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UC-80 — Reactor Technology

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NOVEMBER 1967

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BIBLIOGRAPHIC DATA AND ABSTRACTS HAVE BEEN STORED IN BOTH A COMPUTER AND A MANUAL FILE SINCE SEPTEMBER 1964. THE PRODUCTION OF THIS BIBLIOGRAPHY WAS MADE POSSIBLE THROUGH IBM-7090 COMPUTER PROGRAMS DEVELOPED BY THE INFORMATION SYSTEMS DEPARTMENT OF THE COMPUTER SCIENCES CENTER AT OAK RIDGE.

BIBLIOGRAPHIC ITEMS HAVE BEEN SORTED INTO 19 CATEGORIES OF NUCLEAR SAFETY INFORMATION. ITEMS MAY APPEAR IN AS MANY AS THREE CATEGORIES. A SELECTOR INDEX AND AN AUTHOR INDEX ARE PROVIDED FOR THE CONVENIENCE OF THE USER.

EACH BIBLIOGRAPHIC ITEM CONSISTS OF AUTHOR(S), TITLE, CORPORATE AUTHOR(S), NUMBER OF PAGES, TABLES, FIGURES, REFERENCES, DATE, DOCUMENT NUMBER(S), AVAILABILITY (IF NOT OBVIOUS), AN INFORMATIVE ABSTRACT OF LESS THAN 100 WORDS, AND SEVERAL SELECTOR TERMS. THE SELECTOR TERMS OR KEYWORDS ARE ASSIGNED BY NSIC PERSONNEL TO SERVE AS COORDINATE INDEXING TERMS FOR STORAGE AND FUTURE RETRIEVAL OF INFORMATION. THE MOST SIGNIFICANT SELECTOR TERMS FOR EACH BIBLIOGRAPHIC ENTRY ARE ASTERISKED AS WEIGHTING FACTORS. SELECTOR TERMS ARE INCLUDED WITH THIS BIBLIOGRAPHY SINCE THEY CAN, THROUGH THE SELECTOR INDEX, BE OF AID TO THE READER IN LOCATING ITEMS OF INTEREST. MANY READERS, HOWEVER, WILL PREFER TO SCAN THE CATEGORIES MOST RELATED TO THEIR FIELD OF INTEREST.

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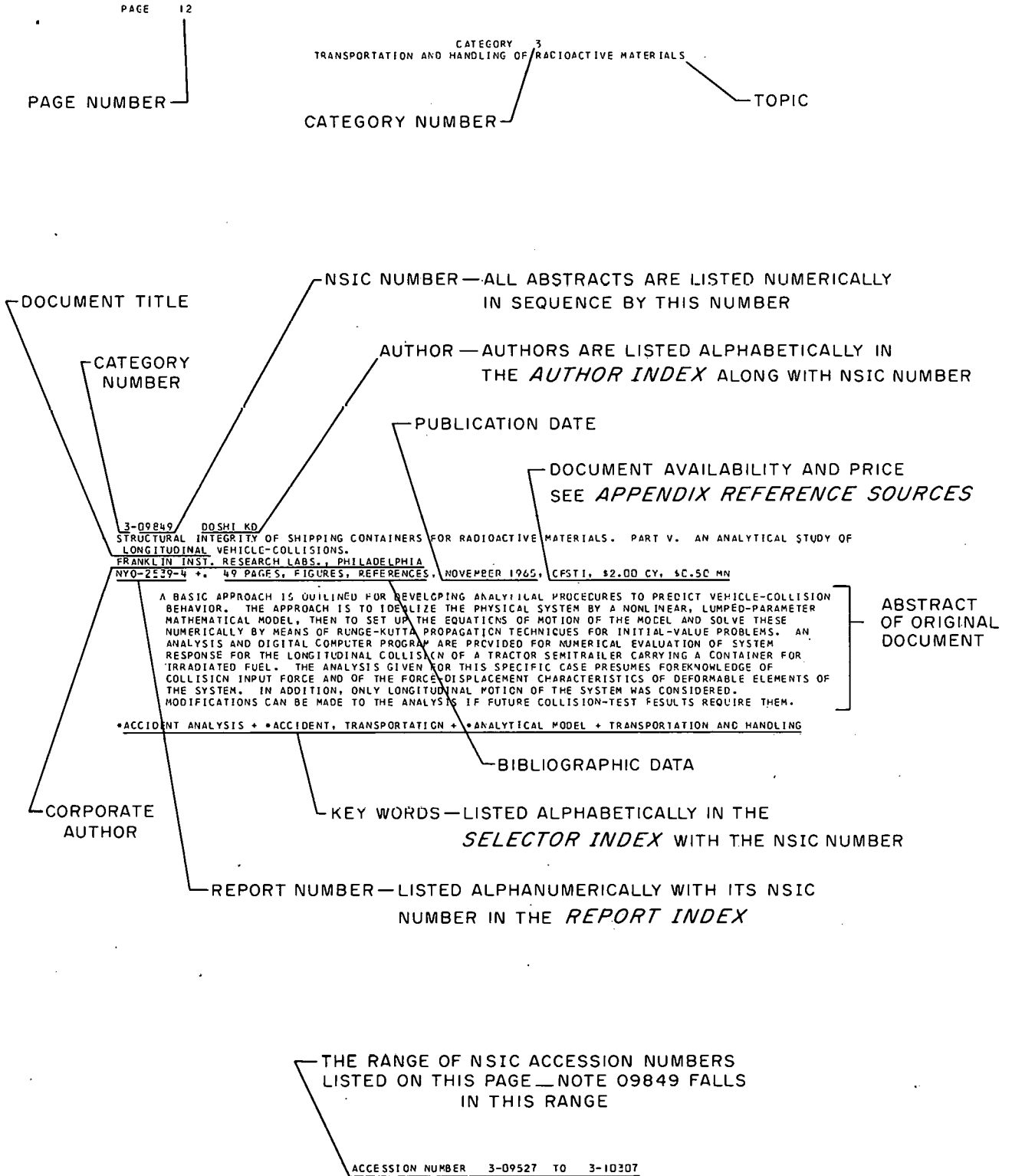
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- ORNL-NSIC-9 INDEXED BIBLIOGRAPHY OF CURRENT NUCLEAR SAFETY LITERATURE - 2 AUGUST, 1965
- ORNL-NSIC-12 INDEXED BIBLIOGRAPHY OF CURRENT NUCLEAR SAFETY LITERATURE - 3 NOVEMBER, 1965
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- ORNL-NSIC-34 INDEXED BIBLIOGRAPHY OF CURRENT NUCLEAR SAFETY LITERATURE - 9 MAY, 1967
- ORNL-NSIC-36 INDEXED BIBLIOGRAPHY OF CURRENT NUCLEAR SAFETY LITERATURE - 10 AUGUST, 1967



# PARTS AND METHOD OF INDEXING ABSTRACTS



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## CATEGORY SCOPE NOTES

A BRIEF EXPLANATION OF THE COMPOSITION OF EACH CATEGORY WITHIN THE SCOPE OF THE NUCLEAR SAFETY INFORMATION CENTER FOLLOWS

## 1. GENERAL SAFETY CRITERIA

THIS CATEGORY ENCOMPASSES ALL SAFETY ASPECTS OF RADIATION PHILOSOPHY, STANDARDS, CODES, COST, FINANCIAL LIABILITY AND INSURANCE. OTHER ITEMS OF INTEREST ARE THE COMPARATIVE RISK TO THE PUBLIC HEALTH AND SAFETY FROM NUCLEAR AND NONNUCLEAR HAZARDS.

## 2. SITING OF NUCLEAR FACILITIES

THIS CATEGORY DEALS WITH DOCUMENTS RELATED TO THE FACTORS USED IN EVALUATING SITES SUCH AS CHARACTERISTICS OF THE FACILITY DESIGN, PROPOSED OPERATION, POPULATION DENSITY, USE CHARACTERISTICS OF THE SITE ENVIRONS, PHYSICAL CHARACTERISTICS OF THE SITE, EARTHQUAKE CONSIDERATIONS, AND THE RELATIONSHIP OF ENGINEERED SAFEGUARDS TO NUCLEAR FACILITY SITING.

## 3. TRANSPORTATION AND HANDLING OF RADIOACTIVE MATERIALS

THIS CATEGORY CONTAINS ARTICLES DEALING WITH SHIPPING CONTAINERS, SHIPPING REGULATIONS, CRITICALITY SAFETY AS RELATED TO SHIPPING AND HANDLING, TRANSPORTATION ACCIDENTS, AND ALL OTHER ITEMS DEALING WITH SAFETY DURING THE TRANSPORTATION AND/OR HANDLING OF RADIOACTIVE MATERIALS.

## 4. AEROSPACE SAFETY

THIS CATEGORY COVERS SAFETY CONSIDERATIONS SUCH AS LAUNCH AND REENTRY PROBLEMS THAT ARE UNIQUE TO NUCLEAR SYSTEMS USED IN AEROSPACE VEHICLES.

## 5. ACCIDENT ANALYSIS

ALL FACETS OF THE ANALYSIS OF POSTULATED ACCIDENTS ARE CONSIDERED IN THIS CATEGORY. INCLUDED ARE BURNOUT HEAT FLUX, CRITICAL HEAT TRANSFER, RELIABILITY ANALYSIS, IN PILE EXPERIMENTS, COOLANT ACTIVITY BUILDUP, PIPE RUPTURE, AND EXPERIMENTS, I.E. LOFT. EXPERIMENTS RELATED TO REACTOR KINETICS ARE CATALOGED IN CATEGORY 6.

## 6. REACTOR TRANSIENTS, KINETICS, AND STABILITY

THIS CATEGORY INCLUDES THE VARIOUS STUDIES, BOTH ANALYTICAL AND EXPERIMENTAL, SUCH AS TREAT AND SPERT IN WHICH THE TRANSIENT BEHAVIOR OF REACTORS AND CRITICALITY ACCIDENTS ARE EXAMINED.

## 7. FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

THE RELEASE OF FISSION PRODUCTS FROM VARIOUS MATERIALS AND THEIR MOVEMENT WITHIN A NUCLEAR FACILITY CONTAINMENT SYSTEM ARE INCLUDED IN THIS CATEGORY. TRANSPORT OF THE FISSION PRODUCT INVOLVES THE PHYSICAL AND CHEMICAL CHARACTERIZATION OF THE RELEASED RADIOACTIVE MATERIALS, AS WELL AS THE VARIOUS MECHANISMS SUCH AS DEPOSITION, ADSORPTION, FILTRATION, FALLOUT, ETC., THAT WOULD ATTENUATE THEIR CONCENTRATION WITHIN THE CONTAINMENT SYSTEM.

## 8. SOURCES OF ENERGY RELEASE UNDER ACCIDENT CONDITIONS

SOURCES OF ENERGY CONSIDERED IN THIS CATEGORY INCLUDE NUCLEAR, WIGNER, AND GAMMA ENERGIES, AS WELL AS CHEMICAL REACTIONS, METAL-WATER REACTIONS, AND ANY OTHER TYPES OF ENERGY THAT MIGHT BE RELEASED AS THE RESULT OF A NUCLEAR ACCIDENT.

## 9. NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

THE DESIGN OF CONTROL AND SAFETY SYSTEMS FOR VARIOUS NUCLEAR PROCESSES, AS WELL AS THE REQUIRED INSTRUMENTATION AND HARDWARE, ARE INCLUDED IN THIS CATEGORY. THE PROBLEMS INVOLVED ARE THE PERFORMANCE REQUIRED OF SAFETY SYSTEMS THE SPECIFICATION OF INSTRUMENTATION THE CONCEPTS OF COINCIDENCE, REDUNDANCE, FAILURE MODES, AND RELIABILITY THE ADEQUACY OF SHUTDOWN MARGINS THE DESIGN FEATURES OF DIFFERENT MECHANICAL DEVICES AND RELATED SUBJECTS.

10. ELECTRICAL POWER SYSTEMS

INFORMATION RELATED TO ROUTINE AND EMERGENCY MEANS OF SUPPLYING ELECTRICAL POWER TO NUCLEAR FACILITIES IS COVERED IN THIS CATEGORY.

11. CONTAINMENT OF NUCLEAR FACILITIES

THIS CATEGORY ENCOMPASSES ALL ASPECTS OF PRESSURE CONTAINMENT, PRESSURE RELEASE CONTAINMENT, AND MULTIPLE BARRIER CONTAINMENT FOR REACTORS, RADIOCHEMICAL PLANTS, HOT CELLS, SOURCES, ETC., AND WILL INCLUDE SUCH ASPECTS AS DESIGN CONSIDERATIONS, LEAKAGE, PENETRATIONS, STRUCTURAL INTEGRITY, AND TEST TESTING.

12. PLANT SAFETY FEATURES

THE SAFETY ASPECTS OF MAINTENANCE, DECONTAMINATION, REACTOR SYSTEMS, URANIUM MINING AND MILLING, AND FUEL FABRICATION AND STORAGE ARE COVERED IN THIS CATEGORY. ENGINEERING DEVICES SUCH AS PRESSURE AND TEMPERATURE REDUCING SYSTEMS, AIR CLEANING SYSTEMS, AND CORE SPRAY AND SAFETY INJECTION SYSTEMS THAT ARE DESIGNED TO MINIMIZE THE CONSEQUENCES OF NUCLEAR ACCIDENTS ARE INCLUDED.

13. RADIOCHEMICAL PLANT SAFETY

NUCLEAR SAFETY INFORMATION RELATED SPECIFICALLY TO RADIOCHEMICAL PLANTS IS COVERED IN THIS CATEGORY.

14. RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

ALL ASPECTS OF THE INTENTIONAL OR ACCIDENTAL RELEASE OF RADIOACTIVITY TO THE ENVIRONMENT ARE INCLUDED IN THIS CATEGORY. RADIOACTIVE WASTE MANAGEMENT, INCLUDING WASTE TRANSPORTATION, TREATMENT, DISPOSAL AND EFFLUENT CONTROL IS OF PRIMARY IMPORTANCE AS IS RADIONUCLIDE OCCURRENCE AND MOVEMENT. THE LATTER INCLUDES FALLOUT, GEOLOGICAL CONSIDERATIONS, COUNTERMEASURES, ANALYTICAL TECHNIQUES, HYDROLOGIC CONSIDERATIONS, AND RADIONUCLIDE MOVEMENT IN SOIL AND WATER.

15. ENVIRONMENTAL SURVEYS, MONITORING, AND RADIATION EXPOSURE OF MAN

THIS CATEGORY INCLUDES ITEMS RELATED TO (1) ENVIRONMENTAL AND PERSONNEL MONITORING DURING ROUTINE AND ACCIDENTAL RADIONUCLIDE RELEASE, (2) MONITORING METHODS AND TECHNIQUES, (3) DOSE MEASUREMENT AND CALCULATION, (4) DETERMINATION OF MAXIMUM PERMISSIBLE DOSE AND CONCENTRATION, AND (5) INTERNAL AND EXTERNAL EXPOSURE TO RADIONUCLIDES.

16. METEOROLOGICAL CONSIDERATIONS

THIS CATEGORY CONSIDERS NOT ONLY DIFFUSION AND DEPOSITION OF RADIOACTIVE MATERIAL NEAR THE EARTH'S SURFACE IN CONNECTION WITH REACTOR OPERATIONS BUT ALSO THE ATMOSPHERIC TRANSPORT AND FALLOUT IN THE TROPOSPHERE AND STRATOSPHERE AS A RESULT OF NUCLEAR WEAPONS TESTS.

17. OPERATIONAL SAFETY AND EXPERIENCE

THIS CATEGORY INCLUDES COVERAGE OF THE SAFETY ASPECTS OF ROUTINE REACTOR OPERATION AND OF INCIDENTS OR UNUSUAL OPERATING OCCURRENCES, LARGE OR SMALL. POWER, RESEARCH, AND TEST REACTORS AND FUEL REPROCESSING PLANTS WILL BE COVERED. ALL AVAILABLE OPERATING, INCIDENTS, SAFEGUARDS, AND INSPECTION REPORTS WILL BE COLLECTED AND INDEXED.

18. SAFETY ANALYSIS AND DESIGN REPORTS

ROUTINE LISTINGS OF THE LATEST NUCLEAR FACILITY SAFETY ANALYSIS AND DESIGN REPORTS ARE TO BE FOUND IN THIS CATEGORY. INCLUDED ARE BOTH ANALYSES AND REPORTS BY FACILITY DESIGNERS AND BY THE AEC REGULATORY STAFF.

19. BIBLIOGRAPHIES

THIS CATEGORY CATALOGUES DOCUMENTS ON NUCLEAR SAFETY TOPICS THAT ARE EXCLUSIVELY BIBLIOGRAPHIES AS WELL AS THOSE THAT INCLUDE EXTENSIVE

CATEGORY 1  
GENERAL SAFETY CRITERIA

1-09286 ALSO IN CATEGORIES 12 AND 18  
PROCEDURES FOR DISMANTLING RICE UNIVERSITY REACTOR  
RICE UNIVERSITY  
11 PAGES, JULY 11, 1965, DOCKET NUMBER 50-114, PDR

PROCEDURES FOR DISMANTLING RICE UNIV. REACTOR ARE GIVEN FOR FUEL-ELEMENT REMOVAL, PERSONNEL PROTECTION, DISPOSAL OF COMPONENTS, DISPOSAL OF SHIELDING WATER, RECORDS, AND CLEANING THE WATER TANK.

\*LICENSING STATUS OF NUCLEAR PROJECTS + \*PROCEDURES AND MANUALS + \*REACTOR, TRAINING + FUEL HANDLING + PERSONNEL PROTECTIVE DEVICE + TRANSPORTATION AND HANDLING

1-12183  
HENNING'S VU + WOHLER J + WOLFAM B  
REACTOR SAFETY ASPECTS AND EQUIPMENT  
2 PAGES FROM ATOMWIRTSCHAFT, 11(5), PAGES 262-263 (MAY 1966)

AN ESSENTIAL TECHNICAL SAFETY CHARACTERISTIC OF THE AVR-REACTOR LIES IN THE POSSIBILITY OF BRINGING THE FUEL INTO THE REACTOR CORE IN SMALL, MEASURED AMOUNTS. A STRICT SAFETY PHILOSOPHY FORMS THE BASIS FOR ALL MEASURES FOR THE PROTECTION OF PERSONNEL AND THE SURROUNDINGS. IN ADDITION THE REACTOR PRESSURE VESSEL, SPECIAL SAFETY EQUIPMENT IS PROVIDED TO PROTECT AGAINST TROUBLE IN THE REACTOR CORE, HAZARD TO THE CONTAINMENT VESSEL, AND DISTURBANCES FROM THE STEAM GENERATOR. CERTAIN MEASURES WERE TAKEN BECAUSE THE REACTOR WAS DESIGNED INITIALLY FOR OPERATION WITH UNCOATED FUEL ELEMENTS. WITH LATER REACTORS OF THIS TYPE, MANY OF THESE MEASURES COULD BE LARGELY ELIMINATED.

\*GERMANY + \*REACTOR, TEST + \*SAFETY PRINCIPLES AND PHILOSOPHY

1-12184  
UNITED STATES ATOMIC ENERGY COMMISSION RULES AND REGULATIONS - TITLE 10 - ATOMIC ENERGY - SUPPLEMENT NUMBER 15  
UNITED STATES ATOMIC ENERGY COMMISSION  
9 PAGES, JUNE 4, 1966

THIS SUPPLEMENT TO TITLE 10 OF THE CODE OF FEDERAL REGULATIONS GIVES EFFECTIVE CHANGES IN PART 36 (EXPORT AND IMPORT OF BY-PRODUCT MATERIAL) AND PART 40 (LICENSING OF SOURCE MATERIAL), PLUS PROPOSED CHANGES FOR PART 70 (REQUIREMENTS FOR CONTROL AND PHYSICAL INVENTORY OF SPECIAL NUCLEAR MATERIAL).

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*REGULATION, AEC + BYPRODUCT MATERIAL + SOURCE MATERIAL

1-12271  
HIGHTON CJ  
THE ADAPTATION OF BRITISH NUCLEAR LIABILITY LAW TO THE INTERNATIONAL CONVENTIONS  
1 PAGE, ATOMWIRTSCHAFT 11(3), PAGE 129, (MARCH 1966)

GREAT BRITAIN IS THE FIRST COUNTRY TO HAVE CARRIED OUT THE LEGALLY RATHER COMPLICATED TASK OF ADAPTING ITS ATOMIC LEGISLATION TO THE INTERNATIONAL CONVENTIONS. THE LIABILITY REGULATIONS HAD TO BE EXTENSIVELY CHANGED. THE LIABILITY OF THE OPERATOR OF A NUCLEAR INSTALLATION HAD, IN PART, TO BE EXTENDED AND, IN PART, RESTRICTED IN ACCORDANCE WITH THE ATOMIC LIABILITY CONVENTIONS (PARIS CONVENTION 1960, VIENNA CONVENTION 1963). IT AMOUNTS BASICALLY TO 5 MILLION POUNDS FOR EVERY INCIDENT. NUMEROUS INDIVIDUAL QUESTIONS OF INTERNATIONAL CIVIL LAW ARE NEWLY REGULATED IN ACCORDANCE WITH THE CONVENTIONS.

\*LAW + \*LIABILITY + \*UNITED KINGDOM

1-13667 ALSO IN CATEGORY 18  
COMPARISON OF PLANT DESIGN WITH AEC CRITERIA  
PUBLIC SERVICE COMPANY OF COLORADO, DENVER, COLORADO  
49 PAGES, FT. ST. VRAIN NUCLEAR GENERATING STATION PRELIMINARY SAFETY ANALYSIS REPORT, VOL. II, APPENDIX B, SEPTEMBER 1966, DOCKET 50-267

COMPARES THE PLANT DESIGN WITH EACH OF THE 27 AEC CRITERIA FOR NUCLEAR POWER PLANT CONSTRUCTION PERMITS. CRITERIA ARE GIVEN FOR THE FACILITY, THE REACTOR, ENGINEERED SAFEGUARDS, AND RADIOACTIVITY CONTROL.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*AEC CONSTRUCTION PERMIT CRITERIA + \*DESIGN CRITERIA + ENGINEERED SAFETY SYSTEM + FT. ST. VRAIN + RADIOACTIVITY, RELEASE + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED + REACTOR, POWER

CATEGORY 1  
GENERAL SAFETY CRITERIA

1-13949 ALSO IN CATEGORY 2  
KELLERMANN O + FRANZEN LF  
THE CHOICE AND SAFETY CRITERIA OF REACTOR SITES  
5 PAGES, 2 FIGURES, 6 TABLES, ATOMWIRTSCHAFT 11(7), PAGES 380-384, (JULY 1966), IN GERMAN

BRITISH MEDICAL RESEARCH COUNCIL SETS MAXIMUM PERMISSIBLE DOSES. DISCUSSION OF REGULATIONS IN USA, UK, AND CANADA. GERMANY HAS AT PRESENT NO SITE CRITERIA, BUT COST OF ENGINEERED SAFEGUARDS REQUIRED AT SOME SITES MIGHT BE PROHIBITIVE.

\*SAFETY PRINCIPLES AND PHILOSOPHY + \*SITING, REACTOR + GERMANY + MAXIMUM PERMISSIBLE DOSE (MPD) + UNITED KINGDOM + UNITED STATES

1-13980  
BROWN CL + LLOYD RC  
MATERIAL BUCKLINGS FOR 1.002, 1.25, AND 1.95 WT% URANIUM-235-ENRICHED URANIUM TUBES IN LIGHT WATER  
BATTELLE MEMORIAL INSTITUTE  
6 PAGES, 7 FIGURES, 3 TABLES, NUCLEAR SCIENCE AND ENGINEERING 27, PAGES 1-15, (JANUARY 1957)

MATERIAL BUCKLINGS AND EXTRAPOLATION DISTANCES WERE MEASURED FOR SEVERAL SLIGHTLY ENRICHED URANIUM-METAL TUBE LATTICES AND TUBE-IN-TUBE ASSEMBLY LATTICES IN LIGHT WATER. THE LATTICES ARE DESCRIBED NUMERICALLY, AND THE RESULTS ARE GIVEN. BASED ON THE MEASUREMENTS, CRITICAL PARAMETERS FOR USE IN NUCLEAR SAFETY ANALYSES WERE CALCULATED.

\*CRITICALITY SAFETY + URANIUM + WATER, GENERAL

1-14073  
EDWARD TELLER RECOMMENDS GREATER USE OF NUCLEAR POWER AND NATURAL GAS TO COMBAT AIR POLLUTION  
UNIVERSITY OF CALIFORNIA  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(3) PAGE 1 (JANUARY 16, 1967)

EDWARD TELLER, AT AN INTERSTATE CONFERENCE ON AIR POLLUTION, RECOMMENDED THAT POWER REACTORS BE BUILT CLOSE IN TO CITIES (FOR ELECTRICITY PRODUCTION) AND NATURAL GAS BE USED FOR HEATING. HE URGED THAT UNDERGROUND CONTAINMENT BE INVESTIGATED.

\*ATMOSPHERIC POLLUTION + \*CONTAINMENT, UNDERGROUND + REACTOR, POWER

1-14074 ALSO IN CATEGORIES 14 AND 18  
T. J. THOMPSON (MIT) PROTESTS NEW AEC APPROACH IN HAVING DIVISION OF COMPLIANCE REVIEW DETAILED EFFLUENT RELEASE RECORDS  
MASSACHUSETTS INSTITUTE OF TECHNOLOGY  
3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(3) PAGES 11-13 (JANUARY 16, 1967), DOCKET NO. 53-20

PROTEST MADE ON GROUNDS OF TIME SPENT BY AEC AND REACTOR OPERATOR, CHANGE IN RELATIONS WITH OPERATOR (NEW PROCESS SURE TO HAVE AEC MAKE TECHNICAL JUDGMENTS WHICH ARE A FUNCTION OF REACTOR MANAGEMENT, WOULD ALSO CAUSE AEC TO ASSUME CERTAIN LEGAL LIABILITIES). SUGGESTS THIS MOVE AS A RESULT OF INTERJURISDICTIONAL DISPUTE WITH ORGANIZATIONS, SUCH AS PUBLIC HEALTH SERVICE.

\*INSPECTION AND COMPLIANCE + \*REGULATION, AEC + EFFLUENT + WASTE DISPOSAL, GENERAL

1-14180 ALSO IN CATEGORIES 6 AND 18  
BURTON SF + HOSLER AG  
SMALL NUCLEAR POWER PLANTS. VOLUME ONE. DESIGN, CONSTRUCTION, AND OPERATING EXPERIENCE  
CHICAGO OPERATIONS OFFICE, AEC  
COO-284 (VOL.1) +. 274 PAGES, 4 FIGURES, 17 TABLES, OCTOBER 1966

COMPARES AI REACTOR, MODULAR, OXIDE FUEL, GRAPHITE IN BLANKET, WITH W, GE, CE, AND AC DESIGNS AS PUBLISHED IN COO-279. SHOWS COUPLED CORES (W CONCEPT) EFFECTIVE IN SUPPRESSING POSITIVE VOID EFFECT. IMPROVED CROSS SECTION DATA, TECHNIQUES FOR SPACE/ENERGY DEPENDENT FLUXES NEEDED FOR POWER SPLIT EFFECT. AI VOID EFFECT BEST OF GROUP, FUEL CYCLE COST INTERMEDIATE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*ECONOMICS + COUPLED CORES + REACTOR, BREEDER + REACTOR, FAST + SAFETY REVIEW (OPERATIONS, EXPERIMENTS)

1-14290 ALSO IN CATEGORIES 3 AND 11  
GULLEY PL  
PLUTONIUM HANDLING AND CONTROL PRACTICES AT PACIFIC NORTHWEST LABORATORY  
BATTELLE-NORTHWEST  
BNWL-287 +. 11 PAGES, 7 FIGURES, 2 TABLES, 3 REFERENCES, OCTOBER 1966

CATEGORY 1  
GENERAL SAFETY CRITERIA

1-14290 \*CONTINUED\*

ONE OF TWO MAJOR FACILITIES USED FOR PLUTONIUM FUELS RESEARCH AND DEVELOPMENT STUDIES AT PATELLE-NORTHWEST IS THE PLUTONIUM FUELS LABORATORY (PFL). THE DESIGN AND OPERATIONAL POLICY OF THE PFL IS ONE OF COMPLETE PLUTONIUM CONTAINMENT. PRIMARY PLUTONIUM CONTAINMENT IS PROVIDED BY GLOVE BOXES, SECONDARY CONTAINMENT BY INDIVIDUAL LABORATORIES, AND TERTIARY BY THE BUILDING PROPER. AIR SAMPLES, TAKEN THROUGHOUT THE FACILITY, ARE CONSTANTLY MONITORED FOR FREE CONTAMINATION. RULES FOR THE PREVENTION OF AN ACCIDENTAL CRITICALITY IN THE PFL ARE BASED ON THE CRITERION THAT AT LEAST TWO CONTROL CONDITIONS MUST FAIL BEFORE CRITICALITY IS IMMINENT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*CONTAINMENT, GENERAL + \*PLUTONIUM + \*SAFETY PRINCIPLES AND PHILOSOPHY + GLOVE BOX + PERSONNEL EXPOSURE, RADIATION

1-14291 ALSO IN CATEGORY 11  
NUCLEAR MATERIALS MANAGEMENT

INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA

STI-PUB-110 + CONF-650803 +. 902 PAGES, FIGURES, TABLES, REFERENCES, PROCEEDINGS OF THE SYMPOSIUM, HELD IN VIENNA, AUGUST 30-SEPTEMBER 3, 1965

THE VOLUME ON NUCLEAR MATERIALS MANAGEMENT CONSTITUTES THE PROCEEDINGS OF THE SYMPOSIUM ON NUCLEAR MATERIALS MANAGEMENT HELD BY THE INTERNATIONAL ATOMIC ENERGY AGENCY, AUGUST 30 TO SEPTEMBER 3, 1965. THE VOLUME IS 888 PAGES LONG AND CONTAINS THE FOLLOWING SUBTOPICS - (1) MATERIAL CONTROL SYSTEMS, (2) RECORDING, REPORTING AND GENERATION OF QUANTITATIVE DATA, (3) EVALUATION OF MEASUREMENT METHODS, NUCLEAR SAFETY AND CRITICALITY CONTROL, (4) ECONOMIC CONSIDERATIONS, GOVERNMENT ACTIVITIES, (5) CHEMICAL AND ISOTOPIIC ANALYSES, AND (6) BURN-UP AND PRODUCTION.

AVAILABILITY - INTERNATIONAL ATOMIC ENERGY AGENCY, \$18.00 COPY

\*CONTROL, GENERAL + \*IAEA (INTERNATIONAL ATOMIC ENERGY AGENCY) + \*MATERIAL + ECONOMIC STUDY + RADIOCHEMICAL ANALYSIS + SAFETY PRINCIPLES AND PHILOSOPHY

1-14297

KARR H

THE NEW INSTITUTE FOR REACTOR SAFETY

ORNL-TR-652 +. 10 PAGES, ATOMWIRTSCHAFT 10(3), PAGES 140-141, (MARCH 1965)

THE NEW GERMAN INSTITUTE FOR REACTOR SAFETY WAS FORMED BY THE TECHNICAL SUPERVISORY ASSOCIATIONS IN THE ELEVEN COUNTIES, WITH THE DIRECTIVE COOPERATION OF THE FEDERAL RESEARCH MINISTRY UNDER A CONTRACT AGREEMENT. IT IS TO COLLABORATE IN THE SIMPLIFICATION AND IMPROVEMENT OF THE COMPLICATED LEGAL APPROVAL PROCEDURES EXISTING IN THE FEDERAL REPUBLIC. FOR THIS PURPOSE, IT IS TO COLLECT INFORMATION ON SAFETY QUESTIONS ON ONE HAND, WITH THE DEVELOPMENT OF RULES OF SAFETY ENGINEERING, WHILE ON THE OTHER HAND IT IS TO BE AVAILABLE AS AN EXPERT CONSULTANT IN APPROVAL PROCEEDINGS.

AVAILABILITY - SPECIAL LIBRARIES ASSOCIATION TRANSLATION CENTER, JOHN CRERAR LIBRARY, 35 WEST 33RD STREET, CHICAGO, ILLINOIS 60616

\*GERMANY + \*SAFETY PRINCIPLES AND PHILOSOPHY + ADMINISTRATIVE CONTROLS AND PRACTICES + INFORMATION RETRIEVAL + REGULATION, GENERAL + SAFETY REVIEW (OPERATIONS, EXPERIMENTS)

1-14419 ALSO IN CATEGORIES 17 AND 18

REPORT TO THE ATOMIC ENERGY COMMISSION BY THE REGULATORY REVIEW PANEL

UNITED STATES ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.

74 PAGES, JULY 14, 1965

PANEL REVIEWED TWO AREAS, POLICY-PROCEDURE (FOR FASTER HANDLING) AND DECISION-MAKING PROCESS (FOR IMPROVEMENTS WITHOUT NEW LEGISLATION). NINE GENERAL CONCLUSIONS AND MANY RECOMMENDATIONS ARE GIVEN. DRL STAFF MUST BE INCREASED WITHOUT LOWERING QUALITY. ACRS SHOULD NOT BE OVERLOADED WITH ROUTINE QUESTIONS. OPEN HEARINGS ARE INDISPENSIBLE IN GAINING PUBLIC CONFIDENCE. CRITERIA AND STANDARDS ARE NEEDED. CLARIFICATION OF OVERLAPPING FUNCTIONS OF REGULATORY BODIES IS NEEDED. A PRELIMINARY APPROVAL OF A SITE FOR A CERTAIN REACTOR CAPACITY SHOULD BE MADE TO ALLOW BETTER UTILITY PLANNING.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*REGULATION, AEC + ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) + ADMINISTRATIVE CONTROLS AND PRACTICES + CODES AND STANDARDS + SAFETY REVIEW (OPERATIONS, EXPERIMENTS)

1-14524 ALSO IN CATEGORIES 11 AND 2

GILL S

STRUCTURES FOR NUCLEAR POWER

NORTHAMPTON COLLEGE OF ADVANCED TECHNOLOGY

398 PAGES, 129 FIGURES, TABLES, REFERENCES, C.R. BOOKS LIMITED, LONDON, 1964

CATEGORY 1  
GENERAL SAFETY CRITERIA

1-14524 \*CONTINUED\*

THIS BOOK CONTAINS A GENERAL DISCUSSION OF ALL THE CIVIL ENGINEERING PHASES OF A NUCLEAR POWER PLANT. THE PRESENTATION IS FROM THE DESIGNERS POINT OF VIEW. GENERAL PRINCIPLES AND PROVEN DESIGN CRITERIA ARE EMPHASIZED. OF PARTICULAR CURRENT INTEREST ARE THE THREE CHAPTERS ON CONCRETE RESEARCH AND PRESTRESSED CONCRETE PRESSURE VESSELS. CHAPTER 14 CONTAINS THE ELASTIC ANALYSIS AND ULTIMATE LOAD CALCULATIONS FOR AN EXAMPLE PCRV DESIGN.

AVAILABILITY - CR BOOKS LIMITED, THE ADELPHI, JOHN ADAM STREET, LONDON W.C.2

\*CONCPTE + \*CONCRETE, PRESTRESSED + \*CONTAINMENT DESIGN + \*CONTAINMENT STRUCTURE + \*DESIGN CRITERIA + \*DESIGN STUDY + BIBLIOGRAPHY + CONTAINMENT, GENERAL + CONTAINMENT, PRESSURE VESSEL + EARTHQUAKE + GEOLOGICAL CONSIDERATION, GENERAL + STEEL + STRESS

1-14547 ALSO IN CATEGORY 18

QUESTION R3 - COMPARISON WITH 27 AEC CONSTRUCTION PERMIT CRITERIA

TENNESSEE VALLEY AUTHORITY

PAGE B.2.1 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966, DOCKET NO. 50-259/260.

APPENDIX H (COMPARATIVE EVALUATION OF CONSTRUCTION PERMIT CRITERIA) IS FORWARDED IN ANSWER.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + AEC CONSTRUCTION PERMIT CRITERIA + BROWNS FERRY + REACTOR, BOILING WATER

1-14625 ALSO IN CATEGORIES 17 AND 18

MANUAL OF LECTURE NOTES REACTOR SAFETY COURSE NO. 4, JUNE 6 TO JULY 1, 1966

UNITED KINGDOM ATOMIC ENERGY AUTHORITY, HARWELL, ENGLAND

500 PAGES +. FIGURES, TABLES, REFERENCES, 1966

PROVIDES MAIN DATA FOR LECTURE NOTES AND DISCUSSIONS. SECTIONS INCLUDE - I. INTRODUCTION (UNITED KINGDOM HEALTH AND SAFETY ORGANIZATION). II. FISSION PRODUCT RELEASE (DEPOSITION WITHIN A SYSTEM, FILTRATION). III. PRESSURE-CIRCUIT ENGINEERING (REACTOR VESSEL AND CONTAINMENT). IV. CONTROL AND INSTRUMENTATION (EXPERIENCE, RELIABILITY). V. GAS-COOLED REACTORS. VI. WATER-COOLED REACTORS. VII. FAST REACTORS. VIII. GENERAL (SAFETY REPORTS, RESEARCH REACTORS, ACCIDENT REPORTING, TRAINING). IX. SITING AND EMERGENCY PROCEDURES.

AVAILABILITY - UNITED KINGDOM ATOMIC ENERGY AUTHORITY, AUTHORITY HEALTH AND SAFETY BRANCH AT THE POST-GRADUATE EDUCATION CENTRE, A.E.R.E., HARWELL, BERKS., \$75.00 COPY

\*STAFFING, TRAINING, QUALIFICATION + CONCRETE, PRESTRESSED + CONTAINMENT, GENERAL + FISSION PRODUCT RELEASE, GENERAL + INSTRUMENTATION, GENERAL + MAIN COOLING SYSTEM + REACTOR, GAS COOLED + SAFETY ANALYSIS REPORT, GENERAL + SITING, REACTOR + UNITED KINGDOM

1-14639 ALSO IN CATEGORIES 17 AND 18

MERTNEY RJ

THE TRA SAFEGUARD COMMITTEE

IDAHO NUCLEAR CORPORATION

IN-1022 +. 9 PAGES, SEPTEMBER 1966

THIS DOCUMENT CONSTITUTES THE WORKING CHARTER OF THE TRA SAFEGUARD COMMITTEE. IT DESCRIBES THE DUTIES AND FUNCTIONS OF THE TRA SAFEGUARD COMMITTEE - DOCUMENTS CERTAIN EXISTING PROCEDURES REGARDING REACTOR AND EXPERIMENTAL SAFETY AT THE MTR, ETR, AND ATR - INDICATES THOSE ACTIVITIES WHICH REQUIRE TRA SAFEGUARD COMMITTEE APPROVAL, DESCRIBES THE PROCEDURES FOR OBTAINING SUCH APPROVAL AND RELATES THE ACTIVITIES OF THE TRA SAFEGUARD COMMITTEE TO THE FUNCTIONS AND RESPONSIBILITIES OF IDAHO NUCLEAR CORPORATION LINE-SUPERVISION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*CODES AND STANDARDS + \*SAFETY PRINCIPLES AND PHILOSOPHY + \*SAFETY REVIEW (OPERATIONS, EXPERIMENTS) + ATR (ADVANCED TEST REACTOR - NRTS) + ETR (ENGINEERING TEST REACTOR) + MTR (MATERIAL TESTING REACTOR) + REACTOR, AEC OWNED + REACTOR, TEST

1-14641 ALSO IN CATEGORIES 9 AND 17

GEKLER WC + POMREHN HP

AN ANALYSIS OF NUCLEAR POWER PLANT OPERATING AND SAFETY EXPERIENCE. VOL. I

HOLMES AND NARVER, INC.

HN-185 +. 110 PAGES, 22 TABLES, 7 FIGURES, 6 REFERENCES, DECEMBER 15, 1966

OPERATING AND SAFETY EXPERIENCE, AT FIVE MAJOR NUCLEAR POWER PLANTS, REPRESENTING 20 REACTOR-YEARS OF OPERATION WAS STUDIED. RESULTS AND CONCLUSIONS ARE GIVEN WHICH ENUNCIATE THE RELIABILITY OF SAFETY SYSTEM AND ENGINEERED SAFEGUARDS. TECHNIQUES OF OBTAINING RELIABILITY ESTIMATES ARE BRIEFLY DESCRIBED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE



CATEGORY 1  
GENERAL SAFETY CRITERIA

1-14641 \*CONTINUED\*

\*OPERATING EXPERIENCE + \*RELIABILITY ANALYSIS + CONTAINMENT INTEGRITY + CONTROL ROD DRIVE + CONTROL ROD SCRAM MECHANISM + DRESDEN 1 + EMERGENCY COOLING CONSIDERATIONS + EMERGENCY POWER, ELECTRIC + EMERGENCY SYSTEM + ENGINEERED SAFETY SYSTEM + HUMBOLDT BAY + INDIAN POINT 1 + MAINTENANCE AND REPAIR + PLANT PROTECTIVE SYSTEM + REACTOR SAFETY SYSTEM + REACTOR, BOILING WATER + REACTOR, POWER + REACTOR, PRESSURIZED WATER + SAFETY REVIEW (OPERATIONS, EXPERIMENTS) + SAFETY STUDY + SCRAM, REAL + SCRAM, SPUROUS + SHIPPINGPORT + SHUTDOWN SYSTEM, SECONDARY + YANKEE

1-14643 ALSO IN CATEGORIES 12 AND 17

GEKLER WC + POMREHN HP  
RELIABILITY TECHNIQUES  
HOLMES AND NARVER, INC.

HM-185 +. 16 PAGES, 2 TABLES, AN ANALYSIS OF NUCLEAR POWER PLANT OPERATING AND SAFETY EXPERIENCE. VOL. 1, PAGES 52-67, DECEMBER 15, 1966

OPERATING AND SAFETY EXPERIENCE, AT FIVE MAJOR NUCLEAR POWER PLANTS, REPRESENTING 20 REACTOR-YEARS OF OPERATION WAS ANALYZED. THE TECHNIQUES AND PROCEDURES USED IN COLLECTING AND TREATING THE DATA ARE GIVEN. NO NEW IDEAS OR MATHEMATICS WERE DEVELOPED. THE LEVEL OF THE ANALYSIS FOR PREDICTING RELIABILITY OF SYSTEMS EXTENDED DOWN TO THE COMPONENTS AND NOT TO THE PARTS OF THE COMPONENTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*OPERATING EXPERIENCE + \*RELIABILITY ANALYSIS + MATHEMATICAL STUDY + PROCEDURES AND MANUALS + REACTOR, POWER

1-14660 ALSO IN CATEGORY 11

PRESSURE VESSEL CODES - THEIR APPLICATION TO NUCLEAR REACTOR SYSTEMS. FINDINGS FROM A SURVEY. TECHNICAL REPORTS SERIES NO. 56

INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA, AUSTRIA  
STI-DOC-10/56 +. 36 PAGES, 2 TABLES, 1 FIGURE, 21 REFERENCES, MAY 1966

A SURVEY WAS MADE BY THE INTERNATIONAL ATOMIC ENERGY AGENCY OF HOW THE PROBLEMS OF APPLYING NATIONAL PRESSURE VESSEL CODES TO NUCLEAR REACTOR SYSTEMS HAVE BEEN TREATED IN THOSE MEMBER STATES THAT HAVE PRESSURIZED REACTORS IN OPERATION OR UNDER CONSTRUCTION AT THE BEGINNING OF 1963. FIFTEEN ANSWERS RECEIVED TO AN OFFICIAL INQUIRY FORM THE BASIS OF THIS REPORT, WHICH ALSO TAKES INTO ACCOUNT SOME RECENTLY PUBLISHED MATERIAL. IT HAS BEEN POSSIBLE TO APPLY THE NORMAL NATIONAL PRESSURE VESSEL CODES TO MOST OF THE PRESSURIZED REACTORS BUILT SO FAR, AND THE BODIES NORMALLY RESPONSIBLE FOR THE ADMINISTRATION OF CODES AND REGULATIONS HAVE STILL HAD THIS FUNCTION TO FULFIL, EVEN IF SOMETIMES THE PROCEDURES DIFFER FROM THE ROUTINE FOR BOILERS AND CONVENTIONAL VESSELS.

AVAILABILITY - NATIONAL AGENCY FOR INTERNATIONAL PUBLICATIONS, INC., 317 EAST 34TH STREET, NEW YORK, NEW YORK 10016, \$1.00 COPY

\*CODES AND STANDARDS + \*CONTAINMENT, PRESSURE VESSEL + AUSTRIA + BELGIUM + DENMARK + GERMANY + INSPECTION AND COMPLIANCE + IRRADIATION TESTING + LAW + NEUTRON + NORWAY + SWEDEN + UNION OF SOVIET SOCIALIST REPUBLICS + UNITED STATES

1-14667

A FINDINGS AND FORECASTS SPECIAL - THE OUTLOOK FOR NUCLEAR POWER AND THE URANIUM INDUSTRY  
ARTHUR WIESENBERGER AND CO.  
122 PAGES, NOVEMBER 29, 1966

SAFETY IS DISCUSSED ON PAGES 47-48. IN ABOUT 20 YEARS OF OPERATION OF REACTORS OF VARIOUS TYPES, NOT ANY KNOWN INJURY TO THE PUBLIC. RADIATION EXPOSURE FROM NORMAL PLANT OPERATION COMPARED WITH OTHER RADIATION SOURCES.

AVAILABILITY - ARTHUR WIESENBERGER AND CO., 61 BROADWAY, NEW YORK, NEW YORK

RADIATION IN PERSPECTIVE

1-14723 ALSO IN CATEGORIES 11 AND 18

TURKEY POINT INTERVENTION PETITION  
FLORIDA POWER AND LIGHT

3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(7) PAGES 6-8 (FEBRUARY 13, 1967)

PAUL SIEGEL, MIAMI RESIDENT, FILES INTERVENTION PETITION TO ENSURE THOROUGH STUDY OF THE CONTAINMENT VESSELS ABILITY TO WITHSTAND A CONVENTIONAL BOMB BLAST, WHICH MIGHT BREACH CONTAINMENT AND INITIATE A LOSS-OF-COOLANT ACCIDENT. REFERENCE IS MADE TO CUBA BEING 200 MILES AWAY.

\*CONSTRUCTION PERMIT PROCESS + \*CONTAINMENT DESIGN + \*EXPLOSION + CIVIL DEFENSE + REACTOR, PRESSURIZED WATER + TURKEY POINT 3 + TURKEY POINT 4

CATEGORY 1  
GENERAL SAFETY CRITERIA

1-14724 ALSO IN CATEGORY 1A  
PUBLIC RELATIONS REGARDING COLUMBIA U TRIGA  
COLUMBIA UNIVERSITY  
3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(7) PAGES 14-15 (FEBRUARY 13, 1967) DOCKET NO. 50-208

ON DECEMBER 23, 1966 CBS-TV INTERVIEWED THE 69TH DISTRICT (N.Y. CITY) LEADER, AND THAT EVENING BROADCAST CRITICAL STATEMENTS REGARDING THE SITING IN MORNINGSIDE HEIGHTS AND THE SECRECY OF THE PROJECT. A LETTER FROM THE MORNINGSIDE RENEWAL COUNCIL ASKING 6 QUESTIONS, AND AEC ANSWER IS GIVEN. 1. WHAT DOES TRIGA STAND FOR. 2. WHEN DID COLUMBIA UNIVERSITY APPLY FOR A LICENSE (1963). 4.6 WHY WAS NO ONE TOLD OF THIS (MAYOR, LIBRARIES, HEALTH DEPARTMENTS, AND NEWSPAPERS GOT COPIES OF APPLICATIONS). 5. WHEN WILL PUBLIC HEARINGS BE HELD (AFTER CONSTRUCTION IS COMPLETED IN JUNE 1967).

\*RADIATION, PUBLIC EDUCATION/ACCEPTANCE + \*SITING, REACTOR + REACTOR, RESEARCH + TRIGA (TRAINING REACTOR, ISOTOPES, G.A.)

1-14752 ALSO IN CATEGORY 3  
PHYSICS RESEARCH QUARTERLY REPORT, APRIL, MAY, JUNE 1966  
PACIFIC NORTHWEST LABORATORY  
RNWL-315 +. 15 PAGES, 6 FIGURES, 1 TABLES, 5 REFERENCES, NOVEMBER 15, 1966

CALCULATIONS WERE MADE TO DETERMINE THE BARE AND WATER-REFLECTED SPHERICAL CRITICAL MASSES OF 12 OF THE MOST FREQUENTLY ENCOUNTERED COMPOUNDS, IN THE UNDERMODERATED RANGE (H/PU EQUAL TO OR LESS THAN 20). THE CRITICAL MASSES OF PLUTONIUM ATOMS IN WATER WERE ALSO CALCULATED FOR UNDERMODERATED SYSTEMS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

CRITICALITY EXPERIMENT + CRITICALITY SAFETY + PLUTONIUM + WATER, GENERAL

1-14759 ALSO IN CATEGORY 3  
JOHNSON FR + REEDY RK  
CRITICALITY OF LATTICES OF HEAT TRANSFER REACTOR EXPERIMENT FUEL ELEMENTS  
OAK RIDGE NATIONAL LABORATORY  
ORNL-TM-1566 +. 14 PAGES, 5 TABLES, 3 FIGURES, JULY 20, 1966

A SERIES OF EXPERIMENTS WAS COMPLETED TO DETERMINE THE CRITICAL PARAMETERS OF LATTICES OF HEAT TRANSFER REACTOR EXPERIMENT (HTRE) FUEL ELEMENTS, PRIMARILY IN GEOMETRIES AND ENVIRONMENTS OF INTEREST FOR TRANSPORT, STORAGE, AND CHEMICAL DISSOLUTION. ARRAYS OF THESE ELEMENTS WERE MADE CRITICAL WITH WATER AND WITH DILUTE AQUEOUS U(92.61021NO3)2 SOLUTION OF TWO CONCENTRATIONS (TO SIMULATE DISSOLVER ENVIRONMENTS) AS MODERATOR AND REFLECTOR. ONE SOLUTION CONCENTRATION WAS 3.97 G OF U-235 PER LITER, AND THE OTHER WAS 8.02 G PER LITER. IN SOME OF THE SLAB LATTICES IN WATER, SHEETS OF CADMIUM WERE PLACED BETWEEN ROWS TO SERVE AS A NEUTRON ABSORBER AS THEY MIGHT IN A SHIPPING CONTAINER.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

CRITICALITY EXPERIMENT + CRITICALITY SAFETY + FUEL ELEMENT + REACTOR, AIRCRAFT + REACTOR, TEST

1-14799  
MEE WT + CRUME EC + MCLENDON JD  
NUCLEAR SAFETY CONSIDERATIONS IN FABRICATION OF MASSIVE PARTIALLY ENRICHED URANIUM--MOLYBDENUM REACTOR PARTS  
OAK RIDGE NATIONAL LABORATORY  
Y-KR-62 + SM-70/44 + CONF-651-103-3 +. 24 PAGES, TO BE PRESENTED AT THE IAEA SYMPOSIUM ON CRITICALITY CONTROL OF FISSILE MATERIALS, STOCKHOLM, SWEDEN, NOVEMBER 1-5, 1965

20% ENRICHED URANIUM WAS ALLOYED (10%) WITH MOLYBDENUM AND CAST INTO MASSIVE CORE COMPONENTS FOR A PROMPT-BURST REACTOR, SUPER KUKLA. WHERE DIRECT CRITICALITY DATA WERE SPARSE, CALCULATIONS WERE MADE BY USING S-SUB-N TYPE MULTIGROUP TRANSPORT-THEORY PROGRAMS DSN AND DTK. ADJUSTMENTS WERE MADE TO ENSURE CONSERVATISM, AND BY APPLYING DOUBLE-CONTINGENCY ANALYSES TO OPERATIONS, CORE COMPONENTS WEIGHING UP TO 400 KG OF U-10 (MO) ALLOY WERE CAST AND SAFELY MADE INTO FINISHED PARTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*CRITICALITY SAFETY + \*FABRICATION + \*FUEL ELEMENT + COMPUTER PROGRAM + REACTOR, FAST BURST

1-14801 ALSO IN CATEGORIES 12 AND 17  
ROMANKO J  
INVESTIGATION OF EXPLOSIONS IN IRRADIATED LIQUID-NITROGEN DEWARS

CATEGORY 1  
GENERAL SAFETY CRITERIA

1-14801 \*CONTINUED\*  
GENERAL DYNAMICS  
N-66-13092 + NASA-CR-68435 + FZK-219 +. 122 PAGES, FIGURES, TABLES, REFERENCES, DEC. 15, 1965

LIQUID NITROGEN WITH VARIOUS IMPURITIES WAS IRRADIATED UNDER CONTROLLED CONDITIONS (OPEN AND CLOSED) TO GIVE INFORMATION ON CONDITIONS THAT CAUSE EXPLOSIONS. THE X-RAY IRRADIATIONS WERE CARRIED TO COMPLETION. THE REACTOR IRRADIATIONS PROGRAM WAS TERMINATED BEFORE THE COMPLETION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*EXPLOSION + \*NITROGEN + \*TEST, DESTRUCTIVE + IN PILE LOOP + IRRADIATION TESTING

1-14809 ALSO IN CATEGORY 18  
REVISED 10 CFR 50, CONSTRUCTION PERMIT APPLICATION FOR ULTIMATE POWER LEVEL  
ATOMIC ENERGY COMMISSION  
3 PAGES, ATOMIC ENERGY CLEARINGHOUSE 13(8), PAGES 10-12 (FEB. 20, 1967)

PROPOSED REVISION WOULD REQUIRE APPLICANTS TO PROVIDE ADDITIONAL INFORMATION AND TO EVALUATE FACILITY (AT CONSTRUCTION-PERMIT STAGE) FOR THE ULTIMATE POWER LEVEL, RATHER THAN AT THE LOWER MANUFACTURERS-GUARANTEE LEVEL. LATER INCREASES IN POWER LEVELS AFTER THE PLANT IS OPERATIONAL WOULD NOT BE PREJUDICED.

\*REGULATION, AEC + REACTOR POWER + SITING, REACTOR

1-14844 ALSO IN CATEGORIES 12 AND 18  
AEC AUTHORIZED FERMI TO USE PROTECTION FACTORS FOR RESPIRATORY DEVICES  
DIVISION OF REACTOR LICENSING  
6 PAGES, 1 TABLE, JANUARY 1967, DOCKET NO. 50-16

PENDING AMENDMENT OF 10 CFR 20, A SET OF FILTER FACTORS (TO ADJUST THE CONCENTRATION INHALED ACCORDING TO RESPIRATORY DEVICE USED) WAS ESTABLISHED. FERMI PERSONNEL MAY NOW USE THESE.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*PERSONNEL PROTECTIVE DEVICE + FERMI + FILTER EFFICIENCY + RADIATION SAFETY AND CONTROL + REACTOR, BREEDER + REACTOR, FAST

1-14860 ALSO IN CATEGORY 17  
PARKER WB  
DEVELOPMENT OF A RECOVERY BOILER OPERATOR TRAINING PROGRAM  
THE HARTFORD STEAM BOILER INSPECTION AND INSURANCE COMPANY  
3 PAGES, PAGES 231-233, JULY 7, 1965, PRESENTED AT THE 20TH ENGINEERING CONFERENCE OF THE TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY HELD IN MINNEAPOLIS, MINN., SEPTEMBER 12-16, 1965

WHEN THE FREQUENCY OF EXPLOSIONS IN BLACK-LIQUOR-RECOVERY BOILERS CONTINUED TO INCREASE, A GROUP MET IN 1962 TO TAKE INDUSTRY-WIDE ACTION. A QUESTIONNAIRE REVEALED THAT EXPLOSIONS WERE CAUSED BY INCORRECT OPERATING PROCEDURES AND MAINTENANCE. A SUBCOMMITTEE PRODUCED A TRAINING-MANUAL OUTLINE AND TRAINING PROGRAM IN 1965, SO THAT LOCAL PLANT SUPERVISION COULD REVISE THE MANUAL TO SUIT LOCAL PLANT DETAILS. REFRESHER COURSES ARE ADVISED ON PLANT SHUTDOWN UNDER EMERGENCY CONDITIONS. TRAINING-MANUAL OUTLINE INCLUDED AND DISCUSSED.

AVAILABILITY - TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY, 360 LEXINGTON AVENUE, NEW YORK, NEW YORK 10017

\*PROCEDURES AND MANUALS + \*STAFFING, TRAINING, QUALIFICATION + EXPLOSION + HEAT EXCHANGER + INCIDENT, ACTUAL, NONNUCLEAR

1-14864 ALSO IN CATEGORIES 3 AND 14  
STARR MS  
IMPACT TESTING OF RADIOACTIVE SAMPLES  
BERKELEY NUCLEAR LABORATORIES  
3 PAGES, 5 FIGURES, 3 REFERENCES, NUCLEAR ENGINEERING 11(123) PAGES 606-608 (AUGUST 1966)

THE EMBRITTLMENT OF STEELS BY NEUTRON IRRADIATION HAS BEEN KNOWN SINCE THE 1957 GENEVA CONFERENCE BUT IT IS STILL NOT COMPLETELY UNDERSTOOD. A CONVENIENT WAY OF DEFINING THESE CHANGES IS TO SPECIFY THE CHANGES IN THE BRITTLE/DUCTILE TRANSITION TEMPERATURE. SUCH TESTS REQUIRE REMOTELY OPERATED IMPACT MACHINES FOR EXPERIMENTS ON ACTIVE MATERIALS. THIS REPORT DESCRIBES THE TESTING FACILITIES AT BERKELEY NUCLEAR LABORATORIES, PRIMARILY INSTALLED FOR TESTING THE MONITORING SAMPLES WHICH ARE NOW INCORPORATED IN THE GEBC CIVIL REACTORS.

\*IMPACT SHOCK + CLAD + EMBRITTLMENT + FAILURE, CLADDING + IRRADIATION TESTING

1-14866 ALSO IN CATEGORIES 3 AND 13  
KOLAR OC + MORTON JR + PRUVOST NL

CATEGORY 1  
GENERAL SAFETY CRITERIA

1-14866 \*CONTINUED\*  
INTERACTION IN ARRAYS OF FISSIONABLE MATERIALS  
LAWRENCE RADIATION LABORATORY  
UCRL-14245 + CONF-651103-12 +. 32 PAGES, OCTOBER 5, 1965, FROM IAEA SYMPOSIUM ON CRITICALITY CONTROL OF  
FISSIONABLE MATERIALS, STOCKHOLM

A PROGRAM TO STUDY THE INTERACTION EFFECT IN ARRAYS OF FISSIONABLE MATERIALS WAS STARTED AT  
LAWRENCE RADIATION LABORATORY. THE PROGRAM CONSISTS OF EXPERIMENTAL AND THEORETICAL EFFORTS.  
THE PARTICULAR ARRAYS BEING STUDIED EXPERIMENTALLY ARE COMPOSED OF PU METAL UNITS. ARRAY  
GEOMETRIES ARE SIMPLE. THE BASIC UNITS ARE CYLINDERS, AND THE ARRAYS ARE CUBICAL. BARE  
ARRAYS ARE BEING STUDIED, AS WELL AS THOSE WITH INTERNAL MODERATION OR EXTERNAL REFLECTION.  
130 BASIC UNITS ARE AVAILABLE SO THAT ARRAYS UP TO 5 X 5 X 5 IN SIZE CAN BE STUDIED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*CRITICALITY SAFETY + \*PLUTONIUM + CRITICALITY EXPERIMENT + NEUTRON INTERACTION + THEORETICAL INVESTIGATION

1-14868 ALSO IN CATEGORIES 3 AND 13  
LANE RC + PERKINS OJE  
MEASUREMENT OF THE CRITICAL MASS OF 37 1/2 PERCENT ENRICHED URANIUM IN REFLECTORS OF WOOD, CONCRETE,  
POLYETHYLENE AND WATER  
ATOMIC WEAPONS RESEARCH ESTABLISHMENT, ALDERMASTON, ENGLAND  
AWRF-NR-1/66 +. 20 PAGES, 8 FIGURES, 8 TABLES, 3 REFERENCES, FEBRUARY 1966

THIS REPORT DESCRIBES THE EXPERIMENTAL ARRANGEMENTS USED IN ATLAS, A VERTICAL ASSEMBLY MACHINE  
FOR MEASUREMENT OF THE CRITICAL MASS OF 37-1/2 PERCENT ENRICHED URANIUM IN REFLECTORS OF  
WOOD, CONCRETE, POLYETHYLENE, AND WATER. DATA PRESENTED INDICATES THE SIZES OF THE UNIFORMLY  
REFLECTED CRITICAL SYSTEMS, OBTAINED BY EXTRAPOLATION OF THE RECIPROCAL COUNT RATES AS  
DESCRIBED ABOVE. THE STANDARD DEVIATION OF THE ERRORS IN THE CRITICAL DIMENSIONS DUE TO  
UNCERTAINTY OF EXTRAPOLATION AND TO THE STATISTICS OF COUNTING ARE PLUS OR MINUS 0.005 PLUS  
OR MINUS 0.013 CM. THE STANDARD DEVIATIONS OF THE ERRORS OF MEASUREMENTS OF CORE DIMENSIONS,  
ESTIMATED FROM MEASUREMENTS OF THE HEIGHT OF STACKS OF FUEL PLATES (20 CM HIGH) ARE 0.021 CM,  
THE MAXIMUM ERROR RECORDED BEING 0.05 CM.

AVAILABILITY - BRITISH INFORMATION SERVICE, 945 THIRD AVENUE, NEW YORK, NEW YORK 10022, \$1.40 COPY

\*CRITICALITY SAFETY + \*REFLECTOR + FUEL ELEMENT + URANIUM

1-15046 ALSO IN CATEGORY 11  
ACI STANDARDS, 1966, CURRENT ACI STANDARDS  
500 PAGES, AMERICAN CONCRETE INSTITUTE, DETROIT, MICHIGAN, 1966

CURRENT STANDARDS OF THE AMERICAN CONCRETE INSTITUTE ARE PUBLISHED IN THIS VOLUME (EXCEPT  
MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES, ACI 315-57, WHICH  
APPEARS AS A SEPARATE PUBLICATION BECAUSE OF ITS SIZE). EACH STANDARD IS ALSO AVAILABLE AS A  
SEPARATE BOOKLET. NEW EDITIONS OF THE COLLECTED ACI STANDARDS ARE ISSUED AS RAPIDLY AS  
JUSTIFIED BY THE COMPLETION OF TECHNICAL COMMITTEE WORK.

AVAILABILITY - AMERICAN CONCRETE INSTITUTE, P. O. BOX 4754, REDFORD STATION, DETROIT, MICHIGAN 48219  
\$10.00 COPY

\*CODES AND STANDARDS + \*CONCRETE + COATING + CONCRETE, PRESTRESSED

1-15358  
LIEBERMAN JA  
SAFETY ASPECTS OF NUCLEAR POWER  
ATOMIC ENERGY COMMISSION, DIVISION OF REACTOR DEVELOPMENT AND TECHNOLOGY, WASHINGTON, D. C.  
CONF-660-930 +. 8 PAGES, PRESENTED TO NATIONAL COAL ASSOCIATION BRIEFING, OAK RIDGE, SEPTEMBER 29, 1966

THE SAFETY OF POWER REACTORS HINGES ON THE CONTROL OF THE RADIOACTIVE FISSION PRODUCTS  
GENERATED. THEIR CONTROL, UNDER BOTH NORMAL AND ACCIDENT CONDITIONS, INVOLVES NUMEROUS  
CONSIDERATIONS OF DESIGN, LOCATION, CONSTRUCTION, AND OPERATION OF THE PLANT. THERE ARE  
THREE IMPORTANT CONTRIBUTORS TO THE ASSURANCE OF SAFETY. THEY ARE THE DEVELOPMENT AND  
APPLICATION OF ADEQUATE CODES, STANDARDS AND SPECIFICATIONS TO THE DESIGN, FABRICATION,  
CONSTRUCTION AND OPERATION OF A NUCLEAR PLANT, THE THOROUGH AND DETAILED REVIEW AND  
ASSESSMENT OF THE PLANT THROUGH THE REGULATORY PROCESS, AND THE CONDUCT OF AN EXTENSIVE  
NUCLEAR SAFETY RESEARCH AND DEVELOPMENT PROGRAM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151

\*CODES AND STANDARDS + \*FISSION PRODUCT RELEASE, GENERAL + \*REACTOR, RESEARCH +  
\*SAFETY PRINCIPLES AND PHILOSOPHY

1-15397 ALSO IN CATEGORIES 2 AND 18  
QUESTION III D - EQUIPMENT DESIGN CRITERIA FOR 0.2-G EARTHQUAKE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

CATEGORY 1  
GENERAL SAFETY CRITERIA

1-15397 \*CONTINUED\*  
1 PAGE, PAGE D-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

FOR ALL CLASS-I EQUIPMENT OTHER THAN CONTAINMENT, STATE YOUR CRITERIA IN TERMS OF % YIELD STRESS OR % YIELD STRAIN TO ENSURE NO LOSS OF FUNCTION UNDER 0.2G EARTHQUAKE LOADINGS. FOR AREAS OF LOCAL HIGH STRESS CONCENTRATIONS, INDICATE IF CODE RULES ARE FOLLOWED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + DESIGN CRITERIA + EARTHQUAKE ENGINEERING + EQUIPMENT DESIGN + INELASTIC BEHAVIOR + REACTOR, PRESSURIZED WATER + ROBINSON 2

1-15400 ALSO IN CATEGORY 18  
QUESTION III G - QUALITY-CONTROL SYSTEM  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
7 PAGES, 1 FIGURE, PAGES G-1 TO G-7 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

DISCUSS THE FABRICATION INSPECTION AND QUALITY CONTROL TECHNIQUES, AS WELL AS THE ORGANIZATIONS AND THEIR RESPONSIBILITY FOR INSPECTION AND QUALITY CONTROL, WHICH WILL BE USED IN FIELD FABRICATION OF CLASS-I ITEMS, EXCLUDING CONTAINMENT. PROVIDE INFORMATION TO ESTABLISH THE DEGREE OF INDEPENDENCE OF THE INSPECTION AND QUALITY CONTROL ORGANIZATIONS FROM PRODUCTION AND SCHEDULAR PRESSURES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ENGINEERED SAFETY SYSTEM + QUALITY CONTROL + REACTOR, PRESSURIZED WATER + ROBINSON 2

1-15892  
WEHMEYER DB  
EVALUATION OF THE NEED FOR A NUCLEAR PROOF TEST FACILITY FOR THE FAST FLUX TEST FACILITY  
ATOMIC POWER DEVELOPMENT ASSOCIATES, INC., DETROIT  
APDA-18P +. 31 PAGES, REFERENCES, APRIL 30, 1966

DURING THE CONCEPTUAL DESIGN STAGE OF THE FAST FLUX TEST FACILITY (FFTF), IT WAS SUGGESTED THAT A MOCKUP OF THE FAST TEST REACTOR (FTR) CORE BE BUILT TO PERFORM VARIOUS NUCLEAR TESTS OUTSIDE THE REACTOR, ON A CONTINUOUS BASIS TO ASSIST IN THE OPERATION OF THE FTR. ALTHOUGH ZERO-POWER NUCLEAR MOCKUPS HAVE BEEN FOUND USEFUL FOR OTHER TEST REACTORS, THIS WAS THE FIRST TIME A MOCKUP OF A SODIUM-COOLED REACTOR, OR A FAST REACTOR HAS BEEN CONSIDERED, AND IT WAS NOT CLEAR HOW ACCURATE A MOCKUP WAS NEEDED NOR WHAT THE COST MIGHT BE. THIS REPORT INVESTIGATES THE NEED FOR THIS NUCLEAR PROOF TEST FACILITY (PTF) AND DESCRIBES THE FUNCTIONAL AND DESIGN REQUIREMENTS OF SUCH A FACILITY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*FFTF (FAST FLUX TEST FACILITY) + \*MOCKUP + \*REACTOR, TEST + \*TEST, PROOF

1-15893  
WENSCH GW + SIEGEL S  
PRESENTATION ON SODIUM GRAPHITE REACTOR PROTOTYPE AT ATOMIC ENERGY COMMISSION, GERMANTOWN, MARYLAND  
ATOMIC INTERNATIONAL, CANOGA PARK, CALIF.  
NAA-SR-MEMO-975E +. 37 PAGES, 2 TABLES, MARCH 20, 1964

CONCEPTUAL DESIGNS OF LARGE SGR PLANTS, IN PARTICULAR THE 200-MWE PROTOTYPE, WERE PREPARED IN SUFFICIENT DETAIL TO PERMIT A FIRM ASSESSMENT OF THEIR TECHNICAL AND ECONOMIC PERFORMANCE. THESE PLANTS CAN PROVIDE PRESENT-DAY STEAM CONDITIONS OF 2400 PSI, 1000 F/1000 F REHEAT, WITH A CYCLE EFFICIENCY NEAR 42%. THEIR INHERENT SAFETY FEATURES APPEAR TO PERMIT RELATIVELY MODEST SITE REQUIREMENTS. THE COOLANT TECHNOLOGY AND COMPONENT DEVELOPMENT IN HAND AND IN PROGRESS PROVIDE A SOUND BASIS FOR THE DESIGN CONDITIONS SELECTED. THE FUEL ELEMENTS APPEAR REALISTICALLY CAPABLE OF ATTAINING AN AVERAGE BURNUP OF 25,000 MWD/T, AND FABRICATION METHODS AND YIELDS HAVE BEEN DEMONSTRATED PERMITTING ATTRACTIVELY LOW FABRICATION COSTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*DESIGN STUDY + \*REACTOR, GRAPHITE MODERATED + \*REACTOR, LIQUID METAL COOLED + \*SODIUM

1-15895  
AEC APPROVES AGREEMENT WITH WASHINGTON  
ATOMIC ENERGY COMMISSION, WASHINGTON, D.C.  
USAFIC PRESS RELEASE J-263 +. 2 PAGES, NOVEMBER 18, 1966

THE COMMISSION APPROVED AN AGREEMENT UNDER WHICH THE STATE OF WASHINGTON ASSUMES PART OF AEC REGULATORY AUTHORITY OVER THE USE OF RADIOACTIVE MATERIALS IN THAT STATE. THE TRANSFER OF REGULATORY RESPONSIBILITY INCLUDES LICENSING, RULE MAKING AND ENFORCEMENT IN THE USES OF

CATEGORY 1  
GENERAL SAFETY CRITERIA

1-15895 \*CONTINUED\*

RADIOISOTOPES, THE SOURCE MATERIALS URANIUM AND THORIUM, AND SMALL QUANTITIES OF FISSIONABLE MATERIALS. THE DEPT. OF HEALTH IS THE AGENCY RESPONSIBLE FOR ADMINISTERING THE STATES RADIATION CONTROL PROGRAM. THERE ARE ABOUT 190 AEC LICENSES IN WASHINGTON FOR THE USE OF RADIOACTIVE MATERIALS. THE AGREEMENT WAS EFFECTIVE ON DECEMBER 31, 1966.

AVAILABILITY - USAEC DIVISION OF PUBLIC INFORMATION, WASHINGTON D.C. 20545

\*REGULATION, AEC + \*REGULATION, STATE + CONTROL, GENERAL

1-15896

AEC EXEMPTS USE OF TRITIUM IN GLOW LAMPS  
ATOMIC ENERGY COMMISSION, WASHINGTON, D.C.  
USAEC PRESS RELEASE J-254 +. 1 PAGE, NOVEMBER 8, 1966

THE ATOMIC ENERGY COMMISSION AMENDED PARTS 30 AND 32 OF ITS REGULATIONS TO PROVIDE LICENSE EXEMPTION FOR THE POSSESSION AND USE OF UP TO 10 MICROCURIES OF TRITIUM CONTAINED IN GLOW LAMPS. TRITIUM MAKES GLOW LAMPS START MORE QUICKLY WHEN THE LAMPS ARE USED IN AREAS OF REDUCED LIGHT OR DARKNESS. SUCH LAMPS ARE USED IN A WIDE VARIETY OF ITEMS RANGING FROM GENERAL APPLIANCES TO COMPLICATED ELECTRONIC CIRCUITS. THE MANUFACTURE OR IMPORT OF THE GLOW LAMPS CONTAINING TRITIUM STILL WILL REQUIRE A LICENSE FROM THE AEC.

AVAILABILITY- USAEC, DIVISION OF PUBLIC INFORMATION, WASHINGTON, D.C., 20545

\*REGULATION, AEC + \*TRITIUM + \*USAEC (U.S. ATOMIC ENERGY COMMISSION)

1-15897

BECK CK  
CURRENT TRENDS AND PERSPECTIVES IN REACTOR LOCATION AND SAFETY REQUIREMENTS  
U.S. ATOMIC ENERGY COMMISSION  
5 PAGES, 2 REFERENCES, NUCLEAR SAFETY 8(1), PAGES 12-16 (FALL 1966)

REACTORS ARE BECOMING LARGER AND THEIR FUEL CYCLES LONGER. THERE IS RAPID PROGRESS TOWARD STANDARDIZATION OF THE WATER-MODERATED AND COOLED TYPE OF REACTOR. BOILING AND PRESSURIZED-WATER REACTORS ARE NOW APPEARING IN REPETITIVE FACILITIES OF ESSENTIALLY SIMILAR DESIGN. STRONG INCENTIVES ARE EMERGING FOR LOCATING REACTORS CLOSER TO METROPOLITAN LOAD CENTERS. REACTOR DESIGN, CONSTRUCTION, AND OPERATING STANDARDS FOR POWER REACTORS SHOULD BE FULLY ESTABLISHED AT THE HIGH QUALITY LEVEL REQUIRED. THE PRACTICAL ASPECTS AND LIKELIHOODS OF METAL-WATER REACTIONS DURING TRANSIENT CONDITIONS ACCOMPANYING REACTOR ACCIDENTS NEED FURTHER CLARIFICATION. THE RELATION BETWEEN TECHNOLOGY AVAILABLE AND ACTUAL PRACTICE IN CONSTRUCTION OF VESSELS, THE FACTORS AFFECTING RATE OF DEFECT GROWTH IN THICK-WALLED VESSELS, AND FEASIBLE METHODS FOR PERIODIC INSPECTION OR OTHERWISE VERIFYING CONTINUED ACCEPTABILITY OF THE VESSEL ARE AMONG THE PROBLEMS THAT REQUIRE FURTHER CLARIFICATION. THE ADEQUACY OF SAFEGUARD SYSTEMS, BOTH THOSE ON WHICH DEPENDENCE IS PLACED FOR PREVENTION OF ACCIDENTS AND THOSE FOR LIMITING THE CONSEQUENCES OF ACCIDENTS, SHOULD BE FIRMLY ESTABLISHED. THERE SHOULD BE SUFFICIENT EXPERIENCE WITH LARGE POWER REACTORS OF THE TYPE AND CHARACTERISTICS PROPOSED FOR LOCATIONS NEAR POPULATED AREAS TO ENSURE A HIGH LEVEL OF CONFIDENCE IN THEIR SATISFACTORY PERFORMANCE.

\*ENGINEERED SAFETY SYSTEM + \*SAFETY PRINCIPLES AND PHILOSOPHY + \*SAFETY STUDY + \*SITING, REACTOR + REVIEW

1-15898

JOHNSON WA  
NUCLEAR SAFETY OF FISSIONABLE MATERIAL OUTSIDE REACTORS  
OAK RIDGE NATIONAL LABORATORY  
4 PAGES, 12 REFERENCES, NUCLEAR SAFETY 8(1), PAGES 16-19 (FALL 1966)

EXPERIENCE, IDEAS, AND TRENDS IN NUCLEAR SAFETY CONTROL OUTSIDE REACTORS ARE EXAMINED. PARTICULAR EMPHASIS IS GIVEN TO EARLY CONCEPTS OF SAFETY IN RELATION TO ACCIDENT EXPERIENCE. THE IMPORTANCE AND STATUS OF CRITICALITY DATA, TOGETHER WITH CONTINGENCY FACTORS, ARE STRESSED, AS WELL AS THE HUMAN ELEMENT, WHICH IS PARAMOUNT IN EFFECTIVE NUCLEAR SAFETY CONTROL. THE ROLE OF THE AEC IN SAFETY CONTROL IS PRESENTED AS A PART OF THE EVOLUTION OF THE EXPANDING NUCLEAR INDUSTRY.

\*ACCIDENT ANALYSIS + \*ACCIDENT, CRITICALITY + \*CRITICALITY SAFETY + \*REVIEW

1-15902

ALSO IN CATEGORY 8  
BLOOD CM + OVERHOLSER LG  
COMPATIBILITY OF PYROLYTIC-CARBON COATED FUEL PARTICLES WITH WATER VAPOR  
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.  
ORNL-4014 +. 29 PAGES, 13 FIGURES, 2 TABLES, NOVEMBER 1966

THE OXIDATION OF VARIOUS LOTS OF COATED FUEL PARTICLES BY WATER VAPOR WAS STUDIED AT 1000 C, USING HELIUM-WATER VAPOR MIXTURES HAVING PARTIAL PRESSURES OF 4.6, 46 AND 567 TORR AND A TOTAL PRESSURE OF 1 ATM. SURFACE AREA DEVELOPMENT BY OXIDATION WITH WATER VAPOR COULD NOT BE CORRELATED WITH REACTION RATES. THE EFFECTS OF PARTIAL PRESSURE OF WATER VAPOR ON THE REACTION RATES ALSO WERE OBSCURE. EXPERIMENTS MADE IN GRAPHITE CONTAINERS INDICATE THAT GRAPHITE CAN PROTECT THE COATED FUEL PARTICLES FROM OXIDATION BY WATER VAPOR.

CATEGORY 1  
GENERAL SAFETY CRITERIA

1-15902 \*CONTINUED\*  
 AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*COATED PARTICLE + \*GRAPHITE + \*HIGH TEMPERATURE + \*OXIDATION + \*WATER VAPOR

1-15928  
 RTCE WL  
 MATERIALS SELECTION AND DESIGN. A KEY TO QUALITY ASSURANCE  
 U.S. ATOMIC ENERGY COMMISSION  
 1 PAGE, ANS TRANS. 9(2), PAGE 407 (OCTOBER-NOVEMBER, 1966), WINTER MEETING, AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PA., OCTOBER 30-NOVEMBER 3, 1966

SELECTION AND DESIGN OF REACTOR MATERIALS WILL BE ENHANCED IF THE FOLLOWING POINTS ARE CONSIDERED - (1) THE MAJORITY OF TESTS FOR EVALUATING REACTOR FUELS AND MATERIALS SHOW HOW MATERIALS COMPARE WITH ONE ANOTHER BUT DO NOT PERMIT PREDICTION OF SERVICE PERFORMANCE. (2) OUT-OF-REACTOR TESTING WILL NOT NECESSARILY INDICATE HOW MATERIALS WILL BEHAVE IN-REACTOR. IN-REACTOR TESTING MUST BE INTERPRETED WITH CAUTION. (3) IN MATERIALS SELECTION AND DEVELOPMENT FOR A SPECIFIC REACTOR SYSTEM, THE DESIGNER MUST SPECIFY WHAT CONSTITUTES FAILURE, SHOW WHAT MATERIALS-DESIGN DATA ARE NEEDED TO PERMIT PREDICTION OF ONSET OF FAILURE, AND, IF POSSIBLE, SEE THAT THIS IS VERIFIED EXPERIMENTALLY. (4) FINALLY, THE USE OF STATISTICS TO DEFINE FAILURE MUST NOT BE ATTEMPTED UNLESS IT IS CLEARLY SHOWN THAT SPECIFIED FAILURES ARE PERMITTED AND THAT THE SYSTEM CAN COMPENSATE FOR THEM.

\*DESIGN CRITERIA + \*QUALITY CONTROL + CLAD + CONTAINMENT, PRESSURE VESSEL + MATERIAL

1-15929  
 WOLTON DC  
 NONDESTRUCTIVE TESTING. A KEY TO QUALITY ASSURANCE  
 RATTLEFF-NORTHWEST  
 BNWL-SA-901 +. 1 PAGE, ANS TRANSACTIONS 9(2), PAGE 408, (OCTOBER-NOVEMBER 1966), 1966 WINTER MEETING OF THE AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PA., OCTOBER 30-NOVEMBER 3, 1966

NUCLEAR PROCESSES ARE MADE MORE SAFE, EFFICIENT, AND ECONOMIC BY GOOD NONDESTRUCTIVE TESTING. NEW PROPAGATIONAL MODES ARE EXTENDING THE EFFECTIVENESS OF ULTRASONIC TEST METHODS IN REVEALING CRITICAL PROPERTIES OF NUCLEAR MATERIALS. NEED EXISTS FOR NEW METHODS OF CONTINUOUSLY MONITORING CRITICAL REACTOR COMPONENTS UNDER ACTUAL OPERATING CONDITIONS TO PROVIDE EARLY WARNING OF IMPENDING FAILURE. METHODS BASED ON THE DETECTION AND ANALYSIS OF ACOUSTIC SIGNALS GENERATED BY STRESSED METALS ARE SHOWING HIGH PROMISE OF PROVIDING THIS ASSURANCE.

\*QUALITY CONTROL + \*NDE, NONDESTRUCTIVE + FAILURE, FATIGUE + FAILURE, PIPE + FAILURE, PRESSURE VESSEL + INSTRUMENTATION, TESTING + PROCEDURES AND MANUALS + TEST, COMPONENT + TESTING

1-15930  
 CHALKER RG  
 A CRITICAL REVIEW OF NUCLEAR CODES AND STANDARDS AVAILABLE AND UNDER DEVELOPMENT IN THE UNITED STATES  
 ATOMIC INTERNATIONAL, CANOGA PARK, CALIF.  
 2 PAGES, ANS TRANSACTION 9(2), PAGES 408-409, (OCTOBER-NOVEMBER 1966)

NUCLEAR STANDARDS ARE BEING GENERATED BY 32 ORGANIZATIONS WHICH HAVE APPROVED 243 STANDARDS AND ARE WORKING ON 133 MORE. ABOUT 90% OF THE TOTAL IS DUE TO 10 ORGANIZATIONS. PAST PROBLEMS IN DEVELOPMENT OF STANDARDS HAVE BEEN POOR MANAGEMENT, SLOW TIMING, TOO-BROAD SCOPE, AND PRE-EMPTION BY AEC. ADDITIONAL EFFORT IS NEEDED IN SPEEDING OF ALL PHASES OF THE PROGRAM, SUBMITTING MORE INDUSTRY STANDARDS FOR USASI APPROVAL, DEVELOPING MASS COMMUNICATION MEDIA, AND STRENGTHENING ANS IN THE ROLE OF SPONSOR.

\*CODES AND STANDARDS + \*USASI (USA STANDARDS INSTITUTE)

CATEGORY 2  
SITING OF NUCLEAR FACILITIES

2-12476 ALSO IN CATEGORIES 7 AND 11  
COTTRELL WR  
ORNL NUCLEAR SAFETY RESEARCH AND DEVELOPMENT PROGRAM BIMONTHLY REPORT FOR MAY-JUNE 1966  
OAK RIDGE NATIONAL LABORATORY  
ORNL-CF-66-7-48 +. 50 PAGES, 2 TABLES, JULY 22, 1966

THE ACCOMPLISHMENTS OF THE RESEARCH AND DEVELOPMENT PROGRAM BEING UNDERTAKEN AT ORNL AS PART OF THE U.S. ATOMIC ENERGY COMMISSIONS REACTOR SAFETY PROGRAM DURING THE MONTHS OF MAY AND JUNE ARE SUMMARIZED. INCLUDED IN THIS REPORT ARE WORK ON VARIOUS CHEMICAL REACTIONS, AS WELL AS THE RELEASE, CHARACTERIZATION, AND TRANSPORT OF FISSION PRODUCTS IN CONTAINMENT SYSTEMS UNDER VARIOUS ACCIDENT CONDITIONS AND ON PROBLEMS ASSOCIATED WITH THE REMOVAL OF THESE FISSION PRODUCTS FROM GAS STEAMS. WHILE THESE STUDIES PROVIDE INFORMATION ON THE CONSEQUENCE OF POTENTIAL REACTOR ACCIDENTS AND THUS HAVE DIRECT RELEVANCE TO THE EVALUATION OF REACTOR SITES, A SEPARATE STUDY IS BEING UNDERTAKEN ON THE SAFETY AND FEASIBILITY OF THE OFF-SHORE SITING OF POWER REACTORS. ALTHOUGH MOST OF THE WORK HAS BEEN AND CONTINUES TO BE IN GENERAL SUPPORT OF WATER POWER REACTOR TECHNOLOGY, INCLUDING SOME IN DIRECT SUPPORT OF THE LOFT AND CSE PROGRAMS, SEVERAL PROJECTS WERE INITIATED THE FIRST OF THE CALENDAR YEAR IN SUPPORT OF THE HIGH-TEMPERATURE GAS-COOLED REACTOR (HTGR) PROGRAM. THESE PROJECTS INCLUDE BOTH IN-PILE AND OUT-PILE STUDIES OF REACTION RATES AND FISSION PRODUCT RELEASE AND TRANSPORT PHENOMENA RELEVANT TO POTENTIAL HTGR ACCIDENT SITUATIONS. TWO OTHER RECENT PROJECTS INCLUDE A SERIES OF DISCUSSION PAPERS ON VARIOUS ASPECTS OF WATER REACTOR TECHNOLOGY AND THE STUDIES ON PRESSURE VESSEL TECHNOLOGY. EXPERIMENTAL WORK RELATIVE TO PRESSURE VESSELS INCLUDES INVESTIGATIONS OF THE ATTACHMENT OF NOZZLES TO SHELLS AND THE VARIABILITY OF IMPACT DATA ON LOW-ALLOY STEELS. THE RECENT ACTIVITIES OF THE NSIC AND THE NUCLEAR SAFETY JOURNAL IN BEHALF OF THE NUCLEAR COMMUNITY ARE ALSO DISCUSSED.

AVAILABILITY - WM. B. COTTRELL, OAK RIDGE NATIONAL LAB., OAK RIDGE, TENN.

\*BPITTLER FRACTURE + \*CONTAINMENT, PRESSURE VESSEL + \*FISSION PRODUCT, IODINE + \*IN PILE EXPERIMENT + \*LOFT (LOSS OF FLUID TEST) + \*NSPP (NUCLEAR SAFETY PILOT PLANT) + \*OUT OF PILE LOOPS AND EXPERIMENTS + \*TREAT (TRANSIENT TEST REACTOR FACILITY) + AEROSOL + AEROSOL PRODUCTION + AEROSOL, RADIOACTIVE + FILTER SYSTEM + FISSION PRODUCT TRANSPORT + FUEL HANDLING + GRAPHITE + OXIDATION + TRANSPORTATION AND HANDLING

2-13525 ALSO IN CATEGORIES 18 AND 13  
DESIGN AND ANALYSIS. MIDWEST FUEL RECOVERY PLANT. GENERAL ELECTRIC COMPANY, FUEL RECOVERY OPERATION, NUCLEAR ENERGY DIVISION  
GENERAL ELECTRIC COMPANY  
300 PAGES, 31 FIGURES, 12 TABLES, NOVEMBER 1966, DOCKET NO. 50-268

REPORT SUPPORTS GENERAL ELECTRIC COMPANY APPLICATION FOR A CONSTRUCTION PERMIT AND AEC LICENSE FOR THE MIDWEST FUEL RECOVERY PLANT (MFRP). PLANT UTILIZES THE GENERAL ELECTRIC AQUAFUOR PROCESS FOR THE SEPARATION AND PURIFICATION OF URANIUM AND PLUTONIUM PRODUCT MATERIALS FROM SPENT UO<sub>2</sub> REACTOR FUEL ELEMENTS CLAD WITH STAINLESS STEEL OR ZIRCONIUM ALLOYS. AQUAFUOR USES THE FOLLOWING UNIT OPERATIONS - MECHANICAL DISASSEMBLY, CHEMICAL LEACHING, SOLVENT EXTRACTION, ION EXCHANGE, AND FLUID-BED FLUORINATION. REPORT COVERS ALL PHASES OF HAZARDS INVOLVING NUCLEAR CRITICALITY, RADIOACTIVE CONTAMINATION, CHEMICAL, AND MECHANICAL OPERATIONS THAT ARE REQUIRED FOR OPERATION OF THE RADIOCHEMICAL PROCESSING PLANT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*RADIOCHEMICAL PLANT SAFETY + \*RADIOCHEMICAL PROCESSING + \*SAFETY ANALYSIS REPORT, GENERAL + \*WASTE DISPOSAL, GENERAL + CONTAINMENT, FUEL REPROCESSING + CRITICALITY SAFETY + MFRP (MIDWEST FUEL RECOVERY PLANT) + PLUTONIUM + URANIUM DIOXIDE + WASTE DISPOSAL, ATMOSPHERIC

2-13846  
BIRO GG  
OPENING SPEECH - ANS SYMPOSIUM ON LOCATING NUCLEAR POWER PLANTS IN CITIES  
GIBBS AND HILL, INC.  
8 PAGES, PRESENTED AT THE ANS SYMPOSIUM ON LOCATING NUCLEAR POWER PLANTS IN CITIES, NEW YORK, MARCH 22, 1966

OPENING PAPER AT SYMPOSIUM. BIRO CALLED ON THE NUCLEAR INDUSTRY TO QUIT TALKING OVER THE HEADS OF THE PUBLIC AND TO PLACE NUCLEAR PLANTS IN THE PROPER PERSPECTIVE SO THAT UNGROUNDED FEARS WILL BE REMOVED.

AVAILABILITY - GEORGE G. BIRO, GIBBS AND HILL, INC., 393 SEVENTH AVE., NEW YORK, N.Y. 10001

\*RADIATION IN PERSPECTIVE + \*SITING, REACTOR + IODINE + KRYPTON + RADIOACTIVITY, RELEASE + YANKEE

2-13949 ALSO IN CATEGORY 1  
KELLEPMANN O + FRANZEN LF  
THE CHOICE AND SAFETY CRITERIA OF REACTOR SITES  
5 PAGES, 2 FIGURES, 6 TABLES, ATOMWIRTSCHAFT 11(7), PAGES 380-384, (JULY 1966), IN GERMAN

BRITISH MEDICAL RESEARCH COUNCIL SETS MAXIMUM PERMISSIBLE DOSES. DISCUSSION OF REGULATIONS IN USA, UK, AND CANADA. GERMANY HAS AT PRESENT NO SITE CRITERIA, BUT COST OF ENGINEERED



CATEGORY 2  
SITING OF NUCLEAR FACILITIES

2-13949 \*CONTINUED\*  
SAFEGUARDS REQUIRED AT SOME SITES MIGHT BE PROHIBITIVE.

\*SAFETY PRINCIPLES AND PHILOSOPHY + \*SITING, REACTOR + GERMANY + MAXIMUM PERMISSIBLE DOSE (MPD) + UNITED KINGDOM + UNITED STATES

2-13950 ALSO IN CATEGORY 12  
REACTOR SITE AND SAFETY MEASURES (REPORT ON THE TECHNICAL DISCUSSION OF THE INSTITUTE FOR REACTOR SAFETY AT MUNICH)  
TECHNICAL UNIVERSITY OF MUNICH, WEST GERMANY  
1 PAGES, ATOMWIRTSCHAFT 11(7), PAGE 379, (JULY 1966) IN GERMAN

REPORT ON A REACTOR-SITING MEETING IN MUNICH. PAPER BY O. KELLERMANN (SEE NSIC BIBLIOGRAPHIC REPORT). O. GPOOS SAYS GERMAN ATOMIC COMMISSION CONSIDERS LIMITING MAN-REMS. H. BRESSER SAYS LIQUID EFFLUENTS CAN BE CONTROLLED, BUT FOR GASEOUS EFFLUENTS THIS IS DIFFICULT. H. GOPPELL REPORTED ON CONTAINMENT TESTING. A. TRETZE DISCUSSED DOUBLE CONTAINMENT. H. G. SEIPEL DISCUSSED CONTAINMENT LOAD IN MCA. TRANSACTIONS AVAILABLE FROM INSTITUT FUR REACTORSICHERHEIT, MUNCHEN.

\*GERMANY + \*SAFETY PRINCIPLES AND PHILOSOPHY + \*SITING, REACTOR + CONTAINMENT ANALYSIS + CONTAINMENT INTEGRITY + CONTAINMENT VESSEL LOADING + CONTAINMENT, MULTIPLE + EFFLUENT

2-14010  
WIRTH G + RANDOLPH P  
NINE ARTICLES DISCUSSING THE SALMON NUCLEAR DETONATION OF OCTOBER 22, 1964 IN A GULF COAST SALT DOME  
LAWRENCE RADIATION LABORATORY, LIVERMORE, CALIFORNIA  
16 PAGES, JOURNAL OF GEOPHYSICAL RESEARCH, 71(14), PP. 3405-3521 (JULY 15, 1966)

SERIES OF NINE ARTICLES DISCUSSING THE SALMON NUCLEAR DETONATION OF OCTOBER 22, 1964, IN A GULF-COAST SALT DOME. INCLUDES DETAILS OF THE EXPERIMENT, EFFECTS OF DECOUPLED EXPLOSIONS, PRESHOT SEISMIC DATA ON SOUTHERN MISSISSIPPI, CALCULATIONS OF TRAVEL TIMES, AMPLITUDES EPICENTER AND FIRST-ARRIVAL DATA AT BOTH CLOSE-IN AND WORLD-WIDE SEISMIC NETS, AND THE POSTEXPLOSION ENVIRONMENT WHEN THE CAVITY WAS REENTERED.

\*EARTH TREMOR, INDUCED + EARTH MATERIAL, DYNAMIC PROPERTY + EARTHQUAKE EPICENTER + EARTHQUAKE, GENERAL + GEOLOGICAL CONSIDERATION, GENERAL + GROUND MOTION + MATHEMATICAL TREATMENT + VELA UNIFORM PROGRAM + WAVE, STRESS

2-14011  
FRANK FC  
DEDUCTION OF EARTH STRAINS FROM SURVEY DATA  
9 PAGES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA, 56(1), PP. 35-42 (FEBRUARY 1966)

IN DEDUCING EARTH STRAINS FROM REPEATED TRIANGULATION SURVEYS, IT IS ADVANTAGEOUS TO EXTRACT THE SHEAR COMPONENTS OF STRAIN SEPARATELY. UNLIKE THE DILATION AND ROTATION COMPONENTS OF STRAIN, THESE SHEAR COMPONENTS CAN BE DETERMINED LOCALLY, WITHOUT REQUIRING KNOWLEDGE FROM ADJOINING AREAS. IT FOLLOWS THAT IT SHOULD BE POSSIBLE TO EXTRACT MUCH MORE AND BETTER INFORMATION ABOUT THE SHEAR STRAINS FROM EXISTING SURVEY DATA THAN HAS BEEN EXTRACTED BEFORE.

\*TECTONICS + EARTHQUAKE, GENERAL + FAULT + GEOLOGICAL CONSIDERATION, GENERAL + ROCK MECHANICS

2-14012  
BERNINGHAUSEN WH  
TSUNAMIS AND SEISMIC SEICHES REPORTED FROM REGIONS ADJACENT TO THE INDIAN OCEAN  
5 PAGES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA, 56(1), PP. 69-74 (FEBRUARY 1966)

REFERENCES HAVE BEEN MADE IN THE PAST TO THE ABSENCE OF TSUNAMIS AND SEISMIC SEICHES IN THE INDIAN OCEAN. HOWEVER, A SURVEY OF AVAILABLE LITERATURE INDICATES THAT AT LEAST 27 SUCH WAVES HAVE BEEN REPORTED. MOST OF THESE WERE REPORTED FROM THE COASTAL REGIONS OF THE SEISMICALLY ACTIVE INDONESIA ARC, WHEREAS PROGRESSIVELY FEWER SUCH WAVES WERE REPORTED FROM THE COASTAL REGIONS ADJACENT TO THE BAY OF BENGAL, ARABIAN SEA, THE SOUTHEASTERN COAST OF AFRICA, AND THE WESTERN COAST OF AUSTRALIA.

\*SEICHE + \*TSUNAMI + EARTHQUAKE, GENERAL

2-14013  
HASKELL NA  
TOTAL ENERGY AND ENERGY SPECTRAL DENSITY OF ELASTIC WAVE RADIATION FROM PROPAGATING FAULTS. PART II. A STATISTICAL SOURCE MODEL  
15 PAGES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA, 56(1), PP. 125-140 (FEBRUARY 1966)

PREVIOUSLY DERIVED EXPRESSIONS FOR THE TOTAL ENERGY AND ENERGY SPECTRAL DENSITY OF ELASTIC WAVES RADIATED BY A PROPAGATING FAULT ARE REWRITTEN IN TERMS OF A SPACIOTEMPORAL AUTOCORRELATION OF THE ACCELERATION OF RELATIVE DISPLACEMENT OVER THE FAULT PLANE. THIS IS INTERPRETED IN A STATISTICAL SENSE AS THE AVERAGE AUTOCORRELATION OVER AN ENSEMBLE OF

CATEGORY 2  
SITING OF NUCLEAR FACILITIES

2-14013 \*CONTINUED\*

EARTHQUAKES. AN EXPLICIT FORM OF AUTOCORRELATION FUNCTION IS ASSUMED, DEPENDING UPON TWO PARAMETERS (A CORRELATION LENGTH AND A CORRELATION TIME). THE TOTAL ENERGY AND ENERGY SPECTRAL DENSITY ARE DERIVED IN TERMS OF THESE PARAMETERS. BY USING SCALING LAWS DUE TO BATH AND DUDA FOR EARTHQUAKE VOLUME AND RADIATION EFFICIENCY AS FUNCTIONS OF MAGNITUDE, THE STATISTICAL PARAMETERS MAY ALSO BE RELATED TO MAGNITUDE.

\*MATHEMATICAL STUDY + EARTHQUAKE, GENERAL + ENERGY LEVEL + ROCK MECHANICS

2-14014  
SUZUEHRO S

DIFFERENCE BETWEEN AFTERSHOCKS AND FORESHOCKS IN THE RELATIONSHIP OF MAGNITUDE TO FREQUENCY OF OCCURRENCE FOR THE GREAT CHILEAN EARTHQUAKE OF 1960  
15 PAGES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA, 56(1), PP. 185-200 (FEBRUARY 1966)

WHEN A RELATIVELY SMALL PERCEPTIBLE EARTHQUAKE OCCURRED NEAR A TRIPARTITE NET OF HIGH SENSITIVITY IN CENTRAL JAPAN, A SUBSTANTIAL DIFFERENCE WAS FOUND BETWEEN ITS 25 FORESHOCKS AND 173 AFTERSHOCKS IN THE RELATION OF FREQUENCY OF OCCURRENCE AND MAGNITUDE. FOR THAT STUDY, THE COEFFICIENT B IN THE MAGNITUDE-VERSUS-FREQUENCY EQUATION IS 0.35 FOR THE FORMER AND 0.76 FOR THE LATTER. A SIMILAR INVESTIGATION HAS BEEN CARRIED OUT ON THE GREAT CHILEAN EARTHQUAKE OF 1960, USING 45 FORESHOCKS AND 250 AFTERSHOCKS WHICH OCCURRED IN A PERIOD OF 33 HOURS BEFORE AND 33 HOURS AFTER THE MAIN SHOCK. THE SAME CHARACTERISTIC FOUND FOR THE JAPANESE EARTHQUAKE WAS ALSO FOUND FOR THE CHILEAN EARTHQUAKE, I.E., THE FORESHOCKS SHOWED A DIFFERENT PICTURE FROM THE AFTERSHOCKS FOR THE FREQUENCY OF OCCURRENCE, AND AN APPRECIABLY SMALLER VALUE SEEMS TO BE VALID FOR B OF THE FORESHOCKS.

\*AFTERSHOCK + \*FORESHOCK + EARTHQUAKE EPICENTER + EARTHQUAKE RECORDS + EARTHQUAKE, GENERAL

2-14015

SIX ARTICLES DESCRIBING THE SLIPPAGE OCCURRING ON THE HAYWARD FAULT, CALIFORNIA  
60 PAGES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA, 56(2), PP. 257-317 (APRIL 1966)

SERIES OF SIX ARTICLES DESCRIBING THE SLIPPAGE OCCURRING ON THE HAYWARD FAULT, CALIFORNIA. THIS FAULT CREEP WAS DETECTED BY ITS DEFORMATION OF STRUCTURES, RAILROAD TRACKS, CULVERTS, ETC. CONSTRUCTED ASTRADDE THE FAULT TRACE. TITLES OF THE ARTICLES ARE - 1. HAYWARD FAULT SLIPPAGE IN THE IRVINGTON-NILES DISTRICTS OF FREMONT, CALIFORNIA, 2. DEFORMATION OF RAILROAD TRACKS BY SLIPPAGE ON THE HAYWARD FAULT IN THE NILES DISTRICT OF FREMONT, CALIFORNIA, 3. DISPLACEMENTS IN THE CLAREMONT WATER TUNNEL AT THE INTERSECTION WITH THE HAYWARD FAULT, 4. DAMAGE TO CULVERT UNDER MEMORIAL STADIUM, UNIVERSITY OF CALIFORNIA, BERKELEY, CAUSED BY SLIPPAGE IN THE HAYWARD FAULT ZONE, 5. INSTRUMENTAL MEASUREMENT OF SLIPPAGE ON THE HAYWARD FAULT, 6. SURVEYS FOR CRUSTAL MOVEMENT ALONG THE HAYWARD FAULT.

\*CREEP + \*FAULT + DISPLACEMENT, GENERAL + EARTHQUAKE, GENERAL + GEOLOGICAL CONSIDERATION, GENERAL

2-14016

BURRIDGE R + KNOPOFF L

THE EFFECT OF INITIAL STRESS OR RESIDUAL STRESS ON ELASTIC ENERGY CALCULATIONS  
5 PAGES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA, 56(2), PP. 421-424 (APRIL 1966)

THE FIRST AIM OF THIS PAPER IS TO DEFINE A STRESS-ENERGY FUNCTION WHICH COINCIDES WITH THE CONVENTIONAL STRAIN-ENERGY FUNCTION IN A NON-PRESTRESSED MEDIUM, BUT WHICH HAS A MORE NATURAL PHYSICAL INTERPRETATION THAN STRAIN ENERGY FOR PRESTRESSED MEDIA. THE SECOND AIM IS TO SHOW HOW CONSIDERATION OF PRESTRESS OR RESIDUAL STRESS MAY DRASTICALLY CHANGE THEORETICAL ENERGY ESTIMATES FOR EARTHQUAKES.

\*ENERGY LEVEL + \*ROCK MECHANICS + EARTHQUAKE, GENERAL + FAULT + SOURCE MECHANISM

2-14017

CHOUHAN RK

REGIONAL STRAIN RELEASE CHARACTERISTICS FOR INDIAN REGIONS  
UNIVERSITY OF ROORKEE, SCHOOL OF RESEARCH AND TRAINING IN EARTHQUAKE ENGINEERING, ROORKEE U.P.  
5 PAGES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA, 56(3), PP. 749-754 (JUNE 1966)

THE STRAIN ACCUMULATION AND RELEASE CURVES FOR SHALLOW- AND DEEP-FOCUS EARTHQUAKES OF INDIAN ORIGIN HAVE BEEN CONSTRUCTED FOR A SPAN OF SIXTY YEARS, FROM 1905 TO 1964. FOR SHALLOW-FOCUS EARTHQUAKES, MAGNITUDES 7.2 AND ABOVE HAVE BEEN CONSIDERED. FOR DEEP-FOCUS SHOCKS, MAGNITUDES 6.7 AND ABOVE ARE USED. STRAIN-REBOUND CHARACTERISTICS YIELD A NUMBER OF VERY INTERESTING FEATURES. FOR EXAMPLE, THE CURVE FOR SHALLOW-FOCUS EARTHQUAKES SHOWS TWO LINEAR SEGMENTS OF STRAIN ACCUMULATION. DEEP-FOCUS SHOCKS SHOW A SINGLE CYCLE OF STRAIN ACCUMULATION. COMPARISON OF THESE CURVES WITH SIMILAR CURVES FROM OTHER REGIONS GIVEN BY BENIOFF ARE MADE.

\*ENERGY LEVEL + \*SOURCE MECHANISM + EARTHQUAKE, GENERAL + ROCK MECHANICS + SEISMIC ZONE + TECTONICS

2-14018

CATEGORY 2  
SITING OF NUCLEAR FACILITIES

2-14018 \*CONTINUED\*  
OLIVER J + RYALL A + BRUNE JN + SLEMMONS DB  
MICROEARTHQUAKE ACTIVITY RECORDED BY PORTABLE SEISMOGRAPHS OF HIGH SENSITIVITY  
25 PAGES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA, 56(4), PP. 899-924 (AUGUST 1966)

THE INCREASE IN FREQUENCY OF OCCURRENCE OF EARTHQUAKES WITH DECREASING MAGNITUDE IS WELL KNOWN. IN A FEW CASES, OBSERVATIONS HAVE SHOWN THAT THIS RELATION HOLDS FOR EXTREMELY SMALL EVENTS, INCLUDING THOSE WITH MAGNITUDES WELL BELOW ZERO, AND THAT THE ENERGY OF THE SMALLER SHOCKS IS CONFINED LARGELY TO THE HIGHER SEISMIC FREQUENCIES. THESE FACTS SUGGEST THAT PORTABLE SEISMOGRAPHS WITH ULTRA-HIGH SENSITIVITY MIGHT RECORD A SUFFICIENT NUMBER OF NEARBY MICROEARTHQUAKES IN A SHORT INTERVAL OF TIME, SAY ONE DAY, SO THAT SOME MEASURE OF THE SEISMIC ACTIVITY OF A VERY LOCAL AREA MIGHT BE OBTAINED VERY QUICKLY. THIS IDEA WAS TESTED IN WEST CENTRAL NEVADA WHERE TEN SITES WERE OCCUPIED FOR SHORT INTERVALS OF TIME. MICROEARTHQUAKES WERE RECORDED AT RATES RANGING FROM SEVERAL PER DAY TO OVER TWO HUNDRED PER DAY. GENERALLY, CONSISTENTLY HIGH MICROSEISMICITY WAS OBSERVED IN AREAS OF RECENT FAULTING. A LOWER LEVEL OF ACTIVITY, WELL ABOVE THAT OF ASEISMIC AREAS HOWEVER, WAS OBSERVED AT OTHER SITES IN NEVADA. THE METHOD APPEARS VERY PROMISING AS A TECHNIQUE FOR MONITORING CURRENT TECTONIC ACTIVITY.

\*MICROSEISMICITY + EARTHQUAKE, GENERAL + ENERGY LEVEL + GEOLOGICAL CONSIDERATION, GENERAL + INSTRUMENTATION, EARTHQUAKE + SEISMIC ZONE

2-14019  
PARKFIELD EARTHQUAKES OF JUNE 27-29, 1966, MONTEREY AND SAN LUIS OBISPO COUNTIES, CALIFORNIA--PRELIMINARY REPORT  
10 PAGES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA, 56(4), PP. 961-971 (AUGUST 1966)

TWO EARTHQUAKES (M EQUAL TO 5.3 AND 5.5) SHOOK THE PARKFIELD AREA IN SOUTHERN MONTEREY COUNTY, CALIFORNIA, AT 0409 TO 56.5 AND 0426 TO 13.8 GMT, JUNE 28, 1966. A THIRD SHOCK (M EQUAL TO 5.0) OCCURRED IN THE SAME AREA AT 1953 TO 26.2 ON JUNE 29. EXTENSIVE INSTRUMENTATION WITHIN A FEW MILES OF THE EPICENTRAL DISTRICT GAVE UNUSUALLY COMPLETE RECORDS FROM FORESHOCK TO AFTERSHOCK SEQUENCE. A STRONG-MOTION INSTRUMENT IN THE FAULT ZONE NEAR CHOLAME RECORDED THE UNUSUALLY HIGH HORIZONTAL ACCELERATION OF 0.5 G. THE EPICENTRAL REGION OF THE EARTHQUAKES IS ON A KNOWN ACTIVE SEGMENT OF THE SAN ANDREAS FAULT. EARTHQUAKES IN 1901, 1922, AND 1934 IN THIS REGION WERE ALSO ACCOMPANIED BY SURFACE FAULTING. SMALL RIGHT-LATERAL SURFICIAL DISPLACEMENTS HAD BEEN RECOGNIZED PRIOR TO THE LATE JUNE EARTHQUAKES IN AT LEAST THREE PLACES ON THE PARKFIELD-CHOLAME TRACE OF THE FAULT. SIMILAR CREEP, OR SLIPPAGE, HAS CONTINUED SINCE THE EARTHQUAKES. EXTENSIVE NETS OF SURVEY MARKERS INSTALLED BY JUNE 30 ACROSS THE ACTIVE FAULT TRACE HAD RECORDED SLIPPAGE AS GREAT AS 0.1 INCH PER DAY BY JULY 12. THE FAULT TRACE ASSOCIATED WITH THE EARTHQUAKES IS PRINCIPALLY IN ALLUVIUM OF UNKNOWN DEPTH IN CHOLAME VALLEY, APPARENTLY A FAULTED GRABEN WITHIN THE SAN ANDREAS FAULT ZONE. IN SPITE OF THE LARGE HORIZONTAL ACCELERATION RECORDED NEAR THE FAULT, VERY LITTLE BUILDING DAMAGE OCCURRED IN THIS SPARSELY POPULATED REGION. SMALL CONCRETE AND STEEL BRIDGES IN AND ADJACENT TO THE FAULT TRACE DID NOT HAVE THEIR STRUCTURAL STRENGTH IMPAIRED.

\*ACCELERATION + \*CREEP + DISPLACEMENT, GENERAL + EARTHQUAKE, GENERAL + FAULT + SOURCE MECHANISM

2-14020  
RYALL A + SLEMMONS DB + GEDNEY LD  
SEISMICITY, TECTONISM, AND SURFACE FAULTING IN THE WESTERN UNITED STATES DURING HISTORIC TIME  
30 PAGES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA, 56(5), PP. 1105-1135 (OCTOBER 1966)

MAPS OF TECTONIC FLUX ARE PRESENTED FOR THE CONTERMINOUS UNITED STATES WEST OF LONGITUDE 109 DEGREES W, FOR TIMES BEFORE AND AFTER 1932, AND FOR THE ENTIRE HISTORIC PERIOD THROUGH 1961. THE MOST ACTIVE CONTINUOUS SEISMIC ZONE IN THIS REGION DURING HISTORIC TIME EXTENDED OVER 750 KM, FROM A POINT OFF THE CALIFORNIA COAST NEAR VENTURA TO WINNEMUCCA IN NORTH-CENTRAL NEVADA. ALTHOUGH THIS ZONE IS CHARACTERIZED BY A DISCONTINUOUS LINE OF HISTORIC SURFACE FAULTING, IT IS NEITHER SHARPLY DEFINED BY NOR CLOSELY RELATED TO STRUCTURES ALONG ITS PATH THAT ARE GENERALLY CONSIDERED TO BE THE MAJOR TECTONIC ELEMENTS OF THE REGION. THE BROAD AREAL EXTENT OF THIS, AND FIVE OTHER ACTIVE ZONES, SUGGESTS THAT THE TECTONIC PROCESSES CAUSING EARTHQUAKES AND SURFACE FAULTING IN THE WESTERN UNITED STATES ARE DISTRIBUTED OVER BROAD REGIONS AND ARE NOT CONFINED TO GEOLOGIC OR PHYSIOGRAPHIC PROVINCES. SEISMICITY MAPS FOR DIFFERENT PERIODS INDICATE THAT SEISMIC ACTIVITY IN SOME AREAS HAS SHIFTED WITH TIME. WITHIN MAJOR SEISMIC ZONES, GAPS IN THE SEISMICITY PATTERN ARE FILLED IN BY SUCCESSIVE LARGE EARTHQUAKES.

EARTHQUAKE, GENERAL + ENERGY LEVEL + FAULT + GEOLOGICAL CONSIDERATION, GENERAL + MATHEMATICAL STUDY + SEISMIC ZONE + TECTONICS

2-14021  
GUPTA IN  
STANDING WAVES IN A LAYERED HALF SPACE  
9 PAGES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA, 56(5), PP. 1153-1161 (OCTOBER 1966)

IN A HOMOGENEOUS ELASTIC HALF-SPACE, PLANE HARMONIC WAVES GIVE RISE TO STANDING WAVES ONLY WHEN ON REFLECTION THERE IS NO CONVERSION FROM ONE WAVE TYPE TO ANOTHER. THE EXISTENCE OF STANDING WAVES IN A HORIZONTALLY LAYERED HALF-SPACE IS ESTABLISHED FOR VERTICALLY PROPAGATING PLANE HARMONIC P, SV OR SH WAVES. EXPRESSIONS ARE DERIVED FOR THE PARTICLE DISPLACEMENTS AT THE FREE SURFACE AND AT ANY GIVEN DEPTH. THE LAYERED SYSTEM ACTS AS A COMPLICATED FILTER, SUPPRESSING CERTAIN PERIODS WHILE AMPLIFYING OTHERS. THE RESULTS OBTAINED MAY BE HELPFUL IN AN UNDERSTANDING OF THE GROUND FACTOR, AMBIENT SEISMIC BODY-WAVE NOISE, AND THE VIBRATION

CATEGORY 2  
SITING OF NUCLEAR FACILITIES

2-14021 \*CONTINUED\*  
PROBLEM OF A STRUCTURE DUE TO EARTHQUAKE MOTION.

\*GROUND MOTION + \*MATHEMATICAL STUDY + EARTH MATERIAL, DYNAMIC PROPERTY + EARTHQUAKE, GENERAL + SOIL MECHANICS

2-14022  
WEERTMAN J.  
RELATIONSHIP BETWEEN DISPLACEMENTS ON A FREE SURFACE AND THE STRESS ON A FAULT  
BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA, 55(6), P. 945 (DECEMBER 1965)

A SIMPLE RELATIONSHIP EXISTS BETWEEN THE CHANGE IN THE DISPLACEMENT AT A FREE SURFACE OF A SOLID IN THE VICINITY OF INFINITELY LONG FAULTS OR CRACKS AND THE STRESS ACTING ACROSS THE PLANE OF THE CRACK OR FAULT. THE PLANE OF THE CRACK OR FAULT IS TAKEN TO BE PERPENDICULAR TO THE FREE SURFACE. THE EXPRESSION DEVELOPED FOR THE RELATIONSHIP HAS APPLICATION TO THE STUDY OF THE FLOW STRESS IN THE MATERIAL AHEAD OF THE TIP OF A FREELY SLIPPING CRACK OR NOTCH CUT INTO THE SURFACE OF A TEST SAMPLE. IT ALSO HAS APPLICATION TO THE STUDY OF THE FRICTIONAL STRESS ON EARTHQUAKE FAULTS IN THE EARTH'S CRUST.

\*MATHEMATICAL STUDY + \*SOURCE MECHANISM + EARTHQUAKE, GENERAL + FAULT + ROCK MECHANICS

2-14023  
ALLEN CP + ST. AMAND P + RICHTER CF + NORDQUIST JM  
RELATIONSHIP BETWEEN SEISMICITY AND GEOLOGIC STRUCTURE IN THE SOUTHERN CALIFORNIA REGION  
45 PAGES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA, 55(4), PP. 753-797 (AUGUST 1965)

DATA FROM 10,126 EARTHQUAKES THAT OCCURRED IN THE SOUTHERN CALIFORNIA REGION BETWEEN 1934 AND 1963 HAVE BEEN SYNTHESIZED IN THE ATTEMPT TO UNDERSTAND BETTER THEIR RELATIONSHIP TO REGIONAL GEOLOGIC STRUCTURE, WHICH IS HERE DOMINATED BY A SYSTEM OF FAULTS RELATED MAINLY TO THE SAN ANDREAS SYSTEM. MOST OF THESE FAULTS HAVE BEEN CONSIDERED ACTIVE FROM PHYSIOGRAPHIC EVIDENCE, BUT BOTH GEOLOGIC AND SHORT-TERM SEISMIC CRITERIA FOR ACTIVE VERSUS INACTIVE FAULTS ARE GENERALLY INADEQUATE. OF THE LARGE HISTORIC EARTHQUAKES THAT HAVE BEEN ASSOCIATED WITH SURFICIAL FAULT DISPLACEMENTS, MOST AND PERHAPS ALL WERE ON MAJOR THROUGHGOING FAULTS HAVING A PREVIOUS HISTORY OF EXTENSIVE QUATERNARY DISPLACEMENTS. THE SAME RELATIONSHIP HOLDS FOR MOST EARTHQUAKES DOWN TO MAGNITUDE 6.0, BUT SMALLER SHOCKS ARE MUCH MORE RANDOMLY SPREAD THROUGHOUT THE REGION, AND MOST ARE NOT CLEARLY ASSOCIATED WITH ANY MAPPABLE SURFICIAL FAULTS.

\*FAULT + DISPLACEMENT, GENERAL + EARTHQUAKE RECORDS + EARTHQUAKE, GENERAL + ENERGY LEVEL + GEOLOGICAL CONSIDERATION, GENERAL + SEISMIC ZONE + TECTONICS

2-14024  
BRADLEY EA + BENNETT TJ  
EARTHQUAKE HISTORY OF OHIO  
9 PAGES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA, 55(4), PP. 745-752 (AUGUST 1965)

SOME 78 EARTHQUAKES OCCURRING IN OHIO IN THE YEARS 1776 THROUGH 1964 WERE TABULATED. A LITERATURE SEARCH OF NEWSPAPERS AND SCIENTIFIC JOURNALS WAS UNDERTAKEN, AND A REASONABLY COMPLETE HISTORY FROM 1900 TO THE PRESENT MAY BE ASSUMED. THE MOST PROMINENT FEATURE OF THE CATALOGUE IS THE HIGH CONCENTRATION OF SHOCKS IN THE ANNA REGION. CERTAIN GEOLOGICAL TRENDS ARE INDICATED, BUT EVIDENCE IS INADEQUATE TO ESTABLISH A DEFINITE CORRELATION.

\*EARTHQUAKE EPICENTER + \*EARTHQUAKE RECORDS + EARTHQUAKE, GENERAL + GEOLOGICAL CONSIDERATION, GENERAL + SEISMIC ZONE

2-14025  
LEET LD + LEET FJ  
THE EARTH'S MANTLE  
7 PAGES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA, 55(3), PP. 619-625 (JUNE 1965)

IT HAS BEEN GENERALLY ACCEPTED FOR SOME TIME THAT THE EARTH'S MANTLE IS SOLID (CRYSTALLINE). BUT INCREASING COMPLICATIONS ARISE AS ATTEMPTS ARE MADE TO RATIONALIZE THAT STATE OF MATTER WITH THE GROWING LIST OF PROPERTIES OF THE MANTLE. WE SUGGEST THAT MATERIALS OF THE EARTH'S MANTLE ARE IN A FOURTH STATE OF MATTER, WHICH WE PROPOSE CALLING SOLIQUOUS--A COMBINATION OF SOLID, LIQUID, AND GASEOUS. IT INCLUDES ELEMENTS FOR FORMING WATER MOLECULES AND ALLOWS EXPANDING SUPERHEATED STEAM TO SUPPLY THE PRINCIPAL FORCE FOR ELEVATING AND DISTORTING LAND MASSES.

\*TECTONICS + EARTHQUAKE, GENERAL + FAULT + GEOLOGICAL CONSIDERATION, GEOPHYSICAL + SOURCE MECHANISM

2-14026  
SLEMMONS DR + JONES AE + GIMLETT JI  
CATALOG OF NEVADA EARTHQUAKES, 1852-1960  
46 PAGES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA, 55(2), PP. 537-583 (APRIL 1965)

NEVADA EARTHQUAKES FOR THE PERIOD FROM ABOUT 1852 TO 1961 ARE TABULATED ON I.B.M. PUNCH CARDS.

CATEGORY 2  
SITING OF NUCLEAR FACILITIES

2-14026 \*CONTINUED\*

DURING THIS PERIOD 1,173 EVENTS WITH NEVADA EPICENTERS WERE FELT. 586 OTHERS WITH RICHTER MAGNITUDES ABOVE 4.0 WERE RECORDED AND WERE PROBABLY FELT BY SOME RESIDENTS. APPROXIMATELY 220 WERE REPORTED IN NONSPECIFIC TERMS (E.G., SEVERAL AFTERSHOCKS WERE FELT). HIGH SEISMICITY OF THIS REGION IS INDICATED BY THE FACT THAT ON AN EQUAL-AREA BASIS, DURING THE PERIOD 1934-1960, NEVADA HAS HAD THE HIGHEST INCIDENCE OF EARTHQUAKES PER UNIT AREA OF ANY OF THE CONTIGUOUS WESTERN STATES. THE SEISMIC ACTIVITY SHOWS A DISTINCT TENDENCY, STATISTICALLY INADEQUATE, FOR A 20-YEAR CYCLE OF ACTIVITY, WITH PEAKS AT ABOUT 1852, 1872, 1894, 1916, 1932-33, AND 1954. A METHOD IS DEVELOPED FOR CORRELATING BETWEEN RICHTER MAGNITUDE, EARTHQUAKE INTENSITY, AND SIZE OF FELT AREA. THIS PERMITS ESTIMATION OF EARTHQUAKE MAGNITUDE FOR SHOCKS THAT PRE-DATE INSTRUMENTAL METHODS OF RECORDING.

\*EARTHQUAKE RECORDS + \*SEISMIC ZONE + EARTHQUAKE EPICENTER + EARTHQUAKE, GENERAL + GEOLOGICAL CONSIDERATION, GEOPHYSICAL

2-14027  
STROBACH K

ORIGIN AND PROPERTIES OF MICROSEISMS FROM THE STANDPOINT OF OSCILLATOR THEORY  
25 PAGES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA, 55(2), PP. 365-390 (APRIL 1965)

THE GENERALLY LARGE SOURCE AREA FOR SEAWAVE-GENERATED MICROSEISMS DOES NOT READILY ALLOW CONSIDERATION OF THESE EVENTS AS UNIDIRECTIONAL. RATHER, THESE WAVE PATTERNS MUST BE DUE TO A COMPLICATED INTERFERENCE SYSTEM WHOSE PROPERTIES CAN BE DESCRIBED ONLY BY STATISTICS. IN THIS STUDY IT IS POSTULATED THAT THE GENERATION OF MICROSEISMS RESULTS AS THE SUPERPOSITION OF THE OUTPUTS OF A LARGE NUMBER  $N$  OF SEISMIC OSCILLATORS. THESE OSCILLATORS ARE RANDOMLY DISTRIBUTED BOTH IN SPACE AND TIME. THIS RANDOM DISTRIBUTION NECESSARILY IMPLIES THAT THE PHASE ANGLES OF INCOMING WAVES ARE RANDOMLY DISTRIBUTED TOO. THE STATISTICAL PROPERTIES OF THE RESULTANT GROUND MOTION, OUTSIDE OF THE GENERATION AREA, IS INVESTIGATED THEORETICALLY. SPECIAL ATTENTION IS GIVEN TO THE PROBABILITY DISTRIBUTIONS OF THE VERTICAL AMPLITUDES AND THE HORIZONTAL VECTOR AMPLITUDES. GOOD AGREEMENT IS FOUND BETWEEN THESE THEORETICAL RESULTS AND THE MEASUREMENTS OBTAINED FROM PARTICLE MOTION DIAGRAMS.

\*MICROSEISMICITY + \*SOURCE MECHANISM + EARTHQUAKE, GENERAL + MICROEARTHQUAKE + WAVE, STRESS

2-14028  
SAVAGE JC

THE EFFECT OF RUPTURE VELOCITY UPON SEISMIC FIRST MOTIONS  
12 PAGES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA, 55(2), PP. 263-275 (APRIL 1965)

THE EFFECT OF RUPTURE VELOCITY UPON THE FIRST MOTION RADIATED BY SEISMIC SOURCES IS TO MULTIPLY THE RADIATION PATTERN BY A SCALAR FACTOR, A MODULATING FUNCTION, AS SHOWN IN THIS REPORT. THE RELATION OF THE FIRST MOTION TO THE COMPLETE RESPONSE IS SHOWN BY A SAMPLE CALCULATION. IT IS CONCLUDED THAT THE AMPLITUDE OF THE FIRST HALF CYCLE OF TRACE DISPLACEMENT ON A SEISMOGRAM IS PROBABLY A VALID MEASURE OF THE FIRST MOTION, AT LEAST FOR MAJOR SHALLOW-FOCUS EARTHQUAKES.

\*FAULT + \*SOURCE MECHANISM + EARTHQUAKE, GENERAL + INSTRUMENTATION, EARTHQUAKE + MATHEMATICAL STUDY

2-14029

SCHEIDEGGER AE

THE TECTONIC STRESS AND TECTONIC MOTION DIRECTION IN THE PACIFIC AND ADJACENT AREAS AS CALCULATED FROM EARTHQUAKE FAULT PLANE SOLUTIONS  
6 PAGES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA, 55(1), PP. 147-152 (FEBRUARY 1965)

THE BEST  $P$  AND  $T$  AXES AS WELL AS THE BEST NORMALS TO THE NULL DIRECTIONS WERE CALCULATED FOR GROUPS OF EARTHQUAKE FAULT-PLANE SOLUTIONS BELONGING TO 29 AREAS OF THE PACIFIC BASIN AND VICINITY. THE METHOD EMPLOYED WAS ONE DEVELOPED IN AN EARLIER PAPER OF THE WRITER. IT IS BASED ON A CALCULATION OF THE EIGENVECTORS OF A QUADRATIC FORM. IT IS SHOWN THAT THE PRINCIPAL HORIZONTAL STRESS (PHS) DIRECTIONS OBTAINED IN THIS FASHION ARE IN EXCELLENT AGREEMENT WITH THOSE OBTAINED FROM OTHER EVIDENCE. IN THE WESTERN PACIFIC BASIN AND VICINITY, THE CALCULATIONS WERE SUFFICIENTLY DENSE TO DETERMINE PHS TRAJECTORIES. THE LATTER ARE SHOWN AND YIELD A CONSISTENT PICTURE OF THE AREAS IN QUESTION.

\*TECTONICS + EARTHQUAKE, GENERAL + GEOLOGICAL CONSIDERATION, GEOPHYSICAL + SOURCE MECHANISM

2-14030

UDIAS A

A STUDY OF THE AFTERSHOCKS AND FOCAL MECHANISM OF THE SALINAS-WATSONVILLE EARTHQUAKES OF AUGUST 31 AND SEPTEMBER 14, 1963  
21 PAGES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA, 55(1), PP. 85-106 (FEBRUARY 1965)

THE EARTHQUAKE SEQUENCES CONNECTED WITH THE EARTHQUAKES OF AUGUST 31 AND SEPTEMBER 14, 1963, IN THE SALINAS-WATSONVILLE REGION OF CALIFORNIA ARE HERE STUDIED WITH REFERENCE TO THE BACKGROUND SEISMIC ACTIVITY. A VERY FAVORABLE DISTRIBUTION OF PERMANENT AND MOBILE STATIONS IN THIS AREA PERMITS THE ANALYSIS TO INCLUDE EARTHQUAKES OF SMALL MAGNITUDES. THE MECHANISM OF THE LARGER AFTERSHOCKS OF BOTH SEQUENCES IS FOUND TO BE SIMILAR TO THE MECHANISM OF THE MAIN SHOCK OF SEPTEMBER 14, 1963. THE ORIENTATION OF THE PRINCIPAL AXES OF STRESS DERIVED FROM THE FOCAL MECHANISM OF THE SEPTEMBER 14 EARTHQUAKE IS RELATED TO THE STRIKE OF THE SAN

CATEGORY 2  
SITING OF NUCLEAR FACILITIES

2-14030 \*CONTINUED\*  
ANDREAS FAULT.

\*AFTERSHOCK + \*SOURCE MECHANISM + EARTHQUAKE, GENERAL + ENERGY LEVEL + FAULT

2-14031  
SAVAGE JC  
THE STOPPING PHASE ON SEISMOGRAMS  
12 PAGES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA, 55(1), PP. 47-58 (FEBRUARY 1965)

MODEL STUDIES HAVE DEMONSTRATED THAT THE STOPPING PHASE, AN EVENT WHICH ORIGINATES AT THE TERMINATION OF RUPTURE, MAY BE IDENTIFIED ON LONG-PERIOD STRAIN RECORDINGS. A TENTATIVE IDENTIFICATION OF THE STOPPING PHASE HAS BEEN MADE ON ULTRA-LONG-PERIOD SEISMOGRAMS OF THREE MAJOR EARTHQUAKES (MONTANA, 1959, CHILE, 1960, AND ALASKA, 1964). THE EVENTS CHOSEN LEAD TO REASONABLE ESTIMATES OF THE LENGTH OF RUPTURE ASSOCIATED WITH THE EARTHQUAKE. A SECOND TYPE OF STOPPING EVENT, THE BREAKOUT PHASE, MUST OCCUR WHEN A RUPTURE INTERSECTS A FREE SURFACE. A TWO-DIMENSIONAL MODEL STUDY INDICATES THAT THE BREAKOUT PHASE SHOULD BE A PROMINENT SEISMIC EVENT, PARTICULARLY IF THE FIRST MOTION IS EMERGENT. A REVIEW OF STUDIES OF SEISMOGRAMS OF EARTHQUAKES WHICH PRODUCED SURFACE FAULTING INDICATES THAT A PROMINENT SECOND EVENT IS OFTEN OBSERVED. HOWEVER, THERE DOES NOT APPEAR TO BE AN ADEQUATE CRITERION TO DISTINGUISH THE BREAKOUT PHASE FROM THE PP PHASE. THUS NO CERTAIN IDENTIFICATION CAN BE MADE.

\*INSTRUMENTATION, EARTHQUAKE + EARTHQUAKE, GENERAL + FAULT + GEOLOGICAL CONSIDERATION, GEOPHYSICAL + SOURCE MECHANISM + WAVE, STRESS

2-14032  
SAVAGE JC + HASTIE LM  
SURFACE DEFORMATION ASSOCIATED WITH DIP-SLIP FAULTING  
GEOPHYSICS LABORATORY, UNIVERSITY OF TORONTO, CANADA  
8 PAGES, 1 TABLE, 6 FIGURES, REFERENCES, JOURNAL OF GEOPHYSICAL RESEARCH, 71(20), PP. 4897-4904 (OCTOBER 15, 1966)

A FAULT SURFACE MAY BE REPRESENTED BY A RECTANGULAR SURFACE OF HORIZONTAL LENGTH  $2L$ , WIDTH  $W$ , AND DIP  $\rho$  EMBEDDED IN AN ELASTIC HALF-SPACE WITH THE TOP OF THE FAULT A DEPTH  $h$  BELOW THE FREE SURFACE. THE VERTICAL DISPLACEMENT OF THE FREE SURFACE FOR A DIP-SLIP MOTION  $\Delta U$  ON SUCH A FAULT SURFACE CAN BE CALCULATED FROM THE THEORY OF MARUYAMA. THIS CALCULATION WAS MADE FOR FAULT MODELS OF THREE EARTHQUAKES, AND THE RESULTS WERE COMPARED WITH THE OBSERVED SURFACE DEFORMATION IN EACH CASE. FOR EACH CALCULATION, THE DIP OF THE FAULT PLANE WAS TAKEN FROM THE P-WAVE FAULT-PLANE SOLUTION.

\*FAULT + \*SOURCE MECHANISM + EARTHQUAKE, GENERAL + GEOLOGICAL CONSIDERATION, GEOPHYSICAL + MATHEMATICAL STUDY + ROCK MECHANICS

2-14086  
CHOPRA AK  
THE IMPORTANCE OF THE VERTICAL COMPONENT OF EARTHQUAKE MOTIONS  
12 PAGES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA, 56(5), PP. 1163-1175 (OCTOBER 1966)

RESPONSE SPECTRA AND SPECTRUM INTENSITY FOR THE VERTICAL COMPONENT OF STRONG MOTIONS RECORDED AT EL CENTRO (1940), OLYMPIA (1949), AND TAFT (1952) ARE EVALUATED. COMPARISON WITH RESULTS FOR HORIZONTAL GROUND-MOTION COMPONENTS INDICATES - (1) SPECTRUM INTENSITY OF VERTICAL COMPONENTS IS ABOUT 20 TO 30 PERCENT OF THAT FOR HORIZONTAL COMPONENTS, AND (2) SPECTRA FOR VERTICAL COMPONENTS ARE RELATIVELY ACCENTUATED IN THE SHORTER-PERIOD RANGE AND REDUCED IN THE LONGER. RESULTS OF ANALYSIS OF A TYPICAL EARTH DAM CROSS-SECTION SUBJECTED SEPARATELY TO TWO (N69W AND VERTICAL) COMPONENTS OF TAFT GROUND MOTION ARE PRESENTED. THE TWO-DIMENSIONAL STRESS-ANALYSIS TECHNIQUE USED IS BASED ON THE FINITE-ELEMENT CONCEPT. THE SIGNIFICANCE OF RESPONSE TO VERTICAL GROUND MOTION IS DISCUSSED. IT IS CONCLUDED THAT EFFECTS OF VERTICAL COMPONENT OF GROUND MOTION ARE LARGE ENOUGH TO WARRANT CONSIDERATION FOR THIS CLASS OF STRUCTURES.

\*RESPONSE SPECTRUM + \*SOIL MECHANICS + EARTH MATERIAL, DYNAMIC PROPERTY + EARTHQUAKE, GENERAL + GROUND MOTION

2-14160 ALSO IN CATEGORY 18  
REQUEST EXEMPTION TO ALLOW PILE DRIVING AT POINT BEACH  
WISCONSIN MICHIGAN POWER COMPANY  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(4) PAGES 2-3 (JANUARY 23, 1967) DOCKET NO. 50-266

WISCONSIN MICHIGAN POWER COMPANY SUPPORTS ITS REQUEST TO BEGIN FOUNDATION CONSTRUCTION PRIOR TO RECEIVING A CONSTRUCTION PERMIT BY NOTING NEED FOR POWER IN APRIL 1970, NEED FOR THREE MONTHS EXTRA FOR PILE DRIVING AS SHOWN BY ANALYSIS OF SUBSOIL.

\*CONSTRUCTION PERMIT PROCESS + FOUNDATION ENGINEERING + POINT BEACH + REACTOR, PRESSURIZED WATER

2-14206

CATEGORY 2  
SITING OF NUCLEAR FACILITIES

2-14206 \*CONTINUED\*  
STONELEY P  
THE PROPAGATION OF TSUNAMIS  
19 PAGES, GEOPHYSICAL JOURNAL, 8, PP. 64-81 (1964)

THE PASSAGE OF A SEISMIC SEA-WAVE, OR TSUNAMI, MAY BE CONVENIENTLY THOUGHT OF IN THREE STAGES - (1) THE DEVELOPMENT OF THE DISTURBANCE IN THE AREA OF GENERATION, (2) THE TRANSMISSION ACROSS THE OCEAN, (3) THE CHANGES OCCURRING NEAR A SLOPING SHORE (USUALLY REFERRED TO AS THE RUN-UP PROBLEM). THE PRESENT PAPER DEALS WITH SOME OF THE HYDRODYNAMICAL ASPECTS OF (2).

\*TSUNAMI + EARTHQUAKE, GENERAL + MATHEMATICAL STUDY + SEICHE

2-14213  
BRUTSAERT W + LUTHIN JN  
THE VELOCITY OF SOUND IN SOILS NEAR THE SURFACE AS A FUNCTION OF THE MOISTURE CONTENT  
CORNELL UNIVERSITY + UNIVERSITY OF CALIFORNIA, DAVIS  
10 PAGES, JOURNAL OF GEOPHYSICAL RESEARCH, 69(4), PP. 643-52 (FEBRUARY 1964)

IN THIS EXPERIMENTAL STUDY, EVIDENCE WAS OBTAINED ON THE RELATIONSHIP BETWEEN THE VELOCITY OF SOUND AND THE MOISTURE CONTENT OF THE SOIL. THE VELOCITY OF SOUND IN UNSATURATED SOILS AT SHALLOW DEPTHS WAS SHOWN TO BE PROPORTIONAL TO THE 1/6 POWER OF THE EFFECTIVE PRESSURE. THUS THE EFFECTIVE STRESS CONCEPT, USED IN CONJUNCTION WITH THE HERTZ THEORY, WAS PROVED VALID.

\*EARTH MATERIAL, DYNAMIC PROPERTY + \*SOIL MECHANICS + EARTHQUAKE, GENERAL + GROUND MOTION + WAVE, STRESS

2-14214  
BRUTSAERT W  
THE PROPAGATION OF ELASTIC WAVES IN UNCONSOLIDATED UNSATURATED GRANULAR MEDIUMS  
CORNELL UNIVERSITY, DEPT. OF HYDRAULICS AND HYDRAULIC ENGINEERING, SCHOOL OF CIVIL ENGINEERING  
15 PAGES, JOURNAL OF GEOPHYSICAL RESEARCH, 69(2), PP. 243-57 (JANUARY 1964)

THE THEORY MAKES USE OF THREE DISTINCT IDEALIZED MODELS. THE GENERAL EQUATIONS OF MOTION ARE DERIVED FOR A CONTINUUM MODEL. THIS CONTINUUM CONSISTS OF THREE COMPONENTS - A SOLID, A GAS, AND A LIQUID. THE LIQUID ADHERES TO THE SOLID AND HAS SURFACE TENSION. THE ELASTIC COEFFICIENTS OCCURRING IN THE EQUATIONS OF MOTION ARE DETERMINED FOR A MODEL CONSISTING OF RANDOMLY STACKED SPHERES OF DIFFERENT SIZES, AND THE INTERSTICES OF THIS MODEL CONTAIN BOTH GAS AND LIQUID. THE DISSIPATION COEFFICIENTS OCCURRING IN THE EQUATIONS OF MOTION ARE DETERMINED FOR A MODEL OF SHORT CAPILLARY TUBES. THE NINE EQUATIONS OF MOTION ARE TRANSFORMED INTO ROTATIONAL AND IRRROTATIONAL EQUATIONS TO YIELD PLANE, PROGRESSIVE, SINUSOIDAL WAVES. THE WAVE VELOCITY AND THE ATTENUATION ARE DERIVED FOR THE ASYMPTOTIC CASES OF VERY LOW AND VERY HIGH FREQUENCIES. IT IS PROVED THAT THERE ARE THREE TYPES OF COMPRESSIONAL WAVES AND ONE TYPE OF SHEAR WAVE. AT VERY LOW FREQUENCIES ONLY ONE TYPE OF COMPRESSIONAL WAVE PREVAILS, AND AT VERY HIGH FREQUENCIES THE DISSIPATION FOR ALL FOUR TYPES OF WAVES IS PROPORTIONAL TO THE SQUARE ROOT OF THE FREQUENCY.

\*EARTH MATERIAL, DYNAMIC PROPERTY + \*SOIL MECHANICS + EARTHQUAKE, GENERAL + GROUND MOTION + MATHEMATICAL STUDY + WAVE, STRESS

2-14215  
CHINNERY MA  
THE STRENGTH OF THE EARTH'S CRUST UNDER HORIZONTAL SHEAR STRESS  
INSTITUTE OF EARTH SCIENCES, UNIVERSITY OF BRITISH COLUMBIA, VANCOUVER, CANADA  
4 PAGES, JOURNAL OF GEOPHYSICAL RESEARCH, 69(10), PP. 2085-89 (MAY 1964)

RECENT THEORETICAL EXPRESSIONS FOR THE CHANGE IN STRESS DISTRIBUTION CAUSED BY STRIKE-SLIP FAULTING ARE APPLIED TO FIVE REAL FAULTS, AND ESTIMATES ARE MADE OF THE MAXIMUM SHEAR STRESS RELIEVED IN EACH CASE. THE CALCULATED VALUES LIE BETWEEN 10 TO THE 7 AND 10 TO THE 8 DYNES/CM SQUARED, AND REASONABLE REFINEMENTS OF THE ASSUMPTIONS INVOLVED IN THE CALCULATION (PARTICULARLY IN THE VALUE OF THE COEFFICIENT OF RIGIDITY) ALL TEND TO REDUCE THESE ESTIMATES, PERHAPS BY AN ORDER OF MAGNITUDE. A DISCUSSION OF THE MECHANISM OF FAULTING SUGGESTS THAT THE STRESS CHANGE IS UNLIKELY TO DIFFER BY MORE THAN A FACTOR OF 2 FROM THE SHEAR STRESS THAT CAUSED THE FRACTURE. IT IS CONCLUDED THAT THE STRENGTH OF THE EARTH'S CRUST UNDER HORIZONTAL SHEAR STRESS APPEARS TO BE LITTLE MORE THAN 10 TO THE 7 DYNES/CM SQUARED AND MAY BE LESS IN SOME AREAS.

\*FAULT + \*SOURCE MECHANISM + DISPLACEMENT, GENERAL + EARTHQUAKE, GENERAL + ENERGY LEVEL + TECTONICS

2-14218  
REIMNITZ F + MARSHALL NF  
EFFECTS OF THE ALASKA EARTHQUAKE AND TSUNAMI ON RECENT DELTAIC SEDIMENTS  
SCRIPPS INSTITUTION OF OCEANOGRAPHY, LA JOLLA, CALIFORNIA  
14 PAGES, JOURNAL OF GEOPHYSICAL RESEARCH, 70(10), PP. 2363-2376 (MAY 1965)

THE ALASKAN EARTHQUAKE ON GOOD FRIDAY (ITS EPICENTER ABOUT 80 MI FROM THE COPPER RIVER DELTA) AND THE EVENTS ASSOCIATED WITH THE QUAKE LEFT INDELIBLE MARKS ON THE RECENT SEDIMENTS OF THE DELTA. A RELATIVELY DENSE PATTERN OF EARTHQUAKE SHOCK STRUCTURES IS FOUND IN THE UPPER PART OF THE SECTION. THESE INCLUDE SAND DIKES, SAND PIPES, SLUMPS, FAULTS, AND JOINTS. THE STRUCTURES INCREASE IN ABUNDANCE TOWARD THE CENTRAL PART OF THE DELTA, WHERE SEDIMENTS ARE

CATEGORY 2  
SITING OF NUCLEAR FACILITIES

2-14218 \*CONTINUED\*

THICKEST, AND BECOME RARE ALONG ITS FRINGES, WHERE SEDIMENTS ARE THINNEST. THE 6-FT UPLIFT OF THE REGION WAS RESPONSIBLE FOR SOME EROSION AND OTHER IMMEDIATE CHANGES. SEICHES, BROUGHT ABOUT BY THE EARTHQUAKE, WITH CURRENT VELOCITIES OF UP TO 20 OR 30 KNOTS, REGIONALLY PLANED OFF THE UPPER 2 OR 3 FT OF THE TIDAL FLATS.

\*EARTHQUAKE RECORDS + EARTHQUAKE, GENERAL + GEOLOGICAL CONSIDERATION, GENERAL + SEICHE + SUBSIDENCE + TSUNAMI + VIBRATION

2-14219

PRESS F  
DISPLACEMENTS, STRAINS, AND TILTS AT TELESEISMIC DISTANCES  
CALIFORNIA INSTITUTE OF TECHNOLOGY, SEISMOLOGICAL LABORATORY, PASADENA  
18 PAGES, JOURNAL OF GEOPHYSICAL RESEARCH, 70(10), PP. 2395-2412 (MAY 1965)

THE DISLOCATION THEORY REPRESENTATION OF FAULTING OF VVEDENSKAYA, STEKETEE, CHINNERY, AND MARUYAMA IS USED TO COMPUTE THE RESIDUAL DISPLACEMENT, STRAIN, AND TILT FIELDS AT INTERMEDIATE AND LARGE DISTANCES FROM MAJOR EARTHQUAKES. IT IS SHOWN THAT THE DISTANT FIELDS ARE LARGE ENOUGH TO BE DETECTED BY MODERN INSTRUMENTS. THE VERTICAL-DISPLACEMENT FIELD FROM THE ALASKAN EARTHQUAKE OF MARCH 27, 1964, INDICATES THAT THE PRIMARY FAULT EXTENDED TO A DEPTH OF 150 TO 200 KM AND THAT IT PROBABLY CAME TO WITHIN 15 KM OF THE SURFACE. THE RESIDUAL STRAIN OBSERVED AT HAWAII AMOUNTED TO 10 TO THE MINUS 8TH, A VALUE WHICH IS REASONABLY CONSISTENT WITH THE EXTENT OF FAULTING AND THE DISPLACEMENTS NEAR THE SOURCE. THE ELASTIC STRAIN ENERGY RELEASE WAS ABOUT 10 TO THE 25TH ERGS. OTHER OBSERVATIONS OF RESIDUAL STRAINS AND TILTS ARE EXAMINED. IN SOME CASES NONFAULTING SOURCES ARE PROBABLY INVOLVED.

\*SOURCE MECHANISM + EARTHQUAKE, GENERAL + ENERGY LEVEL + INSTRUMENTATION, EARTHQUAKE + MATHEMATICAL STUDY

2-14220

GIRDLER RW  
RESEARCH NOTE - HOW GENUINE IS THE CIRCUM-PACIFIC BELT  
4 PAGES, GEOPHYSICAL JOURNAL, 8, PP. 537-40 (1964)

THE PACIFIC OCEAN IS BORDERED BY REGIONS OF CRUSTAL COMPRESSION (DEEP AND INTERMEDIATE FOCUS EARTHQUAKES) AND CRUSTAL TENSION (SHALLOW EARTHQUAKES). THE TECTONICS OF SOUTH AMERICA (COMPRESSION) ARE NOT COMPARABLE TO THOSE OF THE WESTERN UNITED STATES (TENSION), AND CARE MUST BE EXERCISED IN INTERPRETING THE FIERY RING OF THE PACIFIC AS A CONTINUOUS BELT.

\*TECTONICS + EARTHQUAKE, GENERAL + SOURCE MECHANISM

2-14224

SANDHAWALTA PS  
INFLUENCE OF FOUNDATION STRATA ON THE EARTHQUAKE RESPONSE OF BUILDINGS  
NAGPUR CENTRAL CIRCLE, C.P.W.D., NAGPUR, INDIA  
10 PAGES, PROC. OF THIRD SYMPOSIUM ON EARTHQUAKE ENGINEERING, SCHOOL OF RESEARCH AND TRAINING IN EARTHQUAKE ENGINEERING, UNIVERSITY OF ROORKEE, INDIA, NOVEMBER 4-6, 1966, PP. 1-10

THE FOUNDATION STRATA THAT SUPPORTS A STRUCTURE AFFECTS ITS EARTHQUAKE RESPONSE BECAUSE IT (I) AFFECTS ITS DYNAMIC CHARACTERISTICS, (II) AFFECTS THE CHARACTERISTICS OF THE SURFACE VIBRATIONS ENGENDERED BY THE EARTHQUAKE MOTION, (III) INFLUENCES THE POSSIBILITY OF A QUASI-RESONANCE RESPONSE BUILD-UP, AND (IV) INFLUENCES THE SELECTION OF THE TYPE OF FOUNDATION PROVIDED FOR THE STRUCTURE. EACH FACTOR IS DISCUSSED, AND IT IS CONCLUDED THAT A CASE EXISTS FOR HAVING SMALLER SEISMIC COEFFICIENTS FOR THE NORMAL INDIAN BUILDINGS ON SOFT SOILS THAN THOSE SPECIFIED FOR THE DESIGN OF THESE BUILDINGS ON AVERAGE OR HARD SOILS.

\*EARTHQUAKE ENGINEERING + \*INTERACTION, FOUNDATION AND STRUCTURE + EARTH MATERIAL, DYNAMIC PROPERTY + EARTHQUAKE, GENERAL + FOUNDATION ENGINEERING + SOIL MECHANICS

2-14225

SINGH P + RAO BR  
GEOLOGICAL EVIDENCES OF QUATERNARY EARTH MOVEMENTS IN THE HIMALAYAN REGION AND THEIR SEISMIC SIGNIFICANCE  
GEOLOGICAL SURVEY OF INDIA, CALCUTTA  
6 PAGES, PROC. OF THIRD SYMPOSIUM ON EARTHQUAKE ENGINEERING, SCHOOL OF RESEARCH AND TRAINING IN EARTHQUAKE ENGINEERING, UNIVERSITY OF ROORKEE, INDIA, NOVEMBER 4-6, 1966, PP. 437-442

THE FOOT-HILLS ZONE OF THE HIMALAYAN MOUNTAINS, THE ALLUVIAL PLAINS ABUTTING THEM, AND THE MARGINAL ZONE BORDERING THE PENINSULAR SHIELD, APPROXIMATELY 350 MILES WIDE, FORM A PART OF THE ALPINE-HIMALAYAN SEISMIC BELT THAT FREQUENTLY EXPERIENCES EARTHQUAKE SHOCKS OF MODERATE INTENSITY. A BRIEF ACCOUNT OF THE GEOLOGICAL EVIDENCE RECORDING EARTH MOVEMENTS DURING THE QUATERNARY PERIOD ARE GIVEN IN THIS PAPER, BASED ON THE RELATIONSHIP OF SIWALIK AND LATER DEPOSITS WITH THE OLDER FORMATIONS. THE EARTH MOVEMENTS HAVE ALSO INVOLVED SEMICONSOLIDATED AND UNCONSOLIDATED QUATERNARY DEPOSITS CAUSING HIGHLY DISTURBED AND WEAK ZONES IN THEM. MANY OF THE FAULT AND THRUST ZONES HAVE SHOWN ACTIVITY IN RECENT TIMES, AND THE FREQUENT EARTHQUAKES EXPERIENCED IN THIS REGION MAY POSSIBLY BE DUE TO REACTIVATION OF THESE WEAK ZONES UNDER GROWING STRESS CONDITIONS OF THE EARTH MOVEMENTS, WHICH ARE CONSIDERED STILL CONTINUING IN THIS REGION. WHILE THE AVAILABLE GEOLOGICAL AND GEOPHYSICAL DATA ARE NOT SUFFICIENT TO MAKE ANY PREDICTIONS AS TO THE FREQUENCY OF THE EARTHQUAKES IN THE FUTURE, THEY DEMAND SAFETY PRECAUTIONS IN ALL THE CONSTRUCTIONS ENVISAGED HERE TO BE MADE EARTHQUAKE



CATEGORY 2  
SITING OF NUCLEAR FACILITIES

2-14225 \*CONTINUED\*  
RESISTANT.

\*FAULT + EARTHQUAKE, GENERAL + GEOLOGICAL CONSIDERATION, GENERAL + SEISMIC ZONE + TECTONICS

2-14226  
NUDA SJ  
THE STRESS AROUND A FAULT ACCORDING TO A PHOTOELASTIC MODEL EXPERIMENT  
11 PAGES, GEOPHYSICAL JOURNAL, 9, PP. 399-410 (1965)

A REPORT IS GIVEN OF PRELIMINARY PHOTOELASTIC MEASUREMENTS OF THE TWO-DIMENSIONAL STRESS FIELD AROUND A FAULT OR CRACK IN A PLATE. THE MEASUREMENTS INCLUDE THE FOLLOWING CASES - OPEN SLIT WITH THE UNIAXIAL APPLIED PRESSURE FIELD MAKING AN ANGLE OF 45 DEGREES WITH THE SLIT, CLOSED SLIT (ZONE OF WEAKNESS) WITH TWO DIFFERENT THICKNESSES OF THE WEAK ZONE AND AGAIN 45 DEGREES TO THE EXTERNAL PRESSURE FIELD. THE MEASUREMENTS FOR THE WEAKEST SLIT WERE MADE ALSO WITH AN ANGLE OF 22.5 DEGREES TO THE PRESSURE FIELD. THE DETERMINED NORMAL AND SHEAR STRESSES ARE REPRESENTED IN GRAPHICAL FORM. THE RESULTS PROVIDE EXPLANATIONS FOR SOME EARTHQUAKE CHARACTERISTICS, FOR EXAMPLE, DISTRIBUTION OF SHEAR STRESS AND PATTERNS OF GEOGRAPHICAL EXTENSION OF SEISMIC ACTIVITY DURING AN AFTERSHOCK SEQUENCE.

\*FAULT + EARTHQUAKE, GENERAL + ROCK MECHANICS + SOURCE MECHANISM + TECTONICS

2-14227  
IBANEZ J  
SUB-SOIL STRESSES, AND SUB-SOIL COLLAPSE  
UNIVERSIDAD DE CHILE  
7 PAGES, PROC. OF THIRD SYMPOSIUM ON EARTHQUAKE ENGINEERING, SCHOOL OF RESEARCH AND TRAINING IN EARTHQUAKE ENGINEERING, UNIVERSITY OF ROORKEE, INDIA, NOVEMBER 4-6, 1966, PP. 263-270

OBSERVED HORIZONTAL SLIPPINGS, AS LARGE AS 6 METERS OR MORE, ALONG MANY KILOMETERS OF TECTONIC FAULT PLANES, OCCURRED DURING LARGE EARTHQUAKES. THESE DISPLACEMENTS ARE USUALLY IRREVERSIBLE AND ARE SPREAD OVER LARGE AREA. A DEPOSIT OF SOFT SOIL, LYING ON A ROCKY BED, VIBRATES FREELY IN A HORIZONTAL DIRECTION IF THE BED DISPLACES, ONE WAY, IN THAT DIRECTION. THE MAXIMUM RELATIVE DISPLACEMENTS OF THE VARICUS LAYERS OF THE INDICATED DEPOSIT, THE SHEARING STRESSES DEVELOPED IN THEM, AND THE MOVEMENTS OF THE UPPER LAYER, MAY BE COMPUTED BY MATHEMATIC ANALYSIS, PROVIDED THAT THE DISPLACEMENT OF THE BED BE KNOWN.

\*FAULT + DISPLACEMENT, GENERAL + EARTHQUAKE, GENERAL + GROUND MOTION + SOIL MECHANICS + VIBRATION + WAVE, STRESS

2-14229  
CONSTANTINESCU L + RUPRECHTOVA L + ENESCU D  
MEDITERRANEAN-ALPINE EARTHQUAKE MECHANISMS AND THEIR SEISMOTECTONIC IMPLICATIONS  
21 PAGES, GEOPHYSICAL JOURNAL, 10, PP. 347-368 (JANUARY 1966), MEETING OF THE EUROPEAN SEISMOLOGICAL COMMISSION HELD IN BUDAPEST, SEPTEMBER 1964

A NUMBER OF SEVENTY-FIVE FAULT-PLANE SOLUTIONS GIVEN BY THE PRESENT AUTHORS FOR EARTHQUAKES HAVING OCCURRED DURING THE LAST 50 YEARS IN EUROPE, ASIA MINOR AND NORTHERN AFRICA, AND TWENTY-SIX SOLUTIONS DUE TO OTHER AUTHORS ARE STUDIED FROM THE POINT OF VIEW OF THE GEOMETRY, KINEMATICS, AND DYNAMICS OF THE FAULTING PROCESS. THE MAIN RESULTS LEAD TO THE CONCLUSION THAT THE FORCES HAVING DETERMINED THE GEOMORPHOLOGY AND THE TECTONICS OF THE DIFFERENT AREAS OF THE MEDITERRANEAN-ALPINE BELT HAVE BEEN OF THE SAME NATURE AS THOSE CONTINUING TO BE ACTIVE AT PRESENT AT THE SEISMIC FOCI OF THE CORRESPONDING AREAS. COMPARING THE PRESENT RESULTS WITH PREVIOUS ONES, BASED ON A SMALLER NUMBER OF EARTHQUAKES, SHOWS A BETTER AGREEMENT OF THE EUROPEAN PATTERN OF EARTHQUAKE MECHANISMS WITH THE WORLD PATTERN FOR ALL EARTHQUAKES. SOME DIFFERENCES SEEM, HOWEVER, TO CONTINUE TO BE PRESENT BETWEEN THE TWO PATTERNS IN THE CASE OF SHALLOWER EARTHQUAKES.

\*FAULT + \*SOURCE MECHANISM + EARTHQUAKE RECORDS + EARTHQUAKE, GENERAL + SEISMIC ZONE + TECTONICS

2-14386 ALSO IN CATEGORIES 7 AND 18  
CAROLINA POWER AND LIGHT COMPANY, H.B. ROBINSON UNIT NO. 2 PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT  
CAROLINA POWER AND LIGHT COMPANY  
163 PAGES, FIGURES, TABLES, JULY 1966, DOCKET NO. 50-261

THE DESIGN OF ROBINSON UNIT 2 WILL BE BASED ON PROVED CONCEPTS WHICH HAVE BEEN DEVELOPED AND APPLIED TO THE DESIGN OF PRESSURIZED-WATER REACTOR SYSTEMS. THE USE OF A WATER SPRAY TO COOL AND DECONTAMINATE THE CONTAINMENT ATMOSPHERE FOLLOWING A MAJOR LOSS OF COOLANT IS DESCRIBED IN THIS REPORT. TO EMPLOY THE SPRAY AS A MEANS OF DECONTAMINATING AS WELL AS COOLING THE CONTAINMENT ATMOSPHERE IN THIS PLANT, A CHEMICAL WILL BE USED TO ENHANCE THE SOLUBILITY OF FISSION PRODUCT IODINE IN THE SPRAY DROPLETS. THE DESIGNER WILL UNDERTAKE CERTAIN DEVELOPMENT TASKS TO AUGMENT PRESENTLY AVAILABLE DATA ON THE CHARACTERISTICS OF SUCH A SYSTEM.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*REACTOR, PRESSURIZED WATER + \*SPRAY, GENERAL + AIR CLEANING + FISSION PRODUCT, IODINE + SAFETY ANALYSIS REPORT, PRELIMINARY

CATEGORY 2  
SITING OF NUCLEAR FACILITIES

2-14392  
MAJOP MW  
RESIDUAL STRAIN OVER LARGE AREAS  
4 PAGES, ESSA SYMPOSIUM ON EARTHQUAKE PREDICTION, ROCKVILLE, MARYLAND, FEBRUARY 7,8,9, 1966, PP. 31-34

DURING THE PAST FEW YEARS, A NUMBER OF STRAINMETERS HAVE RECORDED STEPS ASSOCIATED WITH LARGE EARTHQUAKES AT EPICENTRAL DISTANCES AS GREAT AS 41 DEGREES. MANY OF THESE RECORDS WERE ANALYZED BY FRANK PRESS. SIMILAR STEPS HAVE BEEN OBSERVED AT BERGEN PARK, COLORADO, ASSOCIATED WITH EARTHQUAKES AS SMALL AS MAGNITUDE 4 AT EPICENTRAL DISTANCES OF ABOUT 45 KM. MAPS OF STRAIN RELEASE FOLLOWING AN EARTHQUAKE DEFINE THE TYPE OF STRAIN FIELD BUILDUP WHOSE DETECTION IS ONE OF THE TARGETS OF AN EARTHQUAKE-PREDICTION STUDY.

AVAILABILITY - U. S. GOVERNMENT PRINTING OFFICE, WASHINGTON, D.C., 20402, \$1.00 COPY

\*FAULT + \*SOURCE MECHANISM + EARTHQUAKE RECORDS + EARTHQUAKE, GENERAL + ROCK MECHANICS

2-14393  
SYKES LR  
THE SEISMICITY AND DEEP STRUCTURE OF ISLAND ARCS  
COLUMBIA UNIVERSITY, LAMONT GEOLOGICAL OBSERVATORY, PALISADES, NEW YORK  
25 PAGES, JOURNAL OF GEOPHYSICAL RESEARCH, 71(12), PP. 2981-3006 (JUNE 1966)

THE HYPOCENTERS OF APPROXIMATELY 1500 EARTHQUAKES IN THE TONGA-FIJI, KERMADEC, KURIL-KAMCHATKA, AND CARIBBEAN REGIONS WERE REDETERMINED USING A DIGITAL COMPUTER. SINCE THESE COMPUTATIONS ARE MORE ACCURATE THAN THOSE USED IN MOST PREVIOUS STUDIES, THE SPATIAL DISTRIBUTION OF THE REDETERMINED HYPOCENTERS CAN BE USED TO RESOLVE STRUCTURAL FEATURES WITH DIMENSIONS LARGER THAN ABOUT 20 KM. IN EACH OF THE REGIONS INVESTIGATED IN THIS PAPER, A ZONE OF INTENSE SEISMIC ACTIVITY WAS FOUND BENEATH THE INNER (ISLANDWARD) MARGIN OF THE OCEANIC TRENCH. NEAR ITS NORTHERN END, THE TONGA TRENCH CURVES ABRUPTLY TO THE WEST. THE BELTS OF SHALLOW AND DEEP EARTHQUAKES AND THE CHAIN OF ACTIVE VOLCANOES CURVE SIMILARLY. THUS THE TECTONIC PROCESSES RESPONSIBLE FOR THE EARTHQUAKES, THE VOLCANOES, AND THE TRENCH ARE INTIMATELY RELATED FOR DEPTHS FROM 0 TO 650 KM. THEORIES THAT ATTEMPT TO EXPLAIN THE CURVATURE OF THE TRENCH MUST ACCOUNT FOR A SIMILAR CURVATURE IN THE BELTS OF DEEP AND SHALLOW EARTHQUAKES. IN AT LEAST SOME REGIONS, THE FOCAL SURFACE CAN BE REGARDED AS A CONTINUOUS ZONE OF TECTONIC ACTIVITY THAT EXTENDS FROM THE SURFACE TO A DEPTH OF ABOUT 650 KM. WITHIN THE ACCURACY OF THE COMPUTATIONS, THE DIP OF THIS ZONE IS INDEPENDENT OF DEPTH.

\*SEISMIC ZONE + \*TECTONICS + EARTHQUAKE EPICENTER + EARTHQUAKE, GENERAL + FAULT

2-14456  
RANDALL MJ  
SEISMIC RADIATION FROM A SUDDEN PHASE TRANSITION  
DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH, WELLINGTON, NEW ZEALAND  
6 PAGES, JOURNAL OF GEOPHYSICAL RESEARCH, 71(22), PP. 5297-5302 (NOVEMBER 1966)

THE HYPOTHESIS THAT SUDDEN PHASE TRANSITION MAY PROVIDE A MECHANISM FOR EARTHQUAKES IS EXAMINED MATHEMATICALLY, THE MODEL ALLOWING CHANGE IN SHAPE AS WELL AS OF DENSITY. THE BASIC DISTORTIONAL CHANGE GIVES A RADIATION PATTERN LIKE THAT OF THE DOUBLE-COUPLE MULTIPOLE.

\*SOURCE MECHANISM + EARTHQUAKE, GENERAL + ENERGY LEVEL + MATHEMATICAL STUDY

2-14509  
BRACE WF + RYERLEE JD  
STICK-SLIP AS A MECHANISM FOR EARTHQUAKES  
MASSACHUSETTS INSTITUTE OF TECHNOLOGY  
2 PAGES, SCIENCE, 153, PP. 990-2 (AUGUST 26, 1966)

STICK-SLIP OFTEN ACCOMPANIES FRICTIONAL SLIDING IN LABORATORY EXPERIMENTS WITH GEOLOGIC MATERIALS. SHALLOW-FOCUS EARTHQUAKES MAY REPRESENT STICK-SLIP DURING SLIDING ALONG OLD OR NEWLY FORMED FAULTS IN THE EARTH. IN SUCH A SITUATION, OBSERVED STRESS DROPS REPRESENT RELEASE OF A SMALL FRACTION OF THE STRESS SUPPORTED BY THE ROCK SURROUNDING THE EARTHQUAKE FOCUS.

\*SOURCE MECHANISM + EARTH MATERIAL, DYNAMIC PROPERTY + EARTHQUAKE, GENERAL + FAULT + ROCK MECHANICS

2-14510  
PRESS F + BRACE WF  
EARTHQUAKE PREDICTION  
MASSACHUSETTS INSTITUTE OF TECHNOLOGY  
10 PAGES, 13 FIGURES, 37 REFERENCES, SCIENCE, 152(3729), PP. 1575-84 (JUNE 17, 1966)

THIS ARTICLE IS A SUMMARY OF AN EARTHQUAKE-PREDICTION PROPOSAL SUBMITTED TO THE OFFICE OF SCIENCE AND TECHNOLOGY BY THE AD HOC PANEL ON EARTHQUAKE PREDICTION CHAIRED BY FRANK PRESS. IT COVERS THE EXTENSIVE NETWORK OF SURVEY STATIONS SUGGESTED AND THE BASIS ON WHICH THE

CATEGORY 2  
SITING OF NUCLEAR FACILITIES

2-14510 \*CONTINUED\*  
DESIGNS WERE CHOSEN.

\*EARTHQUAKE PREDICTION + EARTHQUAKE, GENERAL + SEISMIC ZONE + SOURCE MECHANISM + TECTONICS

2-14512  
SEED HB + CHAN CK  
CLAY STRENGTH UNDER EARTHQUAKE LOADING CONDITIONS  
25 PAGES, JOURNAL OF THE SOIL MECHANICS AND FOUNDATIONS DIVISION, ASCE, 92(SM2), PROC. PAPER 4523, PP. 53-78 (MARCH 1966)

A PROCEDURE FOR DETERMINING THE COMBINATIONS OF SUSTAINED STRESS AND PULSATING STRESS THAT WILL CAUSE FAILURE OF A GIVEN SOIL IS DESCRIBED, AND SUCH DATA IS PRESENTED FOR THREE SOIL TYPES. THE RELATIONSHIP DEPENDS ON THE NATURE OF THE LOADING CONDITIONS (ONE-DIRECTIONAL OR TWO-DIRECTIONAL), THE SOIL TYPE, THE PRINCIPAL STRESS RATIO DURING CONSOLIDATION, THE FREQUENCY AND DURATION OF THE PULSATING STRESSES, THE NUMBER OF STRESS PULSES, AND THE FORM OF THE STRESS PULSE. DATA IS ALSO PRESENTED ON THE STRAINS RESULTING FROM DIFFERENT STRESS COMBINATIONS. FOR TYPICAL FIELD AND EARTHQUAKE CONDITIONS, IT IS SHOWN THAT THE RELATIONSHIP BETWEEN TOTAL STRESS (SUSTAINED PLUS PULSATING) AND TOTAL STRAIN FOR SOME SOILS WILL NOT DIFFER GREATLY FROM THE STRESS-VERSUS-STRAIN RELATIONSHIP FOR THE SOILS DETERMINED BY CONVENTIONAL UNDRAINED TEST PROCEDURES. FINALLY, IT APPEARS THAT IN SENSITIVE CLAY, A SERIES OF VIBRATIONS OR STRESS PULSES THAT WILL NOT IN THEMSELVES CAUSE FAILURE, MAY INDUCE AN INCREASE IN PORE WATER PRESSURE AND INITIATE CREEP MOVEMENT THAT WILL LEAD TO FAILURE SOME TIME AFTER THE VIBRATIONS HAVE CEASED.

\*SOIL MECHANICS + EARTH MATERIAL, DYNAMIC PROPERTY + EARTHQUAKE, GENERAL + SOIL PROPERTY, IN SITU

2-14513  
GOODMAN RE + SEED HB  
EARTHQUAKE-INDUCED DISPLACEMENTS IN SAND EMBANKMENTS  
21 PAGES, JOURNAL OF THE SOIL MECHANICS AND FOUNDATIONS DIVISION, ASCE, 92(SM2), PROC. PAPER 4736, PP. 125-146 (MARCH 1966)

IF AN EMBANKMENT OF DENSE GRANULAR MATERIAL IS ACCELERATED SO THAT ALL POINTS OF THE SLOPE EXPERIENCE APPROXIMATELY THE SAME ACCELERATION AT THE SAME TIME, THE RESULTS OF OVERSTRESSING IS A SURFACE SLIDE INVOLVING A THIN LAYER OF SOIL. THE YIELD ACCELERATION AT WHICH THIS SLIDE WILL BEGIN TO MOVE ON ANY CYCLE OF ACCELERATION CAN BE EXPRESSED IN TERMS OF THE ANGLE OF FRICTION  $\phi$  AND A SHEAR STRENGTH INTERCEPT  $S-SUB-I$ , BOTH OF WHICH ARE FUNCTIONS OF THE CUMULATIVE DOWNSLOPE DISPLACEMENT. PROCEDURES FOR COMPUTING THE MAGNITUDE OF SLOPE DISPLACEMENTS RESULTING FROM A SEQUENCE OF ACCELERATION PULSES ARE PRESENTED. SURFACE DISPLACEMENTS DETERMINED BY PROCEDURES HAVE BEEN SHOWN TO BE IN REASONABLE AGREEMENT WITH THOSE MEASURED IN BANKS OF SAND SUBJECT TO BASE ACCELERATION, PROVIDED THAT ALLOWANCE IS MADE FOR THE VARIATION IN SOIL STRENGTH AND YIELD ACCELERATION WITH INCREASING DISPLACEMENTS.

\*SOIL MECHANICS + DISPLACEMENT, GENERAL + EARTH MATERIAL, DYNAMIC PROPERTY + EARTHQUAKE, GENERAL + LANDSLIDE + LURCHING

2-14515  
MITRA M  
SURFACE DISPLACEMENT PRODUCED BY AN UNDERGROUND FRACTURE  
JADAVPUR UNIVERSITY, DEPARTMENT OF MATHEMATICS, CALCUTTA, INDIA  
10 PAGES, GEOPHYSICS, 31(1), PP. 204-13 (FEBRUARY 1966)

THE SURFACE DISPLACEMENT DUE TO AN UNDERGROUND FRACTURE WAS EVALUATED IN EXACT TERMS. NUMERICAL RESULTS SHOW THAT THE PASSAGE OF THE FRACTURE PRODUCES A PERMANENT LATERAL DISPLACEMENT WHICH INCREASES WITH DISTANCE ALONG THE DIRECTION OF MOTION OF THE FRACTURE.

\*MATHEMATICAL STUDY + DISPLACEMENT, GENERAL + EARTHQUAKE, GENERAL + FAULT + SOURCE MECHANISM

2-14516  
KUMARAPELI PS + SAULL VA  
THE ST. LAWRENCE VALLEY SYSTEM - A NORTH AMERICAN EQUIVALENT OF THE EAST AFRICAN RIFT VALLEY SYSTEM  
MCGILL UNIVERSITY, DEPARTMENT OF GEOLOGICAL SCIENCES, MONTREAL, QUEBEC, CANADA  
20 PAGES, CANADIAN JOURNAL OF EARTH SCIENCES, 3(5), PP. 639-58 (1966)

THE ST. LAWRENCE VALLEY SYSTEM (INCLUDING THE ST. LAWRENCE, OTTAWA, AND CHAMPLAIN VALLEYS, AND THE ST. LAWRENCE OR CABOT TROUGH) IS COEXTENSIVE WITH A WELL-DEFINED PATTERN OF SEISMIC ACTIVITY. THE VALLEY SYSTEM IS IN A REGION OF GENERAL UPDOWING, NORMAL FAULTING, AND ALKALINE IGNEOUS ACTIVITY OF A DISTINCTIVE TYPE. THE MAIN PHASE OF TECTONIC ACTIVITY PROBABLY DATES BACK TO MESOZOIC TIME. THE ABOVE AND OTHER EVIDENCE PRESENTED IN THIS PAPER INDICATE THE EXISTENCE OF A MAJOR RIFT VALLEY SYSTEM THAT MAY BE CALLED THE ST. LAWRENCE RIFT SYSTEM. THE ROUGH CREEK - KENTUCKY RIVER FAULT ZONE, AND THE NORMAL FAULT ZONES IN TEXAS AND OKLAHOMA, AND THE LAKE SUPERIOR FAULT ZONE PROBABLY REPRESENT EXTENSIONS OF THE ST. LAWRENCE RIFT SYSTEM. HOWEVER, CURRENT SEISMICITY INDICATES THAT THE PRESENT TECTONIC ACTIVITY IS ALONG A STRAIGHT ZONE RUNNING THROUGH LAKE'S ONTARIO AND ERIE INTO THE MISSISSIPPI EMBAYMENT. THE ST. LAWRENCE RIFT SYSTEM MAY ALSO BE CONNECTED WITH THE MID-ATLANTIC RIFT, IN THE REGION OF THE AZORES PLATEAU. THE RIFT HYPOTHESIS PRESENTED MAY BE USEFUL AS A REGIONAL GUIDE IN THE SEARCH FOR NIObIUM-BEARING ALKALINE COMPLEXES AND DIAMOND-BEARING KIMBERLITES. CRUSTAL

CATEGORY 2  
SITING OF NUCLEAR FACILITIES

2-14516 \*CONTINUED\*

TENSION IN THE ST. LAWRENCE REGION MAY BE GENETICALLY RELATED TO THE OPENING OF THE ATLANTIC BASIN AS POSTULATED IN THE HYPOTHESIS OF CONTINENTAL DRIFT.

EARTHQUAKE EPICENTER + EARTHQUAKE, GENERAL + FAULT + GEOLOGICAL CONSIDERATION, GENERAL + SEISMIC ZONE + TECTONICS

2-14517

CHINNERY MA  
SECONDARY FAULTING. I. THEORETICAL ASPECTS. II. GEOLOGICAL ASPECTS  
UNIVERSITY OF BRITISH COLUMBIA, VANCOUVER, BRITISH COLUMBIA  
28 PAGES, CANADIAN JOURNAL OF EARTH SCIENCES, 3(2), PP. 163-190 (1966)

THE RESULTS OF TWO PREVIOUS PAPERS BY CHINNERY PUBLISHED IN 1963 AND 1964 ARE USED TO CALCULATE THE DISTRIBUTION OF STRESS THAT IS PRESENT AFTER THE FORMATION OF A STRIKE-SLIP FAULT. THE PATTERN OBTAINED SHOWS THAT ALTHOUGH THE INITIAL STRESS IS REDUCED OVER MOST OF THE LENGTH OF THE FAULT, THERE ARE STRONG CONCENTRATIONS OF SHEAR STRESS NEAR THE ENDS. IT IS THEREFORE SUGGESTED THAT SECONDARY FAULTING IS DUE TO THESE END-EFFECTS, AND PATTERNS OF LIKELY MODES OF SECONDARY FAULTING ARE SHOWN. A SECONDARY FAULT IS DEFINED AS A FRACTURE WHICH ARISES AS A DIRECT RESULT OF MOVEMENT ON A MASTER TRANSCURRENT FAULT. SOME PREVIOUS APPROACHES TO THE STUDY OF SECONDARY FAULTING ARE DISCUSSED, AND FALLACIES IN THE ARGUMENTS OF MCKINSTRY (1953) AND MCCOY AND HILL (1956) ARE POINTED OUT. THE EFFECT OF MOVEMENT ON A FAULT IS TO REDUCE THE INITIAL SHEAR STRESS EVERYWHERE EXCEPT IN THE VICINITY OF THE ENDS OF THE FAULT, WHERE IT CAUSES COMPLEX ADDITIONAL STRESSES (SEE FIRST PAPER IN THIS SERIES ON THE THEORETICAL ASPECTS OF SECONDARY FAULTING). THUS IT IS PROPOSED THAT SECONDARY FAULTING IS AN END-EFFECT OF A MASTER SHEAR MOVEMENT, AND ON THIS BASIS SIX MAJOR MODES OF SECONDARY FAULTING, LABELLED A TO F, ARE DESCRIBED. THE USEFULNESS OF THESE RESULTS IN THE ANALYSIS OF FAULT SYSTEMS IS ILLUSTRATED BY APPLYING THEM TO THE ALPINE, SAN ANDREAS, AND MACDONALD FAULTS. IN EACH CASE IT IS POSSIBLE TO PREDICT OR EXPLAIN THE CURVATURE, LOCATION, AND SENSE OF THE SECONDARY FAULTS IN THE AREA. IN ADDITION, THE DEVELOPMENT OF THE MASTER FAULT MAY BE TRACED BY LOCATING THE ENDS OF THE SHEAR ZONE AT VARIOUS TIMES IN THE PAST.

\*FAULT + DISPLACEMENT, GENERAL + EARTHQUAKE, GENERAL + GEOLOGICAL CONSIDERATION, GENERAL + MATHEMATICAL STUDY + ROCK MECHANICS

2-14518

PROCEEDINGS OF THE UNITED STATES-JAPAN CONFERENCE ON RESEARCH RELATED TO EARTHQUAKE PREDICTION PROBLEMS, MARCH 9-20, 1964, AT TOKYO AND KYOTO  
MARCH, 1964, 106 PAGES

CONTAINS SUMMARIES (ONLY) OF 54 PAPERS PRESENTED AT 8 SESSIONS OF THE CONFERENCE AND A TRANSCRIPT OF THE DISCUSSION. SESSION TITLES ARE - (1) GENERAL PROBLEMS, (2) CRUSTAL DEFORMATIONS (GEODETIC SURVEYS), (3) CRUSTAL DEFORMATIONS (TIDE GAUGE, STRAINMETER AND TILTMETER), (4) CRUSTAL DEFORMATIONS (CONTINUED), (5) SEISMICITY AND CHANGES IN SEISMIC WAVE VELOCITY IN ACTIVE SEISMIC AREAS, (6) SAME AS 5 (CONTINUED), (7) RELATION OF SEISMIC ACTIVITY TO GEOMAGNETISM AND EARTH CURRENTS, (8) TECTONIC MOVEMENTS.

\*EARTHQUAKE PREDICTION + AFTERSHOCK + EARTHQUAKE RECORDS + EARTHQUAKE, GENERAL + FAULT + FORESHOCK + GEOLOGICAL CONSIDERATION, GENERAL + MICROSEISMICITY + SOURCE MECHANISM + SUBSIDENCE + TECTONICS

2-14519

KAWASUMI H  
A. IMAMURAS NOTE ON SUCCESSFUL EARTHQUAKE PREDICTION  
THE UNIVERSITY OF TOKYO, EARTHQUAKE RESEARCH INSTITUTE  
3 PAGES, PROCEEDINGS OF U.S.-JAPAN CONFERENCE ON RESEARCH RELATED TO EARTHQUAKE PREDICTION, MARCH 1964,  
PP. 17-19

EARTHQUAKE PREDICTION, TO A CERTAIN LIMITED EXTENT, HAS BEEN ACHIEVED IN JAPAN WHERE THE GENERAL LOCATION OF THE NEXT LARGE EARTHQUAKE WAS ACCURATELY PREDICTED BUT NOT ITS TIME OF OCCURRENCE NOR ITS MAGNITUDE. THIS PREDICTION WAS BASED ON TILT MEASUREMENTS INTERPRETED IN THE LIGHT OF KNOWLEDGE OF THE GEOLOGICAL STRUCTURE AND THE HISTORY OF PAST EVENTS.

\*EARTHQUAKE PREDICTION + EARTHQUAKE, GENERAL + GEOLOGICAL CONSIDERATION, GENERAL + SEISMIC ZONE + SUBSIDENCE

2-14520

SUYEHIRO S  
AN EXAMPLE OF FORE- AND AFTER-SHOCK SEQUENCES AND DIFFERENCE IN THE RELATION BETWEEN MAGNITUDE AND FREQUENCY OF OCCURRENCE BETWEEN THE TWO SEQUENCES  
2 PAGES, PROCEEDINGS OF U.S.-JAPAN CONFERENCE ON RESEARCH RELATED TO EARTHQUAKE PREDICTION, MARCH 1964,  
PP. 52-3

EXAMINATION OF THE FORESHOCK AND AFTERSHOCK SEQUENCES ASSOCIATED WITH THE JANUARY 22, 1964, HONSHU, JAPAN EARTHQUAKE (M EQUALS 3.3) SHOWED A DISTINCT DIFFERENCE IN CHARACTER. ON A FREQUENCY-OF-OCCURRENCE-MAGNITUDE PLOT, THE FORESHOCKS HAVE A GUTENBERG-RICHTER B OF 0.35, WHILE THE AFTERSHOCK B IS 0.76. THIS FEATURE, IF UNIVERSAL, WOULD REPRESENT A POSSIBLE EARTHQUAKE PREDICTION METHOD.

CATEGORY 2  
SITING OF NUCLEAR FACILITIES

2-14520 \*CONTINUED\*  
\*EARTHQUAKE PREDICTION + AFTERSHOCK + EARTHQUAKE, GENERAL + FORESHOCK

2-14524 ALSO IN CATEGORIES 11 AND 1  
GILL S  
STRUCTURES FOR NUCLEAR POWER  
NORTHAMPTON COLLEGE OF ADVANCED TECHNOLOGY  
398 PAGES, 129 FIGURES, TABLES, REFERENCES, C.R. BOOKS LIMITED, LONDON, 1964

THIS BOOK CONTAINS A GENERAL DISCUSSION OF ALL THE CIVIL ENGINEERING PHASES OF A NUCLEAR POWER PLANT. THE PRESENTATION IS FROM THE DESIGNERS POINT OF VIEW. GENERAL PRINCIPLES AND PROVEN DESIGN CRITERIA ARE EMPHASIZED. OF PARTICULAR CURRENT INTEREST ARE THE THREE CHAPTERS ON CONCRETE RESEARCH AND PRESTRESSED CONCRETE PRESSURE VESSELS. CHAPTER 14 CONTAINS THE ELASTIC ANALYSIS AND ULTIMATE LOAD CALCULATIONS FOR AN EXAMPLE PCRV DESIGN.

AVAILABILITY - CR BOOKS LIMITED, THE ADELPHI, JOHN ADAM STREET, LONDON W.C.2

\*CONCRETE + \*CONCRETE, PRESTRESSED + \*CONTAINMENT DESIGN + \*CONTAINMENT STRUCTURE + \*DESIGN CRITERIA + \*DESIGN STUDY + BIBLIOGRAPHY + CONTAINMENT, GENERAL + CONTAINMENT, PRESSURE VESSEL + EARTHQUAKE + GEOLOGICAL CONSIDERATION, GENERAL + STEEL + STRESS

2-1453P ALSO IN CATEGORY 18  
QUESTION A1 - JUSTIFY CHOSEN LOW POPULATION DISTANCE BASED ON 1970/80 PROJECTED POPULATION DISTANCE  
TENNESSEE VALLEY AUTHORITY  
2 PAGES, PAGES A.1.1 TO A.1.2 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966, DOCKET NO. 50-259/60

REVISED TABLE II-6 INCLUDES 1970 AND 1980 POPULATION DISTRIBUTIONS FOR THE AREA AND LARGE CITIES. WITHIN A 10-MILE RADIUS, THE POPULATION WILL INCREASE FROM 83 TO 104 PERSONS PER SQUARE MILE IN 1980, AND NO CHANGE THEREAFTER. THEREFORE, 10 MILES WAS CHOSEN.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + POPULATION DISTRIBUTION + REACTOR, BOILING WATER

2-14664 ALSO IN CATEGORY 18  
PORT REVIEW 23 (THESSALONIKI, GREECE) FOR N S SAVANNAH  
DIVISION OF REACTOR LICENSING, UNITED STATES ATOMIC ENERGY COMMISSION  
4 PAGES, DECEMBER 13, 1966, DOCKET NO. 50-238

PROPOSED OPERATION IS CONSISTENT WITH NS SAVANNAH IN U.S. PORTS IF ENOUGH TUGS ARE IN ATTENDANCE OR ON CALL, IN ACCORD WITH TIME-TO-MELT CRITERIA (UNLESS REACTOR IS SHUT DOWN AND DEPRESSURIZED).

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY EVALUATION + \*SITING, GENERAL + N S SAVANNAH + REACTOR, MARITIME + REACTOR, PRESSURIZED WATER + REGULATION, AEC

2-14672 ALSO IN CATEGORY 11  
GLUCKMANN AL  
CONTAINMENT STRUCTURES. REACTOR CONTAINMENT STRUCTURES ABROAD  
GIBBS AND HILL, INC., NEW YORK  
CONF-650,829-2 + GMELIN-AED-CONF-65-238-1 +. 35 PAGES, 9 FIGURES, AUGUST 1965, PRESENTED AT AMERICAN SOCIETY OF CORROSION ENGINEERS, DIVISION SPECIALTY CONFERENCE, DENVER, COLORADO, AUGUST 1965

DESCRIBES SOME CONTAINMENT STRUCTURES DESIGNED FOR PRESSURIZED WATER REACTORS IN BELGIUM, SPAIN, JAPAN, ITALY AND SWITZERLAND.

AVAILABILITY - GIBBS + HILL INC., NEW YORK, NEW YORK

\*CONTAINMENT STRUCTURE + \*CONTAINMENT, GENERAL + BELGIUM + CONTAINMENT DESIGN + EARTHQUAKE ENGINEERING + ITALY + JAPAN + REACTOR, PRESSURIZED WATER + SPAIN + SWITZERLAND

2-14679  
TANNER WF  
UNIFIED BASIS FOR TECTONIC THEORY  
FLORIDA STATE UNIVERSITY, DEPARTMENT OF GEOLOGY, TALLAHASSEE  
24 PAGES, TECTONOPHYSICS, 1(2), PP. 135-58 (1964)

FIVE IMPORTANT PRINCIPLES ARE ADOPTED AS GUIDES IN DEVELOPING A TECTONIC THEORY. THESE ARE - (1) STRIKE-SLIP MOTION IS MORE IMPORTANT THAN ANY OTHER KIND, (2) THE CRUST IS ESSENTIALLY A PASSIVE LAYER, RIDING ON TOP OF AN ACTIVE DEEPER ZONE, (3) THE DEGREE OF CRUSTAL DEFORMATION IS, COMMONLY, A GREATLY DIMINISHED MEASURE OF ACTUAL DISPLACEMENT AT DEPTH, (4) THE

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SITING OF NUCLEAR FACILITIES

2-14679 \*CONTINUED\*

ORIENTATION OF STRUCTURAL FEATURES SUCH AS FAULTS AND FOLD AXES IS MORE IMPORTANT THAN THEIR RELATIVE SIZES, (5) PRESENT DEFORMATIONAL PATTERNS ARE TYPICAL, RATHER THAN UNIQUE, AND THEREFORE CAN BE USED AS A KEY TO TECTONIC HISTORY. THESE FIVE PRINCIPLES ARE COMBINED TO PRODUCE A ZONAL ROTATION HYPOTHESIS FOR EARTH DEFORMATION. ACCORDING TO THIS HYPOTHESIS, THE HIERARCHY OF DEFORMATIONAL UNITS IS AS FOLLOWS - I. EQUATORIAL BELT, CONSISTING OF A VARIETY OF FEATURES. II. THE NORTH PACIFIC PLATE, ROTATING IN COUNTER-CLOCKWISE FASHION. III. INDIVIDUAL CONTINENTS OR FRAGMENTS OF CONTINENTS, SUCH AS NORTH AMERICA, WHICH IS CIRCLING THE NORTH PACIFIC PLATE. IV. SMALLER FEATURES, SUCH AS THE QUACHITA MOUNTAINS OF ARKANSAS AND OKLAHOMA, AND THE ALPS.

\*TECTONICS + EARTHQUAKE, GENERAL + GEOLOGICAL CONSIDERATION, GENERAL

2-14680  
RENIOFF H  
EARTHQUAKE SOURCE MECHANISMS  
CALIFORNIA INSTITUTE OF TECHNOLOGY, PASADENA  
8 PAGES, SCIENCE, 143(3613), PP. 1399-1406 (MARCH 1964)

THE ELASTIC REBOUND THEORY OF REID PROVIDES A SATISFACTORY MODEL FOR THE IMMEDIATE SOURCE MECHANISM OF SHALLOW EARTHQUAKES AND PROBABLY OF EARTHQUAKES OF INTERMEDIATE DEPTH. DEEP EARTHQUAKES APPEAR TO INVOLVE VOLUME COLLAPSE, EITHER WITH OR WITHOUT ASSOCIATED FAULTING EFFECTS. OUR KNOWLEDGE OF THE ORIGIN OF SECULAR STRAINS WHICH PROVIDE THE ELASTIC REBOUND ENERGY IS INCOMPLETE. STRIKE-SLIP AND DIP-SLIP FAULTS VERY PROBABLY INVOLVE DIFFERENT STRAIN GENERATING MECHANISMS. NO MECHANISM PROPOSED TO DATE FOR GENERATING EITHER STRIKE-SLIP OR DIP-SLIP STRAINS HAS ACHIEVED GENERAL ACCEPTANCE.

\*FAULT + \*SOURCE MECHANISM + DISPLACEMENT, GENERAL + EARTHQUAKE, GENERAL + SEISMIC ZONE + TECTONICS

2-14681  
RIKITAKE T  
A FIVE-YEAR PLAN FOR EARTHQUAKE PREDICTION RESEARCH IN JAPAN  
UNIVERSITY OF TOKYO, EARTHQUAKE RESEARCH INSTITUTE, TOKYO, JAPAN  
15 PAGES, TECTONOPHYSICS, 3(1), PP. 1-15 (FEBRUARY 1966)

A 5-YEAR PLAN FOR EARTHQUAKE-PREDICTION RESEARCH IN JAPAN AS PROPOSED BY THE SUB-COMMITTEE FOR EARTHQUAKE PREDICTION, NATIONAL COMMITTEE FOR GEODESY AND GEOPHYSICS, SCIENCE COUNCIL OF JAPAN IS OUTLINED. THE PLAN INVOLVES TIDE-GAUGE OBSERVATION, OBSERVATION BY GEODETIC MEANS, CONTINUOUS OBSERVATION OF CRUSTAL DEFORMATION, OBSERVATION OF SEISMIC ACTIVITY, OBSERVATION OF CHANGES IN SEISMIC WAVE VELOCITY, GEOTHERMAL STUDY, LABORATORY ROCK TESTING AND GEOMAGNETIC OBSERVATION. AFTER COMPLETING THE PROJECT, IT IS HOPED TO GAIN SOME CLUES FOR ACTUAL EARTHQUAKE PREDICTION.

\*EARTHQUAKE PREDICTION + \*INSTRUMENTATION, EARTHQUAKE + EARTHQUAKE, GENERAL + FAULT + SEISMIC ZONE

2-14683  
LOFGREN BE  
TECTONIC MOVEMENT IN THE GRAPEVINE AREA, KERN COUNTY, CALIFORNIA  
U. S. GEOLOGICAL SURVEY  
5 PAGES, U. S. GEOLOGICAL SURVEY PROF. PAPER 550-B, PP. B6-B11 (1966)

TECTONIC MOVEMENTS DURING THE DESTRUCTIVE ARVIN-TEHACHAPI EARTHQUAKE OF 1952 CAUSED A DIFFERENTIAL UPLIFT OF AS MUCH AS 2 FEET IN THE TEHACHAPI MOUNTAINS SOUTH OF WHEELER RIDGE. PERIODIC RELEVELING SINCE 1952 INDICATES AN AXIS OF CONTINUING FLEXURE 2 MILES SOUTH OF GRAPEVINE, AT THE NORTHERN EDGE OF THE TEHACHAPI MOUNTAINS. DIFFERENTIAL MOVEMENT OF BENCH MARKS DURING THE PERIOD 1953-62 WAS 0.32 FOOT, ABOUT 7 TIMES THE MAXIMUM ALLOWABLE SURVEYING ERROR. IT IS NOT KNOWN, HOWEVER, WHETHER THE AXIS AREA IS RISING OR THE AREAS NORTH AND SOUTH OF THE AXIS ARE SUBSIDING. IN EITHER CASE, TECTONIC MOVEMENT IN THE MOUNTAINS EVIDENTLY IS CONTINUING.

\*FAULT + CREEP + DISPLACEMENT, GENERAL + EARTHQUAKE, GENERAL + SUBSIDENCE + TECTONICS

2-14686  
LOMNITZ C  
ESTIMATION PROBLEMS IN EARTHQUAKE SERIES  
UNIVERSIDAD DE CHILE + CARNEGIE INSTITUTION OF WASHINGTON  
11 PAGES, TECTONOPHYSICS, 2, PP. 193-203 (1964)

THE THEORIES OF REID AND MATSUZAWA MAY BE RECONCILED BY CONSIDERING EARTHQUAKES AS RESULTING FROM A STOCHASTIC PROCESS INVOLVING THE TRANSFER OF THERMAL STRAINS FROM THE MANTLE TO THE CRUST. THE THERMAL IMBALANCE IS DEFINED AS THE DEVIATION FROM A HYPOTHETICAL UNSTRAINED TEMPERATURE DISTRIBUTION CALLED AN ADIASTROPHIC STATE. FOR ANY STRESS DISTRIBUTION IN THE EARTH'S OUTER SHELL, THE ENERGY DISTRIBUTION OF EARTHQUAKES MAY BE DERIVED BY ASSUMING A SIMPLE STOCHASTIC MODEL. THE RESULTING LOGNORMAL DISTRIBUTION AGREES WITH THE GUTENBERG-RICHTER FREQUENCY FUNCTION. THIS PROPERTY IN TURN LEADS TO A LOGNORMAL DISTRIBUTION OF INTER-OCCURRENCE TIMES, WHICH IS IN AGREEMENT WITH OBSERVATIONS. A FREQUENCY SPECTRUM ANALYSIS OF THE TIME SERIES OF WORLD EARTHQUAKES INDICATES A LACK OF MAJOR PERIODICITIES. A CONCEPT OF EARTHQUAKE RISK IS PROPOSED, AND ITS WIDER IMPLICATIONS FOR THE

CATEGORY 2  
SITING OF NUCLEAR FACILITIES

2-14686 \*CONTINUED\*  
PROBLEM OF EARTHQUAKE PREDICTION ARE DISCUSSED.

\*EARTHQUAKE PREDICTION + EARTHQUAKE, GENERAL + ENERGY LEVEL + SEISMIC ZONE + SOURCE MECHANISM

2-14687  
YURKEVICH OI  
SLOW MOVEMENTS OF THE EARTH'S CRUST AND THE CREATION OF EARTHQUAKES  
ACADEMY OF SCIENCES, INSTITUTE OF GEOPHYSICS, LVOV; U.S.S.R.  
3 PAGES, TECTONOPHYSICS, 1(3), PP. 207-209 (1964)

THE ARTICLE DISCUSSES PROBLEMS OF THE APPLICATION OF DATA ON VERTICAL MOVEMENTS OF THE EARTH'S CRUST TO EARTHQUAKE FORECASTING. A MATHEMATICAL AND NUMERICAL CORRELATION BETWEEN THE INTERNAL TENSIONS UNDER THE EARTH'S CRUST AND THE VERTICAL UPLIFTS OF THE EARTH'S SURFACE IS ESTABLISHED.

\*TECTONICS + EARTHQUAKE PREDICTION + EARTHQUAKE, GENERAL + SEISMIC ZONE + SUBSIDENCE

2-14688  
DENNIS JG + WALKER CT  
EARTHQUAKES RESULTING FROM METASTABLE PHASE TRANSITIONS  
CALIFORNIA STATE COLLEGE, DEPT. OF GEOLOGY, LONG BEACH, CALIFORNIA  
7 PAGES, TECTONOPHYSICS, 2(5), PP. 401-407 (1965)

DEEP AND INTERMEDIATE EARTHQUAKES CANNOT BE EXPLAINED IN TERMS OF SLOW ACCUMULATION AND SUDDEN RELEASE OF STRESS BECAUSE RELAXATION RATES IN THE EARTH'S MANTLE ARE SUCH THAT ACCUMULATION OF STRESS OVER A LONG PERIOD OF TIME DOES NOT APPEAR LIKELY. CONSEQUENTLY, SUDDEN VOLUME CHANGES DUE TO PHASE TRANSITIONS IN THE MANTLE HAVE BEEN SUGGESTED AS A POSSIBLE ENERGY SOURCE FOR THESE EARTHQUAKES. HOWEVER, A PHASE TRANSITION AT EQUILIBRIUM PRESSURE AND TEMPERATURE CANNOT RESULT IN THE SPONTANEOUS RELEASE OF ENERGY BECAUSE THE RATE OF APPEARANCE OF THE NEW PHASE IS DETERMINED BY THE RATE AT WHICH ENERGY ENTERS OR LEAVES THE SYSTEM. THUS A SUDDEN RELEASE OF FREE ENERGY REQUIRES A SPONTANEOUS CHANGE FROM THE METASTABLE STATE. SLOW CURRENTS IN THE EARTH'S MANTLE CONTAINED BETWEEN PHASE DISCONTINUITIES COULD GENERATE EFFECTS RESULTING IN THE TRANSPORT OF A MINERAL ASSEMBLAGE FROM ONE PRESSURE-TEMPERATURE ENVIRONMENT TO ANOTHER. IF THE PRESSURE-VOLUME CHANGES IN THESE CURRENTS ARE ESSENTIALLY ADIABATIC THE PRESSURE-TEMPERATURE ENVIRONMENT NEAR A PHASE DISCONTINUITY WOULD BE FAVOURABLE FOR SPONTANEOUS PHASE TRANSITIONS, EVEN THOUGH THE ENVIRONMENT AT THE PHASE DISCONTINUITY IN THE SURROUNDING MANTLE WAS THAT OF EQUILIBRIUM. THUS, THE HYPOTHESIS THAT DEEP AND INTERMEDIATE EARTHQUAKES ARE TRIGGERED BY SUDDEN VOLUME CHANGES IS CONSISTENT WITH THERMODYNAMIC CONSIDERATIONS.

\*SOURCE MECHANISM + EARTHQUAKE, GENERAL + FAULT + ROCK MECHANICS

2-14689  
DUDA SJ  
SECULAR SEISMIC ENERGY RELEASE IN THE CIRCUM-PACIFIC BELT  
UNIVERSITY OF UPPSALA, SEISMOLOGICAL INSTITUTE, SWEDEN  
44 PAGES, TECTONOPHYSICS, 2(5), PP. 409-452 (1965)

THE PAPER IS BASED ON THE DATA OF THE LARGEST EARTHQUAKES IN THE 68 YEARS FROM 1897 TO 1964, INCLUSIVE. THE MOST COMPLETE LIST OF PERTINENT EARTHQUAKES EVER PUBLISHED WAS COMPILED AND IS ATTACHED AS APPENDIX I. THE CIRCUM-PACIFIC SEISMIC BELT IS DIVIDED INTO EIGHT REGIONS SHOWING DIFFERENT INTENSITIES OF STRAIN ENERGY RELEASE AND STATISTICALLY DIFFERENT R-COEFFICIENTS IN THE RECURRENCE DIAGRAMS, WHICH RELATE NUMBER OF EARTHQUAKES TO MAGNITUDE. THE INTENSITIES AND B-COEFFICIENTS ARE CORRELATED WITH EACH OTHER, INDICATING THAT THE B-COEFFICIENT DEPENDS ON THE STRESS PATTERN. INFERENCES ARE DRAWN AS TO THE GENERATION OF AFTERSHOCK SEQUENCES. THE SEISMIC ENERGY RELEASE PER YEAR HAS DECREASED SIGNIFICANTLY IN THE TIME INTERVAL INVESTIGATED IN ALL DEPTH RANGES IN THE CIRCUM-PACIFIC BELT AND OUTSIDE OF IT. HOWEVER, ANY EXTRAPOLATION BEYOND THAT TIME WOULD BE SPECULATIVE.

\*EARTHQUAKE RECORDS + EARTHQUAKE PREDICTION + EARTHQUAKE, GENERAL + ENERGY LEVEL + SEISMIC ZONE

2-14708  
HOSNER GW + HUDSON DE  
EARTHQUAKE RESEARCH PROBLEMS OF NUCLEAR POWER PLANTS  
CALIFORNIA INSTITUTE OF TECHNOLOGY, PASADENA  
11 PAGES, NUCLEAR ENGINEERING AND DESIGN, 3, PP. 308-319 (1966)

EARTHQUAKE PROBLEMS ASSOCIATED WITH THE CONSTRUCTION OF NUCLEAR POWER PLANTS REQUIRE A MORE EXTENSIVE AND A MORE PRECISE KNOWLEDGE OF EARTHQUAKE CHARACTERISTICS AND THE DYNAMIC BEHAVIOR OF STRUCTURES THAN HAS BEEN CONSIDERED NECESSARY FOR ORDINARY BUILDINGS. ECONOMIC CONSIDERATIONS INDICATE THE DESIRABILITY OF ADDITIONAL RESEARCH ON THE PROBLEMS OF EARTHQUAKES AND NUCLEAR REACTORS. THE NATURE OF THESE EARTHQUAKE-RESISTANT DESIGN PROBLEMS IS DISCUSSED AND PROGRAMS OF RESEARCH ARE RECOMMENDED.

\*EARTHQUAKE ENGINEERING + ACCELERATION + EARTHQUAKE, GENERAL + GROUND MOTION

CATEGORY 2  
SITING OF NUCLEAR FACILITIES

2-14709

HOUSNER GW + JENNINGS PC  
GENERATION OF ARTIFICIAL EARTHQUAKES  
CALIFORNIA INSTITUTE OF TECHNOLOGY, PASADENA + DEPT. OF MECHANICS, U. S. AIR FORCE ACADEMY, COLORADO  
38 PAGES, JOURNAL OF THE ENGINEERING MECHANICS DIVISION, PROCEEDINGS OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS, 90(EM 1), PP. 113-50 (FEBRUARY 1964)

A METHOD IS DEVELOPED FOR GENERATING A RANDOM PROCESS THAT HAS THE KNOWN PERTINENT PROPERTIES OF RECORDED STRONG-MOTION EARTHQUAKE ACCELEROGRAMS. THE MODEL ACCELEROGRAMS ARE SECTIONS OF A STATIONARY, GAUSSIAN, RANDOM PROCESS WITH A POWER SPECTRAL DENSITY FOUND FROM THE AVERAGE OF THE UNDAMPED VELOCITY SPECTRA OF RECORDED GROUND ACCELERATIONS. EIGHT PSEUDO-EARTHQUAKES OF THIRTY SECONDS DURATION WERE GENERATED ON THE DIGITAL COMPUTER, AND THE VELOCITIES, DISPLACEMENTS, AND VELOCITY SPECTRA WERE CALCULATED. THE AVERAGE VELOCITY SPECTRA OF THE REAL AND PSEUDO-EARTHQUAKES CORRESPOND CLOSELY, AND THE VELOCITIES, DISPLACEMENTS, AND VELOCITY SPECTRA OF THE REAL AND PSEUDO-EARTHQUAKES EXHIBIT SIMILAR STATISTICAL BEHAVIOR. EVEN SOME OF THOSE FEATURES SOMETIMES ATTRIBUTED TO THE EFFECTS OF LOCAL GEOLOGY ARE SHOWN BY THE PSEUDO-EARTHQUAKES. IT IS CONCLUDED THAT THE ARTIFICIAL EARTHQUAKES ARE SATISFACTORY MODELS OF STRONG-MOTION EARTHQUAKES FOR THE PURPOSES OF STRUCTURAL ANALYSIS, AND THAT THEY CAN BE USED AS STANDARD GROUND MOTIONS FOR THE DESIGN OF STRUCTURES.

\*EARTHQUAKE ENGINEERING + ACCELERATION + EARTH TREMOR, INDUCED + EARTHQUAKE, GENERAL + GROUND MOTION + VIBRATION ANALYSIS

2-14713

SHAWE DR  
STRIKE-SLIP CONTROL OF BASIN-RANGE STRUCTURE INDICATED BY HISTORICAL FAULTS IN WESTERN NEVADA  
U. S. GEOLOGICAL SURVEY, DENVER, COLORADO  
18 PAGES, 8 FIGURES, BULLETIN OF GEOLOGICAL SOCIETY OF AMERICA, 76(12), PP. 1361-78 (DECEMBER 1965)

PATTERN AND MOVEMENT OF HISTORICAL SURFACE FAULTS IN WESTERN NEVADA--TYPICAL BASIN-RANGE STRUCTURES--SUGGEST A CONTROL RELATED TO STRIKE-SLIP FAULTING. SURFACE FAULTS ASSOCIATED WITH SEVEN MAJOR EARTHQUAKES IN THE PAST 60 YEARS FORM A COHERENT ARCUATE LINEAR ZONE (THE CHURCHILL ARC), WHICH APPEARS TO HAVE RESULTED FROM A SPECIFIC DEFORMATION ACTING AT A SINGLE INSTANT IN GEOLOGIC TIME. THE CHURCHILL ARC TRANSGRESSES SEVERAL MOUNTAIN RANGES, DEMONSTRATING THAT BASIN-RANGE FAULT-BLOCK MOUNTAINS HAVE NOT GROWN INDEPENDENTLY OF ONE ANOTHER. A PROGRESSIVE CHANGE FROM DIP-SLIP NORMAL FAULTING AT THE NORTH END OF THE ARC TO DOMINANTLY RIGHT-LATERAL STRIKE-SLIP FAULTING AT THE SOUTH END SUGGESTS A RELATIONSHIP TO THE WALKER LANE AT THE SOUTH END. THE WALKER LANE IS A MAJOR NORTHWEST-TRENDING STRUCTURAL ZONE ALONG WHICH SIGNIFICANT RIGHT-LATERAL STRIKE-SLIP MOVEMENT HAS OCCURRED.

\*FAULT + DISPLACEMENT, GENERAL + EARTHQUAKE RECORDS + EARTHQUAKE, GENERAL + SEISMIC ZONE + TECTONICS

2-14714

HOWARD JH  
VERTICAL NORMAL STRESS IN THE EARTH AND THE WEIGHT OF THE OVERBURDEN  
4 PAGES, BULLETIN OF GEOLOGICAL SOCIETY OF AMERICA, 77(6), PP. 657-9 (JUNE 1966)

THE VERTICAL NORMAL COMPONENT OF STRESS IN THE EARTH AT A POINT OF SOME DEPTH  $Z$  IS, IN GENERAL, EQUAL TO WEIGHT OF THE OVERBURDEN PER UNIT AREA PLUS CONTRIBUTIONS FROM THE VERTICAL SHEAR COMPONENTS OF STRESS. OBSERVATIONS OF STRUCTURAL GEOLOGY IMPLY THAT THE POSSIBILITY OF CONTRIBUTIONS FROM THESE SHEARS SHOULD NOT BE OVERLOOKED. THIS NOTE ALSO EMPHASIZES THAT MEASUREMENTS OF THE VERTICAL NORMAL COMPONENT WHICH ARE NOT EQUAL TO THE WEIGHT OF THE OVERBURDEN PER UNIT AREA ARE NOT NECESSARILY INVALID.

\*ROCK MECHANICS + EARTHQUAKE, GENERAL + FAULT + MATHEMATICAL STUDY + TECTONICS

2-14715

MICHAEL ED  
LARGE LATERAL DISPLACEMENT ON GARLOCK FAULT, CALIFORNIA, AS MEASURED FROM OFFSET FAULT SYSTEM  
4 PAGES, BULLETIN OF GEOLOGICAL SOCIETY OF AMERICA, 77(1), PP. 111-114 (JANUARY 1966)

SMITH (1962) ESTIMATED ABOUT 40 MILES OF LEFT-LATERAL MOVEMENT ALONG THE GARLOCK FAULT ON THE BASIS OF AN OFFSET DIKE SWARM. HEWETT (1954) NOTED THAT THE MOJAVE BLOCK MAY BE DIVIDED BY A LINE SOUTHWEST OF WHICH NORTHWEST-TRENDING FAULTS ARE NUMEROUS, AND NORTHEAST OF WHICH THEY ARE NOT. THE BLACKWATER FAULT COINCIDES WITH THIS LINE. ON THE NORTHERN SIDE OF THE GARLOCK FAULT, A SIMILAR LINE LIES ALONG THE BASE OF THE PIUTE MOUNTAINS AND BETWEEN CROSS MOUNTAIN AND CACHE PEAK. THESE TWO LINES ARE NAMED THE BLACKWATER AND PIUTE LINES. DISTANCE BETWEEN THEIR POINTS OF INTERSECTION WITH THE GARLOCK FAULT ALONG THE TRACE IS 46 MILES. THIS EVIDENCE SUPPORTS SMITH'S POSTULATED DISPLACEMENT. IT IS BELIEVED TO PROVIDE ANOTHER INDICATION OF THE DISTANCE INVOLVED.

\*FAULT + DISPLACEMENT, GENERAL + EARTHQUAKE, GENERAL + GEOLOGICAL CONSIDERATION, GENERAL + TECTONICS

2-14716



CATEGORY 2  
SITING OF NUCLEAR FACILITIES

2-14716 \*CONTINUED\*  
 EAST N  
 RECENT TRENDS IN GEOTECTONICS  
 UNIVERSITY OF LIVERPOOL, DEPARTMENT OF GEOLOGY, GREAT BRITAIN  
 47 PAGES, EARTH-SCIENCE REVIEWS, 2, PP. 1-46 (1966)

AN ATTEMPT IS MADE TO REVIEW THE STATUS OF GEOTECTONICS IN GEOLOGY AND THE CONTRIBUTIONS OF STRUCTURAL GEOLOGISTS TO THE UNDERSTANDING OF MECHANICS OF DEFORMATION OF ROCKS AND TO THE RESULTANT EFFECTS IN THE EARTH CRUST. IT IS SUGGESTED THAT THE PRESENT USAGE DISTINGUISHES STRUCTURAL GEOLOGY AND TECTONICS IN SO FAR AS THE FORMER TERM APPLIES MAINLY TO METHODS OF INVESTIGATION CARRIED OUT ESSENTIALLY BY STUDYING THE FORM OF ROCK STRUCTURES ON ALL SCALES, WHILE THE LATTER TERM APPLIES TO REGIONAL STUDIES AND INCORPORATES STRATIGRAPHICAL AND GEOPHYSICAL RESULTS. THUS STRUCTURAL GEOLOGY IS AN ESSENTIALLY ANALYTICAL SCIENCE, WHILE TECTONICS ARE CONCERNED WITH SYNTHESIS. NEVERTHELESS IT IS FELT THAT IN ORDER TO APPRECIATE THE STRUCTURE AND EVOLUTION OF THE EARTH'S CRUST ALL STRUCTURAL AND TECTONIC STUDIES SHOULD BE CONSIDERED.

\*TECTONICS + CREEP + EARTHQUAKE, GENERAL + GEOLOGICAL CONSIDERATION, GENERAL + SEISMIC ZONE

2-14717  
 SCHFIDEGGER AE  
 RECENT ADVANCES IN GEODYNAMICS  
 UNIVERSITY OF ILLINOIS  
 21 PAGES, EARTH-SCIENCE REVIEWS, 1, PP. 133-153 (1966)

A SURVEY IS GIVEN OF RECENT DEVELOPMENTS IN GEODYNAMICS. THE FIRST TWO SECTIONS DESCRIBE BRIEFLY THE RECENTLY ACCUMULATED PERTINENT GEOLOGICAL AND GEOPHYSICAL FACTS. THEN, THE NEW DEVELOPMENTS IN THE PHYSICAL BASIS OF GEODYNAMICS, IN THE THEORY OF THE EARTH'S ROTATION, IN OUR KNOWLEDGE OF EPEIROGENESIS, IN THE PROPOSED GEOTECTONIC HYPOTHESES, IN THE THEORY OF FAULTING, EARTHQUAKE ORIGINATION, FOLDING, AND VARIOUS MISCELLANEOUS PHENOMENA, ARE DESCRIBED.

\*GEOLOGICAL CONSIDERATION, GENERAL + \*TECTONICS + EARTHQUAKE, GENERAL + FAULT + GEOLOGICAL CONSIDERATION, GEOPHYSICAL + SEISMIC ZONE

2-14719  
 CURRIE JB  
 EXPERIMENTAL STRUCTURAL GEOLOGY  
 UNIVERSITY OF TORONTO, DEPARTMENT OF GEOLOGY, CANADA  
 17 PAGES, EARTH-SCIENCE REVIEWS, 1, PP. 51-67 (1966)

EXPERIMENTAL WORK IN STRUCTURAL GEOLOGY COMPRISES PRINCIPALLY HIGH-PRESSURE DEFORMATION OF ROCK SAMPLES AND CONSTRUCTION OF DYNAMIC SCALE MODELS. DURING THE FIRST HALF OF THIS CENTURY LABORATORY STUDIES OF ROCK DEFORMATION HAVE SIMULATED A WIDE RANGE OF GEOLOGICAL CONDITIONS IN RESPECT OF PRESSURE, TEMPERATURE AND STRAIN RATE. THESE STUDIES HAVE INCREASED OUR UNDERSTANDING OF MECHANISMS BY WHICH ROCK DEFORMATION PROCEEDS. SCALE MODELS ACHIEVE THEIR GREATEST VALUE WHEN USED TO ILLUSTRATE STRUCTURAL PROCESSES. THEIR RESULTS AID THE APPRECIATION OF THEORETICALLY DERIVED STRUCTURAL RELATIONSHIPS AND SERVE ALSO TO RELATE THE STAGES OF STRUCTURAL DEVELOPMENT THAT ARE OBSERVED IN SEPARATE FIELD OCCURRENCES.

\*GEOLOGICAL CONSIDERATION, GENERAL + EARTH MATERIAL, DYNAMIC PROPERTY + EARTHQUAKE, GENERAL + FAULT + ROCK MECHANICS + SOURCE MECHANISM

2-14720  
 RATH M  
 EARTHQUAKE SEISMOLOGY  
 SEISMOLOGICAL INSTITUTE, UPPSALA, SWEDEN  
 18 PAGES, EARTH-SCIENCE REVIEWS, 1, PP. 69-86 (1966)

THE PAPER GIVES A CROSS-SECTION OF PRESENT-DAY SEISMOLOGY, ESPECIALLY WITH REGARD TO EARTHQUAKE INVESTIGATIONS. AMONG THE TOPICS DEALT WITH ARE DETERMINATION OF EARTHQUAKE PARAMETERS, PARTICULARLY MAGNITUDE AND WAVE ENERGY, EARTHQUAKE MECHANISM, BOTH AS FOCAL MECHANISMS AND AS STRAIN RELEASE, EARTHQUAKE PREDICTION, RECENT DEVELOPMENTS OF OBSERVATIONAL SEISMOLOGY, INSTRUMENTATION, STATIONS, ETC.

\*EARTHQUAKE PREDICTION + EARTHQUAKE, GENERAL + ENERGY LEVEL + INSTRUMENTATION, EARTHQUAKE + SEISMIC ZONE + SOURCE MECHANISM

2-14762 ALSO IN CATEGORIES 12 AND 18  
 ARNOLD HG + GALL WR + MORRIS G  
 FEASIBILITY OF OFFSHORE DUAL-PURPOSE NUCLEAR POWER AND DESALINATION PLANTS  
 OAK RIDGE NATIONAL LABORATORY  
 ORNL-TM-1329 +. 105 PAGES, 23 FIGURES, 3 TABLES, JANUARY 1966

THE SURGE PRESSURE FROM THE MAXIMUM CREDIBLE ACCIDENT WILL PROBABLY BE LESS THAN ATMOSPHERIC IF THE RELEASED VAPORS ARE ALLOWED TO EXPAND INTO THE EVAPORATOR SPACE. IF THE ENTIRE VOLUME OF THE CONTAINING SHELL IS SUBMERGED BELOW THE SURFACE OF THE SEA, THE EXTERNAL PRESSURE WILL BE GREATER THAN THE INTERNAL PRESSURE AT ALL TIMES. THIS MAY ENSURE THAT NO RADIOACTIVE FISSION PRODUCTS CAN ESCAPE. WITH THE LOW-PRESSURE STAGES OF THE EVAPORATOR AS A

CATEGORY 2  
SITING OF NUCLEAR FACILITIES

2-14762 \*CONTINUED\*

PRESSURE-SUPPRESSION CHAMBER AND THE SURROUNDING SEAWATER AS HEAT SINK, THE SAFETY OF THE PLANT TO THE PUBLIC MIGHT BE ENHANCED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*ACCIDENT ANALYSIS + ACCIDENT, MAXIMUM CREDIBLE (MCA) + CONTAINMENT LEAKAGE CONTROL + CONTAINMENT, PRESSURE SUPPRESSION + REACTOR, DESALINATION + SITING, OFF SHORE

2-14931

LUBIMOVA EA + MAGNITZKY VA  
THERMOELASTIC STRESSES AND THE ENERGY OF EARTHQUAKES  
INSTITUTE OF PHYSICS OF THE EARTH ACADEMY OF SCIENCES, MOSCOW + MOSCOW UNIVERSITY  
5 PAGES, JOURNAL OF GEOPHYSICAL RESEARCH 69(16), PAGES 3443-3447, (AUGUST 15, 1964)

THE NONUNIFORM DISTRIBUTION OF TEMPERATURE AND THE HETEROGENEITY OF PHYSICAL PROPERTIES PRODUCE THERMOELASTIC STRESSES IN THE EARTH'S MANTLE. THE VARIATION OF THE EARTH'S TEMPERATURE WITH TIME DUE TO RADIOACTIVE HEAT GENERATION RESULTS IN THE ACCUMULATION OF SUCH STRESSES.

\*SOURCE MECHANISM + EARTHQUAKE, GENERAL + ENERGY LEVEL + FAULT + TECTONICS

2-14932

KEYLIS-BOROK VI + MALINOVSKAYA LN  
ONE REGULARITY IN THE OCCURRENCE OF STRONG EARTHQUAKES  
INSTITUTE OF PHYSICS OF THE EARTH ACADEMY OF SCIENCES, MOSCOW  
6 PAGES, JOURNAL OF GEOPHYSICAL RESEARCH 69(14), PAGES 3019-3024, (JULY 15, 1964)

AN ATTEMPT IS MADE TO CHARACTERIZE THE PROCESS OF GENERATING STRONG EARTHQUAKES BY A SET OF PRECEDING WEAKER ONES IN A LARGE AREA. THIS SET IS DESCRIBED BY A WEIGHTED SUM OF EARTHQUAKES IN A SLIDING TIME INTERVAL. THE WEIGHT OF EACH EARTHQUAKE DEPENDS ON ITS ENERGY. THE CHANGE OF THE SUM BEFORE 20 STRONG EARTHQUAKES IS INVESTIGATED.

\*EARTHQUAKE PREDICTION + \*FORESHOCK + EARTHQUAKE, GENERAL + ENERGY LEVEL + SEISMIC ZONE

2-14933

EVISON FF  
ON THE OCCURRENCE OF VOLUME CHANGE AT THE EARTHQUAKE SOURCE  
17 PAGES, BULLETIN OF THE SEISMOLOGICAL SOCIETY OF AMERICA 57(1), PAGES 9-25, (FEB. 1967)

IN MOST WELL-OBSERVED EARTHQUAKES ONE DIRECTION OF FIRST MOTION OF THE P WAVE IS STRONGLY DOMINANT OVER THE OTHER. AN ANALYSIS OF 68 EARTHQUAKES, EACH WITH 100 OR MORE OBSERVATIONS, SUGGESTED THE FOLLOWING POLARITY RULE - FIRST MOTIONS ARE DOMINANTLY COMPRESSIONAL FOR SHALLOW EARTHQUAKE SOURCES IN GENERAL, DILATATIONAL FOR SHALLOW SOURCES LOCATED BENEATH OCEAN TRENCHES, AND DILATIONAL FOR DEEP SOURCES. THIS RULE APPLIES GLOBALLY, WITH SCATTERED EXCEPTIONS. IT IS INFERRED THAT THE SOURCE MECHANISM INCLUDES A COMPONENT OF VOLUME CHANGE NOT ALLOWED FOR IN THE USUAL SHEAR MODEL. THE POLARITY RULE IS INTERPRETED ON THE HYPOTHESIS THAT EARTHQUAKES ARE CAUSED BY SUDDEN POLYMORPHIC TRANSITIONS.

\*SOURCE MECHANISM + EARTHQUAKE RECORDS + EARTHQUAKE, GENERAL + FAULT + TECTONICS

2-14935

KNOPOFF L  
THE ENERGY RATE-DEPTH FUNCTION FOR EARTHQUAKES  
3 PAGES, PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCE 51(1), PAGES 1-3, (JANUARY 15, 1964)

SEISMIC ENERGY RELEASE-RATE DATA AS A FUNCTION OF FOCAL DEPTH WERE COLLECTED ON A WORLDWIDE BASIS. THE DATA ESSENTIALLY REDUCES TO A TABULATION OF THE SINGLE LARGEST KNOWN EARTHQUAKE AT ANY GIVEN DEPTH. THE DATA WAS THEN SUMMED ACROSS A 100-KM INTERVAL TO GIVE AN ENERGY RATE-DEPTH FUNCTION. THIS FUNCTION SHOWS PEAKS AT 0, 300, AND 600 KM DEPTH.

EARTHQUAKE, GENERAL + ENERGY LEVEL + SOURCE MECHANISM + TECTONICS

2-14937

CROWAN F  
DILATANCY AND THE SEISMIC FOCAL MECHANISM  
BOEING SCIENTIFIC RESEARCH LABORATORIES, SEATTLE  
10 PAGES, REVIEWS OF GEOPHYSICS 4(3), PAGES 395-404, (AUGUST 1966)

IN A RECENT PAPER F. C. FRANK SUGGESTED THAT THE SEISMIC FOCAL STRESS DROP MIGHT, BY THE CONSEQUENCE OF A MECHANICAL INSTABILITY OF DEFORMATION, BE DUE TO DILATANCY OF THE CRUST AND MANTLE. A MORE COMPLETE CALCULATION SHOWS THAT THE INSTABILITY ATTRIBUTED TO DILATANCY IS A FAMILIAR GENERAL PROPERTY OF COMPACTED GRANULAR MASSES INDEPENDENT OF DILATANCY. THE RAPID PROPAGATION OF THE SEISMIC FAULT ATTRIBUTED TO SHEAR MELTING BY ELASTIC ENERGY RELEASE WOULD DEPEND ON THE ASSUMED ABSENCE OF FRICTION BETWEEN THE WALLS OF AN INITIAL GRIFFITH CRACK.

CATEGORY 2  
SITING OF NUCLEAR FACILITIES

2-14937 \*CONTINUED\*

SINCE THE LENGTH OF THE THIN GRIFFITH CRACK WAS ESTIMATED AT 5 KM, FRICTION COULD BE ABSENT ONLY IF THE CRACK WERE FILLED WITH A PORE FLUID OF PRESSURE EQUAL TO THE TOTAL PRESSURE. IN THIS CASE, THE SHEAR STRENGTH WOULD BE ZERO, AND SEISMIC SHOCKS COULD NOT ARISE.

\*SOURCE MECHANISM + DISPLACEMENT, GENERAL + EARTHQUAKE, GENERAL + FAULT + MATHEMATICAL STUDY + TECTONICS

2-14938

LOMNITZ C

STATISTICAL PREDICTION OF EARTHQUAKES

UNIVERSITY OF CALIFORNIA, BERKELEY

17 PAGES, REVIEWS OF GEOPHYSICS 4(3), PAGES 377-393, (AUGUST 1966)

STATISTICAL PREDICTION IS AN EXTENSION OF FOURIER SPECTRUM ANALYSIS OF TIME SERIES. HISTORICAL ATTEMPTS AT PREDICTION OF EARTHQUAKES HAVE CENTERED ON THE QUESTION OF PERIODICITY. A SURVEY OF WORK IN THIS FIELD IS GIVEN, BOTH PRECEDING AND FOLLOWING CRITICAL INVESTIGATIONS BY JEFFREYS. PRESENT EVIDENCE INDICATES EARTHQUAKES TO BE UNCORRELATED EVENTS. OBSERVED DEVIATIONS FROM THE POISSON DISTRIBUTION, PREVIOUSLY ATTRIBUTED TO DEPENDENCE IN TIME, MAY BE AN EFFECT OF SPATIAL INHOMOGENEITY. IT IS FALLACIOUS TO INFER PROPERTIES OF THE EARTHQUAKE PROCESS ON THE BASIS OF THE SHAPE OF THE DISTRIBUTION FUNCTION OF NUMBER OF EVENTS IN TIME. SOME RESTRICTIONS ARE SHOWN TO APPLY TO THE USE OF DIRECT EXTRAPOLATION METHODS IN EARTHQUAKE TIME SERIES. MULTIPLE PREDICTION IS A POSSIBILITY. HOWEVER, THE ACTUAL MEASUREMENT OF GEOPHYSICAL VARIABLES FOR PREDICTION PURPOSES HAS PROGRESSED VERY SLOWLY.

\*EARTHQUAKE PREDICTION + EARTHQUAKE, GENERAL + SEISMIC ZONE + SITE CRITERIA, EARTHQUAKE

2-14939

HAMILTON W + MYERS WB

CENOZOIC TECTONICS OF THE WESTERN UNITED STATES

U. S. GEOLOGICAL SURVEY, DENVER

41 PAGES, REVIEWS OF GEOPHYSICS 4(4), PAGES 509-549, (NOVEMBER 1966)

THE CENOZOIC STRUCTURES OF THE WESTERN UNITED STATES ARE INTERPRETED HERE AS BEING PRODUCTS MOSTLY OF HORIZONTAL MOTION OF THE CRUST. THE DISTRIBUTION OF STRIKE-SLIP FAULTING, TENSIONAL FRAGMENTATION OF THE BRITTLE UPPER CRUST OR RUPTURING OF THE ENTIRE CONTINENTAL CRUST, AND COMPRESSION DEFINE A PATTERN OF NORTH-WESTWARD MOTION INCREASING IRREGULARLY SOUTHWESTWARD TOWARD COASTAL CALIFORNIA.

\*TECTONICS + EARTHQUAKE, GENERAL + FAULT + GEOLOGICAL CONSIDERATION, GENERAL + SEISMIC ZONE + SOURCE MECHANISM

2-14941

WOODWARD HP

CENTRAL APPALACHIAN TECTONICS AND THE DEEP BASIN

RUTGERS UNIVERSITY

19 PAGES, BULLETIN OF THE AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS 48(3), PAGES 338-356, (MARCH 1964)

MUCH OF THE CENTRAL APPALACHIAN REGION FITS A GEOMETRIC PATTERN THAT IS BILATERALLY SYMMETRICAL TO AN AXIS PASSING N 40-DEG W FROM THE BALTIMORE DOME THROUGH THE HIGH POINT OF THE NITTANY ARCH. MANY ELEMENTS ARE LIKEWISE CONCENTRIC TO A FOCUS SITUATED ON THAT AXIS NEAR BALTIMORE AND ARE SYMMETRICALLY TANGENT TO A BASE-LINE THAT CROSSES THE AXIS AT RIGHT ANGLES. IT IS SUGGESTED THAT THESE SYMMETRICAL FEATURES AND THE FAULT RESULT FROM (A) PRIMARY UPLIFT OF THE BALTIMORE DOME WITH OUTWARD GRAVITATIONAL SLIDING IN THE OVERLYING SKIN OF SEDIMENTS, (B) A SECONDARY FORWARD MOVEMENT ALONG THE AFOREMENTIONED AXIS OF A CRUSTAL BLOCK CONTAINING THE BALTIMORE DOME AT ITS OUTER CORNER, AND (C) DEXTRAL DISPLACEMENT ALONG THE WRENCH FAULT. IT IS POSSIBLE THAT C IS THE CAUSE OF B.

\*SEISMIC ZONE + EARTHQUAKE, GENERAL + FAULT + GEOLOGICAL CONSIDERATION, GENERAL + SITE CRITERIA, EARTHQUAKE + TECTONICS

2-14978

MARSHALL PD + CARPENTER EW + DOUGLAS A + YOUNG JD

SOME SEISMIC RESULTS OF THE LONG SHOT EXPLOSION

ATOMIC WEAPONS RESEARCH ESTABLISHMENT, ENGLAND.

AWPE-D-67/66 +. 15 PAGES, OCTOBER 1966

LONG SHOT, WITH A PREDICTED YIELD OF 80 KT, WAS DETONATED UNDERGROUND ON AMCHITKA ISLAND IN THE ALEUTIANS AND RECORDED AT ESKDALEMUIR, YELLOWKNIFE (CANADA), GAURIBIDANUR (INDIA) AND TENNANT CREEK (AUSTRALIA). THE RESULTS OF PROCESSING OF THE ARRAY RECORDS ARE PRESENTED AND COMPARED WITH THE RESULTS FROM MANY OTHER STATIONS. THE LOCATION OF THE EPICENTER IS ALSO DISCUSSED.

AVAILABILITY - BRITISH INFORMATION SERVICE, 945 THIRD AVE., NEW YORK, N.Y. 10022

\*NUCLEAR DETONATION + EARTH TREMOR, INDUCED + SEISMOLOGY

CATEGORY 2  
SITING OF NUCLEAR FACILITIES

2-15023  
KNOPFF L  
THE CONVECTION CURRENT HYPOTHESIS  
CALIFORNIA INSTITUTE OF TECHNOLOGY, PASADENA  
34 PAGES, REVIEWS OF GEOPHYSICS 2(1), PAGES 89-122, (FEBRUARY 1964)

THE LINEAR-STABILITY PROBLEM FOR A NUMBER OF MODELS OF THE MANTLE OF THE EARTH IS CONSIDERED. FOR APPROPRIATE VALUES OF THE PHYSICAL PARAMETERS OF THE MANTLE IT SEEMS LIKELY THAT THE RAYLEIGH NUMBER FOR MANTLE-WIDE CONVECTION IS FAR IN EXCESS OF THE VALUE NECESSARY FOR MARGINAL INSTABILITY. THE CONCLUSIONS DEPEND CRUCIALLY ON THE ASSUMPTIONS OF THE VALUES OF THE VISCOSITY AND OF THE STRENGTH OF THE MANTLE. THE MODEL OF TURBULENT CONVECTION IN THE LOWER MANTLE IS CONSISTENT WITH LOCALIZING A MATERIAL OF HIGH STRENGTH AND HIGH VISCOSITY IN THE UPPER MANTLE AND WITH THE OBSERVATION THAT EARTHQUAKES ARE NOT OBSERVED TO OCCUR IN THE LOWER MANTLE.

\*TECTONICS + EARTHQUAKE, GENERAL + GEOLOGICAL CONSIDERATION, GEOPHYSICAL + MATHEMATICAL STUDY + SEISMIC ZONE + SUBSIDENCE

2-15024  
FRANK FC  
ON DILATANCY IN RELATION TO SEISMIC SOURCES  
THE INSTITUTE FOR GEOPHYSICS AND PLANETARY PHYSICS, LA JOLLA, CALIF.  
19 PAGES, REVIEWS OF GEOPHYSICS 3(4), PAGES 485-503, (NOVEMBER 1965)

THE THEORY OF THE OSBORNE REYNOLDS DILATANCY PHENOMENON IS DEVELOPED, AND IT IS SHOWN TO CONTAIN AN INTRINSIC INSTABILITY OF THE TYPE NEEDED TO ACCOUNT FOR SEISMIC FAULTING. THE THEORY REQUIRES THE PRESENCE OF FLUIDS IN THOSE PARTS OF THE EARTH'S CRUST AND UPPER MANTLE THAT SHOW SEISMIC ACTIVITY, BUT IT PROVIDES A MECHANISM FOR CONCENTRATING THE FLUIDS FROM A DISTANCE INTO THOSE REGIONS THAT ULTIMATELY FAIL CATASTROPHICALLY. IT PROVIDES AN EXPLANATION FOR THE VERY WIDE RANGE OF TIME CONSTANTS ASSOCIATED WITH EARTHQUAKES.

\*SOURCE MECHANISM + EARTHQUAKE, GENERAL + FAULT + SUBSIDENCE + TECTONICS

2-15025  
RUSNAK GA + FISHER RL  
STRUCTURAL HISTORY AND EVOLUTION OF GULF OF CALIFORNIA  
UNIVERSITY OF MIAMI + UNIVERSITY OF CALIFORNIA, LA JOLLA  
13 PAGES, FROM SYMPOSIUM MARINE GEOLOGY OF THE GULF OF CALIFORNIA, PAGES 144-156, 1964

THE GEOLOGY OF THE GULF OF CALIFORNIA REGION IS DISCUSSED AS IT PERTAINS TO DEVELOPING A HYPOTHETICAL STRUCTURAL MODEL PRESENTED TO DESCRIBE GULF EVOLUTION. IT SUPPOSEDLY EVOLVED AS FRACTURED PLATES OF CRUSTAL MATERIAL MOVED NORTHWESTWARD AND PACIFIC-WARD BY GRAVITATIONAL SLIDING, ON EXTREMELY GENTLE SLOPES, FROM THE REGIONS OF WESTERN MEXICO UPLIFTED BY BATHOLITHIC INTRUSIONS. THE SOURCE OF THE UPLIFT AND WESTWARD TILTING, AND PERHAPS THE FORMATION OF THE INTRUSIONS, IS ASCRIBED TO THE DEVELOPMENT OF THE EAST PACIFIC RISE. THIS RISE IS THE PRESENT EXPRESSION OF A SUBCRUSTAL WELT THAT REACHES THE NORTH AMERICAN CONTINENT NEAR THE SOUTH END OF THE GULF OF CALIFORNIA, AS DEMONSTRATED BY THE WORK OF MENARD AND OTHERS.

\*TECTONICS + EARTHQUAKE, GENERAL + GEOLOGICAL CONSIDERATION, GEOPHYSICAL + SOURCE MECHANISM

2-15026  
RIEHLER S + KOVACH RL + ALLEN CR  
GEOPHYSICAL FRAMEWORK OF NORTHERN END OF GULF OF CALIFORNIA STRUCTURAL PROVINCE  
CALIFORNIA INSTITUTE OF TECHNOLOGY  
18 PAGES, FROM SYMPOSIUM MARINE GEOLOGY OF THE GULF OF CALIF., PAGES 126-143, 1964

MORE THAN 3000 GRAVITY OBSERVATIONS IN THE NORTHERN GULF PROVINCE, INCLUDING AN UNDERWATER GRAVITY SURVEY OF THE SALTON SEA, SHOW THE OVER-ALL TREND OF ISOGAL CONTOURS TO BE NORTHWEST, PARALLEL TO THE TECTONIC PATTERN DOMINATED BY THE SAN ANDREAS FAULT SYSTEM. CONTOURS NORTHEAST OF THE TROUGH TEND EAST, PROBABLY REFLECTING TRANSVERSE RANGE STRUCTURES IN THIS AREA. THE MAXIMUM THICKNESS OF SEDIMENTS IN THE TROUGH APPEARS TO BE ABOUT 6.4 KM (21,000 FT) JUST SOUTH OF THE INTERNATIONAL BORDER, WITH BASEMENT BECOMING SHALLOWER BOTH TO THE NORTH AND SOUTH. THE SALTON TROUGH HAS MANY GEOPHYSICAL AND STRUCTURAL SIMILARITIES TO THE DEAD SEA RIFT, BUT THE MARKEDLY EN ECHELON PATTERN OF MAJOR FAULTS IN THE SALTON TROUGH AND GULF OF CALIFORNIA APPEARS UNIQUE.

\*SEISMIC ZONE + EARTH MATERIAL, DYNAMIC PROPERTY + EARTHQUAKE RECORDS + EARTHQUAKE, GENERAL + GEOLOGICAL CONSIDERATION, GENERAL + TECTONICS

2-15064  
PALFIGH CB + PATERSON MS  
EXPERIMENTAL DEFORMATION OF SERPENTINITE AND ITS TECTONIC IMPLICATIONS  
AUSTRALIAN NATIONAL UNIVERSITY, CANBERRA

CATEGORY 2  
SITING OF NUCLEAR FACILITIES

2-15064 \*CONTINUED\*  
1 PAGE, JOURNAL OF GEOPHYSICAL RESEARCH 70(16), PAGE 3965, (AUGUST 15, 1965)

EXPERIMENTAL INVESTIGATION INTO THE STRENGTH AND DUCTILITY OF SERPENTINITE AT TEMPERATURES TO 700 C AND CONFINING PRESSURES TO 5 KB YIELDED RESULTS IMPORTANT TO THE UNDERSTANDING OF THE ROLE OF SERPENTINITE IN OROGENESIS. SEALED SPECIMENS OF ANTIGORITE-CHRYSOTILE SERPENTINITE, WITH ULTIMATE STRENGTH COMPARABLE TO THAT OF GRANITE AT ROOM TEMPERATURE, SHOWED A MARKED WEAKENING ABOVE 500-600 C. A MESH-TEXTURED SERPENTINITE CONTAINING LIZARD-BRITTLENESS ALWAYS ACCOMPANIED THE HIGH-TEMPERATURE WEAKENING, ALTHOUGH THE SAMPLES SHOWING HIGH STRENGTH AT LOWER TEMPERATURES WERE OFTEN DUCTILE. THE EMBRITTLEMENT AND WEAKENING IS ATTRIBUTED TO A REDUCTION IN THE EFFECTIVE CONFINING PRESSURE DUE TO THE PORE PRESSURE OF THE WATER RELEASED DURING DEHYDRATION AND TO A LOSS IN COHESIVE STRENGTH DUE TO CHANGES IN THE STRUCTURE UPON DEHYDRATION.

\*TECTONICS + EARTH MATERIAL, DYNAMIC PROPERTY + EARTHQUAKE, GENERAL + GEOLOGICAL CONSIDERATION, GENERAL + ROCK MECHANICS + SOURCE MECHANISM

2-15078 ALSO IN CATEGORIES 14 AND 18  
CALIFORNIA NUCLEAR DISCUSSES COMPLEX HYDROGEOLOGY OF SHEFFIELD ILL. WASTE BURIAL SITE  
CALIFORNIA NUCLEAR, INC.  
3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(11), PAGES 30-32 (MARCH 13, 1967) DOCKET NO. 27-39

CONVENTIONAL PUMPING AND GRAVITY INJECTION TESTS FAIL TO YIELD ANY UNDERGROUND-WATER TRANSMISSION MEASUREMENTS. CN DEFENDS USE OF AVERAGE TRANSMISSIBILITY VALUES BASED ON LAB MEASUREMENTS OF SMALL SAMPLES, AND NOTES VARIOUS INCONSISTANCIES IN AEC SUGGESTIONS.

\*HYDROLOGICAL CONSIDERATION, GENERAL + \*WASTE DISPOSAL, TERRESTRIAL + GROUND WATER, GENERAL + HYDROLOGICAL CONSIDERATION, RATE OF MOVEMENT + LICENSING STATUS OF NUCLEAR PROJECTS + OPERATING EXPERIENCE

2-15088 ALSO IN CATEGORY 18  
RAHM AND HAAS CONCERN ABOUT THERMAL POLLUTION OF DELAWARE RIVER MARCH 3  
PUBLIC SERVICE ELECTRIC AND GAS COMPANY  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(11), PAGE 26, (MARCH 20, 1967), DOCKET NO. 50-272

LETTER TO DPL EXPRESSES CONCERN THAT UNLESS HEATED RIVER WATER IS DISCHARGED WITH CARE, THE WARMED WATER WILL LEAD TO DECREASED OXYGEN CONTENT (DUE TO INCREASED BIOCHEMICAL ACTIVITY) AND INCREASED ECOLOGICAL PROBLEMS.

\*ECOLOGICAL CONSIDERATION + \*HEAT SINK + \*RIVER, GENERAL + BURLINGTON 1 + REACTOR, POWER + SITING, REACTOR

2-15373 ALSO IN CATEGORIES 14 AND 18  
QUESTION 1.A. - PREOPERATIONAL ENVIRONMENTAL MONITORING PROGRAM FOR THE SITE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, DECEMBER 29, 1966, DOCKET NO. 50-261, H. B. ROBINSON UNIT NUMBER 2, FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, PAGE A-1

I. QUESTIONS CONCERNING THE SITE. A. DESCRIBE THE SCOPE OF THE PREOPERATIONAL ENVIRONMENTAL MONITORING PROGRAM, PARTICULARLY WITH REFERENCE TO THE NATURAL ACTIVITY OF THE WATER, FISH, AND LAKE BOTTOM.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + MONITOR, RADIATION, ENVIRONMENTAL + REACTOR, PRESSURIZED WATER + ROBINSON 2 + SURVEY, RADIATION, ENVIRONMENTAL

2-15374 ALSO IN CATEGORIES 14 AND 18  
QUESTION 1 B - BOATERS ON LAKE WITHIN EXCLUSION DISTANCE.  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, DECEMBER 29, 1966, DOCKET NO. 50-261, H.B. ROBINSON UNIT NUMBER 2, FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, PAGE B-1

WE NOTE THAT A CONSIDERABLE PORTION OF LAKE ROBINSON IS LOCATED WITHIN THE EXCLUSION DISTANCE AND THAT THE IMMEDIATE VICINITY OF THE PLANT AND THE WATER INTAKES ARE ACCESSIBLE TO THE PUBLIC. IN VIEW OF THIS, DISCUSS THE HAZARDS THIS COULD INVOLVE DURING BOTH NORMAL AND EMERGENCY OPERATIONS. WHAT TYPE OF CONTROL WILL BE IMPLEMENTED TO PROTECT THE PUBLIC IN THESE AREAS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ADMINISTRATIVE CONTROLS AND PRACTICES + POPULATION DISTRIBUTION + REACTOR, PRESSURIZED WATER + ROBINSON 2

2-15275 ALSO IN CATEGORY 18  
QUESTION 1 C - PROTECTION OF LOCAL RESIDENTS

CATEGORY 2  
SITING OF NUCLEAR FACILITIES

2-15375 \*CONTINUED\*  
CAROLINA LIGHT AND POWER COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, DECEMBER 28, 1966, DOCKET NO. 50-261, H. B. ROBINSON UNIT NUMBER 2, FIRST SUPPLEMENT TO  
PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, PAGE C-1

DISCUSS THE TYPE OF EMERGENCY ARRANGEMENTS WHICH WILL BE MADE TO PROTECT THE RESIDENTS WHO  
LIVE IN THE IMMEDIATE VICINITY (LESS THAN ONE MILE) OF THE PLANT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + POPULATION DISTRIBUTION +  
RADIATION SAFETY AND CONTROL + REACTOR, PRESSURIZED WATER + ROBINSON 2

2-15376 ALSO IN CATEGORY 18  
QUESTION I D - CHOICE OF COLUMBIA OR FLORENCE, S.C., AS POPULATION CENTER  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, 1 TABLE, DECEMBER 28, 1966, DOCKET NO. 50-261, H. B. ROBINSON UNIT NUMBER 2, FIRST SUPPLEMENT TO  
PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, PAGE D-1-AND-D-2

DISCUSS THE POPULATION OF FLORENCE AND ITS CONTIGUOUS METROPOLITAN AREA TO SHOW WHY IT SHOULD  
NOT BE CONSIDERED AS THE NEAREST POPULATION CENTER OF 25,000 OR MORE, RATHER THAN COLUMBIA.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + POPULATION DISTRIBUTION +  
REACTOR, PRESSURIZED WATER + ROBINSON 2

2-15396 ALSO IN CATEGORIES 11 AND 18  
QUESTION III C - CONCRETE REINFORCEMENT, SO PIECES WONT FALL DURING EARTHQUAKES  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE C-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B.  
ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

CLASS-I STRUCTURES (EXCLUDING CONTAINMENT) ARE DESIGNED USING A CRITICAL DAMPING OF 5.0  
PERCENT. DISCUSS THE CRITERIA FOR PLACEMENT OF REINFORCING STEEL OR MESH STEEL IN ALL  
CLASS-I STRUCTURES (OTHER THAN CONTAINMENT) TO ENSURE THAT CRACKING OF CONCRETE WILL NOT  
RESULT IN LARGE PIECES FALLING DURING AN EARTHQUAKE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONCRETE + DAMPING +  
DISPLACEMENT, DESIGN FOR + EARTHQUAKE + REACTOR, PRESSURIZED WATER + ROBINSON 2

2-15397 ALSO IN CATEGORIES 1 AND 18  
QUESTION III D - EQUIPMENT DESIGN CRITERIA FOR 0.2-G EARTHQUAKE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE D-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B.  
ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

FOR ALL CLASS-I EQUIPMENT OTHER THAN CONTAINMENT, STATE YOUR CRITERIA IN TERMS OF % YIELD  
STRESS OR % YIELD STRAIN TO ENSURE NO LOSS OF FUNCTION UNDER 0.2G EARTHQUAKE LOADINGS. FOR  
AREAS OF LOCAL HIGH STRESS CONCENTRATIONS, INDICATE IF CODE RULES ARE FOLLOWED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + DESIGN CRITERIA +  
EARTHQUAKE ENGINEERING + EQUIPMENT DESIGN + INELASTIC BEHAVIOR + REACTOR, PRESSURIZED WATER + ROBINSON 2

2-15433 ALSO IN CATEGORIES 11 AND 18  
QUESTION V G - INTEGRATED LEAK-RATE TEST AT DESIGN PRESSURE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE G-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B.  
ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

WILL PROVISIONS BE MADE FOR INSTALLING THE NECESSARY EQUIPMENT TO PERFORM AN ACCURATE  
INTEGRATED CONTAINMENT LEAK-RATE TEST AT DESIGN PRESSURE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT, HIGH PRESSURE +  
PRESSURE, INTERNAL + REACTOR, PRESSURIZED WATER + ROBINSON 2 + TEST, LEAK RATE

2-15905  
STEINBRUGGE KV + BUSH VR  
REVIEW OF EARTHQUAKE DAMAGE IN THE WESTERN UNITED STATES 1933-1964

CATEGORY 2  
SITING OF NUCLEAR FACILITIES

2-15905 \*CONTINUED\*  
U.S. DEPT. OF COMMERCE  
34 PAGES, PAGES 223-256 FROM EARTHQUAKE INVESTIGATIONS IN THE WESTERN U.S. 1931-1964, PUBLICATION NO. 41-2, EDITED BY DEAN S. CARDER

REVIEWS AND DISCUSSES THE STRUCTURAL DAMAGE RESULTING FROM MAJOR U.S. EARTHQUAKES. VARIOUS TYPES OF DAMAGE AND VARIOUS TYPES OF CONSTRUCTIONS ARE SHOWN IN PHOTOS.

AVAILABILITY - U.S. GOVERNMENT PRINTING OFFICE, WASHINGTON, D.C. 20402, \$2.75 COPY

\*EARTHQUAKE ENGINEERING + EARTHQUAKE RECORDS + EARTHQUAKE, GENERAL + GROUND MOTION + SEICHE + SEISMIC ZONE

2-15906  
FPPLEY RA  
EARTHQUAKE HISTORY OF THE U.S. PART I, STRONGER EARTHQUAKES OF THE U.S. (EXCLUSIVE OF CALIFORNIA AND WESTERN NEVADA)  
120 PAGES, NO. 41-1, REVISED EDITION (THROUGH 1963)

CHRONOLOGICAL ACCOUNT OF EARTHQUAKES IN THE U.S. PART I - STRONGER EARTHQUAKES.

AVAILABILITY - U.S. GOVERNMENT PRINTING OFFICE, WASHINGTON, D.C. 20402, \$0.70 COPY

\*EARTHQUAKE RECORDS + EARTHQUAKE EPICENTER + EARTHQUAKE, GENERAL

2-15911  
MCDONALD GJ  
THE DEEP STRUCTURE OF CONTINENTS  
INSTITUTE OF GEOPHYSICS AND PLANETARY PHYSICS, UNIV. OF CALIF., LOS ANGELES  
79 PAGES, REVIEWS OF GEOPHYSICS 1(4), PAGES 587-665 (NOVEMBER 1963)

GRAVITY AND HEAT-FLOW OBSERVATIONS DEMONSTRATE THAT, ON THE AVERAGE, MASS AND RADIOACTIVITY PER UNIT AREA ARE EQUAL UNDER CONTINENTS AND OCEANS. A GLOBAL REPRESENTATION OF THE ANOMALIES IN THE HEAT FLOW AND GRAVITY FIELDS SHOWS MANY SIMILARITIES, AND HORIZONTAL GRADIENTS IN BOTH FIELDS ARE CORRELATED WITH EARTHQUAKE ZONES. THE REGIONAL VARIATIONS OF RAYLEIGH AND LOVE WAVE VELOCITIES PROVIDE EVIDENCE ADDITIONAL TO THAT OF GRAVITY AND HEAT FLOW THAT THE MANTLE UNDER CONTINENTS DIFFERS FROM THAT UNDER OCEANS TO A DEPTH OF 400 TO 700 KM. TAKEN TOGETHER, THE OBSERVATIONS OF THE PLANETARY FIELDS IMPLY THAT VERTICAL SEGREGATION HAS BEEN THE DOMINANT FEATURE OF THE PROCESS OF CONTINENTS AND OCEANS RESULTS IN A CONCENTRATION OF THERMAL STRESSES AT THE CONTINENT-OCEAN BOUNDARY. THE ENSUING FAULT ZONES PROVIDE A PREFERRED LOCATION FOR THE RELEASE OF STRAIN ENERGY ACCUMULATED BY DYNAMIC PROCESSES SUCH AS THOSE ASSOCIATED WITH CHANGES IN THE EARTH'S ROTATION.

\*TECTONICS + EARTHQUAKE, GENERAL + ENERGY LEVEL + FAULT + GEOLOGICAL CONSIDERATION, GENERAL + ROCK MECHANICS + SEISMIC ZONE

2-15912  
PAKISER LC + ZIETZ I  
TRANSCONTINENTAL CRUSTAL AND UPPER-MANTLE STRUCTURE  
U.S. GEOLOGICAL SURVEY, DENVER, COLORADO AND WASHINGTON, D.C.  
16 PAGES, REVIEWS OF GEOPHYSICS 3(4), PAGES 505-520 (NOVEMBER 1965)

TRANSCONTINENTAL SEISMIC, AEROMAGNETIC, AND GRAVITY MEASUREMENTS, TOGETHER WITH GEOLOGIC OBSERVATIONS, SUGGEST THAT THE CONTERMINOUS U.S. IS DIVIDED BY THE ROCKY MOUNTAIN SYSTEM INTO TWO CRUSTAL AND UPPER-MANTLE SUPERPROVINCES. IN THE EASTERN SUPERPROVINCE, THE VELOCITY OF COMPRESSIONAL WAVES IN THE UPPER-MANTLE ROCKS IS EVERYWHERE GREATER THAN 8 KM/SEC., THE MEAN CRUSTAL VELOCITY IS GENERALLY GREATER THAN 6.4 KM/SEC, AND THE CRUST IS GENERALLY THICKER THAN 40 KM. IN THE WESTERN SUPERPROVINCE, THE VELOCITY OF COMPRESSIONAL WAVES IN THE UPPER-MANTLE ROCKS IS EVERYWHERE LESS THAN 8 KM/SEC (EXCEPT ALONG THE MARGIN OF THE PACIFIC OCEAN BASIN), THE MEAN CRUSTAL VELOCITY IS GENERALLY LESS THAN 6.4 KM/SEC, AND THE CRUST IS GENERALLY THINNER THAN 40 KM. AEROMAGNETIC DATA ARE CHARACTERIZED BY ANOMALIES OF LARGE AMPLITUDE IN THE EASTERN SUPERPROVINCE, INDICATING AN ABUNDANCE OF MAGNETIC MINERALS, WHEREAS THE MAGNETIC FIELD IN THE WESTERN SUPERPROVINCE IS RELATIVELY FEATURELESS. THE PRIMITIVE CONTINENTAL CRUST THAT EVOLVED FROM THE MANTLE WAS PROBABLY SILICIC, AND IT HAS BEEN MADE SLOWLY MORE MAFIC BY ADDITION OF MAFIC MATERIAL FROM THE MANTLE AND REMOVAL OF SILICIC MATERIAL FROM THE CONTINENTAL SURFACE BY EROSION AND STEAM TRANSPORT.

\*TECTONICS + EARTHQUAKE, GENERAL + GEOLOGICAL CONSIDERATION, GENERAL + GEOLOGICAL CONSIDERATION, GEOPHYSICAL

CATEGORY 3  
TRANSPORTATION AND HANDLING OF RADIOACTIVE MATERIALS

3-14288  
BARNES JW  
STORAGE FACILITIES FOR HANFORD HIGH-LEVEL FISSION WASTE CONTAINERS  
ISOICHEM INC.  
RL-SA-62 + CONF-660208-2 +. 22 PAGES, REFERENCES, FROM SYMPOSIUM ON SOLIDIFICATION AND LONG-TERM STORAGE  
OF HIGHLY RADIOACTIVE WASTES, RICHLAND, WASHINGTON

THIS PAPER DESCRIBES A FACILITY DESIGNED FOR THE SURVEILLANCE AND LONG-TERM STORAGE OF HIGH-LEVEL-WASTE CONTAINERS PRODUCED UNDER THE HANFORD WASTE MANAGEMENT PROGRAM. THIS FACILITY IS LOCATED IN CANYON-TYPE STRUCTURE TO ASSURE MAXIMUM CONTAINMENT. A CLOSED-LOOP HIGH-PURITY-WATER SYSTEM WITH DUAL HEAT EXCHANGERS AND CIRCULATING PUMPS IS PROVIDED. EQUIPMENT AND CONTAINER HANDLING ARE DESIGNED FOR REMOTE OPERATION AND MAINTENANCE. INSTRUMENTATION IS PROVIDED FOR MONITORING AND SURVEILLANCE OF FISSION-WASTE CONTAINERS. FLEXIBILITY EXISTS FOR SAFELY HANDLING CONTAINERS AND WASTE STREAMS IN THE EVENT OF A CONTAINER FAILURE. ALTERNATIVE STORAGE VAULTS AND COOLING SYSTEMS ARE ALSO CONSIDERED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT OF COMMERCE, \$1.00 COPY, \$0.50 MICROFICHE, SPRINGFIELD, VIRGINIA 22151

\*WASTE MANAGEMENT + \*WASTE STORAGE + SAFETY EVALUATION + TRANSPORTATION AND HANDLING

3-14289  
SPALLER AE  
STRUCTURAL ANALYSIS OF SHIPPING CASKS. VOL. 4. EQUATIONS FOR DESIGNING TOP CLOSURES OF CASKS.  
OAK RIDGE NATIONAL LABORATORY  
ORNL-TM-1312 (VOL. 4) +. 36 PAGES, 11 FIGURES, 5 TABLES, NOVEMBER 1966

EQUATIONS FOR DESIGNING TOP CLOSURES OF SHIPPING CASKS THAT WILL MEET REGULATIONS GOVERNING THE DESIGN AND PERFORMANCE OF CASKS IN WHICH RADIOACTIVE MATERIAL IS SHIPPED ARE DEVELOPED IN THIS REPORT. THE THREE MAIN AREAS OF THE CLOSURE THAT REQUIRE CAREFUL DESIGN ARE (1) THE GASKET OR SEAL, (2) THE RETAINING DEVICES OR BOLTS, AND (3) THE FLANGES ON THE LID AND CASK. DESIGN DATA FOR DIFFERENT TYPES OF GASKETS ARE GIVEN, EQUATIONS FOR DETERMINING THE BOLTING ARRANGEMENT FOR CASK LIDS ARE PRESENTED, AND EQUATIONS FOR DETERMINING THE THICKNESSES OF BOTH ROUND AND RECTANGULAR FLANGES FOR THE LID AND CASK ARE DEVELOPED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*CONTAINMENT EQUIPMENT HATCH + \*CONTAINMENT INTEGRITY + \*SHIPPING CONTAINER + FLANGE + STRUCTURAL INTEGRITY

3-14290 ALSO IN CATEGORIES 1 AND 11  
GULLEY PL  
PLUTONIUM HANDLING AND CONTROL PRACTICES AT PACIFIC NORTHWEST LABORATORY  
BATTELLE-NORTHWEST  
BNWL-287 +. 11 PAGES, 7 FIGURES, 2 TABLES, 3 REFERENCES, OCTOBER 1966

ONE OF TWO MAJOR FACILITIES USED FOR PLUTONIUM FUELS RESEARCH AND DEVELOPMENT STUDIES AT BATTELLE-NORTHWEST IS THE PLUTONIUM FUELS LABORATORY (PFL). THE DESIGN AND OPERATIONAL POLICY OF THE PFL IS ONE OF COMPLETE PLUTONIUM CONTAINMENT. PRIMARY PLUTONIUM CONTAINMENT IS PROVIDED BY GLOVE BOXES, SECONDARY CONTAINMENT BY INDIVIDUAL LABORATORIES, AND TERTIARY BY THE BUILDING PROPER. AIR SAMPLES, TAKEN THROUGHOUT THE FACILITY, ARE CONSTANTLY MONITORED FOR FREE CONTAMINATION. RULES FOR THE PREVENTION OF AN ACCIDENTAL CRITICALITY IN THE PFL ARE BASED ON THE CRITERION THAT AT LEAST TWO CONTROL CONDITIONS MUST FAIL BEFORE CRITICALITY IS IMMINENT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*CONTAINMENT, GENERAL + \*PLUTONIUM + \*SAFETY PRINCIPLES AND PHILOSOPHY + GLOVE BOX + PERSONNEL EXPOSURE, RADIATION

3-14292  
KRAUSS LL  
DEVELOPMENT OF HERMETIC SHIPPING AND STORAGE CONTAINER CNU-89/E23  
CONTAINER RESEARCH CORP., GLEN RIDGE, PENN.  
AFATL-TP-66-99 +. 44 PAGES, 25 FIGURES, 2 TABLES, OCTOBER 1966

A HERMETIC SHIPPING CONTAINER WAS DEVELOPED FOR TMU-28/B CHEMICAL SPRAY TANK FOR ITS PROTECTION DURING HANDLING, TRANSIT, AND STORAGE, AND FOR PREVENTING THE ACCIDENTAL ESCAPE OF ANY OF THE CHEMICAL TO THE ATMOSPHERE. THIS ALL-ALUMINUM CONTAINER CONSISTS OF A LONGITUDINALLY SPLIT CYLINDRICAL SHELL, EXTERIOR STIFFENERS AND HANDLING APPENDAGES, INTERIOR DESICCANT AND CHEMICAL ABSORPTION CHAMBER, BREATHING VALVES, AND A SELF-DAMPING ELASTOMERIC SHOCK-ABSORBING LOAD SUSPENSION SYSTEM. THE CONTAINER HAS UNDERGONE AND PASSED EXTENSIVE TESTING. ITS ACCEPTANCE AND DEPLOYMENT IS RECOMMENDED.

AVAILABILITY - DEFENSE DOCUMENTATION CENTER, CAMERON STATION, ALEXANDRIA, VIRGINIA



CATEGORY 3  
TRANSPORTATION AND HANDLING OF RADIOACTIVE MATERIALS

3-14292 \*CONTINUED\*  
\*CONTAINMENT INTEGRITY + \*SHIPPING CONTAINER + TEST, DROP + TEST, PROOF

3-14529 ALSO IN CATEGORY 17  
PUBLIC SAFETY INFORMATION BULLETIN NO. 1  
ATOMIC ENERGY COMMISSION, US.  
9 PAGES, PUBLIC SAFETY INFORMATION BULLETIN NO. 1, OCTOBER 1966

DISCUSSES ACCIDENTS INVOLVING SHIPMENTS OF RADIOACTIVE MATERIAL, SPECIFICALLY FIRES. MAKES RECOMMENDATIONS TO FIRE DEPARTMENTS.

AVAILABILITY - AEC, DIVISION OF PUBLIC INFORMATION, WASHINGTON, D. C. 20545

\*RADIATION, PUBLIC EDUCATION/ACCEPTANCE + ACCIDENT, TRANSPORTATION + FIRE + SHIPPING CONTAINER

3-14752 ALSO IN CATEGORY 1  
PHYSICS RESEARCH QUARTERLY REPORT, APRIL, MAY, JUNE 1966  
PACIFIC NORTHWEST LABORATORY  
PNWL-315 +. 15 PAGES, 6 FIGURES, 1 TABLES, 5 REFERENCES, NOVEMBER 15, 1966

CALCULATIONS WERE MADE TO DETERMINE THE BARE AND WATER-REFLECTED SPHERICAL CRITICAL MASSES OF 12 OF THE MOST FREQUENTLY ENCOUNTERED COMPOUNDS, IN THE UNDERMODERATED RANGE (H/PJ EQUAL TO OR LESS THAN 20). THE CRITICAL MASSES OF PLUTONIUM ATOMS IN WATER WERE ALSO CALCULATED FOR UNDERMODERATED SYSTEMS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

CRITICALITY EXPERIMENT + CRITICALITY SAFETY + PLUTONIUM + WATER, GENERAL

3-14759 ALSO IN CATEGORY 1  
JOHNSON ER + REEDY RK  
CRITICALITY OF LATTICES OF HEAT TRANSFER REACTOR EXPERIMENT FUEL ELEMENTS  
OAK RIDGE NATIONAL LABORATORY  
ORNL-TM-1566 +. 14 PAGES, 5 TABLES, 3 FIGURES, JULY 20, 1966

A SERIES OF EXPERIMENTS WAS COMPLETED TO DETERMINE THE CRITICAL PARAMETERS OF LATTICES OF HEAT TRANSFER REACTOR EXPERIMENT (HTRE) FUEL ELEMENTS, PRIMARILY IN GEOMETRIES AND ENVIRONMENTS OF INTEREST FOR TRANSPORT, STORAGE, AND CHEMICAL DISSOLUTION. ARRAYS OF THESE ELEMENTS WERE MADE CRITICAL WITH WATER AND WITH DILUTE AQUEOUS  $U(92.6102103)2$  SOLUTION OF TWO CONCENTRATIONS (TO SIMULATE DISSOLVER ENVIRONMENTS) AS MODERATOR AND REFLECTOR. ONE SOLUTION CONCENTRATION WAS 3.97 G OF U-235 PER LITER, AND THE OTHER WAS 8.02 G PER LITER. IN SOME OF THE SLAB LATTICES IN WATER, SHEETS OF CADMIUM WERE PLACED BETWEEN ROWS TO SERVE AS A NEUTRON ABSORBER AS THEY MIGHT IN A SHIPPING CONTAINER.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

CRITICALITY EXPERIMENT + CRITICALITY SAFETY + FUEL ELEMENT + REACTOR, AIRCRAFT + REACTOR, TEST

3-14771  
THOMAS JT  
MONTE CARLO CALCULATIONS OF FAST MULTICOMPONENT CRITICAL SYSTEMS  
OAK RIDGE NATIONAL LABORATORY  
ORNL-P-2600 + CONF-661019-7 +. 12 PAGES, 1966, FROM INTERNATIONAL CONFERENCE ON FAST CRITICAL EXPERIMENTS AND THEIR ANALYSIS, ARGONNE, ILLINOIS

CRITICALITY STUDIES WERE MADE OF THREE-DIMENSIONAL CUBOIDAL SYSTEMS OF URANIUM METAL CYLINDERS ENRICHED TO 93.2 WT PERCENT U-235. SYSTEMS COMPOSED OF NEAR IDENTICAL, INDIVIDUALLY SUBCRITICAL COMPONENTS IN AIR. UNITS RANGED FROM 10.5 TO 26.2 KG OF URANIUM AND WITH HEIGHT-TO-DIAMETER RATIOS FROM 0.47 TO 1.17. MULTIPLICATION FACTORS OF A NUMBER OF THE EXPERIMENTS WERE COMPUTED BY SEVERAL MONTE CARLO CODES. THE ONE MOST EXTENSIVELY EMPLOYED, HOWEVER, WAS THE BRITISH GEM CODE. COMPUTED VALUES OF K-EFFECTIVE AGREED WITH EXPERIMENT TO WITHIN 1-1/2 PERCENT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*MONTE CARLO + CRITICALITY SAFETY + REACTOR, INTERACTING + URANIUM

3-14863  
SHAW AE  
ESTIMATION OF THE ACTIVITY CONTENT IN CURIES OF RADIOACTIVE MATERIALS FOR TRANSPORT PURPOSES  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, DUNDEE, SCOTLAND  
TRG-REPORT-1287 +. 37 PAGES, JULY 22, 1966

CATEGORY 3  
TRANSPORTATION AND HANDLING OF RADIOACTIVE MATERIALS

3-14863 \*CONTINUED\*

THIS REPORT DISCUSSES THE PROBLEMS THAT ARISE WHEN IT IS REQUIRED TO ESTIMATE THE CURIE CONTENT OF RADIOACTIVE MATERIALS TO BE TRANSPORTED ACCORDING TO REGULATIONS SUCH AS HAVE BEEN PUT FORWARD BY THE INTERNATIONAL ATOMIC ENERGY AGENCY. ESTIMATIONS BY CALCULATION AND FROM EXTERNAL RADIATION MEASUREMENTS ARE DISCUSSED, AND SOME OF THE PRACTICAL UNCERTAINTIES THAT ARISE IN EACH CASE ARE EXPLORED. THE GENERAL CONCLUSION IS THAT THE ESTIMATE OF CURIE CONTENT IS NOT VERY PRECISE AND PROBABLY DOES NOT NEED TO BE.

AVAILABILITY - BRITISH INFORMATION SERVICE, 845 THIRD AVENUE, NEW YORK, NEW YORK 10022 \$1.10 COPY

\*FISSION PRODUCT ACTIVITY, GROSS + REGULATION, IAEA + TRANSPORTATION AND HANDLING

3-14864 ALSO IN CATEGORIES 1 AND 14  
STAGG MS

IMPACT TESTING OF RADIOACTIVE SAMPLES  
BERKELEY NUCLEAR LABORATORIES

3 PAGES, 5 FIGURES, 3 REFERENCES, NUCLEAR ENGINEERING 11(123) PAGES 606-608 (AUGUST 1966)

THE EMBRITTEMENT OF STEELS BY NEUTRON IRRADIATION HAS BEEN KNOWN SINCE THE 1957 GENEVA CONFERENCE BUT IT IS STILL NOT COMPLETELY UNDERSTOOD. A CONVENIENT WAY OF DEFINING THESE CHANGES IS TO SPECIFY THE CHANGES IN THE BRITTLE/DUCTILE TRANSITION TEMPERATURE. SUCH TESTS REQUIRE REMOTELY OPERATED IMPACT MACHINES FOR EXPERIMENTS ON ACTIVE MATERIALS. THIS REPORT DESCRIBES THE TESTING FACILITIES AT BERKELEY NUCLEAR LABORATORIES, PRIMARILY INSTALLED FOR TESTING THE MONITORING SAMPLES WHICH ARE NOW INCORPORATED IN THE GECB CIVIL REACTORS.

\*IMPACT SHOCK + CLAD + EMBRITTEMENT + FAILURE, CLADDING + IRRADIATION TESTING

3-14866 ALSO IN CATEGORIES 1 AND 13

KOLAR CC + MORTON JR + PRUVOST NL  
INTERACTION IN ARRAYS OF FISSIONABLE MATERIALS  
LAWRENCE RADIATION LABORATORY

UCRL-14245 + CONF-651103-12 +. 32 PAGES, OCTOBER 5, 1965, FROM IAEA SYMPOSIUM ON CRITICALITY CONTROL OF FISSIONABLE MATERIALS, STOCKHOLM

A PROGRAM TO STUDY THE INTERACTION EFFECT IN ARRAYS OF FISSIONABLE MATERIALS WAS STARTED AT LAWRENCE RADIATION LABORATORY. THE PROGRAM CONSISTS OF EXPERIMENTAL AND THEORETICAL EFFORTS. THE PARTICULAR ARRAYS BEING STUDIED EXPERIMENTALLY ARE COMPOSED OF PU METAL UNITS. ARRAY GEOMETRIES ARE SIMPLE. THE BASIC UNITS ARE CYLINDERS, AND THE ARRAYS ARE CUBICAL. BARE ARRAYS ARE BEING STUDIED, AS WELL AS THOSE WITH INTERNAL MODERATION OR EXTERNAL REFLECTION. 130 BASIC UNITS ARE AVAILABLE SO THAT ARRAYS UP TO 5 X 5 X 5 IN SIZE CAN BE STUDIED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*CRITICALITY SAFETY + \*PLUTONIUM + CRITICALITY EXPERIMENT + NEUTRON INTERACTION + THEORETICAL INVESTIGATION

3-14867

KELLER EL  
URANIUM HEXAFLUORIDE - HANDLING PROCEDURES AND CONTAINER CRITERIA  
U. S. ATOMIC ENERGY COMMISSION, OAK RIDGE OPERATIONS OFFICE  
ORO-651 +. 79 PAGES, 14 FIGURES, 1966

THIS REPORT WAS PREPARED TO BETTER ACQUAINT THE COMMERCIAL SEGMENT OF THE NUCLEAR INDUSTRY WITH AEC ROUTINE HANDLING PROCEDURES, CONTAINER DESIGN, AND UTILIZATION CRITERIA FOR UF<sub>6</sub>. THE PROCEDURAL INFORMATION COVERS THE ESSENTIAL ASPECTS OF UF<sub>6</sub> WEIGHING, SAMPLING, CYLINDER EMPTYING AND FILLING, AND CYLINDER INSPECTION, CLEANING, TESTING, AND REPAIR. ANALYTICAL PROCEDURES ARE LISTED BY TYPE ONLY SINCE THESE PROCEDURES ARE BEING IMPROVED ON A CONTINUING BASIS. SHIPPING PROCEDURES ARE ALSO DISCUSSED IN VERY GENERAL TERMS SINCE ALL UF<sub>6</sub> SHIPMENTS TO OR FROM THE AEC ARE F.O.B. THE AEC FACILITIES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*URANIUM HEXAFLUORIDE + ANALYTICAL TECHNIQUE, GENERAL + HAZARDS ANALYSIS + PROCEDURES AND MANUALS + TRANSPORTATION AND HANDLING

3-14868 ALSO IN CATEGORIES 1 AND 13

LANE RC + PERKINS OJE  
MEASUREMENT OF THE CRITICAL MASS OF 37 1/2 PERCENT ENRICHED URANIUM IN REFLECTORS OF WOOD, CONCRETE, POLYETHYLENE AND WATER  
ATOMIC WEAPONS RESEARCH ESTABLISHMENT, ALDERMASTON, ENGLAND  
AWRE-NR-1/66 +. 20 PAGES, 8 FIGURES, 8 TABLES, 3 REFERENCES, FEBRUARY 1966

THIS REPORT DESCRIBES THE EXPERIMENTAL ARRANGEMENTS USED IN ATLAS, A VERTICAL ASSEMBLY MACHINE FOR MEASUREMENT OF THE CRITICAL MASS OF 37-1/2 PERCENT ENRICHED URANIUM IN REFLECTORS OF WOOD, CONCRETE, POLYETHYLENE, AND WATER. DATA PRESENTED INDICATES THE SIZES OF THE UNIFORMLY REFLECTED CRITICAL SYSTEMS, OBTAINED BY EXTRAPOLATION OF THE RECIPROCAL COUNT RATES AS DESCRIBED ABOVE. THE STANDARD DEVIATION OF THE ERRORS IN THE CRITICAL DIMENSIONS DUE TO

CATEGORY 3  
TRANSPORTATION AND HANDLING OF RADIOACTIVE MATERIALS

3-1486R \*CONTINUED\*

UNCERTAINTY OF EXTRAPOLATION AND TO THE STATISTICS OF COUNTING ARE PLUS OR MINUS 0.005 PLUS OR MINUS 0.013 CM. THE STANDARD DEVIATIONS OF THE ERRORS OF MEASUREMENTS OF CORE DIMENSIONS, ESTIMATED FROM MEASUREMENTS OF THE HEIGHT OF STACKS OF FUEL PLATES (20 CM HIGH) ARE 0.021 CM, THE MAXIMUM ERROR RECORDED BEING 0.05 CM.

AVAILABILITY - BRITISH INFORMATION SERVICE, 845 THIRD AVENUE, NEW YORK, NEW YORK 10022, \$1.40 COPY

\*CRITICALITY SAFETY + \*REFLECTOR + FUEL ELEMENT + URANIUM

3-14992 ALSO IN CATEGORIES 11 AND 12

HARRELL JE

MIXING AND SAMPLING ENRICHED U-235 FLUIDS IN CYLINDRICAL STORAGE CONTAINERS. FINAL REPORT

OAK RIDGE NATIONAL LAB., OAK RIDGE

Y-1561 +. 124 PAGES, FIGURES, TABLES, JANUARY 17, 1967

A STUDY WAS PERFORMED THAT COMBINED THE MEASUREMENT OF SOME SAFE-TANK MIXING AND SAMPLING CHARACTERISTICS WITH A THEORETICAL ANALYSIS FOR THE GENERALIZATION OF MIXING CHARACTERISTICS FOR RECIRCULATION IN MIXED-TANK SYSTEMS. SAFE-TANK MIXING WAS SIMULATED IN FACILITY THAT CONSISTED OF BOTH HORIZONTALLY AND VERTICALLY ORIENTATED TANKAGE EQUIPPED WITH FLOW-RATE AND FLUID-CONCENTRATION MEASUREMENT COMPONENTS. THE THEORETICAL TREATMENT USED A COMBINATION OF THE TANKS-IN-SERIES MODEL AND THE DISPERSION MODEL, AND REQUIRED EITHER ANALOG OR DIGITAL COMPUTER SOLUTIONS. THE EFFECT OF THE PIPING ARRANGEMENT OF THE VARIOUS TANKAGE SYSTEMS UPON MIXING, SAMPLING, AND FUEL-INVENTORY UNCERTAINTIES WAS STUDIED AND RECOMMENDATIONS MADE FOR THE DESIGN AND OPERATION OF A TANKAGE SYSTEM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*FUEL STORAGE + \*SAMPLING + \*URANIUM + COMPARISON, THEORY AND EXPERIENCE

3-15047

STUDY ON INTERNATIONAL TRAFFIC OF RADIOACTIVE MATERIALS

THE SOUTHERN INTERSTATE NUCLEAR BOARD

WASH-2808 +. 271 PAGES, FIGURES, TABLES, JULY 17, 1966

THE DIVISION OF INTERNATIONAL AFFAIRS ASKED THE SOUTHERN INTERSTATE NUCLEAR BOARD TO CONDUCT A COMPREHENSIVE STUDY OF THE TRANSPORTATION OF RADIOACTIVE AND FISSILE MATERIALS TO DEVELOP IMPROVED AND PRACTICAL ECONOMIC CONDITIONS FOR THEIR MOVEMENT TO AND FROM THE U.S. THE STUDY INVESTIGATED THE AVAILABILITY OF ALL MODES OF TRANSPORTATION, THE FREIGHT RATES, REPROCESSING FACILITIES IN THE U.S. AND ABROAD, PORT CAPABILITIES, CONTAINER REQUIREMENTS, COST AND AVAILABILITY OF INSURANCE, LABOR CONSIDERATIONS, AND VOLUME AND FLOW PATTERNS OF THESE SHIPMENTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*ECONOMIC STUDY + \*INSURANCE + \*OCEAN AND SEA + SAFETY STUDY + TRANSPORTATION AND HANDLING

3-15324

STONEKING CE

A STUDY OF IMPACT EFFECTS ON SPHERICAL SHELLS. QUARTERLY PROGRESS REPORT NO. 9, NOVEMBER 1, 1965-JANUARY 31, 1965

SANDIA CORPORATION, ALBUQUERQUE, NEW MEXICO

SC-CR-66-2025 +. 30 PAGES

THE PRESENT STUDY PROPOSED TO INVESTIGATE THE STRUCTURAL INTEGRITY OF HOLLOW SPHERES WHEN THEY IMPACT ON A RIGID TARGET OF KNOWN PROPERTIES. PHYSICAL CHARACTERISTICS OF THE TEST ITEMS TO BE VARIED ARE - (1) DIAMETER, (2) THICKNESS, (3) FILLER MATERIAL, AND (4) MATERIAL OF CONSTRUCTION. THE MAGNITUDE OF THE EFFECTS OF IMPACT WILL BE STUDIED BY MEASURING (1) RUPTURE VELOCITY OF IMPACT, (2) IMPACT PRESSURE (3) REBOUND VELOCITY, (4) CONTACT TIME, AND (5) OTHER QUANTITIES AS CIRCUMSTANCES DICTATE. WITH THE RESULTS OF THE TESTS, IT IS DESIRED TO ESTABLISH THROUGH A LEAST-SQUARES METHOD, OR ANOTHER APPLICABLE METHOD, AN EMPIRICAL EQUATION RELATING RUPTURE VELOCITY AND THE VARIABLE PARAMETERS. DURING THE PRESENT REPORT PERIOD CONSIDERABLE PROGRESS HAS BEEN MADE ON THE THEORETICAL ANALYSIS OF BOTH HOLLOW CYLINDERS AND HOLLOW SPHERES SUBJECTED TO IMPACT LOADS. PART B DISCUSSES THE ANALYSIS OF HOLLOW CYLINDERS AND PART C DISCUSSES THE ANALYSIS OF SPHERES. A COMPARISON OF THE IMPACT EFFECTS ON A SHORT CYLINDER WITH A HEMISPHERICAL END AND A HOLLOW SPHERE IS BEING MADE. THE COMPARISON IS BETWEEN SPECIMENS OF THE SAME DIMENSIONS AND SAME MASS. IF THE OPENED-ENDED SPECIMENS RESPOND TO IMPACT IN A MANNER SIMILAR TO THE SPHERES THEY CAN BE USED TO CALIBRATE EQUIPMENT INSTEAD OF EXPENDING A MUCH MORE COSTLY SPHERICAL SPECIMEN. PRESENT RESULTS INDICATE A VERY SIMILAR RESPONSE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*IMPACT SHOCK + TEST, DESTRUCTIVE + TEST, DROP

CATEGORY 3  
TRANSPORTATION AND HANDLING OF RADIOACTIVE MATERIALS

3-15326 ALSO IN CATEGORY 13  
HOFFMAN TL  
STAINLESS STEEL TANKS FOR RADIOACTIVE WASTE STORAGE  
IDAHO NUCLEAR CORPORATION, IDAHO FALLS, IDAHO  
3 PAGES, 1 FIGURE, 1 TABLE, 8 REFERENCES, MATERIALS PROTECTION, 5(10), PAGES 13-15, (OCTOBER 1966)

AT THE IDAHO CHEMICAL PROCESSING PLANT, IDAHO FALLS, STAINLESS-STEEL TANKS ARE USED FOR LONG-TERM INTERIM STORAGE OF ACIDIC, RADIOCHEMICAL WASTES PRIOR TO THEIR CONVERSION TO SOLID BY FLUIDIZED BED CALCINATION. THESE TANKS (SEVEN 300,000-GALLON, TWO 30,000-GALLON) ARE CONTAINED IN CONCRETE VAULTS 10 FT UNDERGROUND AND CONTAIN MILLIONS OF CURIES OF FISSION PRODUCTS. THEY ARE DESIGNED SO THAT LEAKAGE WILL BE COLLECTED IN THE CONCRETE VAULTS AND JETTED TO AN EMPTY STANDBY TANK. ALL VESSELS ARE TUNGSTEN-INERT-GAS WELDED, AND THREE TYPES OF STAINLESS STEELS ARE USED (348, 304L, AND 316ELC). THE TANKS WERE WELL CHOSEN TO CONTAIN ACIDIC RADIOCHEMICAL WASTES. CONTINUOUS CORROSION TESTING OF ALL FORMS OF MATERIALS IN TANK CONSTRUCTION--TYPES 348, 304L, AND 316ELC STAINLESS STEEL--SHOWS MINIMUM CORROSION AND DETECTS EARLY LOCALIZED ATTACK.

\*WASTE STORAGE + STEEL, STAINLESS + STORAGE CONTAINER + TEST, NONDESTRUCTIVE +  
WASTE DISPOSAL, TERRESTRIAL + WELDING

3-15901 ALSO IN CATEGORIES 9 AND 12  
VALIUNAS A + POPLAWSKI B  
NUCLEAR SAFETY. ANNOTATED BIBLIOGRAPHY. SURVEYS OF SOVIET SCIENTIFIC AND TECHNICAL LITERATURE  
LIBRARY OF CONGRESS  
AD-623557 + N-66-11853 + ATD-B-65-76 +. 60 PAGES, OCTOBER 22, 1965

THIS ANNOTATED BIBLIOGRAPHY DEALS WITH CERTAIN ASPECTS OF NUCLEAR SAFETY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*BIBLIOGRAPHY + \*DOSIMETRY, GENERAL + \*FUEL HANDLING + \*INSTRUMENTATION, GENERAL +  
\*RADIATION PROTECTION, CHEMICAL + RADIATION PROTECTION, ORGANIZATION

3-15918 ALSO IN CATEGORIES 17 AND 13  
SPONTANEOUS IGNITION OF URANIUM FOILS  
DIVISION OF OPERATIONAL SAFETY, USAEC  
2 PAGES, 1 FIGURE, SERVICUS ACCIDENTS BULLETIN NO. 278 (MARCH 17, 1967)

A CONTAINER WAS OPENED TO REMOVE 32 UNALLOYED 93% ENRICHED URANIUM FOILS FOR TRANSFER TO A DIFFERENT CONTAINER. LESS THAN A MINUTE AFTER THE FOILS WERE REMOVED, AND WHILE 25 FOILS WERE STILL HANDHELD, THE ENVELOPES BROKE OUT IN FLAMES. THE FIRE WAS EXTINGUISHED WITHOUT DAMAGE TO THE FACILITY, AND THE WORKERS DID NOT RECEIVE INTERNAL DEPOSITION EXCEEDING PERMISSIBLE LEVELS. THERE IS EVIDENCE THAT STORAGE OF URANIUM IN LOW-OXYGEN-CONTENT ATMOSPHERES, PARTICULARLY IN THE PRESENCE OF SMALL AMOUNTS OF WATER VAPOR, CAN LEAD TO SELF-IGNITION ON EXPOSURE TO AIR.

AVAILABILITY - AEC DIVISION OF PUBLIC INFORMATION, WASHINGTON, D. C. 20545

\*ACCIDENT, GENERAL + FIRE + FUEL STORAGE + IGNITION + URANIUM

CATEGORY 4  
AEROSPACE SAFETY

4-13040  
THE DEVELOPMENT OF A DYNAMIC THREE-DIMENSIONAL ATMOSPHERIC MODEL FOR USE IN THE STUDY OF THE SELECTIVITY OF ORBITAL DECAY (TASK III)  
HITTMAN ASSOCIATES, INC.  
SC-DC-65-1701 +. 79 PAGES, JULY 1965

IMPACT LATITUDES OF A BODY DECAYING FROM A POLAR ORBIT MAY BE SELECTIVE UNDER INFLUENCE OF THE ATMOSPHERIC SOLAR BULGE. FIRST PHASE OF THIS STUDY WAS A LITERATURE SURVEY, SELECTION OF ATMOSPHERIC MODEL AND MODEL DEVELOPMENT. FOLLOWING A SURVEY OF THE ATMOSPHERIC CHARACTERISTICS, A DETAILED DISCUSSION AND EVALUATION OF THE VARIOUS MODELS IS DEVELOPED. COMPARISON OF VARIOUS MODELS SHOWS ONLY THAT OF ANDERSON INDICATES VARIATION OF DENSITY WITH LATITUDE AND IT WAS SELECTED. IT INCLUDES DENSITY AS A FUNCTION OF TIME, ALTITUDE, SEASON, SOLAR ACTIVITY AND LATITUDE. THE MODEL COMPUTER CODE IS TABULATED AS FUNCTION OF THE PARAMETERS. THIS REPORT CONTAINS A BIBLIOGRAPHY AND COMPUTER PROGRAM.

AEROSPACE SAFETY + ANALYTICAL MODEL + BIBLIOGRAPHY

4-13971 ALSO IN CATEGORIES 6 AND 5  
BACKUS CF  
FAST TRANSIENTS IN THERMIONIC REACTORS  
WESTINGHOUSE ELECTRIC CORPORATION  
14 PAGES, 3 TABLES, 15 FIGURES, 5 REFERENCES, AEC TRANSACTIONS 9(2) PAGE 459 (WINTER 1966) PITTSBURGH, PENNSYLVANIA OCTOBER 30-NOVEMBER 3, 1966, AMERICAN NUCLEAR SOCIETY

THIS PAPER CONCENTRATES ON FAST TRANSIENTS AND SAFETY STUDIES. A DESCRIPTION OF A TYPICAL THERMIONIC FUEL ELEMENT IS GIVEN ALONG WITH THE MATHEMATICAL MODEL USED FOR THE DYNAMIC ANALYSIS. RESULTS ARE PRESENTED FOR STUDIES ON THE SUDDEN OPEN CIRCUIT ACCIDENT, THE PUMP STOPPAGE ACCIDENT, AND THE ACCIDENT RESULTING FROM LARGE INSERTIONS OF REACTIVITY.

\*REACTOR TRANSIENT + ACCIDENT, REACTIVITY + EXCURSION, LARGE + REACTOR DYNAMICS + SPACECRAFT

4-13930 ALSO IN CATEGORY 7  
DAVIS MV + BACKUS CF + BRITT EJ + TRUNER DM  
THE EFFECT OF SIMULATED FISSION PRODUCTS IN THE INTER-ELECTRODE SPACING OF THERMIONIC DIODE ANNUAL REPORT NO. 1, NOVEMBER 1, 1964--NOVEMBER 1, 1965  
UNIVERSITY OF ARIZONA  
AD-625586 +. 23 PAGES, DECEMBER 17, 1965

THE NUCLEAR HEATING OF IN-CORE THERMIONIC DIODES TO DIRECTLY CONVERT HEAT TO ELECTRICITY ALLOWS A COMPACT, HIGH-POWERED, LONG-LIVED SYSTEM DESIGN. THERE ARE, HOWEVER, SOME UNANSWERED PROBLEMS, ONE OF WHICH IS THE EFFECT OF ADMITTING FISSION PRODUCTS INTO THE INTERELECTRODE SPACES OF THE SYSTEM. THIS COULD HAPPEN IN THE CASE OF A CLADDING RUPTURE OR BY THE IMPURITIES DIFFUSING THROUGH THE FUEL FROM THE HOTTER CENTER TO THE SURFACES OF THE FUELED EMITTER. THE EFFECTS OF HIGH TEMPERATURE ON THE INSULATING PROPERTIES OF CERAMIC MATERIALS HAVE BEEN EXAMINED TO DELINEATE THE PROBLEMS OF ELECTRICAL BREAKDOWN THAT MAY OCCUR IN HIGH-POWERED THERMIONIC REACTOR SYSTEMS AND TO DEFINE SAFE AREAS OF SYSTEM TEMPERATURE AND VOLTAGES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$1.00 COPY, \$0.50 MICROFICHE

\*AEROSPACE SAFETY + \*ELECTRIC POWER, GENERAL + \*FISSION PRODUCT RELEASE, GENERAL + \*SPACECRAFT + ANALYTICAL MODEL + ANALYTICAL TECHNIQUE, CALIBRATION + FISSION GAS RELEASE + INSTRUMENTATION, GENERAL + IODINE + KRYPTON + NOBLE GAS + SIMULATION + XENON

4-13943 ALSO IN CATEGORIES 14 AND 16  
GOLDMAN MI  
SAFETY ASPECTS OF GROUND TESTING FOR LARGE NUCLEAR ROCKETS  
NUS CORPORATION  
5 PAGES, 2 FIGURES, 1 TABLE, 11 REFERENCES, NUCLEAR APPLICATIONS 2(2), PAGES 94-98, (APRIL 1966)

NORMAL TESTING OF LARGE NUCLEAR-ROCKET ENGINES AT NRDS COULD IMPOSE SOME RESTRICTIONS ON THE FUEL PERFORMANCE THAT WOULD NOT OTHERWISE BE REQUIRED BY SPACE-FLIGHT OPERATION. THE BEST APPARENT SOLUTION WOULD REQUIRE A CAPABILITY FOR DECONTAMINATING EFFLUENT GASES PRIOR TO RELEASE TO THE ATMOSPHERE. TESTS WILL ALSO BE CONTROLLED BY WIND AND ATMOSPHERIC STABILITY CONDITIONS, AND THE REQUIREMENTS FOR MONITORING AND CONTROL OF OFF-SITE EXPOSURES WILL BE MUCH MORE STRINGENT THAN AT PRESENT. AN ANALYSIS OF MAXIMUM ACCIDENTS INDICATES THAT PROJECTIONS OF PRESENT CREDIBLE OCCURRENCES CANNOT BE TOLERATED IN LARGER ENGINE TESTS. THE APPARENT ALTERNATIVES TO A SIGNIFICANT REDUCTION IN CREDIBLE ACCIDENT CONSEQUENCES ARE THE ESTABLISHMENT OF A FACILITY UNDERGROUND, IN AN AREA EQUIVALENT TO THE PACIFIC WEAPONS PROVING GROUND, OR IN SPACE.

\*FISSION PRODUCT RELEASE, GENERAL + \*REACTOR, SPACE + HAZARDS ANALYSIS + IODINE + KIWI + METEOROLOGY + POPULATION EXPOSURE

CATEGORY 4  
AEROSPACE SAFETY

4-13946

BOBKOV VG + DEMIN VP + KEIRIMMARKUS IB + KOVALEV EE + LARICHEV AV + SAKOVICH VA + SMIRENNY LN + SYCHKOV MA  
RADIATION SAFETY DURING SPACE FLIGHTS  
NASA-TT-F-356 +. 440 PAGES, REFERENCE, TRANSLATION OF RADIATIONNAYA BEZOPASNOST PRI KOSMICHESKIKH  
POLETAKH. ATOMIZDAT, MOSCOW, 1964

THIS IS ONE OF THE FIRST SOVIET BOOKS THAT EXAMINES IN DETAIL THE PROBLEM OF SAFETY FROM  
RADIATION DANGER DURING SPACE FLIGHT. THE BOOK COVERS THE FOLLOWING AREAS - COSMIC RADIATION  
DOSIMETRY, RADIATION CONDITIONS IN SPACE, INTERACTION BETWEEN RADIATION AND MATTER,  
PROTECTION FROM SPACE RADIATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$7.00 COPY, \$2.00 MICROFICHE

\*AEROSPACE SAFETY + \*UNION OF SOVIET SOCIALIST REPUBLICS + DOSE + ENERGY SOURCE

4-13947

CAMPANA RJ + BAKER F + LEEDY R  
TEST EVALUATION OF SNAP-15A GENERATOR  
GENERAL ATOMIC DIV. OF GENERAL DYNAMICS  
GA-5781 +. 140 PAGES, NOVEMBER 30, 1964

DURING THE DEVELOPMENT AND AS A PRELIMINARY STEP TO GENERATOR TESTING, THE MAJOR COMPONENTS OF  
THE GENERATOR WERE TESTED INDIVIDUALLY, PARTICULARLY THE THERMOCOUPLES AND THERMOBUNDLES.  
THE POLICY OF CONDUCTING ACCELERATED COMPONENT TESTING WAS ADOPTED BECAUSE OF THE RAPIDITY  
WITH WHICH INFORMATION COULD BE OBTAINED AT A RELATIVELY LOW COST, COMPARED WITH TESTING  
WHOLE GENERATORS. THE MEANS OF ACCELERATING THE TESTS TO DELINEATE THE FAILURE MECHANISMS  
AND MARGINS OF SAFETY WERE TESTING AT TEMPERATURES ABOVE THE MAXIMUM OPERATING TEMPERATURE  
OF THE COMPONENT AND, IN THE CASE OF ELECTRICAL INSULATION, EXPOSING THE INSULATION TO HIGHER  
POTENTIALS THAN WOULD EXIST IN THE GENERATOR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$4.00 COPY, \$1.00 MICROFICHE

\*AEROSPACE SAFETY + \*TEST, COMPONENT + SNAP 15 (SYSTEMS FOR NUCLEAR AUXILIARY POWER)

4-13963

HANSEN HE  
SPACE NUCLEAR SAFETY 1966  
SANDIA LABORATORY  
12 PAGES, 9 FIGURES, 2 TABLES, 42 REFERENCES, NUCLEAR SAFETY 8(1), PAGES 1-12, (FALL 1966)

A GENERAL SURVEY IS PRESENTED OF THE PRESENT STATE OF SPACE-NUCLEAR-SAFETY STUDIES. THE  
RECENTLY FORMED AEC DIVISION OF SPACE NUCLEAR SYSTEMS, WHICH HAS RESPONSIBILITY FOR ALL SPACE  
NUCLEAR POWER AND PROPULSION SYSTEM DEVELOPMENT, IS DESCRIBED. A SYSTEMATIC APPROACH TO  
SPACE NUCLEAR SAFETY ANALYSIS IS PRESENTED, AND A BASIS FOR ACCEPTABLE SAFETY GUIDELINES IS  
SUGGESTED. THE SEVERE ENVIRONMENTS ASSOCIATED WITH LAUNCH-PAD ACCIDENTS AND REENTRY ARE  
DISCUSSED, AND THE SAFETY-ANALYSIS STEPS ARE BRIEFLY DESCRIBED.

\*AEROSPACE SAFETY + ACCIDENT ANALYSIS + ACCIDENT, HYPOTHETICAL

4-14058

ALSO IN CATEGORIES 6 AND 17

JOHNSON RP  
SNAPTRAN 10A/2 KINETICS TESTING AND DESTRUCT REACTOR EXPERIMENTS.  
ATOMICS INTERNATIONAL, CANOGA PARK  
NAA-SR-11906 +. 113 PAGES, 35 FIGURES, 24 TABLES, 14 REFERENCES, JULY 15, 1966

PROVIDES BRIEF DESCRIPTION OF REACTORS, MODIFICATIONS TO CONTROL ROD DRIVES AND IN-CORE  
INSTRUMENTS FOR TEST, PROGRAM, AND PRELIMINARY RESULTS FOR SNAPTRAN-1 (CONTINUAL STEPWISE  
REACTIVITY INSERTIONS TO \$4.15 WITHOUT DESTRUCTION) AND -2 (SINGLE-STEP \$5.06 INSERTION WITH  
DESTRUCTION).

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$4.00 COPY, \$0.75 MICROFICHE

\*ACCIDENT, REACTIVITY + \*TEST, PLANT RESPONSE + REACTOR, SPACE +  
SNAP 10A (SYSTEMS FOR NUCLEAR AUXILIARY POWER)

4-14161

ALSO IN CATEGORY 5

LILLIE AF  
FREE CONVECTION OF A SODIUM-POTASSIUM EUTECTIC IN AN ENCLOSED SPACE BETWEEN TWO VERTICAL PLATES WITH  
UNIFORM HEAT FLUX  
ATOMICS INTERNATIONAL, CANOGA PARK  
NAA-SR-12004 +. 77 PAGES, 30 FIGURES, 10 TABLES, 24 REFERENCES, OCTOBER 25, 1966

CATEGORY 4  
AEROSPACE SAFETY

4-14161 \*CONTINUED\*

AN EXPERIMENTAL INVESTIGATION HAS BEEN CONDUCTED OF LAMINAR STEADY-STATE FREE CONVECTION IN AN ENCLOSED SPACE BETWEEN PARALLEL VERTICAL WALLS WITH UNIFORM HEAT FLUX. MAJOR INTEREST CENTERED ON THE USE OF SODIUM-POTASSIUM EUTECTIC (NAK) LIQUID-METAL HEAT-TRANSFER MEDIUM. HELIUM AND AN OIL-LIKE FLUID (HB-40) WERE ALSO EMPLOYED TO PROVIDE VALIDATION OF THE NAK RESULTS. HEAT FLUXES OF 9,660 TO 45,500 BTU/HR-SQ. FOOT WERE ACHIEVED IN THE NAK RUNS. LONGITUDINAL TEMPERATURE PROFILES WERE MEASURED FOR BOTH THE HOT AND COLD HEAT-TRANSFER PLATES USING STAINLESS-STEEL-SHEATHED CHROMEL-ALUMEL THERMOCOUPLES. THE APPLIED HEAT FLUX AND THE SEPARATION DISTANCE BETWEEN THE PLATES WERE EXPERIMENTAL VARIABLES. THE EXPERIMENTAL RESULTS WERE COMPARED TO THE ANALYTICAL PREDICTIONS DETERMINED FROM THE THEORY AS GIVEN BY SPARROW AND GREGG FOR LAMINAR STEADY-STATE FREE CONVECTION ON A VERTICAL WALL WITH UNIFORM HEAT FLUX. THE RESULTS INDICATE THAT THE LOCAL HEAT-TRANSFER COEFFICIENTS AGREED WITHIN PLUS-OR-MINUS 30% EVEN THOUGH A BASIC BOUNDARY CONDITION USED IN THE THEORY WAS VIOLATED. ON THE COLD PLATE, WHERE THE UNIFORM HEAT FLUX CONDITION WAS NOT MET, THE AGREEMENT WAS LESS SATISFACTORY (PLUS-OR-MINUS 50%). AVERAGE HEAT TRANSFER COEFFICIENTS AGREED WITHIN PLUS-OR-MINUS 20% FOR THE UNIFORM HEAT FLUX CONDITION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.75 MICROFICHE

\*HEAT TRANSFER, NATURAL CONVECTION + \*METAL, LIQUID + HEAT TRANSFER + HEAT TRANSFER EXPERIMENT + NAK (SODIUM POTASSIUM ALLOY) + SODIUM

4-14163 ALSO IN CATEGORY 5  
COE HM + GUTIERREZ DA + FENN DB

COMPARISON OF CALCULATED AND MEASURED CHARACTERISTICS OF HORIZONTAL MULTITUBE HEAT EXCHANGER WITH STEAM CONDENSING INSIDE TUBES  
LEWIS RESEARCH CENTER, CLEVELAND, (NASA)  
NASA-TN-D-3670 +. 48 PAGES, 22 FIGURES, 5 TABLES, 8 REFERENCES, OCTOBER 1966

AS PART OF AN OVERALL RESEARCH PROGRAM OF RANKINE POWER SYSTEMS FOR SPACE VEHICLES, A TEST FACILITY USING WATER AS THE WORKING FLUID WAS CONSTRUCTED. ONE OF THE PURPOSES WAS TO OBTAIN EXPERIMENTAL DATA ON A CONVECTIVELY COOLED SHELL-AND-TUBE CONDENSER AND TO COMPARE THE RESULTING VALUES WITH PREDICTED VALUES. MEASURED VALUES OF THE OVERALL HEAT-TRANSFER COEFFICIENT, THE CONDENSING LENGTH, AND THE OVERALL PRESSURE DROP WERE DETERMINED OVER A RANGE OF CONDENSER INLET PRESSURES OF 0 TO 30 POUNDS PER SQUARE INCH ABSOLUTE AND VAPOR QUALITIES OF 40 TO 100%, WITH TUBE INLET VAPOR REYNOLDS NUMBERS OF 13,000 TO 44,000. THE EXPERIMENTAL CONDENSING DATA WERE TAKEN WITH A CONSTANT COOLANT FLOW RATE IN THE SHELL AND WITH TWO SET VALUES OF COOLANT INLET TEMPERATURE. THE PREDICTED OVERALL COEFFICIENTS AND CONDENSING LENGTHS WERE CALCULATED BY USING CONVENTIONAL CORRELATIONS AND EQUATIONS. THE PREDICTED OVERALL PRESSURE DROPS INCLUDED A CALCULATION FOR THE TWO-PHASE FRICTION PRESSURE DROP THAT UTILIZED AN APPROXIMATING EQUATION (DERIVED IN THIS REPORT) BASED ON THE CORRELATION OF LOCKHART AND MARTINELLI.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$2.00 COPY

\*CONDENSATION + FLOW, TWO PHASE + HEAT EXCHANGER + HEAT TRANSFER + HEAT TRANSFER EXPERIMENT

4-14164 ALSO IN CATEGORY 5

STOCKMAN NO + BITTNER EC + SPRAGUE EL  
COMPARISON OF ONE- AND TWO-DIMENSIONAL HEAT TRANSFER CALCULATIONS IN CENTRAL FIN-TUBE RADIATORS  
LEWIS RESEARCH CENTER, CLEVELAND, (NASA)  
NASA-TN-D-3645 +. 29 PAGES, 7 FIGURES, 3 TABLES, 12 REFERENCES, SEPTEMBER 1966

AN ANALYSIS IS GIVEN OF THE TWO-DIMENSIONAL HEAT TRANSFER, INCLUDING GRAY-BODY RADIANT INTERCHANGE, IN THE CROSS SECTION OF A CENTRAL FIN-TUBE RADIATOR PANEL. RESULTS OF THIS ANALYSIS ARE USED TO EVALUATE SEVERAL ONE-DIMENSIONAL METHODS OF VARYING COMPLEXITY FOR CALCULATING THE HEAT REJECTION RATE OF A CENTRAL FIN-TUBE RADIATOR PANEL. MOST METHODS GAVE GOOD AGREEMENT WITH THE TWO-DIMENSIONAL RESULTS. IN VIEW OF THE EXCELLENT AGREEMENT OF ONE OF THE SIMPLER METHODS, WHICH NEGLECTS TUBE-WALL TEMPERATURE DROP AND ACCOUNTS FOR RADIANT INTERCHANGE BETWEEN FIN AND TUBE SIMPLY BY USING THE PROJECTED AREA OF THE TUBE, IT SEEMS UNWARRANTED TO USE THE MORE COMPLEX METHODS, WHICH GAVE NO BETTER AGREEMENT. DETAILS OF THE NUMERICAL METHOD OF SOLUTION OF THE TWO-DIMENSIONAL EQUATIONS ARE GIVEN IN AN APPENDIX.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$2.00 COPY

\*HEAT EXCHANGER + \*HEAT TRANSFER AUGMENTATION + FIN + HEAT TRANSFER + HEAT TRANSFER ANALYSIS + HEAT TRANSFER, RADIANT

4-14165 ALSO IN CATEGORY 5

CHAPMAN AJ  
EVALUATION OF SEVERAL SILICONE, PHENOLIC, AND EPOXY BASE HEAT-SHIELD MATERIALS AT VARIOUS HEAT-TRANSFER RATES AND DYNAMIC PRESSURES  
LANGLEY RESEARCH CENTER, LANGLEY STATION, HAMPTON, VA., (NASA)  
NASA-TN-D-3619 +. 56 PAGES, 10 FIGURES, 3 TABLES, 13 REFERENCES, OCTOBER 1966

THREE ELASTOMERIC ABLATIVE MATERIALS WITH A SILICONE RESIN BASE AND THREE RIGID ABLATORS WITH AN EPOXY OR PHENOLIC RESIN BASE WERE TESTED IN AN ELECTRIC-ARC-HEATED GAS STREAM. THE MATERIALS WERE REINFORCED WITH A PHENOLIC-GLASS-FIBER HONEYCOMB MATRIX. SEVENTY-ONE

CATEGORY 4  
AEROSPACE SAFETY

4-14165 \*CONTINUED\*

SPECIMENS, FABRICATED AS 3-IN-DIAMETER (76 MM) FLAT-FACE DISKS, WERE EXPOSED TO A RANGE OF TEST STREAM CONDITIONS WHICH INCLUDED STAGNATION ENTHALPY FROM 1850 TO 3370 BTU/LBM (4.3 TO 7.8 MJ/KG), DYNAMIC PRESSURE FROM NEARLY 0 TO 1000 LBF/FT SQUARED (48 KN/M SQUARED), AND HEAT-TRANSFER RATE FROM 20 TO 220 BTU/FT SQUARED-SEC (0.23 TO 2.5 MW/M SQUARED). A TEST STREAM OF REDUCED OXYGEN CONCENTRATION (3 PERCENT OXYGEN AND APPROXIMATELY 97% NITROGEN) WAS USED TO SIMULATE OXIDATION CONDITIONS IN AIR AT HIGH ENTHALPY. THE RESULTS PRESENTED INCLUDE BACK-SURFACE TEMPERATURE RESPONSE, THICKNESS OF DEGRADED AND UNDEGRADED LAYERS AFTER TESTING, AND PHOTOGRAPHS SHOWING CONDITIONS OF THE MATERIALS AFTER TESTING. THE THERMAL SHIELDING PERFORMANCE OF THE MATERIALS IS COMPARED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$2.50 COPY

\*ABLATION + \*FLOW, HIGH SPEED + \*REENTRY, ATMOSPHERIC + HEAT TRANSFER + HEAT TRANSFER EXPERIMENT

4-14179

BRYANT PM

ASSESSMENT OF THE EFFECTS OF RELEASES OF ACTIVITY IN THE UPPER ATMOSPHERE DUE TO POSSIBLE BURN-UP OF ISOTOPIC POWER GENERATORS  
UNITED KINGDOM ATOMIC ENERGY, HARWELL  
AHSB(RP)-M-41 +. 11 PAGES, 2 TABLES, 19 REFERENCES, SEPTEMBER 1966

THE POTENTIAL APPLICATIONS OF ISOTOPIC GENERATORS AS SOURCES OF AUXILIARY POWER IN SPACE INVOLVE QUANTITIES OF RADIONUCLIDES SUFFICIENT TO PRODUCE UP TO 1 KW (ELECTRICAL) OF POWER. AS THE OVERALL RATE OF FUTURE FAILURES IN THE UPPER ATMOSPHERE, RESULTING IN BURNUP OF ALL OR MOST OF THE INITIAL ACTIVITY, IS LIKELY TO BE LOW, CONSIDERATION IS GIVEN TO THE POSSIBLE CONSEQUENCES OF BURNUP OF A SINGLE 1-KW GENERATOR FUELED WITH ANY OF NINE NUCLIDES SELECTED FOR STUDY. PREDICTION OF THE ACTIVITY IN SURFACE AIR AND IN MILK IS BASED ON DATA FROM WEAPONS TESTS, AND PREDICTED ACTIVITIES ARE COMPARED WITH REFERENCE LEVELS DERIVED FOR THE PURPOSE. IT APPEARS THAT MORE THAN TEN SUCH GENERATORS FUELED WITH PLUTONIUM-238 OR STRONTIUM-90, THE NUCLIDES WHICH WOULD PRESENT MORE POTENTIAL PROBLEMS THAN THE OTHERS STUDIED, COULD BE BURNED UP WITHOUT THE REFERENCE LEVELS BEING EXCEEDED AND THAT ONLY IF THE RATE OF FAILURE INVOLVING PREMATURE OR UNPLANNED BURNUP WERE TO BE MUCH GREATER THAN THE LOW RATE ANTICIPATED WOULD SOME RESTRICTION ON THEIR USE IN SPACE BE NECESSARY.

AVAILABILITY - MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669

\*ACCIDENT ANALYSIS + \*AEROSPACE SAFETY + \*RADIOACTIVITY, RELEASE + ACTIVITY BUILDUP + FAILURE, GENERAL + PLUTONIUM + STRONTIUM

4-14181

LERLANC JG + POUCHER FW

MERCURY RANKINE PROGRAM INTEGRATED SYSTEM TEST (PSM-3). VOLUME I. SYSTEM OPERATION.  
ATOMICS INTERNATIONAL, CANOGA PARK  
NAA-SR-11945 (VOL. 1) +. 114 PAGES, 48 FIGURES, 11 TABLES, OCTOBER 25, 1966

A COMPLETE NONNUCLEAR MERCURY RANKINE ORBITAL STARTUP SIMULATOR SYSTEM PRODUCING AN AVERAGE OF ABOUT 3 KWE WAS SUCCESSFULLY FABRICATED AND OPERATED FOR 706 HOURS AND 108 STARTUPS. THE SYSTEM, DESIGNATED PSM-3, WAS THE THIRD IN A SERIES OF THREE PROTOTYPE SYSTEM MOCKUPS FABRICATED AND OPERATED AT ATOMICS INTERNATIONAL AS PART OF THE SNAP 2 PROGRAM (LATER REDIRECTED AS THE MERCURY RANKINE PROGRAM). THIS REPORT (VOLUME I) DESCRIBES THE MAJOR OBJECTIVES AND ACCOMPLISHMENTS OF THE SYSTEM TEST, THE PROGRAM PLAN, TEST OPERATIONS, AND AN EVALUATION OF THE TEST RESULTS WITH REGARD TO THE MERCURY RANKINE PROGRAM. VOLUME II PRESENTS THE DETAILED ANALYSIS AND CORRELATION OF THE TEST DATA.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$4.00 COPY, \$0.75 MICROFICHE

\*AEROSPACE SAFETY + \*SNAP 2 (SYSTEMS FOR NUCLEAR AUXILIARY POWER) + \*TESTING + REACTOR, SPACE + TEST, RENCH + TEST, COMPONENT + TEST, PLANT RESPONSE + TEST, PREOPERATIONAL + TEST, SYSTEM OPERABILITY

4-14317

ALSO IN CATEGORY 5

KITE FD

LAUNCH ABORT ENVIRONMENT STUDY. AN INTERIM REPORT  
SANDIA LABORATORY, ALBUQUERQUE  
SC-RR-64-1651 +. 19 PAGES, FEBRUARY 1965

EARLY IN 1962, SANDIA CORPORATION ACCEPTED THE MANAGEMENT OF INDEPENDENT ASSESSMENT OF AEROSPACE NUCLEAR SAFETY. ONE AREA CONCERNS CONDUCTING GROUND TESTS ON AEROSPACE NUCLEAR SYSTEMS TO DETERMINE HOW THESE SYSTEMS WOULD BE AFFECTED BY VARIOUS TYPES OF ACCIDENTS WHICH MIGHT OCCUR DURING GROUND HANDLING, TRANSPORTATION, OR LAUNCH. THIS REPORT DISCUSSES METHODS OF DETERMINING THE PRESSURE AND TEMPERATURE ENVIRONMENT OF AN ABORTED LAUNCH.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY

ACCIDENT, CONSEQUENCES + ACCIDENT, NONNUCLEAR + EXPLOSION + FIRE + HIGH TEMPERATURE + NUCLEAR ROCKET + PRESSURE, EXTERNAL + SNAP, GENERAL (SYSTEMS FOR NUCLEAR AUX. POWER)



CATEGORY 4  
AFROSPACE SAFETY

4-14334 ALSO IN CATEGORY 17  
HALFEN FJ  
LSGR FAST SHUTDOWN PROCEDURE  
ATOMICS INTERNATIONAL  
NAA-SR-MEMO-11041 +. 45 PAGES, FEBRUARY 12, 1965

SEVERAL ADDITIONAL SHUTDOWN PROCEDURES WERE ANALYZED FOR POSSIBLE USE ON THE 200-MWE SGR. THESE SCHEMES ARE - (1) SEQUENCED ROD DROP, (2) ROD RUNDOWN AND PUMP SHUTDOWN DELAY, (3) SCRAM AND PUMP SHUTDOWN LEAD, (4) ROD DROP AND RUNDOWN OF RODS. ALL THESE SCHEMES ASSUME THAT THE PUMPS ARE SHUTDOWN SOME TIME PRIOR TO, DURING, OR SHORTLY AFTER CONTROL-ROD INSERTION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$2.00 COPY

\*REACTOR, LIQUID METAL COOLED + CONTROL ROD + CONTROL SYSTEM + PUMP + REACTOR, GRAPHITE MODERATED

4-14379 ALSO IN CATEGORIES 9 AND 6  
PACKE DR + SCHOENBERG AA + JEFFERIES KS + TEW RC  
ANALYSIS OF CONDENSING PRESSURE CONTROL FOR SNAP-8 SYSTEM  
LEWIS RESEARCH CENTER, CLEVELAND, OHIO, (NASA)  
NASA-TM-X-1292 +. 26 PAGES, 2 TABLES, 18 FIGURES, 1 REFERENCE, OCTOBER 1966

THE EXPECTED VARIATIONS OF CONDENSING PRESSURE AND METHODS FOR CONTROLLING THESE VARIATIONS IN THE SNAP-8 RANKINE CYCLE WERE INVESTIGATED. THE EFFECTS OF ENVIRONMENTAL DISTURBANCES AND COMPONENT DEGRADATION ON THE SYSTEM WERE STUDIED WITH A DIGITAL COMPUTER. THE STUDY COMPARED THE EFFECTIVENESS OF COOLANT BYPASS FLOW CONTROL WITH CONDENSATE INVENTORY CONTROL AND CONCLUDED THAT THE BYPASS SYSTEM HAD ADVANTAGES IN THIS APPLICATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$1.00 COPY, \$0.50 MICRONEGATIVE

\*MATHEMATICAL STUDY + \*SIMULATION + \*SNAP 8 (SYSTEMS FOR NUCLEAR AUXILIARY POWER) + ANALYTICAL MODEL + CONTROL SYSTEM + HEAT EXCHANGER + METAL, LIQUID

4-14729  
BLAKE VF  
AEROSPACE NUCLEAR SAFETY  
SANDIA CORPORATION  
SC-DC-65-1752 + CONF-651026-1 +. 13 PAGES, SEPTEMBER 22, 1965, FROM 1ST AIAA RANKINE CYCLE SPACE POWER SYSTEM SPECIALISTS CONFERENCE, CLEVELAND

THIS PRESENTATION PROVIDES A BRIEF HISTORY OF THE AEC PROGRAM TO INTRODUCE NUCLEAR POWER INTO SPACE, AND THE RESULTS OF EARLY FLIGHTS. SAFETY WILL BE DISCUSSED, AS WILL THE DIRECTION TAKEN BY EARLY DESIGNERS TO ACHIEVE IT. THE DISCUSSIONS ALSO COVER ALTERNATIVE APPROACHES TO SAFETY WHICH WERE INITIALLY CONSIDERED. THERE WILL BE A DISCUSSION OF POWER SUPPLIES CURRENTLY UNDER DEVELOPMENT, AND THE APPROACHES BEING FOLLOWED TO ACHIEVE SAFETY. A SERIES OF CHARTS WILL BE PRESENTED WHICH CATEGORIZE THE MAIN SAFETY APPROACHES, AND WILL PROVIDE THE BASIS FOR A SYSTEMATIC SAFETY ASSESSMENT. FINALLY, A SAFETY POLICY FOR FUTURE DESIGN WILL BE PRESENTED. IT WILL BE SHOWN THAT SAFETY IS NOT THE RESPONSIBILITY OF ANY ONE AGENCY BUT RATHER A PROBLEM OF ALL. THE CHALLENGE WILL BE PRESENTED TO ALL PARTS OF THE AEROSPACE INDUSTRY TO WORK TOGETHER TO PROVIDE NOT JUST ADEQUATE SAFETY BUT THE MOST SAFETY THAT PRESENT AND FUTURE TECHNOLOGY CAN PROVIDE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151

\*AEROSPACE SAFETY

4-14730 ALSO IN CATEGORY 9  
KECK LJ  
RF-2 TELEMETRY SYSTEM  
SANDIA CORPORATION, ALBUQUERQUE, NEW MEXICO  
SC-DR-65-205 +. 96 PAGES, JULY 1965

THIS REPORT DESCRIBES THE DESIGN AND PERFORMANCE OF THE TELEMETRY SYSTEM FLOWN ON RE-ENTRY FLIGHT DEMONSTRATION 2, WHICH WAS THE SECOND IN SANDIA'S SERIES OF OPERATIONAL-SAFETY FLIGHT TESTS OF SYSTEMS FOR NUCLEAR AUXILIARY POWER.

AVAILABILITY - CLEARINGHOUSE OF FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*AEROSPACE SAFETY + \*INSTRUMENTATION, GENERAL + \*TESTING

CATEGORY 4  
AEROSPACE SAFETY

4-14732  
CLARK AJ  
AERO HEATING RESULTS FROM THE RFD-2 FLIGHT TEST  
SANDIA CORPORATION  
SC-DC-65-1601 + CONF-651101-37 +. 16 PAGES, OCTOBER 8, 1965, FROM THE 13TH CONFERENCE ON REMOTE SYSTEMS TECHNOLOGY, WASHINGTON, D.C.

RE-ENTRY FLIGHT DEMONSTRATION NO. 2 (RFD-2) WAS THE SECOND IN SANDIA CORPORATIONS SERIES OF OPERATIONAL SAFETY FLIGHT TESTS OF SYSTEMS FOR NUCLEAR AUXILIARY POWER (SNAP). THE SNAP GENERATOR FLOWN ON RFD-2 WAS AN INERT VERSION OF A SNAP 19 TYPE ISOTOPIIC GENERATOR DESIGNED BY THE NUCLEAR DIVISION OF THE MARTIN COMPANY. THE SAFETY CRITERIA USED IN THE DESIGN OF THIS ISOTOPIIC GENERATOR BY MARTIN PROVIDED FOR RELEASE OF THE ISOTOPIIC FUEL AND BURNUP AT ALTITUDES ABOVE 100,000 FEET IN THE EVENT OF A LATE ABORT DURING THE ASCENT PHASE OR AFTER ORBITAL DEPARTURE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*AEROSPACE SAFETY + \*SNAP 19 (SYSTEMS FOR NUCLEAR AUXILIARY POWER) + \*TEST, COMPONENT + \*TESTING

4-14733  
KAMPFE WR  
RE-ENTRY OVERPRESSURE SHOCK SIMULATION TEST  
SANDIA CORPORATION  
SC-DC-65-1554 + CONF-651016-2 +. 36 PAGES, OCTOBER 7, 1965

AT SANDIA CORPORATIONS ROCKET SLED TRUCK TEST FACILITY, A TEST SERIES SIMULATING RE-ENTRY CONDITIONS DURING A POSSIBLE OVERPRESSURE BLAST WAS CONDUCTED ON A LARGE RE-ENTRY VEHICLE (RV) FROM AUGUST 1963 THROUGH MAY 1964. THE DYNAMIC BLAST SIMULATION WAS ACHIEVED BY IMPACTING A PROPELLED SLED INTO A NONPROPELLED SLED CONTAINING THE INSTRUMENTED RV. THE IMPACT AMPLITUDE AND DURATION WERE CONTROLLED BY HAVING CUTTER BARS ON THE PROPELLED SLED, AND SHEAR-SHAPED METAL ATTACHED TO THE NONPROPELLED SLED. THE IMPACT FORCES WERE DISTRIBUTED AROUND THE RV AND APPLIED TO ITS SHELL BY PHENOLIC MICROBALLONS WHICH COMPLETELY SURROUNDED THE REENTRY SHIELD SURFACE. BEFORE FULL-SCALE TESTING COULD BEGIN, SCALE-MODEL TESTS WERE NECESSARY TO DEVELOP THE MATERIAL SHEARING METHOD AND TO SELECT THE PROPER MATERIAL TO SUPROUND THE REENTRY SHIELD SURFACE. THIS TESTING TECHNIQUE WAS DEVELOPED ON AND 18-INCH HIGH-G ACTUATOR IN APPROXIMATELY 12 MONTHS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*AEROSPACE SAFETY + \*IMPACT SHOCK + \*SIMULATION + \*TEST, DESTRUCTIVE + \*TESTING

4-14802 ALSO IN CATEGORY 5  
HUNTER HM + DEGARABEDIAN P  
FEASIBILITY STUDY OF DIRECT-FLOW GAS-CORE REACTOR SYSTEM  
TRW SYSTEMS  
N-66-16525 + NASA-CR-70013 + STL-4393-6003-R0-000 +. 316 PAGES, JANUARY 31, 1966

PROPULSION REACTOR CONCEPT EMPLOYS A SINGLE, AXIAL, GASEOUS FUEL JET SURROUNDED BY A COAXIAL STREAM OF GASEOUS HYDROGEN PROPELLANT. FUEL RETENTION IS ACHIEVED BY COLLECTING THE SINGLE FUEL STREAM IN A SCOOP LOCATED AT THE DISCHARGE END OF THE REACTOR WHERE IT IS COOLED, CONDENSED TO THE LIQUID PHASE, AND RECIRCULATED. THE STUDY IS PRIMARILY CONCERNED WITH THE SCOOP, WHICH OPERATES IN A SEVERE THERMAL ENVIRONMENT. COMPUTER PROGRAMS DETERMINED THE HEAT LOADS AND MIXING BETWEEN FUEL AND PROPELLANT STREAMS. VARIOUS ADVANCED SCOOP-COOLING TECHNIQUES WERE STUDIED. THE PROPULSION SYSTEM WAS ANALYZED TO UNCOVER CRITICAL PROBLEM AREAS AND TO ESTABLISH REASONABLE DESIGN AND PERFORMANCE CONDITIONS FOR EVALUATION OF SYSTEM FEASIBILITY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*FUEL ELEMENT + \*WASTE DISPOSAL, GENERAL + REACTOR, SPACE

4-15019 ALSO IN CATEGORY 16  
COUCHMAN ML + DEAGAZIO AW + KIM YS  
NURSE-1--A NUCLEAR ROCKET SAFETY EVALUATION CODE FOR THE CONTROL DATA 3600  
NUCLEAR UTILITY SERVICES, INC., WASHINGTON  
NUS-180 +. 282 PAGES, DECEMBER 1964

THE NURSE-1 CODE EVALUATES THE RADIATION HAZARDS RESULTING FROM THE RAPID RELEASE OF FISSION PRODUCTS FROM A NUCLEAR ROCKET ENGINE. THE PROGRAM DETERMINES SEVERAL DIFFERENT DOSES AT POSITIONS DOWN- AND CROSSWIND FROM THE POINT OF THE EXCURSION. THIS PROGRAM CONSIDERS ONLY A RELEASE OCCURRING IN THE LOWER ATMOSPHERE (ON OR NEAR THE GROUND). THE CODE HAS SEVERAL OPTIONS WHICH PERMIT SELECTION OF THE KINDS OF DOSES TO BE CALCULATED. THE MODELS AND PARAMETERS ARE BELIEVED TO REPRESENT THE BEST INFORMATION AVAILABLE AT THE TIME OF PREPARATION.

CATEGORY 4  
AEROSPACE SAFETY

4-15019 \*CONTINUED\*  
AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*AEROSPACE SAFETY + \*CODES AND STANDARDS + \*COMPUTER PROGRAM + \*NUCLEAR ROCKET + \*COMPUTER PROGRAM, METEOROLOGICAL + DOSE + FISSION PRODUCT RELEASE, GENERAL

4-15020  
O'CONNOR JD + SCHEIDT PC + PASCUAL JN  
ANALYSIS OF DEBRIS FROM APG-3, THE SIMULATED DESTRUCT SYSTEM TEST OF A FULL-SCALE ROVER/NERVA REACTOR NAVAL RADIOLOGICAL DEFENSE LAB., SAN FRANCISCO  
USNRDL-TR-1090 +. 42 PAGES, JUNE 24, 1966

ANALYSIS OF FRAGMENTS FROM ONE OF FOUR JETS OF DEBRIS OF A HIGH-EXPLOSIVE DESTRUCTION TEST OF A NUCLEAR REACTOR SHOWED THAT THE DISTRIBUTION OF WEIGHT WITH PARTICLE SIZE WAS BIMODAL, WITH A MAJOR PEAK NEAR 4 MM AND A MINOR ONE NEAR 0.2. THE DISTRIBUTION OF ACTIVITY ALSO WAS BIMODAL, WITH A MORE PRONOUNCED PEAK AT 0.2 MM. SPECIFICACTIVITY CALCULATIONS SHOWED THAT THE PEAK THAT CENTERED ABOUT THE 0.2-MM SIZE RANGE CONTAINED THE DEBRIS MOST HIGHLY ENRICHED IN URANIUM. LITTLE URANIUM WAS NOTED IN PARTICLES BELOW THIS SIZE. COMPARISON WITH RESULTS OF OTHER INVESTIGATIONS SHOWED THAT A SMALL SAMPLING EFFORT SUCH AS WAS UNDERTAKEN PROVIDES ADEQUATE SAMPLING OF THE DEBRIS FROM ONE JET. HOWEVER, VARIATION IN PARTICLE CHARACTERISTICS FROM ONE JET TO ANOTHER WOULD REQUIRE SAMPLING OF ALL JETS IN A FUTURE OPERATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*AEROSPACE SAFETY + \*NUCLEAR EXPLOSION DEBRIS + \*ROVER PROGRAM + \*TESTING + SAMPLING

4-15021  
NUTTER MJ + BREISCH G + FENSTERMACHER C  
DESIGN AND ANALYSIS OF AN EMERGENCY COOLDOWN SYSTEM FOR NUCLEAR ROCKET REACTOR GROUND TESTS LOS ALAMOS SCIENTIFIC LAB., UNIVERSITY OF CALIFORNIA  
LA-DC-7649 + CONF-660608-6 +. 22 PAGES, 10 FIGURES, 4 REFERENCES, FROM 2ND AIAA PROPULSION JOINT SPECIALIST CONFERENCE, COLORADO SPRINGS, 1965

A SYSTEM IS DESCRIBED FOR AUTOMATICALLY PROVIDING COOLANT TO A NUCLEAR-ROCKET TEST REACTOR DURING THE INITIAL PORTION OF AN EMERGENCY SHUTDOWN. THE ADIABATIC EXPANSION OF THE PRESSURIZING GAS IN A VARIABLE VOLUME AUTOMATICALLY PROGRAMS THE FLOW OF LIQUID HYDROGEN FROM A HIGH-PRESSURE DEWAR THROUGH SUITABLE VALVING TO COOL THE REACTOR SAFELY WHEN A SYSTEM MALFUNCTION, FACILITY FAILURE, SPURIOUS SIGNAL, OR UNPREDICTED REACTOR OPERATION CAUSES AN EMERGENCY SHUTDOWN. CALCULATIONS, INVOLVING THE SOLUTION TO THE SYSTEM DIFFERENTIAL EQUATIONS, INDICATE THAT AN ACCEPTABLE SHUTDOWN CAN BE PRODUCED FOR EMERGENCY SHUTDOWN SITUATIONS OVER THE RANGE OF EXPECTED OPERATING CONDITIONS FOR PHOEBUS I AND II.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*AEROSPACE SAFETY + \*EMERGENCY COOLING CONSIDERATIONS + \*NUCLEAR ROCKET + \*SHUTDOWN COOLING SYSTEM + \*TESTING + DECAY HEAT

4-15022  
FENSTERMACHER C  
ON THE EFFECTS OF COOLDOWN REQUIREMENTS UPON MISSION APPLICATIONS FOR NUCLEAR ROCKETS PUBLIC HEALTH SERVICE, LAS VEGAS + LOS ALAMOS SCIENTIFIC LAB  
LA-DC-7641 + CONF-660608-4 +. 14 PAGES, 7 REFERENCES, FROM 2ND AIAA PROPULSION JOINT SPECIALIST CONFERENCE, COLORADO SPRINGS

WHEN CONSIDERING MISSION APPLICATIONS FOR NUCLEAR ROCKETS, ONE ENCOUNTERS THE PROBLEM OF THE DELAYED ENERGY PRODUCED BY FISSION PRODUCT DECAY AFTER THE FULL-POWER OPERATION PHASE. IF RESTARTS OF THE ENGINE ARE CONSIDERED, AT LEAST TWO ASPECTS OF THE COOLDOWN PROBLEM MUST BE EXAMINED. FIRST, THE PROGRAM NECESSARY FOR SAFE REACTOR COOLDOWN AND PROPELLANT REQUIREMENTS FOR THIS, AND SECOND, THE FEASIBILITY OF PRODUCING USEFUL THRUST DURING THIS COOLDOWN. STUDIES HAVE BEEN MADE OF THE COOLDOWN REQUIREMENTS AS A FUNCTION OF OPERATING TIMES FOR MISSION APPLICATIONS AT THE NERVA-2 POWER LEVEL AND THEIR EFFECTS ON THE SPECIFIC IMPULSE AND VEHICLE WEIGHT. THE CALCULATIONS INCLUDE REALISTIC LIMITS UPON EXIT GAS TEMPERATURES IMPOSED BY REACTOR DESIGN CONSIDERATIONS. THE EFFECTS UPON I-SUB-SP WERE STUDIED USING AS A PARAMETER THE FRACTION OF COOLDOWN PROPELLANT ASSUMED TO PRODUCE THRUST. THE RESULTS INDICATE I-SUB-SP DEGRADATION OF 2 TO 15 SEC AND VEHICLE WEIGHT INCREASES OF 6,000 TO 40,000 LB OVER THE RANGE CONSIDERED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*AEROSPACE SAFETY + \*DECAY HEAT + \*NUCLEAR ROCKET + SHUTDOWN COOLING SYSTEM

4-15129 ALSO IN CATEGORY 11  
BLUMENTHAL JL + KUENZLY JD + SANTY MJ  
STUDY OF THE CHEMICAL INTEGRITY OF RADIOISOTOPE CONTAINMENT MATERIALS IN LAUNCH ABORT ENVIRONMENTS

CATEGORY 4  
AEROSPACE SAFETY

4-15129 \*CONTINUED\*  
TRW SYSTEMS, REDONDO BEACH, CALIFORNIA  
SC-CR-66-2044 +. 240 PAGES, APRIL 1966

HIGH-TEMPERATURE EXPERIMENTAL SCREENING TESTS ON A NUMBER OF COMBINATIONS OF CONTAINMENT MATERIALS AND LAUNCH-ABORT ENVIRONMENTS WERE CONDUCTED. THE SPECIFIC COMBINATIONS OF MATERIALS AND ENVIRONMENTS CHOSEN FOR THE STUDIES WERE THOSE FOR WHICH THERE WAS EITHER NO INFORMATION OR INSUFFICIENT INFORMATION IN THE LITERATURE TO ESTABLISH THEIR CHEMICAL REACTIVITY. BOTH QUANTITATIVE REACTION KINETICS EXPERIMENTS AND QUALITATIVE OBSERVATIONS OF THE BEHAVIOR OF MATERIALS IN SELECTED FLAME ENVIRONMENTS WERE CONDUCTED. THE OBJECTIVE WAS TO DETERMINE, AS A FUNCTION OF TEMPERATURE AND TIME, THE EXTENT OF CHEMICAL REACTION WHICH WOULD OCCUR WITH THE ABOVE-MENTIONED COMBINATIONS OF MATERIALS AND ENVIRONMENTS. CONCLUSIONS ARE PRESENTED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*AEROSPACE SAFETY + \*ALLOY + \*CHEMICAL REACTION + \*STEEL, STAINLESS + \*TANTALUM + \*TESTING + \*TUNGSTEN + ACCIDENT ANALYSIS + CONTAINMENT INTEGRITY + CONTAINMENT, GENERAL

4-15369  
OSMEYER WE + CARTER EL  
PARAMETRIC RE-ENTRY ABLATION STUDY OF HYPOTHETICAL SR-90 FUEL FORMS. FINAL REPORT  
MARTIN COMPANY, NUCLEAR DIVISION, BALTIMORE, MARYLAND  
MND-3062-25 +. 182 PAGES, JANUARY 1966

ANALYTICAL COMPUTER PROGRAMS WERE USED TO DESCRIBE THE RE-ENTRY TRAJECTORY, HEAT FLUX, ABLATION, AND MOLTEN-DROPLET BEHAVIOR OF HYPOTHETICAL SR-90 FUEL CAPSULES EXPOSED TO A RE-ENTRY ENVIRONMENT DURING THE DESCENT FROM ORBIT OF A RADIOISOTOPIC GENERATOR. A DETAILED PARAMETRIC STUDY WAS PERFORMED WHICH COVERED A WIDE RANGE OF CAPSULE DESIGNS AND FUEL-FORM PROPERTIES. ALTHOUGH GROSS CAPSULE TRAJECTORY AND ABLATION COMPUTER PROGRAMS WERE AVAILABLE, NEW PROGRAMS WERE GENERATED TO CONSIDER DECELERATION, BREAKUP, AND ABLATION OF MICRON SIZE DROPLETS. THE CAPSULE DESIGN AND MATERIAL PROPERTY INFLUENCE UPON ABLATION WAS INVESTIGATED FOR THREE MAJOR PHASES OF THE CAPSULE RE-ENTRY ABLATION HISTORY - ENCAPSULATION-MATERIAL ABLATION, FUEL-FORM ABLATION, AND, MOLTEN-DROPLET BREAKUP AND ABLATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*AEROSPACE SAFETY + \*FUEL ELEMENT + \*STRONTIUM + COMPUTER PROGRAM + COMPUTER, ANALOG + HEAT TRANSFER

CATEGORY 5  
ACCIDENT ANALYSIS

5-12471  
RADIOISOTOPE APPLICATIONS IN HYDROSPACE. VOL. V, DOWTHERM A HEAT TRANSFER TESTS. FINAL REPORT  
AEROJET-GENERAL NUCLEONICS, SAN RAMON, CALIFORNIA  
AGN-8163. VOL.V +. 31 PAGES, JANUARY 1966

BOILING-HEAT-TRANSFER EXPERIMENTS USING DOWTHERM A FLOWING IN A 0.5-IN.-DIAM. TUBE AT 225  
LB/HR WERE PERFORMED AT SATURATION TEMPERATURES OF 583 F (38 PSIA) AND 664 F (80 PSIA) WITH  
QUALITIES FROM 67 TO 93 PERCENT. THE WALL-FLUID TEMPERATURE DIFFERENCES WERE LARGE COMPARED  
TO SIMILAR DATA FOR WATER. THE TEMPERATURE DIFFERENCE INCREASED AS THE VAPOR QUALITY WAS  
INCREASED FOR A GIVEN SATURATION TEMPERATURE - HOWEVER, THE TEMPERATURE DIFFERENCE DECREASED  
AS THE SATURATION TEMPERATURE (BOILING PRESSURE) WAS INCREASED FOR A GIVEN QUALITY. ALL THE  
DATA ARE THOUGHT TO LIE IN THE PARTIAL FILM BOILING REGION IN WHICH THE HEATED SURFACE IS  
ONLY PARTIALLY COVERED BY THE LIQUID PHASE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, 22151, \$2.00 COPY, \$0.50 MICROFICHE

\*HEAT TRANSFER, BOILING + FLOW, TUBE + HEAT TRANSFER EXPERIMENT + ISOTOPIC GENERATOR + ORGANIC COOLANT +  
RADIOISOTOPE

5-13113  
FMELIANOFF C + SALLES P  
PROPOSAL FOR INSTALLATION OF A FAST LOOP IN THE CORE CABRI POWER  
CENTRE D ETUDES NUCLEAIRES DE CADARACHE, FRANCE  
DEP/GTSP/CA 6/66 +. 161 PAGES, 27 FIGURES, TABLES, JUNE 1966

FOR A FAST REACTOR, THE MAXIMUM CREDIBLE ACCIDENT IS CONSIDERED TO BE THE MELTING OF AN  
ASSEMBLY AND THE PROPAGATION OF THE MELTDOWN TO NEIGHBORING ASSEMBLIES. IN ORDER TO STUDY  
THIS, A FAST LOOP IS TO BE INSERTED INTO REACTOR CABRI PUISSANCE (CABRI POWER). THE PAPER  
CONTAINS MOSTLY NEUTRONIC AND THERMAL ANALYSIS REGARDING THIS LOOP.

\*FRANCE + \*REACTOR, FAST + ACCIDENT, MAXIMUM CREDIBLE (MCA) + FUEL MELTDOWN + IN PILE LOOP +  
THERMAL ANALYSIS

5-13546 ALSO IN CATEGORY 7  
SHANK RC  
ANNUAL REPORT OF DIVISION ANALYTICAL BRANCH FOR 1965  
PHILLIPS PETROLEUM COMPANY, IDAHO FALLS, IDAHO  
IDC-14679 +. 233 PAGES, JUNE 1966

A SERIES OF EVALUATION OF THE GAS-PARTICLE SAMPLER WAS INITIATED IN SUPPORT OF THE LOFT  
PROGRAM. CONTROLLED EXPERIMENTS ARE UNDERWAY TO VERIFY THE PREDICTED SORPTION PROPERTIES OF  
VARIOUS COMPONENTS OF THE CARTRIDGE FOR IODINE SPECIES AND FOR KRYPTON-XENON UNDER  
LOFT-SIMULATED CONDITIONS. THE RESULTS OF TEMPERATURE STABILITY TESTS OF PARTICULATE FILTER  
MATERIALS ARE SUMMARIZED IN TABLE III-4. IODINE ACTIVITY RETAINED BY THE PARTICULATE FILTER  
SHOULD BE AS PARTICLES OR ON THE PARTICLES. TESTS WERE MADE IN A HELIUM AS WELL AS STEAM-AIR  
ATMOSPHERE TO DETERMINE IODINE VAPOR RETENTION OF THOSE FILTERS THAT WERE THERMALLY STABLE.  
THE RESULTS ARE SUMMARIZED IN TABLE III-5. BORON NITRIDE WAS STUDIED AS A SPECIFIC SORBING  
MEDIUM FOR KRYPTON, XENON, AND IODINE. FOR KRYPTON AND XENON SORPTION TESTS, A GAS  
CHROMATOGRAPHIC COLUMN CONTAINING 1.1 G OF BORON NITRIDE WAS USED AND THE RESULTS INDICATED  
NEITHER KRYPTON AND XENON WERE SORBED TO ANY SIGNIFICANT EXTENT BY BORON NITRIDE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$6.00 CY, \$1.25 MY

ANALYTICAL TECHNIQUE, AIR + ANALYTICAL TECHNIQUE, CALIBRATION + CHEMICAL ANALYSIS + FILTER, MAY PACK +  
FISSION PRODUCT RELEASE, GENERAL + FISSION PRODUCT TRANSPORT + FISSION PRODUCT, IODINE + IODINE +  
LOFT (LOSS OF FLUID TEST) + RUTHENIUM + SAMPLING + TELLURIUM

5-13641  
KROLL JF  
VARIATION OF THE HEAT TRANSFER WITH LENGTH, PRESSURE, FLOW RATE AND TEMPERATURE DIFFERENCE IN AN LTV  
FALLING FILM EVAPORATOR. WATER RESOURCES CENTER DESALINATION REPORT NO. 6  
UNIVERSITY OF CALIFORNIA, LOS ANGELES  
REPORT NO. 66-43 +. 98 PAGES, AUGUST 1966

THE HEAT TRANSFER OF THE LONG TUBE VERTICAL (LTV) FALLING FILM EVAPORATION PROCESS WAS  
INVESTIGATED BOTH EXPERIMENTALLY AND THEORETICALLY. EXPERIMENTAL HEAT TRANSFER DATA WERE  
OBTAINED FOR VARIOUS VALUES OF TUBE LENGTH, INLET FLOW RATE, TEMPERATURE LEVEL (PRESSURE  
LEVEL) AND TEMPERATURE DIFFERENCE FOR A 3/4 INCH DIAMETER TUBE. PRESSURE DROP DATA WERE ALSO  
OBTAINED FOR THE VARIATION OF THE ABOVE PARAMETERS, AND ENTRAINMENT WAS MEASURED AT  
ATMOSPHERIC CONDITIONS. THEORETICAL INVESTIGATIONS CONSISTED OF THE DEVELOPMENT OF TWO  
SLIGHTLY DIFFERING MATHEMATICAL MODELS TO DESCRIBE THE HEAT TRANSFER FOR THE PROCESS. THE  
MODEL DEVELOPED INITIALLY WAS MODIFIED TO FORM A SECOND MODEL TO ACCOUNT FOR THE POSSIBLE  
PRESENCE OF BUBBLES IN THE FILM. COMPARISON OF THEORETICAL AND EXPERIMENTAL RESULTS FOR THE  
APPARENT OVERALL HEAT TRANSFER COEFFICIENT WAS VERY GOOD, WITHIN APPROXIMATELY 10 PERCENT.  
GENERALLY, BOTH THEORY AND EXPERIMENT INDICATE THAT THE APPARENT OVERALL HEAT TRANSFER

CATEGORY 5  
ACCIDENT ANALYSIS

5-13641 \*CONTINUED\*

COEFFICIENT DECREASES WITH INCREASING LENGTH AND DECREASING TEMPERATURE LEVELS. THERE EXISTS A MINIMUM POINT IN THE VARIATION OF THE APPARENT HEAT TRANSFER COEFFICIENT WITH INLET FLOW RATE. A VARIATION IN THE TEMPERATURE DIFFERENCE HAS LITTLE EFFECT. ALSO, THE INDICATION IS THAT THE DISTILLATE RATE ASYMPTOTICALLY APPROACHES A MAXIMUM VALUE WITH INCREASING LENGTH. RESULTS INDICATE THAT IMPROVEMENT IN THE HEAT TRANSFER CAN BEST BE DONE BY INCREASING THE COEFFICIENT OF THE CONDENSING SIDE. THE THEORETICAL MODELS MAY BE USED WITH ECONOMIC FACTORS TO OPTIMIZE THE PROCESS.

AVAILABILITY - KROLL JE, ENGINEERING DEPT., UNIVERSITY OF CALIFORNIA, LOS ANGELES, CALIF.

\*DESALINATION + \*EVAPORATION + \*FILM, LIQUID + HEAT EXCHANGER + HEAT TRANSFER

5-13642

MCCROSKEY WJ

AN EXPERIMENTAL MODEL FOR THE HSARP LEADING EDGE PROBLEM IN RAREFIELD HYPERSONIC FLOW

PRINCETON UNIVERSITY, PRINCETON, NEW JERSEY

ARL-66-0101 +. 95 PAGES, JUNE 1966

FLOW FIELD STUDIES OF THE SHOCK WAVE AND BOUNDARY LAYER DEVELOPMENT ON A SHARP FLAT PLATE ARE PRESENTED FOR A REGION OF RAPIDIFIED FLOW THAT BRIDGES THE GAP BETWEEN A CLASSICAL HYPERSONIC BOUNDARY LAYER DOWNSTREAM AND A KINETIC FLOW MODEL AT THE LEADING EDGE. THE MEASUREMENTS GIVE A COMPREHENSIVE PICTURE OF THE FLOW PATTERN IN THE MERGED LAYER OR VISCOUS LAYER REGIME, WHICH EXISTS UPSTREAM OF THE REGION OF VALIDITY OF HYPERSONIC VISCOUS INTERACTION THEORY. THE RESULTS ARE DERIVED FROM A COMBINATION OF SEVERAL PROBING AND OPTICAL TECHNIQUES AND SURFACE PRESSURE MEASUREMENTS. FROM THE DETAILED MEASUREMENTS, A TRUE-SCALE PHYSICAL MODEL OF THE FLOW FIELD IS CONSTRUCTED FOR THE MERGED LAYER REGIME. ONE OF THE MAIN FEATURES OF THE MODEL IS A THICK, CURVED SHOCK WAVE WHICH DECREASES IN STRENGTH AS THE LEADING EDGE IS APPROACHED, EVEN THOUGH THE SHOCK ANGLE INCREASES. DENSITY PROFILES ACROSS THE SHOCK AND VISCOUS LAYERS SHOW THAT THE STRUCTURE OF THE FLOW FIELD IS QUITE DIFFERENT FROM THE CLASSICAL PICTURE OF A HYPERSONIC BOUNDARY LAYER BENEATH AN OBLIQUE RANKINE-HUGONOT SHOCK WAVE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151

\*BOUNDARY LAYER + \*FLOW, HIGH SPEED + \*GAS DYNAMICS, RARIFIED + FLOW THEORY AND EXPERIMENTS + HEAT TRANSFER

5-13666 ALSO IN CATEGORIES 6 AND 18

INHERENT SAFETY CHARACTERISTICS

PUBLIC SERVICE COMPANY OF COLORADO, DENVER, COLORADO

4 PAGES, SEPTEMBER 1966, DOCKET NO. 50-267, FORT ST. VRAIN NUCLEAR GENERATING STATION PRELIMINARY SAFETY ANALYSIS REPORT, VOL. I, SECTION 1 - INTRODUCTION AND SUMMARY, PAGES 1.3-3 TO 1.3-6

SUMMARIZES THE INHERENT SAFETY CHARACTERISTICS AND DESCRIBES THE REASON FOR EACH. (1) THE LARGE HEAT CAPACITY OF THE CORE AND LOW CAPACITY OF THE HE COOLANT PREVENTS A SUDDEN DROP IN FUEL OR MODERATOR TEMPERATURE, THUS THERE IS NOTHING EQUIVALENT TO A COLD-WATER REACTIVITY INSERTION ACCIDENT. (2) THE HIGH-TEMPERATURE MECHANICAL INTEGRITY OF THE CORE IS ASSURED, SINCE THE GRAPHITE STRUCTURAL MATERIAL GAINS STRENGTH AS THE TEMPERATURE INCREASES. (3) THE CORE SIZE FOR XENON INSTABILITIES. (4) THE PYROLYTIC-CARBON-COATED FUEL DOES NOT MELT NOR DOES IT SUBLIME BELOW 5500 F, SO NO SUDDEN INCREASE IN ACTIVITY RELEASE IS EXPECTED DUE TO HIGH-TEMPERATURE EXCURSIONS. (5) NO ACCUMULATION OF WIGNER (STORED) ENERGY, SINCE THE OPERATING TEMPERATURE IS HIGH ENOUGH TO CONTINUOUSLY ANNEAL THE GRAPHITE. (6) THE CORE AND PRIMARY SYSTEM ARE CONTAINED IN CONCRETE REACTOR VESSEL, WHICH HAS MANY PRESTRESSED TENDONS. THERE IS NO MECHANISM BY WHICH FAILURE OF ONE TENDON COULD PROPAGATE TO OTHER TENDONS. THUS A SUDDEN LOSS OF PRIMARY COOLANT IS PREVENTED WHICH COULD RESULT IN OVERHEATING OF THE CORE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

ACCIDENT, COLD COOLANT + ACCIDENT, LOSS OF COOLANT + COATED PARTICLE + CONCRETE, PRESTRESSED + CONTAINMENT, PRESSURE VESSEL + FT. ST. VRAIN + GRAPHITE + PYROLYTIC + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED + REACTOR, POWER + SAFETY ANALYSIS REPORT, PRELIMINARY + STRUCTURAL INTEGRITY + WIGNER ENERGY RELEASE + XENON OSCILLATION

5-13669

ALSO IN CATEGORY 18

ORIFICING SYSTEM

PUBLIC SERVICE COMPANY OF COLORADO, DENVER, COLORADO

2 PAGES, FORT ST. VRAIN NUCLEAR GENERATING STATION PRELIMINARY SAFETY ANALYSIS REPORT, VOL. 1, SECTION III, PAGES 3.9-1 TO 3.9-2, SEPTEMBER 1966, DOCKET NO. 50-267

TO PROVIDE A UNIFORM EXIT COOLANT TEMPERATURE FROM ALL REGIONS OF THE CORE, A VARIABLE-ORIFICE COOLANT FLOW-CONTROL ASSEMBLY IS LOCATED AT THE INLET OF 37 REFUELING REGIONS. THE ORIFICE IS A CYLINDRICAL SHUTTER WHICH ROTATES CONCENTRICALLY ABOUT A FIXED ORIFICE CYLINDER.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*FLOW DISTRIBUTION + \*FLOW ORIFICE OR RESTRICTION + CONTROL, GENERAL + FT. ST. VRAIN + HIGH TEMPERATURE + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED + REACTOR, POWER

CATEGORY 5  
ACCIDENT ANALYSIS

5-13743 ALSO IN CATEGORY 7  
DURRSCHNAREL W  
HYDROGEN ADSORPTIVE BEHAVIOR OF ZIRCONIUM ALLOY FUEL CLADDING  
3 PAGES, 1 TABLE, 2 FIGURES, ATOMWIRTSCHAFT 10(11) PAGES 560-562 (NOVEMBER 1965), IN GERMAN

ZIRCONIUM ALLOYS, ESPECIALLY ZIRCALOY, ARE QUITE USABLE UNDER NORMAL OPERATING CONDITIONS IN LIGHT-WATER REACTORS. IN CERTAIN SITUATIONS THEY ARE PREDISPOSED TO LOCALIZED HYDROGENATION, LEADING TO FISSURE FORMATION OWING TO THE CONSEQUENT EMBRITTLEMENT. IT SEEMS THAT SUFFICIENT PURITY OF THE FUEL AND OF THE FUEL ELEMENT CLADDING IS PROTECTIVE. IT APPEARS DESIRABLE TO SEEK MEANS OF DECREASING THE HYDROGEN ADSORPTION OF THE ALLOYS DURING REACTOR OPERATION, APPROACHING THE PROBLEM BOTH FROM THE STANDPOINTS OF WATER TECHNOLOGY AND OF ALLOY TECHNOLOGY. APPROPRIATE ADMIXTURES TO THE ALLOYS CAN DIMINISH THE RATE OF HYDROGEN UPTAKE, E.G., BY THE FORMATION OF OXIDE LAYERS HAVING FEWER LATTICE DEFECTS. IN ADDITION, FURTHER WORK IS IN ORDER TO ELUCIDATE THE CAUSES OF THE LOCALIZED INTENSE HYDROGENATION OF THE ZIRCONIUM CLADDINGS.

\*EMBRITTLMENT + \*HYDROGEN + \*ZIRCALOY + ALLOY + FAILURE, CLADDING + ZIRCONIUM

5-13871 ALSO IN CATEGORIES 6 AND 4  
BACKUS CE  
FAST TRANSIENTS IN THERMIONIC REACTORS  
WESTINGHOUSE ELECTRIC CORPORATION  
14 PAGES, 3 TABLES, 15 FIGURES, 5 REFERENCES, ANS TRANSACTIONS 9(2) PAGE 459 (WINTER 1966) PITTSBURGH, PENNSYLVANIA OCTOBER 30-NOVEMBER 3, 1966, AMERICAN NUCLEAR SOCIETY

THIS PAPER CONCENTRATES ON FAST TRANSIENTS AND SAFETY STUDIES. A DESCRIPTION OF A TYPICAL THERMIONIC FUEL ELEMENT IS GIVEN ALONG WITH THE MATHEMATICAL MODEL USED FOR THE DYNAMIC ANALYSIS. RESULTS ARE PRESENTED FOR STUDIES ON THE SUDDEN OPEN CIRCUIT ACCIDENT, THE PUMP STOPPAGE ACCIDENT, AND THE ACCIDENT RESULTING FROM LARGE INSERTIONS OF REACTIVITY.

\*REACTOR TRANSIENT + ACCIDENT, REACTIVITY + EXCURSION, LARGE + REACTOR DYNAMICS + SPACECRAFT

5-13945 ALSO IN CATEGORIES 7 AND 8  
MORRISON DL + GENCO JM + GIESEKE JA + RITZMAN RL + WALTERS CT + SUNDERMAN DN  
AN EVALUATION OF THE APPLICABILITY OF EXISTING DATA TO THE ANALYTICAL DESCRIPTION OF A NUCLEAR-REACTOR ACCIDENT  
BATTELLE MEMORIAL INSTITUTE  
BML-1779 +. 228 PAGES, 60 FIGURES, 20 TABLES, 336 REFERENCES, AUGUST 12, 1966

THE COMPLEX SEQUENCE OF CHEMICAL AND PHYSICAL PROCESSES IN A LOSS-OF-COOLANT ACCIDENT FOR A NUCLEAR POWER REACTOR WAS SUBJECTED TO AN ANALYTICAL STUDY. DATA AND THEORIES ON THESE PROCESSES WERE EXAMINED AND EMPLOYED FOR AN ANALYTICAL DESCRIPTION OF THE ACCIDENT. A DIGITAL-COMPUTER CODE, NURLOC, WAS DEVELOPED TO PERFORM THE TWO-DIMENSIONAL, TRANSIENT-HEAT-TRANSFER CALCULATIONS FOR A GIVEN REACTOR SYSTEM. EXPERIMENTAL DATA ON FISSION-PRODUCT RELEASE WERE EXAMINED, AND A MODEL WAS CONSTRUCTED TO DESCRIBE THE TIME-DEPENDENT RELEASE OF FISSION PRODUCTS DURING AN ACCIDENT. A DIGITAL-COMPUTER CODE, FRACREL, WAS WRITTEN FOR THE MODEL, WITH THE TEMPERATURE DATA FROM NURLOC USED DIRECTLY FOR INPUT. THE SENSITIVITY OF THE OUTPUT FROM FRACREL TO UNCERTAINTIES IN THE EXPERIMENTAL DATA WAS INVESTIGATED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*ACCIDENT, MAXIMUM CREDIBLE (MCA) + \*AEROSOL + \*FISSION PRODUCT TRANSPORT + \*HEAT TRANSFER + \*THERMODYNAMICS + ACCIDENT, LOSS OF COOLANT + ACCIDENT, LOSS OF PRESSURE + COMPUTER PROGRAM + DECAY HEAT + FISSION PRODUCT RELEASE, GENERAL + FLOW, TWO PHASE + PARTICULATE + PHASE CHANGE

5-13954 ALSO IN CATEGORY 18  
BIG ROCK POINT CHANGE IN INFORMATION  
CONSUMERS POWER COMPANY  
3 PAGES, SEPTEMBER 1966, DUCKLE NO. 50-155

GIVES DETAILS OF CONTROL-ROD-EJECTION RESULTS. FUEL ENTHALPY VS REACTIVITY INSERTED (420 CAL/GRAM AT 3% REACTIVITY), RESULTANT VESSEL DAMAGE (1.1% STRAIN AT 590 CAL/GRAM), EXTENT OF FUEL DAMAGE (AT 490 CAL/GRAM, 1450 LB WOULD START MELTING, 650 WOULD BE FULLY MOLTEN, AND 30 WOULD BE RUPTURED PROMPTLY). DESPITE TREAT RESULTS, POWER REACTOR FUEL IS ESSENTIALLY ISOTHERMAL DURING TRANSIENT. WHILE COLD-CONDITION ACCIDENT GIVES GREATER ENTHALPY, ITS SEVERITY IS LESS BECAUSE OF THE LARGER HEAT SINK.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*ACCIDENT, CONTROL ROD EJECTION + BIG ROCK POINT + REACTOR, BOILING WATER

5-13955 ALSO IN CATEGORY 18

CATEGORY 5  
ACCIDENT ANALYSIS

5-13955 \*CONTINUED\*  
BIG ROCK POINT CHANGE 10 INFORMATION - VARIABLE FUEL ELEMENT TIME CONSTANT  
CONSUMERS POWER COMPANY  
3 PAGES, SEPTEMBER 1966, DOCKET NO. 50-155

(1) A VARIABLE TIME CONSTANT WAS USED IN REACTIVITY EXCURSION ANALYSIS (AT FUEL ENTHALPY OF 150 CAL/GRAM, TIME CONSTANT WAS 1 SEC AT 250 CAL/GRAM, 0.1 SEC AT 600 CAL/GRAM, 0.0135 SEC).  
(2) ANL PELLETS TESTS INDICATE THAT POWDER FUEL HAS 0.050 TIME CONSTANT VS PELLETS FUEL 0.260.  
THIS PELLETS FUEL DECREASED HEAT TRANSFER RATE (AND HENCE PRESSURE RISE) AND WOULD DECREASE PROBABLE CONSEQUENCE OF ACCIDENT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*ACCIDENT, CONTROL ROD WITHDRAWAL + \*FUEL ELEMENT + BIG ROCK POINT + REACTOR, BOILING WATER

5-13984 ALSO IN CATEGORY 6  
MCALISTER JA + KENG EY + ORR C  
HEAT TRANSFER TO A GAS CONTAINING A CLOUD OF PARTICLES  
GEORGIA INSTITUTE OF TECHNOLOGY  
NASA-CR-54441 +. 32 PAGES, 14 FIGURES, JULY 30, 1965

THE BASIC RADIATION EQUATIONS WERE SOLVED TO DESCRIBE THE RADIANT HEAT TRANSFER FROM A BLACK, CYLINDRICAL ENCLOSURE UNIFORMLY RADIATING TO A BLACK, EVENLY DISPERSED PARTICLE CLOUD CONTAINED WITHIN. BACK THERMAL RADIATION AND RADIATION SCATTERING WERE CONSIDERED NEGLIGIBLE. THE SOLUTION WAS PRESENTED GRAPHICALLY IN GENERALIZED FORM WITH ALL VARIABLES BEING DIMENSIONLESS QUANTITIES, AND COMPARISONS WITH EXPERIMENTAL DATA WERE SHOWN. EQUATIONS WERE ALSO PRESENTED FOR CALCULATING THE RADIATION ABSORBED BY A PARTICLE CLOUD WITHIN UNHEATED SEGMENTS OF THE ENCLOSURE ADJACENT TO THE RADIATING ELEMENT. A BRIEF DESCRIPTION OF PARTICLE DEAGGLOMERATION AND CLOUD TRANSMISSIVITY STUDIES WAS INCLUDED.

AIR + HEAT SINK + HEAT TRANSFER + HEAT TRANSFER, RADIANT + PARTICULATE

5-13985 ALSO IN CATEGORY 12  
ROY GM  
GETTING MORE OUT OF BWRS  
GENERAL ELECTRIC COMPANY, SAN JOSE  
3 PAGES, 2 FIGURES, 2 TABLES, NUCLEONICS (24)11 PAGES 41-43, (NOVEMBER 1966)

CORE SIZED FOR RATED CONDITIONS, RATHER THAN FOR 120% OF RATED CONDITION. ALLOWABLE HEAT-FLUX VALUE 1.9 TIMES ACTUAL HEAT-FLUX VALUE. USE OF THREE FUEL-ROD ENRICHMENTS WITHIN EACH BUNDLE AND ON-LINE PROCESS COMPUTER REDUCES PEAK TO AVERAGE RATE FROM PREVIOUS VALUE OF 3 TO 2.6. MAXIMUM FLUX TAKEN AT MIDPLANE. NEW HENCH-LEVY HEAT-TRANSFER CORRELATION BASED ON 700 MULTI-ROD DATA DOES NOT DROP OFF WITH STEAM QUALITY AS SHARPLY AS THE OLD CORRELATION. REACTOR-CORE-ISOLATION SYSTEM REPLACES ISOLATION CONDENSER.

EMERGENCY COOLING CONSIDERATIONS + HEAT TRANSFER CORRELATION + POWER DISTRIBUTION + POWER UPGRATING + REACTOR, BOILING WATER

5-13986 ALSO IN CATEGORIES 6 AND 18  
ADDENDUM B TO PROPOSED CHANGE 22 - ADDITIONAL INFORMATION ON REACTIVITY ACCIDENTS AND ON REACTOR VESSEL INSPECTION PROGRAM  
PACIFIC GAS AND ELECTRIC COMPANY  
24 PAGES, 6 FIGURES, OCTOBER 31, 1966, DOCKET NO. 50-133

IN RESPONSE TO A DRL REQUEST, HUMBOLDT BAY SENDS (1) COMPLETE REEVALUATION OF POTENTIAL REACTIVITY ACCIDENTS (THOROUGHLY DESCRIBED). REVIEW OF DATA INDICATES THAT A PEAK FUEL ENTHALPY OF 170 CALORIES/GRAM (FUEL TEMPERATURE 3900 F) IS THE NOMINAL THRESHOLD FOR FUEL-CLADDING DAMAGE, AND THUS 425 CALORIES/GRAM IS THE SUDDEN FUEL-ROD-RUPTURE THRESHOLD (UO2 VAPORIZATION EJECTS HOT FUEL FROM CLAD). STARTUP ACCIDENT HAS SAME CONSEQUENCES AS FHSR (170 CAL/GRAM). CONTROL-ROD-DROP ACCIDENT WOULD REQUIRE ABOUT 2 PERCENT REACTIVITY TO EXCEED 360 CAL/GRAM, BUT SOME OUT-OF-SEQUENCE ROD WITHDRAWAL WOULD GIVE THIS. A TECHNICAL SPECIFICATION CHANGE IS PROPOSED TO CURE THIS WITH ADMINISTRATIVE CONTROL. ROD-EJECTION ACCIDENT SHOWS THAT SEVERAL RODS COULD CAUSE EXCURSION GREATER THAN 425 CALORIES/GRAM. IN THE 1967 REFUELING, ROD-DRIVE-THIMBLE SUPPORTS WILL BE ADDED TO INSURE AGAINST CIRCUMFERENTIAL THIMBLE RUPTURE CAUSING AN ACCIDENT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + ACCIDENT ANALYSIS + ACCIDENT, CONTROL ROD EJECTION + ACCIDENT; CONTROL ROD WITHDRAWAL + ADMINISTRATIVE CONTROLS AND PRACTICES + ENGINEERED SAFETY SYSTEM + HUMBOLDT BAY + REACTOR, BOILING WATER

5-13997 ALSO IN CATEGORY 18  
MEHANN PD  
DRL ASKS FOR REVIEW OF N S SAVANNAH EMERGENCY COOLING IN LIGHT OF NEW CRITERIA AND ANALYSES  
DIVISION OF REACTOR LICENSING, USAEC  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(2) PAGE 13 (JANUARY 9, 1967), DOCKET NO. 50-238



CATEGORY 5  
ACCIDENT ANALYSIS

5-13997 \*CONTINUED\*

DRL ASKS FOR UP-DATED EMERGENCY CORE COOLING ANALYSIS FOR CONSEQUENCES FOLLOWING VARIOUS SIZES OF PIPE RUPTURE, TO DETERMINE PERFORMANCE REQUIREMENTS OF VARIOUS SYSTEMS.

\*EMERGENCY COOLING CONSIDERATIONS + \*REGULATION, AEC + N S SAVANNAH + REACTOR, MARITIME + REACTOR, PRESSURIZED WATER

5-14071 ALSO IN CATEGORY 17  
RUONI FR + HARY LB + LEWISAND VG + VALLISH EJ  
PPF-STARTUP HYDRAULIC TESTS AT THE AIR FORCE NUCLEAR ENGINEERING TEST FACILITY  
AIR FORCE FLIGHT DYNAMICS LABORATORY, WRIGHT-PATTERSON AIR FORCE BASE  
AD-626861 + AFFDL-TR-65-131 +. 50 PAGES, OCTOBER 1965

TECHNIQUES USED TO MEASURE WATER FLOW AND CORE PRESSURE DROP ACROSS EACH COOLANT CHANNELS OF PLATE-TYPE FUEL ELEMENTS IN THE CORE ARE DESCRIBED. TESTS WERE CONDUCTED TO VERIFY CALCULATIONS AND BECAUSE OF SKEPTICISM AS TO ADEQUATE COOLANT IN THE CONTROL PLATES AND EXCESSIVE PRESSURE DIFFERENTIAL BETWEEN ELEMENT SIDE PLATES AND CENTER PLATES. MEASURED VELOCITY THROUGH THE COOLANT CHANNELS WERE 9.5 TO 10.5 FT/SEC - LESS THAN THE 11.75 FT/SEC CALCULATED. LOWER FLOW IN THE CORNER ELEMENTS WAS ATTRIBUTED TO OBSTRUCTION BY THE UPPER GRID LOCKING MECHANISM. FLOW BETWEEN SIDE PLATES AND THE BE REFLECTOR WAS 50% HIGHER THAN CALCULATED, WHICH ALLEVIATED PREVIOUS CONCERN ABOUT ADEQUATE HEAT TRANSFER. THE MOST IMPORTANT RESULT WAS THAT FLOW THROUGH THE CONTROL RODS EXCEEDED THE DESIGN VALUES BY 7 TO 27%. THE CONCERN HERE WAS INADEQUATE HEAT TRANSFER BECAUSE THE RODS TERMINATE IN A BALL-LOCK ARRANGEMENT WHICH RESTRICTS FLOW. THE MAXIMUM PRESSURE DIFFERENCE ACROSS THE SIDE PLATES WAS 0.47 PSIA, WHICH ALLEVIATED CONCERN FOR POSSIBLE BUCKLING OF THE PLATES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$2.00 COPY, \$0.50 MICROFICHE

\*HYDRAULIC ANALYSIS + \*TEST, PREOPERATIONAL + COMPARISON, THEORY AND EXPERIENCE + CONTROL ROD + CORE, PLATE TYPE + FUEL ELEMENT + PRESSURE DROP + REACTOR, ARMY + REACTOR, TEST

5-14146 ALSO IN CATEGORIES 6 AND 18  
PULSTAR CHANGE TO ALLOW OTHER CORE CONFIGURATION, FUEL INSPECTIONS  
WESTERN NEW YORK NUCLEAR RESEARCH CENTER, INC.  
4 PAGES, DECEMBER 16, 1966, DOCKET NO. 50-57

CHANGES REQUESTED FOR NONSTANDARD CORE CONFIGURATIONS, WITH EXPERIMENTS IN THE CORE. GIVES HOT-SPOT-FACTOR FORMULA AND TESTS FOR NEW CORES TO OBTAIN PULSE-ENERGY LIMITS. SIX INSTRUMENTED FUEL PINS LOCATED IN REFLECTOR FLUX PEAK SAW 1.2 TIMES THE ENERGY/CM OF THE CORE FOR THE INITIAL TESTS, BUT SUCH USAGE WOULD DISTURB HOT-SPOT ANALYSIS, SO THE FOUR PINS HAVING HIGHEST ENERGY DENSITIES WILL BE INSPECTED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + EXAMINATION + FUEL ELEMENT + HOT SPOT + PERFORMANCE LIMIT + REACTOR, POOL TYPE + REACTOR, PULSED + REFUELING

5-14161 ALSO IN CATEGORY 4  
LILLIF AF  
FREE CONVECTION OF A SODIUM-POTASSIUM EUTECTIC IN AN ENCLOSED SPACE BETWEEN TWO VERTICAL PLATES WITH UNIFORM HEAT FLUX  
ATOMICS INTERNATIONAL, CANOGA PARK  
NAA-SR-12004 +. 77 PAGES, 30 FIGURES, 10 TABLES, 24 REFERENCES, OCTOBER 25, 1966

AN EXPERIMENTAL INVESTIGATION HAS BEEN CONDUCTED OF LAMINAR STEADY-STATE FREE CONVECTION IN AN ENCLOSED SPACE BETWEEN PARALLEL VERTICAL WALLS WITH UNIFORM HEAT FLUX. MAJOR INTEREST CENTERED ON THE USE OF SODIUM-POTASSIUM EUTECTIC (NAK) LIQUID-METAL HEAT-TRANSFER MEDIUM. HELIUM AND AN OIL-LIKE FLUID (HB-40) WERE ALSO EMPLOYED TO PROVIDE VALIDATION OF THE NAK RESULTS. HEAT FLUXES OF 9,660 TO 45,500 BTU/HR-SQ. FOOT WERE ACHIEVED IN THE NAK RUNS. LONGITUDINAL TEMPERATURE PROFILES WERE MEASURED FOR BOTH THE HOT AND COLD HEAT-TRANSFER PLATES USING STAINLESS-STEEL-SHEATHED CHROMEL-ALUMEL THERMOCOUPLES. THE APPLIED HEAT FLUX AND THE SEPARATION DISTANCE BETWEEN THE PLATES WERE EXPERIMENTAL VARIABLES. THE EXPERIMENTAL RESULTS WERE COMPARED TO THE ANALYTICAL PREDICTIONS DETERMINED FROM THE THEORY AS GIVEN BY SPARROW AND GREGG FOR LAMINAR STEADY-STATE FREE CONVECTION ON A VERTICAL WALL WITH UNIFORM HEAT FLUX. THE RESULTS INDICATE THAT THE LOCAL HEAT-TRANSFER COEFFICIENTS AGREED WITHIN PLUS-OR-MINUS 30% EVEN THOUGH A BASIC BOUNDARY CONDITION USED IN THE THEORY WAS VIOLATED. ON THE COLD PLATE, WHERE THE UNIFORM HEAT FLUX CONDITION WAS NOT MET, THE AGREEMENT WAS LESS SATISFACTORY (PLUS-OR-MINUS 50%). AVERAGE HEAT TRANSFER COEFFICIENTS AGREED WITHIN PLUS-OR-MINUS 20% FOR THE UNIFORM HEAT FLUX CONDITION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.75 MICROFICHE

\*HEAT TRANSFER, NATURAL CONVECTION + \*METAL, LIQUID + HEAT TRANSFER + HEAT TRANSFER EXPERIMENT + NAK (SODIUM POTASSIUM ALLOY) + SODIUM

5-14162

CATEGORY 5  
ACCIDENT ANALYSIS

5-14162 \*CONTINUED\*

SANDERS JP  
THE MODIFIED U-3 CODE. A THERMAL-HYDRAULIC CODE FOR AXIAL FLOW WITH MIXING IN FUEL BUNDLES  
ORNL-4016 +. 51 PAGES, 1 FIGURE, NOVEMBER 1966

HYDRAULICS CALCULATIONS ARE MADE WITH AVERAGE PROPERTY VALUES AND EQUIVALENT HYDRAULIC CHARACTERISTICS FOR THE SUBCHANNELS. THERMAL CALCULATIONS ARE MADE BY APPLYING ENERGY BALANCES TO SUCCESSIVE AXIAL INCREMENTS. MIXING IS REPRESENTED BY ASSUMING THAT INTERSUBCHANNEL FLOW IS PROPORTIONAL TO THE AVERAGE LINEAR VELOCITY OF THE COOLANT, AND THE EFFECT OF THIS INTERSUBCHANNEL FLOW IS INCLUDED IN THE ENERGY BALANCES. HEAT-TRANSFER COEFFICIENTS AND SURFACE (CLADDING) TEMPERATURES ARE CALCULATED AT DESIGNATED INTERVALS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.50 MICROFICHE

\*COMPUTER, DIGITAL + COMPUTER PROGRAM + FLOW, AXIAL + FLOW, CROSS + FUEL ELEMENT + HEAT TRANSFER + HEAT TRANSFER ANALYSIS + HYDRAULIC ANALYSIS.

5-14163 ALSO IN CATEGORY 4  
COE HH + GUTIERREZ OA + FENN DB  
COMPARISON OF CALCULATED AND MEASURED CHARACTERISTICS OF HORIZONTAL MULTITUBE HEAT EXCHANGER WITH STEAM CONDENSING INSIDE TUBES  
LEWIS RESEARCH CENTER, CLEVELAND, (NASA)  
NASA-TN-D-3670 +. 48 PAGES, 22 FIGURES, 5 TABLES, 8 REFERENCES, OCTOBER 1966

AS PART OF AN OVERALL RESEARCH PROGRAM OF RANKINE POWER SYSTEMS FOR SPACE VEHICLES, A TEST FACILITY USING WATER AS THE WORKING FLUID WAS CONSTRUCTED. ONE OF THE PURPOSES WAS TO OBTAIN EXPERIMENTAL DATA ON A CONVECTIVELY COOLED SHELL-AND-TUBE CONDENSER AND TO COMPARE THE RESULTING VALUES WITH PREDICTED VALUES. MEASURED VALUES OF THE OVERALL HEAT-TRANSFER COEFFICIENT, THE CONDENSING LENGTH, AND THE OVERALL PRESSURE DROP WERE DETERMINED OVER A RANGE OF CONDENSER INLET PRESSURES OF 8 TO 30 POUNDS PER SQUARE INCH ABSOLUTE AND VAPOR QUALITIES OF 40 TO 100%, WITH TUBE INLET VAPOR REYNOLDS NUMBERS OF 13,000 TO 44,000. THE EXPERIMENTAL CONDENSING DATA WERE TAKEN WITH A CONSTANT COOLANT FLOW RATE IN THE SHELL AND WITH TWO SET VALUES OF COOLANT INLET TEMPERATURE. THE PREDICTED OVERALL COEFFICIENTS AND CONDENSING LENGTHS WERE CALCULATED BY USING CONVENTIONAL CORRELATIONS AND EQUATIONS. THE PREDICTED OVERALL PRESSURE DROPS INCLUDED A CALCULATION FOR THE TWO-PHASE FRICTION PRESSURE DROP THAT UTILIZED AN APPROXIMATING EQUATION (DERIVED IN THIS REPORT) BASED ON THE CORRELATION OF LOCKHART AND MARTINELLI.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$2.00 COPY

\*CONDENSATION + FLOW, TWO PHASE + HEAT EXCHANGER + HEAT TRANSFER + HEAT TRANSFER EXPERIMENT

5-14164 ALSO IN CATEGORY 4  
STOCKMAN NO + BITTNER EC + SPRAGUE EL  
COMPARISON OF ONE- AND TWO-DIMENSIONAL HEAT TRANSFER CALCULATIONS IN CENTRAL FIN-TUBE RADIATORS  
LEWIS RESEARCH CENTER, CLEVELAND, (NASA)  
NASA-TN-D-3645 +. 29 PAGES, 7 FIGURES, 3 TABLES, 12 REFERENCES, SEPTEMBER 1966

AN ANALYSIS IS GIVEN OF THE TWO-DIMENSIONAL HEAT TRANSFER, INCLUDING GRAY-BODY RADIANT INTERCHANGE, IN THE CROSS SECTION OF A CENTRAL FIN-TUBE RADIATOR PANEL. RESULTS OF THIS ANALYSIS ARE USED TO EVALUATE SEVERAL ONE-DIMENSIONAL METHODS OF VARYING COMPLEXITY FOR CALCULATING THE HEAT REJECTION RATE OF A CENTRAL FIN-TUBE RADIATOR PANEL. MOST METHODS GAVE GOOD AGREEMENT WITH THE TWO-DIMENSIONAL RESULTS. IN VIEW OF THE EXCELLENT AGREEMENT OF ONE OF THE SIMPLER METHODS, WHICH NEGLECTS TUBE-WALL TEMPERATURE DROP AND ACCOUNTS FOR RADIANT INTERCHANGE BETWEEN FIN AND TUBE SIMPLY BY USING THE PROJECTED AREA OF THE TUBE, IT SEEMS UNWARRANTED TO USE THE MORE COMPLEX METHODS, WHICH GAVE NO BETTER AGREEMENT. DETAILS OF THE NUMERICAL METHOD OF SOLUTION OF THE TWO-DIMENSIONAL EQUATIONS ARE GIVEN IN AN APPENDIX.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$2.00 COPY

\*HEAT EXCHANGER + \*HEAT TRANSFER AUGMENTATION + FIN + HEAT TRANSFER + HEAT TRANSFER ANALYSIS + HEAT TRANSFER, RADIANT

5-14165 ALSO IN CATEGORY 4  
CHAPMAN AJ  
EVALUATION OF SEVERAL SILICONE, PHENOLIC, AND EPOXY BASE HEAT-SHIELD MATERIALS AT VARIOUS HEAT-TRANSFER RATES AND DYNAMIC PRESSURES  
LANGLEY RESEARCH CENTER, LANGLEY STATION, HAMPTON, VA., (NASA)  
NASA-TN-D-3619 +. 56 PAGES, 10 FIGURES, 3 TABLES, 13 REFERENCES, OCTOBER 1966

THREE ELASTOMERIC ABLATIVE MATERIALS WITH A SILICONE RESIN BASE AND THREE RIGID ABLATORS WITH AN EPOXY OR PHENOLIC RESIN BASE WERE TESTED IN AN ELECTRIC-ARC-HEATED GAS STREAM. THE MATERIALS WERE REINFORCED WITH A PHENOLIC-GLASS-FIBER HONEYCOMB MATRIX. SEVENTY-ONE SPECIMENS, FABRICATED AS 3-IN-DIAMETER (76 MM) FLAT-FACE DISKS, WERE EXPOSED TO A RANGE OF TEST STREAM CONDITIONS WHICH INCLUDED STAGNATION ENTHALPY FROM 1850 TO 3370 BTU/LBM (4.3 TO 7.8 MJ/KG), DYNAMIC PRESSURE FROM NEARLY 0 TO 1300 LBF/FT SQUARED (48 KN/M SQUARED), AND HEAT-TRANSFER RATE FROM 20 TO 220 BTU/FT SQUARED-SEC (0.23 TO 2.5 MW/M SQUARED). A TEST

CATEGORY 5  
ACCIDENT ANALYSIS

5-14165 \*CONTINUED\*

STREAM OF REDUCED OXYGEN CONCENTRATION (3 PERCENT OXYGEN AND APPROXIMATELY 97% NITROGEN) WAS USED TO SIMULATE OXIDATION CONDITIONS IN AIR AT HIGH ENTHALPY. THE RESULTS PRESENTED INCLUDE BACK-SURFACE TEMPERATURE RESPONSE, THICKNESS OF DEGRADED AND UNDEGRADED LAYERS AFTER TESTING, AND PHOTOGRAPHS SHOWING CONDITIONS OF THE MATERIALS AFTER TESTING. THE THERMAL SHIELDING PERFORMANCE OF THE MATERIALS IS COMPARED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$2.50 COPY

\*ABLATION + \*FLOW, HIGH SPEED + \*REENTRY, ATMOSPHERIC + HEAT TRANSFER + HEAT TRANSFER EXPERIMENT

5-14166

MFUMAN M  
ON TWO-DIMENSIONAL STATISTICAL HYDRODYNAMICS  
LAWRENCE RADIATION LABORATORY  
UCRL-50105 +. 85 PAGES, 4 FIGURES, JULY, 1966

THE STATISTICAL TREATMENT OF THREE-DIMENSIONAL TURBULENCE HAS BEEN THE SUBJECT, IN RECENT YEARS, OF MANY DETAILED INVESTIGATIONS. THE CORRESPONDING TWO-DIMENSIONAL PROBLEM HAS RECEIVED COMPARATIVELY LITTLE ATTENTION. THIS IS ONLY NATURAL. THE THREE-DIMENSIONAL VIEWPOINT IS MORE REALISTIC AND SHOULD ENCOMPASS THOSE FEATURES OF THE PROBLEM WHICH MIGHT BE DEDUCED FROM AN IDEALIZED TWO-DIMENSIONAL FLOW. YET, THERE ARE SOME SEEMINGLY VALID REASONS FOR AN INDEPENDENT INVESTIGATION OF TWO-DIMENSIONAL TURBULENCE. THE THREE-DIMENSIONAL TREATMENTS HAVE NEVER BEEN SO THOROUGH AS TO BRING OUT ALL THE FEATURES OF THE PROBLEM - THE MATHEMATICAL DIFFICULTIES ARE TOO GREAT. SOME FEATURES WHICH ARE ALSO ASSOCIATED WITH A TWO-DIMENSIONAL IDEALIZATION MIGHT BE OBTAINED MORE DIRECTLY, WITH LESS EFFORT, FROM A TWO-DIMENSIONAL FLOW. THE LATTER HAS ALSO SOME INTRINSIC THEORETICAL INTEREST.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY

\*FLOW THEORY AND EXPERIMENTS + \*FLOW, TURBULENT + HYDRODYNAMIC ANALYSIS + STATISTICAL ANALYSIS + TURBULENCE, STATISTICS

5-14167

SCHACK JA  
INDUSTRIAL HEAT TRANSFER - PRACTICAL AND THEORETICAL WITH BASIC NUMERICAL EXAMPLES  
460 PAGES, 74 FIGURES, 1965, JOHN WILEY AND SONS INC., NEW YORK

ENGLISH TRANSLATION OF THE 1956 GERMAN EDITION. THIS BOOK PRESENTS PRACTICAL FORMULAE AND METHODS FOR COMPUTING HEAT-TRANSFER PROBLEMS AND DESIGNING HEAT-TRANSFER EQUIPMENT. FORMULAE AND DATA ARE GIVEN IN PRACTICAL ENGLISH UNITS. LITTLE USE IS MADE OF DIMENSIONLESS PARAMETERS IN CORRELATING DATA. THE BOOK SHOULD BE USEFUL TO THOSE DOING PRACTICAL NON-RESEARCH WORK.

AVAILABILITY - JOHN WILEY AND SONS, NEW YORK, N.Y., \$16.00 COPY

\*HEAT TRANSFER + HEAT EXCHANGER + HEAT TRANSFER CORRELATION + HYDRAULIC ANALYSIS + HYDRODYNAMIC ANALYSIS

5-14168

WILKIE D  
HEAT TRANSFER FROM SURFACES ROUGHENED BY SQUARE RIBS AT PITCH TO HEIGHT RATIOS OF 5, 7.2, 9.4 AND 15  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, SELLAFIELD  
TRG-1127 (W) +. 7 PAGES, 8 FIGURES, 6 TABLES, 2 REFERENCES, MARCH 8, 1966

HEAT-TRANSFER AND PRESSURE-DROP DATA ARE PRESENTED FOR SURFACES ROUGHENED BY SQUARE RIBS AT PITCH-TO-HEIGHT RATIOS OF 5, 7.2, 9.4, AND 15, AND HEIGHT-TO-EQUIVALENT-DIAMETER RATIOS FROM 0.002 TO 0.0104 OVER A REYNOLDS NUMBER RANGE FROM  $0.75 \times 10^5$  TO  $10^6$ . THE TESTS, WHICH WERE WITH AIR, PROVIDE AN ESTIMATE OF THE EFFECT ON FRICTION FACTOR OF THE WALL-TO-BULK-COOLANT-TEMPERATURE RATIO.

AVAILABILITY - UNITED KINGDOM ATOMIC ENERGY AUTHORITY, (REACTOR GROUP), RISLEY, WARRINGTON, LANCASHIRE, ENGLAND

\*HEAT TRANSFER AUGMENTATION + FIN + HEAT TRANSFER + HEAT TRANSFER EXPERIMENT + PRESSURE DROP

5-14169

ALSO IN CATEGORY 8  
VESSERS DR + STEINDLER MJ  
LABORATORY INVESTIGATIONS IN SUPPORT OF FLUID-BED FLUORIDE VOLATILITY PROCESSES. PART X. A LITERATURE SURVEY ON THE PROPERTIES OF TELLURIUM, ITS OXYGEN AND FLUORINE COMPOUNDS.  
ARGONNE NATIONAL LABORATORY  
ANL-7142 +. 83 PAGES, 3 FIGURES, 11 TABLES, FEBRUARY 1966

THE RESULTS OF A LITERATURE SURVEY OF THE PROPERTIES OF TELLURIUM, ITS OXIDES, FLUORIDES, AND OXYFLUORIDES WERE ASSEMBLED. THE PERTINENT DATA FOR THE PHYSICAL AND CHEMICAL PROPERTIES AS WELL AS THE BEHAVIOR OF TELLURIUM IN PROCESSING OF NUCLEAR FUELS BY FLUORIDE VOLATILITY METHODS ARE INCLUDED. AN APPENDIX CONTAINING TABULATED VAPOR PRESSURES AND ABSTRACTS OF ALL

CATEGORY 5  
ACCIDENT ANALYSIS

5-14169 \*CONTINUED\*  
PERTINENT REFERENCES IS FURNISHED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY

\*CHEMICAL REACTION + \*PROPERTY, PHYSICAL + \*TELLURIUM + \*THERMODYNAMICS + CHEMICAL EQUILIBRIUM + FISSION PRODUCT, SEPARATION FROM WASTE + THERMAL PROPERTY

5-14170 ALSO IN CATEGORIES 7 AND 8  
SCHICK HL

THERMODYNAMICS OF CERTAIN REFRACTORY COMPOUNDS. (VOLUME I, DISCUSSION OF THEORETICAL STUDIES. VOLUME II, THERMODYNAMIC TABLES, BIBLIOGRAPHY, AND PROPERTY FILE)  
1403 PAGES, 24 FIGURES, 250 TABLES, REFERENCES, 1966, ACADEMIC PRESS, NEW YORK, N.Y. AND LONDON

THIS IS A COMPREHENSIVE COMPILATION OF THERMOCHEMICAL DATA, GIVING THE SPECIFIC HEAT, ENTROPY, FULL ENERGY FUNCTION, HEATS OF FORMATION, FREE ENERGY OF FORMATION, AND THE EQUILIBRIUM CONSTANT OF FORMATION FOR TEMPERATURES FROM 0 TO 6000 K. THE DATA REPORTED WAS COMPILED BETWEEN 1 JUNE 1962 AND 31 DECEMBER 1963. THIS WORK INCLUDES A STUDY OF THE THERMODYNAMICS OF THE BORIDES, CARBIDES, NITRIDES, AND OXIDES OF 31 ELEMENTS IN THE TEMPERATURE RANGE FROM 0 TO 6000 DEGREES K. THE ELEMENTS ARE (A) GROUP IIA--BERYLLIUM, MAGNESIUM, CALCIUM, AND STRONTIUM, (B) GROUP IVB--TITANIUM, ZIRCONIUM, AND HAFNIUM, (C) GROUP IVA--SILICON, (D) GROUP IVB--TITANIUM, ZIRCONIUM, AND HAFNIUM, (E) GROUP VB--VANADIUM, NIOBIUM, AND TANTALUM, (F) GROUP VIB--CHROMIUM, MOLYBDENUM, AND TUNGSTEN, (G) GROUP VIIB--MANGANESE, TECHNETIUM, AND RHENIUM, (H) GROUP VIII--RHODIUM, OSMIUM, IRIIDIUM, AND PLATINUM, (I) RARE EARTHS--CERIUM, NEODYMIUM, SAMARIUM, GADOLINIUM, AND DYSPROSIUM, AND (J) ACTINIDES--URANIUM AND THORIUM. MORE THAN 160 THERMODYNAMIC TABLES, TOGETHER WITH COMPREHENSIVE DISCUSSIONS, HAVE BEEN PREPARED. THE WORK HAS BEEN SUMMARIZED IN TWO VOLUMES. VOLUME 1, PRESENTS A SUMMARY OF THE TECHNIQUES USED TO ANALYZE THERMODYNAMIC DATA AND GIVES THE DATA ANALYSES FOR REFRACTORIES CONSIDERED. VOLUME 2, IS A COMPILATION OF THERMODYNAMIC TABLES GENERATED ON THIS PROJECT. IT ALSO CONTAINS A BIBLIOGRAPHY AND SUBJECT INDEX.

AVAILABILITY - ACADEMIC PRESS, INC., 111 FIFTH AVENUE, NEW YORK, NY, 10003, \$38.00 A SET

\*CHEMICAL EQUILIBRIUM + \*CHEMICAL REACTION + \*PROPERTY, PHYSICAL + \*THERMAL PROPERTY + \*THERMODYNAMICS + HEAT TRANSFER

5-14230  
LEE AY

STEADY-STATE COUPLED FLUID FLOW AND HEAT CONDUCTION ANALYSIS OF A HEAT-GENERATING SOLID, AS APPLIED TO REACTOR DESIGN  
WESTINGHOUSE ELECTRIC CORPORATION, PITTSBURGH, PA.  
CONF-651110-29 + SNP-1 +. 25 PAGES, NOVEMBER 1965

A METHOD OF SOLUTION OF THE STEADY-STATE COUPLED FLUID FLOW AND HEAT-CONDUCTION ANALYSIS OF A HEAT-GENERATING SOLID BODY THAT IS COOLED BY A FLUID FLOW ALONG PARALLEL CHANNELS IS DESCRIBED. THE MAJOR OBJECTIVES OF THE ANALYSIS ARE THE DETERMINATION OF FLOW DISTRIBUTION, AXIAL TEMPERATURE RISE AND PRESSURE DROP OF THE COOLANT AS WELL AS THE SPATIAL TEMPERATURE DISTRIBUTION OF THE SOLID MATERIAL. THE SOLUTION IS APPLICABLE TO ANY SOLID BODY OF ARBITRARY GEOMETRY HAVING AXIALLY AND TRANSVERSELY VARYING HEAT-GENERATION RATES. CALCULATION EXAMPLE FOR A LONG RECTANGULAR BAR INTERNALLY COOLED ALONG 12 PARALLEL CHANNELS ARRANGED IN A SQUARE ARRAY IS GIVEN. RESULTS FROM THIS COUPLED ANALYSIS AND THAT OBTAINED FROM AN ISOLATED CHANNEL ANALYSIS ARE COMPARED. THE EFFECTS OF PLUGGED CHANNELS ON THE MATERIAL TEMPERATURE OF THIS SAMPLE SOLID BODY ARE ALSO DISCUSSED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$1.00 COPY, \$0.50 MICRONEGATIVE

HEAT TRANSFER + HEAT TRANSFER ANALYSIS + HEAT TRANSFER, CONDUCTION + HEAT TRANSFER, CONVECTION + HYDRAULIC ANALYSIS + PRESSURE DROP

5-14231  
SPIGT CL

ON THE HYDRAULIC CHARACTERISTICS OF A BOILING WATER CHANNEL WITH NATURAL CIRCULATION  
TECHNISCHE HOOGESCHOOL, EINDHOVER, NETHERLANDS  
EURAE-1644 + EUR-2842 + WWO-16-R92 +. 150 PAGES, MAY 1966

IN THIS PUBLICATION, THE RESULTS OF AN EXPERIMENTAL AND THEORETICAL STUDY ARE REPORTED ON THE HYDRAULIC CHARACTERISTICS OF A SINGLE COOLANT CHANNEL OF SIMPLE ANNULAR GEOMETRY IN A BOILING WATER NUCLEAR REACTOR, WITH THE MAIN EMPHASIS ON THE STABILITY CHARACTERISTICS OF THE FLOW PROCESS IN SUCH A CHANNEL. THE EXPERIMENTAL PART WAS RESTRICTED TO THE OPERATION UNDER CONDITIONS OF NATURAL CIRCULATION. MOST ATTENTION WAS PAID TO (A) THE DETERMINATION OF THE LIQUID FLOW RATE AT THE INLET AND THE VOID AND PRESSURE DISTRIBUTION ALONG THE HEIGHT OF THE COOLANT CHANNEL UNDER STEADY-STATE CONDITIONS, (B) THE OCCURRENCE AND CHARACTERIZATION OF SPONTANEOUS FLOW INSTABILITIES, (C) THE DETERMINATION OF THE STABILITY CHARACTERISTICS OF A STEADY STATE BY MEANS OF A FREQUENCY-RESPONSE ANALYSIS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$4.00 COPY, \$1.00 MICRONEGATIVE

\*ANNULUS + \*FLOW THEORY AND EXPERIMENTS + \*FLOW, AXIAL + \*HEAT TRANSFER, BOILING + FLOW STABILITY +

CATEGORY 5  
ACCIDENT ANALYSIS

5-14231 \*CONTINUED\*  
FUEL ELEMENT

5-14232  
MAYINGFP F + SCHAD O + WEISS E  
RESEARCH INTO THE CRITICAL HEAT FLUX (BURNOUT) IN BOILING WATER. FINAL REPORT ON PULSATING BURNOUT  
MASCHINENFABRIK AUGSBURG-NUERNBERG A. G., NUREMBERG, WEST GERMANY  
EURAF-C-1620 + EUR-2833 +. 151 PAGES, MARCH 1966, IN ENGLISH AND GERMAN

BURNOUT, I.E., DESTRUCTION OF THE HEATING SURFACE MATERIAL BY BURNING OR MELTING, IS GENERALLY THE RESULT OF THE BOILING CRISIS WHICH IS CAUSED BY THE MECHANISM OF THE HEAT EXCHANGE CHANGING FROM NUCLEATE TO FILM BOILING. SOME INVESTIGATIONS MADE IN RECENT TIMES HAVE SHOWN THAT BURNOUT MAY ALSO BE CAUSED BY SUDDENLY OCCURRING PULSATIONS IN PRESSURE AND MASS FLOW. STARTING FROM COMPLETELY STEADY-STATE CONDITIONS THESE PULSATIONS INSTANTANEOUSLY TAKE PLACE WHEN A PREDETERMINED HEAT FLUX IS REACHED WITH NO OTHER CHANGE BEING MADE IN THE CIRCUIT THAN A SLOW AND STEADY INCREASE IN THE HEAT FLUX. THIS TYPE OF BURNOUT IS CONVENIENTLY REFERRED TO AS PULSATING BURNOUT OR TYPE-2 BURNOUT, IN CONTRAST TO THE TYPE-1, OF WHICH THE CAUSE IS IN THE BOILING CRISIS, I.E., FILM BOILING. THE MAXIMUM ATTAINABLE HEAT FLUXES IN THE CASE OF THE PULSATING BURNOUT ARE 20 TO 50 PERCENT LOWER THAN IN THE CASE OF THE TYPE-1 BURNOUT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$5.00 COPY, \$1.00 MICRONEGATIVE

\*BURNOUT HEAT FLUX + \*FLOW, PULSATING + \*HEAT TRANSFER, BOILING + FLOW STABILITY + FLOW, TUBE + HEAT TRANSFER

5-14233  
ALIA P + CRAVAROLO L + HASSID A + PEDROGGI E  
LIQUID VOLUME FRACTION IN ADIABATIC TWO-PHASE VERTICAL UPFLOW-ROUND CONDUIT. TOPICAL REPORT NO. 15  
CENTRO INFORMAZIONI STUDI ESPERIENZE, MILAN, ITALY  
EURAF-C-1088 + EUR-2040 + CISE-B-105 +. 103 PAGES, JUNE 1965

THIS REPORT PRESENTS AND DISCUSSES THE RESULTS OBTAINED AT CISE UNDER THE CAN-2 RESEARCH PROGRAM ON LIQUID VOLUME FRACTION WITH VERTICAL UPWARD FLOW OF TWO-PHASE (GAS PLUS LIQUID) MIXTURES IN ADIABATIC CONDITIONS. THE EXPERIMENTS WERE CARRIED OUT UNDER THE FOLLOWING CONDITIONS - GEOMETRY (ROUND CONDUITS 1.5 AND 2.5 CM I.D.), FLUIDS (GAS PHASE - ARGON, LIQUID PHASE - WATER, ETHYL ALCOHOL), GAS FLOW RATE (15 PLUS 100 GM/SQCM-SEC), LIQUID FLOW RATE (20 PLUS 200), TEMPERATURE (APPROXIMATELY 18-20 C), PRESSURE (UP TO 22 KG/SQCM). THE EXPERIMENTS WERE PERFORMED THROUGH VARIOUS METHODS BASED ON DIFFERENT PRINCIPLES WHICH ARE BRIEFLY REVIEWED. THE RESULTS ENABLED US TO OUTLINE THE DEPENDENCE OF LIQUID VOLUME FRACTION UPON THE FOLLOWING PARAMETERS - SPECIFIC MASS FLOW RATE, QUALITY, GAS DENSITY, SURFACE TENSION, DIAMETER.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$4.00 COPY, \$0.75 MICRONEGATIVE

\*FLOW, TWO PHASE + FLOW THEORY AND EXPERIMENTS + FLOW, TUBE + HYDRODYNAMIC ANALYSIS

5-14234  
KAMINSKI F  
THE EXPERIMENTAL INVESTIGATIONS OF LIQUID SODIUM HEAT TRANSFER AND FLUID FLOW IN THE LABORATORY CONVECTION LOOP  
INSTITUTE OF NUCLEAR RESEARCH, WARSAW, POLAND  
LA-TR-66-54 + INR-588/9/9 +. 25 PAGES, 4 TABLES, 2 FIGURES, 10 REFERENCES, DECEMBER 1964

THIS PAPER DISCUSSES THE EXPERIMENTAL INVESTIGATION OF THE HEAT TRANSFER FROM A VERTICAL PIPE TO LIQUID SODIUM IN THE CASE OF NATURAL CONVECTION, AND THE CALIBRATION OF A MAGNETIC FLOWMETER FOR THE SMALL VOLUME RATES OF SODIUM. THE RESULTS OF MEASUREMENTS OF HEAT LOSSES FROM VERTICAL UNINSULATED PIPES ARE ALSO PRESENTED. THESE HEAT LOSSES ARE CONSIDERED AS A FUNCTION OF THE AVERAGE TEMPERATURE OF SODIUM FLOWING INSIDE. THE RESULTS OF INVESTIGATIONS WERE COMPARED WITH RESULTS OF SIMILAR EXPERIMENTS OF VARIOUS AUTHORS.

AVAILABILITY - JOHN CREPAR LIBRARY, 35 WEST 33RD ST. CHICAGO, ILLINOIS 60616, \$2.60 COPY, \$0.95 MICRONEGATIVE

\*METAL, LIQUID + HEAT TRANSFER + HEAT TRANSFER, NATURAL CONVECTION + SODIUM

5-14235  
TWO-PHASE FLOW AND HEAT TRANSFER IN MULTIROD GEOMETRIES. SIXTH QUARTERLY PROGRESS REPORT JANUARY 26-APRIL 25, 1966  
GENERAL ELECTRIC COMPANY, SAN JOSE, CALIF.  
GEAP-5161 +. 24 PAGES, MAY 1966

THIS IS ONE OF A SERIES OF PROGRESS REPORTS ON THE TITLED SUBJECT. THE FOLLOWING IS A SUMMARY OF RESULTS IN THE GIVEN TIME PERIOD. ECCENTRIC ANNULUS - THE FLOW STRUCTURE IN AN ECCENTRIC-ANNULUS GEOMETRY WITH AIR AND WATER FLOWING UPWARD HAS BEEN STUDIED. NINE-ROD CHANNEL - BOTH SINGLE-PHASE AIR TESTING AND TWO-PHASE AIR-WATER TESTING HAVE BEEN SUCCESSFULLY PERFORMED WITH THE NINE-ROD AIR-WATER TEST SECTION. WALL SHEAR PROBE - AN

CATEGORY 5  
ACCIDENT ANALYSIS

5-14235 \*CONTINUED\*

INDIRECT METHOD OF DETERMINING WALL SHEAR IN TWO-PHASE FLOW IS DISCUSSED, AND PRELIMINARY RESULTS ARE PRESENTED. THE METHOD IS AN EXTENSION OF THAT PROPOSED BY PRESTON IN 1954 FOR SINGLE-PHASE FLOW.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$1.00 COPY, \$0.50 MICRONEGATIVE

\*FLOW, TWO PHASE + ANNULUS + FUEL ELEMENT + HEAT TRANSFER + HEAT TRANSFER, BOILING + PRESSURE DROP

5-14317 ALSO IN CATEGORY 4

KITE FD

LAUNCH ABORT ENVIRONMENT STUDY. AN INTERIM REPORT

SANDIA LABORATORY, ALBUQUERQUE

SC-RR-64-1651 +. 19 PAGES, FEBRUARY 1965

EARLY IN 1962, SANDIA CORPORATION ACCEPTED THE MANAGEMENT OF INDEPENDENT ASSESSMENT OF AEROSPACE NUCLEAR SAFETY. ONE AREA CONCERNS CONDUCTING GROUND TESTS ON AEROSPACE NUCLEAR SYSTEMS TO DETERMINE HOW THESE SYSTEMS WOULD BE AFFECTED BY VARIOUS TYPES OF ACCIDENTS WHICH MIGHT OCCUR DURING GROUND HANDLING, TRANSPORTATION, OR LAUNCH. THIS REPORT DISCUSSES METHODS OF DETERMINING THE PRESSURE AND TEMPERATURE ENVIRONMENT OF AN ABORTED LAUNCH.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY

ACCIDENT, CONSEQUENCES + ACCIDENT, NONNUCLEAR + EXPLOSION + FIRE + HIGH TEMPERATURE + NUCLEAR ROCKET + PRESSURE, EXTERNAL + SNAP, GENERAL (SYSTEMS FOR NUCLEAR AUX. POWER)

5-14447

TRANSITION BOILING HEAT TRANSFER PROGRAM. FIFTEENTH QUARTERLY PROGRESS REPORT

GENERAL ELECTRIC COMPANY, SAN JOSE

GEAP-5278 + EURAEC-1739 +. 18 PAGES, OCTOBER 1, 1966

A SUMMARY OF WORK DONE DURING THIS QUARTER FOLLOWS - A NEW TEST SECTION WAS DESIGNED TO OBTAIN FILM-BOILING HEAT-TRANSFER MEASUREMENTS FOR FLOW INSIDE A HEATED TUBE. TWO TYPES OF PROBES FOR MEASUREMENT OF THE STEAM-PHASE SUPERHEAT LEVEL WILL BE USED WITH THE TEST SECTION - A TEMPERATURE PROBE UTILIZING SEPARATION OF THE MOISTURE FROM THE STEAM, AND A PITOT TUBE FROM WHICH THE STEAM TEMPERATURE CAN BE INFERRED. FABRICATION OF TEST ASSEMBLY WAS STARTED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*FLOW, TUBE + \*HEAT TRANSFER, BOILING + FILM, GENERAL + HEAT TRANSFER + HEAT TRANSFER EXPERIMENT

5-14452

TWO-PHASE FLOW AND HEAT TRANSFER IN MULTIROD GEOMETRIES. SEVENTH PROGRESS REPORT APRIL 26, 1966-JULY 25, 1966

GENERAL ELECTRIC COMPANY, SAN JOSE, CALIFORNIA

GEAP-6207 +. 23 PAGES, AUGUST 1966

THIS IS ONE OF A SERIES OF PROGRESS REPORTS DEALING WITH THE PROGRAM WHOSE OBJECTIVES WERE AS FOLLOWS - (1) TO OBTAIN DETAILED MEASUREMENTS OF FLOW STRUCTURE (PRESSURE DROP, LIQUID-FILM THICKNESS, WALL SHEAR STRESS, LOCAL MASS FLUX, LOCAL IMPACT PRESSURE) FOR AIR-WATER AND STEAM-WATER MIXTURES - (2) TO CARRY ON AN ANALYTICAL EFFORT IN PARALLEL WITH THE AIR-WATER TESTS - (3) TO MEASURE THE CRITICAL HEAT FLUX FOR A VERTICAL NINE-ROD GEOMETRY, UNDER FORCED CONVECTION CONDITIONS, WITH WATER AT HIGH PRESSURE (600 TO 1400 PSIA) AND FLOW UPWARD - (4) TO APPLY THE MODEL DEVELOPED IN TASK A TO THE PREDICTION OF CRITICAL HEAT FLUX.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

DNB (DEPARTURE FROM NUCLEATE BOILING) + FILM, LIQUID + FLOW THEORY AND EXPERIMENTS + FLOW, TWO PHASE + FUEL ELEMENT + HEAT TRANSFER + HEAT TRANSFER, BOILING + PRESSURE DROP

5-14527 ALSO IN CATEGORY 18

PROPOSED TECHNICAL SPECIFICATION CHANGE AT WESTERN NEW YORK REACTOR, LOW FLOW OPERATION

WESTERN NEW YORK RESEARCH CENTER

1 PAGE, JAN. 16, 1967, DOCKET NO. 50-57

REQUESTS 1-MW OPERATION AT 500 GPM TO OBTAIN N-16 HOLDUP INFORMATION. CALCULATION SHOWS INCIPENT BOILING AT HOT SPOT AT 1.14 MW, WITH A BULK INLET TEMP. OF 80 F. ONE-MW HEAT FLUX AT 500 GPM IS COMPUTED AS ONE-SIXTH THE BURNOUT HEAT FLUX.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*BURNOUT HEAT FLUX + \*FLOW BLOCKAGE + NITROGEN + OPERATING LIMITS/TECHNICAL SPECIFICATIONS + REACTOR, POOL TYPE + REACTOR, PULSED

CATEGORY 5  
ACCIDENT ANALYSIS

5-14569 ALSO IN CATEGORIES 11 AND 18  
QUESTION D.2.1A - ANALYSIS OF BLOWDOWN EFFECTS ON REACTOR VESSEL INTERNALS  
TENNESSEE VALLEY AUTHORITY  
6 PAGES, PAGES D.2.1 TO D.2.6 OF BROWNS FERRY CONSTRUCTION PERMIT, ANSWERS TO AEC QUESTIONS, AMENDMENT 3,  
NOVEMBER 10, 1966, DOCKET NO. 50-259/260

ANALYSIS REPORTED TO SUPPLEMENT EARLIER ANALYSIS ON VESSEL ALONE. (1) RECIRCULATION LINE RUPTURE. PRESSURE CHANGE IS ONLY 35 PSI/SEC, BEING CHOKED BY TWO-PHASE FLOW AFTER THE INTERNAL PRESSURE SURGE OF 28 PSI (MAX). CORE DELTA P IS ONLY 18 PSI, WELL BELOW 42 PSI REQUIRED FOR FUEL-BUNDLE LIFTING. (2) STEAM LINE RUPTURE. INITIAL DEPRESSURIZATION IS 80 PSI/SEC, REDUCING TO 25 PSI/SEC WHEN TWO-PHASE BLOWDOWN BEGINS (ASSUMING BREAK IS UPSTREAM OF THE FLOW LIMITER). CORE DELTA P WOULD BE 7 PSI BELOW FUEL LIFT VALUE OF 42 PSI. A 25-PSI PRESSURE DIFFERENCE WOULD NOT BIND THE CONTROL RODS. THE PEAK CALCULATED VALUE IS 18 PSI.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + ACCIDENT, LOSS OF COOLANT + BLOWDOWN + BROWNS FERRY + CORE COMPONENTS, MISCELLANEOUS + DAMAGE + FLOW, TWO PHASE + REACTOR, BOILING WATER + STRUCTURAL INTEGRITY

5-14570 ALSO IN CATEGORIES 11 AND 18  
QUESTION D.2.1B - ANALYSIS OF REACTIVITY-TRANSIENT EFFECTS ON REACTOR VESSEL OR INTERNALS  
TENNESSEE VALLEY AUTHORITY  
5 PAGES, 2 FIGURES, 1 TABLE, PAGES D.2.7 TO D.2.11 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3,  
ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966, DOCKET NO. 50-259/260

GIVES DAMAGES THAT WOULD RESULT FROM VARIOUS PEAK FUEL-ELEMENT ENTHALPIES. 170 CAL/GRAM GIVES FUEL-CLAD DAMAGE. 200-280 CAUSES FUEL FRAGMENTATION OR MELTING, BUT ONLY A SMALL FRACTION OF THE BURST ENERGY IS IN THIS FUEL. 300-400 WOULD GENERATE 10-100 PSI AND CAUSE CORE-COMPONENT DAMAGE. FOR EXCURSIONS YIELDING ENTHALPIES ABOVE 425 CAL/GRAM, THE THERMAL-TO-MECHANICAL ENERGY CONVERSION IS ABOVE A FEW PERCENT, SO PRIMARY-SYSTEM INTEGRITY WOULD BE THREATENED IF THE FUEL CONTAINED SUFFICIENT ENERGY.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + ACCIDENT, REACTIVITY + BROWNS FERRY + CORE COMPONENTS, MISCELLANEOUS + DAMAGE + REACTOR, BOILING WATER

5-14577 ALSO IN CATEGORY 18  
QUESTION D.4 - PRIMARY SYSTEM WATER/STEAM INVENTORY, AND VOLUME NEEDED FOR REFILL  
TENNESSEE VALLEY AUTHORITY  
PAGE D.4.1 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966,  
DOCKET NO. 50-259/260

AT POWER, THERE ARE 579,000 LB OF WATER AND 21,600 LB OF STEAM IN THE VESSEL AND RECIRCULATING LINES. THE JET-PUMP SHROUDS NEED 4900 CUBIC FEET TO REFILL TO TOP OF JET-PUMP THROAT--WHICH IS 2/3 CORE LEVEL. TEST DATA SHOWS REFLOODING TO 1/3 HEIGHT WILL ADEQUATELY COOL IT.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + CORE REFLOODING SYSTEM + REACTOR, BOILING WATER

5-14576 ALSO IN CATEGORIES 9 AND 18  
QUESTION E.3 - NEW SYSTEM WITH INCREASED SENSITIVITY TO CONTROL ROD INDUCED LOCAL FLUX PEAKING  
TENNESSEE VALLEY AUTHORITY  
PAGE E.3.1 OF BROWNS FERRY CONSTRUCTION PERMIT, ANSWERS TO AEC QUESTIONS, AMENDMENT 3, NOVEMBER 10, 1966,  
DOCKET NO. 50-259/260

THIS SYSTEM IS THE RBM (ROD-BLOCK MONITOR) DESCRIBED IN APPENDIX G. FINAL LOGIC AND PERFORMANCE DATA WILL BE AVAILABLE LATER. THE SYSTEM USES SIGNALS FROM SEVERAL LOCAL-POWER-RANGE MONITORS NEAR THE ROD TO PREVENT POWER PEAKING IF THE ROD IS MOVED.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + CONTROL ROD + INSTRUMENTATION, IN CORE + POWER DISTRIBUTION + REACTOR, BOILING WATER

5-14578 ALSO IN CATEGORIES 9 AND 18  
QUESTION E.5 - DESCRIBE THE PROTECTION SYSTEM IN DETAIL, RELIABILITY, AND TESTING ASSOCIATED WITH STEAM LINE RUPTURE  
TENNESSEE VALLEY AUTHORITY  
PAGE E.5.1 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966,  
DOCKET NO. 50-259/260

CATEGORY 5  
ACCIDENT ANALYSIS

5-14578 \*CONTINUED\*  
INCLUDED IN ANSWER G-1.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + REACTOR, BOILING WATER

5-14647 ALSO IN CATEGORIES 11 AND 18  
EXTERNAL COLLAPSING PRESSURE FOR ELK RIVER REACTOR FUEL ELEMENT TUBING  
ALLIS-CHALMERS MANUFACTURING COMPANY  
ACNP-64509 +. 21 PAGES, JANUARY 1964, DOCKET NO. 115-1

TEST AND CALCULATIONS WERE MADE ON THE COLLAPSING PRESSURE OF THE UNIRRADIATED 304L STAINLESS TUBING WITH 600 PPM BORON ADDED. TUBES WERE 62 INCHES LONG, 0.452 INCH OD, WITH A WALL THICKNESS 0.020 TO 0.018 INCH. COLLAPSE TESTS AT 600 F AVERAGED 2010 PSI (LOWEST 1800), AND 70 F AVERAGED 2750 PSI (LOWEST 2400). CALCULATIONS WERE 1500 PSI AT 600 F, AND 2500 PSI AT 70 F. OPERATING PRESSURE MAY REACH 1250 PSIG AT 600 F, AND 1375 DURING COLD HYDRO TEST. THE CRITICAL BUCKLING PRESSURE IS 1825 PSI AT 600 F.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*CLAD + \*FUEL ELEMENT + \*STRESS ANALYSIS + BUCKLING + ELK RIVER + REACTOR, BOILING WATER + TEST, PROOF

5-14652 ALSO IN CATEGORY 18  
DRESDEN 1 REQUESTS CHANGE TO ALLOW (PU,U) OXIDE FUEL ROD USAGE  
DIVISION OF REACTOR LICENSING, UNITED STATES ATOMIC ENERGY COMMISSION  
11 PAGES, 1 TABLE, JANUARY 9, 1967, DOCKET NO. 50-10

A ROD (WITH APPROX. 1.2 W/O PU IN NATURAL URANIUM) WILL REPLACE A GADOLINIA-URANIA ROD IN EACH OF 4 FUEL ELEMENTS DURING THE JANUARY 1967 REFUELING. EACH ROD CONTAINS (PU, U)O<sub>2</sub> HOT-PRESSED PELLETS, BUT THE WEIGHT PERCENTS VARY. THE PLUTONIUM IN THE NEW ROD IS ONLY 2-3 TIMES THE PU IN AN IRRADIATED NORMAL ROD. THE PEAK HEAT FLUX IN THE SINGLE 1.7 W/O ROD IS 275,000 BTU/HR/SQ.FT. GIVING A MAX. CRITICAL HEAT FLUX RATION OF 2.5 AT 125 PERCENT RATED POWER. HOWEVER, THIS ROD INITIALLY PRODUCES ABOUT 1.2 TIMES THE PEAK URANIUM-ROD HEAT FLUX, AND SLIGHTLY LESS THAN THE PEAK HEAT FLUX AT THE END OF CYCLE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + DRESDEN 1 + FUEL ELEMENT + PLUTONIUM DIOXIDE + REACTOR, BOILING WATER + REFUELING + URANIUM DIOXIDE

5-14657 ALSO IN CATEGORY 18  
BIG ROCK POINT PROPOSED CHANGE - LATEST CRITICAL HEAT FLUX CORRELATION  
CONSUMERS POWER COMPANY  
5 PAGES, DECEMBER 23, 1966, DOCKET NO. 50-155

MULTI-ROD DATA GAVE A NEW CORRELATION, AS IN APED5286 (SEPT. 66), TO REPLACE THAT BASED ON ONE ROD TEST DATA (APED 3892, APRIL 64). APPLICATIONS OF THE NEW CORRELATION INCREASES THE CALCULATED CRITICAL HEAT FLUX RATIO BY 10%. FURTHERMORE, FUEL-ROD SPACERS INCREASE TURBULENCE ENOUGH TO INCREASE THE CH FLUX BY 100,000 B/HR-FT. SQ. CREDIT FOR THIS LATTER IS NOT TAKEN, TO ASSURE CONSERVATISM.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*HEAT TRANSFER CORRELATION + \*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + BIG ROCK POINT + BURNOUT HEAT FLUX + POWER DISTRIBUTION + REACTOR, BOILING WATER

5-14658 ALSO IN CATEGORY 17  
SAXTON PLUTONIUM PROGRAM. SEMI-ANNUAL PROGRESS REPORT FOR THE PERIOD ENDING JUNE 30, 1966  
WESTINGHOUSE ELECTRIC CORPORATION, ATOMIC POWER DIVISION  
EURAEC-1661 + WCAP-3385-8 +. 43 PAGES, 6 TABLES, 13 FIGURES, 7 REFERENCES, JULY 1966 DOCKET NO. 50-146

REACTOR HAS OPERATED AT 21 OR 23.5 MWTH FOR MOST OF THE PERIOD, REACHING HALF (AVERAGE 6,170 MWD/MTM, PEAK PELLETT BURNUP OF 12,400 MWD/MTU) DESIGN BURNUP FOR THE PUO<sub>2</sub>-UO<sub>2</sub> FUEL. CLOSE AGREEMENT BETWEEN MEASURED AND CALCULATED REACTIVITIES WAS DEMONSTRATED EXCEPT FOR A LOW WORTH OF ROD 5. THE LEOPARD V-BUBBLE-POO CORE-DEPLETION CALCULATION IS IN GOOD AGREEMENT WITH OBSERVATION, WHILE THE EARLIER TURBO CALCULATION OVERPREDICTS CORE LIFETIME. THE POWER PEAKING HAS NOT DIMINISHED AS EXPECTED, THOUGH ITS LOCATION HAS CHANGED. THE POWER COEFFICIENT IS MORE NEGATIVE THAN CALCULATED, APPARENTLY BECAUSE OF A SMALLER PELLETT DIAMETER AND PUO<sub>2</sub> ENRICHMENT CHANGE FROM 6 TO 6.6 PERCENT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*FUEL BURNUP + \*OPERATIONS REPORT, ANALYSIS + \*PLUTONIUM DIOXIDE + \*URANIUM DIOXIDE + COMPARISON, THEORY AND EXPERIENCE + INSTRUMENTATION, IN CORE + POWER DISTRIBUTION +



CATEGORY 5  
ACCIDENT ANALYSIS

5-14658 \*CONTINUED\*  
REACTIVITY EFFECT, ANOMALOUS + REACTOR, PRESSURIZED WATER + SAXTON

5-14666 ALSO IN CATEGORIES 11 AND 18  
ACRS APPROVES QUAD CITIES 1 AND 2 CONSTRUCTION PERMIT  
UNITED STATES ATOMIC ENERGY COMMISSION  
3 PAGES, 6 REFERENCES, DECEMBER 14, 1966, DOCKET NOS. 50-254 AND 50-265

ACRS NOTES THAT MORE INFORMATION IS AVAILABLE ON THE EMERGENCY COOLING SYSTEM OF THIS  
DRESDEN-2 CLASS OF REACTOR, THAT IMPROVEMENTS WERE MADE IN THE PROCEDURES FOR INSPECTING THE  
REACTOR VESSEL DURING FABRICATION AND DURING OPERATION. ACRS MAY REVIEW REACTOR-VESSEL TESTS  
AT INTERVALS LATER, AND RECOMMENDS THAT APPLICANT TEST STEAM-LINE-ISOLATION VALVES UNDER  
ACCIDENT CONDITIONS AND THAT REGULATORY STAFF CHECK EMERGENCY-COOLING ANALYSES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) + \*CONTAINMENT PENETRATION, CLOSURE OF +  
\*SAFETY ANALYSIS REPORT, REVIEW OF + \*TEST, PROOF + CONTAINMENT, PRESSURE VESSEL + EXAMINATION +  
QUAD CITIES 1 AND 2

5-14676 ALSO IN CATEGORY 17  
NUCLEATE BOILING SHOWN TO HAVE SEVERAL REGIMES - LITERATURE SURVEY  
LOS ALAMOS SCIENTIFIC LABORATORY  
LA-3625-MS +. 1 PAGE, QUARTERLY STATUS REPORT ON ADVANCED REACTOR TECHNOLOGY (ART) FOR PERIOD ENDING  
OCTOBER 31, 1966, PAGE 13, NOVEMBER 1966

A FOUR-MONTH SURVEY OF THE LITERATURE ON BOILING HEAT TRANSFER AND TWO-PHASE FLOW WAS  
COMPLETED. THE MORE RECENT PUBLICATIONS REVEALED THAT RESEARCHERS HAVE TURNED TO A STUDY OF  
THE BASIC MECHANISM OF BOILING. THESE STUDIES HAVE SHOWN THAT THE CONVENTIONAL CONCEPT OF  
NUCLEATE BOILING UPON WHICH ALL PRIOR CORRELATIONS WERE BASED IS NOT CORRECT. THREE AND  
POSSIBLY FOUR REGIMES OF NUCLEATE BOILING HAVE BEEN DEMONSTRATED, WITH ONLY THE LOW-HEAT-FLUX  
RANGE CORRESPONDING TO THE IDEAS HELD PREVIOUSLY ABOUT NUCLEATE BOILING. THE NEW VIEWS AND  
THEIR CONSEQUENCES HAVE BEEN EXPLORED - A SUMMARY OF THE LITERATURE AND SPECIFIC  
RECOMMENDATIONS FOR FUTURE WORK HAVE BEEN PREPARED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*HEAT TRANSFER, BOILING + \*NUCLEATE BOILING + HEAT TRANSFER EXPERIMENT + REACTOR, LIQUID METAL COOLED +  
SODIUM

5-14764 ALSO IN CATEGORIES 17 AND 18  
DETAILS ON 500 GPM HOT SPOT DNB ANALYSIS  
WESTERN NEW YORK NUCLEAR RESEARCH CENTER, INC.  
1 PAGE, JANUARY 18, 1967, DOCKET NO. 50-57

METHOD OF ANALYSIS WAS AS GIVEN ON PG 133 OF HAZARDS ANALYSIS (REV.2) AND INCLUDES A FACTOR  
FOR FLOW BEING 10 PERCENT LESS THAN MEASURED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + DNB (DEPARTURE FROM NUCLEATE BOILING) +  
FLOW ORIFICE OR RESTRICTION + HOT SPOT + REACTOR, POOL TYPE + REACTOR, PULSED

5-14765 ALSO IN CATEGORIES 17 AND 18  
WESTERN NEW YORK PROPOSED CHANGE - 1 MW OPERATION AT 500 GPM TO OBSERVE N-16 CONDITIONS  
WESTERN NEW YORK NUCLEAR RESEARCH CENTER, INC.  
1 PAGE, JANUARY 16, 1967, DOCKET NO. 50-57

AT 500 GPM, WITH A BULK-COOLANT INLET TEMPERATURE OF 80 F, HEAT FLUXES EQUIVALENT TO 1.14-MW  
OPERATION CORRESPOND TO THE ONSET OF NUCLEATE BOILING AND ARE A FACTOR OF 16 BELOW THE  
BURNOUT HEAT FLUX. WNYRC WISHES A SPECIFIC TECH.-SPEC. CHANGE TO AUTHORIZE THIS EXPERIMENT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + DNB (DEPARTURE FROM NUCLEATE BOILING) +  
FLOW ORIFICE OR RESTRICTION + HOT SPOT + REACTOR, POOL TYPE + REACTOR, PULSED

5-14767 ALSO IN CATEGORIES 9 AND 18  
TRUSHIN JT + MILLER JK + PETRIE TW  
M-3A SAFETY SYSTEM SET POINT ANALYSIS  
MARTIN COMPANY, BALTIMORE, MARYLAND  
MND-M3A-3146 +. 95 PAGES, JUNE 5, 1964

A PERFORMANCE ANALYSIS OF THE PRIMARY SYSTEM IS PRESENTED IN DETAIL TO PERMIT REEVALUATION OF

CATEGORY 5  
ACCIDENT ANALYSIS

5-14767 \*CONTINUED\*

THE REACTOR SAFETY SYSTEM SET-POINTS UNDER CHANGED CONDITIONS. DETAILED THERMAL AND HYDRAULIC CHARACTERISTICS OF THE PRESENT CORE DESIGN ARE PRESENTED FOR THE CASE OF STEADY-STATE OPERATION. STEADY-STATE OPERATING LIMITS WERE ESTABLISHED FOR NO BULK BOILING IN THE HOT CHANNEL. TRANSIENT ANALYSES (NEITHER DNB NOR HOT-CHANNEL EXIT QUALITY ABOVE 15 PERCENT WERE ALLOWED) INCLUDED LOSS OF PUMPING POWER, LOCKED PUMP IMPELLER, COLD AND HOT ROD-WITHDRAWAL ACCIDENTS, AND STEAM-DEMAND LOAD TRANSIENTS. IN ALL CASES, THE RESTRICTION OF NO BULK BOILING DURING STEADY STATE PRECLUDED DNB DURING A TRANSIENT. THE SAFETY SYSTEM SET-POINTS ARE OBTAINED FROM THE THERMAL OPERATING LIMITS AND THE ACCURACY OF THE SYSTEM INSTRUMENTATION. A SAMPLE CALCULATION FOR DETERMINING THE MAXIMUM POWER SCRAM SET-POINT IS PRESENTED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*ANALOG SIMULATION + \*PERFORMANCE LIMIT + \*SAFETY ANALYSIS + HEAT TRANSFER ANALYSIS + PM 3A (PORTABLE MEDIUM NUCLEAR POWER PLANT) + REACTOR, ARMY + REACTOR, PRESSURIZED WATER

5-14777 ALSO IN CATEGORY 6

BROIDO JH

NEUTRONIC ASPECTS OF A 1000-MW(E) GAS-COOLED FAST REACTOR

ATOMICS INTERNATIONAL

1 PAGE, 1 TABLE, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PA., OCT. 30-NOV. 3, 1966, ANS TRANS 9(2), PAGE 580, (NOVEMBER 1966)

REACTIVITY GAIN DUE TO LOSS OF HELIUM IS 0.34 TO 0.48%. NUMERICAL VALUE OF DOPPLER COEFFICIENT. LOSS-OF-COOLANT ACCIDENT (ASSUMING SLOW LOSS OF HELIUM BECAUSE OF PRESTRESSED-CONCRETE VESSEL) RESULTS IN PEAK CLADDING TEMPERATURE ABOUT 120 SEC AFTER START OF ACCIDENT.

\*REACTOR, FAST + \*REACTOR, GAS COOLED + ACCIDENT, LOSS OF COOLANT + DOPPLER COEFFICIENT

5-14778 ALSO IN CATEGORIES 6 AND 7

DICKERMAN CE

USE OF PRESENT TREAT CORE AS A FAST-FLUX LOOP-MELTDOWN FACILITY

ARGONNE NATIONAL LABORATORY

1 PAGE, 7 REFERENCES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PA., OCTOBER 30-NOVEMBER 3, 1966, ANS TRANS. 9(2), PAGE 551, (NOVEMBER 1966)

AVOIDANCE OF SELF-SHIELDING BY LOW ENRICHMENT OF FUEL OR BY CADMIUM SHIELD ELIMINATING THERMAL MEMBRANES. FOR SODIUM-BONDED CARBIDE FUEL, ADIABATIC TRANSIENTS CAN BE SIMULATED ONLY BY THE SHORTEST OBTAINABLE TRANSIENTS (40-MSEC ASYMPTOTIC PERIOD). TEMPERATURE DISTRIBUTIONS TYPICAL OF STEADY STATE CAN BE OBTAINED FOR OXIDE ELEMENTS BY LOW-ENERGY-RELEASE EXCURSIONS, THEN PROGRAMMED ROD MOTIONS CAN PRODUCE A TEMPERATURE EXCURSION FROM OPERATING LEVELS.

\*OPERATING EXPERIENCE + \*TREAT (TRANSIENT TEST REACTOR FACILITY)

5-14780 ALSO IN CATEGORIES 18 AND 11

LAWROSKI H

THE ZERO-POWER PLUTONIUM REACTOR FACILITY

ARGONNE NATIONAL LABORATORY

4 PAGES, 2 FIGURES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PA., OCTOBER 30-NOVEMBER 3, 1966, ANS TRANS. 9(2), PAGE 552 (NOVEMBER 1966)

ZPPR IS A CRITICAL MACHINE FOR LARGE, FAST POWER REACTOR CORES (UP TO 1000 MWE, 3000 KG PU). FOR THE FACILITY ASSUMED, MAXIMUM CREDIBLE ACCIDENT IS A FIRE WITHOUT EXCURSION, AND ASSUMED DESIGN-BASIS ACCIDENT IS A VIGOROUS FIRE DUE TO VAPORIZATION OF FUEL DURING AN EXCURSION. FILTERING THROUGH A GRAVEL-SAND ROOF AND ADDITIONAL FILTERS LIMITS RELEASE OF PLUTONIUM TO ATMOSPHERE.

\*ACCIDENT, HYPOTHETICAL + \*ACCIDENT, MAXIMUM CREDIBLE (MCA) + \*ZPPR (ANL ZERO POWER PLUTONIUM REACTOR) + CRITICAL ASSEMBLY FACILITY + FILTER + PLUTONIUM

5-14784 ALSO IN CATEGORIES 6 AND 7

LIIMATAINEN RC + FRESHLEY MD + YESTA FJ

TRANSIENT IRRADIATION OF VIBRATIONALLY COMPACTED UO2 FUEL IN TREAT

ARGONNE NATIONAL LAB. + BATTTELLE-NORTHWEST

1 PAGE, 1 TABLE, 1966 WINTER MEETING, AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PA., OCT. 30-NOV. 3, 1966, ANS TRANS. 9(2), PAGE 395, (NOVEMBER 1966)

ZIRCALOY-CLAD, VIBRATIONALLY PACKED, URANIUM OXIDE FUEL RODS SUBJECTED TO TREAT TRANSIENTS UP TO 470 CAL PER GRAM. PRE-TRANSIENT BURNUP SIMULATED BY HELIUM PRESSURE. RODS WITH SIMULATED HIGH BURNUP FAIL BY CLAD RUPTURE BEFORE SIMULATED LOW-BURNUP RODS FAIL BY CLAD MELTING. 40% CLAD-WATER REACTIONS AND SOME OXIDATION OF URANIUM OXIDE. PEAK PRESSURE AND RATE OF PRESSURE RISE HIGHER THAN FOR PELLETS.

\*FAILURE, FUEL ELEMENT + \*TREAT (TRANSIENT TEST REACTOR FACILITY) + REACTOR, GRAPHITE MODERATED + REACTOR, TEST

CATEGORY 5  
ACCIDENT ANALYSIS

5-1478P ALSO IN CATEGORIES 6 AND 17  
GARIGLIANO NUCLEAR POWER PLANT. OPERATION REPORT FOR THE 2ND QUARTER OF 1966  
ENTE NAZIONALE PER L ENERGIA ELETTRICA, ROME  
TID-23383 +. 15 PAGES, JUNE 30, 1966

REACTOR RETURNED TO POWER IN MAY, LIMITED BY STEAM-REGULATING-VALVE MALFUNCTION.  
HIGHER-POWER-DENSITY/HIGH-VOID TESTS SHOWED SATISFACTORY REACTOR STABILITY. CORE PRESSURE  
DROP INCREASED FROM 1.88 PSI MAY 23 TO 2.36 ON JUNE 27. HIGH SUBCOOLING TESTS WERE  
IMPOSSIBLE BECAUSE BYPASSING FEEDWATER HEATERS CAUSED PIPING VIBRATION. ONE-LOOP OPERATION  
LED TO DRUM WATER LEVEL AND NEUTRON FLUX OSCILLATIONS, WORSENER BY COLDER FEEDWATER. THE  
POSSIBILITY WAS DEMONSTRATED OF OPERATING REACTOR FULL POWER WITH ONLY NATURAL CIRCULATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U. S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*HEAT TRANSFER, NATURAL CONVECTION + \*OPERATIONS REPORT, GENERAL + ITALY + PRESSURE DROP +  
\*REACTOR STABILITY + REACTOR, BOILING WATER + SURFACE FILM DEPOSIT + TEST, PLANT RESPONSE

5-14790 ALSO IN CATEGORIES 9 AND 17  
GARIGLIANO NUCLEAR POWER PLANT OPERATION REPORT FOR THE 4TH QUARTER OF 1965  
ENTE NAZIONALE PER L ENERGIA ELETTRICA, ROME  
TID-23320 +. 16 PAGES, DECEMBER 31, 1965

REACTOR WAS SHUT DOWN ALL THIS PERIOD FOR ZIRCALOY CHANNEL REPLACEMENT OF 108 SS CHANNELS.  
THE 20TH-STAGE DISK, FIVE BLADES, AND SHROUD BANDS WERE FOUND FAILED BECAUSE OF COMPLEX  
VIBRATION. EROSION WAS HARDLY APPRECIABLE. ALL FUEL ELEMENTS WERE CLEANED OF CRUD (70%  
COPPER OXIDE). ONE REACTOR DRAIN PIPE LEAKED AT A SS CONNECTION BETWEEN THE PIPE AND THE  
INCONEL VESSEL-NOZZLE. THE POISON SPARGER WAS FOUND BROKEN INTO PIECES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*OPERATIONS REPORT, GENERAL + FAILURE, EQUIPMENT + FAILURE, FATIGUE + FAILURE, PIPE + HEAT SINK + ITALY +  
REACTOR, BOILING WATER + REFUELING + SHUTDOWN SYSTEM, SECONDARY + SURFACE FILM DEPOSIT

5-14796 ALSO IN CATEGORIES 6 AND 18  
ANALYTICAL INVESTIGATION OF NUCLEAR AND THERMAL-HYDRAULIC DESIGN CHARACTERISTICS OF SM-1A, CORE 3, VOLUME I  
HITTMAN ASSOCIATES, INC.  
HIT-3459-11 (VOL. I AND II) + HIT-161 +. 80 PAGES, FIGURES, TABLES, REFERENCES, MARCH 1965

AN EARLIER REPORT INDICATING POTENTIAL PROBLEMS REQUIRED THIS DETAILED STUDY. CONCLUSIONS -  
(1) REACTIVITY CAN BE PREDICTED WITHIN 1% DELTA K OVER LIFETIME. (2) CORE SHOULD BE COLD  
SHUTDOWN WITH ANY TWO RODS OUT. (3, 4) CORE LIFETIME IS 32 MW YEARS, ROD POSITION CONSTANT  
AT 10.45 INCHES FROM 10 TO 18 MW YEARS. (5, 6) POWER DISTRIBUTIONS ARE LESS ADVERSE.  
MINIMUM DNB RATIO OF 2.67 OCCURS IN CONTROL-ROD FUEL ELEMENTS DURING PEAK REACTIVITY. (7)  
CORE IS HYDRAULICALLY STABLE UP TO 29 MW THERMAL.

\*SAFETY STUDY + DNB (DEPARTURE FROM NUCLEATE BOILING) + FUEL BURNUP + POWER DISTRIBUTION +  
REACTIVITY, EXCESS + REACTOR STABILITY + REACTOR, ARMY + REACTOR, PRESSURIZED WATER + SHUTDOWN MARGIN +  
SM 1 (STATIONARY MEDIUM POWER PLANT)

5-14797 ALSO IN CATEGORIES 6 AND 18  
ANALYTICAL INVESTIGATION OF NUCLEAR AND THERMAL HYDRAULIC DESIGN CHARACTERISTICS OF SM-1A, CORE 3, VOLUME  
II.  
HITTMAN ASSOCIATES  
HIT-3459-11 + HIT-161 +. 112 PAGES, FIGURES, TABLES, REFERENCES, MARCH 1965

TECHNICAL APPENDIX TO VOLUME I. GIVES VARIOUS PLANT AND CORE-3 DESCRIPTIONS, NUCLEAR PHYSIC  
ANALYSIS METHODS, AND THERMAL-HYDRAULIC ANALYSES METHODS.

\*COMPUTER PROGRAM + \*HEAT TRANSFER ANALYSIS + \*HYDRODYNAMIC ANALYSIS + \*REACTOR PHYSICS + REACTOR, ARMY +  
REACTOR, PRESSURIZED WATER + SM 1 (STATIONARY MEDIUM POWER PLANT) +  
SM 1A (STATIONARY MEDIUM POWER PLANT, ALASKA)

5-14802 ALSO IN CATEGORY 4  
HUNTER HM + DEGARABEDIAN P  
FEASIBILITY STUDY OF DIRECT-FLOW GAS-CORE REACTOR SYSTEM  
TPW SYSTEMS  
N-66-16525 + NASA-CR-70013 + STL-4393-6003-RO-000 +. 316 PAGES, JANUARY 31, 1966

PROPULSION REACTOR CONCEPT EMPLOYS A SINGLE, AXIAL, GASEOUS FUEL JET SURROUNDED BY A COAXIAL  
STREAM OF GASEOUS HYDROGEN PROPELLANT. FUEL RETENTION IS ACHIEVED BY COLLECTING THE SINGLE  
FUEL STREAM IN A SCOOP LOCATED AT THE DISCHARGE END OF THE REACTOR WHERE IT IS COOLED,  
CONDENSED TO THE LIQUID PHASE, AND RECIRCULATED. THE STUDY IS PRIMARILY CONCERNED WITH THE

CATEGORY 5  
ACCIDENT ANALYSIS

5-14802 \*CONTINUED\*

SCOOP, WHICH OPERATES IN A SEVERE THERMAL ENVIRONMENT. COMPUTER PROGRAMS DETERMINED THE HEAT LOADS AND MIXING BETWEEN FUEL AND PROPELLANT STREAMS. VARIOUS ADVANCED SCOOP-COOLING TECHNIQUES WERE STUDIED. THE PROPULSION SYSTEM WAS ANALYZED TO UNCOVER CRITICAL PROBLEM AREAS AND TO ESTABLISH REASONABLE DESIGN AND PERFORMANCE CONDITIONS FOR EVALUATION OF SYSTEM FEASIBILITY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*FUEL ELEMENT + \*WASTE DISPOSAL, GENERAL + REACTOR, SPACE

5-14803 ALSO IN CATEGORIES 9 AND 17  
SMELTZER P

EVALUATION OF CORE THERMAL AND HYDRAULIC DATA OBTAINED DURING THE OPERATION OF PWR CORE-I WITH THE FOURTH SEED. JANUARY 1963-FEBRUARY 1964  
NETTIS ATOMIC POWER LAB.

WAPPD-PWR-TE-151 +. 105 PAGES, FIGURES, DECEMBER 1964

IN-CORE THERMOCOUPLE CALIBRATION SHIFTED SEVERAL DEGREES WITHIN ONE YEAR. HALF THE 9 IN-CORE FLOW TRANSMITTERS WERE NOT WITHIN PLUS-OR-MINUS 1.25%. FLOW DISTRIBUTION WAS ADEQUATE. THE POWER SPLIT BETWEEN THE SEED AND BLANKET IS IN REASONABLE AGREEMENT OVER THE CYCLE WITH TNT CALCULATIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*OPERATIONS REPORT, ANALYSIS + FLOW DISTRIBUTION + FUEL BURNUP + INSTRUMENTATION, IN CORE + POWER DISTRIBUTION + REACTOR, PRESSURIZED WATER + REFUELING + SHIPPINGPORT

5-14847 ALSO IN CATEGORY 1A

PROPOSED ELK RIVER CHANGE 10 - REVISED FUEL ELEMENT LIMITATIONS AND CORRELATIONS  
RURAL COOPERATIVE POWER ASSOCIATION

8 PAGES, 1 TABLE, 6 REFERENCES, NOVEMBER 8, 1966, DOCKET NO. 115-1

MAXIMUM FUEL TEMPERATURE NOT TO EXCEED 5800 F DURING ACCIDENTAL TRANSIENTS. CRITICAL HEAT FLUX SHALL BE ABOVE 2.0 IN STEADY STATE, AND ABOVE 1.7 DURING (CREDIBLE) ACCIDENTAL TRANSIENTS. THE JANSSEN-LEVY (1962) CORRELATION SHALL BE USED (INSTEAD OF THE GRIFFITH CORRELATION BASED ON POOL BURNOUT DATA). BURNOUT HEAT FLUX LIMIT REPLACED BY ABOVE. MCHF RATIO OF 1.7 USED INSTEAD OF 1.5 BECAUSE ERR HAS NO IN-CORE INSTRUMENTATION. INTEGRAL OF KDT FOR UO2 USED AS CONSERVATIVE FOR (U, TH) OXIDE FUEL. CALCULATIONS SUMMARIZED.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*FUEL ELEMENT + \*HEAT TRANSFER CORRELATION + \*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + \*PERFORMANCE LIMIT + BURNOUT HEAT FLUX + OXIDE + REACTOR, BOILING WATER + THORIUM

5-14898 ALSO IN CATEGORY 17

EVESEP FUEL FAILURE DUE TO STEAM FLOW REDUCTION  
GENERAL ELECTRIC COMPANY, SAN JOSE

2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(9) PAGES 6-7 (FEBRUARY 27, 1967) DOCKET NO. 50-183

DURING STRAIN-CYCLE TESTING OF A MARK-III FUEL ELEMENT, COOLANT FLOW WAS ACCIDENTALLY REDUCED MOMENTARILY WHILE INVESTIGATING A MALFUNCTIONING FLOW CONTROL VALVE. A FUEL-CLADDING FAILURE RESULTED. OPERATION WAS RESUMED AFTER INVESTIGATION, AND THE SUPERHEAT TEST PROGRAM TERMINATED ON FEBRUARY 1, 1967.

\*FAILURE, FUEL ELEMENT + \*FAILURE, OPERATOR ERROR + \*FLOW BLOCKAGE + \*INCIDENT, ACTUAL, HUMAN ERROR + REACTOR, BOILING WATER + REACTOR, SUPERHEAT + VESR (VALLECITOS EXP. SUPERHEAT REACTOR-ESADA)

5-15006 ALSO IN CATEGORIES 11 AND 18

GINNA CORE COOLING AND CONTAINMENT SPRAY REVISIONS  
ROCHESTER GAS AND ELECTRIC CORP., ROCHESTER

1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(10) PAGE 26 (MARCH 6, 1967) DOCKET NO. 50-244

TWO PRESSURIZED ACCUMULATORS WILL BE ADDED FOR BORATED WATER INJECTION ON LOSS-OF-COOLANT ACCIDENT. SPACE PROBLEMS REQUIRED A THIOSULFATE SPRAY TO REPLACE 2 OF THE 4 IODINE (CHARCOAL) FILTEPS. THE REMAINING 2 WILL BE ELIMINATED IF WESTINGHOUSE ANALYSIS SHOWS IT POSSIBLE.

\*CONTAINMENT FILTERING SYSTEM + \*CONTAINMENT SPRAY + \*EMERGENCY COOLING CONSIDERATIONS + GINNA + REACTOR, PRESSURIZED WATER

5-15014 ALSO IN CATEGORIES 6 AND 8  
GENCO JM + RAINES GE

CATEGORY 5  
ACCIDENT ANALYSIS

5-15014 \*CONTINUED\*  
METAL-WATER REACTIONS DURING A LOSS-OF-COOLANT ACCIDENT. THE ZIRCONIUM-STEAM REACTION  
BATTELLE MEMORIAL INSTITUTE  
2 PAGES, 1 FIGURE, 4 REFERENCES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PA., OCT. 30 -  
NOV. 3, 1966, ANS TRANS. 9(2), PAGES 555-556.

A CALCULATION TECHNIQUE FOR EXTENT OF A METAL-WATER REACTION IN A REACTOR CORE DURING  
LOSS-OF-COOLANT ACCIDENT. RATE-LIMITING PHENOMENA - GAS-PHASE DIFFUSION OF STEAM AND  
SOLID-STATE DIFFUSION OF VARIOUS IONIC SPECIES THROUGH THE ZIRCONIUM DIOXIDE PRODUCT INTO THE  
BASE METAL. ASSUMPTION IS THAT THE STEAM-HYDROGEN MIXTURE BEHAVES AS AN INCOMPRESSIBLE FLUID.

\*ACCIDENT, LOSS OF COOLANT + \*COMPUTER, DIGITAL + \*METAL WATER REACTION + ZIRCONIUM

5-15015 ALSO IN CATEGORY 7  
RITZMAN RL + GIESEKE JA + MORRISON DL  
FISSION-PRODUCT RELEASE AND TRANSPORT DURING A LOSS-OF-COOLANT ACCIDENT.  
BATTELLE MEMORIAL INSTITUTE  
2 PAGES, 1 FIGURE, 7 REFERENCES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PA., OCT. 30 -  
NOV. 3, 1966, ANS TRANS. 9(2), PAGES 556-557

A GENERALIZED SEMIEMPIRICAL FISSION-PRODUCT-RELEASE MODEL OF THE TIME-TEMPERATURE-DEPENDENT  
RELEASE OF FISSION-PRODUCT SPECIES FROM FUEL DURING LOSS-OF-COOLANT ACCIDENTS. FOR LOFT, 5  
TO 15% OF THE IODINE WOULD ESCAPE THE FUEL DURING THE INITIAL SEVEN MINUTES OF THE ACCIDENT.  
FOR BWR, ONLY ABOUT 0.2%. TRANSPORT OF FISSION PRODUCTS FROM THE POINT OF RELEASE AND THEIR  
DEPOSITION.

\*ACCIDENT, LOSS OF COOLANT + \*DECAY HEAT + FISSION PRODUCT RELEASE, GENERAL + FISSION PRODUCT TRANSPORT +  
FISSION PRODUCT, IODINE + FISSION PRODUCT, NONVOLATILE + LOFT (LOSS OF FLUID TEST) +  
REACTOR, BOILING WATER

5-15016 ALSO IN CATEGORY 7  
OZISIK MN + CHEN PC  
DIFFUSION OF RADIOACTIVE MOLECULES FROM STAGNANT GAS IN CONTAINMENT VESSELS  
NORTH CAROLINA STATE UNIVERSITY  
2 PAGES, 1 FIGURE, 2 REFERENCES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PA., OCT. 30 -  
NOV. 3, 1966, ANS TRANS. 9(2), PAGES 557-558

ONE OF THE PROBLEMS ASSOCIATED WITH NUCLEAR REACTOR SAFETY IS THE DEPOSITION OF FISSION  
PRODUCTS ON THE WALLS OF A CONTAINMENT VESSEL UNDER ACCIDENTAL RELEASE CONDITIONS. TO  
FORMULATE DEPOSITION AS A FUNCTION OF TIME, THE FOLLOWING ASSUMPTIONS ARE MADE - (1)  
INITIALLY, THE RADIOACTIVE MOLECULES ARE UNIFORMLY DISTRIBUTED IN THE STAGNANT GAS, (2)  
ONE-DIMENSIONAL ISOTHERMAL DIFFUSION PROCESS IS CONSIDERED BETWEEN TWO LARGE PARALLEL PLATES,  
(3) DEPOSITION ON THE WALL IS MUCH LESS THAN A MONOMOLECULAR LAYER, (4) THERE ARE NO SOURCES  
IN THE GAS.

\*DEPOSITION + \*FISSION PRODUCT TRANSPORT + COMPUTER, DIGITAL

5-15017 ALSO IN CATEGORY 7  
MOORE KV + ROSE RP  
APPLICATION OF A LUMPED PARAMETER BUBBLE-RISE MODEL TO COOLANT BLOWDOWN ANALYSIS  
PHILLIPS PETROLEUM CO., IDAHO  
2 PAGES, 1 FIGURE, 7 REFERENCES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PA., OCT. 30 -  
NOV. 3, 1966, ANS TRANS. 9(2), PAGES 559-560

FOR BLOWDOWN OF A WATER-COOLED REACTOR SYSTEM IN THE LOSS-OF-COOLANT ACCIDENT. THE  
LUMPED-PARAMETER BUBBLE-RISE MODEL IS INCORPORATED IN THE FLASH AND RELAPSE DIGITAL COMPUTER  
PROGRAMS. COMPARISONS OF PREDICTED AND MEASURED VESSEL PRESSURE BEHAVIOR DURING BLOWDOWN ARE  
PRESENTED. APPLICATIONS TO LOFT REACTOR SYSTEM INDICATE THAT CYCLIC HYDRAULIC LOADS MAY BE  
IMPOSED ON THE CORE-SUPPORT STRUCTURE.

\*ACCIDENT, LOSS OF COOLANT + \*COMPUTER, DIGITAL + \*LOFT (LOSS OF FLUID TEST) + HYDRAULIC ANALYSIS

5-15018 ALSO IN CATEGORY 7  
CURET HD  
EXPERIMENTAL BLOWDOWN PHENOMENA APPLICABLE TO PRESSURIZED-WATER REACTOR SYSTEMS  
PHILLIPS PETROLEUM COMPANY, IDAHO  
2 PAGES, 1 FIGURE, 1 TABLE, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PA., OCTOBER 30-NOV  
3, 1966, ANS TRANS 9(2), PAGES 560-561

EXPERIMENTAL BLOWDOWN TESTS SIMULATING CONDITIONS EXPECTED DURING LOFT, RANGING FROM 70 F AND  
600 PSIG TO LOFT CONDITIONS OF 540 F AND 2330 PSIG. A PRESSURE VESSEL, DEVOID OF INTERNAL  
RESTRICTIONS, 128-IN. LONG AND 12 IN. IN DIAM WITH 4-IN. BLOWDOWN NOZZLES AT THE TOP AND  
BOTTOM WAS USED.

\*ACCIDENT, LOSS OF COOLANT + \*LOFT (LOSS OF FLUID TEST) + COMPUTER, DIGITAL + STRUCTURAL INTEGRITY

CATEGORY 5  
ACCIDENT ANALYSIS

5-15091 ALSO IN CATEGORIES 6 AND 8  
SHERER DG + MEINHARDT WG  
AN ANALYSIS OF FAST REACTOR TRANSIENT RESPONSE AND SAFETY IN SELECTED ACCIDENTS  
GENERAL ELECTRIC, SAN JOSE  
GEAP-4787 +. 67 PAGES, FIGURES, TABLES, 26 REFERENCES, JUNE 1966

THE DOPPLER COEFFICIENT IS THE PRIMARY MEANS OF MITIGATING A REACTIVITY INSERTION ACCIDENT. THE NEGATIVE RADIAL CORE EXPANSION COEFFICIENT IS THE DOMINANT FACTOR IN MITIGATING A LOSS OF FLOW ACCIDENT. THE REACTIVITY EFFECTS OF SODIUM THERMAL EXPANSION CAN BE MADE SMALL. IF A SCRAM DOES NOT TERMINATE A REACTIVITY INSERTION ACCIDENT, FAILURES ARE WORST AT THE HIGHEST OPERATING TEMPERATURES. DURING A LOSS-OF-FLOW ACCIDENT WITHOUT SCRAM, FUEL FAILURE DUE TO WEAKENED CLADDING IS LIKELY. AMONG THE FACTORS TO BE CONSIDERED IN ESTABLISHING RADIAL POWER PROFILE IS THE PATTERN OF FAILURE AND SODIUM VOIDING THAT WILL RESULT IF A SUFFICIENTLY SEVERE ACCIDENT IS POSTULATED. IT MAY BE DESIRABLE TO MAINTAIN SOME COOLANT FLOW DURING REFUELING.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*ACCIDENT ANALYSIS + \*REACTOR, FAST + ACCIDENT, LOSS OF FLOW + ACCIDENT, REACTIVITY + CONTROL, GENERAL + DOPPLER COEFFICIENT + FAILURE, CLADDING + FAILURE, FUEL ELEMENT + REACTIVITY EFFECT, EXPANSION + SODIUM COEFFICIENT

5-15092 ALSO IN CATEGORIES 18 AND 7  
GEIER JD  
FAST REACTOR TEST FACILITY (FARET). VOLUME II. SUMMARY OF PRELIMINARY SAFETY ANALYSIS  
ARGONNE NATIONAL LABORATORY, ILL.  
ANL-7168 (VOL. 2) +. 179 PAGES, 46 FIGURES, 23 TABLES, 54 REFERENCES, APRIL 1966

FOLLOWING AN INTRODUCTION (SECTION I) THIS REPORT CONSISTS OF TWO MAIN PARTS, THE FIRST OF WHICH DESCRIBES AND EVALUATES THE POSSIBLE CIRCUMSTANCES LEADING TO AND CULMINATING IN THE MAXIMUM CREDIBLE ACCIDENT. THIS ACCIDENT AND ITS SUBSEQUENT EFFECTS ON THE FARET SURROUNDINGS IS DESCRIBED IN SECTION II. THE SECOND MAIN PART OF THIS REPORT IS CONTAINED IN SECTION III. IT DESCRIBES THE RESULTS OF INVESTIGATIONS AND ANALYSES PERFORMED IN CONNECTION WITH THE FARET PSAR AND WHICH RESULTED IN CONDITIONS LESS SEVERE THAN THE MAXIMUM CREDIBLE ACCIDENT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*ACCIDENT, MAXIMUM CREDIBLE (MCA) + \*FARET (FAST ARGONNE REACTOR EXPERIMENT TEST) + ACCIDENT ANALYSIS + ACCIDENT MODEL + ACCIDENT, CONSEQUENCES + ACCIDENT, FUEL SLUMP + ACCIDENT, LOSS OF COOLANT + ACCIDENT, PROBABILITY OF + ACCIDENT, REFUELING + ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) + CONTAMINATION + CORE MELTDOWN + ENVIRONMENTAL CONDITION + FISSION PRODUCT RELEASE, GENERAL + MISSILE GENERATION AND PROTECTION

5-15094 ALSO IN CATEGORY 6  
ROSE RP + HANSON GH + JAYNE GA  
STUDIES OF ACOUSTIC EFFECTS IN REACTOR SYSTEM BLOWDOWN  
PHILLIPS PETROLEUM CO., IDAHO  
2 PAGES, 1 FIGURE, 9 REFERENCES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PA., OCT. 30 - NOV. 3, 1966, ANS TRANS. 9(2), PAGES 558-559

A PRESSURIZED-WATER REACTOR SYSTEM CAN EXPERIENCE RAPID DECOMPRESSION AFTER A BREAK IN THE PRIMARY LOOP. TREATMENT OF RAPID BLOWDOWN EFFECTS BY BURST PROGRAM. WAVE REFLECTION AT AREA TRANSITION. CYCLIC NATURE OF PREDICTED AND MEASURED PRESSURE BEHAVIOR. APPLICATIONS TO LOFT WITH THIS CYCLIC CORE HYDRAULIC LOADING INDICATE THAT SEVERE DESIGN REQUIREMENTS CAN BE POSED FOR THE GRID AND OTHER CORE SUPPORT STRUCTURES.

\*ACCIDENT, LOSS OF COOLANT + COMPUTER, DIGITAL + HYDRAULIC ANALYSIS + LOFT (LOSS OF FLUID TEST) + REACTOR, PRESSURIZED WATER

5-15108  
TSKHVIRASHVILI DG + VASADZE LF + TSUKH AS  
NEUTRON IRRADIATION AND THE DISTRIBUTION OF CORROSION PRODUCTS FROM CONSTRUCTIONAL MATERIALS  
1 PAGE, ATOMNAYA ENERGIYA 21(4), PAGE 30, (1966) FROM JOURNAL OF NUCLEAR ENERGY 21(2), PAGE 222, (FEBRUARY 1967)

ABSTRACT IS NOT AVAILABLE.

\*ACTIVATION + \*CORROSION

5-15184  
DAVIDSON DF + LEECE J

CATEGORY 5  
ACCIDENT ANALYSIS

5-15184 \*CONTINUED\*  
MAINS-FREQUENCY INDUCTION HEATING OF HIGH-TEMPERATURE FLOWING SODIUM  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, RISLEY, ENGLAND  
TRG-REPORT-1273 +. 22 PAGES, 9 FIGURES, 5 REFERENCES, JUNE 15, 1966

HEATING OF FLOWING SODIUM IN HIGH-TEMPERATURE EXPERIMENTAL RIGS HAS, IN THE PAST, PRESENTED PROBLEMS OF RELIABILITY OF THE HEATER AND OF THE SODIUM CONTAINMENT. A METHOD OF MAINS-FREQUENCY INDUCTION HEATING IS DESCRIBED, WHICH CAN BE DESIGNED TO COVER A LARGE RANGE OF RIG REQUIREMENTS AND MAINTAIN ACCEPTED ENGINEERING STANDARDS FOR BOTH THE CONTAINMENT AND THE ELECTRICAL EQUIPMENT. A HEATER OF THIS TYPE WAS MADE FOR THE FUEL ELEMENT THERMAL TEST RIG AT THE REACTOR ENGINEERING LABORATORY, RISLEY, AND PERFORMED VERY WELL. A RATING OF 400 KW IS OBTAINED FROM TWO 200-KW, THREE-PHASE UNITS. THE SYSTEM IS DESIGNED FOR A SODIUM FLOW OF 350 GAL/MIN AND AN OUTLET TEMPERATURE OF 650 C. DESIGNS HAVE ALSO BEEN PRODUCED FOR 5- AND 30-KW OUTPUTS. A METHOD IS DESCRIBED FOR DETERMINING THE LEAKAGE REACTANCE OF A HEATER UNIT, USING A MODEL PIPE LOOP MADE FROM COPPER IN PLACE OF THE SODIUM-FILLED STAINLESS-STEEL PIPE LOOP.

AVAILABILITY - BRITISH INFORMATION SERVICE, 845 THIRD AVE., N. Y. 10022, \$0.80 COPY

\*METAL, LIQUID + \*OUT OF PILE LOOPS AND EXPERIMENTS + \*SODIUM + \*THERMAL EXPERIMENT + HIGH TEMPERATURE + STEEL, STAINLESS + THERMAL PROPERTY

5-15320  
REFERENCES AE + MORTON HL  
SURVEY AND EVALUATION OF TECHNIQUES TO AUGMENT CONVECTIVE HEAT TRANSFER. TECHNICAL REPORT NO. 4382-34  
DEPARTMENT OF MECHANICAL ENGINEERING, MASSACHUSETTS INSTITUTE OF TECHNOLOGY, CAMBRIDGE  
AD-619511 +. 143 PAGES, 41 FIGURES, 5 TABLES, 183 REFERENCES, FEBRUARY 1965

THIS REPORT PRESENTS A SURVEY AND EVALUATION OF THE NUMEROUS TECHNIQUES SHOWN TO AUGMENT CONVECTIVE HEAT TRANSFER. THESE TECHNIQUES ARE - SURFACE PROMOTERS, INCLUDING ROUGHNESS AND TREATMENT, DISPLACED PROMOTERS, SUCH AS FLOW DISTURBERS LOCATED AWAY FROM THE HEAT-TRANSFER SURFACE, VORTEX FLOWS, INCLUDING TWISTED-TAPE SWIRL GENERATORS, VIBRATION OF THE HEATED SURFACE OR THE FLUID NEAR THE SURFACE, ELECTROSTATIC FIELDS, AND VARIOUS TYPES OF FLUID ADDITIVES. NATURAL AND FORCED CONVECTION SITUATIONS FOR NONBOILING, BOILING, AND CONDENSATION HEAT TRANSFER ARE INCLUDED. THE CONDITIONS UNDER WHICH HEAT TRANSFER IS IMPROVED ARE SUMMARIZED, AND THE EFFICIENCY OF EACH TECHNIQUE IS PRESENTED IN TERMS OF A PERFORMANCE CRITERION WHERE POSSIBLE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*HEAT TRANSFER AUGMENTATION + FIN + HEAT TRANSFER + HEAT TRANSFER, CONVECTION

5-15321  
YU WS + DWYER DE  
HEAT TRANSFER TO LIQUID METALS FLOWING TURBULENTLY IN ECCENTRIC ANNULI - II  
BROOKHAVEN NATIONAL LABORATORY, UPTON, NEW YORK  
9 PAGES, 7 FIGURES, 2 TABLES, NUCLEAR SCIENCE AND ENGINEERING, 27(1), PAGES 1-9, (JANUARY 1967)

AN ANALYTICAL STUDY WAS CARRIED OUT TO DETERMINE THE EFFECTS OF ECCENTRICITY ON BOTH LOCAL AND AVERAGE HEAT-TRANSFER COEFFICIENTS FOR TURBULENT FLOW OF LIQUID METALS THROUGH ECCENTRIC ANNULI. THE STUDY WAS BASED ON THE CONDITIONS OF - (1) HEAT TRANSFER FROM THE INNER WALL ONLY, (2) HEAT FLUX, AT A GIVEN CIRCUMFERENTIAL ANGLE, INDEPENDENT OF LENGTH, (3) INNER-WALL TEMPERATURE, AT A GIVEN AXIAL POSITION, INDEPENDENT OF CIRCUMFERENTIAL ANGLE, AND (4) FULLY DEVELOPED VELOCITY AND TEMPERATURE PROFILES. THIS STUDY IS A SEQUEL TO AN EARLIER ONE, WHICH DESCRIBED A SIMILAR CASE, EXCEPT THAT THE HEAT FLUX IN THAT CASE WAS UNIFORM IN ALL DIRECTIONS. THE SCOPES OF THE TWO STUDIES WERE IDENTICAL, AS FAR AS PARAMETER RANGES ARE CONCERNED. IN GENERAL, THE EFFECTS OF ECCENTRICITY WERE FOUND TO BE MUCH LESS IN THE PRESENT CASE.

\*FLOW, TURBULENT + \*METAL, LIQUID + ANNULUS + HEAT TRANSFER

5-15322  
WICHNER RP + HOFFMAN HW  
PRESSURE DROP WITH FORCED-CONVECTION BOILING OF POTASSIUM  
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.  
ORNL-P-1681 + CONF-650946-4 + ANL-7100 +. 13 PAGES, 4 FIGURES, 1 TABLE, 7 REFERENCES, 1965, FROM 4TH HIGH TEMPERATURE LIQUID-METAL HEAT TRANSFER TECHNOLOGY CONFERENCE, ARGONNE, ILL.

THE RESULTS ARE GIVEN FOR THE PRESSURE DROP WITH BOILING POTASSIUM IN FORCED-CONVECTION FLOW THROUGH A VERTICAL, CIRCULAR TUBE. THE DATA, WHICH COMPRISE A SINGLE SERIES OF MEASUREMENTS (SERIES D), WERE OBTAINED IN A TUBE (6 FT LONG X 0.270-IN. IN ID) HAVING PRESSURE TAPS AT 1-FT SPACINGS OVER THE FINAL 4 FT OF THE CHANNEL. THE PRESSURE-MEASUREMENT SYSTEM AND ITS DEFICIENCIES ARE DISCUSSED. THE PRIMARY DIFFICULTY APPEARS TO BE AGING OF THE DIAPHRAGMS IN THE PRESSURE TRANSMITTERS OVER LONG EXPOSURE TIMES AT HIGH TEMPERATURES. THE PRESSURE DISTRIBUTION ALONG THE BOILER WAS ESTIMATED BY USING BOTH HOMOGENEOUS AND LOCKHART-MARTINELLI DESCRIPTIONS OF THE FLOW. THE CALCULATED EXIT PRESSURES COMPARED FAVORABLY WITH MEASURED VALUES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

CATEGORY 5  
ACCIDENT ANALYSIS

5-15322 \*CONTINUED\*  
\*FLOW, TUBE + \*POTASSIUM + FLOW THEORY AND EXPERIMENTS + HEAT TRANSFER + HEAT TRANSFER, BOILING + METAL, LIQUID

5-15323  
KRAJFWSKI B + SZCZUREK J  
APPROXIMATE DETERMINATION OF THE FLOW AND TEMPERATURE FIELD IN A PEBBLE-BED GAS-COOLED REACTOR (NUMERICAL EXAMPLF).  
8 PAGES, 5 FIGURES, 3 TABLES, NUKLEONICA 8(4), PAGES 249-257, (1963)

THE PAPER GIVES A NUMERICAL EXAMPLE ALONG WITH GRAPHICAL ILLUSTRATIONS OF CALCULATIONS OF THE FLOW AND TEMPERATURE FIELD IN GAS FLOWING THROUGH PACKED BEDS. THE ANALYSIS WAS MADE FOR A CASE IN WHICH THE THERMAL CONDUCTIVITY OF THE GAS IS NEGLIGIBLE AND THE TOTAL PRESSURE OF THE GAS IS ASSUMED CONSTANT WITHIN THE RANGE CONSIDERED. THIS PROBLEM CAN BE REDUCED TO ONE OF FINDING A DIFFERENTIAL SOLUTION IN PARTIAL DERIVATIVES WITH GIVEN CONDITIONS. SINCE THE DIFFERENTIAL EQUATION UNDER CONSIDERATION CORRESPONDS TO A VARIATIONAL PROBLEM, THE RITZ METHOD WAS USED TO FIND THE APPROXIMATE SOLUTION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*FLOW DISTRIBUTION + \*HEAT TRANSFER + \*REACTOR, PEBBLE BED + PARTICULATE + REACTOR, GAS COOLED + SPHERE

5-15324  
ARPAZI VS  
CONDUCTION HEAT TRANSFER  
UNIVERSITY OF MICHIGAN  
550 PAGES, FIGURES, TABLES, REFERENCES, ADDISON-WESLEY PUBLISHING CO., READING, MASS., PALO ALTO, LONDON, DON MILLS, ONTARIO

FOLLOWING AN INTRODUCTORY CHAPTER, THE TEXT IS DIVIDED INTO THREE PARTS. IN PART I, FORMULATION, I HAVE TRIED HARD TO BREAK AWAY FROM THE TRADITIONAL THOUGHT THAT THE FORMULATION OF THE CONDUCTION PROBLEM IS MERELY POISSONS EQUATION OR ANOTHER BUT SIMILAR DIFFERENTIAL EQUATION. I HAVE KEPT THIS PART SOMEWHAT GENERAL SO IT CAN READILY BE EXTENDED TO THE CASE OF DEFORMABLE MEDIA. ONLY THE TREATMENT OF INERTIAL COORDINATES, STRESS TENSOR, MOMENTUM, AND MOMENT OF MOMENTUM ARE OMITTED FROM THIS DISCUSSION. I HAVE DEVCTED PART II, SOLUTION, TO THE SIMPLEST AND, TO A LARGE EXTENT, THE GENERAL (BUT NOT NECESSARILY THE MOST ELEGANT) METHODS OF SOLUTION. THUS THE POTENTIAL THEORY, THE SOURCE THEORY, GREENS FUNCTIONS, AND THE TRANSFORM CALCULUS (WITH THE EXCEPTION OF LAPLACE TRANSFORMS) ARE LEFT UNTREATED. THIS SEEMS QUITE ADEQUATE FOR THE INTENDED SIZE AND LEVEL OF THE TEXT. I HAVE COLLECTED TOPICS OF ADVANCED OR SPECIAL NATURE UNDER PART III AS FURTHER METHODS OF FORMULATION AND SOLUTION. THESE INCLUDE VARIATION, NUMERICAL, GRAPHICAL, AND ANALOG SOLUTIONS.

AVAILABILITY - ADDISON-WESLEY PUBLISHING COMPANY, READING, MASS., \$17.50 COPY

\*HEAT TRANSFER, CONDUCTION + HEAT TRANSFER + HEAT TRANSFER ANALYSIS

5-15329  
SPARROW FM + CESS RD  
RADIATION HEAT TRANSFER  
UNIVERSITY OF MINNESOTA + STATE UNIVERSITY OF NEW YORK AT STONY BROOK  
322 PAGES, FIGURES, TABLES, REFERENCES, 1966

THIS BOOK IS AIMED AT PROVIDING A CONTEMPORARY ACCOUNT OF RADIATION HEAT TRANSFER. IT WAS WRITTEN TO FULFILL TWO GENERAL FUNCTIONS - AS A TEXTBOOK FOR A COLLEGE COURSE IN RADIATION HEAT TRANSFER AND AS A REFERENCE SOURCE FOR RESEARCH WORKERS AND APPLICATIONS ENGINEERS. PART ONE SETS FORTH THE BASIC CHARACTERISTICS OF THERMAL RADIATION AND OF THE RADIATION PROPERTIES OF SURFACES AND PARTICIPATING MEDIA. ANALYTICAL METHODS FOR THE COMPUTATION OF RADIANT INTERCHANGE AMONG SURFACES ARE TREATED IN DETAIL IN PART TWO. PART THREE DEALS WITH RADIATIVELY PARTICIPATING MEDIA. A GENERAL ANALYTICAL FORMULATION OF THE ENERGY TRANSPORT IN SUCH MEDIA IS DEVELOPED. THIS IS THEN SUCCESSIVELY APPLIED TO SITUATIONS INVOLVING PURELY RADIATIVE TRANSPORT, SIMULTANEOUS RADIATION AND CONDUCTION, AND SIMULTANEOUS RADIATION AND CONVECTION.

AVAILABILITY - BROOKS/COLE PUBLISHING COMPANY, BELMONT, CALIF., \$8.50 COPY

HEAT TRANSFER + HEAT TRANSFER, RADIANT

5-15419 ALSO IN CATEGORIES 9 AND 18  
QUESTION V B - SINGLE CONTROL-ROD EJECTION AFFECTING OTHER RODS BY MISSILE ACTION  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
4 PAGES, 1 FIGURE, PAGE B-1 TO B-4 OF THIRD SUPPLEMENT TO PPELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.R. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

PROVIDE A DRAWING OF THE CONTROL-ROD HOUSING ARRANGEMENT. DISCUSS IN DETAIL THE POSSIBILITY THAT A ROD EJECTION DUE TO CONTROL-ROD-DRIVE THIMBLE FAILURE COULD LEAD TO FAILURE OF ADJACENT THIMBLES. CONSIDER THE EFFECT OF THE THIMBLE HITTING THE MISSILE SHIELD ABOVE THE



CATEGORY 5  
ACCIDENT ANALYSIS

5-15419 \*CONTINUED\*  
ROD HOUSINGS AND BEING DEFLECTED, CAUSING FAILURE OF ADJACENT THIMBLES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, CONTROL ROD EJECTION + MISSILE GENERATION AND PROTECTION + REACTOR, PRESSURIZED WATER + ROBINSON 2

5-15422 ALSO IN CATEGORIES 11 AND 18  
QUESTION V C (2) (B) - BLOWDOWN FORCES ON REACTOR VESSEL INTERNALS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGES C (2) (R)-1 AND C (2) (B)-2 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

STATE THE MAGNITUDE OF FORCES ON THE REACTOR VESSEL INTERNALS DURING BLOWDOWN ACCIDENTS RESULTING FROM HOT-LINE OR COLD-LINE BREAKS, AND DISCUSS THE ABILITY OF THESE COMPONENTS TO WITHSTAND SUCH FORCES.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT + BLOWDOWN + CORE COMPONENTS, MISCELLANEOUS + HYDRODYNAMIC ANALYSIS + REACTOR, PRESSURIZED WATER + ROBINSON 2

5-15434 ALSO IN CATEGORY 18  
QUESTION V H CORE THERMAL AND HYDRAULIC DESIGN  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
5 PAGES, 2 FIGURES, PAGES H(1)-1 TO H(3)-2 TO THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

PRELIMINARY STATEMENT - YOUR PRESENTATION CONSISTS OF EVALUATIONS OF STEADY STATE AND TRANSIENT DNB RATIOS AND FUEL TEMPERATURES FOR THE HOTTEST CORE LOCATION. A COMPLETE ASSESSMENT OF THE CONSERVATISM OF SAFETY REQUIRES SOME UNDERSTANDING OF THE CONDITION OF THE ENTIRE CORE SO WE CAN EVALUATE THE MARGINS AVAILABLE BEFORE LARGE NUMBERS OF FUEL RODS EXCEED DESIGN LIMITATIONS. THUS, OUR EVALUATION OF THE DESIGN MUST BE BASED ON THE OVERALL CORE CONDITION, AS WELL AS THAT OF THE SO CALLED HOT SPOT.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + DNB (DEPARTURE FROM NUCLEATE BOILING) + HYDRODYNAMIC ANALYSIS + POWER DISTRIBUTION + REACTOR, PRESSURIZED WATER + ROBINSON 2 + THERMAL ANALYSIS

5-15435 ALSO IN CATEGORY 18  
QUESTION V H (1) - FRACTION OF CORE AT VARIOUS POWER DENSITIES  
CALIFORNIA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, 1 FIGURE, PAGE H (1)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

PREPARE A DISTRIBUTION CURVE SHOWING THE FRACTION OF THE CORE (OR NUMBER OF RODS) OPERATING AT THE VARIOUS POWER LEVELS FOR DESIGN AND OVERPOWER CONDITIONS.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + POWER DISTRIBUTION + REACTOR, PRESSURIZED WATER + ROBINSON 2

5-15436 ALSO IN CATEGORY 18  
QUESTION V H (2) - NUMBER OF RODS EXCEEDING DNB RATIO  
CALIFORNIA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, 1 FIGURE, PAGES H (2)-1 AND H (2)-2 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

USING THE STATISTICAL W-3 DNB CORRELATION AND THE ABOVE DISTRIBUTION, DETERMINE THE CORRESPONDING DNB RATIOS AND THE STATISTICAL NUMBER OF FUEL RODS THAT COULD EXPERIENCE DNB.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + DNB (DEPARTURE FROM NUCLEATE BOILING) + POWER DISTRIBUTION + REACTOR, PRESSURIZED WATER + ROBINSON 2

5-15437 ALSO IN CATEGORY 18  
QUESTION V H (3) - DNB RATIO UNCERTAINTY ANALYSIS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

CATEGORY 5  
ACCIDENT ANALYSIS

5-15437 \*CONTINUED\*  
2 PAGES, PAGES H (3)-1 AND H (3)-2 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

PERFORM AN UNCERTAINTY ANALYSIS BY ARBITRARILY ASSUMING CERTAIN ERRORS IN MAJOR PARAMETERS USED IN CALCULATING THE NUMBER OF RODS EXPERIENCING DNB. FOR EXAMPLE, CALCULATE THE NUMBER OF RODS WITH DNB, AS A FUNCTION OF POSSIBLE PERCENTAGE ERRORS IN THE DNB CORRELATION, POWER DISTRIBUTIONS, FLOW RATES, AND POWER LEVELS.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + DNR (DEPARTURE FROM NUCLEATE BOILING) + ERROR ANALYSIS + POWER DISTRIBUTION + REACTOR, PRESSURIZED WATER + ROBINSON 2

5-15438 ALSO IN CATEGORIES 12 AND 18  
QUESTION VI A - DETAILS OF ACCUMULATOR SYSTEM FOR RAPID CORE REFLOODING  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
14 PAGES, 2 FIGURES, PAGES A (1)-1 TO A (12)-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

VI. ENGINEERED SAFEGUARDS. (A). TWELVE QUESTIONS ABOUT VARIOUS DESIGN, EQUIPMENT, AND PERFORMANCE DETAILS REQUESTED FOR ACCUMULATOR SYSTEM FOR RAPID INJECTION OF BORATED WATER INTO REACTOR VESSEL FOLLOWING A PRIMARY-PIPE RUPTURE.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CORE REFLOODING SYSTEM + REACTOR, PRESSURIZED WATER + ROBINSON 2

5-15439 ALSO IN CATEGORIES 12 AND 18  
QUESTION VI B (1) SAFETY INJECTION SYSTEM  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE B (1)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

VI B. SAFETY INJECTION SYSTEM. (1) WHAT CRITERIA PERTAINING TO PIPE MOTION UNDER HYPOTHETICAL EARTHQUAKE FORCES WILL BE USED IN THE DESIGN OF THE PIPING AND NOZZLES ASSOCIATED WITH THE INJECTION LINES CONNECTED TO THE PRIMARY SYSTEM.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CORE REFLOODING SYSTEM + EARTHQUAKE ENGINEERING + PIPING + REACTOR, PRESSURIZED WATER + ROBINSON 2

5-15440 ALSO IN CATEGORIES 11 AND 18  
QUESTION VI B (2) - THERMAL SHOCK TO VESSEL NOZZLES FOLLOWING A SAFETY INJECTION  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGES B (2)-1 AND B (2)-2 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

ASSUME THAT SAFETY INJECTION HAS BEEN DELAYED FOLLOWING A PIPE RUPTURE AND THAT THE TEMPERATURE OF THE PRIMARY PIPE AND INJECTION NOZZLE HAS INCREASED. WILL THE THERMAL SHOCK UPON INJECTION BE ACCOMMODATED BY THE NOZZLE WITHOUT FAILURE. WHAT IS THE LIMITING INITIAL TEMPERATURE.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT + CONTAINMENT, PRESSURE VESSEL + CORE REFLOODING SYSTEM + REACTOR, PRESSURIZED WATER + ROBINSON 2 + THERMAL MECHANICAL EFFECT

5-15446 ALSO IN CATEGORY 1P  
QUESTION VI B (8) - PRESSURE SAFETY MARGIN IN HIGH-HEAD INJECTION SYSTEM  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE B (8)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

DISCUSS THE SAFETY MARGIN BETWEEN EXPECTED OPERATING PRESSURES AND THE DESIGN PRESSURES OF THE SYSTEMS DISCUSSED IN VI B (7) ABOVE. WHAT TYPE OF FAILURE COULD LEAD TO PRESSURES IN EXCESS OF DESIGN PRESSURE.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CORE REFLOODING SYSTEM + FAILURE, PIPE + PRESSURE, INTERNAL + REACTOR, PRESSURIZED WATER + ROBINSON 2

CATEGORY 5  
ACCIDENT ANALYSIS

5-15447 ALSO IN CATEGORY 18  
QUESTION VI B (9) - PIPING CODE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE B (9)-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT.  
H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

STATE THE PIPING CODE USED FOR EACH PIPING RUN SHOWN ON FIGURE 6-1.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CODES AND STANDARDS + CORE REFLOODING SYSTEM + DESIGN CRITERIA + REACTOR, PRESSURIZED WATER + ROBINSON 2

5-15448 ALSO IN CATEGORIES 12 AND 18  
QUESTION VI B (10) - HIGH-HEAD INJECTION VS RECIRCULATION  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE B (10)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT.  
H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

IN FIGURE 6-1 IT APPEARS THAT PROVISIONS HAVE BEEN MADE TO PERMIT HIGH-HEAD INJECTION AFTER RECIRCULATION HAS BEEN STARTED. DISCUSS THE CIRCUMSTANCES THAT WOULD REQUIRE SUCH OPERATION. IS OPERATION OF A RESIDUAL-HEAT-REMOVAL PUMP REQUIRED. IF SO, DISCUSS THE INDEPENDENCE AND RELIABILITY OF THIS MODE OF OPERATION.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CORE REFLOODING SYSTEM + FLOW, RECIRCULATION + INDEPENDENCE + REACTOR, PRESSURIZED WATER + RELIABILITY, SYSTEM + ROBINSON 2 + SHUTDOWN COOLING SYSTEM

5-15464 ALSO IN CATEGORIES 12 AND 18  
QUESTION VII A (1)(D) AND (G) - REACTOR-VESSEL WATER LEVEL FOLLOWING PIPE RUPTURE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, 5 FIGURES, PAGES A(1)(D)-1 AND A(1)(G)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, (H. B. ROBINSON UNIT NUMBER 2,) DECEMBER 1966, DOCKET 50-261

PLOT WATER LEVEL IN THE REACTOR VESSEL AS A FUNCTION OF TIME FOLLOWING A SPECTRUM OF BREAK SIZES, ASSUMING (1) THAT TWO ACCUMULATORS OPERATE AND (2) THAT ONLY ONE OPERATES. IN BOTH CASES ASSUME THAT THE MINIMUM INJECTION FLOW EXISTS AFTER ACCUMULATOR INJECTION. (G) PLOT CORE REACTIVITY AND POWER AS A FUNCTION OF TIME FOR DIFFERENT SIZE BREAKS, ASSUMING A CONSERVATIVE POSITIVE MODERATOR COEFFICIENT. INDICATE THE TIME AT WHICH SCRAM WOULD BE ASSUMED TO OCCUR, BUT, FOR PURPOSES OF ANALYSIS, ASSUME NO SCRAM.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT + ACCUMULATOR + BLOWDOWN + CONTAINMENT, PRESSURE VESSEL + CORE REFLOODING SYSTEM + REACTOR, PRESSURIZED WATER + ROBINSON 2

5-15465 ALSO IN CATEGORIES 12 AND 18  
QUESTION VII A (1) (E) - SAFETY INJECTION VESSEL NOZZLE PRESSURE DURING LOSS-OF-COOLANT ACCIDENTS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, 4 FIGURES, PAGE A(1)(E)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, (H. B. ROBINSON UNIT NUMBER 2,) DECEMBER 1966, DOCKET 50-261

PLOT PRESSURE AT THE SAFETY-INJECTION NOZZLES BOTH IN THE HOT AND COLD LEGS AS A FUNCTION OF TIME FOR BREAKS OF VARIOUS SIZES.

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5-15466 ALSO IN CATEGORIES 12 AND 18  
QUESTION VII A (1) (F) - COOLANT ACCUMULATING IN CONTAINMENT PUMP  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, 8 FIGURES, PAGE A(1)(F)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, (H. B. ROBINSON UNIT NUMBER 2,) DECEMBER 1966, DOCKET 50-261

ASSUME NO CORE COOLING. PROVIDE A PLOT OF LIQUID VOLUME AND TEMPERATURE IN THE REACTOR SUMP AND CONTAINMENT FLOOR AS A FUNCTION OF TIME AFTER THE ACCIDENT. TWO PLOTS SHOULD BE PRESENTED, ONE ASSUMING THAT THE MOLTEN CORE HEATS THE SUBCOOLED WATER AND THE OTHER ASSUMING THAT THIS ENERGY GOES TO FLASHING STEAM.

CATEGORY 5  
ACCIDENT ANALYSIS

5-15466 \*CONTINUED\*  
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5-15467 ALSO IN CATEGORIES 8 AND 18  
QUESTION VII A (1) (H,I,K) - METAL-WATER REACTION WITH VARIOUS EMERGENCY COOLING  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
3 PAGES, PAGES A(1)(H),(I)-1 TO A(1)(H),(I)-2 AND A(1)(K)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY  
DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

(H) WHAT IS THE PERCENT METAL-WATER REACTION, ASSUMING (1) TWO ACCUMULATORS AND MINIMUM SAFETY INJECTION, (2) ONE ACCUMULATOR AND MINIMUM SAFETY INJECTION, (3) SAME AS 1 BUT NO HEAT TRANSFER FROM CORE DURING BLOWDOWN FOR THE LARGEST BREAK. CONSIDER A SPECTRUM OF PIPE-BREAK SIZES EXCEPT FOR 3. (I) FOR THE WORST CASE IN H, PROVIDE A SIMILAR PLOT, ASSUMING THAT TWO ACCUMULATORS OPERATE BUT THAT THE SAFETY INJECTION IS DELAYED 2, 5, 10, AND 20 MINUTES. (K) PLOT THE WEIGHT PERCENTAGE OF CLAD AND FUEL AT A CERTAIN TEMPERATURE AS A FUNCTION OF TIME, ASSUMING THAT TWO ACCUMULATORS OPERATE ALONG WITH SAFETY INJECTION FOLLOWING VARIOUS PIPE-BREAK SIZES.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT + ACCUMULATOR + EMERGENCY COOLING CONSIDERATIONS + FAILURE, CLADDING + METAL WATER REACTION + REACTOR, PRESSURIZED WATER + ROBINSON 2

5-15468 ALSO IN CATEGORY 18  
QUESTION VII A (1) (J) - ACCUMULATOR FLOW RATES TO LIMIT CLAD FAILURE TO 5%  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, 4 FIGURES, PAGES A(1)(J)-1-TO-A(1)(J)-2 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION  
AND SAFETY ANALYSIS REPORT, (H. B. ROBINSON UNIT NUMBER 2,) DECEMBER 1966, DOCKET 50-261

PLOT FLOW RATE PROVIDED BY TWO ACCUMULATORS AND THE MINIMUM SAFETY INJECTION AS A FUNCTION OF TIME FOR VARIOUS BREAK SIZES. ON THIS SAME PLOT, DRAW LINES FOR EACH BREAK SIZE WHICH SHOWS THE RATE THAT YOU CONSIDER NECESSARY TO LIMIT CLADDING FAILURE TO 5% OF THE FUEL RODS.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT + ACCUMULATOR + EMERGENCY COOLING CONSIDERATIONS + FAILURE, CLADDING + REACTOR, PRESSURIZED WATER + ROBINSON 2

5-15470 ALSO IN CATEGORY 18  
QUESTION VII A (1) (M) - TIME SEQUENCE OF EVENTS FOLLOWING MCA  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGES A(1)(M)-1-TO-A(1)(M)-2 OF THIRD SUPPLEMENT TO PRELIMINARY DESCRIPTION AND SAFETY ANALYSIS  
REPORT, (H. B. ROBINSON UNIT NUMBER 2,) DECEMBER 1966, DOCKET 50-261

PROVIDE A TIME SEQUENCE OF EVENTS BOTH AUTOMATIC AND MANUAL WHICH THE OPERATOR MUST OBSERVE OR PERFORM DURING THE MCA. INDICATE THE TIME THAT EACH ENGINEERED SAFEGUARD IS ACTUATED, INCLUDING CONTAINMENT ISOLATION.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, MAXIMUM CREDIBLE (MCA) + ENGINEERED SAFETY SYSTEM + REACTOR, PRESSURIZED WATER + RESPONSE TIME + ROBINSON 2

5-15471 ALSO IN CATEGORY 18  
QUESTION VII A (1) (N) - STEAM-GENERATOR RESPONSE TO MCA  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGES A(1)(N)-1 TO A(1)(N)-2 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY  
ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

ASSUME NO OFF-SITE POWER. PLOT THE STEAM-GENERATOR PRESSURE, WATER LEVEL, AND STEAM-VALVE POSITION AFTER VARIOUS SIZE PRIMARY SYSTEM BREAKS, ASSUMING THAT THE OPERATOR TAKES NO ACTION THAT AFFECTS THE STEAM GENERATORS. WHAT ACTION WOULD THE OPERATOR BE REQUIRED TO TAKE IN THE FIRST TWO HOURS. WHAT IS THE CONDITION OF THE STEAM GENERATOR AFTER SEVERAL DAYS. RELATE YOUR ANSWER TO LEAKAGE POTENTIAL OF CONTAINMENT ATMOSPHERE THROUGH THE STEAM LINES.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT PENETRATION, CLOSURE OF + HEAT EXCHANGER + REACTOR, PRESSURIZED WATER + ROBINSON 2

CATEGORY 5  
ACCIDENT ANALYSIS

5-15472 ALSO IN CATEGORIES 9 AND 18  
QUESTION VII A (2) - EFFECT OF LOSS OF COOLANT ON SCRAM CAPABILITY  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE A(2)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT,  
(H. B. ROBINSON UNIT NUMBER 2,) DECEMBER 1966, DOCKET 50-261

IF SCRAM IS NEEDED TO LIMIT THE CONSEQUENCES OF THE ACCIDENT, INCLUDE THE FOLLOWING  
INFORMATION FOR THE SPECTRUM OF BREAK SIZES - SCRAM SIGNAL, TIME TO SCRAM INITIATION, EFFECT  
OF BLOWDOWN FORCES ON SCRAM TIME.

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CONTROL ROD, SHIM SAFETY + REACTOR, PRESSURIZED WATER + ROBINSON 2 + SCRAM, REAL +  
SYSTEM OPERABILITY IN ACCIDENT CONDITIONS

5-15473 ALSO IN CATEGORY 18  
QUESTION VII A (3) - EFFECT OF NORMAL POWER REDISTRIBUTION ON MCA  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE A (3)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT,  
(H. B. ROBINSON UNIT NUMBER 2,) DECEMBER 1966, DOCKET 50-261

PLEASE DISCUSS THE SIGNIFICANCE, IN RELATION TO THE MAXIMUM-ACCIDENT ANALYSIS, OF POWER  
PROFILE CHANGES AS THE COPE FUEL IS DEPLETED.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY +  
ACCIDENT, MAXIMUM CREDIBLE (MCA) + POWER DISTRIBUTION + REACTOR, PRESSURIZED WATER + ROBINSON 2

5-15475 ALSO IN CATEGORY 18  
QUESTION VII A (5) - EFFECT OF PIPE-BREAK LOCATION ON MCA  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGES A (5)-1-AND-A (5)-2 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY  
ANALYSIS REPORT, (H. B. ROBINSON UNIT NUMBER 2,) DECEMBER 1966, DOCKET 50-261

DISCUSS THE EFFECT OF PIPE-BREAK LOCATION ON THE CONSEQUENCES OF THE LOSS-OF-COOLANT  
ACCIDENTS, CONSIDERING BOTH POSITIVE AND NEGATIVE MODERATOR COEFFICIENTS.

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FAILURE, PIPE + MODERATOR COEFFICIENT + REACTOR, PRESSURIZED WATER + ROBINSON 2

5-15476 ALSO IN CATEGORIES 6 AND 18  
QUESTION VII B (1) - METHODS OF ANALYZING ROD-INJECTION ACCIDENT  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
9 PAGES, 1 FIGURE, PAGES B (1)-1-TO-B (1)(D)-6 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND  
SAFETY ANALYSIS REPORT, (H. B. ROBINSON UNIT NUMBER 2,) DECEMBER 1966, DOCKET 50-261

WE UNDERSTAND THAT THE METHODS AND RESULTS WILL BE VERY SIMILAR TO THOSE ON INDIAN POINT 2,  
REPORTED IN WCAP-2940. WE WILL NEED ADDITIONAL INFORMATION - (A) QUANTITATIVELY DISCUSS THE  
SIGNIFICANT DIFFERENCES IN THE INPUT PARAMETERS USED FROM THOSE USED IN WCAP-2940. (B)  
QUANTITATIVELY DISCUSS THE EFFECTS ON THE ACCIDENT CONSEQUENCES THAT RESULT FROM THESE  
CHANGES. (C) DESCRIBE THE ENTHALPY DISTRIBUTION IN THE CORE FUEL FOR BOTH THE PREACCIDENT  
CONDITION AND THE MOST PESSIMISTIC POSTACCIDENT CONDITION. (D) DISCUSS THE CRITERIA (AND  
THEIR BASES) UPON WHICH YOU EVALUATE THE ACCEPTABILITY OF THE ENTHALPY DISTRIBUTION IN THE  
FUEL DURING POWER EXCURSIONS.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY +  
ACCIDENT, CONTROL ROD EJECTION + ANALYTICAL MODEL + FUEL ELEMENT + PERFORMANCE LIMIT +  
REACTOR, PRESSURIZED WATER + ROBINSON 2

5-15477 ALSO IN CATEGORIES 9 AND 18  
QUESTION VII B (2) - DETAILS OF ROD-EJECTION ACCIDENT  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
3 PAGES, 1 FIGURE, PAGE 9 (2)-1-TO-B (2)-3 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND  
SAFETY ANALYSIS REPORT, (H. B. ROBINSON UNIT NUMBER 2,) DECEMBER 1966, DOCKET 50-261

WCAP-2940 ROD-EJECTION RESULTS WERE SENSITIVE TO THE SCRAM-DELAY TIME. PLEASE DISCUSS THE  
EXPERIMENTAL JUSTIFICATION FOR THE RANGE OF VALUES USED AND INDICATE THEIR APPLICABILITY TO  
ROBINSON. IN ADDITION, DISCUSS THE EFFECT THAT ACCIDENT CONDITIONS WITHIN THE CORE WILL HAVE

CATEGORY 5  
ACCIDENT ANALYSIS

5-15477 \*CONTINUED\*

ON THE PERFORMANCE OF THE SCRAM FUNCTION. CONSIDER SUCH ITEMS AS - THE EFFECT OF THERMAL-HYDRAULIC CONDITIONS ON THE EXPULSION OF WATER FROM THE RCC GUIDE TUBES AS RODS COME IN, TRANSIENT-INDUCED PRESSURE EFFECTS, ROD BOWING, ETC. ALSO, QUANTITATIVELY DISCUSS THE EFFECTS OF THE MODERATOR COEFFICIENT ON THE SENSITIVITY OF CONSEQUENCES OF THE ACCIDENT TO TRIP DELAY.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, CONTROL ROD EJECTION + CONTROL ROD SCRAM MECHANISM + MODERATOR COEFFICIENT + REACTOR, PRESSURIZED WATER + RESPONSE TIME + ROBINSON 2 + SYSTEM OPERABILITY IN ACCIDENT CONDITIONS

5-15483 ALSO IN CATEGORIES 6 AND 18  
QUESTION VII E - LOSS OF FLOW FROM ONE LOOP  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, 1 FIGURE, PAGE E-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

PLEASE SHOW, BY ANALYSIS, THAT THE LOSS OF COOLANT FLOW IN ONE PRIMARY LOOP WITHOUT OPERATOR ACTION WOULD NOT RESULT IN FUEL FAILURE. WHAT IS THE MINIMUM DNBR UNDER THIS CONDITION. CONSIDER THE EFFECTS OF POSITIVE MODERATOR COEFFICIENTS. THE ANALYSIS SHOULD INCLUDE CASES OF INITIAL TWO-LOOP OPERATION AS ALLOWED BY PERMISSIVE INTERLOCK CIRCUITRY.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF FLOW + DNBR (DEPARTURE FROM NUCLEATE BOILING) + MODERATOR COEFFICIENT + REACTOR, PRESSURIZED WATER + ROBINSON 2

5-15485 ALSO IN CATEGORIES 11 AND 18  
QUESTION VII G - HYDROGEN FOLLOWING MCA  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
3 PAGES, PAGE G-1 TO G-3 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

ASSUMING A LOSS OF COOLANT WITH NO CORE COOLING, HOW MUCH HYDROGEN COULD BE FORMED FROM (A) METAL-WATER REACTION, (B) DECOMPOSITION OF UO<sub>2</sub> TO U<sub>3</sub>O<sub>8</sub> AND (C) RADIOLYTIC DECOMPOSITION OF WATER. (1) DISCUSS THE LOCAL EFFECTS DUE TO THE HYDROGEN BURNING UPON EXIT FROM THE PRIMARY PIPE. (2) WHAT WOULD CONTAINMENT PRESSURE BE IF THE HYDROGEN WERE RAPIDLY BURNED. (3) DISCUSS IN DETAIL THE MODEL USED FOR RADIOLYTIC DECOMPOSITION.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT + CONTAINMENT, HIGH PRESSURE + HYDROGEN + PRESSURE, INTERNAL + REACTOR, PRESSURIZED WATER + ROBINSON 2

5-15488 ALSO IN CATEGORY 18  
QUESTION VII J - OFF-SITE DOSE FROM CONTAMINATED STEAM DUMP TO ATMOSPHERE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
6 PAGES, 1 FIGURE, PAGES J-1 TO J-6 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

LIST ALL POSSIBLE CAUSES OF ATMOSPHERIC STEAM DUMP. USING THE EXPECTED MAXIMUM CONCENTRATION OF FISSION AND CORROSION PRODUCTS IN THE PRIMARY SYSTEM, AND THE MAXIMUM AMOUNT OF STEAM GENERATOR LEAKS WHICH WOULD NOT FORCE ISOLATION OF THE STEAM GENERATOR, CALCULATE THE OFF-SITE DOSES RESULTING FROM THE ATMOSPHERIC STEAM DUMP.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + AIRBORNE RELEASE + CRUD + DOSE + PRESSURE RELIEF + REACTOR, PRESSURIZED WATER + ROBINSON 2 + STEAM

5-15489 ALSO IN CATEGORY 18  
QUESTION VII K - MELTDOWN OF FUEL ELEMENT DROPPED IN REFUELING  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE K-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

CONSIDER A FUEL ELEMENT WHICH IS DROPPED, DAMAGED AS ASSUMED, AND COMES TO REST ON ITS SIDE IN THE POOL. WILL RADIATION LEVELS FORCE EVACUATION BEFORE THE ELEMENT CAN BE UPRIGHTED. WILL THE FUEL THEN BECOME HOT ENOUGH TO RELEASE MUCH MORE FISSION PRODUCTS THAN ASSUMED. DISCUSS THE RELEASE OF IODINE BOTH FOR THIS AND AS DESCRIBED IN THE PSAR. CALCULATE THE DOSES FOR THIS CASE IF THEY ARE SIGNIFICANTLY DIFFERENT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, REFUELING + AIRBORNE RELEASE + DOSE + FISSION PRODUCT, IODINE + FUEL MELTDOWN + REACTOR, PRESSURIZED WATER +

CATEGORY 5  
ACCIDENT ANALYSIS

5-15480 \*CONTINUED\*  
ROBINSON 2

5-15490 ALSO IN CATEGORIES 15 AND 18  
QUESTION VII L - CONSEQUENCES OF COOLANT-HOLDUP-TANK RUPTURE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE L-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B.  
ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

ANALYZE THE CONSEQUENCES OF THE VOLUME-CONTROL-TANK RUPTURE. PROVIDE DATA ON THE FLOW RATES AND CLEANUP CONSTANTS USED TO DETERMINE THE FISSION-PRODUCT CONCENTRATION. HOW MANY CURIES OF NOBLE GASES AND IODINE ARE AVAILABLE FOR RELEASE BY THIS MECHANISM. WHAT SPECIFIC ASSUMPTIONS WERE MADE TO CAUSE THE THYROID DOSE TO BE INSIGNIFICANT WITH RESPECT TO THE WHOLE-BODY DOSE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + AIRBORNE RELEASE + COOLANT PURIFICATION SYSTEM + DOSE + FAILURE, PRESSURE VESSEL + FISSION PRODUCT, IODINE + REACTOR, PRESSURIZED WATER + ROBINSON 2 + STORAGE CONTAINER

5-15492 ALSO IN CATEGORY 18  
QUESTION VII O - STEAM-LINE RUPTURE WITH A STUCK ROD  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGES O-1 AND O-2 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

INDICATE THE EXTENT OF CORE DAMAGE IF RUPTURE OF THE LARGEST STEAM LINE OCCURS WITH ONE CONTROL ASSEMBLY STUCK IN THE FULLY WITHDRAWN POSITION AT THE END OF CORE LIFE (MOST NEGATIVE TEMPERATURE COEFFICIENT). WHAT IS THE MAXIMUM K-EFFECTIVE ATTAINED. COMPARE THE RESULTANT MAXIMUM STEAM GENERATOR TUBE-SHEET STRESS WITH THE YIELD STRESS, AND DISCUSS THE EFFECT OF THIS ACCIDENT ON PRIMARY-SYSTEM INTEGRITY. IF PRIMARY-SYSTEM PRESSURE PULSES CAN BE INITIATED BY FUEL FAILURES, DISCUSS THE EFFECT THEY HAVE ON PRIMARY-SYSTEM INTEGRITY.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, STEAM LINE RUPTURE + FAILURE, PIPE + FAILURE, SCRAM MECHANISM + FAILURE, SCRAM MECHANISM + HEAT EXCHANGER + REACTOR, PRESSURIZED WATER + ROBINSON 2

5-15493 ALSO IN CATEGORY 18  
QUESTION VII P - NO-DAMAGE CRITERIA FOR OPERATING TRANSIENTS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGES P-1 AND P-2 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

THE ACCEPTABILITY CRITERION FOR UNCONTROLLED RCC WITHDRAWAL AND TURBINE-TRIP ACCIDENTS IS THAT DNB WILL NOT OCCUR. WHAT IS THE MINIMUM DNB MARGIN THAT WILL COMPLY WITH THIS CRITERION. SIMILARLY, FOR THE LOSS-OF-COOLANT-FLOW INCIDENT, IT IS STATED THAT CLAD FAILURE WILL NOT OCCUR. INDICATE THE MARGIN TO DNB, CLAD MELTING TEMPERATURES, AND CLAD YIELD WHICH ARE ASSUMED AS LIMITING IN YOUR ANALYSIS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, CONTROL ROD WITHDRAWAL + ACCIDENT, LOAD REJECTION + ACCIDENT, LOSS OF FLOW + DNB (DEPARTURE FROM NUCLEATE BOILING) + FAILURE, CLADDING + PERFORMANCE LIMIT + REACTOR, PRESSURIZED WATER + ROBINSON 2

5-15495 ALSO IN CATEGORIES 12 AND 18  
QUESTION VII R - ANALYSIS OF THYROID DOSE IF FAN-COOLER TUBE RUPTURES AFTER MCA  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE R-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B.  
ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

ANALYZE THE OFF-SITE THYROID DOSE RESULTING FROM COMPLETE RUPTURE OF A FAN-COOLER TUBE, ASSUMING 100% COPE MELT. PROVIDE ALL ASSUMPTIONS MADE. YOU MAY TERMINATE THE CALCULATION WHEN CONTAINMENT PRESSURE IS REDUCED BELOW THAT OF THE SERVICE WATER (ABOUT 3000 SECONDS).

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, MAXIMUM CREDIBLE (MCA) + AIRBORNE RELEASE + CONTAINMENT AIR COOLING + DOSE + FAILURE, PIPE + REACTOR, PRESSURIZED WATER + ROBINSON 2

CATEGORY 5  
ACCIDENT ANALYSIS

5-15496 ALSO IN CATEGORIES 15 AND 18  
QUESTION VII S - OFF-SITE DOSE DUE TO PLUTONIUM DURING MCA  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
8 PAGES, 1 FIGURE, PAGES S-1 TO S-8 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY  
ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

PROVIDE THE PLUTONIUM (PU-238 TO PU-241) ISOTOPIC CONCENTRATIONS WHICH EXIST IN THE CORE AT  
THE END OF CORE LIFE. DISCUSS THE CREDIBILITY THAT IF CORE MELTDOWN OCCURS, SUFFICIENT  
QUANTITIES COULD BECOME AIRBORNE TO CONTRIBUTE SIGNIFICANTLY TO THE OFF-SITE DOSE. EXPLAIN  
YOUR ASSUMPTIONS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY +  
ACCIDENT, MAXIMUM CREDIBLE (MCA) + AIRBORNE RELEASE + DOSE + FUEL BURNUP + PLUTONIUM +  
REACTOR, PRESSURIZED WATER + ROBINSON 2

5-15501 ALSO IN CATEGORIES 12 AND 18  
QUESTION VIII A (5 AND 9) - MORE DETAILS OF THERMAL-STRESS ANALYSIS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, 10 FIGURES, PAGES A (5)-1 TO A(5)-2 AND A (9)-1 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY  
DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

THE HANDLING OF THERMAL LOADS NEEDS AMPLIFICATION. IN PARTICULAR, PROVIDE THE THERMAL  
GRADIENT ACROSS THE CONTAINMENT LINER AND CONCRETE STRUCTURE AS A FUNCTION OF TIME, INDICATE  
THE DESIGN CONDITIONS UNDER WHICH THERMAL LOADING DUE TO LINER AND CONCRETE TEMPERATURE  
GRADIENTS ARE CRITICAL, AND PROVIDE THE LOADING DIAGRAMS FOR THE SEPARATE LINER AND CONCRETE  
THERMAL CONTRIBUTIONS. A 2-PSIG INTERNAL NEGATIVE PRESSURE RESULTS FROM AN 80 F  
DIFFERENTIAL. RELATE THE SELECTED OPERATING AND/OR ENVIRONMENTAL CONDITIONS THAT COULD CAUSE  
SUCH A DIFFERENTIAL, AND STATE WHY VACUUM RELIEF IS NOT CONSIDERED NECESSARY.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT STRUCTURE +  
DESIGN CRITERIA + REACTOR, PRESSURIZED WATER + ROBINSON 2 + STRESS ANALYSIS + THERMAL ANALYSIS +  
THERMAL MECHANICAL EFFECT + VACUUM RELIEF

5-15507 ALSO IN CATEGORIES 12 AND 18  
QUESTION VII A (13) - STRESS ANALYSIS IN THE VICINITY OF CONTAINMENT AIR LOCKS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
3 PAGES, PAGE A (13)-1 TO A (13)-3 OF SECOND PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT,  
H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

PROVIDE DRAWINGS, STRESS ANALYSIS, AND CONSTRUCTION DETAILS IN VICINITY OF PERSONNEL AND  
EQUIPMENT AIR LOCKS. DESCRIBE PROPOSED RING ANALYSIS, LOCAL MARGINS TO FAILURE IN SHEAR.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT AIR LOCK +  
CONTAINMENT EQUIPMENT HATCH + CONTAINMENT STRUCTURE + REACTOR, PRESSURIZED WATER + ROBINSON 2 +  
STRESS ANALYSIS

5-15517 ALSO IN CATEGORIES 12 AND 18  
QUESTION VIII B (4) - STURDINESS OF PIPING JOINED TO CONTAINMENT LINER  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE B (4)-1 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT,  
H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

PROPOSED PIPING PENETRATIONS THAT PENETRATE AND ARE JOINED TO THE CONTAINMENT LINER WILL BE  
ANCHORED AT THE WALL OF THE CONTAINMENT. STATE THE DESIGN CRITERION TO BE USED TO ENSURE  
THAT, UNDER A POSTULATED PIPE RUPTURE, THE TORSIONAL, AXIAL, AND BENDING FORCES TRANSMITTED  
TO THE PENETRATION WILL NOT BREACH THE CONTAINMENT. ALSO INCLUDE THE DESIGN CRITERION WHICH  
WILL BE APPLIED TO ENSURE THAT PIPE RUPTURE IS PRECLUDED BETWEEN THE PENETRATION AND  
CONTAINMENT ISOLATION VALVES, SINCE THESE PIPE SECTIONS REPRESENT AN EXTENSION OF THE  
CONTAINMENT BOUNDARY.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT INTEGRITY +  
CONTAINMENT LINER + CONTAINMENT PENETRATION + CONTAINMENT PENETRATION, CLOSURE OF +  
CONTAINMENT STRUCTURE + DESIGN CRITERIA + REACTOR, PRESSURIZED WATER + ROBINSON 2 + STRESS ANALYSIS

5-15971  
TAYLOR AF



CATEGORY 5  
ACCIDENT ANALYSIS

5-15971 \*CONTINUED\*  
THE INVESTIGATION OF REACTOR FLOW PROBLEMS USING MODELLING TECHNIQUES  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, RISLEY  
4 PAGES, ATOM (NUMBER 119), PAGES 195-197 + 212 (SEPTEMBER 1966)

BRIEFLY DESCRIBES THE USE OF AIR AND WATER IN FULL-SCALE MODELS TO STUDY FLOW PROBLEMS.  
\*HYDRODYNAMIC ANALYSIS + MOCKUP + REACTOR, POWER + TESTING + UNITED KINGDOM

CATEGORY 6  
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-06225  
A NOTE ON THE ANALYSIS OF PULSED NEUTRON SHUTDOWN MEASUREMENTS  
ROLLS-ROYCE AND ASSOCIATES LIMITED  
4 PAGES, NUCLEAR SCIENCE AND ENGINEERING 21(1), PAGES 116-119, (JANUARY 1965)

DETERMINATION OF (MULTIPLICATION CONSTANT X DELAYED NEUTRON FRACTION/PROMPT NEUTRON LIFETIME)  
FROM SHAPE OF THE PULSE CAUSED BY INJECTING BURST OF FAST NEUTRONS INTO SUBCRITICAL REACTOR.  
APPROXIMATE TREATMENT OF NON-MONOENERGETIC NEUTRONS.

\*SHUTDOWN MARGIN + SOURCE, PULSED NEUTRON

6-13120  
MERRILL MH  
TEMPERATURE COEFFICIENT CALCULATION FOR PEACH BOTTOM  
GENERAL DYNAMICS CORPORATION, GENERAL ATOMICS  
GAMD-7357 +. 25 PAGES, 8 FIGURES, TABLES, 6 REFERENCES, SEPT. 1, 1966.

THE TEMPERATURE COEFFICIENT OF THE PEACH BOTTOM HTGR HAS BEEN CALCULATED FOR THE  
BEGINNING-OF-LIFE CORE FOR AN ISOTHERMAL CORE AND REFLECTOR AND FOR AN ISOTHERMAL CORE WITH A  
CONSTANT REFLECTOR TEMPERATURE. THE FIRST CONDITION CORRESPONDS TO THE EXPERIMENTAL  
MEASUREMENTS MADE IN TEST CP-1, WHILE THE SECOND REPRESENTS THE REACTOR AT FULL POWER  
OPERATION AND IS A PREDICTION OF THE COEFFICIENTS TO BE MEASURED IN THE RISE-TO-POWER PROGRAM.

AVAILABILITY -- CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*TEMPERATURE COEFFICIENT + PEACH BOTTOM 1

6-13666 ALSO IN CATEGORIES 5 AND 18  
INHERENT SAFETY CHARACTERISTICS  
PUBLIC SERVICE COMPANY OF COLORADO, DENVER, COLORADO  
4 PAGES, SEPTEMBER 1966, DOCKET NO. 50-267, FORT ST. VRAIN NUCLEAR GENERATING STATION PRELIMINARY SAFETY  
ANALYSIS REPORT, VOL. 1, SECTION 1 - INTRODUCTION AND SUMMARY, PAGES 1.3-3 TO 1.3-6

SUMMARIZES THE INHERENT SAFETY CHARACTERISTICS AND DESCRIBES THE REASON FOR EACH. (1) THE  
LARGE HEAT CAPACITY OF THE CORE AND LOW CAPACITY OF THE HE COOLANT PREVENTS A SUDDEN DROP IN  
FUEL OR MODERATOR TEMPERATURE, THUS THERE IS NOTHING EQUIVALENT TO A COLD-WATER REACTIVITY  
INSERTION ACCIDENT. (2) THE HIGH-TEMPERATURE MECHANICAL INTEGRITY OF THE CORE IS ASSURED,  
SINCE THE GRAPHITE STRUCTURAL MATERIAL GAINS STRENGTH AS THE TEMPERATURE INCREASES. (3) THE  
CORE SIZE FOR XENON INSTABILITIES. (4) THE PYROLYTIC-CARBON-COATED FUEL DOES NOT MELT NOR  
DOES IT SUBLIME BELOW 5500 F, SO NO SUDDEN INCREASE IN ACTIVITY RELEASE IS EXPECTED DUE TO  
HIGH-TEMPERATURE EXCURSIONS. (5) NO ACCUMULATION OF WIGNER (STORED) ENERGY, SINCE THE  
OPERATING TEMPERATURE IS HIGH ENOUGH TO CONTINUOUSLY ANNEAL THE GRAPHITE. (6) THE CORE AND  
PRIMARY SYSTEM ARE CONTAINED IN CONCRETE REACTOR VESSEL, WHICH HAS MANY PRESTRESSED TENDONS.  
THERE IS NO MECHANISM BY WHICH FAILURE OF ONE TENDON COULD PROPAGATE TO OTHER TENDONS. THUS  
A SUDDEN LOSS OF PRIMARY COOLANT IS PREVENTED WHICH COULD RESULT IN OVERHEATING OF THE CORE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

ACCIDENT, COLD COOLANT + ACCIDENT, LOSS OF COOLANT + COATED PARTICLE + CONCRETE, PRESTRESSED +  
CONTAINMENT, PRESSURE VESSEL + FT. ST. VRAIN + GRAPHITE + PYROLYTIC + REACTOR, GAS COOLED +  
REACTOR, GRAPHITE MODERATED + REACTOR, POWER + SAFETY ANALYSIS REPORT, PRELIMINARY +  
STRUCTURAL INTEGRITY + WIGNER ENERGY RELEASE + XENON OSCILLATION

6-13871 ALSO IN CATEGORIES 4 AND 5  
BACKUS CE  
FAST TRANSIENTS IN THERMIONIC REACTORS  
WESTINGHOUSE ELECTRIC CORPORATION  
14 PAGES, 3 TABLES, 15 FIGURES, 5 REFERENCES, ANS TRANSACTIONS 9(2) PAGE 459 (WINTER 1966) PITTSBURGH,  
PENNSYLVANIA OCTOBER 30-NOVEMBER 3, 1966, AMERICAN NUCLEAR SOCIETY

THIS PAPER CONCENTRATES ON FAST TRANSIENTS AND SAFETY STUDIES. A DESCRIPTION OF A TYPICAL  
THERMIONIC FUEL ELEMENT IS GIVEN ALONG WITH THE MATHEMATICAL MODEL USED FOR THE DYNAMIC  
ANALYSIS. RESULTS ARE PRESENTED FOR STUDIES ON THE SUDDEN OPEN CIRCUIT ACCIDENT, THE PUMP  
STOPPAGE ACCIDENT, AND THE ACCIDENT RESULTING FROM LARGE INSERTIONS OF REACTIVITY.

\*REACTOR TRANSIENT + ACCIDENT, REACTIVITY + EXCURSION, LARGE + REACTOR DYNAMICS + SPACECRAFT

6-13882 ALSO IN CATEGORY 9  
HESS AL + KEENEY WP + CAUMETTE P + BOYER JP  
CRITICAL STUDIES FOR THE FRENCH FAST REACTOR RAPSODIE  
ARGONNE NATIONAL LABORATORY  
ANL-7044 +. 72 PAGES, 38 FIGURES, 26 TABLES, 10 REFERENCES, MARCH 1966

CATEGORY 6  
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-13882 \*CONTINUED\*

CRITICAL STUDIES ON ZPR-3 WITH A MOCKUP OF THE FRENCH FAST REACTOR, RAPSODIE. OBJECTIVES INCLUDED AMONG OTHERS, THE EVALUATION OF THE RAPSODIE DESIGN CONTROL SYSTEMS, REACTIVITY COEFFICIENTS, AND ROD-WORTH STUDIES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFO., NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 CY

\*FRANCE + CONTROL ROD WORTH + REACTIVITY COEFFICIENT

6-13883

HANSON JE + FIELD JH

RESPONSE OF HIGH BURNUP IRRADIATED PLUTONIA-URANIA FUEL TO TRANSIENT OVERPOWER

GENERAL ELECTRIC COMPANY, SAN JOSE, CALIFORNIA

5 PAGES, 8 FIGURES, 9 REFERENCES, 1966, ANS TRANSACTIONS 9(2) PAGE 396 (1966 WINTER MEETING) PITTSBURGH, PENNSYLVANIA OCTOBER 30-NOVEMBER 3, 1966, AMERICAN NUCLEAR SOCIETY

TRANSIENT IRRADIATION OF TWO PREIRRADIATED HIGH-BURNUP (70,000 MWD/MT), MIXED-OXIDE FUEL SPECIMENS (DESIGNATED C3C AND C3E) HAS BEEN COMPLETED. THE 0.250 IN. DIAM 6 IN. LONG, 28 WT PERCENT PUO-2 - 72 WT PERCENT UC2 SPECIMENS WERE IDENTICAL TO THE LOW BURNUP PIN DESCRIBED IN A PREVIOUS PAPER. THE RESULTS OF THE EXPERIMENTS SUPPORT THE MODEL FOR FISSION GAS BEHAVIOR DURING A TRANSIENT WHICH WAS DEDUCED FROM THE PREVIOUS TRANSIENT IRRADIATION OF THE LOW BURNUP SPECIMEN. THIS LED TO THE CONCLUSION THAT THE RELEASE OF FISSION GAS FROM IRRADIATED OXIDE FUEL (DURING A TRANSIENT WHICH GOES TO A SUBSTANTIAL FRACTION OF FUEL MELTING) CONSTITUTES A PRIMARY CONTRIBUTION TO THE FAILURE MECHANISM FOR THE FUEL.

\*FAILURE, FUEL ELEMENT + \*TREAT (TRANSIENT TEST REACTOR FACILITY) + FISSION GAS RELEASE + PLUTONIUM OXIDE + REACTOR, GRAPHITE MODERATED + REACTOR, TEST + URANIUM DIOXIDE

6-13896

ALSO IN CATEGORY 17

GERKEN WW

TRANSIENT ANALYSIS

COMBUSTION ENGINEERING INC, PUERTO RICO WATER RESOURCES AUTHORITY

CEND-PRWRA-270 +. 14 PAGES, 31 FIGURES, 5 TABLES, BONUS POWER STATION, BONUS PREOPERATIONAL ANALYSIS REPORT, PAGES VII-1-VII-14, JUNE 1966, ANS TRANSACTIONS 9(2) PAGES 536-537 (1966 WINTER MEETING)

DISCUSSES TESTS OF TRANSIENT CHARACTERISTICS OF THE BONUS REACTOR IN RESPONSE TO CHANGES IN STEAM, FEEDWATER AND RECIRCULATION FLOW, AND FEEDWATER TEMPERATURE. REACTIVITY COEFFICIENTS WERE DETERMINED. THE DYNAMIC PRESSURE COEFFICIENT WAS 0.28 PERCENT DELTA K/PSI PER SEC. THE EFFECT OF FEEDWATER-FLOW TRANSIENTS WAS 0.10 PERCENT DELTA K PER 10 TO THE 4TH POUNDS/HR. POWER WAS PROPORTIONAL TO THE RECIRCULATION FLOW RATE. CALCULATED TRANSIENTS SHOWED A LINEAR POWER RESPONSE DURING RAMP TRANSIENTS.

\*MEASUREMENT, REACTIVITY + BONUS (BOILING NUCLEAR SUPERHEAT PROJECT) + HYDRODYNAMIC ANALYSIS + REACTOR, BOILING WATER + REACTOR, SUPERHEAT + TEST, PLANT RESPONSE + THERMAL ANALYSIS

6-13903

THE STEADY-STATE AND DYNAMIC BEHAVIOR OF A BOILING WATER REACTOR. QUARTERLY PROGRESS REPORT NO. 20, OCTOBER 1, 1965 THROUGH JANUARY 1, 1966

TECHNISCHE HOOGESCHOOL, EINDHOVEN, NETHERLANDS

FURAFEC-1674 + EUR-2865 + WW-016-R94 +. 21 PAGES, 1966

MEASUREMENTS USING THE 60-MM SHROUD, NON-STEADY-STATE CONDITIONS COMPARED WITH THE RESULTS OBTAINED FROM THE 50-MM SHROUD. THE FLOW RATE TENDS TO BE LARGER AND THE VOID FRACTION TO BE LOWER AT COMPARABLE CONDITIONS. THE THRESHOLD OF INSTABILITIES HAS MOVED TO HIGHER POWER. THE EFFECT OF SUBCOOLING IS SIMILAR TO THAT OBSERVED FOR THE 50-MM SHROUD. TRANSFER FUNCTIONS AT A SATURATION TEMPERATURE OF 200 C. PRELIMINARY RESULTS OF THE ANALYSIS OF THE DATA. THE VOID FRACTION PLOTTED ACCORDING TO ZUBER AND FINDLAY, THE TWO-PHASE FRICTION DATA ACCORDING TO MARTINELLI-NELSON.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$1.00 COPY, \$0.50 MICRONEGATIVE

\*REACTOR DYNAMICS + \*REACTOR, BOILING WATER + REACTOR STABILITY + TRANSFER FUNCTION

6-13904

ALSO IN CATEGORY 9

RASTOGI BP + SRINIVASAN KR + NAKRA AN + BHATIA HK + HURIA HC + BALAKRISHNAN K + PURANDARE HD

PHYSICS STUDIES OF PROTOTYPE POWER REACTOR PROJECT

ATOMIC ENERGY ESTABLISHMENT, TROMBAY, INDIA

AET-239 +. 69 PAGES, 1965

OF SAFETY INTEREST ARE - REACTIVITY WORTH OF THE CENTRAL FUEL ROD, VARIATION OF FLUX WITH TIME ON ADDITION OF A SMALL POSITIVE REACTIVITY, TEMPERATURE COEFFICIENT OF REACTIVITY FOR HOT AND CLEAN CONDITIONS, CONTROL-ROD CALCULATIONS, SOME COMMENTS ON SAFETY AND CONTROL, CHANGE IN REACTIVITY DUE TO LOSS OF COOLANT.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT WEST SALEM, WISCONSIN 54669

CATEGORY 6  
 REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-13904 \*CONTINUED\*  
 \*INDIA + CONTROL ROD WORTH + MODERATOR COEFFICIENT + REACTOR DYNAMICS + TEMPERATURE COEFFICIENT

6-13905  
 FORTI G + RINALDINI C + VINCENTI E  
 COMPARISON OF DIFFERENT METHODS FOR THE KINETICS OF AN ESSOR REACTOR TYPE  
 EUROPEAN ATOMIC ENERGY COMMUNITY, ISPRA, ITALY  
 EUR-3051.E +. 14 PAGES, JULY 1966

WITH THE AIM OF INVESTIGATING THE KIND OF REPRESENTATION NEEDED IN THE KINETICS CALCULATION OF A REACTOR MADE UP OF THREE QUITE DIFFERENT REGIONS LIKE THE ESSOR REACTOR, THREE APPROACHES WERE USED - A POINT MODEL METHOD, A NODAL METHOD SUBDIVIDING THE REACTOR IN THREE SPATIAL REGIONS, A DIRECT NUMERICAL SOLUTION OF THE TIME DEPENDENT DIFFUSION EQUATIONS. THE RESULTS LEAD TO THE CONCLUSIONS THAT, FOR A LARGE CATEGORY OF TRANSIENTS, THE POINT MODEL IS A GOOD REPRESENTATION OF THE ESSOR REACTOR.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

\*SPACE DEPENDENT DYNAMICS + EURATOM + HWOCR (HEAVY WATER ORGANIC COOLED REACTOR) + REACTOR, HEAVY WATER + REACTOR, ORGANIC COOLED

6-13906  
 MOXON D  
 SPLOSH II. A DYNAMICS PROGRAMME FOR NUCLEAR-THERMAL-HYDRODYNAMIC BEHAVIOUR OF WATER-COOLED REACTORS  
 ATOMIC ENERGY ESTABLISHMENT, WINFRITH, ENGLAND  
 AEEW-P-441 +. 70 PAGES, 2 FIGURES, JANUARY 1966

DESCRIBES A DYNAMICS CODE THAT SOLVES THE TWO-GROUP NEUTRON DIFFUSION EQUATIONS SIMULTANEOUSLY WITH THE THERMAL AND THE HYDRAULIC EQUATIONS FOR AN AVERAGE CHANNEL OF A WATER-COOLED REACTOR. OTHER REACTOR CHANNELS CAN BE REPRESENTED AS SLAVES, WHICH HAVE NO FEEDBACK TO THE AVERAGE CHANNEL. THE CODE CAN BE USED TO STUDY TRANSIENTS RESULTING FROM IMPOSED TIME VARIATIONS IN COOLANT FLOW, INLET ENTHALPY, SYSTEM PRESSURE, ELECTRICAL TORQUE SUPPLIED TO THE CIRCULATING PUMPS, MODERATOR HEIGHT, FRICTIONAL RESISTANCES SIMULATING BLOCKAGES, AND CONTROL ROD AND FUEL ELEMENT INSERTIONS.

AVAILABILITY - FOR SALE BY THE BRITISH INFORMATION SERVICE 845 THIRD AVE., NEW YORK, N.Y. 10022, \$1.80 COPY

\*COMPUTER, DIGITAL + \*REACTOR DYNAMICS + REACTOR, WATER + TRANSFER FUNCTION

6-13981  
 KERLIN TW  
 STABILITY EXTREMA IN NUCLEAR POWER SYSTEMS WITH DESIGN UNCERTAINTIES  
 OAK RIDGE NATIONAL LAB., OAK RIDGE + UNIVERSITY OF TENNESSEE  
 11 PAGES, 6 FIGURES, 4 TABLES, NUCLEAR SCIENCE AND ENGINEERING 27(1), PAGES 120-30, (JANUARY 1967)

SYSTEMATIC PROCEDURE FOR CALCULATING THE LEAST STABLE CONDITION IN A REACTOR SYSTEM THAT CAN OCCUR WITHIN THE UNCERTAINTY RANGE ON SYSTEM PARAMETERS. UNCERTAINTY RANGE DUE TO IMPOSSIBILITY OF PERFECTLY PREDICTING THE DESIGN PARAMETERS AND EFFECT OF AGING OF THE SYSTEM. METHOD USES LINEAR APPROXIMATION TO THE SYSTEM-DYNAMICS EQUATIONS AND A STEEPEST ASCENT EXTREMUM-SEEKING PROCEDURE. PROCEDURE CAN ALSO BE REVERSED TO DETERMINE DESIGN CHANGES NEEDED TO GIVE GREATER SYSTEM STABILITY. APPLICATION TO ANALYSIS OF THE MOLTEN SALT REACTOR EXPERIMENT.

\*REACTOR DYNAMICS + COMPUTER, DIGITAL + MSRE (MOLTEN SALT REACTOR EXPERIMENT) + REACTOR, MOLTEN SALT + SCRAM, REAL

6-13984 ALSO IN CATEGORY 5  
 MCALISTER JA + KENG EY + ORR C  
 HEAT TRANSFER TO A GAS CONTAINING A CLOUD OF PARTICLES  
 GEORGIA INSTITUTE OF TECHNOLOGY  
 NASA-CR-54441 +. 32 PAGES, 14 FIGURES, JULY 30, 1965

THE BASIC RADIATION EQUATIONS WERE SOLVED TO DESCRIBE THE RADIANT HEAT TRANSFER FROM A BLACK, CYLINDRICAL ENCLOSURE UNIFORMLY RADIATING TO A BLACK, EVENLY DISPERSED PARTICLE CLOUD CONTAINED WITHIN. BACK THERMAL RADIATION AND RADIATION SCATTERING WERE CONSIDERED NEGLIGIBLE. THE SOLUTION WAS PRESENTED GRAPHICALLY IN GENERALIZED FORM WITH ALL VARIABLES BEING DIMENSIONLESS QUANTITIES, AND COMPARISONS WITH EXPERIMENTAL DATA WERE SHOWN. EQUATIONS WERE ALSO PRESENTED FOR CALCULATING THE RADIATION ABSORBED BY A PARTICLE CLOUD WITHIN UNHEATED SEGMENTS OF THE ENCLOSURE ADJACENT TO THE RADIATING ELEMENT. A BRIEF DESCRIPTION OF PARTICLE DEAGGLOMERATION AND CLOUD TRANSMISSIVITY STUDIES WAS INCLUDED.

AIR + HEAT SINK + HEAT TRANSFER + HEAT TRANSFER, RADIANT + PARTICULATE

CATEGORY 6  
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-13986 ALSO IN CATEGORIES 5 AND 18  
APPENDUM B TO PROPOSED CHANGE 22 - ADDITIONAL INFORMATION ON REACTIVITY ACCIDENTS AND ON REACTOR VESSEL INSPECTION PROGRAM  
PACIFIC GAS AND ELECTRIC COMPANY  
24 PAGES, 6 FIGURES, OCTOBER 31, 1966, DOCKET NO. 50-133

IN RESPONSE TO A DRL REQUEST, HUMBOLDT BAY SENDS (1) COMPLETE REEVALUATION OF POTENTIAL REACTIVITY ACCIDENTS (THOROUGHLY DESCRIBED). REVIEW OF DATA INDICATES THAT A PEAK FUEL ENTHALPY OF 170 CALORIES/GRAM (FUEL TEMPERATURE 3900 F) IS THE NOMINAL THRESHOLD FOR FUEL-CLADDING DAMAGE, AND THUS 425 CALORIES/GRAM IS THE SUDDEN FUEL-ROD-RUPTURE THRESHOLD (UO<sub>2</sub> VAPORIZATION EJECTS HOT FUEL FROM CLAD). STARTUP ACCIDENT HAS SAME CONSEQUENCES AS FHSR (170 CAL/GRAM). CONTROL-ROD-DROP ACCIDENT WOULD REQUIRE ABOUT 2 PERCENT REACTIVITY TO EXCEED 360 CAL/GRAM, BUT SOME OUT-OF-SEQUENCE ROD WITHDRAWAL WOULD GIVE THIS. A TECHNICAL SPECIFICATION CHANGE IS PROPOSED TO CURE THIS WITH ADMINISTRATIVE CONTROL. ROD-EJECTION ACCIDENT SHOWS THAT SEVERAL RODS COULD CAUSE EXCURSION GREATER THAN 425 CALORIES/GRAM. IN THE 1967 REFUELING, ROD-DRIVE-THIMBLE SUPPORTS WILL BE ADDED TO INSURE AGAINST CIRCUMFERENTIAL THIMBLE RUPTURE CAUSING AN ACCIDENT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + ACCIDENT ANALYSIS + ACCIDENT, CONTROL ROD EJECTION + ACCIDENT, CONTROL ROD WITHDRAWAL + ADMINISTRATIVE CONTROLS AND PRACTICES + ENGINEERED SAFETY SYSTEM + HUMBOLDT BAY + REACTOR, BOILING WATER

6-14053  
LITTLE WW + HARDIE RW  
NEUTRONIC CONSIDERATIONS IN THE SELECTION OF A DRIVER FUEL FOR THE FAST TEST REACTOR (FTR)  
BATTELLE-NORTHWEST, RICHLAND  
BNWL 1071, 37 PAGES, DECEMBER 1965

NO SINGLE FUEL APPEARS BEST IN ALL AREAS OF COMPARISON. FOR A HIGH FLUX, PUO<sub>2</sub>-SS CERMET IS BEST. IF A 20-30% LOWER FLUX IS ACCEPTABLE, UO<sub>2</sub>-SS, PUO<sub>2</sub>-UO<sub>2</sub>, OR PUO<sub>2</sub>-UO<sub>2</sub>-BEO COULD BE EMPLOYED. A URANIUM CERMET OFFERS A LARGE DELAYED NEUTRON FRACTION AND RELIABLE EXPANSION COEFFICIENT. A MIXED OXIDE FUEL OFFERS A NUMBER OF ATTRACTIVE FEATURES, ALTHOUGH HAVING A RATHER MARGINAL DOPPLER COEFFICIENT. THE MAGNITUDE OF THIS COEFFICIENT CAN BE INCREASED BY GOING TO A LARGER REACTOR, BUT THIS GIVES A POSITIVE SODIUM VOID COEFFICIENT. A BETTER SCHEME FOR INCREASING THE DOPPLER COEFFICIENT IS TO ADD BEO TO THE CORE, ALTHOUGH THIS SLIGHTLY DECREASES THE FAST FLUX.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.50 MICROFICHE

\*FUEL ELEMENT + \*REACTOR PHYSICS + DOPPLER COEFFICIENT + FRCTF (FAST REACTOR CORE TEST FACILITY) + REACTIVITY EFFECT, EXPANSION + REACTOR, FAST + REACTOR, TEST

6-14058 ALSO IN CATEGORIES 4 AND 17  
JOHNSON RP  
SNAPTRAN 10A/2 KINETICS TESTING AND DESTRUCT REACTOR EXPERIMENTS.  
ATOMICS INTERNATIONAL, CANOGA PARK  
NAA-SR-11906 +. 113 PAGES, 35 FIGURES, 24 TABLES, 14 REFERENCES, JULY 15, 1966

PROVIDES BRIEF DESCRIPTION OF REACTORS, MODIFICATIONS TO CONTROL ROD DRIVES AND IN-CORE INSTRUMENTS FOR TEST, PROGRAM, AND PRELIMINARY RESULTS FOR SNAPTRAN-1 (CONTINUAL STEPWISE REACTIVITY INSERTIONS TO \$4.15 WITHOUT DESTRUCTION) AND -2 (SINGLE-STEP \$5.06 INSERTION WITH DESTRUCTION).

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$4.00 COPY, \$0.75 MICROFICHE

\*ACCIDENT, REACTIVITY + \*TEST, PLANT RESPONSE + REACTOR, SPACE + SNAP 10A (SYSTEMS FOR NUCLEAR AUXILIARY POWER)

6-14146 ALSO IN CATEGORIES 5 AND 18  
PULSTAR CHANGE TO ALLOW OTHER CORE CONFIGURATION, FUEL INSPECTIONS  
WESTERN NEW YORK NUCLEAR RESEARCH CENTER, INC.  
4 PAGES, DECEMBER 16, 1966, DOCKET NO. 50-57

CHANGES REQUESTED FOR NONSTANDARD CORE CONFIGURATIONS, WITH EXPERIMENTS IN THE CORE. GIVES HOT-SPOT-FACTOR FORMULA AND TESTS FOR NEW CORES TO OBTAIN PULSE-ENERGY LIMITS. SIX INSTRUMENTED FUEL PINS LOCATED IN REFLECTOR FLUX PEAK SAW 1.2 TIMES THE ENERGY/CM OF THE CORE FOR THE INITIAL TESTS, BUT SUCH USAGE WOULD DISTURB HOT-SPOT ANALYSIS, SO THE FOUR PINS HAVING HIGHEST ENERGY DENSITIES WILL BE INSPECTED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + EXAMINATION + FUEL ELEMENT + HOT SPOT + PERFORMANCE LIMIT + REACTOR, COOL TYPE + REACTOR, PULSED + REFUELING

CATEGORY 6  
 REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-14180 ALSO IN CATEGORIES 1 AND 18  
 BURTON SF + HOSLER AG  
 SMALL NUCLEAR POWER PLANTS. VOLUME ONE. DESIGN, CONSTRUCTION, AND OPERATING EXPERIENCE  
 CHICAGO OPERATIONS OFFICE, AEC  
 COO-284 (VOL.1) +. 274 PAGES, 4 FIGURES, 17 TABLES, OCTOBER 1966

COMPARES AI REACTOR, MODULAR, OXIDE FUEL, GRAPHITE IN BLANKET, WITH W, GE, CE, AND AC DESIGNS  
 AS PUBLISHED IN COO-279. SHOWS COUPLED CORES (W CONCEPT) EFFECTIVE IN SUPPRESSING POSITIVE  
 VOID EFFECT. IMPROVED CROSS SECTION DATA, TECHNIQUES FOR SPACE/ENERGY DEPENDENT FLUXES  
 NEEDED FOR POWER SPLIT EFFECT. AI VOID EFFECT BEST OF GROUP, FUEL CYCLE COST INTERMEDIATE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
 STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*ECONOMICS + COUPLED CORES + REACTOR, BREEDER + REACTOR, FAST + SAFETY REVIEW (OPERATIONS, EXPERIMENTS)

6-14189 ALSO IN CATEGORY 9  
 PETERSON LR + WEAVER LE  
 A GRAPHICAL DESIGN OF AN OPTIMUM CONTROL SYSTEM TO MINIMIZE BOILING REACTOR NOISE  
 UNIVERSITY OF ARIZONA  
 9 PAGES, 13 FIGURES, 2 TABLES, NUCLEAR SCIENCE AND ENGINEERING 21(1), PAGES 40-48, (JANUARY 1965)

IN THIS PAPER A NEW GRAPHICAL TECHNIQUE IS USED TO DETERMINE AN OPTIMUM REACTOR-CONTROL SYSTEM  
 THAT WILL MINIMIZE BOILING REACTOR NOISE. THE TECHNIQUE PRACTICALLY ELIMINATES THESE SERIOUS  
 DRAWBACKS AND PERMITS A CONSIDERABLE PHYSICAL INSIGHT INTO THE BASIC STRUCTURAL PROPERTIES OF  
 OPTIMUM CONTROL SYSTEMS TO MINIMIZE REACTOR NOISE. IT WAS FOUND THAT A REACTOR CONTROL  
 SYSTEM INDEPENDENT OF REACTOR POWER LEVEL EXCEPT FOR A GAIN CONSTANT COULD BE DESIGNED THAT  
 WOULD MINIMIZE BOILING NOISE AT ALL POWER LEVELS.

\*NOISE ANALYSIS + \*REACTOR CONTROL + \*REACTOR, BOILING WATER + ANALYTICAL MODEL + REACTOR DYNAMICS

6-14303  
 CANOSA J  
 REACTOR EXCURSIONS WITH RAMP REACTIVITY INSERTION  
 GENERAL ELECTRIC COMPANY  
 5 PAGES, 1 TABLE, ANS TRANSACTIONS 8(2)(FALL 1965)

A RAMP REACTIVITY ADDITION IS APPLIED TO A REACTOR WITH A NEGATIVE FEEDBACK PROPORTIONAL TO  
 THE REACTOR TEMPERATURE, WHICH IN TURN IS PROPORTIONAL TO THE ENERGY DEPOSITED IN THE  
 REACTOR. POINT-REACTOR MODEL, DELAYED NEUTRONS NEGLECTED. THE SYSTEM IS TREATED AS A  
 BOUNDARY-LAYER PROBLEM, DIVIDING THE TIME INTERVAL INTO AN INNER RANGE WHERE FEEDBACK IS  
 NEGLIGIBLE, AN INTERMEDIATE RANGE, AND AN OUTER RANGE WHERE THE FEEDBACK TERMINATES.

\*REACTOR DYNAMICS

6-14311 ALSO IN CATEGORY 9  
 MAXWELL DC  
 EVESR TRANSIENT MODEL  
 GENERAL ELECTRIC COMPANY, SAN JOSE  
 GEAP-4780 +. 65 PAGES, FEBRUARY 1, 1965

A COMPLETE SYSTEM OF EQUATIONS FOR THE EVESR SUPERHEAT REACTOR. POSSIBILITIES FOR WHICH THE  
 RESPONSE CAN BE OBTAINED ARE - (A) OUTLET FLOW CHANGES BY PROGRAMMING THE TURBINE FLOW, (B)  
 OUTLET FLOW CONTROLLER CHANGES BY PROGRAMMING THE TEMPERATURE SET POINT, (C) INLET FLOW  
 CONTROLLER CHANGES, (D) BOILER DISTURBANCES, (E) FEEDWATER DISTURBANCES. THE NUMERICAL  
 VALUES OF THE VARIOUS PARAMETERS AND FUNCTIONS DESCRIBING THE EVESR REACTOR ARE GIVEN IN THE  
 APPENDIX.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
 STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.55 MN.

\*REACTOR TRANSIENT + HYDRAULIC ANALYSIS + REACTIVITY COEFFICIENT

6-14333 ALSO IN CATEGORY 9  
 SPINKS N  
 A METHOD FOR CALCULATING THE REACTIVITY WORTH OF PARTIALLY INSERTED CONTROL RODS USING TWO-DIMENSIONAL  
 GEOMETRY  
 AUSTRALIAN ATOMIC ENERGY COMMISSION RESEARCH ESTABLISHMENT  
 AAEC/E-134 +. 14 PAGES, APRIL 1965

THE THREE-DIMENSIONAL PROBLEM OF A REACTOR WITH PARTIALLY INSERTED CONTROL RODS IS REDUCED TO  
 A TWO-DIMENSIONAL ONE BY A REDISTRIBUTION OF CONTROL MATERIAL WITHIN THE REACTOR. THE  
 TRANSFORMATION IS EXACT WHEN THE PITCH CIRCLE RADIUS OF THE RODS AND THE DEPTH OF INSERTION  
 OF THE RODS INTO THE REACTOR ARE LARGE COMPARED WITH THE CONTROL ROD PITCH. THE EFFECT OF

CATEGORY 6  
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-14333 \*CONTINUED\*  
VARIATIONS IN PITCH ON THE ACCURACY OF THE TRANSFORMATION IS INVESTIGATED BY CALCULATION.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT WEST SALEM,  
WISCONSIN 54669

\*ANALYTICAL MODEL + \*CONTROL ROD + AUSTRALIA + CONTROL ROD INTERACTION + REACTIVITY EFFECT

6-14379 ALSO IN CATEGORIES 9 AND 4  
PACKE DR + SCHOENBERG AA + JEFFERIES KS + TEW RC  
ANALYSIS OF CONDENSING PRESSURE CONTROL FOR SNAP-8 SYSTEM  
LEWIS RESEARCH CENTER, CLEVELAND, OHIO, (NASA)  
NASA-TM-X-1292 +. 26 PAGES, 2 TABLES, 18 FIGURES, 1 REFERENCE, OCTOBER 1966

THE EXPECTED VARIATIONS OF CONDENSING PRESSURE AND METHODS FOR CONTROLLING THESE VARIATIONS IN THE SNAP-8 RANKINE CYCLE WERE INVESTIGATED. THE EFFECTS OF ENVIRONMENTAL DISTURBANCES AND COMPONENT DEGRADATION ON THE SYSTEM WERE STUDIED WITH A DIGITAL COMPUTER. THE STUDY COMPARED THE EFFECTIVENESS OF COOLANT BYPASS FLOW CONTROL WITH CONDENSATE INVENTORY CONTROL AND CONCLUDED THAT THE BYPASS SYSTEM HAD ADVANTAGES IN THIS APPLICATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$1.00 COPY, \$0.50 MICRONEGATIVE

\*MATHEMATICAL STUDY + \*SIMULATION + \*SNAP 8 (SYSTEMS FOR NUCLEAR AUXILIARY POWER) + ANALYTICAL MODEL + CONTROL SYSTEM + HEAT EXCHANGER + METAL, LIQUID

6-14528 ALSO IN CATEGORY 18  
MILLER DL  
CORE PHYSICS CHARACTERISTICS OF THE FIRST LOADING OF THE SAN ONOFRE NUCLEAR GENERATING STATION.  
WESTINGHOUSE ELECTRIC CORP., ATOMIC POWER DIV.  
WCAP-3269-55 +. 139 PAGES, 79 FIGURES, 6 TABLES, 35 REFERENCES, OCTOBER 1966, DOCKET NO. 50-206

DESIGN DATA, METHODS OF ANALYSIS, AND THEIR EXPERIMENTAL JUSTIFICATION ARE GIVEN FOR REACTIVITY, POWER DISTRIBUTIONS, CONTROL BY CHEMICAL SHIM AND RODS, AND FOR ALL REACTIVITY COEFFICIENTS. DOES NOT REPORT TESTS AT SAN ONOFRE. INCLUDES EFFECT OF CONTROL-GROUP INSERTION ON HOT-CHANNEL FACTOR, POWER DISTRIBUTION WITH STUCK ROD AND WITH ONE ROD EJECTED, EFFECTS OF POSITIVE MODERATOR COEFFICIENT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY \$0.65 MICROFICHE

\*REACTOR PHYSICS + ACCIDENT, CONTROL ROD EJECTION + CHEMICAL SHIM + COMPARISON, THEORY AND EXPERIENCE + HOT CHANNEL + MODERATOR COEFFICIENT + POWER DISTRIBUTION + REACTOR, PRESSURIZED WATER + SAN ONOFRE

6-14663 ALSO IN CATEGORY 17  
ADAMS RM + GLASSNER A  
REACTOR DEVELOPMENT PROGRAM PROGRESS REPORT, NOVEMBER 1966  
ARGONNE NATIONAL LABORATORY  
ANL-7279 +. 98 PAGES, 26 FIGURES, 20 TABLES, DECEMBER 21, 1966

TRANSFER-FUNCTION MEASUREMENTS WITH THE PLUTONIUM-LOADED EBWR AT 42 MW(TH) AND BORIC ACID IN MODERATOR (5 GRAMS/GAL) SHOW THAT THE REACTOR WOULD BE STABLE UP TO 90 MW(TH).

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*OPERATING EXPERIENCE + \*REACTOR STABILITY + EBWR (EXPERIMENTAL BOILING WATER REACTOR) + REACTOR, AEC OWNED + REACTOR, BOILING WATER + TEST, PLANT RESPONSE + TRANSFER FUNCTION

6-14696  
JAMES PP + TAIT D  
DOUNREAY FAST REACTOR KINETIC COMPUTER ANALOGUE  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, RISLEY  
3 PAGES, 5 FIGURES, NUCLEAR ENGINEERING 11(123) PAGES 611-613 (AUGUST 1966)

AN ANALOGUE COMPUTER BUILT AT DOUNREAY BY R. K. THOMASSON AND J. DRAKEFORD. ALL THE PRINCIPAL FEEDBACK CHARACTERISTICS OF THE DFR HAVE BEEN ESTABLISHED. MODEL OF THE REACTOR PROGRAMMED AND USED TO INVESTIGATE THE REACTOR RESPONSE TO COOLANT-FLOW FAILURES, REACTIVITY STEPS, AND CONTROL-ROD-RUNAWAY ACCIDENTS. COMPUTER ACTS AS AN ON-LINE REACTIVITY MONITOR FOR CONTROL-ROD CALIBRATION AND MEASUREMENT OF THE REACTIVITY WORTH OF PERTURBATION SAMPLES.

\*COMPUTER, ANALOG + \*DOUNREAY (UK) + ACCIDENT, CONTROL ROD WITHDRAWAL + ACCIDENT, LOSS OF COOLANT + ACCIDENT, REACTIVITY + CONTROL ROD CALIBRATION + DANGER COEFFICIENT

6-14697

CATEGORY 6  
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-14697 \*CONTINUED\*

HUREL H + KNECHT O + MAUSBECK H

REACTOR SAFETY IN THE CASE OF POSITIVE POWER COEFFICIENT OF REACTIVITY WITH THE KNK REACTOR AS AN EXAMPLE  
3 PAGES, 3 FIGURES, ATOMWIRTSCHAFT 11(11) PAGES 566-568 (NOVEMBER 1966)

AFTER A REACTIVITY DISTURBANCE, THE POSITIVE MODERATOR INFLUENCE IS DELAYED BY THE FUEL-COOLANT TIME CONSTANT AND BY THE COOLANT-MODERATOR TIME CONSTANT, AND THERE IS SUFFICIENT TIME FOR A CONVENTIONAL SAFETY SYSTEM TO TRIP THE POWER. UNCONTROLLED POWER EXCURSIONS CAN THEREFORE BE AVOIDED WITH A CONVENTIONAL SAFETY SYSTEM IF THE FUEL-TEMPERATURE COEFFICIENT OF REACTIVITY IS NEGATIVE. THIS CONDITION IS FULFILLED CLEARLY, AND THE MAIN DEMAND OF THERMAL REACTOR SAFETY IS SATISFIED.

\*GERMANY + \*REACTOR, FAST + MODERATOR COEFFICIENT + POWER COEFFICIENT

6-14700

MARGOLIS SG + REDFIELD JA

FLASH - A PROGRAM FOR DIGITAL SIMULATION OF THE LOSS OF COOLANT ACCIDENT  
RETTIS ATOMIC POWER LABORATORY, PITTSBURGH, PENNSYLVANIA  
WAPP-TM-534 +. 106 PAGES, MAY 1966

FLASH IS A DIGITAL PROGRAM WHICH CALCULATES FLOWS, INVENTORIES, PRESSURES, AND TEMPERATURES IN THE PRIMARY SYSTEM DURING A LOSS-OF-COOLANT ACCIDENT. FLASH DIVIDES THE PRIMARY SYSTEM INTO THREE VOLUMES, EACH OF WHICH CONTAINS BOTH A HOMOGENEOUS MIXTURE AND A SEPARATED STEAM PHASE. THE MODEL USED IN FLASH REPRESENTS A CONSIDERABLE SIMPLIFICATION OF THE ACTUAL SYSTEM GEOMETRY BUT ATTEMPTS TO ACCOUNT FOR THE BEHAVIOR OF EVERY COMPONENT OF THE PRIMARY SYSTEM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*ACCIDENT, LOSS OF COOLANT + \*COMPUTER, DIGITAL

6-14701

KERLIN TW + BALL SJ

EXPERIMENTAL DYNAMIX ANALYSIS OF THE MOLTEN-SALT REACTOR EXPERIMENT

OAK RIDGE NATIONAL LABORATORY

ORNL-TM-1647 + CONF-661001-28 +. 58 PAGES, 2 TABLES, 29 FIGURES, 19 REFERENCES, OCTOBER 13, 1966,  
PRESENTED AT THE WINTER MEETING OF THE AMERICAN NUCLEAR SOCIETY, OCTOBER 30-NOVEMBER 3, 1966, PITTSBURGH,  
PENNSYLVANIA

THE FREQUENCY RESPONSE OF THE UNCONTROLLED REACTOR SYSTEM DISPLAYED RESONANT BEHAVIOR IN WHICH THE FREQUENCY OF OSCILLATION AND THE DAMPING INCREASED WITH INCREASING POWER LEVEL. MEASURED PERIODS OF NATURAL OSCILLATION RANGED FROM THIRTY MINUTES AT 75 KW TO TWO MINUTES AT 7.5 MW. THESE OSCILLATIONS WERE LIGHTLY DAMPED AT LOW POWER, BUT STRONGLY DAMPED AT HIGHER POWER.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*MSRE (MOLTEN SALT REACTOR EXPERIMENT) + \*REACTOR DYNAMICS + REACTOR, MOLTEN SALT + TRANSFER FUNCTION

6-14737

ADAMS RM + GLASSNER A

COOLANT DYNAMICS AND TREAT OPERATIONS

ARGONNE NATIONAL LABORATORY

ANL-7249 +. 5 PAGES, 1 FIGURE, 1 TABLE, 6 REFERENCES, REACTOR DEVELOPMENT PROGRAM PROGRESS REPORT, AUGUST 1966, PAGES 73-74 AND 81-82, SEPTEMBER 23, 1966

ANALYTICAL WORK AND FABRICATION ON COOLANT-EXPERIMENTATION STUDIES. PROGRESS ON SODIUM SUPERHEAT EXPERIMENT. ANALYTICAL SOLUTION FOR CRITICAL FLOW RATES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*HYDRAULIC ANALYSIS + \*THERMAL ANALYSIS + DESTRUCTIVE TRANSIENT + FLOW, TWO PHASE + REACTOR TRANSIENT

6-14738

ADAMS RM + GLASSNER A

FUEL MELTDOWN STUDIES IN TREAT

ARGONNE NATIONAL LABORATORY

ANL-7249 +. 2 PAGES, REACTOR DEVELOPMENT PROGRAM PROGRESS REPORT, AUGUST 1966, PAGES 75-76, SEPTEMBER 23, 1966

REMARKS ON PREIRRADIATED OXIDE, FAST-REACTOR-TYPE FUEL PINS. ANALYSIS OF CONVECTIVE BED AND MASS TRANSFER WITH PHASE CHANGE. TREAT EXPERIMENT RUN SHORT OF GROSS SAMPLE FAILURE SHOWED EUTECTIC FORMATION BUT NO PENETRATION OF CLADDING. RESULTS OF FUEL-PIN DISINTEGRATION DURING A TREAT TRANSIENT AS STUDIED BY THE HODOSCOPE AND OTHER DEVICES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE



CATEGORY 6  
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-14738 \*CONTINUED\*  
\*THERMAL ANALYSIS + \*TREAT (TRANSIENT TEST REACTOR FACILITY) + FAILURE, FUEL ELEMENT + FLOW, TWO PHASE +  
HEAT TRANSFER ANALYSIS + REACTOR, FAST + REACTOR, GRAPHITE MODERATED + REACTOR, TEST + URANIUM OXIDE

6-14739  
ADAMS RM + GLASSNER A  
SAFETY RELATED PROPERTIES OF MATERIALS  
ARGONNE NATIONAL LABORATORY  
ANL-7249 +. 2 PAGES, 2 FIGURE, 1 TABLE, REACTOR DEVELOPMENT PROGRAM PROGRESS REPORT, AUGUST 1966, PAGES  
80-81, SEPTEMBER 23, 1966

PENETRATION OF V-20 W/O TI BY MOLTEN U-15 W/O PU-6.5 W/O TI INCREASES FROM 0.02 MM/SEC AT 1300  
C TO 0.45 MM/SEC AT 1450.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

FAILURE, FUEL ELEMENT + REACTOR, FAST

6-14740 ALSO IN CATEGORY 8  
ADAMS RM + GLASSNER A  
CHEMICAL AND ASSOCIATED ENERGY PROBLEMS (THERMAL)  
ARGONNE NATIONAL LABORATORY  
ANL-7249 +. 6 PAGES, 14 REFERENCES, REACTOR DEVELOPMENT PROGRAM PROGRESS REPORT, AUGUST 1966, PAGES  
82-87, SEPTEMBER 23, 1966

THE EXPERIMENTS ON METAL-WATER REACTORS PREVIOUSLY PERFORMED BY LASER-BEAM HEATING OF ALUMINUM  
POWDER IN WATER ARE QUALITATIVELY EXPLAINED, AND AN ANALYTICAL DESCRIPTION IS GIVEN.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*METAL WATER REACTION + ALUMINUM + LASER HEATING + THERMAL ANALYSIS

6-14753  
STABILITY EXPERIMENTS FOR BOILING WATER REACTORS. QUARTERLY REPORT NO. 6, APRIL 1-JUNE 30, 1966  
ALLGEMEINE ELEKTRIZITAETS-GESELLSCHAFT, FRANKFURT AM MAIN, WEST GERMANY KERNENERGIEANLAGEN  
EURAF-1698 + EUR-2885 +. 19 PAGES, 1966

OUTPUT/LOCAL-STEAM-BUBBLE-CONTENT FREQUENCY-RESPONSE MEASUREMENTS WERE CARRIED OUT ON THE  
CYLINDRICAL MEASUREMENT SECTION, AND THE MEASUREMENT PROGRAM WAS COMPLETED. DEPENDENCE OF  
LOCAL STEAM-BUBBLE CONTENT ON STEAM CONTENT AND WATER INLET VELOCITY IS BEING ASCERTAINED BY  
STATIONARY MEASUREMENTS. THEORETICAL ANALYSIS OF FREQUENCY RESPONSES OBTAINED IN EXPERIMENTS  
HAS BEGUN WITH THE HELP OF THE AMOK-L COMPUTER PROGRAM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*GERMANY + \*REACTOR, BOILING WATER + COMPUTER, DIGITAL + REACTOR STABILITY

6-14754  
SCHMIDT WH  
SANDIA PULSED REACTOR SPR-II-1 CORE CALCULATIONS  
SANDIA LABORATORY  
SC-PR-65-344 +. 30 PAGES, OCTOBER 1965

DESIGN OBJECTIVE OF THE NEW REACTOR WAS TO PROVIDE THE CAPABILITY OF DELIVERING AN INTEGRATED  
FAST NEUTRON FLUX OF 10 TO THE 15TH NEUTRONS PER SQ. CM, IN A BURST WHOSE HALF-WIDTH IS  
APPROXIMATELY 40 MICROSECONDS. SPR-II USES A U-MO FIJI ALLOY. DISTINGUISHING MECHANICAL  
FEATURES OF SPR-II ARE THE 1-1/2-INCH-DIAMETER GLORY HOLE AND THE FLY-THROUGH BURST ROD.  
DESIGN PARAMETERS INCLUDED THE CORE DIMENSIONS, THE REACTIVITY WORTHS OF CONTROL ELEMENTS AND  
TYPICAL IN-CORE IRRADIATION SAMPLES, AND THE SPATIAL NEUTRON FLUX DISTRIBUTION IN THE CORE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*REACTOR, PULSED + CONTROL ROD WORTH

6-14755  
NATFELSON M + OSBORN RK + SHURE F  
RECENT DEVELOPMENTS IN THE ANALYSIS OF NEUTRON NOISE EXPERIMENTS  
BETTIS ATOMIC POWER LABORATORY, PITTSBURGH, PENNSYLVANIA  
WAPD-T-1014 + CONF-660206-4 +. 25 PAGES, FEBRUARY 1965, FROM SYMPOSIUM ON NEUTRON NOISE, WAVES, AND PULSE  
PROPAGATION, GAINESVILLE, FLORIDA

CATEGORY 6  
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-14755 \*CONTINUED\*

AN ANALYSIS OF SPACE AND ENERGY EFFECTS IN NEUTRON-NOISE EXPERIMENTS WAS MADE. IN PARTICULAR, INFLUENCES OF DETECTOR AND REACTOR CONFIGURATION AND NEUTRON SLOWING-DOWN ON POWER SPECTRAL-DENSITY, CROSS POWER-SPECTRAL DENSITY, AND VARIANCE-TO-MEAN MEASUREMENTS ARE CONSIDERED. IN THE PROCESS, AN EXPLANATION IS GIVEN FOR THE SUCCESS OF A SPACE- AND ENERGY-INDEPENDENT DESCRIPTION FOR A LARGE CLASS OF SYSTEMS ON WHICH SUCH EXPERIMENTS ARE PERFORMED. A SPECIFIC EXPRESSION FOR DETECTOR EFFICIENCY IS OBTAINED. THUS EXPERIMENTAL LIMITATIONS FOR NOISE EXPERIMENTS ARE ALSO CONSIDERED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*NOISE ANALYSIS + SPACE DEPENDENT DYNAMICS

6-14756

PORSCHING TA

THE NUMERICAL SOLUTION OF THE REACTOR KINETICS EQUATIONS BY DIFFERENCE ANALOGS - A COMPARISON OF METHODS  
RETTIS ATOMIC POWER LABORATORY, WEST MIFFLIN, PENNSYLVANIA  
WAPD-TM-564 +. 44 PAGES, MARCH 1966

THIS REPORT PRESENTS THE RESULTS OF A STUDY OF SIX ANALOGS USED TO GENERATE NUMERICAL SOLUTIONS OF THE REACTOR KINETICS EQUATIONS. EACH ANALOG WAS STUDIED FROM THE POINT OF VIEW OF THE ACCURACY OF ITS SOLUTION AND THE TIME REQUIRED TO GENERATE IT. THE APPENDIX PRESENTS A MATHEMATICAL DEVELOPMENT OF ONE OF THE ANALOGS. FURTHER DISCUSSION CONCERNING THE OTHER ANALOGS MAY BE FOUND IN THE REFERENCES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*REACTOR KINETICS + \*SPACE DEPENDENT DYNAMICS + COMPUTER, DIGITAL

6-14758

RABALA D

INTERVAL DISTRIBUTIONS OF REACTOR NEUTRON COUNTS  
INSTITUTT FOR ATOMENERGI, KJELLER, NORWAY  
TID-23382 + KR-106 +. 13 PAGES, SEPTEMBER 1966

FORMULAS FOR INTERVAL DISTRIBUTIONS OF NEUTRON COUNTS FOR REACTOR NOISE MEASUREMENTS. TECHNIQUE LESS TIME CONSUMING THAN METHOD OF MOGILNER AND ZOLOTUKHIN. THE PROPOSED COUNT-TO-COUNT INTERVAL DISTRIBUTION MEASUREMENT SEEMS TO COMBINE THE ADVANTAGES OF THE EFFICIENCY-SENSITIVE METHODS (FEYNMAN) AND THE POWER-SENSITIVE METHODS (ROSSI-ALPHA).

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*NOISE ANALYSIS + NORWAY + ROSSI ALPHA

6-14760

ALGER D + MAYO W + MULLER R

MEASUREMENT OF EFFECTIVE DELAYED NEUTRON FRACTION FOR NASA ZERO POWER REACTOR I  
LEWIS RESEARCH CENTER, CLEVELAND, OHIO, (NASA)  
NASA-TN-D-3709 +. 37 PAGES, 15 FIGURES, 7 TABLES, 17 REFERENCES, NOVEMBER 1966

THE EFFECTIVE DELAYED NEUTRON FRACTION HAS BEEN EXPERIMENTALLY DETERMINED FOR EACH OF THREE URANYL FLUORIDE-WATER SOLUTION REACTORS IN THE NASA ZERO POWER REACTOR I FACILITY. THE HYDROGEN-TO-URANIUM-235 ATOM RATIOS FOR THE SOLUTIONS IN THESE MEASUREMENTS ARE 190, 473, AND 565. THE VALUE OF THE EFFECTIVE DELAYED NEUTRON FRACTION WAS MEASURED BY THE PROPON-SUBSTITUTION METHOD. VALUES OBTAINED ARE 0.0090 PLUS-OR-MINUS 0.0006, 0.0086 PLUS-OR-MINUS 0.0005, AND 0.0082 PLUS-OR-MINUS 0.0004 FOR THE RESPECTIVE ATOM RATIOS. CALCULATED VALUES ARE IN REASONABLE AGREEMENT WITH THE EXPERIMENTAL RESULTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*DELAYED NEUTRON + REACTOR, TEST

6-14761

PACILTO, N

POWER LEVEL FLUCTUATIONS OF A STEADY STATE OPERATING REACTOR  
COMITATO NAZIONALE PER L'ENERGIA NUCLEARE, ROME, ITALY  
RT-FI-(66)11 +. 46 PAGES, 1966, IN ITALIAN

POWER LEVEL AND FLUCTUATION, STATISTICAL ANALYSES OF THE NEUTRON POPULATION, PARAMETRIC STUDY OF THE VARIANCE, EXPERIMENTAL CALIBRATIONS, AND INSTRUMENTATION.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

CATEGORY 6  
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-14761 \*CONTINUED\*  
\*NOISE ANALYSIS

6-14769  
STABILITY STUDIES FOR BOILING-WATER REACTORS. FINAL REPORT NO. 1, APRIL 1, 1964-MARCH 31, 1965  
KERNENERGIEANLAGEN, ALLGEMEINE ELEKTRICITAETS-GESELLSCHAFT, FRANKFURT AM MAIN (WEST GERMANY)  
EURAE-1561 + EUR-2700 +. 37 PAGES, APRIL 30, 1965

AFTER SOME PRELIMINARY WORK, MEASUREMENT OF FREQUENCY RESPONSE CURVES FOR POWER VERSUS THE  
VOID FRACTION FOR A MASS FLOW-RATE  $\dot{m}$  EQUALS 5.7 KG PER SQ. METER PER HR AND TWO SUBCOOLINGS  
( $T$  EQUALS 2.5 AND 6 C).

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*REACTOR, BOILING WATER + GERMANY + MOCKUP + REACTOR STABILITY

6-14770  
KISTNER G + MIHALCZO JT  
CRITICAL EXPERIMENTS WITH A MOCK-UP OF THE REPETITIVELY PULSED REACTOR SORA  
OAK RIDGE NATIONAL LABORATORY  
ORNL-P-2641 + CONF-661019-R +. 11 PAGES, 1965, FROM INTERNATIONAL CONFERENCE ON FAST CRITICAL EXPERIMENTS  
AND THEIR ANALYSIS, ARGONNE, ILLINOIS

CRITICALITY EXPERIMENTS ON MOCKUP OF SORA, A NAH-COOLED, REPETITIVELY PULSED FAST REACTOR USED  
AS A HIGH INTENSITY NEUTRON SOURCE. THE TOTAL REACTIVITY VALUE OF THE MOVABLE REFLECTOR  
DETERMINES THE RATIO OF THE PEAK POWER TO THAT BETWEEN PULSES. THE REACTIVITY OF THE MOVABLE  
REFLECTOR AND THE PROMPT NEUTRON DECAY CONSTANT DETERMINE WIDTH OF NEUTRON PULSES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*REACTOR, PULSED + ITALY + REACTOR, FAST + REFLECTOR

6-14772  
MENELEY DA + KVITEK LC + OSHEA DM  
MACH 1, A ONE-DIMENSIONAL DIFFUSION-THEORY PACKAGE  
ARGONNE NATIONAL LABORATORY  
ANL-7223 +. 71 PAGES, 15 REFERENCES, JUNE 1966

THE CODE COMPUTES, AMONG OTHER THINGS, THE DELAYED-NEUTRON FRACTION, THE PROMPT-NEUTRON  
LIFETIME, AND SOLUTIONS TO THE INHOUR-EQUATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*COMPUTER, DIGITAL + DELAYED NEUTRON + EQUATION, IN HOUR + PROMPT NEUTRON LIFETIME

6-14776  
MAHNA KL + NIMS JB + PAGE EM  
ZONED FUEL CORE FOR A SODIUM-COOLED FAST REACTOR  
ATOMIC POWER DEVELOPMENT ASSOCIATION  
1 PAGE, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY PITTSBURGH, PA., OCT. 30-NOV. 3, 1966, ANS TRANS.  
9(2), PAGE 581, (NOVEMBER 1966)

SODIUM COEFFICIENT CAN BE MADE LESS POSITIVE, OR NEGATIVE, BY ZONED LOADING. THE CENTER  
LOADING IS OXIDE OF U-233 AND TH.

\*SODIUM COEFFICIENT + REACTOR, FAST + THORIUM + URANIUM-233

6-14777 ALSO IN CATEGORY 5  
BRIDG JH  
NEUTRONIC ASPECTS OF A 1000-MW(E) GAS-COOLED FAST REACTOR  
ATOMICS INTERNATIONAL  
1 PAGE, 1 TABLE, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PA., OCT. 30-NOV. 3, 1966, ANS  
TRANS 9(2), PAGE 580, (NOVEMBER 1966)

REACTIVITY GAIN DUE TO LOSS OF HELIUM IS 0.34 TO 0.48%. NUMERICAL VALUE OF DOPPLER  
COEFFICIENT. LOSS-OF-COOLANT ACCIDENT (ASSUMING SLOW LOSS OF HELIUM BECAUSE OF  
PRESTRESSED-CONCRETE VESSEL) RESULTS IN PEAK CLADDING TEMPERATURE ABOUT 120 SEC AFTER START  
OF ACCIDENT.

\*REACTOR, FAST + \*REACTOR, GAS COOLED + ACCIDENT, LOSS OF COOLANT + DOPPLER COEFFICIENT

CATEGORY 6  
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-14778 ALSO IN CATEGORIES 5 AND 7  
DICKERMAN CE  
USE OF PRESENT TREAT CORE AS A FAST-FLUX LOOP-MELTDOWN FACILITY  
ARGONNE NATIONAL LABORATORY  
1 PAGE, 7 REFERENCES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PA., OCTOBER 30-NOVEMBER 3, 1966, ANS TRANS. 9(2), PAGE 551, (NOVEMBER 1966)

AVOIDANCE OF SELF-SHIELDING BY LOW ENRICHMENT OF FUEL OR BY CADMIUM SHIELD ELIMINATING THERMAL MEMBRANES. FOR SODIUM-BONDED CARBIDE FUEL, ADIABATIC TRANSIENTS CAN BE SIMULATED ONLY BY THE SHORTEST OBTAINABLE TRANSIENTS (40-MSEC ASYMPTOTIC PERIOD). TEMPERATURE DISTRIBUTIONS TYPICAL OF STEADY STATE CAN BE OBTAINED FOR OXIDE ELEMENTS BY LOW-ENERGY-RELEASE EXCURSIONS, THEN PROGRAMMED ROD MOTIONS CAN PRODUCE A TEMPERATURE EXCURSION FROM OPERATING LEVELS.

\*OPERATING EXPERIENCE + \*TREAT (TRANSIENT TEST REACTOR FACILITY)

6-14781  
SALIJA J + SAGE AP + UHRIG RE  
OPTIMUM OPEN AND CLOSED LOOP CONTROL OF NUCLEAR SYSTEM DYNAMICS  
UNIVERSITY OF FLORIDA  
5 PAGES, 1 FIGURE, 5 REFERENCES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PA., OCTOBER 30-NOVEMBER 3, 1966. ANS TRANS 9(2), PAGE 462, (NOVEMBER 1966)

REACTOR POWER TRANSFERRED FROM ONE STEADY STATE TO ANOTHER WITH QUADRATIC CONSTRAINT ON CONTROL ROD MOVEMENT. MINIMIZATION OF ERROR IN DESIRED POWER WITH SIMILAR CONSTRAINT. ROD MOVEMENT LINEAR FUNCTION OF POWER ERROR AND ITS TIME INTEGRAL.

\*CONTROL, GENERAL + \*REACTOR DYNAMICS

6-14782  
HASSAN HH + MILEY GH  
THE PERIOD EFFECT IN REACTOR KINETICS  
UNIVERSITY OF ILLINOIS  
4 PAGES, 1 FIGURE, 6 REFERENCES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PA., OCT. 30-NOV. 3, 1966. ANS TRANS. 9(2), PAGE 466 (NOVEMBER 1966)

TRANSFER FUNCTION OF A REACTOR AFTER AN ASYMPTOTIC PERIOD, AND DEPENDENCE OF THE FUNCTION ON THE PERIOD.

\*TRANSFER FUNCTION + REACTOR DYNAMICS + TRIGA (TRAINING REACTOR, ISOTOPES, G.A.)

6-14784 ALSO IN CATEGORIES 5 AND 7  
LITMATAINFN RC + FRESHLEY MD + TESTA FJ  
TRANSIENT IRRADIATION OF VIBRATIONALLY COMPACTED UO<sub>2</sub> FUEL IN TREAT  
ARGONNE NATIONAL LAB. + BATTELLE-NORTHWEST  
1 PAGE, 1 TABLE, 1966 WINTER MEETING, AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PA., OCT. 30-NOV. 3, 1966, ANS TRANS. 9(2), PAGE 395, (NOVEMBER 1966)

ZIRCALOY-CLAD, VIBRATIONALLY PACKED, URANIUM OXIDE FUEL RODS SUBJECTED TO TREAT TRANSIENTS UP TO 470 CAL PER GRAM. PRE-TRANSIENT BURNUP SIMULATED BY HELIUM PRESSURE. RODS WITH SIMULATED HIGH BURNUP FAIL BY CLAD RUPTURE BEFORE SIMULATED LOW-BURNUP RODS FAIL BY CLAD MELTING. 40% CLAD-WATER REACTIONS AND SOME OXIDATION OF URANIUM OXIDE. PEAK PRESSURE AND RATE OF PRESSURE RISE HIGHER THAN FOR PELLETS.

\*FAILURE, FUEL ELEMENT + \*TREAT (TRANSIENT TEST REACTOR FACILITY) + REACTOR, GRAPHITE MODERATED + REACTOR, TEST

6-14786  
COHN CE + GRAHAM WW + HARMER DS  
ACCURATE DELAYED NEUTRON PARAMETER MEASUREMENTS IN A HEAVY-WATER REACTOR  
GEORGIA INSTITUTE OF TECHNOLOGY + ARGONNE NATL. LAB.  
21 PAGES, 4 FIGURES, 2 TABLES, 14 REFERENCES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PA., OCT. 30-NOV. 3, 1966. ANS TRANS. 9(2), PAGE 465 (NOVEMBER 1966)

THE FAMILIAR ROD-DROP METHOD FOR DETERMINING DELAYED-NEUTRON PARAMETERS WAS REFINED WITH NEW TECHNIQUES OF DATA COLLECTION, ANALYSIS, AND CORRECTION. THE VALUES WERE ACCURATELY CORRECTED FOR REACTOR-POWER HISTORY, POST-SHUTDOWN SUBCRITICAL MULTIPLICATION, AND FINITE ROD-DROP TIME. THERE ARE INDICATIONS THAT DELAYED-NEUTRON EFFECTIVENESS IS ENHANCED BY ABOUT 3% IN THIS TYPE OF REACTOR AND THAT THE EFFECTIVENESS OF PHOTONEUTRON GROUPS IS DECREASED BY ABOUT 28% BECAUSE OF ATTENUATION OF HIGH-ENERGY GAMMA RAYS.

\*DELAYED NEUTRON + \*REACTOR, HEAVY WATER

CATEGORY 6  
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-14788 ALSO IN CATEGORIES 5 AND 17  
GARIGLIANO NUCLEAR POWER PLANT. OPERATION REPORT FOR THE 2ND QUARTER OF 1966  
ENTE NAZIONALE PER L'ENERGIA ELETTRICA, ROME  
TID-23383 +. 15 PAGES, JUNE 30, 1966

REACTOR RETURNED TO POWER IN MAY, LIMITED BY STEAM-REGULATING-VALVE MALFUNCTION.  
HIGHER-POWER-DENSITY/HIGH-VOID TESTS SHOWED SATISFACTORY REACTOR STABILITY. CORE PRESSURE  
DROP INCREASED FROM 1.88 PSI MAY 23 TO 2.36 ON JUNE 27. HIGH SUBCOOLING TESTS WERE  
IMPOSSIBLE BECAUSE BYPASSING FEEDWATER HEATERS CAUSED PIPING VIBRATION. ONE-LOOP OPERATION  
LED TO DRYM WATER LEVEL AND NEUTRON FLUX OSCILLATIONS, WORSENER BY COLDER FEEDWATER. THE  
POSSIBILITY WAS DEMONSTRATED OF OPERATING REACTOR FULL POWER WITH ONLY NATURAL CIRCULATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U. S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*HEAT TRANSFER, NATURAL CONVECTION + \*OPERATIONS REPORT, GENERAL + ITALY + PRESSURE DROP +  
REACTOR STABILITY + REACTOR, BOILING WATER + SURFACE FILM DEPOSIT + TEST, PLANT RESPONSE

6-14791 ALSO IN CATEGORIES 9 AND 17  
HOWARD CL  
DEVELOPMENT PROGRAM ON THE GARIGLIANO NUCLEAR REACTOR. QUARTERLY REPORT NO. 15.  
GENERAL ELECTRIC COMPANY, SAN JOSE, ATOMIC POWER EQUIPMENT DEPT.  
GEAP-5190 + EURAEC-1717 +. 35 PAGES, JULY 1, 1966

DURING PLANT STABILITY TESTS, THE ON-LINE COMPUTER AIDED GREATLY BY COMPILING OPERATING LIMITS  
(HEAT FLUX AND MCHF RATIO), CALIBRATION OF IN-CORE INSTRUMENTS, ETC. OFF-LINE USAGE IN DATA  
REDUCTION SAVED MANY DAYS BETWEEN TESTS, ALTHOUGH EACH SUCH USAGE PROHIBITS ITS ON-LINE  
MONITORING. FEEDWATER-HEATER BYPASSING FOR TESTS CAUSED DAMAGE FROM VIBRATION. HIGH-VOID  
TESTS GAVE HALF SCRAMS FROM THE FLOAT-ACTUATED REACTOR-WATER-LEVEL SWITCHES. ONE  
RECIRCULATION-LOOP OPERATION GAVE UNBALANCED POWER/VOID DISTRIBUTIONS, AND FLOW OSCILLATIONS.  
A STUCK ROD ALSO GAVE FLUX OSCILLATIONS LOCALLY (PLUS-OR-MINUS 10% AT 0.33 CPS) DUE TO  
HYDRODYNAMIC DISTURBANCES. THE REACTOR IS MORE STABLE THAN PREDICTED WITH CORE AVERAGE VOIDS  
AT 50%.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*OPERATIONS REPORT, ANALYSIS + DATA PROCESSING + FAILURE, PIPE + FAILURE, SCRAM MECHANISM +  
HYDRODYNAMIC ANALYSIS + INSTRUMENTATION, ABNORMAL INDICATION + INSTRUMENTATION, IN CORE + ITALY +  
POWER DISTRIBUTION + REACTOR STABILITY + REACTOR, BOILING WATER + TEST, PLANT RESPONSE

6-14793 ALSO IN CATEGORIES 9 AND 18  
MANCAN MA  
CONNECTICUT YANKEE SET POINT STUDY  
WESTINGHOUSE ELECTRIC CORPORATION, ATOMIC POWER DIVISION  
NY9-3250-7 + WCAP-2948 +. 127 PAGES, JUNE 1966, DOCKET NO. 50-213

THIS STUDY FORMED THE BASIS FOR THE DEFINITION OF A CONSISTENT SET OF CONTROL SYSTEM SET  
POINTS TO BE USED DURING INITIAL PLANT TESTS AND OPERATION, BASED ON MAINTAINING ADEQUATE  
CONTROL-SYSTEM PERFORMANCE OVER THE WHOLE RANGE OF PREDICTED PLANT OPERATING CONDITIONS.  
ALSO PRESENTS AN INSIGHT INTO THE PREDICTED CONTROL-SYSTEM PERFORMANCE UNDER VARIOUS PLANT  
CONDITIONS. CONTROL SYSTEM PERFORMANCE IS PREDICTED FOR MORE PROBABLE OR BEST-ESTIMATE  
PLANT-DESIGN PARAMETERS FOR VARIOUS TIMES THROUGHOUT CORE LIFETIME AND MAY BE INDICATIVE OF  
WHAT MAY BE EXPECTED DURING OPERATION. THE SENSITIVITY OF CONTROL-SYSTEM PERFORMANCE TO  
VARIOUS CONTROL-PARAMETER SET POINTS IS ALSO INDICATED TO GIVE THE OPERATOR A FEEL FOR  
POSSIBLE ADJUSTMENTS IN CONTROL-SYSTEM PARAMETERS TO IMPROVE CERTAIN ASPECTS OF PLANT  
TRANSIENT RESPONSE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*ANALOG SIMULATION + \*REACTOR TRANSIENT + HADDAM NECK + PLANT PROTECTIVE SYSTEM + REACTOR CONTROL +  
REACTOR STABILITY + REACTOR, PRESSURIZED WATER

6-14796 ALSO IN CATEGORIES 5 AND 18  
ANALYTICAL INVESTIGATION OF NUCLEAR AND THERMAL-HYDRAULIC DESIGN CHARACTERISTICS OF SM-1A, CORE 3, VOLUME I  
HITTMAN ASSOCIATES, INC.  
HIT-3459-11 (VOL. I AND II) + HIT-161 +. 80 PAGES, FIGURES, TABLES, REFERENCES, MARCH 1965

AN EARLIER REPORT INDICATING POTENTIAL PROBLEMS REQUIRED THIS DETAILED STUDY. CONCLUSIONS -  
(1) REACTIVITY CAN BE PREDICTED WITHIN 1% DELTA K OVER LIFETIME. (2) CORE SHOULD BE COLD  
SHUTDOWN WITH ANY TWO RODS CUT. (3, 4) CORE LIFETIME IS 32 MW YEARS, ROD POSITION CONSTANT  
AT 10.45 INCHES FROM 10 TO 18 MW YEARS. (5, 6) POWER DISTRIBUTIONS ARE LESS ADVERSE.  
MINIMUM DNB RATIO OF 2.67 OCCURS IN CONTROL-ROD FUEL ELEMENTS DURING PEAK REACTIVITY. (7)  
CORE IS HYDRAULICALLY STABLE UP TO 29 MW THERMAL.

\*SAFETY STUDY + DNB (DEPARTURE FROM NUCLEATE BOILING) + FUEL BURNUP + POWER DISTRIBUTION +

CATEGORY 6  
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-14796 \*CONTINUED\*  
REACTIVITY, EXCESS + REACTOR STABILITY + REACTOR, ARMY + REACTOR, PRESSURIZED WATER + SHUTDOWN MARGIN + SM 1 (STATIONARY MEDIUM POWER PLANT)

6-14797 ALSO IN CATEGORIES 5 AND 18  
ANALYTICAL INVESTIGATION OF NUCLEAR AND THERMAL HYDRAULIC DESIGN CHARACTERISTICS OF SM-1A, CORE 3, VOLUME II  
HITTMAN ASSOCIATES  
HIT-3459-11 + HIT-161 +. 112 PAGES, FIGURES, TABLES, REFERENCES, MARCH 1965

TECHNICAL APPENDIX TO VOLUME I. GIVES VARIOUS PLANT AND CORE-3 DESCRIPTIONS, NUCLEAR PHYSIC ANALYSIS METHODS, AND THERMAL-HYDRAULIC ANALYSES METHODS.

\*COMPUTER PROGRAM + \*HEAT TRANSFER ANALYSIS + \*HYDRODYNAMIC ANALYSIS + \*REACTOR PHYSICS + REACTOR, ARMY + REACTOR, PRESSURIZED WATER + SM 1 (STATIONARY MEDIUM POWER PLANT) + SM 1A (STATIONARY MEDIUM POWER PLANT, ALASKA)

6-14800 ALSO IN CATEGORY 18  
PFLASTERER GR + CALDAROLA L  
SEFOR EXPERIMENTAL PROGRAM PLANNING. VOLUME II. DESCRIPTIONS OF PLANNED TESTS  
GENERAL ELECTRIC, SAN JOSE, ADVANCED PRODUCTS OPERATION  
GFAP-5092 (VOL. 2) +. 116 PAGES, AUGUST 1965

VOL. 1 CONTAINS FUNCTIONAL REQUIREMENTS (FOR MAJOR EQUIPMENT ITEMS), BASED ON INFORMATION IN VOL. 2. VOL. 2 DESCRIBES THE TESTS, ANALYSES, AND REQUIRED MEASUREMENTS. TESTS INCLUDE (1) CRITICAL, (2) STATIC, (3) FREQUENCY RESPONSE, (4) REACTIVITY OSCILLATOR, (5) SUPERCRITICAL TRANSIENTS, AND (6) SUPER-PROMPT-CRITICAL TRANSIENTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*DESIGN CRITERIA + \*REACTOR KINETICS + \*TEST, PLANT RESPONSE + NOISE ANALYSIS + OSCILLATOR, REACTIVITY + REACTOR TRANSIENT + REACTOR, BREEDER + REACTOR, LIQUID METAL COOLED + SEFOR (SOUTHWEST EXP. FAST OXIDE REACTOR)

6-14810  
LEE RR + HARDING RS  
FACTORS AFFECTING REACTIVITY COEFFICIENTS IN THE HWOCR  
COMBUSTION ENGINEERING INC.  
2 PAGES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PA., OCT. 30-NOV. 3, 1966. ANS TRANS. 9(2), PAGES 450-451, (NOVEMBER 1966)

COMPUTATIONS USING THE THERMOS, FORM, AND HAMMER CODES, AND BASED ON AN INFINITE LATTICE, GIVE NEGATIVE FUEL AND POSITIVE COOLANT-TEMPERATURE COEFFICIENTS. THE RESULTING POWER COEFFICIENT IS POSITIVE. THIS INVESTIGATION DEFINES THE PHYSICAL PROCESSES AFFECTING THE COEFFICIENTS, THEIR DEPENDENCE ON DESIGN PARAMETERS, AND THE UNCERTAINTY IN THE COEFFICIENTS DUE TO INADEQUACIES IN THE CALCULATIONAL MODEL AND EXPERIMENTAL DATA.

COOLANT COEFFICIENT + FUEL COEFFICIENT + REACTOR, HEAVY WATER + REACTOR, ORGANIC COOLED

6-14811  
KUTCHER JW + LAUBY JH + PURCELL WL + SCHMID LC + WILLIAMS LD + WORDEN JR  
CRITICAL EXPERIMENTS WITH PUO<sub>2</sub>-UO<sub>2</sub> FUEL AND D2O MODERATOR  
BATTELLE NORTHWEST LABORATORY  
1 PAGE, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PA., OCT. 30-NOV. 3, 1966, ANS TRANS. 9(2), PAGE 448 (NOVEMBER 1966)

MEASUREMENTS IN THE PLUTONIUM RECYCLE CRITICAL FACILITY (PRCF) FOR THE STARTUP OF THE HIGH POWER DENSITY CORE (HPDC) IN THE PLUTONIUM RECYCLE TEST REACTOR. INVESTIGATED WERE - FUEL WORTH, BORON WORTH, MODERATOR-LEVEL COEFFICIENT, TEMPERATURE COEFFICIENT, VOID COEFFICIENT, FLUX DISTRIBUTION, AND ROSSI ALPHA.

\*CRITICALITY EXPERIMENT + \*PRTR (PLUTONIUM RECYCLE TEST REACTOR) + MODERATOR COEFFICIENT + NOISE ANALYSIS + REACTOR, HEAVY WATER + REACTOR, PRESSURE TUBE + ROSSI ALPHA + VOID COEFFICIENT

6-14812  
PONCELET CG  
SOLUTION OF THE LINEARIZED SPACE- AND ENERGY-DEPENDENT REACTOR KINETICS WITH ARBITRARY FEEDBACK  
WESTINGHOUSE ELECTRIC CORPORATION, ATOMIC POWER DIVISION  
1 PAGE, 1 FIGURE, 2 REFERENCES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PA., OCT. 30-NOV. 3, 1966. ANS TRANS. 9(2), PAGE 455 (NOVEMBER 1966)

A SOLUTION OF THE LINEARIZED SPACE- AND ENERGY-DEPENDENT REACTOR-KINETICS EQUATIONS WAS OBTAINED BY TRANSFORMING THE TIME-DEPENDENT EQUATIONS INTO THE LAPLACE DOMAIN. THE FORMULATION ADMITS OF ARBITRARY FEEDBACK EFFECTS AND IS READILY APPLICABLE TO MULTIENERGY,

CATEGORY 6  
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-14812 \*CONTINUED\*

MULTIDIMENSIONAL, MULTIREGION PROBLEMS. THE APPROACH IS SIMILAR TO THAT DESCRIBED BY MACDONALD AND JOHNSON FOR THE CALCULATION OF THE ZERO-POWER SPACE-DEPENDENT REACTOR TRANSFER FUNCTION. A NUMERICAL SOLUTION OF THE DESCRIBING EQUATIONS IN ONE-DIMENSIONAL GEOMETRY WAS OBTAINED AND IS COMPLETELY NONITERATIVE.

\*REACTOR DYNAMICS + \*SPACE DEPENDENT DYNAMICS + \*TRANSFER FUNCTION

6-14814

HSU C + BAILEY PE

STABILITY ANALYSIS OF NONLINEAR REACTOR SYSTEMS.

ARGONNE NATIONAL LABORATORY + PURDUE UNIVERSITY

1 PAGE, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PA., OCT. 30-NOV. 3, 1966. ANS TRANS 9(2), PAGE 457 (NOVEMBER 1966)

THIS PAPER USES LIAPUNOV'S METHODS TO STUDY THE STABILITY OF A REACTOR SYSTEM DESCRIBED BY A SET OF NONLINEAR PARTIAL DIFFERENTIAL EQUATIONS WHICH TAKE INTO ACCOUNT THE COUPLING OF HEAT TRANSFER, HYDRODYNAMICS, AND NEUTRON KINETICS.

\*DYNAMICS, NONLINEAR + \*SPACE DEPENDENT DYNAMICS + LIAPUNOV'S FUNCTION

6-14816

REVILACQUA F + COPPERSMITH WC

RESULTS OF ANALOG COMPUTER STUDIES ON THE TRANSIENT BEHAVIOR OF THE HWOCR WITH A POSITIVE POWER COEFFICIENT COMBUSTION ENGINEERING INC.

2 PAGES, 2 FIGURES, 2 REFERENCES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PA., OCT. 30-NOV. 3, 1966. ANS TRANS, 9(2), PAGE 461-462 (NOVEMBER 1966)

AN ANALOG COMPUTER STUDY WAS PERFORMED USING TWO REACTOR MODELS - (1) A MULTI-NODE MODEL WITH TIME-INDEPENDENT SPATIAL FLUX SHAPE, (2) A SIMPLE POINT MODEL WHOSE CHARACTERISTICS WERE DETERMINED FROM THE MULTI-NODE MODEL. THE STUDY COVERED RAMP CHANGES IN INLET COOLANT TEMPERATURE AND FLOW, STEP AND RAMP CHANGES IN REACTIVITY, COMPARISON OF THE TRANSIENT BEHAVIOR WITH SLIGHT POSITIVE AND SLIGHT NEGATIVE POWER COEFFICIENTS, A START-UP ACCIDENT ANALYSIS, AND THE TRANSIENT BEHAVIOR WITH A SIMPLE ON-OFF CONTROLLER.

\*REACTOR TRANSIENT + COMPUTER, ANALOG + POWER COEFFICIENT + REACTOR, HEAVY WATER + REACTOR, ORGANIC COOLED

6-14817

COPPERSMITH WC + HARDING RS + HENCEY TR

ANALYTICAL METHODS USED IN THE PRELIMINARY ANALYSIS OF THE TRANSIENT BEHAVIOR OF THE HWOCR

COMBUSTION ENGINEERING INC.

1 PAGE, 2 FIGURES, 2 REFERENCES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PA., OCT. 31-NOV. 3, 1966. ANS TRANS. 9(2), PAGE 461 (NOVEMBER 1966)

SPACE-DEPENDENT DYNAMICS USING WIGL2 CODE. 3.5% LOCAL REACTIVITY PENETRATION CAUSES TRANSIENT WHICH IS FAST, COMPARED WITH TIME CONSTANT OF HEAT CONDUCTION FROM FUEL TO COOLANT. FOR XENON OSCILLATION, THIS HEAT CONDUCTION IS SO FAST THAT IT CAN BE REPLACED BY THERMAL EQUILIBRIUM.

\*COMPUTER, DIGITAL + \*HWOCR (HEAVY WATER ORGANIC COOLED REACTOR) + \*SPACE DEPENDENT DYNAMICS + XENON OSCILLATION

6-14818

NEAL LG + PATE NC + FIRSTENBERG A

POWER-VOID TRANSFER-FUNCTION MEASUREMENTS IN SUBCOOLED BOILING

THOMPSON RAMO WOLDRIDGE INC.

2 PAGES, 1 FIGURE, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PA., OCT. 30-NOV. 3, 1966, ANS TRANS. 9(2), PAGE 464

DESCRIPTION OF TRW SUBCOOLED BOILING LOOP. UNDER THE CONDITIONS OF THE EXPERIMENT, VOID RESPONSE WAS LINEAR TO POWER MODULATION. POWER-VOID TRANSFER FUNCTION CALCULATED AND COMPARED WITH EXPERIMENT.

\*HEAT TRANSFER, BOILING + \*TRANSFER FUNCTION

6-14819

KUNZE JF + PINCOCK GD + SIMS FL + WALSH WP

ROSSI-ALPHA MEASUREMENTS ON A MULTIPLE COMPONENT LIFETIME SYSTEM

GENERAL ELECTRIC

2 PAGES, 1 TABLE, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PA., OCT. 30-NOV. 3, 1966. ANS TRANS. 9(2), PAGES 467-468 (NOVEMBER 1966)

ROSSI-ALPHA DECAY MEASUREMENTS ON A NUMBER OF FAST-REACTOR CRITICAL EXPERIMENTS HAVING CORES SURROUNDED RADIALLY BY REFLECTORS OF BE AND OF STAINLESS STEEL WITH THICKNESSES BETWEEN 2 AND 8 IN. THE REACTOR CORES WERE COMPOSED OF HIGHLY ENRICHED URANIUM DILUTED WITH HEAVY

CATEGORY 6  
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-14819 \*CONTINUED\*

REFRACTORY METALS, SOME STAINLESS STEEL, AND OTHERS ALUMINUM. THE LEAST-SQUARES FIT GENERALLY COULD NOT BE FORCED, BY APPROPRIATE INITIAL GUESSES, TO FIT THE FAST AND THE SLOW ALPHAS SIMULTANEOUSLY.

\*REACTOR, FAST + \*REFLECTOR + \*ROSSI ALPHA + BERYLLIUM + STEEL, STAINLESS

6-14820

COATS PL

KINETIC BEHAVIOR OF A REFLECTED FAST-BURST REACTOR

SANDIA CORP.

1 PAGE, 1 FIGURE, 3 REFERENCES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PA., OCT. 30-NOV. 3, 1966. ANS TRANS 9(2), PAGE 468 (NOVEMBER 1966)

COHNS REFLECTED KINETIC MODEL EXTENDED TO A MULTI-ENERGY REPRESENTATION OF THE REFLECTED NEUTRONS WHICH INCLUDED THE TRANSIT AND RESIDENCE TIMES INVOLVED. EXPERIMENTS IN WHICH THE SANDIA PULSED REACTOR WAS SURROUNDED BY VARIOUS POLYETHYLENE AND STEEL REFLECTORS. REFLECTED MODERATED NEUTRONS MANIFEST THEMSELVES AS A DELAYED-NEUTRON GROUP WHOSE MEAN LIFETIME IS ABOUT THE SAME AS THE REACTOR PERIOD. THE PRINCIPAL REFLECTOR TIME CONSTANT FOR THIS INVESTIGATION IS THE TRANSIT TIME OF THE NEUTRONS FROM THE REFLECTOR TO THE FUEL

\*REFLECTOR + PROMPT NEUTRON LIFETIME + REACTOR TRANSIENT + ROSSI ALPHA

6-14821

ALSO IN CATEGORY 9

GODELLE M

SHUT-DOWN OF A HEAVY WATER REACTOR BY A SUDDEN REACTIVITY VARIATION

EUR-548.F + ORNL-TR-383 +. 32 PAGES, FIGURES, TABLES, MAY 1964

THEORETICAL STUDY OF KINETIC BEHAVIOR OF NEUTRON FLUX FOLLOWING STEP REDUCTION IN REACTIVITY. REACTOR ORIGINALLY CRITICAL WITH DELAYED NEUTRONS AT EQUILIBRIUM. EFFECT OF PHOTONEUTRONS FROM HEAVY WATER INCLUDED BY INCREASING NUMBER OF DELAYED NEUTRON GROUPS. TABLES AND CURVES FOR MATHEMATICAL PARAMETERS ARE INCLUDED FOR NEGATIVE REACTIVITIES.

AVAILABILITY - JOHN CRERAR LIBRARY, 35 WEST 33RD. ST., CHICAGO, ILLINOIS 60616

\*REACTOR KINETICS + ANALYTICAL MODEL + DELAYED NEUTRON + HEAVY WATER + MATHEMATICAL STUDY + PROMPT NEUTRON LIFETIME + REACTIVITY EFFECT + REACTIVITY, NEGATIVE

6-14842

HENRY AF + VOTA AV

WIGL2. A PROGRAM FOR THE SOLUTION OF THE ONE-DIMENSIONAL, TWO-GROUP, SPACE-TIME DIFFUSION EQUATIONS ACCOUNTING FOR TEMPERATURE XENON, AND CONTROL FEEDBACK.

BETTS ATOMIC POWER LAB.

WAPD-TM-532 +. 54 PAGES, OCTOBER 1965

WIGL2 IS A ONE-DIMENSIONAL, TWO-GROUP, SPACE-TIME DIFFUSION THEORY PROGRAM WITH ZERO, ONE, OR SIX DELAYED NEUTRON GROUPS. IT TREATS SLAB, CYLINDRICAL AND SPHERICAL GEOMETRIES, NONBOILING HEAT TRANSFER, XENON FEEDBACK AND FEEDBACK EFFECTS DUE TO FUEL AND COOLANT TEMPERATURE, CONTROL ROD MOTION AND CONTROL SYSTEM FEEDBACK BASED ON TOTAL CORE POWER OR OUTLET COOLANT TEMPERATURE. TRANSIENTS MAY BE EXCITED BY PRESCRIBED CHANGES IN INLET COOLANT TEMPERATURE, COOLANT FLOW RATE, OR ROD POSITION. GOVERNING EQUATIONS AND A DESCRIPTION OF THE INPUT AND EDIT FEATURES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*COMPUTER, DIGITAL + \*SPACE DEPENDENT DYNAMICS + CONTROL, GENERAL + DELAYED NEUTRON + HEAT TRANSFER + REACTOR TRANSIENT + TEMPERATURE COEFFICIENT + XENON OSCILLATION

6-14843

ALSO IN CATEGORY 17

GARIGLIANO NUCLEAR POWER STATION RESEARCH PROGRAM. QUARTERLY REPORT NO. 9.

ENTE NAZIONALE PER L ENERGIA ELETTRICA, ROME

EURAE-1697 + EUR-2884 +. 23 PAGES, JULY 1, 1966

OF SAFETY INTEREST ARE - THE BREAKDOWN OF INSULATION IN THREE FAN MEASURING DEVICES AND TRANSFER FUNCTION MEASUREMENTS BY SINUSOIDAL INPUT AND NOISE ANALYSIS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*ITALY + \*REACTOR, BOILING WATER + INSTRUMENTATION, ABNORMAL INDICATION + NOISE ANALYSIS + TRANSFER FUNCTION

6-14945

ALSO IN CATEGORY 9

KERLIN TW



CATEGORY 6  
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-14945 \*CONTINUED\*  
THE PSEUDO-RANDOM BINARY SIGNAL FOR FREQUENCY RESPONSE TESTING  
ORNL-TM-1662 +. 59 PAGES, FIGURES, TABLES, 19 REFERENCES, SEPTEMBER 23, 1966

PSEUDO-RANDOM TEST SIGNALS WERE EXAMINED AS A TOOL FOR THE FREQUENCY-RESPONSE TESTING OF REACTORS. RESULTS OF PSEUDO-RANDOM BINARY TESTS MADE ON THE MOLTEN-SALT REACTOR EXPERIMENT ARE INCLUDED. THESE RESULTS SUPPORT THE THEORETICAL CONCLUSIONS. THE FREQUENCY CHARACTERISTICS OF THE PSEUDO-RANDOM SIGNAL WERE DETERMINED. TWO TYPES OF DATA ANALYSIS WERE INVESTIGATED. ONE IS THE INDIRECT METHOD, WHICH REQUIRES AUTOCORRELATION OF THE INPUT SIGNAL, CROSS-CORRELATION OF INPUT AND OUTPUT SIGNALS, AND SUBSEQUENT FOURIER ANALYSIS. THE OTHER IS THE DIRECT METHOD, INVOLVING FILTERING, SQUARING, CROSS MULTIPLYING, AND TIME AVERAGING OF THE SIGNALS. THE ERROR DUE TO IMPROPER SELECTION OF ANALYSIS FREQUENCIES WAS DETERMINED FOR BOTH METHODS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*MATHEMATICAL STUDY + \*REACTOR DYNAMICS + OSCILLATOR, REACTIVITY + REACTOR STABILITY

6-14946  
FRANKLIN JL + FIELDHOUSE P + BRICKSTOCK A + DAVIES AR  
MEASUREMENTS AND CALCULATIONS OF THE DOPPLER EFFECT ON THE REACTIONS U-238 (N, GAMMA), U-235 (N,F) AND PU-239 (N,F) WITH NEUTRONS IN THE ENERGY RANGE 0-25 KEV  
ATOMIC WEAPONS RESEARCH ESTABLISHMENT, ALDERMASTON  
17 PAGES, 6 FIGURES, 3 TABLES, 16 REFERENCES, JOURNAL OF NUCLEAR ENERGY PARTS A/B 20(11/12), PAGES 921-937, (1966)

SPHERICAL SAMPLES, 2 CM IN DIAMETER, OF U-238, U-235, AND PU-239 WERE IRRADIATED AT TEMPERATURES FROM 170 TO 770 K IN A CENTRAL CAVITY OF A SPHERICALLY SYMMETRICAL SB-BE PHOTONEUTRON SOURCE. THE U-238(N,GAMMA) REACTION RATE WAS MEASURED BY COUNTING THE U-239 ACTIVITY PRODUCED, AND THE (N,F) REACTIONS WERE MONITORED BY COUNTING THE FISSION NEUTRONS EMITTED. THE RESULTS ARE TABULATED.

URANIUM-235 + URANIUM-238

6-15009 ALSO IN CATEGORIES 17 AND 18  
POWER INCREASE DURING LOAD REJECTION TESTS AT PATHFINDER, FEBRUARY 20, 1967  
NORTHERN STATES POWER, MINNEAPOLIS  
1 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(10), PAGES 25 (MARCH 6, 1967) DOCKET NO. 50-130

LOAD-REJECTION TESTS AT 20, 50, AND 70% POWER WERE WITHOUT INCIDENT, BUT AT 90% A HIGH-FLUX SCRAM OCCURRED. AT 85%, THE POWER INCREASED TO ABOUT 110% IN ABOUT 0.6 SEC AND LEVELED OFF. THE INCREASE WAS CAUSED BY TURBINE OVERSPEED, WITH THE INCREASED FREQUENCY INCREASING THE RECIRCULATION FLOW TO ADD \$0.25 BUT FASTER THAN THE \$0.12/SEC TECHNICAL-SPECIFICATION LIMIT. A LOAD-DUMP ANTICIPATOR CLOSES THROTTLE VALVES TO HOLD TURBINE AT STATION LOAD.

\*ACCIDENT, REACTIVITY + \*FLOW, RECIRCULATION + \*INCIDENT, ACTUAL, GENERAL +  
\*REACTOR STARTUP EXPERIENCE, INITIAL + ACCIDENT, LOAD REJECTION + PATHFINDER + REACTOR, SUPERHEAT + TEST, SYSTEM OPERABILITY

6-15014 ALSO IN CATEGORIES 5 AND 8  
GENCO JM + RAINES GE  
METAL-WATER REACTIONS DURING A LOSS-OF-COOLANT ACCIDENT. THE ZIRCONIUM-STEAM REACTION  
BATTELLE MEMORIAL INSTITUTE  
2 PAGES, 1 FIGURE, 4 REFERENCES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PA., OCT. 30 - NOV. 3, 1966, ANS TRANS. 9(2), PAGES 555-556

A CALCULATION TECHNIQUE FOR EXTENT OF A METAL-WATER REACTION IN A REACTOR CORE DURING LOSS-OF-COOLANT ACCIDENT. RATE-LIMITING PHENOMENA - GAS-PHASE DIFFUSION OF STEAM AND SOLID-STATE DIFFUSION OF VARIOUS IONIC SPECIES THROUGH THE ZIRCONIUM DIOXIDE PRODUCT INTO THE BASE METAL. ASSUMPTION IS THAT THE STEAM-HYDROGEN MIXTURE BEHAVES AS AN INCOMPRESSIBLE FLUID.

\*ACCIDENT, LOSS OF COOLANT + \*COMPUTER, DIGITAL + \*METAL WATER REACTION + ZIRCONIUM

6-15033 ALSO IN CATEGORIES 14 AND 7  
TECHNICAL PUBLICATIONS OF BATTELLE-NORTHWEST DURING 1965  
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON, PACIFIC NORTHWEST LABORATORY  
BNWL-21P +. 52 PAGES, MARCH 1966

CATEGORIES ARE BIOLOGY AND MEDICINE, CHEMISTRY AND CHEMICAL ENGINEERING, EARTH AND ATMOSPHERIC SCIENCES, ELECTRONICS AND COMPUTER TECHNOLOGY, ENGINEERING AND EQUIPMENT, HEALTH AND SAFETY, METALS AND CERAMICS AND MATERIALS, PHYSICS, RADIATION EFFECTS, REACTOR TECHNOLOGY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*BIBLIOGRAPHY + CRITICALITY SAFETY + DOSE + ENVIRONMENTAL CONDITION + GRAPHITE + INSTRUMENTATION, GENERAL +

CATEGORY 6  
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-15033 \*CONTINUED\*  
RADIATION EFFECT + REACTOR COOLANT + REACTOR, FAST + REACTOR, GENERAL + ROVER PROGRAM +  
WASTE TREATMENT, GENERAL

6-15044  
BAYER A + SEUFERT H + STEGEMANN D  
SPECIAL EXPERIMENTAL TECHNIQUES DEVELOPED RECENTLY FOR APPLICATION IN FAST ZERO POWER ASSEMBLIES  
KERNFORSCHUNGSZENTRUM, KARLSRUHE, WEST GERMANY  
CONF-661019-9 + KFK-474 +. 41 PAGES, 11 FIGURES, 3 TABLES, AUGUST, 1966, FROM INTERNATIONAL CONFERENCE ON  
FAST CRITICAL EXPERIMENTS AND THEIR ANALYSIS, ARGONNE, ILLINOIS, OCTOBER 10-13, 1966

OF INDIRECT SAFETY INTEREST IS A METHOD TO DETERMINE THE PROMPT-NEUTRON DECAY CONSTANT, THE  
REACTIVITY, AND THE ABSOLUTE REACTOR POWER BY THE NEUTRON NOISE. THE PROBABILITY  
DISTRIBUTION OF DETECTOR COUNTS IN GIVEN TIME INTERVALS IS MEASURED BY A  
PROBABILITY-DISTRIBUTION ANALYZER. THE COMPLETE PROBABILITY DISTRIBUTION OF INTEREST CAN BE  
MEASURED AT ONCE. EXPERIMENTAL SET-UP OF THE ANALYZER IS DESCRIBED IN DETAIL. DERIVATION OF  
REACTOR PARAMETERS FROM THE MEASURED DISTRIBUTIONS. APPLICABILITY OF THIS TECHNIQUE TO  
PLUTONIUM-FUELLED FAST REACTOR ASSEMBLIES IS MENTIONED.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM,  
WISCONSIN 54669

\*GERMANY + \*NOISE ANALYSIS + \*REACTOR, FAST + PROMPT NEUTRON LIFETIME + REACTIVITY, EXCESS

6-15067 ALSO IN CATEGORY 9  
MCGAUGH JD  
THE EFFECT OF XENON SPATIAL VARIATIONS AND THE MODERATOR COEFFICIENT ON CORE STABILITY  
WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PENNSYLVANIA  
WCAP-2983 +. 52 PAGES, FIGURES, REFERENCES, AUGUST 1966

THE QUESTION OF SPATIAL INSTABILITIES IN LARGE PRESSURIZED-WATER REACTORS IS CONSIDERED. BOTH  
XENON SPATIAL OSCILLATIONS AND INSTABILITIES DUE TO A POSITIVE MODERATOR TEMPERATURE ARE  
CONSIDERED. IT IS CONCLUDED THAT THE POSITIVE MODERATOR COEFFICIENT DOES NOT GIVE RISE TO  
CORE INSTABILITIES. A CONTROL STRATEGY IS OUTLINED WHICH INCREASES CORE STABILITY AGAINST  
XENON-FLUX OSCILLATIONS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*MODERATOR COEFFICIENT + \*REACTOR, PRESSURIZED WATER + \*XENON OSCILLATION + REACTOR CONTROL +  
REACTOR STABILITY + SPACE DEPENDENT DYNAMICS

6-15069  
SAVERY CW  
TAP. A FORTRAN IV PROGRAM FOR THE TRANSIENT ANALYSIS OF THE HTGR POWERPLANT PERFORMANCE  
GENERAL DYNAMICS CORP., SAN DIEGO, GENERAL ATOMICS DIV.  
GAMD-7248 +. 219 PAGES, FIGURES, TABLES, REFERENCES, OCTOBER 12, 1966

DIGITAL COMPUTER PROGRAM, TAP. A SPECIAL-PURPOSE PROGRAM IN FORTRAN IV FOR THE TRANSIENT  
ANALYSIS OF THE HTGR POWERPLANT PERFORMANCE. CODE UTILIZED FOR VALIDATION OF POWERPLANT  
PROCESS CONTROL SCHEMES, GENERATION OF TEMPERATURE, FLOW AND PRESSURE HISTORIES FOR DESIGN  
AND SAFEGUARDS ENGINEERING, PROVISION OF TRANSIENT INFORMATION FOR USE IN EQUIPMENT SELECTION  
AND PLANT OPERATION STRATEGY. ABOUT 30 DIFFERENT TRANSIENT PROBLEMS INCLUDING BOTH NORMAL  
AND ABNORMAL OPERATING CONDITIONS HAVE BEEN SIMULATED TO DATE WITH TAP.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*HTGR (HIGH TEMPERATURE GAS COOLED REACTOR) + \*REACTOR TRANSIENT + COMPUTER, DIGITAL

6-15071  
CALDAROLA L + SCHLECHTENDAHL EG  
REACTOR TEMPERATURE TRANSIENTS WITH SPATIAL VARIABLES - PART I- RADIAL ANALYSIS  
KERNFORSCHUNGSZENTRUM, KARLSRUHE  
KRK-FRI-43 + EURFNR-87F + EUR-2403 +. 60 PAGES, 27 FIGURES, 1 TABLE, APRIL 1965

RADIAL ANALYSIS IN WHICH THE HEAT PROPAGATION INSIDE THE FUEL ELEMENT IS STUDIED. AXIAL  
ANALYSIS - THE RESULTS COMING FROM THE FIRST PART ARE INCORPORATED IN THE HEAT-BALANCE  
EQUATION OF THE COOLANT. THEN THE COMPLETE SOLUTION, INCLUDING THE HEAT TRANSPORT ALONG THE  
CHANNEL, IS ANALYZED. NUMERICAL EXAMPLES WITH REFERENCE TO SEFOR AND POWER REACTORS.

AVAILABILITY - EUROPEAN ATOMIC ENERGY COMMUNITY PRESSES ACADEMIQUES EUROPEENES, 98 CHAUSSEE DE CHARLEROI,  
BRUSSELS 6, BELGIUM

\*REACTOR TRANSIENT + \*SEFOR (SOUTHWEST EXP. FAST OXIDE REACTOR) + \*THERMAL ANALYSIS + REACTOR, BREEDER +  
REACTOR, FAST

CATEGORY 6  
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-15072  
FABREGA S  
EXPERIMENTAL STUDY OF THE HYDRODYNAMIC INSTABILITIES OCCURRING IN BOILING-WATER REACTORS  
COMMISSARIAT A L'ENERGIE ATOMIQUE, GRENOBLE, FRANCE  
CEA-R-2884 +. 120 PAGES, FIGURES, TABLES, OCTOBER 15, 1964

EXPERIMENTAL OUT-OF-PILE LOOP STUDY OF THE HYDRODYNAMIC OSCILLATIONS IN BOILING-WATER REACTORS  
AT ATMOSPHERIC PRESSURE AND AT 8 ATM. CHANNELS HEATED ELECTRICALLY BY A CONSTANT AND UNIFORM  
SPECIFIED CURRENT

AVAILABILITY - MICROCARD EDITIONS, ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN, 54669

\*OUT OF PILE LOOPS AND EXPERIMENTS + \*REACTOR, BOILING WATER + FRANCE + HYDRAULIC EXPERIMENT +  
REACTOR STABILITY

6-15073  
FICHER FA  
INTERPRETATION OF DOPPLER COEFFICIENT MEASUREMENTS IN FAST CRITICAL ASSEMBLIES  
KERNFORSCHUNGSZENTRUM, KARLSRUHE, GERMANY  
KFK-473 +. 19 PAGES, 2 FIGURES, 1 TABLE, 8 REFERENCES, OCT. 1966

INTERPRETATIONS OF DOPPLER EXPERIMENTS IN WHICH REACTIVITY CHANGE DUE TO HEATING A SAMPLE IN A  
FAST CENTRAL ASSEMBLY IS MEASURED. SAMPLE IS SMALLER THAN OR COMPARABLE TO ONE MEAN FREE  
PATH AND HAS A COMPOSITION DIFFERENT FROM THAT OF THE CORE. FORMULAS BASED ON INTEGRAL  
TRANSPORT THEORY AND PERTURBATION THEORY. A SPECIAL CASE DISCUSSED.

AVAILABILITY - GESELLSCHAFT FUR KERNFORSCHUNG MBH, 75 KARLSRUHE, POSTFACH 947, GERMANY

\*DOPPLER COEFFICIENT + \*TEST, PHYSICS + REACTOR, FAST + TRANSPORT THEORY

6-15074  
CALDAROLA L + TAVOSANIS M  
DESIGN CRITERIA AND PRELIMINARY CALCULATIONS FOR SEFOR SECOND AND THIRD CORES  
KERNFORSCHUNGSZENTRUM, KARLSRUHE, GERMANY  
KFK-467 +. 39 PAGES, 30 FIGURES, JULY 1966

THE SEFOR SECOND CORE WILL MEASURE THE DOPPLER COEFFICIENT AT HIGH FUEL TEMPERATURES WITH A PU  
ENRICHMENT SIMILAR TO THAT OF A POWER REACTOR AND WITH A NEUTRON SPECTRUM HARDER THAN THAT OF  
THE FIRST CORE. THE POSSIBLY ENVISAGED SEFOR THIRD CORE WILL TEST FUEL ELEMENTS AND FUEL  
ASSEMBLIES AT DESIGN CONDITIONS CHOSEN FOR THE 1000-MW SODIUM-COOLED REFERENCE REACTOR. THE  
THIRD CORE HAS A TEST ZONE AND A DRIVER ZONE. THE DRIVER ZONE WOULD USE THE FUEL RODS OF THE  
SECOND CORE OR FUEL RODS DESIGNED ONLY WITH THE PURPOSE TO FILL THE DRIVER ZONE.

AVAILABILITY - GESELLSCHAFT FUR KERNFORSCHUNG MBH, 75 KARLSRUHE, POSTFACH 947, GERMANY

\*SEFOR (SOUTHWEST EXP. FAST OXIDE REACTOR) + DOPPLER COEFFICIENT + PLUTONIUM + REACTOR, BREEDER +  
REACTOR, FAST + THERMAL ANALYSIS

6-15090  
LITTLE WW + HARDIE RW + MAAS LL  
MULTIGROUP ANALYSIS OF SELECTED FAST CRITICAL ASSEMBLIES  
BATTELLE NORTHWEST  
BNWL-347 +. 29 PAGES, TABLES, 15 REFERENCES, DECEMBER 1966

BY USE OF A MODIFIED VERSION OF THE RUSSIAN DATA COMPILATION, REACTIVITY COEFFICIENTS (AND  
OTHER PROPERTIES) ARE CALCULATED AND COMPARED WITH EXPERIMENTS FOR SOFT-SPECTRUM CRITICAL  
ASSEMBLIES WITH PLUTONIUM FUEL SUCH AS THOSE APPLICABLE TO THE FTR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*REACTIVITY COEFFICIENT + \*REACTOR, FAST + \*REACTOR, TEST + COMPUTER, DIGITAL +  
CRITICAL ASSEMBLY FACILITY + MODERATOR + PLUTONIUM + URANIUM + ZPR 3 (ANL ZERO POWER REACTOR)

6-15091 ALSO IN CATEGORIES 5 AND 8  
SHERER DG + MEINHARDT WG  
AN ANALYSIS OF FAST REACTOR TRANSIENT RESPONSE AND SAFETY IN SELECTED ACCIDENTS  
GENERAL ELECTRIC, SAN JOSE  
GEAP-4787 +. 67 PAGES, FIGURES, TABLES, 26 REFERENCES, JUNE 1966

THE DOPPLER COEFFICIENT IS THE PRIMARY MEANS OF MITIGATING A REACTIVITY INSERTION ACCIDENT.  
THE NEGATIVE RADIAL CORE EXPANSION COEFFICIENT IS THE DOMINANT FACTOR IN MITIGATING A LOSS OF  
FLOW ACCIDENT. THE REACTIVITY EFFECTS OF SODIUM THERMAL EXPANSION CAN BE MADE SMALL. IF A  
SCRAM DOES NOT TERMINATE A REACTIVITY INSERTION ACCIDENT, FAILURES ARE WORST AT THE HIGHEST

CATEGORY 6  
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-15091 \*CONTINUED\*

OPERATING TEMPERATURES. DURING A LOSS-OF-FLOW ACCIDENT WITHOUT SCRAM, FUEL FAILURE DUE TO WEAKENED CLADDING IS LIKELY. AMONG THE FACTORS TO BE CONSIDERED IN ESTABLISHING RADIAL POWER PROFILE IS THE PATTERN OF FAILURE AND SODIUM VOIDING THAT WILL RESULT IF A SUFFICIENTLY SEVERE ACCIDENT IS POSTULATED. IT MAY BE DESIRABLE TO MAINTAIN SOME COOLANT FLOW DURING REFUELING.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*ACCIDENT ANALYSIS + \*REACTOR, FAST + ACCIDENT, LOSS OF FLOW + ACCIDENT, REACTIVITY + CONTROL, GENERAL + DOPPLER COEFFICIENT + FAILURE, CLADDING + FAILURE, FUEL ELEMENT + REACTIVITY EFFECT, EXPANSION + SODIUM COEFFICIENT

6-15093

SWANSON CD  
RECENT PRTR KINETICS TESTS USING RANDOM SIGNALS  
HANFORD ATOMIC PRODUCTS OPERATION  
HW-R1-211 +. 8 PAGES, 4 FIGURES, MARCH 5, 1964

PRTR MODERATOR-LEVEL FLUCTUATIONS CAN BE USED AS A TEST SIGNAL FOR OBTAINING REACTOR TRANSFER FUNCTION AND KINETICS DATA, THOUGH IN THE TEST DESCRIBED NO ACCURATE ROSSI ALPHA DATA WERE OBTAINED. THE MANUAL OPERATING CONDITIONS EXCITE THE MODERATOR LEVEL IN THE FREQUENCY RANGE FROM 0.1 TO 10 CPS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*PRTR (PLUTONIUM RECYCLE TEST REACTOR) + \*TRANSFER FUNCTION + MODERATOR + REACTOR, HEAVY WATER + REACTOR, PRESSURE TURE + ROSSI ALPHA

6-15094

ALSO IN CATEGORY 5

ROSE RP + HANSON GH + JAYNE GA  
STUDIES OF ACOUSTIC EFFECTS IN REACTOR SYSTEM BLOWDOWN  
PHILLIPS PETROLEUM CO., IDAHO  
2 PAGES, 1 FIGURE, 9 REFERENCES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PA., OCT. 30 - NOV. 3, 1966, ANS TRANS. 9(2), PAGES 558-559

A PRESSURIZED-WATER REACTOR SYSTEM CAN EXPERIENCE RAPID DECOMPRESSION AFTER A BREAK IN THE PRIMARY LOOP. TREATMENT OF RAPID BLOWDOWN EFFECTS BY BURST PROGRAM. WAVE REFLECTION AT AREA TRANSITION. CYCLIC NATURE OF PREDICTED AND MEASURED PRESSURE BEHAVIOR. APPLICATIONS TO LOFT WITH THIS CYCLIC CORE HYDRAULIC LOADING INDICATE THAT SEVERE DESIGN REQUIREMENTS CAN BE POSED FOR THE GRID AND OTHER CORE SUPPORT STRUCTURES.

\*ACCIDENT, LOSS OF COOLANT + COMPUTER, DIGITAL + HYDRAULIC ANALYSIS + LOFT (LOSS OF FLUID TEST) + REACTOR, PRESSURIZED WATER

6-15097

XENON STABILITY OF A SLAB REACTOR WITH AN ABSORBING LAYER  
5 PAGES, 4 FIGURES, 9 REFERENCES, JOURNAL OF NUCLEAR ENERGY 21(2), PAGES 211-215, (FEBRUARY 1967)

THE EFFECT OF AN ABSORBER ON THE XENON STABILITY OF A REACTOR WAS INVESTIGATED BY THE METHOD OF RANDALL AND ST. JOHN.

\*XENON OSCILLATION + REACTOR STABILITY

6-15098

WOOD J + WILLIAMS MM  
THE VALIDITY OF THE BUCKLING CONCEPT AND THE IMPORTANCE OF SPATIAL TRANSIENTS IN THE PULSED NEUTRON EXPERIMENT  
UNIVERSITY OF BIRMINGHAM + UNIVERSITY OF LONDON, ENGLAND  
18 PAGES, 17 FIGURES, 4 TABLES, 14 REFERENCES, JOURNAL OF NUCLEAR ENERGY 21(2), PAGES 113-130, (FEBRUARY 1967)

BY SOLVING NUMERICALLY THE EXACT INTEGRAL TRANSPORT EQUATION FOR A PULSED SLAB OF PURE MODERATOR, AND THE CORRESPONDING ASYMPTOTIC EQUATION, IT HAS BEEN POSSIBLE TO UNIQUELY RELATE THE BUCKLING OF THE SYSTEM TO ITS PHYSICAL SIZE. IN ADDITION, THE SPATIAL TRANSIENTS, EXCITED BY THE BOUNDARY, ARE FOUND TO HAVE A MARKED EFFECT ON THE FLUX CURVATURE. CRITERIA ARE GIVEN FOR VARIOUS MODERATORS (GRAPHITE, BERYLLIUM, WATER) WHICH WILL ENABLE THE EXPERIMENTALIST TO JUDGE THE IMPORTANCE OF DROPPING POINTS NEAR THE BOUNDARY OF THE SYSTEM WHEN ATTEMPTING TO FIT A COSINE TO EXPERIMENTAL DATA.

\*PULSED NEUTRON TECHNIQUE

6-15099

CATEGORY 6  
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-15099 \*CONTINUED\*  
 GORYACHENKO VD  
 STABILITY OF A NUCLEAR POWER PLANT WITH CIRCULATING FUEL  
 2 PAGES, ATOMNAYA ENERGIYA 21(1) PAGE 3 (1966) ABSTRACT FROM JOURNAL OF NUCLEAR ENERGY 21(2), PAGES 217 AND 218, (FEBRUARY 1967)

A POWER REACTOR WITH INCOMPRESSIBLE CIRCULATING FUEL IS DISCUSSED. THE CORE IS REPRESENTED AS A SYSTEM WITH LUMPED PARAMETERS, AND THE HEAT EXCHANGER AS A LINK WITH DISTRIBUTED PARAMETERS. IT IS SHOWN THAT SUCH A SYSTEM IS STABLE IN THE SMALL IN THE STEADY STATE. IN ADDITION, STABILITY FOR ANY DEVIATION FROM THE EQUILIBRIUM STATE IS DEMONSTRATED FOR THE CASE WHERE THE CONTRIBUTIONS FROM DELAYED NEUTRONS IS SMALL.

\*REACTOR STABILITY + \*REACTOR, CIRCULATING FUEL

6-15100  
 PRIKKEP NN  
 INVERSE SOLUTION OF THE KINETIC EQUATIONS FOR A REACTOR  
 2 PAGES, ATOMNAYA ENERGIYA 21(1), PAGE 9, (1966) ABSTRACT FROM JOURNAL OF NUCLEAR ENERGY 21(2), PAGES 217 AND 218. (FEBRUARY 1967)

THE KINETIC EQUATIONS ARE USED TO DERIVE A FUNCTIONAL THAT DEFINES THE VARIATION OF THE MULTIPLICATION FACTOR IN TERMS OF A KNOWN CHANGE IN NEUTRON DENSITY, AND ALSO THE LAW TO BE USED FOR THAT FACTOR IN ORDER TO VARY THE NEUTRON DENSITY IN A SPECIFIED WAY.

\*REACTOR DYNAMICS

6-15101  
 SAFRONOV EY + BRISKMAN BA + BONDAREV VD + SHISHOV VS  
 THERMAL DEFORMATION OF FUEL RODS  
 2 PAGES, ATOMNAYA ENERGIYA 21(1), PAGE 22, (1966) ABSTRACT FROM JOURNAL OF NUCLEAR ENERGY 21(2), PAGES 217 AND 218, (FEBRUARY 1967)

TEMPERATURE GRADIENTS ARE CALCULATED FOR CANS OF CASSETTE TYPE, THERE BEING A RADIAL GRADIENT IN THE NEUTRON FLUX. THE THERMAL DISTORTION OF THE CANS WAS MEASURED FOR THE WORKING TEMPERATURE RANGE.

\*FUEL ELEMENT BOWING + THERMAL MECHANICAL EFFECT

6-15102  
 BULAVIN PE + TOSHINSKII GI  
 CALCULATION OF THE DOPPLER TEMPERATURE COEFFICIENT OF REACTIVITY AT ISOLATED RESONANCES FOR A HOMOGENEOUS MEDIUM  
 1 PAGE, ATOMNAYA ENERGIYA 21(1), PAGE 54 (1966) FROM JOURNAL OF NUCLEAR ENERGY 21(2), PAGE 217, (FEBRUARY 1967)

ABSTRACT IS NOT AVAILABLE

\*DOPPLER COEFFICIENT

6-15105  
 GORYACHENKO VD  
 STABILITY OF A REACTOR WITH CIRCULATING FUEL IN THE ABSENCE OF DELAYED NEUTRONS  
 2 PAGES, ATOMNAYA ENERGIYA 21(4), PAGES 267, (1966), ABSTRACT FROM JOURNAL OF NUCLEAR ENERGY 21(2), PAGES 222-223, (FEBRUARY 1967)

THE STABILITY IS EXAMINED, NEGLECTING THE DELAYED NEUTRONS BUT WITH ALLOWANCE FOR THE SPATIAL DISTRIBUTION OF THE VARIABLES ALONG THE REACTOR CORE. THE CONDITIONS FOR STABILITY IN THE SMALL ARE DERIVED. IT IS SHOWN THAT A SIMPLIFIED DESCRIPTION OF THE DELAYED NEUTRONS INDICATES A FAVOURABLE EFFECT ON THE STABILITY. IT IS SHOWN THAT WELTONS CRITERION FAILS TO SOLVE THE PROBLEM OF STABILITY FOR A REACTOR WITH DISTRIBUTED PARAMETERS.

\*REACTOR STABILITY + \*REACTOR, CIRCULATING FUEL

6-15107  
 MITENKOV FM + BOYARINOV VS  
 APPROXIMATE DESCRIPTION OF REACTOR KINETICS IN STABILITY EXAMINATION  
 1 PAGE, ATOMNAYA ENERGIYA 21(4), PAGE 293, (1966) FROM JOURNAL OF NUCLEAR ENERGY 21(2), PAGE 222, (FEBRUARY 1967)

ABSTRACT IS NOT AVAILABLE.

\*REACTOR DYNAMICS + REACTOR STABILITY

CATEGORY 6  
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-15123 ALSO IN CATEGORY 9  
WIBERG DM  
CONTROLLABILITY OF THE SPATIAL FLUX SHAPE  
UNIVERSITY OF CALIFORNIA, LOS ANGELES  
5 PAGES, NUCLEAR SCIENCE AND ENGINEERING, 27(3), PAGES 600-604, (MARCH 1967)

CONTROLLABILITY OF A FINITE NUMBER OF SPATIAL MODE SHAPES. EXTENSIONS TO THE CASE OF AN INFINITE NUMBER OF MODES. IT IS POSSIBLE TO CONTROL A GIVEN NUMBER OF UNSTABLE MODES WITH A SMALLER NUMBER OF INDEPENDENT CONTROLS. A PRACTICAL RESTRICTION IN CASE OF PHYSICAL SYSTEMS IN WHICH THE OBSERVABILITY OF THE MODE SHAPES IS HINDERED BY NOISE. FINALLY, APPLICATIONS ARE MADE TO AN EXAMPLE OF YASINSKY AND KAPLAN.

\*REACTOR CONTROL + \*SPACE DEPENDENT DYNAMICS

6-15124  
MACDONALD RJ  
THE EFFECT OF ENRICHMENT AND MODERATING MATERIALS ON THE SODIUM LOSS AND DOPPLER COEFFICIENTS OF FAST REACTORS  
ATOMIC ENERGY ESTABLISHMENT, WINFRITH, ENGLAND  
AEEW-M-657 +. 34 PAGES, 11 FIGURES, 9 TABLES, 16 REFERENCES, MAY 1966

IN SAFETY STUDIES OF LARGE FAST REACTORS TWO IMPORTANT FACTORS ARE THE REACTIVITY CHANGES ARISING FROM THE DOPPLER EFFECT AND FROM LOSS OF PRIMARY COOLANT. THIS MEMORANDUM EXAMINES THE EFFECT OF ENRICHMENT AND THE ADDITION OF MODERATING MATERIAL ON THESE REACTIVITY CHANGES. IT IS CONCLUDED THAT THE SODIUM-LOSS REACTIVITY CHANGE DEPENDS MAINLY ON THE FUEL ENRICHMENT, THOUGH THE ADDITION OF MODERATOR DOES MAKE THE REACTIVITY CHANGE LESS POSITIVE. THE DOPPLER COEFFICIENT, ON THE OTHER HAND, IS INFLUENCED MORE BY THE ADDITION OF MODERATOR THAN BY CHANGES IN ENRICHMENT.

\*ACCIDENT ANALYSIS + \*REACTOR, FAST + \*REACTOR, LARGE + ACCIDENT, LOSS OF COOLANT + DOPPLER EFFECT + SODIUM

6-15127  
KOZIK B  
A STATISTICAL BASIS FOR THE APPLICATION OF A DYNAMIC MODEL TO STATIONARY NUCLEAR REACTORS  
8 PAGES, 7 REFERENCES, JOURNAL OF NUCLEAR ENERGY, 21(1), PAGES 73-80, (JANUARY 1967) TRANSLATED FROM ATOMNAYA ENERGIYA 20, PAGE 21(1966)

ON THE BASIS OF A STATISTICAL THEORY OF THE MULTIPLICATION PROCESS, AN EXACT EXPRESSION IS OBTAINED FOR THE SPECTRAL DENSITY OF THE NOISE LEVEL IN STATIONARY REACTORS, IN THE FORM OF THE PRODUCT OF THE SQUARE OF THE MODULUS OF THE TRANSFER FUNCTION OF THE REACTOR AND A FACTOR WEAKLY DEPENDENT ON FREQUENCY.

\*NOISE ANALYSIS + TRANSFER FUNCTION

6-15128  
MOGILNER AI + KRIVELEV GP  
THE INTEGRAL METHOD OF MEASURING THE QUANTITY  
4 PAGES, 6 REFERENCES, JOURNAL OF NUCLEAR ENERGY, 21(1), PAGES 108-111, (JANUARY 1967) TRANSLATED FROM ATOMNAYA ENERGIYA 20, PAGE 157 (1966)

WE DESCRIBE HERE A METHOD OF DETERMINING ALPHA, KNOWN AS THE INTEGRAL METHOD, WHICH IS BASED ON A MEASUREMENT OF THE DISPERSION OF THE FLUCTUATIONS OF THE ION CURRENT FROM AN IONIZATION CHAMBER WHICH HAVE BEEN PASSED BY A WIDE-BAND FILTER WITH A VARIABLE BAND-PASS. THE EQUIPMENT REQUIRED TO APPLY THIS METHOD IS VERY SIMPLE.

\*NOISE ANALYSIS + ROSSI ALPHA

6-15136  
RESEARCH PROGRAM ON THE STEADY STATE AND DYNAMIC BEHAVIOR OF A BOILING WATER REACTOR. QUARTERLY PROGRESS REPORT 22  
TECHNISCHE HOGESCHOOL, EINDHOVEN, NETHERLANDS  
EURAE-1745 + EUR-3305.E +. 22 PAGES, 6 FIGURES, FEBRUARY 1966

THIS IS ONE OF A SERIES OF PROGRESS REPORTS DEALING WITH MOCK-UPS OF BOILING WATER REACTORS AND STUDY OF STABILITY OF SUCH REACTORS. THIS REPORT PARTICULARLY REFERS TO THE LACK OF INFLUENCE OF HEAT CAPACITY ON THE STEADY STATE OR THRESHOLD OF INSTABILITY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*OUT OF PILE LOOPS AND EXPERIMENTS + \*REACTOR STABILITY + \*REACTOR, BOILING WATER

CATEGORY 6  
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-15137  
FOCACACCIA G + MARSEGUERRA M  
TEMPERATURE COEFFICIENT MEASUREMENTS OF THE RC-1 REACTOR (TRIGA)  
COMITATO NAZIONALE PER L ENERGIA NUCLEARE, ROME  
RT/FI(65)40 +. 31 PAGES, OCTOBER 1965

MEASUREMENT OF THE TEMPERATURE COEFFICIENT OF THE TRIGA-TYPE RC-1 REACTOR AND COMPARISON WITH  
GENERAL ATOMICS MEASUREMENT.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM,  
WISCONSIN 54669

\*TEMPERATURE COEFFICIENT + \*TRIGA (TRAINING REACTOR, ISOTOPES, G.A.) + ITALY

6-15138  
BARLEON L + BAYER A + BRUCKNER C  
EVALUATION OF REACTOR PHYSICS EXPERIMENTS ON THE COUPLED FAST-THERMAL ARGONAUT REACTOR STARK  
KERNFORSCHUNGSZENTRUM, KARLSRUHE, GERMANY  
KFK-482 +. 50 PAGES, 18 FIGURES, 9 TABLES, SEPTEMBER 1966

IN THE COUPLED ZERO-POWER REACTOR STARK, REACTIVITY WORTHS, PROMPT NEUTRON LIFETIME, AND OTHER  
PARAMETERS WERE MEASURED.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM,  
WISCONSIN 54669

\*REACTOR, HALF FAST + DANGER COEFFICIENT + GERMANY + PROMPT NEUTRON LIFETIME

6-15141  
CASADEI G + FUCCI C + LEPRONI V + PAPA G + SCAFER R  
SCR PROGRAM IDM-7094 CODE FOR THE CALCULATION OF NUCLEAR REACTOR FAST POWER TRANSIENTS  
COMITATO NAZIONALE PER L ENERGIA NUCLEARE, ROME, ITALY  
PT-FIMA-(66)-4 +. 33 PAGES, 1966

FAST POWER EXCURSIONS DUE TO AN INCIDENT IN WATER-MODERATED PLATE-TYPE REACTORS WITHOUT  
INTERVENTION OF THE SAFETY SYSTEM. STEP, OR LINEAR OR PARABOLIC RAMP REACTIVITY INSERTION.  
COMPENSATED REACTIVITY DUE TO TEMPERATURE OF THE METAL OR MODERATOR, AND VOID FORMATION BY  
RADIOLYSIS OR BOILING. SPACE-INDEPENDENT, ONE-GROUP THEORY IN DELAYED-NEUTRON GROUPS.  
HEAT-TRANSFER CALCULATIONS IN AVERAGE CHANNEL. TEMPERATURE IN HOT CHANNEL COMPUTED FROM  
AVERAGE CHANNEL AND PEAK-TO-AVERAGE RATIO CALCULATION OF DYNAMIC PRESSURE

AVAILABILITY - MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669

\*REACTOR TRANSIENT + CORE, PLATE TYPE + FUEL EXPANSION COEFFICIENT + HEAT TRANSFER ANALYSIS +  
MODERATOR COEFFICIENT + VOID COEFFICIENT

6-15142  
FARINELLI U + GANDINI A + SALVATORES M + SENA G  
SEMIEMPIRICAL FORMULATION OF THE DOPPLER COEFFICIENT IN FAST REACTORS  
COMITATO NAZIONALE ENERGIA NUCLEARE, ITALY  
6 PAGES, ENERGIA NUCLEARE 13(8), PAGES 409-414 (AUGUST 1966)

DETAILED PARAMETRIC STUDY OF THE DOPPLER COEFFICIENT IN DILUTE, FAST REACTORS FUELED WITH  
PLUTONIUM OXIDE. FROM SEMI-EMPIRICAL FORMULATION OF THE DOPPLER COEFFICIENT, THE COEFFICIENT  
IS OBTAINED IN RELATION TO SODIUM VOID FRACTION AND THE CORE DIMENSIONS.

\*DOPPLER EFFECT + PLUTONIUM OXIDE + REACTOR, FAST + SODIUM

6-15143  
FUROLA T  
DYNAMICS OF THE HALDEN BOILING WATER REACTOR  
INSTITUTT FOR ATOMENERGI, HALDEN, NORWAY  
HPR-66 +. 57 PAGES, FIGURES, TABLES, REFERENCES, DECEMBER 1965

HALDEN BOILING WATER REACTOR AND ITS RESEARCH PROGRAM 1960-1964, PARTICULARLY THE DYNAMIC  
BEHAVIOR OF SECOND CORE. LOW-FREQUENCY INSTABILITY. INTEGRAL CALCULATION OF VOID AND VOID  
REACTIVITY FOR SPACE AND TIME DEPENDENT STEAM GENERATION, VELOCITY AND DENSITY, AND FOR  
SPACE-DEPENDENT REACTIVITY COEFFICIENTS. COOLANT TEMPERATURE AND ITS EFFECT ON REACTIVITY.  
PRESSURE EFFECTS. NONLINEARITIES DUE TO THE MODERATOR BEING SLIGHTLY SUBCOOLED. COMPARISON  
OF THE THEORY AND EXPERIMENTS.

AVAILABILITY - MICROCARD EDITIONS INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669

DYNAMICS, NONLINEAR + HBWR (HALDEN BOILING WATER REACTOR) + MODERATOR COEFFICIENT + REACTOR DYNAMICS +

CATEGORY 6  
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-15143 \*CONTINUED\*  
REACTOR STABILITY + SPACE DEPENDENT DYNAMICS + VOID COEFFICIENT

6-15144  
FROELICH R + OTT K  
EFFECT OF SOLID-STATE BODY PROPERTIES UPON THE CALCULATION OF DOPPLER COEFFICIENTS.  
KERNFORSCHUNGSZENTRUM, KARLSRUHE, GERMANY  
ANL-TRANS-305 +. 9 PAGES, NUKLEONIKA 8, PAGES 137-139, (MARCH 1966)

BASED ON DEBYE THEORY. DETAILED STUDY AND QUANTITATIVE ESTIMATE OF THE DOPPLER EFFECT OF FAST REACTORS AS INFLUENCED BY SOLID-STATE EFFECTS AND PHASE TRANSITIONS.

AVAILABILITY - JOHN CRERAR LIBRARY, 35 WEST 33RD. ST., CHICAGO, ILL. 60616, \$1.10 COPY, \$0.80 MICROFICHE

\*DOPPLER EFFECT + \*REACTOR, FAST

6-15145  
FISCHER EA  
THE OVERLAP EFFECT OF RESONANCES OF DIFFERENT FUEL ISOTOPES IN DOPPLER-COEFFICIENT CALCULATIONS FOR FAST REACTORS  
KERNFORSCHUNGSZENTRUM KARLSRUHE, GERMANY  
3 PAGES, 1 TABLE, 11 REFERENCES, NUKLEONIK 8(3), PAGES 146-148, (MARCH 1966)

FOR THE CORE COMPOSITION EXAMINED WHICH CONTAINS PU-239 AND U-238 AND IS TYPICAL FOR A SODIUM-COOLED FAST BREEDER, THE OVERLAP OF RESONANCES OF THE TWO DIFFERENT ISOTOPES INFLUENCES THE DOPPLER CHANGES TO ONLY 2 PERCENT OR LESS. THE ENERGIES EXAMINED COVER MOST OF THE RANGE OF INTEREST FOR THE DOPPLER COEFFICIENT IN A FAST REACTOR. THE CONCLUSIONS DRAWN HERE WOULD NOT HOLD AT 100 EV OR BELOW.

DOPPLER EFFECT + PLUTONIUM + PLUTONIUM OXIDE + REACTOR, FAST + SODIUM + URANIUM + URANIUM OXIDE

6-15146  
ANCARANI A + FOSSOUL EA  
DETERMINATION OF THE DOPPLER EFFECT OF FISSILE ELEMENTS IN FAST REACTORS  
SOCIETE BELGE POUR L INDUSTRIE NUCLEAIRE, BRUSSELS  
EUR-90F + EUR-530.F. +. 92 PAGES, 1964

INTRODUCTION, THEORY, RESONANCE PARAMETERS OF FISSIONABLE MATERIALS OF LOW ENERGY, CHOICE OF MULTIGROUP CONSTANTS, NUMERICAL RESULTS OF CALCULATIONS BEARING OF THE CHOICE OF PARAMETERS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*DOPPLER EFFECT + PLUTONIUM + REACTOR, FAST + URANIUM

6-15147  
HUBEL H + KNECHT O + MAUSBECK H  
REACTOR SAFETY IN THE CASE OF POSITIVE POWER COEFFICIENT OF REACTIVITY WITH THE KNK REACTOR AS EXAMPLE  
INTERATOM, GERMANY  
5 PAGES, 8 FIGURES, ATOMWIRTSCHAFT 11(10), PAGES 506-510, (OCTOBER 1966)

COEFFICIENT IS DUE TO THE MODERATOR. AFTER A REACTIVITY DISTURBANCE, THE POSITIVE MODERATOR INFLUENCE IS DELAYED BY THE FUEL-COOLANT TIME CONSTANT AND BY THE COOLANT-MODERATOR TIME CONSTANT AND THERE IS SUFFICIENT TIME FOR A CONVENTIONAL SAFETY SYSTEM TO TRIP THE POWER. UNCONTROLLED POWER EXCURSIONS CAN BE AVOIDED WITH A CONVENTIONAL SAFETY SYSTEM IF THE FUEL TEMPERATURE COEFFICIENT OF REACTIVITY IS NEGATIVE. A SMALL POSITIVE POWER COEFFICIENT LOWERS THE NECESSARY EXCESS REACTIVITY. NO STUCK-ROD PROBLEM EXISTS.

\*REACTOR, FAST + GERMANY + MODERATOR COEFFICIENT + POWER COEFFICIENT + SODIUM

6-15148 ALSO IN CATEGORY 9  
KJAER-PEDERSEN N  
DYNAMIC ASPECTS OF BOILING-HEAVY-WATER NUCLEAR REACTORS. PART I.  
DANISH ATOMIC ENERGY COMMISSION, RISO  
RISO-128 +. 55 PAGES, REFERENCES, AUGUST 1966

GENERAL ASPECTS OF REACTOR DYNAMICS. TYPICAL FEATURES OF BOILING-WATER REACTORS. CORE DYNAMICS RELATED TO PLANT DYNAMICS. PHYSICAL EFFECTS DETERMINING DYNAMIC RESPONSE. LINEAR METHODS. TRANSFER FUNCTIONS. SEMILINEAR AND NONLINEAR METHODS DESCRIBING FUNCTIONS. DIGITAL COMPUTERS. STABILITY THEORY. LINEAR MODEL OF COOLING CHANNEL. PARTIAL TRANSFER FUNCTION. EXAMPLE.

AVAILABILITY - MICROCARD EDITION, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669  
COMPUTER, DIGITAL + CONTROL SYSTEM + DESCRIBING FUNCTION + DOPPLER EFFECT + DYNAMICS, NONLINEAR +



CATEGORY 6  
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-15148 \*CONTINUED\*

HEAT TRANSFER, BOILING + HEAT TRANSFER, CONVECTION + HYDRAULIC ANALYSIS + REACTOR DYNAMICS + REACTOR KINETICS + REACTOR STABILITY + REACTOR, BOILING WATER + REACTOR, HEAVY WATER + TEMPERATURE COEFFICIENT + THERMAL ANALYSIS + TRANSFER FUNCTION + VOID COEFFICIENT

6-15149

SCHWALM D

ON ASCERTAINING ASYMPTOTIC STABILITY IN THE LARGE OF NUCLEAR POWER REACTORS BY MEANS OF LIAPUNOV'S SECOND METHOD

EUPATOM, ISPRA, ITALY

6 PAGES, 4 FIGURES, 20 REFERENCES, NUKLEONIK 8(7), PAGES 378-383, (SEPT. 1966)

THE ANALYSIS OF LA SALLE AND LEFSCHETZ WAS APPLIED TO THE PROBLEM OF REACTOR STABILITY. IT IS SHOWN THAT IN THE CASE OF SECOND-ORDER TEMPERATURE FEEDBACK IT IS AT BEST EQUIVALENT TO THE LURIE-LETOV ANALYSIS WHICH HAS BEEN APPLIED TO REACTOR PHYSICS BY SMETS. FINALLY THE RELATION BETWEEN THE WELTON CRITERION AND LIAPUNOV'S DIRECT (SECOND) METHOD IS DISCUSSED.

\*LIAPUNOV'S FUNCTION + \*REACTOR DYNAMICS + REACTOR STABILITY

6-15150

CARSON CE + PRICE LK

CALCULATION OF COMBINED TEMPERATURE COEFFICIENT OF REACTIVITY FOR THE EGCR  
TENNESSEE VALLEY AUTHORITY, OAK RIDGE

TID-22742 +. 21 PAGES, 4 REFERENCES, MAY 11, 1965

DESCRIBES THE CALCULATIONS OF THE ISOTHERMAL TEMPERATURE COEFFICIENT OF REACTIVITY IN THE EGCR. RESULTS ARE PRESENTED FOR THE TEMPERATURE RANGE 300 TO 2,400 K, AND BURNUP RANGE FROM ZERO TO APPROXIMATELY 12,000 MW/D/MT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*EGCR (EXPERIMENTAL GAS COOLED REACTOR) + \*TEMPERATURE COEFFICIENT + COMPUTER, DIGITAL

6-15151

FRUHAUF CL

RKC REACTOR KINETICS CALCULATIONS PROGRAM.

KNOLLS ATOMIC POWER LAB., SCHENECTADY, N.Y.

KAPL-M-SR-1 (REV. A) +. 33 PAGES, REFERENCES, AUGUST 1966

RKC COMPUTES REACTOR STARTUP TRANSIENTS IN THE RANGE OF REACTOR POWER LEVELS WHERE THE TEMPERATURE COEFFICIENT EFFECT CAN BE NEGLECTED. A CONSTANT SHIM RATE AND/OR A TIME-DEPENDENT TABLE IS USED AS A DRIVING FUNCTION. THE CODE SOLVES THE SPACE-INDEPENDENT ONE-ENERGY-GROUP REACTOR KINETICS EQUATIONS WITH A MAXIMUM OF SIX DELAYED NEUTRON GROUPS. THE KINETICS EQUATIONS ARE PROGRAMMED IN TWO FORMS - THE FIRST NEGLECTS THE NORMALIZED PROMPT GENERATION TIME, THE SECOND CONSIDERS IT. THE ARBITRARY VALUE OF REACTIVITY BELOW WHICH THE PROMPT GENERATION TIME IS TO BE NEGLECTED IS AN INPUT QUANTITY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*COMPUTER, DIGITAL + \*REACTOR TRANSIENT + ACCIDENT, CONTROL ROD WITHDRAWAL + DELAYED NEUTRON

6-15152

ALSO IN CATEGORY 9

CLARKE WG

SPARK A FORTRAN IV DIGITAL PROGRAM FOR SUB-POWER ANALYSIS OF REACTOR KINETICS TRANSIENTS.

BETTIS ATOMIC POWER LAB., PITTSBURGH, PA.

WAPD-TM-424 +. 74 PAGES, REFERENCES, APRIL 1966

FORTRAN IV DIGITAL COMPUTER PROGRAM FOR CONVENTIONAL POINT-REACTOR KINETICS EQUATIONS FOR TRANSIENTS WITH NO FEEDBACK REACTIVITY MECHANISMS. THE PROGRAM IS ESPECIALLY USEFUL IN DESCRIBING THE DYNAMIC BEHAVIOR OF THE FIRST (POINT KINETICS) AND SECOND MOMENTS (STOCHASTIC PROCESS) OF THE NEUTRON POPULATION DURING STARTUP. SIMULATION OF NUCLEAR INSTRUMENTATION, ANALYSIS OF INTERMEDIATE RANGE RATE PROTECTION, GRAVITY SCRAM, AND PERMISSIBLE TIME VARIATION OF BASIC KINETICS PARAMETERS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

COMPUTER, DIGITAL + INSTRUMENTATION, STARTUP RANGE + REACTOR KINETICS + SCRAM, REAL

6-15153

ALSO IN CATEGORY 9

HORST KM

SOUTHWEST EXPERIMENTAL FAST REACTOR DEVELOPMENT PROGRAM. NINTH QUARTERLY REPORT. MAY-JUNE 1966  
GENERAL ELECTRIC CORP., SAN JOSE, ADVANCED PRODUCTS OPERATION.

CATEGORY 6  
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-15153 \*CONTINUED\*  
GEAP-5208 +. 98 PAGES, AUGUST 1966

BALANCED OSCILLATOR EXPERIMENT. EFFECTIVENESS OF DELAYED NEUTRONS. REACTIVITY TIME DEPENDENCE OF THE ROD AND THE REFLECTOR ROD. ESTIMATES OF ERRORS IN THE DOPPLER COEFFICIENT. INHERENT NEUTRON SOURCES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*SEFOR (SOUTHWEST EXP. FAST OXIDE REACTOR) + CONTROL ROD WORTH + DELAYED NEUTRON + DOPPLER EFFECT + OSCILLATOR, REACTIVITY + REACTOR STARTUP, LOW SOURCE

6-15154  
CARLVIK I  
DANCOFF CORRECTION IN SQUARE AND HEXAGONAL LATTICES  
AKTIEBOLAGET ATOMENERGI, STOCKHOLM  
AE-257 +. 38 PAGES, FIGURES, TABLES, NOVEMBER 1966

TABLES FOR DANCOFF CORRECTIONS FOR SQUARE AND HEXAGONAL ROD LATTICES COVER A WIDE RANGE OF VOLUME RATIOS AND MODERATOR CROSS SECTIONS. THE MODIFICATION OF BONALUMI TO SAUERS FORMULA CALCULATED THE DANCOFF CORRECTION WITHIN 0.01 - 0.02 IN CASES OF PRACTICAL INTEREST. ERROR INVOLVED IN TREATING SQUARE LATTICES WITH AN EMPTY GAP SURROUNDING THE RODS BY MEANS OF HOMOGENIZING THE GAP AND THE MODERATOR. FORTRAN ROUTINES FOR DANCOFF CORRECTIONS AND A SUBROUTINE DASOHE.

AVAILABILITY - MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669

\*DOPPLER EFFECT + COMPUTER, DIGITAL

6-15155  
DRAGT JR  
REACTOR NOISE ANALYSIS BY MEANS OF POLARITY CORRELATION  
REACTOR CENTRUM NEDERLAND, PETTEN, NETHERLANDS  
2 PAGES, 2 FIGURES, 2 REFERENCES, NUKLEONIK 8(4), PAGES 225-226, (MAY 1966)

INSTEAD OF DETERMINING THE AUTOCORRELATION FUNCTION OF REACTOR NOISE, A FUNCTION IS DETERMINED, WHICH RESULTS FROM THE AUTOCORRELATION FUNCTION BY REPLACING THE VALUES OF THE NOISE BY ITS SIGN. THE EQUIPMENT IS DESCRIBED ON PAGE 188 FF OF THE SAME ISSUE. THE NEW FUNCTION IS ONLY ONE AND A HALF AS INACCURATE AS THE AUTOCORRELATION FUNCTION.

\*COMPUTER, DIGITAL + \*NOISE ANALYSIS + ARGONAUT (ARGONNE NUC ASSEMBLY, UNIV TRAINING) + NETHERLANDS

6-15156  
DRAGT JR  
ACCURATE REACTOR NOISE MEASUREMENTS IN A LOW POWER CRITICAL REACTOR  
REACTOR CENTRUM NEDERLAND, PETTEN, NETHERLANDS  
6 PAGES, 4 FIGURES, 1 TABLE, 7 REFERENCES, NUKLEONIK 8(4), PAGES 188-193, (MAY 1966)

THE NOISE FROM AN IONIZATION CHAMBER IN THE CRITICAL ARGONAUT-TYPE REACTOR LFR, WITH ONE SLAB CORE LOADING, AT LOW POWER WAS MEASURED BY A DIGITAL COMPUTER, ANALYZED IN THE TIME-DOMAIN (AUTOCORRELATION FUNCTIONS). ALL RESULTS COULD BE INTERPRETED BY MEANS OF THE SIMPLE POINT-REACTOR THEORY. FROM THE NOISE, REACTOR PARAMETERS WERE DETERMINED WITH HIGH ACCURACY (A FEW PERCENT). PARAMETERS DETERMINED WERE - PROMPT-NEUTRON DECAY CONSTANT, DELAYED-NEUTRON FRACTION, NEUTRON-GENERATION TIME, AND THE RATIO OF MEAN SQUARE CHARGE AND MEAN CHARGE COLLECTED IN THE IONIZATION CHAMBER PER NEUTRON DETECTED.

\*ARGONAUT (ARGONNE NUC ASSEMBLY, UNIV TRAINING) + \*NOISE ANALYSIS + COMPUTER, DIGITAL + NETHERLANDS + NOISE CROSS CORRELATION + PROMPT NEUTRON LIFETIME + ROSSI ALPHA

6-15157  
ZALFSKI CP + ARDON R + LADET J + PUIG IP + STEVENS L  
USE OF THE RAPSDIE REACTOR FOR MEASUREMENT OF THE DOPPLER COEFFICIENT OF FAST POWER REACTORS  
COMMISSARIAT A L ENERGIE ATOMIQUE, CADARACHE, FRANCE  
EURFNR-10F + CEA-R-2565 + EUR-2233.F +. 20 PAGES, TABLES, 3 REFERENCES, JUNE 1964

FOR MEASUREMENTS OF THE DOPPLER COEFFICIENT OF FAST REACTORS BY MEANS OF A 400-LITER CORE IN RAPSDIE, NEUTRONIC, THERMAL, AND DYNAMIC REQUIREMENTS ARE SPECIFIED. THE STATIC, OSCILLATION, AND REACTIVITY EXCURSION METHODS ARE COMPARED WITH RESPECT TO OPERATING FACILITIES REQUIRED, INFORMATION YIELDED, AND ACCURACY.

AVAILABILITY - MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISC. 54669

\*DOPPLER COEFFICIENT + \*FRANCE + \*REACTOR, FAST + REACTOR, TEST

CATEGORY 6  
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-1515R  
COCKRELL RG + PEREZ RB  
ON THE KINETIC THEORY OF SPATIAL AND SPECTRAL COUPLING OF THE REACTOR NEUTRON FIELD  
UNIVERSITY OF FLORIDA  
CONF-650,413-13 +. 33 PAGES, 1965

FROM THE TIME, SPACE, ENERGY, AND ANGULAR DEPENDENT INTEGRO-DIFFERENTIAL FORM OF THE BOLTZMANN NEUTRON TRANSPORT EQUATION, A SET OF COUPLED, ORDINARY FIRST-ORDER DIFFERENTIAL EQUATIONS IS DERIVED WHICH DESCRIBE THE KINETICS OF THE SPATIAL AND SPECTRAL COUPLING OF THE REACTOR NEUTRON FIELD. COEFFICIENTS IN THE DERIVED EXPRESSION ARE DEFINED IN TERMS OF DIFFUSION THEORY AND TRANSPORT THEORY. PRESENT COMPUTER CODES FOR PERFORMING THE NECESSARY COMPUTATIONS ARE DISCUSSED. RESULTS OF CALCULATIONS MADE ON THE UFTR, AN ARGONAUT-TYPE REACTOR, ARE PRESENTED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*SPACE DEPENDENT DYNAMICS + ARGONAUT (ARGONNE NUC ASSEMBLY, UNIV TRAINING)

6-15171 ALSO IN CATEGORY 7  
KOTORA A  
SODIUM CAN FABRICATION FOR ZERO POWER REACTORS VI AND IX  
ARGONNE NATIONAL LABORATORY, ARGONNE, ILLINOIS  
10 PAGES, 8 FIGURES, 2 REFERENCES, NUCLEAR ENGINEERING AND DESIGN, 4(4), PAGES 413-422, (NOVEMBER 1966)

THIS ARTICLE DESCRIBES FABRICATION, LOADING, SEALING, AND TESTING OF 1/4- OR 1/2-INCH-THICK SODIUM CANS FOR USE IN THE ZERO POWER REACTORS XI AND IX AT THE ARGONNE NATIONAL LABORATORY. THE SODIUM CAN IS A PRECISELY MADE STAINLESS-STEEL CONTAINER, FILLED WITH SODIUM AND SEALED UNDER EXACTING CIRCUMSTANCES TO RETAIN ITS HIGH PURITY. WHEN COMPLETED, SUCH CANS ARE USED IN MOCK-UP REACTOR CORE GEOMETRIES TO SIMULATE SODIUM-COOLED REACTOR CORES. FUTURE PROJECTS BEING CONTEMPLATED IN THESE MACHINES UTILIZING BOTH U-235 AND PU, ARE LARGE METALLIC OXIDE AND CARBIDE SYSTEMS, CORE MELTDOWN CONFIGURATIONS, COUPLED REACTOR DESIGNS, AND OTHER EXPERIMENTS DESIGNED TO FURTHER UNDERSTAND THE MAGNITUDE OF THE NA REACTIVITY COEFFICIENT. IN ADDITION, REACTOR STUDIES ARE IN PROGRESS TO DETERMINE THE DOPPLER EFFECT ON DIFFERENT TYPES OF REACTOR CORES.

\*GLAD + \*FABRICATION + \*SODIUM + \*TESTING + METAL, LIQUID + REACTIVITY EFFECT + REACTOR KINETICS + REACTOR TEST FACILITY + STEEL, STAINLESS

6-15243  
FRISCH W + SCHOENFELD F  
CALCULATION PROGRAM FOR THE DYNAMICS AND STABILITY OF A FAST POWER REACTOR  
KERNFORSCHUNGSZENTRUM, KARLSRUHE, GERMANY  
KFK-465 +. 82 PAGES, FIGURES, 24 REFERENCES, JUNE 1966, IN GERMAN

ANALOG COMPUTER PROGRAM FOR DYNAMICS (CHARACTERIZATION OF THE MATHEMATICAL MODEL, NEUTRON KINETICS, REACTIVITY FEED BACK, THERMODYNAMICS OF THE CORE AND THE INTERMEDIATE HEAT EXCHANGER, TRANSPORT DELAYS IN PIPES AND MIXING PROCESS, COOLANT PUMPS, PROGRAMMING). DIGITAL PROGRAM FOR STABILITY ANALYSIS (FREQUENCY REPRESENTATION OF THE CORE, NEUTRON KINETICS, THERMODYNAMICS, DETAILED BLOCK DIAGRAM AND FREQUENCIES, PROGRAM FOR 3- AND 30-ZONE MODEL).

AVAILABILITY - MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669

\*REACTOR DYNAMICS + \*REACTOR, FAST + \*REACTOR, POWER + COMPUTER, ANALOG + HYDRAULIC ANALYSIS + REACTOR STABILITY + THERMAL ANALYSIS + TRANSFER FUNCTION

6-15254  
REACTOR PHYSICS DEPARTMENT TECHNICAL ACTIVITIES QUARTERLY REPORT, JULY-SEPT. 1966  
BATTELLE-NORTHWEST, RICHLAND, WASH.  
BNWL-340 +. 72 PAGES, FIGURES, TABLES, REFERENCES, OCTOBER 15, 1966

OF SAFETY INTEREST IS THE TABLE OF KINETICS PARAMETER OF AN 800-LITER OXIDE FTR REFERENCE CORE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

DELAYED NEUTRON + DOPPLER COEFFICIENT + PROMPT NEUTRON LIFETIME + REACTOR, FAST + SODIUM COEFFICIENT

6-15306 ALSO IN CATEGORIES 17 AND 18  
EMMONS AH  
UNIVERSITY OF MISSOURI REACTOR MEASURED VOID COEFFICIENT LOW  
UNIVERSITY OF MISSOURI, COLUMBIA, MO.  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(13), PAGE 26, (MARCH 27, 1967)

CATEGORY 6  
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-15306 \*CONTINUED\*

UNIVERSITY OF MISSOURI AT COLUMBIA REQUESTS (MARCH 6) CHANGE IN TECHNICAL-SPECIFICATION VOID COEFFICIENT FROM MORE NEGATIVE THAN MINUS 2 X 1D TO THE MINUS 3RD DELTA K PER % VOID TO MINUS 1.2 (THE MEASURED VALUE). EARLIER TRANSIENT ANALYSIS USED MINUS 1.11. COMPLETE VOIDING WILL GIVE ONLY 0.0058 DELTA K.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + MEASUREMENT, REACTIVITY + REACTOR, FLUX TRAP + REACTOR, RESEARCH + VOID COEFFICIENT

6-15344

SHAVIV G + YIFTAH Y  
THE EFFECT OF PLUTONIUM ISOTOPIC COMPOSITION ON THE DOPPLER COEFFICIENT IN FAST REACTORS  
SORFQ NUCLEAR RESEARCH CENTER, YAVNE, ISRAEL  
4 PAGES, 5 FIGURES, 2 TABLES, 7 REFERENCES, NUCLEAR APPLICATION, 3(4), PAGES 213-216, (APRIL 1967)

THE EFFECT OF PLUTONIUM ISOTOPIC COMPOSITION ON THE DOPPLER COEFFICIENT IS EXAMINED IN FAST REACTORS HAVING DIFFERENT CHEMICAL COMPOSITIONS OF THE FUEL AND DIFFERENT CORE VOLUMES. FOR A GIVEN CORE VOLUME AND CHEMICAL COMPOSITION, THE ABSOLUTE VALUE OF THE DOPPLER COEFFICIENT INCREASES WITH INCREASE OF THE AMOUNT OF HIGH PLUTONIUM ISOTOPES (PU-240, PU-241, AND PU-242).

\*DOPPLER COEFFICIENT + PLUTONIUM + REACTOR, FAST

6-15386 ALSO IN CATEGORY 18

QUESTION II C (2) - SYSTEM RESPONSE TO LOSS OF LOAD  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, DECEMBER 1966, DOCKET NO. 50-261, H. B. ROBINSON UNIT NUMBER 2, FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, PAGE C (2)-1

PROVIDE PLOTS OF VALVE POSITION, S.G. AND PRIMARY PRESSURE AND LEVEL, STEAM-DUMPED CORE REACTIVITY AND POWER LEVEL, PRIMARY COOLANT FLOW RATE, CONTROL-ROD POSITION, AND TURBINE SPEED AS A FUNCTION OF TIME AFTER A NET LOAD REJECTION.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOAD REJECTION + REACTOR DYNAMICS + REACTOR, PRESSURIZED WATER + ROBINSON 2

6-15476 ALSO IN CATEGORIES 5 AND 18

QUESTION VII B (1) - METHODS OF ANALYZING ROD-INJECTION ACCIDENT  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
9 PAGES, 1 FIGURE, PAGES B (1)-1-TO-B (1)(D)-6 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, (H. B. ROBINSON UNIT NUMBER 2,) DECEMBER 1966, DOCKET 50-261

WE UNDERSTAND THAT THE METHODS AND RESULTS WILL BE VERY SIMILAR TO THOSE ON INDIAN POINT 2, REPORTED IN WCAP-2940. WE WILL NEED ADDITIONAL INFORMATION - (A) QUANTITATIVELY DISCUSS THE SIGNIFICANT DIFFERENCES IN THE INPUT PARAMETERS USED FROM THOSE USED IN WCAP-2940. (B) QUANTITATIVELY DISCUSS THE EFFECTS ON THE ACCIDENT CONSEQUENCES THAT RESULT FROM THESE CHANGES. (C) DESCRIBE THE ENTHALPY DISTRIBUTION IN THE CORE FUEL FOR BOTH THE PREACCIDENT CONDITION AND THE MOST PESSIMISTIC POSTACCIDENT CONDITION. (D) DISCUSS THE CRITERIA (AND THEIR BASES) UPON WHICH YOU EVALUATE THE ACCEPTABILITY OF THE ENTHALPY DISTRIBUTION IN THE FUEL DURING POWER EXCURSIONS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, CONTROL ROD EJECTION + ANALYTICAL MODEL + FUEL ELEMENT + PERFORMANCE LIMIT + REACTOR, PRESSURIZED WATER + ROBINSON 2

6-15478 ALSO IN CATEGORY 18

QUESTION VII B (3) - CONTROL OF MODERATOR COEFFICIENT WITH FIXED POISON  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
4 PAGES, PAGES B (3)(A)-1-TO-B (3)(B)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, (H. B. ROBINSON UNIT NUMBER 2,) DECEMBER 1966, DOCKET 50-261

FIXED POISONS MAY BE USED TO CONTROL THE MODERATOR COEFFICIENT. PLEASE PROVIDE THE FOLLOWING INFORMATION - (A) DISCUSS THE TECHNIQUES AND PROCEDURES TO EVALUATE THE POTENTIAL REQUIREMENTS FOR CONTROLLING THE MODERATOR COEFFICIENT. INCLUDE CONSIDERATIONS OF THE EFFECT OF THE COEFFICIENT ON REACTOR STABILITY AS WELL AS ITS EFFECT ON THE CONSEQUENCES OF PROMPT POWER EXCURSIONS. (B) DESCRIBE THE WAY THAT THE FIXED POISONS WOULD BE INCORPORATED WITHIN THE CORE, AND THE WAY THEIR INCLUSION WOULD AFFECT CORE DESIGN CHARACTERISTICS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + MODERATOR COEFFICIENT + POISON, FIXED + REACTOR STABILITY + REACTOR, PRESSURIZED WATER + ROBINSON 2

CATEGORY 6  
REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-15479 ALSO IN CATEGORY 18  
QUESTION VII B (4) - XENON AND COOLANT-FLOW INSTABILITIES  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE B (4)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT,  
(H. B. ROBINSON UNIT NUMBER 2,) DECEMBER 1966, DOCKET 50-261

WESTINGHOUSE RECENTLY EXPANDED THEIR ANALYSES OF XENON AND COOLANT-FLOW STABILITY IN REPORTS  
WCAP-2983 AND WCAP-2987. PLEASE INDICATE YOUR POSITION ON THE INFORMATION CONTAINED IN THESE  
REPORTS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + FLOW STABILITY +  
REACTOR STABILITY + REACTOR, PRESSURIZED WATER + ROBINSON 2 + XENON OSCILLATION

6-15480 ALSO IN CATEGORY 18  
QUESTION VII B (5) - POSSIBILITY AND POTENTIAL CONSEQUENCES OF RAPID INSERTION OF UNBORATED, RELATIVELY  
COLD PRIMARY COOLANT AS RESULT OF DISPLACEMENT BY ACTUATION OF SAFETY-INJECTION AND RECUMMULATOR SYSTEMS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE B (5)-1 OF THIRD SUPPLEMENT TO FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, (H. B.  
ROBINSON UNIT NUMBER 2,) DECEMBER 1966, DOCKET 50-261

DISCUSS THE POSSIBILITY AND POTENTIAL CONSEQUENCES OF RAPID INSERTION OF THE UNBORATED,  
RELATIVELY COLD PRIMARY COOLANT REMAINING IN THE PRIMARY SYSTEM AS A RESULT OF DISPLACEMENT  
BY ACTUATION OF THE SAFETY INJECTION SYSTEM AND ACCUMULATOR SYSTEM. ASSUME THAT THE CONTROL  
RODS DO NOT GO IN. THIS DISCUSSION SHOULD INCLUDE VARIOUS SIZE BREAKS FOR BOTH BEGINNING AND  
END OF CORE LIFE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, COLD COOLANT +  
ACCIDENT, LOSS OF COOLANT + ACCUMULATOR + REACTOR, PRESSURIZED WATER + ROBINSON 2

6-15481 ALSO IN CATEGORY 18  
QUESTION VII C (1 THROUGH 5) - CONTROL-ROD DROP ACCIDENT DETAILS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
4 PAGES, PAGES C-1 TO C-5 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS  
REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

C. RCC DROP ACCIDENT - (1) SHOW THAT A FLUX DECREASE CAUSED BY DROPPING ANY OF THE RCCS INTO  
THE CORE AT POWER WILL BE DETECTED BY ONE OR MORE NUCLEAR DETECTORS, AND THAT A NEGATIVE  
SIGNAL OUTPUT LESS THAN APPROXIMATELY 10% WILL NOT REQUIRE A TURBINE CUTBACK. (2) IF ONE OF  
THE FOUR HIGH-LEVEL CHANNELS IS OUT OF SERVICE, WILL THE REMAINING DETECTORS PROTECT. (3)  
HOW WILL THIS BE DISTINGUISHED FROM A NORMAL TRANSIENT CORE IMBALANCE. (4) WHAT IS THE TIME  
RELATION BETWEEN THE SIGNAL THAT WOULD CUT BACK THE TURBINE AND THE SIGNAL THAT WOULD CAUSE  
RCC WITHDRAWAL TO RESTORE REACTOR POWER. (5) HOW IS THE PROPER TURBINE CUTBACK DETERMINED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY +  
ACCIDENT, CONTROL ROD DROP IN + REACTOR, PRESSURIZED WATER + ROBINSON 2

6-15482 ALSO IN CATEGORY 18  
QUESTION VII D - STARTUP ACCIDENT ANALYSIS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGES D-1 AND D-2 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS  
REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

PLEASE PERFORM THE FOLLOWING STARTUP ACCIDENT ANALYSIS - ASSUME THE SIMULTANEOUS WITHDRAWAL OF  
ALL RODS FROM THEIR FULL-IN POSITIONS UNDER INITIAL COLD, CLEAN, 1% SHUTDOWN CONDITIONS.  
CREDIT SHOULD BE TAKEN ONLY FOR SCRAM INITIATED BY THE NUCLEAR-LINEAR-LEVEL SAFETY CHANNELS  
SET AT THEIR HIGHEST TRIP POINTS AND THE INHERENT NEGATIVE FEEDBACK WITHIN THE REACTOR  
ITSELF. WILL ANY FUEL DAMAGE RESULT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY +  
ACCIDENT, CONTROL ROD WITHDRAWAL + REACTOR, PRESSURIZED WATER + ROBINSON 2 + SAFETY ANALYSIS

6-15483 ALSO IN CATEGORIES 5 AND 18  
QUESTION VII E - LOSS OF FLOW FROM ONE LOOP  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, 1 FIGURE, PAGE E-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS  
REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

CATEGORY 6  
 REACTOR TRANSIENTS, KINETICS, AND STABILITY

6-15483 \*CONTINUED\*

PLEASE SHOW, BY ANALYSIS, THAT THE LOSS OF COOLANT FLOW IN ONE PRIMARY LOOP WITHOUT OPERATOR ACTION WOULD NOT RESULT IN FUEL FAILURE. WHAT IS THE MINIMUM DNBR UNDER THIS CONDITION. CONSIDER THE EFFECTS OF POSITIVE MODERATOR COEFFICIENTS. THE ANALYSIS SHOULD INCLUDE CASES OF INITIAL TWO-LOOP OPERATION AS ALLOWED BY PERMISSIVE INTERLOCK CIRCUITRY.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF FLOW + DNBR (DEPARTURE FROM NUCLEATE BOILING) + MODERATOR COEFFICIENT + REACTOR, PRESSURIZED WATER + ROBINSON 2

6-15687

DURNEY JL + KAUFMAN NC  
 CALCULATING REACTOR POWER FROM ACTIVATION TECHNIQUES AS APPLIED TO AN UNUSUAL FUEL GEOMETRY (ATRC)  
 IDAHO NUCLEAR CORP., IDAHO FALLS  
 IN-1047 +. 42 PAGES, 5 FIGURES, 3 TABLES, 5 REFERENCES, JANUARY 1967

TWO METHODS FOR DETERMINING REACTOR POWER BY NEUTRON ACTIVATION IN A LOW-POWER REACTOR WERE DEVELOPED AND THEN APPLIED TO THE ATR CRITICAL FACILITY. IN ONE METHOD, FISSION RATE DATA ARE TAKEN BETWEEN FUEL-BEARING PLATES, THE VALUES ARE GRAPHICALLY INTEGRATED, AND REACTOR POWER IS CALCULATED. IN THE OTHER METHOD, THE FUEL REGION IS DIVIDED INTO A NUMBER OF SUBREGIONS WITHOUT REGARD TO FUEL PLATE POSITION, A FISSION RATE IS MEASURED AT A POINT IN EACH SUBREGION, AND THESE VALUES ARE APPROPRIATELY WEIGHTED AND SUMMED TO OBTAIN REACTOR POWER. BOTH METHODS WERE RELIABLE, BUT THE LATTER METHOD IS MORE CONVENIENT TO USE SINCE IT REQUIRES FEWER FISSION RATE DETECTORS AND ALLOWS THE USE OF A DIGITAL COMPUTER IN CALCULATING THE POWER.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*ACTIVATION + \*ANALYTICAL TECHNIQUE, CALIBRATION + \*REACTOR, POWER + COMPUTER PROGRAM

6-15957

READ JW  
 TAMER. A COMPUTER PROGRAM USED IN STUDYING CORE THERMAL CONDITIONS DURING PLANT TRANSIENTS  
 GENERAL DYNAMICS CORP., SAN DIEGO, GENERAL ATOMICS DIV.  
 GAMD-7397 +. 209 PAGES, 5 FIGURES, TABLES, 5 REFERENCES, SEPTEMBER 6, 1966

THE COMPUTER CODE TAMER (TRANSIENT ANALYSIS OF MULTIPLE ELEMENTS WITH REVERSE FLOW), WAS DEVELOPED FOR STUDYING THERMAL CONDITION OF THE CORE DURING PLANT TRANSIENTS. THE CODE IS DESIGNED TO COMPUTE THE FLOW DIVISION AMONG VARIOUS AGES OF FUEL REGIONS AND THEN CALCULATE THE TEMPERATURE DISTRIBUTION FOR THE COOLANT AND FUEL ELEMENTS. THE COMPUTATIONS ACCOUNT FOR NATURAL-CONVECTION AND FORCED-CONVECTION CONDITIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*COMPUTER, DIGITAL + \*REACTOR TRANSIENT + \*THERMAL ANALYSIS

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-09150  
CLARENBURG LA + VAN DER WAL JF  
AEROSOL FILTERS. INFLUENCE OF FILTER COMPOSITION ON AEROSOL PENETRATION THROUGH GLASS FIBER FILTERS  
NATIONAL DEFENCE RESEARCH ORGANIZATION T.N.O., PIJSWIJK  
9 PAGES, 2 FIGURES, 6 TABLES, I AND EC PROCESS DESIGN AND DEVELOPMENT 5(2), PAGES 110-117, (APRIL 1966)

AEROSOL PENETRATION THROUGH FIBROUS FILTERS HAS TWO ASPECTS - A FLUID MECHANICAL AND A FILTER GEOMETRICAL ONE. THE LATTER IS THE SUBJECT OF THIS PAPER. TWO EFFECTS, THE STRUCTURE EFFECT AND THE SHADOW EFFECT, GIVE AN ADEQUATE QUANTITATIVE DESCRIPTION OF WHAT IS USUALLY CALLED THE FIBER INTERFERENCE EFFECT. A NEW MATHEMATICAL FORMULATION OF THE AEROSOL PENETRATION THROUGH FIBROUS FILTERS BASED ON DAVIES THEORY IS PROPOSED, TAKING THE FILTER GEOMETRY INTO ACCOUNT. WITH THIS FORMULATION, A FAIR PREDICTION OF AEROSOL PENETRATION THROUGH FILTERS OF VARYING COMPOSITIONS IS OBTAINED. THE PRESSURE DROP ACROSS MULTICOMPONENT GLASS-FIBER FILTERS WAS DISCUSSED IN A PAPER WHICH INTRODUCED TWO NEW EFFECTS, THE STRUCTURE EFFECT AND THE SHADOW EFFECT. WITH THE AID OF THESE EFFECTS IT WAS POSSIBLE TO PREDICT ACCURATELY THE PRESSURE DROP ACROSS GLASS-FIBER FILTERS OF ARBITRARY COMPOSITION. BOTH EFFECTS ARE RELATED TO THE GEOMETRICAL STRUCTURE OF A FILTER.

\*FILTER DESIGN + \*FILTER THEORY, INTERCEPTION + \*POROUS DIFFUSION + AEROSOL + FILTER + FILTER, FIBER

7-09533  
RICKLES RN + FRIEDLANDER HZ  
THE BASICS OF MEMBRANE PERMEATION  
DORR-OLIVER, INC.  
6 PAGES, 4 FIGURES, 2 TABLES, 51 REFERENCES, CHEMICAL ENGINEERING 73(9), PAGES 163-168, (APRIL 25, 1966)

ALTHOUGH THE THEORY AND APPLICATIONS OF MEMBRANE PROCESSES HAVE BEEN INTENSIVELY STUDIED, NO SATISFACTORY METHOD IS AVAILABLE FOR PREDICTING THE PERMEATION RATES FOR ANY PERMEANT OR MEMBRANE. IT IS ALSO IMPORTANT TO DISTINGUISH BETWEEN PERMEATION AND DIFFUSION. PERMEATION INVOLVES SOLUTION OF THE PENETRANT IN THE MEMBRANE, ACTIVATED DIFFUSION IN THE DIRECTION OF MINIMIZED FREE ENERGY, AND DESORPTION OF THE PENETRANT ON THE OTHER SIDE. THEREFORE, DIFFUSION IS BUT ONE OF THREE SIMULTANEOUS EVENTS OCCURRING DURING THE PERMEATION OF ANY PENETRANT.

\*FILTER CHARACTERISTICS + \*FILTER DESIGN + \*FILTER, MEMBRANE + \*FILTER, PLASTIC + \*WATER TREATMENT + DIFFUSION + DIFFUSION COEFFICIENT + FILTER COST + FILTER, LIQUID + OCEAN AND SEA + POROUS MEDIA + THERMODYNAMICS + WATER, GENERAL

7-10333  
FRIEDLANDER HZ + RICKLES RN  
MEMBRANES FOR SEPARATION PROCESSES  
DORR-OLIVER, INCORPORATED  
4 PAGES, 1 FIGURE, 11 REFERENCES, CHEMICAL ENGINEERING 73(9) PAGES 121-124 (MARCH 28, 1966)

A HOMOGENEOUS MEMBRANE IS ONE THAT VISUALLY IS ONE PHASE AND HAS UNIFORM CHARACTERISTICS FROM ONE SIDE TO THE OTHER. IT IS USUALLY TRANSPARENT OR AT LEAST TRANSLUCENT. CRYSTALLINE MEMBRANES MAY BE HOMOGENEOUS FROM A PHASE POINT OF VIEW, BUT NORMALLY THEY ARE SPECIFICALLY NAMED E.G., GOLD, CLAY, PALLADIUM, SHALE, GRAPHITE, COPPER MEMBRANES. A MEMBRANE IS TERMED HOMOGENEOUS IF IT, VISUALLY, HAS ONE PHASE EVEN IF IT OBVIOUSLY HAS MORE THAN ONE PHASE ON A SUBMICROSCOPIC LEVEL. FOR EXAMPLE, A HYDROPHILIC MEMBRANE IS CALLED HOMOGENEOUS EVEN IF WATER IS A NECESSARY COMPONENT.

\*FILTER CHARACTERISTICS + \*FILTER COST + \*FILTER, MEMBRANE + FILTER DESIGN + FILTER LIFE + FILTER, PLASTIC + POROUS MEDIA

7-11795 ALSO IN CATEGORY 17  
FERMI FUEL ELEMENT FAILURE, OCTOBER 4, 1966  
POWER REACTOR DEVELOPMENT COMPANY  
1 PAGE, NUCLEONICS WEEK, 7(41), (OCTOBER 13, 1966)

AT 34 MW(TH) DURING A STARTUP, THE CONTROL RODS SEEMED TO BE WITHDRAWN FARTHER THAN NORMAL. TWO CORE-OUTLET TEMPERATURES WERE HIGHER THAN NORMAL. COVER-GAS ACTIVITY INCREASED, THE REACTOR-BUILDING RADIATION MONITORS GAVE AN ISOLATION SIGNAL, AND THE REACTOR WAS SCRAMMED. AS OF OCT. 10, 1966, 22 CENTS REACTIVITY HAD BEEN LOST, AND THE COVER-GAS XENON WAS ABOUT EQUAL TO THAT EXPECTED FROM A CORE SUBASSEMBLY. REACTIVITY BEGAN TO BE LOST AT ABOUT 15 MW(TH).

\*FAILURE, FUEL ELEMENT + FERMI + FUEL MELTDOWN + INCIDENT, ACTUAL, GENERAL + REACTOR, BREEDER + REACTOR, FAST + REACTOR, LIQUID METAL COOLED

7-11820  
BALDWIN WH + HOLCOMB DL + JOHNSON JS  
PREPARATION AND HYPERFILTRATION PROPERTIES OF A POLYACRYLATE CELLOPHANE MEMBRANE  
OAK RIDGE NATIONAL LABORATORY

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-11820 \*CONTINUED\*  
14 PAGES, 6 REFERENCES, 1 TABLE, 17 REFERENCES, JOURNAL OF POLYMER SCIENCE. PART AE, PAGES 833-846, (1965)

PREPARATION OF A CARBOXYLIC ION-EXCHANGE MEMBRANE BY GRAFTING POLYACRYLIC ACID ONTO CELLOPHANE IS DESCRIBED. THIS MEMBRANE FILTERS APPRECIABLE FRACTIONS OF DISSOLVED SALTS FROM SOLUTIONS 1 M AND LESS IN NaCl. FLOW RATES THROUGH THE MEMBRANE AT 2500 PSI ARE 0.5 CM/HR AND HIGHER. COMPARISON IS MADE OF SALT-REJECTION PROPERTIES AND FLOW RATES WITH A FILM OF CELLULOSE ACETATE IN WHICH REJECTION DOES NOT DEPEND ON FIXED IONIZABLE GROUPS. REJECTIONS OF SALTS HAVING IONS OF DIFFERENT CHARGES ARE PRESENTED. EXPERIMENTAL APPARATUS FOR HYPERFILTRATION IS DESCRIBED.

\*FILTER, MEMBRANE + \*WATER TREATMENT + FILTER, LIQUID + POROUS MEDIA

7-12153  
EVANS EV + KENNEY CN  
GASEOUS DISPERSION IN PACKED BEDS AT LOW REYNOLDS NUMBER  
BILLINGHAM COMPANY + CAMBRIDGE UNIVERSITY, ENGLAND  
9 PAGES, 7 FIGURES, 22 REFERENCES, DECEMBER 29, 1965, TRANS. INSTN CHEM. ENGRS 44(6) PAGES T189-T197 (JULY - AUGUST 1966)

LONGITUDINAL DISPERSION DATA ARE REPORTED FOR A NUMBER OF BINARY GAS MIXTURES FLOWING THROUGH PACKED BEDS. THE PACKINGS EXAMINED WERE LEAD SHOT, GLASS BEADS, AND RASCHIG RINGS. AT LOW PARTICLE REYNOLDS NUMBERS (0.5 TO 10), WHERE MOLECULAR DIFFUSION AND EDDY DIFFUSION ARE BOTH SIGNIFICANT, THE DISPERSION COEFFICIENT DE MAY BE WRITTEN FOR THE SHOT AND BEADS IN THE FORM SHOWN. A SIMILAR RELATION IS DERIVED FOR THE RASCHIG RINGS. THESE CORRELATIONS AGREE WELL WITH THAT OBTAINED BY HIBY BUT DO NOT SUPPORT THE VIEW THAT THE VALUE OF DE VARIES LINEARLY WITH GAS VELOCITY AS PROPOSED BY VAN DEEMTER, ZUIDERWEG, AND KLINKENBERG, AND SO ARE ALSO OF INTEREST IN RELATION TO GAS CHROMATOGRAPHY WHERE THE VAN DEEMTER EQUATION IS WIDELY USED.

\*FILTER, BED + \*HYDRODYNAMIC ANALYSIS + ANALYTICAL MODEL + FLOW DISTRIBUTION + THEORETICAL INVESTIGATION

7-12476 ALSO IN CATEGORIES 11 AND 2  
COTTRELL WB  
ORNL NUCLEAR SAFETY RESEARCH AND DEVELOPMENT PROGRAM BIMONTHLY REPORT FOR MAY-JUNE 1966  
OAK RIDGE NATIONAL LABORATORY  
ORNL-CF-66-7-48 +. 50 PAGES, 2 TABLES, JULY 22, 1966

THE ACCOMPLISHMENTS OF THE RESEARCH AND DEVELOPMENT PROGRAM BEING UNDERTAKEN AT ORNL AS PART OF THE U.S. ATOMIC ENERGY COMMISSIONS REACTOR SAFETY PROGRAM DURING THE MONTHS OF MAY AND JUNE ARE SUMMARIZED. INCLUDED IN THIS REPORT ARE WORK ON VARIOUS CHEMICAL REACTIONS, AS WELL AS THE RELEASE, CHARACTERIZATION, AND TRANSPORT OF FISSION PRODUCTS IN CONTAINMENT SYSTEMS UNDER VARIOUS ACCIDENT CONDITIONS AND ON PROBLEMS ASSOCIATED WITH THE REMOVAL OF THESE FISSION PRODUCTS FROM GAS STREAMS. WHILE THESE STUDIES PROVIDE INFORMATION ON THE CONSEQUENCE OF POTENTIAL REACTOR ACCIDENTS AND THUS HAVE DIRECT RELEVANCE TO THE EVALUATION OF REACTOR SITES, A SEPARATE STUDY IS BEING UNDERTAKEN ON THE SAFETY AND FEASIBILITY OF THE OFF-SHORE SITING OF POWER REACTORS. ALTHOUGH MOST OF THE WORK HAS BEEN AND CONTINUES TO BE IN GENERAL SUPPORT OF WATER POWER REACTOR TECHNOLOGY, INCLUDING SOME IN DIRECT SUPPORT OF THE LOFT AND CSE PROGRAMS, SEVERAL PROJECTS WERE INITIATED THE FIRST OF THE CALENDAR YEAR IN SUPPORT OF THE HIGH-TEMPERATURE GAS-COOLED REACTOR (HTGR) PROGRAM. THESE PROJECTS INCLUDE BOTH IN-PILE AND OUT-PILE STUDIES OF REACTION RATES AND FISSION PRODUCT RELEASE AND TRANSPORT PHENOMENA RELEVANT TO POTENTIAL HTGR ACCIDENT SITUATIONS. TWO OTHER RECENT PROJECTS INCLUDE A SERIES OF DISCUSSION PAPERS ON VARIOUS ASPECTS OF WATER REACTOR TECHNOLOGY AND THE STUDIES ON PRESSURE VESSEL TECHNOLOGY. EXPERIMENTAL WORK RELATIVE TO PRESSURE VESSELS INCLUDES INVESTIGATIONS OF THE ATTACHMENT OF NOZZLES TO SHELLS AND THE VARIABILITY OF IMPACT DATA ON LOW-ALLOY STEELS. THE RECENT ACTIVITIES OF THE NSIC AND THE NUCLEAR SAFETY JOURNAL IN BEHALF OF THE NUCLEAR COMMUNITY ARE ALSO DISCUSSED.

AVAILABILITY - WM. B. COTTRELL, OAK RIDGE NATIONAL LAB., OAK RIDGE, TENN.

\*BRITTLE FRACTURE + \*CONTAINMENT, PRESSURE VESSEL + \*FISSION PRODUCT, IODINE + \*IN PILE EXPERIMENT + \*LOFT (LOSS OF FLUID TEST) + \*NSPP (NUCLEAR SAFETY PILOT PLANT) + \*OUT OF PILE LOOPS AND EXPERIMENTS + \*TREAT (TRANSIENT TEST REACTOR FACILITY) + AEROSOL + AEROSOL PRODUCTION + AEROSOL, RADIOACTIVE + FILTER SYSTEM + FISSION PRODUCT TRANSPORT + FUEL HANDLING + GRAPHITE + OXIDATION + TRANSPORTATION AND HANDLING

7-13527  
OCHS HJ  
ELECTRIC AIR FILTERS IN VENTILATION AND EXHAUST SYSTEMS  
6 PAGES, 5 FIGURES, 2 TABLES, METALL 20(4) PAGES 346-351 (APRIL 1966), ABSTRACT ONLY

IN THE PRESENT-DAY AIR-CLEANING FIELD, ELECTROSTATIC FILTERS (UNDER THE PROPER CONDITIONS AND WITHIN THEIR OWN LIMITATIONS) REPRESENT THE MOST EFFICIENT AND ECONOMICAL WAY OF REMOVING FINE AND ULTRA-FINE DUST FROM AIR AND INDUSTRIAL GASES. ALTHOUGH AIR IS A GAS TOO, A DISTINCTION IS MADE IN THE VENTILATION FIELD BETWEEN AIR AND OTHER GASES.

\*AIR CLEANING + \*FILTER, ELECTROSTATIC + ELECTROSTATIC PRECIPITATION + FILTER SYSTEM

7-13544



CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-13544 \*CONTINUED\*

BUSCH DD

THE NATURE OF CONDENSABLE FISSION PRODUCTS IN AN HTGR ENVIRONMENT  
GENERAL ATOMIC

GA-6957 +. 25 PAGES, 7 FIGURES, 1 TABLE, 10 REFERENCES, APRIL 15, 1966, PAPER PRESENTED AT THE  
INTERNATIONAL SYMPOSIUM ON THE DECONTAMINATION OF NUCLEAR INSTALLATIONS, HARWELL, ENGLAND, MAY 4-6, 1966

A DIFFUSION-TUBE TECHNIQUE WAS USED TO DETERMINE THE DIFFUSION COEFFICIENTS AND PARTIAL PRESSURES OF FISSION PRODUCTS IN A SIMULATED HIGH-TEMPERATURE GAS-COOLED REACTOR ENVIRONMENT. THE EXPERIMENTS WERE CONDUCTED IN THE GENERAL ATOMIC IN-PILE LOOP. DIFFUSION COEFFICIENTS FOR IODINE AND CESIUM WERE GENERALLY DETERMINED TO BE IN THE RANGE 0.03 TO 0.1 SQ. CM PER SEC, DEPENDING ON THE TEMPERATURE. DIFFUSION COEFFICIENTS OF THIS MAGNITUDE, IN HELIUM AT 350 PSIA, INDICATED THAT IODINE AND CESIUM WERE TRANSPORTED IN THE COOLANT IN MONATOMIC FORM. BARIUM-140 WAS FOUND TO HAVE BEEN TRANSPORTED AS ITS PRECURSOR, XE-140. PARTIAL PRESSURES WERE CALCULATED FROM THE TOTAL AMOUNT OF EACH FISSION PRODUCT DEPOSITED IN THE DIFFUSION TUBES. THEY VARIED LITTLE DURING THE IRRADIATION OF THE GAIL IV ELEMENT. PARTIAL PRESSURES WERE APPROXIMATELY  $2 \times 10^{-15}$  TO THE MINUS 15TH ATM AND APPROXIMATELY  $6 \times 10^{-13}$  TO THE MINUS 13TH ATM FOR I-131 AND CS-137, RESPECTIVELY, DEPENDING UPON THE POSITION IN THE LOOP AT WHICH THE MEASUREMENTS WERE MADE. THE PARTIAL PRESSURE OF XE-140, CALCULATED FROM BA-140 DATA TO BE APPROXIMATELY  $2 \times 10^{-16}$  TO THE MINUS 16TH ATM, WAS ESSENTIALLY CONSTANT THROUGHOUT THE LOOP.

AVAILABILITY - D. D. BUSCH, GENERAL ATOMIC, JOHN JAY HOPKINS LABORATORY FOR PURE AND APPLIED SCIENCE, P.O. BOX 608, SAN DIEGO, CALIFORNIA 92112

\*ANALYTICAL TECHNIQUE, CALIBRATION + \*DIFFUSION CHANNEL + \*DIFFUSION COEFFICIENT + \*IN PILE LOOP + CESIUM + DEPOSITION + FISSION PRODUCT, IODINE + IN PILE EXPERIMENT + IODINE + IRRADIATION TESTING + NOBLE GAS + REACTOR, GAS COOLED + XENON

7-13545

ADAMS RE + BENNETT RL + BROWNING WE

CHARACTERIZATION OF VOLATILE FORMS OF IODINE AT HIGH RELATIVE HUMIDITY BY COMPOSITE DIFFUSION TUBES  
OAK RIDGE NATIONAL LABORATORY

ORNL-3985 +. 29 PAGES, 8 FIGURES, 4 TABLES, 5 REFERENCES, AUGUST 1966

THE RESULTS OF THESE INVESTIGATIONS INDICATE THAT EITHER IMPREGNATED MSA AND PCB CHARCOAL GIVES SATISFACTORY DEPOSITION PROFILES IN THE CHARCOAL SECTION OF COMPOSITE DIFFUSION TUBE PROVIDED THAT THE MOIST AIR STREAM IS SUFFICIENTLY DRIED WITH DRIERITE. THE DRIERITE DOES NOT RETAIN SIGNIFICANT AMOUNTS OF THE CHOI WHEN IT IS PLACED AFTER THE SILVER SECTION. WHEN NO OR INADEQUATE DRYING OCCURS, THE MSA IODINE-IMPREGNATED CHARCOAL GIVES MUCH BETTER RESULTS. TO PROTECT AGAINST INSUFFICIENT DRYING, IT WOULD BE PRUDENT TO USE THE SPECIAL IODINE-IMPREGNATED CHARCOAL IN PREFERENCE TO PCB OR OTHER NONIMPREGNATED CHARCOALS. WITH THESE MODIFICATIONS, THE COMPOSITE DIFFUSION TUBE IS A CHARACTERIZATION DEVICE CAPABLE OF DISTINGUISHING AND MEASURING ELEMENTAL IODINE AND METHYL IODIDE UNDER HIGH TEMPERATURE, STEAM CONDITIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$2.00 COPY

\*ANALYTICAL TECHNIQUE, CALIBRATION + \*FISSION PRODUCT, IODINE + \*ORGANIC IODIDE + CHARCOAL + DEPOSITION + DIFFUSION + IODINE + SAMPLING

7-13546

ALSO IN CATEGORY 5

SHANK RC

ANNUAL REPORT OF DIVISION ANALYTICAL BRANCH FOR 1965

PHILLIPS PETROLEUM COMPANY, IDAHO FALLS, IDAHO

IDO-14679 +. 233 PAGES, JUNE 1966

A SERIES OF EVALUATION OF THE GAS-PARTICLE SAMPLER WAS INITIATED IN SUPPORT OF THE LOFT PROGRAM. CONTROLLED EXPERIMENTS ARE UNDERWAY TO VERIFY THE PREDICTED ADSORPTION PROPERTIES OF VAPOROUS COMPONENTS OF THE CARTRIDGE FOR IODINE SPECIES AND FOR KRYPTON-XENON UNDER LOFT-SIMULATED CONDITIONS. THE RESULTS OF TEMPERATURE STABILITY TESTS OF PARTICULATE FILTER MATERIALS ARE SUMMARIZED IN TABLE III-4. IODINE ACTIVITY RETAINED BY THE PARTICULATE FILTER SHOULD BE AS PARTICLES OR ON THE PARTICLES. TESTS WERE MADE IN A HELIUM AS WELL AS STEAM-AIR ATMOSPHERE TO DETERMINE IODINE VAPOR RETENTION OF THOSE FILTERS THAT WERE THERMALLY STABLE. THE RESULTS ARE SUMMARIZED IN TABLE III-5. BORON NITRIDE WAS STUDIED AS A SPECIFIC SORBING MEDIUM FOR KRYPTON, XENON, AND IODINE. FOR KRYPTON AND XENON ADSORPTION TESTS, A GAS CHROMATOGRAPHIC COLUMN CONTAINING 1.1 G OF BORON NITRIDE WAS USED AND THE RESULTS INDICATED NEITHER KRYPTON AND XENON WERE SORBED TO ANY SIGNIFICANT EXTENT BY BORON NITRIDE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$6.00 CY, \$1.25 MN

ANALYTICAL TECHNIQUE, AIR + ANALYTICAL TECHNIQUE, CALIBRATION + CHEMICAL ANALYSIS + FILTER, MAY PACK + FISSION PRODUCT RELEASE, GENERAL + FISSION PRODUCT TRANSPORT + FISSION PRODUCT, IODINE + IODINE + LOFT (LOSS OF FLUID TEST) + RUTHENIUM + SAMPLING + TELLURIUM

7-13548

ALSO IN CATEGORY 9

LAUREN GN

INITIAL EXPERIENCE WITH LARGE SODIUM FIRES EXPERIMENTS (LF-1)

ATOMICS INTERNATIONAL

NAA-SR-12041 +. 41 PAGES, 14 FIGURES, 3 TABLES, 15 REFERENCES, AUGUST 1, 1966

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-13548 \*CONTINUED\*

IN THE SAFEGUARDS ANALYSIS OF SODIUM-COOLED REACTORS, A SERIOUS DISPERSION OF RADIOACTIVITY IS POSTULATED TO RESULT FROM A LARGE PRIMARY-COOLANT (SODIUM) FIRE IN A GALLERY OR VAULT. TO EVALUATE AND/OR MITIGATE THIS DISPERSION, IT IS NECESSARY TO DETERMINE THE EFFECTS OF TIME, INITIAL-CONDITION VARIABLES, AND SYSTEM PARAMETERS ON THE SPATIAL DISTRIBUTION OF ENERGY, THE AMOUNT OF SODIUM RELEASED (PRESUMABLY AS SODIUM OXIDE), AND THE AMOUNT OF SELECTED FISSION PRODUCTS RELEASED. EARLY SODIUM-FIRE INVESTIGATIONS GAVE WIDELY VARYING RESULTS OF BURNING AND RELEASE RATES WHICH SEEMED TO BE VERY SENSITIVE TO GEOMETRY AND AIR FLOW. FOR EXAMPLE, IT HAS BEEN REPORTED THAT SHALLOW-POOLS BURN AS NODULES ON AN IRREGULAR OXIDE SURFACE, WHEREAS DEEPER, WELL-INSULATED POOLS BURNED ON THE MOLTEN METAL SURFACE. REPORTED HEREIN ARE THE RESULTS OF THE CURRENT INVESTIGATION, INCLUDING RESULTS OF A FIRE, DESIGNATED AS LARGE FIRE NO. 1, IN WHICH THE GEOMETRIC AND CONVECTIVE CONDITIONS WHICH MIGHT BE FOUND IN A REACTOR GALLERY OR VAULT WERE SIMULATED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$2.00 COPY, \$0.50 MICROFICHE

\*FIRE + \*IODINE + \*SODIUM + FISSION PRODUCT TRANSPORT + FISSION PRODUCT, IODINE + REACTOR, BREEDER + REACTOR, FAST + REACTOR, LIQUID METAL COOLED

7-13569

HOFFMAN DC + MICHELSEN OB

RADIOCHEMICAL AND NUCLEAR STUDIES OF THE SHORT-LIVED FISSION PRODUCTS, CE-145, CE-146, AND CE-147  
INSTITUTT FOR ATOMENERGI, KJELLER  
KP-76 +. 60 PAGES, REFERENCES, DECEMBER 1965

A PROCEDURE BASED ON EXTRACTION BY DI-(2-ETHYLHEXYL) ORTHOPHOSPHORIC ACID (HDEHP) HAS BEEN PREPARED FOR THE RAPID SEPARATION OF CERIUM FROM FISSION PRODUCTS AND ALSO - THROUGH EXTRACTION CHROMATOGRAPHY - FOR THE CONTINUOUS SEPARATION OF PRASEODYMIUM ACTIVITIES FROM THEIR PARENT ACTIVITIES. THE LATTER PROCEDURE ALLOWS OBSERVATION OF RADIOCERIUM WITH A MINIMUM OF INTERFERENCE FROM ITS DAUGHTERS. THE DECAY PROPERTIES OF THE SHORT-LIVED CERIUM ISOTOPES CE-145, CE-146, AND CE-147 HAVE BEEN STUDIED BY GAMMA AND BETA SCINTILLATION SPECTROMETRY AND BY GAMMA-GAMMA, GAMMA-BETA, AND BETA-GAMMA COINCIDENCE MEASUREMENTS. INFORMATION HAS BEEN OBTAINED AS REGARDS HALF-LIVES, GAMMA AND BETA RAY ENERGIES, AND RELATIVE INTENSITIES OF GAMMA RAYS. DECAY SCHEMES ARE PROPOSED FOR CE-146 AND CE-145, THOUGH ONLY A PARTIAL ONE FOR THE LATTER NUCLIDE. THE DECAY OF CE-147 HAS BEEN OBSERVED DIRECTLY FOR THE FIRST TIME, AND ITS HALF-LIFE WAS DETERMINED BY BOTH GAMMA AND BETA DECAY MEASUREMENTS. HOWEVER, ATTEMPTS TO SINGLE OUT SPECIFIC GAMMA OR BETA ENERGIES FOR THIS NUCLIDE FAILED. A SEARCH FOR A POSSIBLE PR-146M GAVE NO DEFINITE RESULTS.

AVAILABILITY - MICROCARD EDITIONS (FOR SALE) ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISC. 54669

\*CERIUM + \*PRASEODYMIUM + \*RADIOCHEMICAL PROCESSING + \*RADIOISOTOPE + RADIOCHEMICAL ANALYSIS

7-13665

ALSO IN CATEGORY 18

RESEARCH AND DEVELOPMENT PROGRAMS

PUBLIC SERVICE COMPANY OF COLORADO, DENVER, COLORADO

100 PAGES, 27 FIGURES, 12 TABLES, FORT ST. VRAIN NUCLEAR GENERATING STATION PRELIMINARY SAFETY ANALYSIS REPORT, VOL. II, APPENDIX A, SEPTEMBER 1966, DOCKET NO. 50-267

DESCRIBES THE CURRENT PROGRAMS RELATED TO PLANT SAFETY AND DESIGN. COATED FUEL PARTICLES HAVE BEEN IRRADIATED TO MORE THAN 50% OF THE DESIGN PEAK BURNUP OF 20 PERCENT, AND THE COATINGS HAVE MAINTAINED COMPLETE INTEGRITY. CESIUM-PLATEOUT STUDIES SHOW LEVELS RANGE FROM 0.5 TO 90 MONOLAYERS. STRONTIUM-PLATEOUT STUDIES SHOW A HIGHER LEVEL OF PLATEOUT. OTHER PROGRAMS INCLUDE FISSION-PRODUCT RELEASE, CONTROL-ROD DRIVES, STEAM-GRAPHITE REACTION, CARBON TRANSPORT TO METALS, FUEL-TRANSFER MACHINE, STEAM-GENERATOR-TUBE VIBRATION, AND METAL-COOLANT COMPATIBILITY.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

CESIUM + COATED PARTICLE + COMBUSTION + DEPOSITION + FISSION PRODUCT RETENTION + FT. ST. VRAIN + FUEL HANDLING MACHINE + GRAPHITE + HEAT EXCHANGER + REACTOR COOLANT + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED + REACTOR, POWER + RESEARCH AND DEVELOPMENT PROGRAM + STRONTIUM + TEST, COMPONENT + TEST, CONTROL ROD DRIVE + VIBRATION

7-13676

DYMMENT J + THOMASTON ID

THE SODIUM FLAME PHOTOMETER TEST FOR HIGH-EFFICIENCY FILTERS

ATOMIC WEAPONS RESEARCH ESTABLISHMENT, ALDERMASTON, ENGLAND

AWRE-0-41/65 +. 44 PAGES, MAY 1965

THE SODIUM FLAME TEST WAS ORIGINALLY DEvised AT CDEE, PORTON FOR TESTING RESPIRATOR FILTERS AND LATER EXTENDED TO LARGE AIR FILTERS. IN THIS REPORT, THE USE OF FLAME PHOTOMETRY AS A FILTER TEST IS REVIEWED BRIEFLY IN RELATION TO THE REQUIREMENTS OF A TEST FOR HIGH-EFFICIENCY VENTILATION FILTERS. THE BASIS OF THE METHOD AND EXPERIMENTAL EXAMINATION OF THE PRINCIPAL FEATURES OF THE CDEE DESIGN ARE DESCRIBED. DETAILED ATTENTION IS GIVEN TO THE OPERATING CHARACTERISTICS OF THE DETECTOR UNIT, THE SIZE DISTRIBUTION OF THE TEST CLOUD, AND COMPARISON OF THE METHOD WITH THE BRITISH METHYLENE BLUE AND AMERICAN DOP TEST METHODS. AN ESTIMATE OF THE CAPITAL AND INSTALLATION COSTS FOR ONE OF THESE RIGS IS GIVEN. THE METHOD IS SATISFACTORY FOR TESTING FILTERS FOR RADIOACTIVE INSTALLATIONS AND HAS CERTAIN ADVANTAGES OVER THE OTHER METHODS CONSIDERED.

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-13676 \*CONTINUED\*  
AVAILABILITY - BRITISH INFORMATION SERVICE, 845 THIRD AVENUE, NEW YORK, N. Y. 10022 \$1.00 COPY

\*ANALYTICAL TECHNIQUE, CALIBRATION + AEROSOL + AIR CLEANING + FILTER + FILTER EFFICIENCY + FILTER, HIGH EFFICIENCY + INSTRUMENTATION, AIR SAMPLING + INSTRUMENTATION, GENERAL + SODIUM + TEST, DOP FILTER + TEST, FILTER + TEST, FILTER SYSTEM + TRACER, GENERAL

7-13678  
KOTRAPPA P + JAUHRI GS + DUA SK  
AEROSOL GENERATOR TO PRODUCE RADIOACTIVE AEROSOLS  
ATOMIC ENERGY ESTABLISHMENT, TROMBAY, INDIA  
AEET-232 +. 16 PAGES, 1965

AN AEROSOL GENERATOR (MODIFIED VERSION OF CAUTERBACH TYPE) WAS BUILT TO PRODUCE HETEROGENEOUS AEROSOLS OF ABOUT 0.2 MICRON MMD OF ACTIVATED SODIUM CHLORIDE (NA-24) AND ACTIVATED SODIUM DIHYDROGEN PHOSPHATE (P-32). THE UNIT IS COMPACT, AND BEING ON WHEELS MAKES IT VERSATILE. IT WAS TESTED FOR STEADY OUTPUT OVER EXTENDED TIMES. IT WAS ALSO FOUND THAT MASS MEDIAN DIAMETER OF AEROSOLS CREATED DID NOT VARY MUCH WITH CONCENTRATION OF NaCl IN THE RANGE OF 1 PERCENT TO 10 PERCENT. HOWEVER, THE OUTPUT INCREASED FIVEFOLD WHEN CONCENTRATION WAS INCREASED FROM 1 PERCENT TO 10 PERCENT. SIZE ANALYSES OF THE AEROSOL ARE MADE WITH AN ELECTRON MICROSCOPE. THE USE OF THIS GENERATOR IN FILTER EVALUATION STUDIES, CALIBRATING AIR MONITORS, AND SUCH OTHER APPLIED HEALTH PHYSICS WORK HAS BEEN DEMONSTRATED.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

\*AEROSOL PRODUCTION + \*PARTICLE SIZE DISTRIBUTION + AEROSOL + AIR CLEANING + ELECTRON MICROSCOPY + FILTER + MONITOR, RADIATION, AIR + PARTICLE SIZE + SAMPLING + TRACER, RADIOACTIVE

7-13670  
KHAN AA + AMALRAJ RV + THOMAS KT  
DEVELOPMENT OF U-FOAM AIR FILTERS  
ATOMIC ENERGY ESTABLISHMENT, TROMBAY, INDIA  
AEET-244 +. 18 PAGES, 1966

THE GAS CLEANING RESEARCH LABORATORY OF THE WASTE TREATMENT DIVISION HAS DEVELOPED PROTOTYPE DESIGNS OF U-FOAM AIR FILTERS. THE UNITS MAY BE USED AS INLET AIR FILTERS, PREFILTERS ALONG WITH HIGH-EFFICIENCY FILTERS, OR AS THE ONLY FILTERS IN SYSTEMS WHERE THE EFFICIENCY AND OTHER REQUIREMENTS ARE SATISFIED. THE FILTER UNITS ARE FAIRLY TEMPERATURE RESISTANT AS FAR AS THE NORMAL UTILIZATION IN THE VENTILATION SYSTEMS IS CONCERNED. IT IS HOWEVER, NOT FIRE RESISTANT NOR SELF-EXTINGUISHING. THE FILTER IS ALSO RESISTANT TO COMMON INORGANIC ACIDS, ALKALIES, AND COMMON ORGANIC SOLVENTS, PROVIDED THAT THE CONCENTRATION OF THE CHEMICALS IS NOT MORE THAN THE SPECIFIED LIMITS. THE PRESSURE DROPS OFFERED BY THE UNITS ARE VERY LOW AT THE RATED CAPACITIES, AND THE EFFICIENCIES ARE FAIRLY HIGH. DUST LOADING OF THE UNITS IS ALSO EXPECTED TO BE HIGH BECAUSE OF A HIGH VOLUME OF THE PORES AVAILABLE IN THE FILTER MEDIUM. THESE UNITS ARE FIRST IN SERIES OF THE CLASS OF LOW-PRESSURE-DROP AIR FILTERS THE WASTE TREATMENT DIVISION HAS PROPOSED TO DEVELOP, USING VARIOUS LOCALLY AVAILABLE POROUS MATERIALS.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

\*FILTER DESIGN + \*FILTER, PLASTIC + AIR CLEANING + FILTER + FILTER CHARACTERISTICS + FIRE

7-13681  
FRIEDLANDER SK + PASCERI RE  
MEASUREMENTS OF THE PARTICLE SIZE DISTRIBUTION OF THE ATMOSPHERIC AEROSOL - I. INTRODUCTION AND EXPERIMENTAL METHODS  
THE JOHNS HOPKINS UNIVERSITY, BALTIMORE, MARYLAND  
6 PAGES, 1 FIGURE, 23 REFERENCES, JOURNAL OF THE ATMOSPHERIC SCIENCES 22(5) PAGES 571-576 (SEPTEMBER 1965)

PREVIOUS EXPERIMENTAL MEASUREMENTS OF PARTICLE-SIZE SPECTRA OF THE ATMOSPHERIC AEROSOL ARE REVIEWED. A FOUR-STAGE IMPACTOR WAS USED TO SAMPLE THE BALTIMORE AEROSOL IN THE SIZE RANGE ABOVE 0.4 MICRON IN RADIUS. PARTICLE SIZE WAS MEASURED WITH AN OPTICAL MICROSCOPE. THE SIZE RANGE BELOW 0.1 MICRON WAS SAMPLED WITH A NOVEL ROTATING-DISK DEVICE, AND THE PARTICLE SIZE DISTRIBUTION WAS MEASURED BY ELECTRON MICROSCOPY. THE THEORY OF THE DISK AS APPLIED TO THE DIFFUSION OF AEROSOL PARTICLES IS DISCUSSED. THE RUNS MADE WITH THE ROTATING DISK WERE EXPLORATORY, AND FULL ADVANTAGE WAS NOT TAKEN OF THE UNIFORM FLUX PROPERTY. THIS SPECIAL CHARACTERISTIC SHOULD MAKE THE METHOD SUITABLE FOR AUTORADIOGRAPHIC DETECTION OF VERY SMALL PARTICLES. SAMPLING BY BROWNIAN DIFFUSION IS ATTRACTIVE SINCE THE PARTICLES ARE TREATED GENTLY AND WILL RETAIN MANY OF THE CHARACTERISTICS WHICH THEY POSSESSED WHEN AIRBORNE. HENCE THE METHOD MAY HAVE APPLICATION TO THE SAMPLING OF VIRUSES.

\*ANALYTICAL TECHNIQUE, CALIBRATION + \*INSTRUMENTATION, AIR SAMPLING + \*PARTICLE SIZE DISTRIBUTION + AEROSOL + AEROSOL PROPERTIES + AIR CLEANING + AIRBORNE RELEASE + ATMOSPHERIC POLLUTION + DIFFUSION + ELECTRON MICROSCOPY + FILTER + FILTER IMPACTION + PARTICLE SIZE + SAMPLING

7-13682

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-13682 \*CONTINUED\*  
ANDERSEN BV  
A NEW TECHNIQUE FOR PLUTONIUM PARTICLE SIZE ANALYSIS  
PACIFIC NORTHWEST LABORATORY, RICHLAND, WASHINGTON  
RNWL-SA-26 +. 14 PAGES, JUNE 7, 1965

FISSION-FRAGMENT DAMAGE TO MINERALS, GLASSES, AND PLASTICS AS A PRINCIPLE FOR DETECTING FISSION FRAGMENTS PROVIDES A METHOD FOR DETECTING EITHER FISSIONABLE MATERIALS OR NEUTRONS. CURRENT HEALTH PHYSICS STUDIES ARE CONCERNED WITH THE APPLICATION OF NEUTRON-PRODUCED FISSION-FRAGMENT DAMAGE CONCEPTS TO NEUTRON DOSIMETRY, TO ASSAY IN BIOLOGICAL MATERIALS FOR PLUTONIUM AND OTHER FISSIONABLE MATERIALS, AND TO PARTICLE-SIZE ANALYSIS OF PLUTONIUM-BEARING AEROSOLS. PLUTONIUM PARTICLE-SIZE ANALYSES ARE MOST FREQUENTLY MADE BY THE CONVENTIONAL AUTORADIOGRAPHIC ALPHA-TRACK FILM TECHNIQUE. THIS REQUIRES EXPOSURE PERIODS OF ABOUT A MONTH TO DEFINE PARTICLE SIZES BELOW 0.1 MICRON. THE AVAILABILITY OF A HIGH THERMAL NEUTRON FLUX AND THE GOOD THERMAL FISSION CROSS-SECTION OF PLUTONIUM ISOTOPES CONTRIBUTE TO MAKE THE FISSION FRAGMENT DAMAGE PHENOMENA A SENSITIVE ANALYTICAL TOOL FOR PLUTONIUM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$1.00 COPY, \$0.50 MICRONEGATIVE

\*ANALYTICAL TECHNIQUE, CALIBRATION + \*PARTICLE SIZE + \*PLUTONIUM + \*RADIOGRAPHY + AEROSOL + AIR CLEANING + ALPHA EMITTER + FILTER, MEMBRANE + PARTICLE SIZE DISTRIBUTION

7-13683  
WALKER RL + FISH BR  
ADHESION OF PARTICLES TO SURFACES IN LIQUID AND GASEOUS ENVIRONMENTS  
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE  
CONF-650577-1 +. 6 PAGES, 1965, PRESENTED AT FOURTH ANNUAL TECHNICAL MEETING AND EXHIBIT, HOTEL CONTAINERLEAU, MIAMI BEACH, FLORIDA, MAY 25-28, 1965

TO UNDERSTAND THE PROBLEMS OF REMOVING PARTICULATE CONTAMINATION WE SHOULD KNOW SOMETHING ABOUT THE FORCES HOLDING THE PARTICLES TO THE SURFACES AND THE FORCES AVAILABLE TO REMOVE THEM. A REVIEW OF THE LITERATURE INDICATES FOUR BASIC MECHANISMS WHICH ACT TO RETAIN PARTICLES TO SURFACES. THESE ARE RELATED TO CAPILLARY, ELECTROSTATIC, AND MOLECULAR FORCES, AND A TIME-DEPENDENT FORCE DUE TO A VISCOUS FLOW PHENOMENON (STEFAN FLOW). IN EACH CASE, THE PROPERTIES OF THE SURFACE LAYER ON BOTH THE PARTICLE AND THE SURFACE CAN EFFECT THESE FORCES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$1.00 COPY, \$0.50 MICRONEGATIVE

\*CONTAMINATION + \*FLOW THEORY AND EXPERIMENTS + \*SURFACE CONTAMINATION + AEROSOL + AIR CLEANING + DECONTAMINATION + DEPOSITION + DISPERSION + FILTER + PARTICULATE + SURFACE FILM DEPOSIT + SURFACE, GENERAL

7-13684 ALSO IN CATEGORY 16  
GAZIEV YI + NAZAROV LE  
DISPERSION OF RADIOACTIVE AEROSOLS IN THE STRATOSPHERE  
JPRS-34860 + TT-66-31298 +. 5 PAGES, TRANSLATED FROM RADIOAKTIVNYE IZOTOPY V ATMOSFERE I IKH ISPOLZOVANIYE V METEOROLOGII, MOSCOW, ATOMIZDAT, 1964

INVESTIGATIONS OF THE DISPERSION OF RADIOACTIVE AEROSOLS FROM NUCLEAR EXPLOSIONS IN THE STRATOSPHERE ARE NECESSARY FOR DETERMINING THE KINETICS OF THE FALLOUT OF THESE AEROSOLS ONTO THE EARTH'S SURFACE. DESPITE THE FACT THAT THE FORMULATION OF SUCH INVESTIGATIONS INVOLVES GREAT METHODOLOGICAL DIFFICULTIES, IN RECENT YEARS ATTEMPTS HAVE BEEN MADE TO STUDY THE SIZE OF RADIOACTIVE PARTICLES IN THE UPPER ATMOSPHERE. WE DETERMINED THE DISPERSION OF RADIOACTIVE AEROSOLS IN THE STRATOSPHERE IN THE CENTRAL EUROPEAN PART OF THE USSR. THIS PAPER DISCUSSES THE RESULTS. THE RADIOACTIVE AEROSOLS WERE INVESTIGATED WITH THE SE-3 STRATOSPHERIC ELECTRICAL PRECIPITATOR AND THE HIGH-ALTITUDE VFU-1 FILTERING APPARATUS WITH A FPA-15-2 FILTER. ALL THE PRINCIPAL COMPONENTS OF THE COLLECTORS WERE DUPLICATED TO ENSURE RELIABLE OPERATION. THE EFFICIENCY OF ELECTRICAL PRECIPITATION AT HEIGHTS OF 19-21 KM, ACCORDING TO THEORETICAL COMPUTATIONS, VARIED FROM 2-3 TO 50-70 PERCENT, WITH A DECREASE OF THE RADIUS OF THE PARTICLES FROM 1 TO 0.005 MICRON. THE EFFICIENCY OF TRAPPING WITH THE FILTER WAS GREATER THAN 95 PERCENT FOR ALL PARTICLES. THE COMPUTATIONS WERE MADE FOR A PARTICLE DENSITY 2 G/CC. THE AEROSOL COLLECTORS WERE CARRIED INTO THE STRATOSPHERE BY AUTOMATIC BALLOONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$1.00 COPY, \$0.50 MICRONEGATIVE

\*AEROSOL + \*AIRBORNE RELEASE + \*FALLOUT + \*NUCLEAR EXPLOSION DEBRIS + \*STRATOSPHERE + AIR CLEANING + EXPLOSION + NUCLEAR DETONATION + PARTICLE SIZE + RADIOACTIVITY, RELEASE

7-13685  
BURNETT RW + TURNBULL WT  
INDUSTRIAL APPLICATIONS OF MOLECULAR SIEVES  
BURNETT AND LEWIS LTD. + UNION CARBIDE LTD.  
2 PAGES, 2 FIGURES, BRITISH CHEMICAL ENGINEERING 11(4) PAGES 261-262 (APRIL 1966)

THE HIGH EFFICIENCY OF MOLECULAR SIEVES AS ADSORBENTS AND THE SIMPLICITY OF THEIR REGENERATION HAS ALREADY RESULTED IN THEIR WIDESPREAD USE. SOME ASPECTS OF THEIR ADVANTAGES ARE DISCUSSED BELOW. THIS METHOD CAN BE USED FOR THE MAJORITY OF COMMERCIAL LARGE-SCALE FLUID PURIFICATION OPERATIONS. CONVENTIONAL FIXED-BED, HEAT-REGENERATED ADSORPTION SYSTEMS ARE GENERALLY

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-13685 \*CONTINUED\*

UTILIZED. A TYPICAL DUAL-BED INSTALLATION PLACES ONE BED ON STREAM PURIFYING THE FLUID WHILE THE OTHER IS BEING HEATED, PURGED AND COOLED. DRYING AND PURIFYING IN ONE STEP. DRYING WITHOUT ALTERING STREAM COMPOSITION. DRYING STREAMS TO VERY LOW WATER CONTENTS. DRYING GASES AT LOW INLET HUMIDITY.

\*MOLECULAR SIEVE + FILTER + FILTER MAINTENANCE + FILTER, BED + WATER VAPOR

7-13687

ZEBEL G

ON THE GROWTH AND RATE OF GROWTH OF AEROSOLS OF WATER-SOLUBLE SUBSTANCES AS A FUNCTION OF THE RELATIVE HUMIDITY IN AIR  
GERMAN BOARD FOR AEROSOL RESEARCH  
AI-TRANS-210 +. 25 PAGES, TRANSLATED FROM Z. AEROSOL-FORSCH. THERAP. 5(4), PAGES 263-288 (1956), FOR ATOMIC INTERNATIONAL

IF A WATERY SOLUTION HAVING A REDUCTION IN VAPOR PRESSURE AS OPPOSED TO THE VAPOR PRESSURE OF PURE WATER IS SPRAYED IN A ROOM (SPACE), THEN SMALL DROPLETS (GLOBULES, VAPOR PARTICLES) OF SOLUTION ARE KNOWN TO BE FOUND AT HIGH RELATIVE AIR MOISTURE (HUMIDITY), WHILE AT LOW MOISTURE SOLID PARTICLES OF THE DISSOLVED SUBSTANCE ARE SUSPENDED IN THE AIR AS RESIDUE OF THE DROPS OF EVAPORATED SOLUTION. THESE SOLID PARTICLES, WHICH USUALLY EXIST IN CRYSTALLINE FORM, ARE AGAIN CONVERTED, AS THE RELATIVE AIR MOISTURE INCREASES, INTO SMALL DROPLETS OF SOLUTION, THE RADIUS OF WHICH GROWS AS THE MOISTURE INCREASES. THE MOST IMPORTANT PREVIOUSLY PUBLISHED PAPERS ON THE PROPERTIES OF SMALL DROPLETS ARE - THE SIZE OF SALTWATER DROPS AS A FUNCTION OF THE SALT CONCENTRATION AND THE RELATIVE (AIR) HUMIDITY, DERIVATION OF THE GENERAL VAPOR PRESSURE FORMULA OF ELECTRICALLY CHARGED SALTWATER DROPS BY MEANS OF A CYCLIC PROCESS, VAPOR PRESSURE OF AN ELECTRICALLY CHARGED DROPLET OF PURE WATER, THE VAPOR PRESSURE OF UNCHARGED DROPLETS OF SALTWATER, THE RATE OF GROWTH OF SALTWATER DROPLETS WITH SUDDEN CHANGES OF HUMIDITY.

AVAILABILITY - JOHN CREPAR LIBRARY, 35 WEST 33RD STREET, CHICAGO, ILLINOIS 60616, \$2.60 COPY, \$0.95 MICROFILM

\*AEROSOL PRODUCTION + \*AEROSOL PROPERTIES + \*SPRAY, GENERAL + \*WATER VAPOR + AEROSOL + AIR CLEANING + OCFAN AND SEA + PARTICLE SIZE + PARTICLE SIZE DISTRIBUTION + WATER, GENERAL

7-13688

KANG WA + OSBERG GL

LONGITUDINAL PARTICLE MIXING IN A SCREEN-PACKED GAS-SOLID FLUIDIZED BED  
NATIONAL RESEARCH COUNCIL, OTTAWA, ONT.

6 PAGES, 7 FIGURES, 2 TABLES, 24 REFERENCES, THE CANADIAN JOURNAL OF CHEMICAL ENGINEERING 44(3), PAGES 142-147 (JUNE 1966)

LONGITUDINAL PARTICLE MIXING IN A SCREEN-PACKED, GAS-SOLID FLUIDIZED BED, 5 CM. I.D. X 100 CM. BED HEIGHT, WAS STUDIED BY EMPLOYING A COLORIMETRIC CONCENTRATION IMPULSE TECHNIQUE. THE PACKINGS WERE 1/2-IN. X 1/2-IN. OPEN-END SCREEN CYLINDERS. FOR THE SCREEN-PACKED BED, THE RESULTS WERE IN GOOD AGREEMENT WITH A DIFFUSION MODEL, WHILE THE RESULTS FOR THE UNPACKED FLUIDIZED BED SHOWED THAT THE SIMPLE DIFFUSION MODEL COULD NOT BE READILY APPLIED. A CELL MODEL WAS ALSO DEVELOPED AND COMPARED WITH THE DIFFUSION MODEL. THE EXPERIMENTAL DATA WERE ANALYSED IN TERMS OF THESE MODELS.

\*FLUIDIZED BED + ANALYTICAL MODEL + DIFFUSION + THEORETICAL INVESTIGATION

7-13689

BRIFFA FF + DOMBROWSKI N

ENTRAINMENT OF AIR INTO A LIQUID SPRAY  
IMPERIAL COLLEGE, LONDON, ENGLAND

10 PAGES, 3 TABLES, 13 FIGURES, 21 REFERENCES, A.I.C.H.E. JOURNAL 12(4), PAGES 708-717 (JULY 1966)

AN INVESTIGATION WAS MADE OF THE FLOW PATTERN EXISTING IN AND AROUND A FLAT SPRAY, PARTICULAR ATTENTION BEING PAID TO THE REGION OF DISINTEGRATION OF THE LIQUID SHEET. THE MASS OF AIR ENTRAINMENT INTO THE SPRAY, THE DECAY OF AIR VELOCITY ALONG THE SPRAY AXIS, AND THE SPREAD OF THE DROPS IN THE PLANE NORMAL TO THAT OF THE SHEET WERE RELATED TO THE OPERATING CONDITIONS BY EQUATIONS THEORETICALLY DERIVED AND EXPERIMENTALLY CONFIRMED. SIMILARITIES BETWEEN THE CHARACTERISTICS OF AIR ENTRAINMENT INTO LIQUID SPRAYS AND INTO GAS JETS WERE NOTED.

\*SPRAY, GENERAL + \*THEORETICAL INVESTIGATION + AIR CLEANING + FLOW DISTRIBUTION + HYDRODYNAMIC ANALYSIS

7-13690

OLBPICH WF

DISPERSION IN PACKED BEDS AND THE CELL MODEL  
MONASH UNIVERSITY, CLAYTON, VICTORIA, AUSTRALIA

9 PAGES, 6 FIGURES, 2 TABLES, 11 REFERENCES, TRANS. INST. CHEM. ENGRS. 44(6) PAGES T207-T215 (1966)

RADIAL AND LONGITUDINAL DISPERSION IN FLOW THROUGH A PACKED BED CAN BE REPRESENTED BY THE DISPERSION WHICH TAKES PLACE IN INTERCONNECTED MIXING CELLS. THE ANALOGY IS DISCUSSED IN SOME DETAIL BY CONSIDERING SMALL NUMBERS OF NEIGHBOURING CELLS AND BY ANALYSING OVERALL PROFILES GENERATED IN CELL SYSTEMS. IT IS FOUND THAT THERE IS NO UNIQUE PECLET NUMBER FOR A

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-13690 \*CONTINUED\*

SYSTEM. THE INCONSISTENCY BETWEEN CELL SYSTEM AND DIFFUSIVE BEHAVIOUR DECREASES AS THE RELATIVE IMPORTANCE OF DISCONTINUITIES AT THE CELL-SYSTEM BOUNDARIES BECOMES LESS. ONE EFFECT OF THE DISCONTINUITY AT THE BOUNDARY IS THAT THE WALL MASS-TRANSFER COEFFICIENT APPROPRIATE TO A CELL SYSTEM DIFFERS FROM THAT APPROPRIATE TO A DIFFUSION MODEL.

\*FILTER, RED + \*THEORETICAL INVESTIGATION + ANALYTICAL MODEL + FLOW DISTRIBUTION

7-13691  
SILVERMAN L  
DIFFUSION BOARD FOR FILTERING HIGH PRESSURE GASES  
U.S. PAT. 3,217,471 +. 5 PAGES, 1 FIGURE, NOVEMBER 16, 1965

THE PRESENT INVENTION RELATES TO A DIFFUSION BOARD FOR FILTERING HIGH PRESSURE GASES AND MORE PARTICULARLY TO A FILTERING MATERIAL CAPABLE OF WITHSTANDING SHOCK WAVES AND HIGH TEMPERATURE. THE PRESENT INVENTION PROVIDES FOR A WAY OF CONTAINING A NUCLEAR POWER PLANT AT A SUBSTANTIAL DECREASE IN COST OVER PRESENT CONTAINMENT ARRANGEMENTS AND AT THE SAME TIME PROVIDE AN ENHANCED ABILITY TO PREVENT THE RELEASE OF RADIOACTIVE PARTICULATES AND CERTAIN DANGEROUS RADIOACTIVE GASES SHOULD A NUCLEAR EXPLOSION OR ACCIDENT OCCUR INVOLVING RUPTURE OR RELEASE OF THE CONTENTS OF A NUCLEAR VESSEL. IN THIS INVENTION THERE IS PROVIDED A CONSTRUCTION REFERRED TO AS A DIFFUSION BOARD WHICH SERVES AS A POROUS FILTRATION AND ADSORPTION MEMBRANE FOR RELEASED PARTICULATES AND RADIOACTIVE GASES AND WHICH AT THE SAME TIME IS CAPABLE OF RESISTING THE ATTENDANT STEAM AND PRESSURE SHOCK WAVES. THE BOARD IS OF SUCH CONSTRUCTION THAT IT CAN BE USED AS A BUILDING MATERIAL WHICH, SHOULD THE NUCLEAR ACCIDENT OCCUR, HAS THE CAPABILITY TO PERMIT THE NONHARMFUL PRODUCTS TO DIFFUSE THROUGH AND TRAP THE DANGEROUS PARTICULATES AND GASES. THIS CONSTRUCTION ELIMINATES THE NEED FOR EXPENSIVE STANDBY EQUIPMENT AND APPARATUS DESIGNED TO PREVENT THE RELEASE OF SUCH MATERIALS TO THE SURROUNDING AREA.

AVAILABILITY - THE U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D.C. (\$0.25 PER COPY)

\*CONTAINMENT FILTERING SYSTEM + \*DIFFUSION BOARD + \*FISSION PRODUCT RETENTION + AIR CLEANING + CONTAINMENT STRUCTURE + CONTAINMENT, GENERAL + POROUS MEDIA

7-13692  
KRACKE RD + PFEIFFER A  
METHOD AND APPARATUS FOR THE CLASSIFICATION AND EVALUATION OF FALLOUT FROM AEROSOLS  
U.S. PAT. 3,222,925 +. 6 PAGES, 6 FIGURES, 7 REFERENCES, DECEMBER 14, 1965

THIS INVENTION RELATES TO AN APPARATUS FOR CLASSIFYING FINE PARTICLES THAT HAVE BEEN PRODUCED AT A GIVEN TIME, E.G., BY AN EXPLOSION, ACCORDING TO SIZE (OR, MORE STRICTLY SPEAKING, ACCORDING TO THEIR RATE OF FALL IN AIR) IN ORDER TO DETERMINE THE PARTICLE-SIZE DISTRIBUTION AND TO MAKE OTHER TYPES OF STUDIES. THE METHOD IS BASED ON THE FACT THAT IF A CLOUD OF FINE PARTICLES IS GENERATED AT A GIVEN INSTANT, THE PARTICLES OF HIGHEST TERMINAL SETTLING VELOCITY IN AIR WILL SETTLE OUT FIRST. FOR PARTICLES OF THE SAME DENSITY THESE WILL BE THE LARGEST PARTICLES.

AVAILABILITY - THE U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D.C. (\$0.25 PER COPY)

\*ANALYTICAL TECHNIQUE, AIR + \*FALLOUT + AEROSOL + AEROSOL PROPERTIES + AIR CLEANING + PARTICLE SIZE + SAMPLING

7-13730  
DOERR RM + JENSEN JW + MYERS CC  
HIGH-TEMPERATURE CORROSION STUDIES. INFLUENCE OF YTTRIUM ON OXIDATION OF NICKEL AT 1200 DEGREE C  
BUREAU OF MINES, ROLLA, MISSOURI, ROLLA METALLURGY RESEARCH CENTER  
BM-RI-6800 +. 23 PAGES, SEPTEMBER 1965

THE OXIDATION KINETICS OF NI-Y ALLOYS IN THE RANGE 0.04 TO 8 WEIGHT-PERCENT Y, AND OF HIGH-PURITY NI, WERE COMPARED BY THE USE OF A SENSITIVE VOLUMETRIC APPARATUS. THE REACTIONS FOLLOWED APPROXIMATELY THE PARABOLIC RATE LAW. INTERNAL OXIDATION OF Y OCCURRED IN THE ALLOY SPECIMENS AND THE RESULTANT Y<sub>2</sub>O<sub>3</sub> PARTICLES, WHICH WERE IN PATTERNS RELATED TO THE EUTECTIC STRUCTURE OF THE ALLOYS, SERVED AS MARKERS SHOWING THAT THE SUBSEQUENT OXIDATION OF THE SURROUNDING NI WAS BY INWARD DIFFUSION OF O. THE SCALE CONSISTED IN EACH CASE OF NiO, BUT THE INNER PARTS OF THE SCALE ON THE ALLOY SPECIMENS INCLUDED THE PATTERNED Y<sub>2</sub>O<sub>3</sub> PARTICLES. THE THICKNESSES OF THE INNER PARTS OF THE SCALE DEPENDED DIRECTLY ON THE Y CONCENTRATION, AND THE THICKNESSES OF THE Y<sub>2</sub>O<sub>3</sub>-FREE OUTER PARTS OF THE SCALE WERE INVERSELY RELATED TO THE Y CONTENT OF THE ALLOYS. THERE IS THUS A RELATIONSHIP BETWEEN THE THICKNESS OF THE OUTER PART OF THE SCALE AND THE PROTECTIVITY OF THE SCALE. OUTWARD DIFFUSION OF NI AND INWARD MOVEMENT OF O, FROM THE INNER BOUNDARY OF THE Y<sub>2</sub>O<sub>3</sub>-FREE PART OF THE SCALE, IS PROPOSED AS A MECHANISM FOR THESE RESULTS.

AVAILABILITY - BUREAU OF MINES - FREE

\*CORROSION + \*NICKEL + ALLOY + HIGH TEMPERATURE + OXIDATION + YTTRIUM

7-13743 ALSO IN CATEGORY 5  
DURRSCHNABEL W

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-13743 \*CONTINUED\*  
HYDROGEN ADSORPTIVE BEHAVIOR OF ZIRCONIUM ALLOY FUEL CLADDING  
3 PAGES, 1 TABLE, 2 FIGURES, ATOMWIRTSCHAFT 10(11) PAGES 560-562 (NOVEMBER 1965), IN GERMAN

ZIRCONIUM ALLOYS, ESPECIALLY ZIRCALOY, ARE QUITE USABLE UNDER NORMAL OPERATING CONDITIONS IN LIGHT-WATER REACTORS. IN CERTAIN SITUATIONS THEY ARE PREDISPOSED TO LOCALIZED HYDROGENATION, LEADING TO FISSURE FORMATION OWING TO THE CONSEQUENT EMBRITTLEMENT. IT SEEMS THAT SUFFICIENT PURITY OF THE FUEL AND OF THE FUEL ELEMENT CLADDING IS PROTECTIVE. IT APPEARS DESIRABLE TO SEEK MEANS OF DECREASING THE HYDROGEN ADSORPTION OF THE ALLOYS DURING REACTOR OPERATION, APPROACHING THE PROBLEM BOTH FROM THE STANDPOINTS OF WATER TECHNOLOGY AND OF ALLOY TECHNOLOGY. APPROPRIATE ADMIXTURES TO THE ALLOYS CAN DIMINISH THE RATE OF HYDROGEN UPTAKE, F.G., BY THE FORMATION OF OXIDE LAYERS HAVING FEWER LATTICE DEFECTS. IN ADDITION, FURTHER WORK IS IN ORDER TO ELUCIDATE THE CAUSES OF THE LOCALIZED INTENSE HYDROGENATION OF THE ZIRCONIUM CLADDINGS.

\*EMBRITTLEMENT + \*HYDROGEN + \*ZIRCALOY + ALLOY + FAILURE, CLADDING + ZIRCONIUM

7-13744  
ITAMI H + NOMURA S + AKUTSU C + ITO N  
CORROSION STUDIES ON REACTOR MATERIALS BY HIGH-TEMPERATURE AND HIGH-PRESSURE WATER LOOP. II. CHEMICAL INVESTIGATION OF THE WATER IN HIGH-TEMPERATURE AND HIGH-PRESSURE WATER LOOP  
JAPAN ATOMIC ENERGY RESEARCH INSTITUTE  
NSJ-TR-61 +. 17 PAGES, TRANSLATED FROM NIPPON GENSHIRYOKU GAKKAISHI 7(1) PAGES 15-24 (JANUARY 1965)

THE STUDY WAS CARRIED OUT AT 260 AND 280 C, USING AN OUT-OF-PILE STAINLESS-STEEL WATER LOOP. EMPHASIS WAS PLACED ON THE EFFECT OF DISSOLVED OXYGEN ON THE FORMATION OF SOLUBLE CORROSION PRODUCTS AND INSOLUBLE CRUD IN THE WATER. THE CONCENTRATIONS OF SOLUBLE CORROSION PRODUCTS AND CRUD INCREASED WITH THE DISSOLVED OXYGEN CONCENTRATION. THE PARTICLES OF CRUD CAUGHT IN A 320-MESH FILTER IN THE LOOP-PURIFICATION SYSTEM WERE BLACKISH-BROWN PLATELETS 1/50 TO 1/100 INCH ACROSS. THEY WERE SEPARATED INTO MAGNETIC AND NONMAGNETIC FRACTIONS THROUGH X-RAY DIFFRACTION. THE FORMER WAS FOUND TO BE MAINLY FE<sub>3</sub>O<sub>4</sub> AND THE LATTER ZRO<sub>2</sub>. THERE WAS LITTLE RELATION BETWEEN THE COMPOSITION OF THE CRUD AND THAT OF THE MAIN MATERIALS CONSTITUTING THE LOOP. THE CRUD DEPOSITED MORE READILY ON 18-8 STAINLESS STEEL THAN ON ZR ALLOY TEST SPECIMENS. THE IONIC FORMS OF THE ELEMENTS IN THE SOLUBLE CORROSION PRODUCT WERE ESTIMATED FROM CHEMICAL ANALYSIS OF THE ION-EXCHANGE RESIN DISCARDED FROM THE LOOP-WATER PURIFICATION SYSTEM.

AVAILABILITY - JOHN CRERAR LIBRARY, 35 WEST 33RD STREET, CHICAGO, ILLINOIS 60616, \$1.60 COPY, \$0.08 MICROFILM

\*CORROSION + \*OUT OF PILE LOOPS AND EXPERIMENTS + HIGH TEMPERATURE + STEEL, STAINLESS + WATER, GENERAL

7-13745  
STUDIES OF STEEL CORROSION IN HIGH-TEMPERATURE WATER AND STEAM. QUARTERLY REPORT NO. 14  
SOCIETE ETUDES, DE RECHERCHES ET D APPLICATIONS POUR LINDUSTRIE, BRUSSELS, BELGIUM  
EUPAEC-1625 + EUR-2838 +. 137 PAGES, APRIL 29, 1966

STUDY OF THE INFLUENCE OF SURFACE WORK-HARDENING ON THE OXIDATION OF CR AND CR-NI STEELS IN SUPERHEATED STEAM ABOVE 400 C WAS CONTINUED TO DEFINE THE RECRYSTALLIZATION CONDITIONS OF VARIOUS GRADES OF ALLOYED STEELS, AND TO DETERMINE, FOR EACH, THE RANGE IN WHICH LASTING IMPROVEMENT MAY BE EXPECTED. DURING THESE TESTS IT WAS SHOWN THAT MASS WORK-HARDENING, PRODUCED BY DRAWING OF UP TO 15 PERCENT DOES NOT ALTER THE CORROSION BEHAVIOR OF 304 STEEL IN SUPERHEATED STEAM AT 500 C. TO PINPOINT THE INFLUENCE OF SURFACE WORK-HARDENING UNDER THESE CONDITIONS, LONG-DURATION TESTS WERE UNDERTAKEN AT 500 C BY THE HYDROGEN DIFFUSION METHOD.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151 \$4.00 COPY, \$1.00 COPY

ALLOY + CLAD + CORROSION + DIFFUSION + HYDROGEN + STEAM + STEEL + STEEL, STAINLESS + ZIRCALOY

7-13746  
A STUDY OF THE STRESS CORROSION BEHAVIOR OF STAINLESS STEELS. QUARTERLY REPORT NO. 1 PERIOD FROM SEPTEMBER TO DECEMBER 1964  
COMPAGNIE DES ATELIERS ET FORGES DE LA LOIRE, PARIS, FRANCE  
FURAFEC-1309 +. 36 PAGES, 1964, IN FRENCH

THE FOLLOWING PAGES COMPRISE THE FIRST REPORT DESCRIBING THE WORK CARRIED OUT UNDER THE FURATOM CONTRACT 033-64-9 TEF (RD) FROM THE MONTH OF SEPTEMBER TO THE MONTH OF DECEMBER 1964. THE WORK CONSTITUTES THE PRELIMINARY TESTS AND CAN BE CLASSIFIED INTO GROUPS - (1) PREPARATION OF THE METAL AND THE SAMPLES, (2) VERIFICATION OF THE BEHAVIOR OF THE EXPERIMENTAL ALLOYS IN THE TRADITIONAL CHLORINATED MEDIA, (3) DESIGN AND CONSTRUCTION OF A FLEXION APPARATUS TO TEST CORROSION UNDER STRESS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$2.00 COPY

\*CORROSION + \*STRESS + ALLOY + STEEL, STAINLESS

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-13748 ALSO IN CATEGORY 11  
PASHOS TJ  
STAINLESS STEEL FAILURE INVESTIGATION PROGRAM. SECOND QUARTERLY REPORT, JULY-SEPTEMBER 1965  
GENERAL ELECTRIC COMPANY, SAN JOSE, CALIFORNIA  
GEAP-4968 + EURAEC-1541 +. 57 PAGES, OCTOBER 1965

A RESEARCH AND DEVELOPMENT PROGRAM WAS STARTED ON FEBRUARY 15, 1965, UNDER PROJECT AGREEMENT 45 OF CONTRACT AT(04-3)-189 TO INVESTIGATE THE CAUSE OF FAILURE OF STAINLESS STEEL CLADDING ON BOILING WATER REACTOR FUEL. THE PROGRAM CONSISTS OF THE INVESTIGATION OF THE EFFECTS OF MATERIAL COMPOSITION, COOLANT ENVIRONMENT, IRRADIATION DAMAGE, AND OPERATING STRESSES ON CLAD CRACKING.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.75 MICRONEGATIVE

\*CORROSION + \*FAILURE, CLADDING + \*STEEL, STAINLESS + EMBRITTLEMENT + HYDROGEN + RADIATION DAMAGE + STRESS

7-13834 ALSO IN CATEGORY 12  
HIGH-EFFICIENCY FILTERS GET UL LABEL  
ATOMIC ENERGY COMMISSION  
2 PAGES, HEALTH AND SAFETY BULLETIN NO. 206, MARCH 15, 1965

BRIEFLY DESCRIBES THE QUALIFICATIONS OF HIGH-EFFICIENCY FILTERS NECESSARY TO MEET THE UNDERWRITERS LABORATORIES STANDARDS. TO QUALIFY, FILTERS MUST WITHSTAND PENETRATION TESTS WITH DIOCTYL PHTHALATE (DOP), EXPOSURE TO FLOWING AIR HEATED AT 700 F, A SPOT FLAME TEST, RELATIVE HUMIDITY OF 90%, AND A LOW TEMPERATURE TEST OF 27 F.

AVAILABILITY - AEC, DIVISION OF PUBLIC INFORMATION, WASHINGTON, D.C. 20545

\*FILTER SAFETY EVALUATION + \*FILTER, HIGH EFFICIENCY + DESIGN CRITERIA + FILTER INSPECTION + FILTER, COMMERCIAL

7-13836 ALSO IN CATEGORIES 11 AND 12  
DURANT WS + MILHAM RC + MUHLBAIER DR + PETERS AH  
ACTIVITY CONFINEMENT SYSTEM OF THE SAVANNAH RIVER PLANT REACTORS  
SAVANNAH RIVER LABORATORY, AIKEN, SOUTH CAROLINA  
DP-1071 +. 150 PAGES, 31 FIGURES, 16 TABLES, 71 REFERENCES, AUGUST 1966

A FILTRATION-ADSORPTION SYSTEM IS INSTALLED IN THE VENTILATION EXHAUST OF EACH REACTOR BUILDING AT THE SAVANNAH RIVER PLANT FOR CONFINEMENT OF AIRBORNE PARTICULATE AND IODINE VAPOR ACTIVITY THAT MIGHT BE RELEASED IN THE HIGHLY UNLIKELY EVENT OF A REACTOR ACCIDENT. AIR FROM THE PROCESS AREAS OF EACH BUILDING IS PASSED CONTINUOUSLY THROUGH MOISTURE SEPARATORS, THEN THROUGH PARTICULATE FILTERS, AND FINALLY THROUGH IODINE ADSORBER BEDS OF ACTIVATED CARBON. THE SYSTEM HAS THE EXPERIMENTALLY DEMONSTRATED ABILITY TO CONFINE MORE THAN 99 PERCENT OF AIRBORNE PARTICULATE ACTIVITY AND MORE THAN 99.9 PERCENT OF AIRBORNE HALOGEN ACTIVITY, EVEN WITH ALLOWANCE FOR METHYL IODIDE, UNDER EMERGENCY CONDITIONS THAT COULD EXIST FOLLOWING A REACTOR ACCIDENT. A MECHANISM FOR METHYL IODIDE FORMATION WAS DEVELOPED FROM PUBLISHED DATA FOR GENERAL APPLICATION TO REACTOR CONFINEMENT. UNDER SAVANNAH RIVER PLANT CONDITIONS, LESS THAN 0.0001 PERCENT OF THE TOTAL IODINE INVENTORY IN THE REACTOR WOULD BE CONVERTED TO METHYL IODIDE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$4.00 COPY, \$1.00 MICROFICHE

\*ADSORPTION + \*CONTAINMENT, PRESSURE VENTING + \*FILTER SYSTEM + \*FILTER, EFFICIENCY OF + \*PARTICULATE + \*SAVANNAH RIVER PRODUCTION REACTORS + CARBON + FILTER + IODINE + OPERATING EXPERIENCE + ORGANIC IODIDE + VENTILATION SYSTEM

7-13847  
PARSLY LF + ROW TH  
STUDY OF FISSION PRODUCTS RELEASED FROM TRACE-IRRADIATED UO2 INTO STEAM-AIR ATMOSPHERES (NUCLEAR SAFETY PILOT PLANT RUNS 8 AND 9)  
OAK RIDGE NATIONAL LABORATORY  
ORNL-TM-1588 +. 89 PAGES, FIGURES, TABLES, MAY 20, 1966

TWO EXPERIMENTS ARE REPORTED IN WHICH FISSION PRODUCTS FROM TRACE LEVEL IRRADIATED, STAINLESS CLAD, NORMAL UO2 FUEL PINS ARE RELEASED INTO A 1350 CU FT MODEL CONTAINMENT VESSEL BY MELTING THE PINS IN A STEAM ATMOSPHERE WITH A PLASMA TORCH. THE DATA OBTAINED INCLUDE DISTRIBUTION OF FISSION PRODUCTS IN THE SYSTEM AFTER MELTING, MATERIAL BALANCES, CONDENSATE ACCUMULATION RATE, RATE OF ACCUMULATION OF FISSION PRODUCTS IN CONDENSATE, CONCENTRATION OF FISSION PRODUCTS IN THE CONTAINMENT VESSEL ATMOSPHERE VS TIME AND DEPOSITION ON A VARIETY OF SURFACES. IN THE FIRST OF THE TWO RUNS LIMITED MELTING OF THE FUEL WAS ACHIEVED AND LIMITED TRANSPORT OF FISSION PRODUCT TO THE VESSEL OCCURRED (THE MAXIMUM TRANSFERRED WAS 2.27% OF THE I). ONLY 20% OF THE I WHICH ENTERED THE VESSEL REMAINED IN THE ATMOSPHERE 1 HR AFTER MELTDOWN, AND THIS CONCENTRATION DECREASED BY A FACTOR OF 8 NEAR THE TOP OF THE VESSEL AND BY A FACTOR OF 2.5 AT THE CENTER OF THE VESSEL IN 24 HR. IN THE SECOND RUN, 35% OF THE IODINE CONTENT OF THE FUEL WAS TRANSFERRED TO THE CONTAINMENT VESSEL, 12% OF THIS INITIAL



CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-13847 \*CONTINUED\*

CONCENTRATION WAS AIRBORNE AFTER 1 HR, AND THE CONCENTRATION FURTHER DECREASED BY A FACTOR OF 10 IN 24 HR (0.4% OF THE INVENTORY WAS AIRBORNE AFTER 24 HR). THE USE OF A WATER SPRAY THEN REDUCED THE IODINE CONCENTRATION BY A FURTHER FACTOR OF 2.5. CONCENTRATIONS OF FISSION PRODUCTS OTHER THAN I WERE TOO LOW TO GIVE SIGNIFICANT TIME-DEPENDENT DATA.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFO., NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 CY, \$0.75 MN

\*FISSION PRODUCT RELEASE, GENERAL + \*FISSION PRODUCT, IODINE + \*FUEL MELTDOWN + \*NSPP (NUCLEAR SAFETY PILOT PLANT) + AEROSOL + CONTAINMENT FILTERING SYSTEM + DEPOSITION + FISSION PRODUCT TRANSPORT + IODINE + URANIUM DIOXIDE

7-13848

JURY SH

FOAM DECONTAMINATION OF AIR CONTAINING RADIOACTIVE IODINE AND PARTICULATES FOLLOWING A NUCLEAR ACCIDENT OAK RIDGE NATIONAL LABORATORY

ORNL-TM-1589 +. 21 PAGES, 2 REFERENCES, OCTOBER 1966

FOAM SUPPRESSION OF RADIOACTIVE IODINE AND PARTICLES FOLLOWING A NUCLEAR INCIDENT IS BRIEFLY REVIEWED, EMPHASIS BEING PLACED ON METHODS OF CHARACTERIZING AND CATEGORIZING THE VARIOUS CONTAMINANTS. IT IS PROPOSED THAT VOLATILE CONTAMINANTS CAN BE ADSORBED ON THE PARTICLES AND THAT THE LATTER, VIA EINSTEINIAN DIFFUSION, CAN ACT AS VEHICLE FOR TRANSPORT OF RADIOACTIVE CONTAMINANTS TO THE SURFACE OF THE BUBBLE. IN THE LIGHT OF THIS KINETIC MECHANISM AN INVESTIGATION WAS MADE VIA A MATHEMATICAL ANALYSIS OF DIFFUSION IN BUBBLES IN STATIC FOAM AND IN FOAM BEDS SUBJECTED TO ELUTION. IT WAS SHOWN THAT IN THE ABSENCE OF CHEMICAL REAGENTS TO REDUCE THE VAPOR PRESSURE OF RADIO-VOLATILE COMPONENTS, THE ELUTION OPERATION IS A BASIC REQUIREMENT TO ATTAIN DECONTAMINATION FACTORS OF 10(MINUS 3RD) TO 10(MINUS 9TH) IN THE GAS PHASE OF THE BUBBLE. FOR MATHEMATICAL CONVENIENCE THE DECONTAMINATION FACTOR IS HERE DEFINED AS THE RATIO OF FINAL OVER INITIAL CONCENTRATION. EVEN IF VAPOR PRESSURE AND BACK-DIFFUSION OF RADIO-VOLATILE COMPONENTS IS NOT A PROBLEM THE BED MUST STILL BE ELUTED TO PREVENT REDISPERSING THE CONTAMINANTS DURING THE FOAM COLLAPSING PHASE OF THE OPERATION. A NUMBER OF OTHER FACTORS ARE DISCUSSED (INVOLVING THE COST OF THE OPERATION, EQUIPMENT AND ITS MAINTENANCE, THE PROBLEM OF UNIFORM ELUANT FEED DISTRIBUTION, VELOCITY CRITERIA, AND DYNAMIC DECONTAMINATION FACTOR VIA WHICH ONE CAN EXERCISE SOME CONTROL OVER BACK DIFFUSION).

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFO., NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$1.00 CY, \$0.50 MN

\*DECONTAMINATION FACTOR + \*ENGINEERED SAFETY SYSTEM + \*FOAM + \*THEORETICAL INVESTIGATION + DECONTAMINATION + EMERGENCY SYSTEM + FISSION PRODUCT TRANSPORT + FISSION PRODUCT, IODINE + FISSION PRODUCT, VOLATILE + PARTICULATE

7-13908

DENSCHLAG JO

REACTIONS OF FISSION RECOIL ATOMS, PARTICULARLY OF IODINE WITH METHANE AND OTHER GASES UNIVERSITY OF MAINZ, WEST GERMANY

MP-15370 +. 199 PAGES, 1965

REACTIONS OF FISSION RECOIL ATOMS, PARTICULARLY OF IODINE WITH METHANE AND OTHER GASES.

AVAILABILITY - MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

\*ORGANIC IODIDE + CHEMICAL KINETICS + CHEMICAL REACTION + FISSION PRODUCT, IODINE + FISSION RECOIL + IODINE

7-13909

RANKIN WN + STURCKEN EF + MCDONELL WR

ADVANCES IN NAK ENCAPSULATION TECHNIQUES AT THE SAVANNAH RIVER LABORATORY

SAVANNAH RIVER LABORATORY

DP-MS-66-1 + CONF-660511-9 +. 15 PAGES, APRIL 25, 1966, FROM INTERNATIONAL SYMPOSIUM ON CAPSULE IRRADIATION EXPERIMENTS, PLEASANTON, CALIFORNIA

NAK-CONTAINING CAPSULES HAVE BEEN UTILIZED AT SRL FOR BASIC STUDIES OF THE IRRADIATION GROWTH AND SWELLING OF URANIUM AND URANIUM ALLOYS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$1.00 COPY, \$0.50 MICROFICHE

\*IN PILE EXPERIMENT + \*NAK (SODIUM POTASSIUM ALLOY) + EQUIPMENT DESIGN

7-13911

LAUREN GN + KOONTZ RL + JARRETT AA

SODIUM PIPES AND THE RELEASE CHARACTERISTICS OF PARTICULATES AND FISSION PRODUCTS

ATOMICS INTERNATIONAL, CANOGA PARK

NAA-SR-MFMQ-9719 +. 23 PAGES, 3 TABLES, APRIL 12, 1965

SMALL-SCALE (3 TO 7 GM) SODIUM-FIRE EXPERIMENTS USING SODIUM IODIDE TRACERS AT ABOUT 300 PPM INDICATED A CONCENTRATION OF IODINE IN THE OXIDE PHASE AND A CORRESPONDING REDUCTION IN THE

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-13911 \*CONTINUED\*

METALLIC PHASE. ONLY SODIUM IODATE AND SODIUM IODIDE COULD BE DETECTED IN THE RELEASE EFFLUVIA - NOT FREE IODINE. THE EXTRACTION OF IODINE FROM THE METALLIC PHASE WAS FURTHER DEMONSTRATED IN AN EXPERIMENT IN WHICH A SODIUM AND SODIUM-IODIDE MIXTURE WAS FILTERED THROUGH A BED OF SODIUM OXIDE. THE IODINE CONTENT OF THE ORIGINAL MIXTURE WAS REDUCED FROM 300 PPM TO ZERO. THUS, WE CAN POSTULATE THAT THE OXIDE PHASE IN A SODIUM FIRE (OXIDE FALLING THROUGH THE MOLTEN POOL) SCAVENGES IODINE (AND PERHAPS OTHER FISSION PRODUCTS) AND THAT OXIDATION DURING THE LATTER PART OF THE FIRE WILL OCCUR AT THE SURFACE OF SODIUM DEPLETED IN IODINE COMPARED WITH THE CONCENTRATION DURING THE FIRST PART OF THE FIRE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$1.00 COPY, \$0.50 MICROFICHE

FIRE + FISSION PRODUCT RELEASE, GENERAL + FISSION PRODUCT, IODINE + IODINE + PARTICULATE + SODIUM

7-13930 ALSO IN CATEGORY 4

DAVIS MV + BACKUS CE + BRITT EJ + TRUNER DM  
THE EFFECT OF SIMULATED FISSION PRODUCTS IN THE INTER-ELECTRODE SPACING OF THERMIONIC DIODE ANNUAL REPORT NO. 1, NOVEMBER 1, 1964--NOVEMBER 1, 1965  
UNIVERSITY OF ARIZONA  
AD-625586 +. 23 PAGES, DECEMBER 17, 1965

THE NUCLEAR HEATING OF IN-CORE THERMIONIC DIODES TO DIRECTLY CONVERT HEAT TO ELECTRICITY ALLOWS A COMPACT, HIGH-POWERED, LONG-LIVED SYSTEM DESIGN. THERE ARE, HOWEVER, SOME UNANSWERED PROBLEMS, ONE OF WHICH IS THE EFFECT OF ADMITTING FISSION PRODUCTS INTO THE INTERELECTRODE SPACES OF THE SYSTEM. THIS COULD HAPPEN IN THE CASE OF A CLADDING RUPTURE OR BY THE IMPURITIES DIFFUSING THROUGH THE FUEL FROM THE HOTTER CENTER TO THE SURFACES OF THE FUELED EMITTER. THE EFFECTS OF HIGH TEMPERATURE ON THE INSULATING PROPERTIES OF CERAMIC MATERIALS HAVE BEEN EXAMINED TO DELINEATE THE PROBLEMS OF ELECTRICAL BREAKDOWN THAT MAY OCCUR IN HIGH-POWERED THERMIONIC REACTOR SYSTEMS AND TO DEFINE SAFE AREAS OF SYSTEM TEMPERATURE AND VOLTAGES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$1.00 COPY, \$0.50 MICROFICHE

\*AEROSPACE SAFETY + \*ELECTRIC POWER, GENERAL + \*FISSION PRODUCT RELEASE, GENERAL + \*SPACECRAFT + ANALYTICAL MODEL + ANALYTICAL TECHNIQUE, CALIBRATION + FISSION GAS RELEASE + INSTRUMENTATION, GENERAL + IODINE + KRYPTON + NOBLE GAS + SIMULATION + XENON

7-13931

POSNER S + BENNICK J  
PREPARATION OF INSOLUBLE AEROSOLS CONTAINING MIXED FISSION PRODUCTS  
LOVELACE FOUNDATION FOR MEDICAL EDUCATION AND RESEARCH, ALBUQUERQUE  
LF-31 + CONF-660504-3 +. 14 PAGES, 3 FIGURES, 3 REFERENCES, JULY 1966, FROM AMERICAN INDUSTRIAL HYGIENE ASSN., ANNUAL CONFERENCE, PITTSBURGH, PA.

THE PREPARATION OF AN INSOLUBLE AEROSOL CONTAINING MIXED FISSION PRODUCTS, USING AN ION EXCHANGE OF URANYL NITRATE WITH MONTMORILLONITE CLAY IS DESCRIBED. ION EXCHANGE OF AN ENRICHED SOLUTION OF URANYL NITRATE TO CLAY PARTICLES IS ACCOMPLISHED BY ADSORPTION. AFTER SPHEROIDIZING BY ENCAPSULATION THE EXCHANGED MATERIAL IS SEALED IN A QUARTZ VIAL AND IRRADIATED FOR 12 HOURS IN A THERMAL COLUMN OF THE OMEGA WEST REACTOR AT LOS ALAMOS, NEW MEXICO. EVALUATION BY GAMMA-RAY SPECTROSCOPY REVEALS THE QUANTITATIVE FISSION PRODUCT INVENTORY FOR THE EXPOSURE PERIOD. CALCULATION INDICATED AN APPROXIMATE 26% UPTAKE OF URANYL IONS BY THE CLAY. RESULTS INDICATE THIS METHOD TO BE FEASIBLE AND PRACTICABLE, AND FUTURE STUDIES WILL INCLUDE EVALUATION OF PARTICLE SIZE VERSUS ION UPTAKE, FISSION PRODUCT BUILDUP FOR VARIOUS EXPOSURE TIMES, AND PILOT RUNS OF AEROSOLIZATION FOR EXPOSURE TO ANIMALS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$1.00 COPY, \$0.50 MICROFICHE

\*AEROSOL PRODUCTION + \*SIMULATION + \*SPECTROMETRY, GAMMA + AEROSOL + BARIUM + CERIUM + CESIUM + FISSION PRODUCT RELEASE, GENERAL + FISSION PRODUCT TRANSPORT + ION EXCHANGE + PARTICLE SIZE + STRONTIUM

7-13945 ALSO IN CATEGORIES 5 AND 8

MORRISON DL + GENCO JM + GIESEKE JA + RITZMAN RL + WALTERS CT + SUNDERMAN DN  
AN EVALUATION OF THE APPLICABILITY OF EXISTING DATA TO THE ANALYTICAL DESCRIPTION OF A NUCLEAR-REACTOR ACCIDENT  
BATTELLE MEMORIAL INSTITUTE  
BMI-1779 +. 228 PAGES, 60 FIGURES, 20 TABLES, 336 REFERENCES, AUGUST 12, 1966

THE COMPLEX SEQUENCE OF CHEMICAL AND PHYSICAL PROCESSES IN A LOSS-OF-COOLANT ACCIDENT FOR A NUCLEAR POWER REACTOR WAS SUBJECTED TO AN ANALYTICAL STUDY. DATA AND THEORIES ON THESE PROCESSES WERE EXAMINED AND EMPLOYED FOR AN ANALYTICAL DESCRIPTION OF THE ACCIDENT. A DIGITAL-COMPUTER CODE, NURLOC, WAS DEVELOPED TO PERFORM THE TWO-DIMENSIONAL, TRANSIENT-HEAT-TRANSFER CALCULATIONS FOR A GIVEN REACTOR SYSTEM. EXPERIMENTAL DATA ON FISSION-PRODUCT RELEASE WERE EXAMINED, AND A MODEL WAS CONSTRUCTED TO DESCRIBE THE TIME-DEPENDENT RELEASE OF FISSION PRODUCTS DURING AN ACCIDENT. A DIGITAL-COMPUTER CODE, FRACREL, WAS WRITTEN FOR THE MODEL, WITH THE TEMPERATURE DATA FROM NURLOC USED DIRECTLY FOR INPUT. THE SENSITIVITY OF THE OUTPUT FROM FRACREL TO UNCERTAINTIES IN THE EXPERIMENTAL DATA WAS INVESTIGATED.

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-13945 \*CONTINUED\*  
AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*ACCIDENT, MAXIMUM CREDIBLE (MCA) + \*AEROSOL + \*FISSION PRODUCT TRANSPORT + \*HEAT TRANSFER + \*THERMODYNAMICS + ACCIDENT, LOSS OF COOLANT + ACCIDENT, LOSS OF PRESSURE + COMPUTER PROGRAM + DECAY HEAT + FISSIION PRODUCT RELEASE, GENERAL + FLOW, TWO PHASE + PARTICULATE + PHASE CHANGE

7-13974 ALSO IN CATEGORIES 14 AND 19  
WASTE MANAGEMENT RESEARCH ABSTRACTS NO. 2  
INTERNATIONAL ATOMIC ENERGY AGENCY  
90 PAGES, 1966

ABSTRACTS FROM AUSTRALIA, CANADA, CZECHOSLOVAKIA, WEST GERMANY, JAPAN, POLAND, SOUTH AFRICA, UAR, UK, US, AND YUGOSLOVIA ARE INCLUDED. IT IS PROPOSED TO PUBLISH A SIMILAR SET OF ABSTRACTS EACH YEAR. THE ABSTRACTS WILL BE PUBLISHED IN THE LANGUAGE OF SUBMITTAL. THE TITLE AND THE NAMES OF AUTHORS AND OF THE INSTITUTE OF ABSTRACTS SUBMITTED IN RUSSIAN WILL BE TRANSLATED INTO ENGLISH.

AVAILABILITY - DIVISION OF HEALTH, SAFETY AND WASTE DISPOSAL, INTERNATIONAL ATOMIC ENERGY AGENCY, KAERNTNEPRING 11-13, A-1010 VIENNA, AUSTRIA, FRCC

\*BIBLIOGRAPHY + \*WASTE MANAGEMENT

7-14075 ALSO IN CATEGORIES 17 AND 18  
N S SAVANNAH WISHES AMENDMENT TO MINIZE FILTER PLUGGING BY DOP  
FIRST ATOMIC SHIP TRANSPORT, INC.  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(3) PAGES 13-14 (JANUARY 16, 1967) DOCKET NO. 50-238

TECH. SPEC. CHANGE WOULD ALLOW PORT ENTRY IF CONTAINMENT FILTERS TESTED OK WITHIN A WEEK. ON SHORT RUNS, PRESENT REQUIREMENT MAKES DAILY TESTING NECESSARY. THE ONLY REASON FOR PAST FILTER CHANGES HAS BEEN EXCESSIVE PRESSURE DROP DUE TO THE OILY RESIDUE LEFT AFTER DOP TESTING.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + FILTER TEST REQUIREMENT + FILTER, DAMAGED + N.S SAVANNAH + PRESSURE DROP + REACTOR, PRESSURIZED WATER + TEST, DOP FILTER

7-14076 ALSO IN CATEGORIES 13 AND 18  
NFS AMENDMENT TO DELETE STACK MONITORING FOR ALPHA ACTIVITY  
NUCLEAR FUEL SERVICES, INC.  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(3) PAGE 14 (JANUARY 16, 1967) DOCKET NO. 50-201

PRESENT STACK MONITOR IS NOT SENSITIVE TO PLUTONIUM OR URANIUM PRODUCT, WHICH HAS BEEN ANALYZED FOR FISSION PRODUCTS. SINCE VENTILATION AIR WILL BE FILTERED, DELETION OF STACK-MONITORING PROVISION FOR PRODUCT-LOADOUT OPERATIONS IS JUSTIFIED.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + ALPHA EMITTER + MONITOR, RADIATION, STACK + NFS (NUCLEAR FUEL SERVICES)

7-14078 ALSO IN CATEGORIES 17 AND 18  
N S SAVANNAH CORRESPONDENCE  
FIRST ATOMIC SHIP TRANSPORT, INC.  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(3) PAGES 19-20 (JANUARY 16, 1967) DOCKET NO. 50-238

(1) OPERATION NEAR BILBAO, SPAIN, IN A TWO-OUT-OF-TWO COINCIDENCE MODE WAS CONTRARY TO TECH. SPECS. (2) WHILE THE HEALTH PHYSICIST SHOULD REPORT TO THE MASTER FOR UNUSUAL RADIATION CONDITIONS AS IN TECH. SPEC., HIS ROUTINE WORK IS FOR ENGINE DEPARTMENT AND IS SHOWN ACCORDINGLY ON THE ORGANIZATION CHART. (3) CHARCOAL FILTERS HAVE BEEN HEAVILY COVERED WITH OXIDIZED LUBE OIL, BUT THAT DID NOT REDUCE CAPABILITY FOR RETAINING ELEMENTAL IODINE. TESTING IS NOW DONE ONCE PER VOYAGE, RATHER THAN ONCE A YEAR.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + ADMINISTRATIVE CONTROLS AND PRACTICES + CHARCOAL + FILTER + INSTRUMENTATION, COINCIDENT + N S SAVANNAH + REACTOR, PRESSURIZED WATER + TEST, FILTER

7-14144 ALSO IN CATEGORIES 17 AND 18  
NS SAVANNAH PROPOSED CHANGE 11 - MONITORING CONTAINMENT INSTEAD OF GAS WASTE HEADER DURING CHARCOAL FILTER, TESTS  
FIRST ATOMIC SHIP TRANSPORT, INC.  
3 PAGES, DECEMBER 12, 1966, DOCKET NO. 50-238

TEMPORARILY, RADIOIODINE TESTING OF CONTAINMENT CHARCOAL FILTERS HAS BEEN INCREASED TO ONCE PER VOYAGE (INSTEAD OF DURING A QUARTERLY OUTAGE) BECAUSE OF LUBE OIL DEPOSITS ON FILTERS. THE TEST REQUIRES THAT THE GAS WASTE MONITORS BE USED FOR THE CONTAINMENT ATMOSPHERE, WHICH IN TURN REQUIRES A REACTOR SHUTDOWN. REQUEST EXCEPTION FROM GAS-WASTE MONITORING DURING CONTAINMENT-FILTER TESTING.

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-14144 \*CONTINUED\*  
AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + CHARCOAL + CONTAINMENT, HIGH PRESSURE + FILTER + MONITOR, RADIATION, GAS + N S SAVANNAH + REACTOR, PRESSURIZED WATER + TEST, DOP FILTER + TEST, FILTER

7-14170 ALSO IN CATEGORIES 5 AND 8  
SCHICK HL  
THERMODYNAMICS OF CERTAIN REFRACTORY COMPOUNDS. (VOLUME I, DISCUSSION OF THEORETICAL STUDIES. VOLUME II, THERMODYNAMIC TABLES, BIBLIOGRAPHY, AND PROPERTY FILE)  
1403 PAGES, 24 FIGURES, 250 TABLES, REFERENCES, 1966, ACADEMIC PRESS, NEW YORK, N.Y., AND LONDON

THIS IS A COMPREHENSIVE COMPILATION OF THERMOCHEMICAL DATA, GIVING THE SPECIFIC HEAT, ENTROPY, FULL ENERGY FUNCTION, HEATS OF FORMATION, FREE ENERGY OF FORMATION, AND THE EQUILIBRIUM CONSTANT OF FORMATION FOR TEMPERATURES FROM 0 TO 6000 K. THE DATA REPORTED WAS COMPILED BETWEEN 1 JUNE 1962 AND 31 DECEMBER 1963. THIS WORK INCLUDES A STUDY OF THE THERMODYNAMICS OF THE BORIDES, CARBIDES, NITRIDES, AND OXIDES OF 31 ELEMENTS IN THE TEMPERATURE RANGE FROM 0 TO 6000 DEGREES K. THE ELEMENTS ARE (A) GROUP IIA--BERYLLIUM, MAGNESIUM, CALCIUM, AND STRONTIUM, (B) GROUP IVB--TITANIUM, ZIRCONIUM, AND HAFNIUM, (C) GROUP IVA--SILICON, (D) GROUP IVB--TITANIUM, ZIRCONIUM, AND HAFNIUM, (E) GROUP VB--VANADIUM, NIOBIUM, AND TANTALUM, (F) GROUP VIB--CHROMIUM, MOLYBDENUM, AND TUNGSTEN, (G) GROUP VIIB--MANGANESE, TECHNETIUM, AND RHENIUM, (H) GROUP VIII--RHODIUM, OSMIUM, IRIIDIUM, AND PLATINUM, (I) RARE EARTHS--CERIUM, NEODYMIUM, SAMARIUM, GADOLINIUM, AND DYSPROSIUM, AND (J) ACTINIDES--URANIUM AND THORIUM. MORE THAN 160 THERMODYNAMIC TABLES, TOGETHER WITH COMPREHENSIVE DISCUSSIONS, HAVE BEEN PREPARED. THE WORK HAS BEEN SUMMARIZED IN TWO VOLUMES. VOLUME 1, PRESENTS A SUMMARY OF THE TECHNIQUES USED TO ANALYZE THERMODYNAMIC DATA AND GIVES THE DATA ANALYSES FOR REFRACTORIES CONSIDERED. VOLUME 2, IS A COMPILATION OF THERMODYNAMIC TABLES GENERATED ON THIS PROJECT. IT ALSO CONTAINS A BIBLIOGRAPHY AND SUBJECT INDEX.

AVAILABILITY - ACADEMIC PRESS, INC., 111 FIFTH AVENUE, NEW YORK, NY, 10003, \$38.00 A SET

\*CHEMICAL EQUILIBRIUM + \*CHEMICAL REACTION + \*PROPERTY, PHYSICAL + \*THERMAL PROPERTY + \*THERMODYNAMICS + HEAT TRANSFER

7-14286  
CHENEBAULT RF  
SPECIAL FEATURES OF THE USE OF URANIUM DIOXIDE AS THE FUEL IN POWER-REACTORS  
21 PAGES, 28 FIGURES, 1 TABLE, 49 REFERENCES, BULLETIN DE LA SOCIETE FRANCAISE DE CERAMIQUE NO. 66, PAGES 81-102

PARALLEL TO THE DEVELOPMENT OF REACTORS USING METALLIC URANIUM, IT IS INTERESTING TO CONSIDER THE USE FOR THIS PURPOSE OF A CERAMIC MATERIAL, PARTICULARLY URANIUM DIOXIDE. THE USE OF THIS REFRACTORY OXIDE PERMITS AN EXCELLENT PERFORMANCE TO BE OBTAINED BUT IT POSES SPECIAL PROBLEMS. FIRST, RESEARCH SHOWS THAT, BECAUSE OF THE LOW THERMAL CONDUCTIVITY OF UO<sub>2</sub>, A FUEL ELEMENT MADE OF THIS OXIDE WILL OPERATE AT A VERY HIGH CORE TEMPERATURE WITH A STEEP TEMPERATURE GRADIENT TO THE OUTSIDE.

CERAMICS + DIFFUSION + FISSION GAS RELEASE + FISSION PRODUCT TRANSPORT + FRANCE + OXIDE

7-14299  
EVERETT MR + KINSEY DV  
SOME ASPECTS OF CARBON TRANSPORT IN HIGH TEMPERATURE GAS-COOLED REACTORS  
UKAEA, WINFRITH  
DP-REPORT-365 +. 56 PAGES, 24 FIGURES, 1 TABLE, 9 REFERENCES, AUGUST 1965

THE CORROSION OF GRAPHITE BY SMALL QUANTITIES OF OXIDISING IMPURITIES IN HELIUM HAS BEEN STUDIED BOTH OUT-OF-PILE AND IN AN IN-PILE LOOP. TO PROVIDE MORE DATA AND TO AVOID INTERFERENCE FROM SIDE REACTIONS WITH THE MATERIALS OF THE LOOP, C-14 LABELLED GRAPHITE SAMPLES HAVE BEEN USED TO SUPPLEMENT THE INFORMATION GAINED FROM NORMAL GAS ANALYTICAL EQUIPMENT. FOR THE RESULTS OBTAINED FROM THE IN-PILE LOOP EXPERIMENTS A THEORETICAL MODEL IS PROPOSED WHICH EXPLAINS THE LARGE DEPARTURE OF THE OBSERVED REACTION RATE FROM FIRST ORDER DEPENDANCE ON CARBON DIOXIDE CONCENTRATIONS FOR THE TEMPERATURE RANGE 250-900 C. OTHER ASPECTS OF GRAPHITE CORROSION IN A HIGH TEMPERATURE HELIUM COOLED GRAPHITE MODERATED REACTOR ARE BRIEFLY CONSIDERED. CARBON DEPOSITION REACTIONS ON CATALYTICALLY ACTIVE SURFACES HAVE BEEN STUDIED EXPERIMENTALLY OVER THE TEMPERATURE RANGE 200-700 C. GAS EQUILIBRIA LIMITING THE SYSTEM FOR IRON SURFACES ARE CONSIDERED AND FOUND TO EXPLAIN THE EXPERIMENTALLY OBSERVED DISTRIBUTION OF DEPOSITED CARBON WITH RESPECT TO TEMPERATURE. THE EFFECTS OF CARBON DEPOSITION ON STEEL SURFACES AND THE NATURE OF THE DEPOSITED CARBON HAVE BEEN STUDIED. OBSERVED RATES OF CARBON DEPOSITION WHEN EXTRAPOLATED TO POWER REACTOR CONDITIONS INDICATE THE POSSIBILITY OF LARGE INCREASES IN GRAPHITE CORROSION RATES CAUSED BY REGENERATION OF OXIDISING IMPURITIES, IF NO SPECIAL MEASURES ARE TAKEN. THIS PAPER PRESENTS A NEW MATHEMATICAL APPROACH TO DESIGN AND OPERATIONAL ASPECTS OF CARBON TRANSPORT IN HIGH TEMPERATURE GAS COOLED REACTORS.

\*ANALYTICAL MODEL + \*GRAPHITE + \*IN PILE LOOP + \*MASS TRANSFER + \*OUT OF PILE LOOPS AND EXPERIMENTS + CARBON + CARBON DIOXIDE + CORROSION + DRAGON (UK) + TRACER, RADIOACTIVE

7-14330 ALSO IN CATEGORIES 11 AND 17

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-14330 \*CONTINUED\*

SWANKS JH

IN-PLACE IODINE FILTER TESTS AT THE HIGH FLUX ISOTOPE REACTOR  
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE  
ORNL-TM-1677 +. 17 PAGES, 6 TABLES, 5 FIGURES, 4 REFERENCES, DECEMBER 1966

EFFICIENCY TESTS ON 1/2-IN. ACTIVATED-CHARCOAL FILTERS USED IN THE AIR DECONTAMINATION SYSTEM WERE UNSATISFACTORY. IODINE REMOVAL EFFICIENCY WAS 99.65 PERCENT. NEW FILTERS WERE INSTALLED WHICH ARE 1-1/8 IN. THICK, WITH IMPREGNATED ACTIVATED-CHARCOAL FILLER CONTAINED BY PERFORATED STAINLESS-STEEL. THE FIRST TESTS ON THE NEW FILTERS WERE VERY UNSATISFACTORY. THE FILTERS WERE DISASSEMBLED AND IT WAS FOUND THAT THE CHARCOAL HAD SETTLED, SO THAT LARGE AIR GAPS HAD FORMED AT THE TOP OF THE FILTERS. AFTER THE FILTERS WERE FILLED, EFFICIENCY WAS 99.994 PERCENT FOR ELEMENTAL IODINE AND 99.97 PERCENT FOR METHYL IODIDE. THE AIR RESIDENCE TIME IN THE CHARCOAL IS 0.28 SEC. METHOD OF TESTING IS DESCRIBED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*CHARCOAL + \*FAILURE, DESIGN ERROR + \*FILTER + \*TEST, FILTER + FISSION PRODUCT, IODINE + HFIR (HIGH FLUX ISOTOPE REACTOR) + IODINE + ORGANIC IODIDE + REACTOR, FLUX TRAP

7-14381

HITCH BF + ROSS RG + MCDUFFIE HF

TESTS OF VARIOUS PARTICLE FILTERS FOR REMOVAL OF OIL MISTS AND HYDROCARBON VAPOR  
OAK RIDGE NATIONAL LABORATORY  
ORNL-TM-1623 +. 21 PAGES, 9 FIGURES, 3 TABLES, SEPTEMBER 7, 1966

VARIOUS FILTER AND ADSORBENT MATERIALS WERE EXAMINED FOR POSSIBLE USE IN THE REMOVAL OF OIL MISTS AND HYDROCARBON VAPORS. A CONTROLLED FLOW OF OIL WAS INJECTED INTO A HEATED NICKEL REACTION VESSEL TO CAUSE VAPORIZATION AND SOME CRACKING OF THE OIL. HELIUM FLOWING THROUGH THE REACTION VESSEL CARRIED THE OIL MIST AND HYDROCARBON VAPOR THROUGH A FILTER SYSTEM. FILTER EFFECTIVENESS WAS DETERMINED BY THE USE OF A PERKIN-ELMER HYDROCARBON DETECTOR, GRAVIMETRIC ANALYSIS, AND GAS CHROMATOGRAPHIC ANALYSIS. GOOD REMOVAL OF MISTS WAS ACHIEVED BY THE USE OF A COMBINATION OF FELTED METAL FIBERS AND CERAMIC FIBERS IN A CONFIGURATION PROPOSED FOR USE IN THE MSRE. GRANULATED CHARCOAL REMOVED HYDROCARBON VAPORS (C-6 AND ABOVE) IN A MANNER CONSISTENT WITH THE ESTABLISHED ADSORPTION ISOTHERMS FOR THIS MATERIAL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$2.00 COPY, \$0.50 MICRONEGATIVE

\*CHARCOAL + \*CHROMATOGRAPHY + \*REACTOR, MOLTEN SALT + CARBON + FILTER + FILTER, TRAP + MSRE (MOLTEN SALT REACTOR EXPERIMENT)

7-14382

KRUPCHATNIKOV VM

VENTILATION IN WORK WITH RADIOACTIVE SUBSTANCES  
AEC-TR-6642 + IPST-CAT-1699 +. 174 PAGES, TRANSLATED FROM VENTILYATSIYA PRI RABTAKH C RADIOAKTIVNYMI VESHNECHESTVAMI, ATOMIZDA MOSKVA, 1964, IN RUSSIAN, ISRAEL PROGRAM FOR SCIENTIFIC TRANSLATIONS,

THIS IS ONE OF THE FIRST BOOKS APPEARING IN THE SOVIET UNION ON THE PROBLEMS INVOLVED IN DESIGNING THE VENTILATION OF PREMISES USED FOR WORK WITH RADIOACTIVE SUBSTANCES. THE BOOK IS MAINLY A SYNOPSIS OF THE EXPERIENCE GAINED SO FAR IN THE SOVIET UNION ON THE DESIGN AND UTILIZATION OF VENTILATING SYSTEMS ON SUCH PREMISES. THE MATERIAL IS ILLUSTRATED BY SAMPLE DIAGRAMS, FLOWSHEETS, TABLES, MODEL CALCULATIONS, AND DESIGNS. THE BOOK IS RECOMMENDED TO SPECIALISTS IN THE FIELD OF DESIGN AND APPLICATION OF VENTILATION EQUIPMENT USED FOR WORK WITH RADIOACTIVE SUBSTANCES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$5.00 COPY, \$1.00 MICRONEGATIVE

\*AIR CLEANING + \*FILTER + \*FILTER SYSTEM + \*VENTILATION SYSTEM + AIRBORNE RELEASE + ATMOSPHERIC POLLUTION + FILTER DESIGN + FISSION PRODUCT RETENTION + FISSION PRODUCT TRANSPORT + RADIATION SAFETY AND CONTROL + RADIOACTIVITY, RELEASE

7-14384

POLLOCK BD + KUNKEL WP + MURBACH EW

NUCLEAR SAFETY, CHEMICAL REACTIONS. FISSION PRODUCT AND CONTAMINATION CONTROL  
ATOMICS INTERNATIONAL

NAA-SR-12175 +. 8 PAGES, 5 FIGURES, 6 REFERENCES, QUARTERLY TECHNICAL PROGRESS REPORT AEC UNCLASSIFIED PROGRAMS, JULY-SEPTEMBER 1966, PAGES 153-160

THE OBJECTIVE OF THIS PROGRAM IS TO ELUCIDATE THE BEHAVIOR OF FISSION PRODUCTS RELEASED TO THE COOLANT IN A FAST SODIUM-COOLED LMFBR REACTOR DURING NORMAL OPERATION, IN ORDER TO PROVIDE INFORMATION NECESSARY FOR THE DEVELOPMENT OF FISSION PRODUCT TRAPPING TECHNIQUES IN SUCH SYSTEMS. THE DISPOSITION OF FISSION PRODUCTS DURING NORMAL OPERATION MUST BE ALSO KNOWN IN ORDER TO ASSESS THE CONSEQUENCES OF POTENTIAL ACCIDENTS. INFORMATION IS REQUIRED ON THE EXTENT OF FISSION PRODUCT RETENTION IN SODIUM COOLANT, THE RATE AND EXTENT OF RELEASE TO THE COVER GAS, AND THE RATE AND EXTENT OF PLATE-OUT ON SURFACES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-14384 \*CONTINUED\*

\*METAL, LIQUID + \*OUT OF PILE LOOPS AND EXPERIMENTS + \*REACTOR, LIQUID METAL COOLED + \*SODIUM + \*TRITIUM + \*CESIUM + \*FILTER, TRAP + \*FISSION PRODUCT TRANSPORT + \*GAMMA EMITTER + \*IODINE + \*KRYPTON + \*NOBLE GAS + \*TRACER, RADIOACTIVE + \*XENON.

7-14385 ALSO IN CATEGORY 8

KOONTZ RL + LAUBEN GN  
NUCLEAR SAFETY, GASEOUS EFFLUENT STUDIES. CHARACTERIZATION OF SODIUM FIRES AND FISSION PRODUCT RELEASE  
ATOMICS INTERNATIONAL  
NAA-SR-12175 +. 14 PAGES, 3 TABLES, 7 FIGURES, QUARTERLY TECHNICAL PROGRESS REPORT AEC UNCLASSIFIED  
PROGRAMS, JULY-SEPTEMBER 1966, PAGES 161-174

THE GENERAL OBJECTIVE OF THIS PROJECT IS TO DEVELOP EXPERIMENTAL INFORMATION AND ANALYTICAL METHODS WHICH CHARACTERIZE THE RELEASE AND TRANSPORT OF EFFLUENTS AND ENERGY GENERATED DURING A PRIMARY-COOLANT (SODIUM) ACCIDENT. THE SOURCE OF ENERGY GENERATION MAY BE FROM THE ESCAPING COOLANT (BY RAPID THERMAL ENERGY TRANSFER) AND/OR SUBSEQUENT COMBUSTION OF THE SODIUM. THE EFFLUENTS ARE SODIUM (AS SODIUM-24) OR ITS OXIDE IN PARTICULATE FORM AND SELECTED FISSION PRODUCTS AVAILABLE AS POTENTIALLY SERIOUS DISPERSIONS OF RADIOACTIVITY. THE INFORMATION TO BE DEVELOPED IS REQUIRED FOR THE DESIGN AND SAFEGUARDS ANALYSIS OF ECONOMICAL; SODIUM-COOLED FAST REACTORS. A MAJOR EFFORT WILL BE DEVOTED TO EXPERIMENTS ON THE CHARACTERIZATION OF I-131 RELEASE FROM SODIUM FIRES. THESE TESTS WILL BE CONDUCTED IN THE LABORATORY TEST CHAMBER AND IN THE PARTICLE GENERATOR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*AEROSOL + \*ANALYTICAL MODEL + \*FIRE + \*PARTICLE SIZE + \*SODIUM + \*FISSION PRODUCT TRANSPORT + \*METAL, LIQUID + \*OUT OF PILE LOOPS AND EXPERIMENTS + \*REACTOR, LIQUID METAL COOLED + \*SMOKE

7-14386 ALSO IN CATEGORIES 2 AND 18

CAROLINA POWER AND LIGHT COMPANY, H.B. ROBINSON UNIT NO. 2 PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT  
CAROLINA POWER AND LIGHT COMPANY  
163 PAGES, FIGURES, TABLES, JULY 1966, DOCKET NO. 50-261

THE DESIGN OF ROBINSON UNIT 2 WILL BE BASED ON PROVED CONCEPTS WHICH HAVE BEEN DEVELOPED AND APPLIED TO THE DESIGN OF PRESSURIZED-WATER REACTOR SYSTEMS. THE USE OF A WATER SPRAY TO COOL AND DECONTAMINATE THE CONTAINMENT ATMOSPHERE FOLLOWING A MAJOR LOSS OF COOLANT IS DESCRIBED IN THIS REPORT. TO EMPLOY THE SPRAY AS A MEANS OF DECONTAMINATING AS WELL AS COOLING THE CONTAINMENT ATMOSPHERE IN THIS PLANT, A CHEMICAL WILL BE USED TO ENHANCE THE SOLUBILITY OF FISSION PRODUCT IODINE IN THE SPRAY DROPLETS. THE DESIGNER WILL UNDERTAKE CERTAIN DEVELOPMENT TASKS TO AUGMENT PRESENTLY AVAILABLE DATA ON THE CHARACTERISTICS OF SUCH A SYSTEM.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*REACTOR, PRESSURIZED WATER + \*SPRAY, GENERAL + AIR CLEANING + \*FISSION PRODUCT, IODINE + \*SAFETY ANALYSIS REPORT, PRELIMINARY

7-14666 ALSO IN CATEGORIES 11 AND 17

MILLER CE + SHIELDS RP  
USED CHARCOAL FILTERS FROM N S SAVANNAH IGNITE AT LOWER TEMPERATURES  
OAK RIDGE NATIONAL LABORATORY  
ORNL-TM-1742 +. 2 PAGES, ORNL NUCLEAR SAFETY RESEARCH AND DEVELOPMENT PROGRAM BIMONTHLY REPORT FOR NOVEMBER-DECEMBER 1966, PAGES 70-71, JANUARY 13, 1967, DOCKET NO. 50-238

ORNL TESTS ON AGED (USED) CHARCOALS FROM THE CONTAINMENT FILTERS OF THE NS SAVANNAH SHOWED THE CHARCOALS IGNITE AT 150-200 C LOWER THAN SIMILAR NON-AGED ONES. IODINE-IMPREGNATED CHARCOALS GENERALLY HAVE A HIGHER IGNITION TEMPERATURE THAN NON-IMPREGNATED CHARCOALS.

AVAILABILITY - WM. B. COTTRELL, OAK RIDGE NATIONAL LABORATORY, P. O. BOX Y, OAK RIDGE, TENNESSEE

\*CHARCOAL + \*FILTER + \*IGNITION + \*OPERATING EXPERIENCE + \*FIRE + \*HIGH TEMPERATURE + \*N S SAVANNAH + \*REACTOR, MARITIME + \*REACTOR, PRESSURIZED WATER

7-14670 ALSO IN CATEGORIES 11 AND 12

KARWAT H  
CURRENT PROBLEMS IN DESIGN AND EVALUATION OF CONTAINMENTS FOR LARGE WATER COOLED POWER REACTORS  
TECHNISCHE HOCHSCHULE MUNCHEN, GERMANY  
MRR-30 +. 15 PAGES, 2 FIGURES, 9 REFERENCES, OCTOBER 1966, FROM SECOND MEETING OF COMMITTEE ON REACTOR SAFETY TECHNOLOGY, PARIS, NOVEMBER 2-4, 1966

DESCRIBES FULL-PRESSURE AND PRESSURE-SUPPRESSION CONTAINMENT SYSTEMS AS USED IN GERMAN FEDERAL REPUBLIC. THERE FOLLOWS A DISCUSSION OF THE TYPES OF ACCIDENT AND ENGINEERED SAFEGUARDS THAT MUST BE CONSIDERED IN REACTOR SAFETY ANALYSIS.

\*CONTAINMENT, GENERAL + \*CONTAINMENT, HIGH PRESSURE + \*CONTAINMENT, PRESSURE SUPPRESSION + \*GERMANY + \*ACCIDENT ANALYSIS + \*CHARCOAL + \*ENGINEERED SAFETY SYSTEM + \*FILTER + \*FISSION PRODUCT TRANSPORT + \*METAL WATER REACTION

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-14766 ALSO IN CATEGORY 17  
SMT-S-346 FLUORESCENT LEAK DETECTOR AVAILABLE COMMERCIALY  
U. S. ATOMIC ENERGY COMMISSION, DIVISION OF OPERATIONAL SAFETY  
BUL. NO. 250 +. 1 PAGE, JANUARY 10, 1967

THE LEAK DETECTOR (AS DESCRIBED IN HEALTH AND SAFETY BULLETIN 219) IS NOW STOCKED IN 12-OUNCE  
AEROSOL CANS, WITH VENDORS LISTED IN AEC FIELD OFFICES. THE TRACER WAS DEVELOPED FOR  
NONQUANTITATIVE AIR-LEAK TESTING AND IS ALSO USEFUL FOR SPECIAL MARKING.

AVAILABILITY - AEC, DIVISION OF PUBLIC INFORMATION, WASHINGTON, D. C.

\*TEST, FILTER + TEST, LEAK LOCATION

7-1477P ALSO IN CATEGORIES 5 AND 6  
DICKERMAN CE  
USE OF PRESENT TREAT CORE AS A FAST-FLUX LOOP-MELTDOWN FACILITY  
ARGONNE NATIONAL LABORATORY  
1 PAGE, 7 REFERENCES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PA., OCTOBER 30-NOVEMBER  
3, 1966, ANS TRANS. 9(2), PAGE 551, (NOVEMBER 1966)

AVOIDANCE OF SELF-SHIELDING BY LOW ENRICHMENT OF FUEL OR BY CADMIUM SHIELD ELIMINATING THERMAL  
MEMBRANES. FOR SODIUM-BONDED CARBIDE FUEL, ADIABATIC TRANSIENTS CAN BE SIMULATED ONLY BY THE  
SHORTEST OBTAINABLE TRANSIENTS (40-MSEC ASYMPTOTIC PERIOD). TEMPERATURE DISTRIBUTIONS  
TYPICAL OF STEADY STATE CAN BE OBTAINED FOR OXIDE ELEMENTS BY LOW-ENERGY-RELEASE EXCURSIONS,  
THEN PROGRAMMED ROD MOTIONS CAN PRODUCE A TEMPERATURE EXCURSION FROM OPERATING LEVELS.

\*OPERATING EXPERIENCE + \*TREAT (TRANSIENT TEST REACTOR FACILITY)

7-14784 ALSO IN CATEGORIES 5 AND 6  
LIIMATAINEN RC + FRESHLEY MD + TESTA FJ  
TRANSIENT IRRADIATION OF VIBRATIONALLY COMPACTED UO2 FUEL IN TREAT  
ARGONNE NATIONAL LAB. + BATTELLE-NORTHWEST  
1 PAGE, 1 TABLE, 1966 WINTER MEETING, AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PA., OCT. 30-NOV. 3, 1966, ANS  
TRANS. 9(2), PAGE 395, (NOVEMBER 1966)

ZIRCALOY-CLAD, VIBRATIONALLY PACKED, URANIUM OXIDE FUEL RODS SUBJECTED TO TREAT TRANSIENTS UP  
TO 470 CAL PER GRAM. PRE-TRANSIENT BURNUP SIMULATED BY HELIUM PRESSURE. RODS WITH SIMULATED  
HIGH BURNUP FAIL BY CLAD RUPTURE BEFORE SIMULATED LOW-BURNUP RODS FAIL BY CLAD MELTING. 40%  
CLAD-WATER REACTIONS AND SOME OXIDATION OF URANIUM OXIDE. PEAK PRESSURE AND RATE OF PRESSURE  
RISE HIGHER THAN FOR PELLETS.

\*FAILURE, FUEL ELEMENT + \*TREAT (TRANSIENT TEST REACTOR FACILITY) + REACTOR, GRAPHITE MODERATED +  
REACTOR, TEST

7-14861 ALSO IN CATEGORIES 11 AND 18  
N S SAVANNAH CHANGE 5 - MISC. ADMINISTRATION AND TESTING  
DIVISION OF REACTOR LICENSING, UNITED STATES ATOMIC ENERGY COMMISSION  
2 PAGES, FEBRUARY 5, 1967, DOCKET NO. 50-238

CHANGES ALLOWED ARE - (1) CHANGE IN ORGANIZATIONAL TITLES, (2) PROVIDE FOR TRITIUM MONITORING  
IN WASTE DISPOSAL, (3) LESS FREQUENT EVACUATION DRILLS, (4) CLARIFY REPORTING RESPONSIBILITY  
OF STAFF HEALTH PHYSICIST, (5) ALTER CHANNEL 10 AND 11 REQUIREMENTS OF RADIATION MONITORING  
DURING FILTER TESTS, AND (6) ALLOW PORT ENTRY IF A DOP TEST WITHIN 1 WEEK PAST SHOWED A  
FILTER FACTOR OF 1000 OR MORE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + \*SAFETY EVALUATION + ADMINISTRATIVE CONTROLS AND PRACTICES +  
CONTAINMENT FILTERING SYSTEM + INSTRUMENTATION, RADIATION MONITORING + N S SAVANNAH + REACTOR, MARITIME +  
REACTOR, PRESSURIZED WATER + TEST, DOP FILTER + TRITIUM + WASTE DISPOSAL, GENERAL

7-15015 ALSO IN CATEGORY 5  
RITZMAN RL + GIESEKE JA + MORRISON DL  
FISSION-PRODUCT RELEASE AND TRANSPORT DURING A LOSS-OF-COOLANT ACCIDENT.  
BATTELLE MEMORIAL INSTITUTE  
2 PAGES, 1 FIGURE, 7 REFERENCES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PA., OCT. 30 -  
NOV. 3, 1966, ANS TRANS. 9(2), PAGES 556-557

A GENERALIZED SEMIEMPIRICAL FISSION-PRODUCT-RELEASE MODEL OF THE TIME-TEMPERATURE-DEPENDENT  
RELEASE OF FISSION-PRODUCT SPECIES FROM FUEL DURING LOSS-OF-COOLANT ACCIDENTS. FOR LOFT, 5  
TO 15% OF THE IODINE WOULD ESCAPE THE FUEL DURING THE INITIAL SEVEN MINUTES OF THE ACCIDENT.  
FOR BWR, ONLY ABOUT 0.2%. TRANSPORT OF FISSION PRODUCTS FROM THE POINT OF RELEASE AND THEIR  
DEPOSITION.

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-15015 \*CONTINUED\*  
\*ACCIDENT, LOSS OF COOLANT + \*DECAY HEAT + FISSION PRODUCT RELEASE, GENERAL + FISSION PRODUCT TRANSPORT + FISSION PRODUCT, IODINE + FISSION PRODUCT, NONVOLATILE + LOFT (LOSS OF FLUID TEST) + REACTOR, BOILING WATER

7-15016 ALSO IN CATEGORY 5  
OZISIK MN + CHEN PC  
DIFFUSION OF RADIOACTIVE MOLECULES FROM STAGNANT GAS IN CONTAINMENT VESSELS  
NORTH CAROLINA STATE UNIVERSITY  
2 PAGES, 1 FIGURE, 2 REFERENCES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PA., OCT. 30 - NOV. 3, 1966, ANS TRANS. 9(2), PAGES 557-558

ONE OF THE PROBLEMS ASSOCIATED WITH NUCLEAR REACTOR SAFETY IS THE DEPOSITION OF FISSION PRODUCTS ON THE WALLS OF A CONTAINMENT VESSEL UNDER ACCIDENTAL RELEASE CONDITIONS. TO FORMULATE DEPOSITION AS A FUNCTION OF TIME, THE FOLLOWING ASSUMPTIONS ARE MADE - (1) INITIALLY, THE RADIOACTIVE MOLECULES ARE UNIFORMLY DISTRIBUTED IN THE STAGNANT GAS, (2) ONE-DIMENSIONAL ISOTHERMAL DIFFUSION PROCESS IS CONSIDERED BETWEEN TWO LARGE PARALLEL PLATES, (3) DEPOSITION ON THE WALL IS MUCH LESS THAN A MONOMOLECULAR LAYER, (4) THERE ARE NO SOURCES IN THE GAS.

\*DEPOSITION + \*FISSION PRODUCT TRANSPORT + COMPUTER, DIGITAL

7-15017 ALSO IN CATEGORY 5  
MOORE KV + ROSE RP  
APPLICATION OF A LUMPED PARAMETER BUBBLE-RISE MODEL TO COOLANT BLOWDOWN ANALYSIS  
PHILLIPS PETROLEUM CO., IDAHO  
2 PAGES, 1 FIGURE, 7 REFERENCES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PA., OCT. 30 - NOV. 3, 1966, ANS TRANS. 9(2), PAGES 559-560

FOR BLOWDOWN OF A WATER-COOLED REACTOR SYSTEM IN THE LOSS-OF-COOLANT ACCIDENT. THE LUMPED-PARAMETER BUBBLE-RISE MODEL IS INCORPORATED IN THE FLASH AND RELAPSE DIGITAL COMPUTER PROGRAMS. COMPARISONS OF PREDICTED AND MEASURED VESSEL PRESSURE BEHAVIOR DURING BLOWDOWN ARE PRESENTED. APPLICATIONS TO LOFT REACTOR SYSTEM INDICATE THAT CYCLIC HYDRAULIC LOADS MAY BE IMPOSED ON THE CORE-SUPPORT STRUCTURE.

\*ACCIDENT, LOSS OF COOLANT + \*COMPUTER, DIGITAL + \*LOFT (LOSS OF FLUID TEST) + HYDRAULIC ANALYSIS

7-15018 ALSO IN CATEGORY 5  
CURET HD  
EXPERIMENTAL BLOWDOWN PHENOMENA APPLICABLE TO PRESSURIZED-WATER REACTOR SYSTEMS  
PHILLIPS PETROLEUM COMPANY, IDAHO  
2 PAGES, 1 FIGURE, 1 TABLE, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PA., OCTOBER 30-NOV 3, 1966, ANS TRANS 9(2), PAGES 560-561

EXPERIMENTAL BLOWDOWN TESTS SIMULATING CONDITIONS EXPECTED DURING LOFT, RANGING FROM 70 F AND 600 PSIG TO LOFT CONDITIONS OF 540 F AND 2330 PSIG. A PRESSURE VESSEL, DEVOID OF INTERNAL RESTRICTIONS, 128-IN. LONG AND 12 IN. IN DIAM WITH 4-IN. BLOWDOWN NOZZLES AT THE TOP AND BOTTOM WAS USED.

\*ACCIDENT, LOSS OF COOLANT + \*LOFT (LOSS OF FLUID TEST) + COMPUTER, DIGITAL + STRUCTURAL INTEGRITY

7-15033 ALSO IN CATEGORIES 14 AND 6  
TECHNICAL PUBLICATIONS OF BATTTELLE-NORTHWEST DURING 1965  
BATTTELLE-NORTHWEST, RICHLAND, WASHINGTON, PACIFIC NORTHWEST LABORATORY  
BNWL-218 +. 52 PAGES, MARCH 1966

CATEGORIES ARE BIOLOGY AND MEDICINE, CHEMISTRY AND CHEMICAL ENGINEERING, EARTH AND ATMOSPHERIC SCIENCES, ELECTRONICS AND COMPUTER TECHNOLOGY, ENGINEERING AND EQUIPMENT, HEALTH AND SAFETY, METALS AND CERAMICS AND MATERIALS, PHYSICS, RADIATION EFFECTS, REACTOR TECHNOLOGY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*BIOTRICOGRAPHY + CRITICALITY SAFETY + DOSE + ENVIRONMENTAL CONDITION + GRAPHITE + INSTRUMENTATION, GENERAL + RADIATION EFFECT + REACTOR COOLANT + REACTOR, FAST + REACTOR, GENERAL + ROVER PROGRAM + WASTE TREATMENT, GENERAL

7-15092 ALSO IN CATEGORIES 18 AND 5  
GETER JD  
FAST REACTOR TEST FACILITY (FARET). VOLUME II. SUMMARY OF PRELIMINARY SAFETY ANALYSIS  
ARGONNE NATIONAL LABORATORY, ILL.  
ANL-716P (VOL. 2) +. 179 PAGES, 46 FIGURES, 23 TABLES, 54 REFERENCES, APRIL 1966

FOLLOWING AN INTRODUCTION (SECTION I) THIS REPORT CONSISTS OF TWO MAIN PARTS, THE FIRST OF WHICH DESCRIBES AND EVALUATES THE POSSIBLE CIRCUMSTANCES LEADING TO AND CULMINATING IN THE



CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-15092 \*CONTINUED\*

MAXIMUM CREDIBLE ACCIDENT. THIS ACCIDENT AND ITS SUBSEQUENT EFFECTS ON THE FARET SURROUNDINGS IS DESCRIBED IN SECTION II. THE SECOND MAIN PART OF THIS REPORT IS CONTAINED IN SECTION III. IT DESCRIBES THE RESULTS OF INVESTIGATIONS AND ANALYSES PERFORMED IN CONNECTION WITH THE FARET PSAR AND WHICH RESULTED IN CONDITIONS LESS SEVERE THAN THE MAXIMUM CREDIBLE ACCIDENT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*ACCIDENT, MAXIMUM CREDIBLE (MCA) + \*FARET (FAST ARGONNE REACTOR EXPERIMENT TEST) + ACCIDENT ANALYSIS + ACCIDENT MODEL + ACCIDENT, CONSEQUENCES + ACCIDENT, FUEL SLUMP + ACCIDENT, LOSS OF COOLANT + ACCIDENT, PROBABILITY OF + ACCIDENT, REFUELING + ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) + CONTAMINATION + CORE MELTDOWN + ENVIRONMENTAL CONDITION + FISSION PRODUCT RELEASE, GENERAL + MISSILE GENERATION AND PROTECTION

7-15096

CLARENBURG LA + VAN DER WAL JF  
AEROSOL FILTERS. INFLUENCE OF FILTER COMPOSITION ON AEROSOL PENETRATION THROUGH GLASS FIBER FILTERS  
NATIONAL DEFENSE RESEARCH ORGANIZATION T.N.O., RIJSDWIJK  
9 PAGES, 2 FIGURES, 6 TABLES, I AND EC PROCESS DESIGN AND DEVELOPMENT 5(2), PAGES 110-117, (APRIL 1966)

AEROSOL PENETRATION THROUGH FIBROUS FILTERS HAS TWO ASPECTS - A FLUID MECHANICAL AND A FILTER GEOMETRICAL ONE. THE LATTER IS THE SUBJECT OF THIS PAPER. TWO EFFECTS, THE STRUCTURE EFFECT AND THE SHADOW EFFECT, GIVE AN ADEQUATE QUANTITATIVE DESCRIPTION OF WHAT IS USUALLY CALLED THE FIBER INTERFERENCE EFFECT. A NEW MATHEMATICAL FORMULATION OF THE AEROSOL PENETRATION THROUGH FIBROUS FILTERS BASED ON DAVIES THEORY IS PROPOSED, TAKING THE FILTER GEOMETRY INTO ACCOUNT. WITH THIS FORMULATION, A FAIR PREDICTION OF AEROSOL PENETRATION THROUGH FILTERS OF VARYING COMPOSITIONS IS OBTAINED. THE PRESSURE DROP ACROSS MULTICOMPONENT GLASS-FIBER FILTERS WAS DISCUSSED IN A PAPER WHICH INTRODUCED TWO NEW EFFECTS, THE STRUCTURE EFFECT AND THE SHADOW EFFECT. WITH THE AID OF THESE EFFECTS IT WAS POSSIBLE TO PREDICT ACCURATELY THE PRESSURE DROP ACROSS GLASS-FIBER FILTERS OF ARBITRARY COMPOSITION. BOTH EFFECTS ARE RELATED TO THE GEOMETRICAL STRUCTURE OF A FILTER.

\*FILTER DESIGN + \*FILTER THEORY, INTERCEPTION + \*POROUS DIFFUSION + AEROSOL + FILTER + FILTER, FIBER

7-15103

VESELKIN AP + NIKITIN AV  
ACTIVATION OF CORROSION PRODUCTS IN REACTORS  
2 PAGES, ATOMNAYA ENERGIYA 21(3), PAGE 184, (1966), ABSTRACT FROM JOURNAL OF NUCLEAR ENERGY 21(2), PAGES 220-221, (FEBRUARY 1967)

MASS TRANSFER AND ACTIVATION ARE CONSIDERED FOR CORROSION PRODUCTS IN PRESSURIZED-WATER AND BOILING WATER REACTORS. THE CURRENT SITUATION IS SURVEYED, WITH EMPHASIS ON THE VARIOUS DIFFICULTIES. A MATHEMATICAL ANALYSIS OF THE MASS TRANSFER IN THE STEADY STATE IS GIVEN TOGETHER WITH AN APPROXIMATE SOLUTION FOR THE TRANSIENT-STATE ACCUMULATION OF CO-60. THE AVAILABLE EXPERIMENTAL DATA ARE ANALYZED TO GIVE MASS-TRANSFER COEFFICIENTS AVERAGED FOR SEVERAL REACTORS, ESPECIALLY THE PROBABILITIES OF DEPOSITION AND REMOVAL FOR PARTICLES.

\*ACTIVATION + \*CORROSION + MASS TRANSFER + REACTOR, BOILING WATER + REACTOR, PRESSURIZED WATER

7-15112

ADAMS RE + ACKLEY PD + BROWNING WE  
REMOVAL OF RADIOACTIVE METHYL IODIDE FROM STEAM - AIR SYSTEMS  
OAK RIDGE NATIONAL LABORATORY, REACTOR CHEMISTRY DIVISION  
ORNL-4040 +, 26 PAGES, 6 TABLES, 4 FIGURES, 4 REFERENCES, JANUARY 1967

METHYL IODIDE READILY PENETRATES BEDS OF THE USUAL TYPES OF CHARCOAL UNLESS THE RELATIVE HUMIDITY IS LOW. RECENTLY, CERTAIN SPECIALLY-IMPREGNATED (IODIZED) CHARCOALS HAVE BEEN OBSERVED TO HAVE THE CAPABILITY OF EFFECTIVELY TRAPPING RADIOACTIVE METHYL IODIDE, BY AN ISOTOPIC EXCHANGE MECHANISM, FROM AIR STREAMS OF FAIRLY HIGH RELATIVE HUMIDITY AT TEMPERATURES AS HIGH AS 115 F. ACCORDING TO THE RESULTS OBTAINED, METHYL IODIDE (I-131 TAGGED) CAN STILL BE TRAPPED EFFECTIVELY AT THESE HIGHER TEMPERATURES AND PRESSURES BY AN APPROPRIATELY SELECTED IMPREGNATED CHARCOAL, PROVIDED THAT THE CHARCOAL HAS NOT BEEN DAMAGED AND PROVIDED THAT THE PREVAILING RELATIVE HUMIDITY IN THE CHARCOAL DOES NOT EXCEED 90%.

CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*CHARCOAL + \*FISSION PRODUCT, IODINE + \*ORGANIC IODIDE + \*STEAM + ADSORPTION + AIR CLEANING + FILTER, TRAP + FISSION PRODUCT TRANSPORT + REACTOR OFFGAS

7-15113

ALSO IN CATEGORY 12

TAGAMI T  
CONSIDERATIONS ON FISSION PRODUCT RELEASE SUPPRESSION FACTORS OF ENGINEERED SAFEGUARDS FOR NUCLEAR POWER PLANTS  
NATIONAL REACTOR TESTING STATION, IDAHO FALLS, IDAHO  
10 PAGES, 10 FIGURES, 1 TABLE, 8 REFERENCES, NUCLEAR ENGINEERING AND DESIGN, 4(2), PAGES 214-223, (AUGUST

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-15113 \*CONTINUED\*  
1966)

IN A LOSS-OF-COOLANT ACCIDENT, THE AMOUNT OF A SPECIFIED NUCLIDE AMONG FISSION PRODUCTS RELEASED TO ATMOSPHERE FROM THE ENGINEERED SAFEGUARD CONSISTING OF AN N-FOLD MULTIPLE BARRIER CAN BE APPROXIMATELY ESTIMATED BY A SIMPLE FORMULA. WITH THIS FORMULA, FUNCTIONS OF VARIOUS ENGINEERED SAFEGUARDS PROPOSED CURRENTLY FOR LIGHT-WATER-MODERATED POWER PLANTS IN THE USA ARE REVIEWED WITH RESPECT TO THE RADIOACTIVE IODINE RELEASE SUPPRESSION EFFECTS.

\*ENGINEERED SAFETY SYSTEM + \*MATHEMATICAL STUDY + \*THEORETICAL INVESTIGATION +  
FISSION PRODUCT RELEASE, GENERAL + FISSION PRODUCT, IODINE + RADIOACTIVITY, RELEASE

7-15114

QZISIK MN + CHEN PCY

EFFECTS OF GEOMETRY FOR DEPOSITION OF RADIOACTIVE MOLECULES FROM STAGNANT GAS IN CONTAINMENT VESSELS.  
PROGRESS REPORT 2

NORTH CAROLINA STATE UNIVERSITY, RALEIGH, NORTH CAROLINA

ORO-3414-2 +. 36 PAGES, 6 FIGURES, 3 REFERENCES; AUGUST, 1966

EFFECTS OF GEOMETRY ON DEPOSITION OF RADIOACTIVE MOLECULES FROM STAGNANT GAS TO THE VESSEL WALLS ARE THEORETICALLY INVESTIGATED FOR THREE DIFFERENT GEOMETRIES - PARALLEL PLATES, LONG CYLINDER, AND SPHERE. THEORETICAL RESULTS OF THE LONG-CYLINDER MODEL WERE COMPARED WITH RESULTS OBTAINED FROM THE DEPOSITION TEST PERFORMED IN THE NUCLEAR SAFETY PILOT PLANT AT OAK RIDGE NATIONAL LABORATORY. AGREEMENT WAS REASONABLY GOOD.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*DEPOSITION + \*FISSION PRODUCT TRANSPORT + CONTAINMENT RESEARCH AND DEVELOPMENT +  
NSPP (NUCLEAR SAFETY PILOT PLANT)

7-15115

PETERSON S

INTEGRITY OF REACTOR FUELS

OAK RIDGE NATIONAL LABORATORY

6 PAGES, REFERENCES, NUCLEAR SAFETY, 6(4), PAGES 398-403 (SUMMER, 1965)

THE SCOPE OF THIS REVIEW IS RESTRICTED TO EXPERIENCE WITH FUELS AND, PARTICULARLY, FUEL ELEMENTS. THUS INTEGRITY OF THE CLADDING IS COVERED ONLY WHERE IT IS TREATED IN ASSOCIATION WITH THE FUEL. CONSEQUENTLY AN IMPORTANT PROBLEM IN FUEL-ELEMENT INTEGRITY, THE LOSS OF DUCTILITY OF STAINLESS STEEL UPON IRRADIATION, IS NOT COVERED.

\*FUEL BURNUP + \*INTEGRITY + \*URANIUM + \*URANIUM DIOXIDE + ALLOY + ALUMINUM + CERAMICS + STEEL, STAINLESS +  
URANIUM CARBIDE + ZIRCONIUM

7-15116

FULLER AB

DESIGN CONSIDERATIONS FOR OFF-GAS SYSTEM MAJOR COMPONENTS

OAK RIDGE NATIONAL LABORATORY

4 PAGES, 2 FIGURES, NUCLEAR SAFETY, 6(4), PAGES 422-425, (SUMMER, 1965)

GASEOUS WASTES HAVE INCREASED IN THE NUCLEAR INDUSTRY AND IN SUPPORTING RESEARCH PROGRAMS. CONSEQUENTLY THERE HAS BEEN A CONTINUOUS EFFORT TO FIND MORE SUITABLE METHODS OF DESIGNING AIR-HANDLING SYSTEMS. RELIABLE OPERATION AT MINIMUM COST IS USUALLY THE PRIMARY CRITERION. MOST OF THE DESIGN APPROACHES DISCUSSED HERE EVOLVED FROM REPEATED TRIALS OF THESE AND LESS EFFECTIVE METHODS OF OBTAINING THE REQUIRED RELIABILITY. THIS DISCUSSION IS NOT MEANT TO BE ALL-INCLUSIVE, BUT IT DOES COVER THE MAJOR COMPONENTS A SYSTEM MUST HAVE.

\*FILTER + \*FILTER DESIGN + \*FILTER INSTALLATION + \*OPERATING EXPERIENCE + \*TEST, FILTER + AIR CLEANING +  
DESIGN CRITERIA + FILTER SYSTEM + REACTOR OFFGAS + TEST, DOP FILTER

7-15117

ROBINSON GC

EMERGENCY COOLING SYSTEMS IN GAS-COOLED REACTORS

OAK RIDGE NATIONAL LABORATORY

7 PAGES, 1 TABLE, REFERENCES, NUCLEAR SAFETY, 6(4), PAGES 425-431, (SUMMER, 1965)

THIS REVIEW OF EMERGENCY COOLING SYSTEMS IS CONFINED TO ANALYSES OF SYSTEMS OR MODES OF HEAT TRANSFER DESIGNED TO EITHER LIMIT FUEL-ELEMENT FAILURES OR TO PREVENT MELTDOWN AND FISSION-PRODUCT RELEASE IN THE EVENT OF A DEPRESSURIZATION ACCIDENT, WHICH IS OFTEN CONSIDERED TO BE THE MAXIMUM CREDIBLE ACCIDENT FOR GAS-COOLED REACTORS. CONSIDERATION HAS BEEN GIVEN TO U.S. AND FOREIGN GAS-COOLED POWER REACTORS AND TO U.S. MARITIME AND ARMY GAS-COOLED REACTORS. THIS DIVERSITY IN REVIEW IS DELIBERATE IN ORDER TO EMPHASIZE THE VARIED SOLUTIONS TO AN ESSENTIALLY COMMON DESIGN PROBLEM.

\*EMERGENCY COOLING CONSIDERATIONS + AGR (ADVANCED GASCOOLED REACTOR, WINDSCALE, UK) + CALDER HALL (UK) +  
EBOR (EXPERIMENTAL BERYLLIUM OXIDE REACTOR) + EGCR (EXPERIMENTAL GAS COOLED REACTOR) +  
REACTOR, BEO MODERATED + REACTOR, GAS COOLED + REACTOR, GAS COOLED + REACTOR, GENERAL +

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-15117 \*CONTINUED\*  
REACTOR, GRAPHITE MODERATED

7-15120  
SIEMASZKO A + NOWAK M + BROSZKIEWICZ + SIEJKA J  
LABORATORY GLOVE-BOXES FOR WORK WITH RADIOACTIVE AEROSOLS  
POLISH ACADEMY OF SCIENCES  
AEC-TR-4919 +. 4 PAGES, 4 FIGURES, NUKLEONIKA, 8(4), PAGES 246-249, (1963)

PROTOTYPES OF TWO TYPES OF LABORATORY GLOVE-BOXES HAVE BEEN DEVELOPED AND BUILT FOR WORK WITH RADIOACTIVE AEROSOLS - FOR WORK WITH THE DUST OF A DUST CHAMBER AND FOR WORK WITH THE MISTS IN A FOG CHAMBER. THEY ARE DESIGNED FOR EVERY TYPE OF SCIENTIFIC RESEARCH IN THE REALM OF REMOVING RADIOACTIVE CONTAMINATION CAUSED BY BETA-RADIOACTIVE AEROSOLS. THE FOG CHAMBER, MOREOVER, MAKES IT POSSIBLE TO EXAMINE THE ABILITY OF VARIOUS FILTER MATERIALS TO STOP AN AEROSOL. IT IS NOTEWORTHY THAT SERIES TESTS (WITH UP TO 20 SAMPLES OF VARIOUS MATERIALS SIMULTANEOUSLY) CAN BE CARRIED OUT IN THESE CHAMBERS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*AEROSOL + \*BETA EMITTER + \*FOG + \*GLOVE BOX + \*RADIATION SAFETY AND CONTROL + DESIGN CRITERIA + FILTER + PARTICULATE + RADIOISOTOPE + UNION OF SOVIET SOCIALIST REPUBLICS

7-15159  
JACKSON G + DAVIES D + BIDDLE P  
FISSION GAS EMISSION FROM UO-2 DURING IRRADIATION AT 800-1600 DEGREES C  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, RESEARCH GROUP, MARWELL  
AERE-R-4714 +. 50 PAGES, 17 FIGURES, 11 TABLES, 14 REFERENCES, 1965

AN IN-PILE PIG FOR CONTINUOUSLY MONITORING NOBLE GASES RELEASED FROM URANIUM DIOXIDE AT HIGH TEMPERATURES IS DESCRIBED. TWO SAMPLES, OF DENSITY 7.90 G/CC AND 10.48 G/CC, WERE IRRADIATED AT 200 C STEPS FROM 800 TO 1400 AND 1600 C RESPECTIVELY. THE RELEASE OF KR-85M, KR-87, KR-88, XE-133, AND XE-135 WAS MEASURED AND THAT OF I-133 AND I-135 ESTIMATED. THE RELEASE WAS SEPARATED INTO TEMPERATURE-INDEPENDENT AND TEMPERATURE-DEPENDENT COMPONENTS, AND DIFFUSION COEFFICIENTS WERE CALCULATED FOR THE LATTER. A COMPARISON WAS MADE WITH POSTIRRADIATION HEATING RESULTS FROM SIMILAR SAMPLES. THE DIFFUSION COEFFICIENTS FOR XENON WERE LOWER THAN THOSE OBTAINED IN THE POSTIRRADIATION EXPERIMENTS. A HIGH PROPORTION OF THE 135, 133 ISOBARES WAS RELEASED FROM THE FUEL AS IODINE.

AVAILABILITY - (HER) MAJESTYS STATIONERY OFFICE, LONDON

\*COMPARISON, THEORY AND EXPERIENCE + \*DIFFUSION COEFFICIENT + \*FISSION PRODUCT, IODINE + \*HIGH TEMPERATURE + \*KRYPTON + \*MONITOR, RADIATION, GAS + \*NOBLE GAS + \*THERMAL CONSIDERATION + \*URANIUM DIOXIDE + \*XENON + DIFFUSION + FISSION GAS RELEASE + INSTRUMENTATION, GENERAL

7-15161  
NOTIFY JF + MACEWAN JR  
STEPWISE RELEASE OF FISSION GAS FROM UO-2 FUEL  
CHALK RIVER NUCLEAR LABORATORIES, ATOMIC ENERGY OF CANADA LIMITED, CHALK RIVER, ONTARIO  
4 PAGES, 6 FIGURES, 6 REFERENCES, NUCLEAR APPLICATIONS 2(6), PAGES 477-480, (DECEMBER 1966)

MEASUREMENTS OF THE FISSION-PRODUCT GAS PRESSURE IN UO<sub>2</sub> FUEL ELEMENTS DURING IRRADIATION HAVE SHOWN THAT A SIGNIFICANT AMOUNT OF GAS IS RELEASED DURING POWER TRANSIENTS. THE GAS APPEARS TO BE RELEASED AS THE ELEMENT POWER IS DECREASED TO ZERO DURING REACTOR SHUTDOWN. LITTLE RELEASE OCCURS AS THE POWER IS RAISED AT STARTUP. IT IS POSTULATED THAT GAS TRAPPED IN BUBBLES OR IN A CENTRAL VOID IS RELEASED BY CRACKING OR STRESS-INDUCED MOVEMENT DURING THE POWER TRANSIENT.

\*FISSION GAS RELEASE + \*IRRADIATION TESTING + \*PRESSURE, INTERNAL + \*REACTOR TRANSIENT + \*STRESS + \*URANIUM DIOXIDE + FISSION PRODUCT RELEASE, GENERAL

7-15162  
YAJIMA S + KANEMOTO Y + SHIBA K + HANDA M  
FISSION GAS RELEASE LOOP OF THE JAPANESE ATOMIC ENERGY RESEARCH INSTITUTE  
ORNL-TR-1313 +. 21 PAGES, TRANSLATED FROM NIPPON GENSHIRYOKU GAKKAISHI 8, PAGES 3-11 (1966)

DESCRIBES AN IN-PILE LOOP IS CAPABLE OF CONTINUOUSLY MEASURING THE RELEASE OF FISSION GAS FROM CEPAMIC FUELS DURING IRRADIATION IN THE JAPAN RESEARCH REACTOR 3. THE FUEL SPECIMEN IS HEATED UP TO 1000 C BY THE COMBINED ACTION OF ITS OWN FISSION AND A PT WIRE HEATER. THE NEUTRON FLUX FOR THE SPECIMENS IS CONTROLLED BY CHANGING THE ROD PATTERN AND THE REACTOR POWER. SPECIMENS OF ABOUT 22 MM DIAMETER AND OF LENGTHS UP TO 40 MM CAN BE ACCOMMODATED. A CONTINUOUSLY FLOWING SWEEP GAS (HE) CARRIES THE FISSION GASES OUTSIDE THE REACTOR, WHERE THE RADIOACTIVE ISOTOPES ARE MEASURED BY GAMMA-RAY SPECTROMETRY. THE NONRADIOACTIVE GASES RELEASED FROM THE SPECIMEN DURING IRRADIATION ARE DETERMINED CONTINUOUSLY BY AN ELUSION GAS CHROMATOGRAPH.

AVAILABILITY - JOHN CRERAR LIBRARY, 25 WEST 33RD. STREET., CHICAGO, ILL. 60616, \$2.60 COPY, \$0.85 MICROFICHE

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-15162 \*CONTINUED\*  
\*CHROMATOGRAPHY + \*DIFFUSION + \*FISSION GAS RELEASE + \*GAMMA + \*IN PILE LOOP + \*URANIUM DIOXIDE + \*XENON +  
\*FISSION PRODUCT RELEASE, GENERAL + IRRADIATION TESTING + MEASUREMENT, GENERAL

7-15163  
LEPSCZYK C + SEGRE G + CESARANO C + FERRARI S + GIAQUINTO L  
URANIUM AND FISSION PRODUCTS RELEASE FROM URANIUM DIOXIDE  
COMITATO NAZIONALE PER L ENERGIA NUCLEARE, ROME, ITALY  
RT/CHI(65)27 +. 21 PAGES, JUNE 1965

DESCRIBES EXPERIMENTS TO ANALYZE THE EMISSION OF U ATOMS FROM UO<sub>2</sub> BY FISSIONS IN THE  
SUPERFICIAL LAYERS OF THE DIOXIDE. THIS INITIAL WORK ATTEMPTS, AMONG OTHER THINGS, TO RELATE  
THE EMISSION TO EXTENT OF BURNUP. SUCCEEDS IN SHOWING SOME INDICATIVE RESULTS, EXPERIMENTAL  
PROBLEMS, AND HOW THEY MIGHT BE SOLVED.

AVAILABILITY - MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669

\*COOLANT QUALITY + \*IRRADIATION TESTING + \*OXYGEN + \*PARTICLE SIZE + \*SODIUM + \*URANIUM +  
\*URANIUM DIOXIDE + FISSION PRODUCT RELEASE, GENERAL

7-15164  
FISHER L + PENDLETON J + POUNDER JO + WASHINGTON AB  
FUEL TEMPERATURE MEASUREMENTS IN MIXED OXIDE ELEMENTS  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, RISLEY  
3 PAGES, 6 FIGURES, 3 REFERENCES, NUCLEAR ENGINEERING 11(123), PAGES 600-602, (AUG. 1966)

THE AIM OF THE WORK WAS TO GET INFORMATION USEFUL IN OPTIMIZING THE DESIGN OF FUEL ELEMENTS  
(PU-U OXIDES, CANNED IN STAINLESS STEEL) FOR FAST REACTORS. THE DESIGN IS GREATLY INFLUENCED  
BY THE HIGH RELEASE OF FISSION GASES FROM THE FUEL, AND ITS LOW THERMAL CONDUCTIVITY, WHICH  
RESULTS IN CENTER-LINE TEMPERATURES IN THE RANGE 1500-2000 C.

\*CLAD + \*COMPARISON, THEORY AND EXPERIENCE + \*FUEL ELEMENT + \*MEASUREMENT, TEMPERATURE + \*PLUTONIUM OXIDE +  
\*REACTOR, FAST + \*STEEL, STAINLESS + \*URANIUM OXIDE + FISSION GAS RELEASE

7-15166  
SEGRE GJ  
FISSION PRODUCT RELEASE FROM UO<sub>2</sub> PARTICLES DISPERSED IN A NA MEDIUM  
COMITATO NAZIONALE PER L ENERGIA NUCLEARE, ROME  
RT/CHI(64)-8 +. 28 PAGES, REFERENCES, MAY 1964

THE FOLLOWING SUBJECTS ARE PRESENTED - CALCULATIONS OF BUILD-UP AND DECAY OF FISSION PRODUCTS,  
RELEASE BY RECOIL, RELEASE BY EVAPORATION, OPEN POROSITY, MAXIMUM PERMISSIBLE BURNUP.

AVAILABILITY - MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISC. 54669

\*DIFFUSION + \*EVAPORATION + \*FISSION RECOIL + \*FUEL BURNUP + \*MATHEMATICAL STUDY + \*POROUS DIFFUSION +  
\*SODIUM + \*URANIUM DIOXIDE + FISSION PRODUCT RELEASE, GENERAL

7-15167  
SEGRE GJ  
A CONTRIBUTION TO THE STUDY OF THE BEHAVIOR OF FISSION GAS BUBBLES  
COMITATO NAZIONALE PER L ENERGIA NUCLEARE, ROME, ITALY  
RT/FI(65)46 +. 28 PAGES, NOVEMBER 1965

THE FOLLOWING SUBJECTS ARE PRESENTED - TEMPERATURE DISTRIBUTION IN IRRADIATED UO<sub>2</sub>, VOID  
MIGRATION VELOCITY, FISSION GAS EXTRACTION BY VOID MIGRATION, CONCLUSIONS. ATTEMPTS WERE  
MADE TO CLARIFY SOME ASPECTS OF THE PROBLEM, KEEPING IN MIND IRRADIATIONS OF UO<sub>2</sub> AT HIGH  
TEMPERATURE AND FOCUSING ATTENTION PARTICULARLY ON THE INNER PART OF THE FUEL, I.E., THE  
COLUMNAR GRAINS REGION. THE RESULTS SHOULD BE USED AS A HELP IN THE PROVISIONAL WORK  
NECESSARY FOR IRRADIATION, BUT THEY DO NOT REPRESENT A COMPLETELY NEW THEORY OF PHENOMENON.  
THIS MEANS THAT THE WORK TO BE DONE IS FAR MORE THAN THAT ACCOMPLISHED TILL NOW, BECAUSE, NOT  
ONLY THERE IS NOT AN ACCURATE DESCRIPTION OF THE GAS-BUBBLE MOVEMENT IN THE COLUMNAR GRAINS  
BUT THE OUTER REGIONS OF THE FUEL WERE NOT CONSIDERED.

AVAILABILITY - MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669

\*DIFFUSION COEFFICIENT + \*FISSION GAS RELEASE + \*MATHEMATICAL STUDY + \*NOBLE GAS + \*RADIATION EFFECT +  
\*TEMPERATURE GRADIENT + \*THERMAL CONSIDERATION + \*URANIUM DIOXIDE + FISSION PRODUCT RELEASE, GENERAL +  
FUEL ELEMENT

7-15168  
CLIFFORD JC + WILLIAMS JM + MCGUIRE JC  
BEHAVIOR OF FISSION PRODUCTS IN SODIUM  
LOS ALAMOS SCIENTIFIC LABORATORY, NEW MEXICO  
LA-DC-8094 + CONF-661110-6 +. 18 PAGES, FROM IAEA SYMPOSIUM ON ALKALI METAL COOLANTS, CORROSION STUDIES,

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-15168 \*CONTINUED\*  
AND SYSTEM OPERATING EXPERIENCE, VIENNA, AUSTRIA

THE BEHAVIOR OF FISSION PRODUCTS RELEASED TO SODIUM COOLANT FROM TRAMP URANIUM OR FROM FAILED OR DELIBERATELY VENTED FUEL ELEMENTS MAY LIMIT ACCESS TO THE PRIMARY COOLANT SYSTEM AND AFFECT THE CONSEQUENCES OF A LOSS-OF-COOLANT INCIDENT. DEPENDING ON THE FISSION PRODUCT INVENTORY ANTICIPATED IN THE PRIMARY COOLANT, IT MAY BE DESIRABLE TO CONCENTRATE URANIUM, PLUTONIUM, LONG-LIVED ENERGETIC GAMMA-EMITTING ISOTOPES, AND SHORT-LIVED, BIOLOGICALLY HAZARDOUS ISOTOPES AT SPECIFIC LOCATIONS WITHIN THE PRIMARY SYSTEM. TO THIS END, THE INTERACTION OF PLUTONIUM-BASED FUELS WITH SODIUM IS BEING INVESTIGATED. THE RELEASE AND DISTRIBUTION OF FISSION PRODUCTS FROM IRRADIATED FUEL TO SODIUM, AND METHODS BY WHICH THIS DISTRIBUTION MAY BE ALTERED ARE INCLUDED. THIS PAPER DESCRIBES THE TECHNIQUES AND PRELIMINARY RESULTS FROM A STUDY OF THE DISTRIBUTION AND TRAPPING OF LONG-LIVED FISSION PRODUCTS IN SODIUM SYSTEMS. RESULTS FROM THIS STUDY ARE COMPARED WITH THE BEHAVIOR NOTED AFTER FAILURE OF FUEL ELEMENTS IN THE LOS ALAMOS MOLTEN PLUTONIUM REACTOR EXPERIMENT, WHICH WAS OPERATED AT LOS ALAMOS DURING 1962-1963.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*LAMPRE 1 (LASL MOLTEN PU REACTOR EXPERIMENT) + \*SODIUM + FISSION PRODUCT TRANSPORT + PLUTONIUM + URANIUM

7-15169  
FURUKAWA K  
LIQUID SODIUM TECHNOLOGY AND PROBLEMS OF FAST BREEDER REACTOR DEVELOPMENT  
NP-TR-1491 +. TRANSLATED FROM GENSHIRYOKU KOGYO, 11(NO 10) PAGES 31-7. (NO 11) PAGES 53 AND 55-60. (NO 12) PAGES 55-61 (1965) 87 PAGES

THE CHIEF PHYSICAL PROPERTIES OF VARIOUS LIQUID METALS ARE REVIEWED, ESPECIALLY SODIUM.

AVAILABILITY - JOHN CRERAR LIBRARY, 35 WEST 33RD ST., CHICAGO, ILLINOIS 60616, \$8.10 COPY, \$2.81 MICROFICHE

\*METAL, LIQUID + LITHIUM + REACTOR, BREEDER + REACTOR, FAST + SODIUM

7-15170 ALSO IN CATEGORY 11  
EFFECT OF HIGH TEMPERATURE SODIUM ON AUSTENITIC AND FERRITIC STEELS. MECHANICAL PROPERTIES OF MATERIALS. QUARTERLY PROGRESS REPORT, JULY-SEPTEMBER 1966  
MSA RESEARCH CORPORATION, EVANS CITY, PENNSYLVANIA  
MSAP-66-220 +. 30 PAGES, OCTOBER, 1966

THE CURRENT PROGRAMS ARE NEARING THE END OF THE OPERATIONAL STAGES. WE ARE ACTIVELY ENGAGED IN THE COMPLETION OF TESTS 6 AND 7 (MECHANICAL PROPERTY TESTS IN HIGH OXYGEN SODIUM AND HIGH CARBON SODIUM)- THE ANALYSES OF THE COLD TRAPS FROM TESTS 3 AND 5 AND THE TESTING OF LVDTs FOR THE EXTENSOMETER DEVELOPMENT PROGRAM. CONCLUSIONS ARE NOT AVAILABLE AT THIS TIME, BUT THE STATUS OF EACH PROGRAM IS DISCUSSED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*CREEP PROPERTY + \*FAILURE, FATIGUE + \*IMPACT PROPERTY + \*SODIUM + \*STEEL + \*STEEL, STAINLESS + FILTER, TRAP + PROPERTY, PHYSICAL

7-15171 ALSO IN CATEGORY 6  
KOTORA A  
SODIUM CAN FABRICATION FOR ZERO POWER REACTORS VI AND IX  
ARGONNE NATIONAL LABORATORY, ARGONNE, ILLINOIS  
10 PAGES, 8 FIGURES, 2 REFERENCES, NUCLEAR ENGINEERING AND DESIGN, 4(4), PAGES 413-422, (NOVEMBER 1966)

THIS ARTICLE DESCRIBES FABRICATION, LOADING, SEALING, AND TESTING OF 1/4- OR 1/2-INCH-THICK SODIUM CANS FOR USE IN THE ZERO POWER REACTORS XI AND IX AT THE ARGONNE NATIONAL LABORATORY. THE SODIUM CAN IS A PRECISELY MADE STAINLESS-STEEL CONTAINER, FILLED WITH SODIUM AND SEALED UNDER EXACTING CIRCUMSTANCES TO RETAIN ITS HIGH PURITY. WHEN COMPLETED, SUCH CANS ARE USED IN MOCK-UP REACTOR CORE GEOMETRIES TO SIMULATE SODIUM-COOLED REACTOR CORES. FUTURE PROJECTS BEING CONTEMPLATED IN THESE MACHINES UTILIZING BOTH U-235 AND PU, ARE LARGE METALLIC OXIDE AND CARBIDE SYSTEMS, CORE MELTDOWN CONFIGURATIONS, COUPLED REACTOR DESIGNS, AND OTHER EXPERIMENTS DESIGNED TO FURTHER UNDERSTAND THE MAGNITUDE OF THE NA REACTIVITY COEFFICIENT. IN ADDITION, REACTOR STUDIES ARE IN PROGRESS TO DETERMINE THE DOPPLER EFFECT ON DIFFERENT TYPES OF REACTOR CORES.

\*CLAD + \*FABRICATION + \*SODIUM + \*TESTING + METAL, LIQUID + REACTIVITY EFFECT + REACTOR KINETICS + REACTOR TEST FACILITY + STEEL, STAINLESS

7-15172  
MILHAM RC  
HIGH TEMPERATURE ADSORBENTS FOR IODINE. PROGRESS REPORT, JANUARY 1965-SEPTEMBER 1966  
SAVANNAH RIVER LABORATORY  
DP-1075 +. 75 PAGES, 9 FIGURES, 7 TABLES, 187 REFERENCES, DECEMBER 1966

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-15172 \*CONTINUED\*

A NEW HIGH-TEMPERATURE COCONUT-SHELL CARBON (IGNITION TEMPERATURE ABOUT 530 C), WHICH WAS DEVELOPED BY AN AMERICAN MANUFACTURER, HAS BEEN SHOWN IN PRELIMINARY TESTS TO MEET SPECIFICATIONS OF THE SAVANNAH RIVER PLANT CONFINEMENT SYSTEM FOR REMOVING IODINE. A PROCEDURE WAS DEVELOPED TO MEASURE IGNITION TEMPERATURE, TO EVALUATE PROMISING NEW TYPES OF ACTIVATED CARBON, AND TO EVALUATE THE EFFECTS OF VARIABLES (SUCH AS AIRFLOW, BED PROPERTIES, IMPREGNANTS, AND PLANT SERVICE) ON IGNITION TEMPERATURE. RESULTS OF THESE EVALUATIONS AND A LITERATURE SURVEY OF IGNITION TEMPERATURE ARE REPORTED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*CHARCOAL + \*DESIGN CRITERIA + \*FILTER + \*FIRE + \*THERMAL PROPERTY + FILTER DESIGN + FILTER SYSTEM + FILTER, TRAP + FISSION PRODUCT, IODINE + IODINE + OXIDATION + PARTICLE SIZE + THERMAL EXPERIMENT

7-15174

DEMASTRY JA + RITZMAN RL + GRIESENAUER NM + JABLONOWSKI EJ + SHOBER FR + MCCALL JL + PRICE RB + TOWNLEY CW  
FISSION-FRAGMENT EFFECTS IN STRUCTURAL MATERIALS  
BATTELLE MEMORIAL INSTITUTE, COLUMBUS, OHIO  
BRI-1755 + EURAEC-1631 +. 53 PAGES, 30 FIGURES, 8 TABLES, 52 REFERENCES, MARCH 22, 1966

FISSION-FRAGMENT EFFECTS WERE STUDIED IN TYPE 304 STAINLESS STEEL AND ZIRCALOY-2 FOR SHORT-TIME EXPOSURES AT 150 C. A CONCENTRATION OF ABOUT  $2.1 \times 10^4$  TO THE 14TH FISSION FRAGMENTS PER SQ. CM HAD LITTLE, IF ANY, EFFECT ON THE MECHANICAL PROPERTIES OF 304 STAINLESS STEEL OR ZIRCALOY-2 AS DETERMINED IN BENDING. INCREASES OF STRENGTH ON THE ORDER OF 7 TO 10% WERE NOTED IN TUBE-BURST SPECIMENS OF THE STRUCTURAL MATERIALS. ELECTRON FRACTOGRAPHIC STUDIES DID NOT REVEAL ANY CHANGES IN THE FRACTURE MODES OF EITHER TYPE OF MATERIAL AS A RESULT OF EXPOSURE TO NEUTRON IRRADIATION OR FISSION FRAGMENTS. STRAIN STUDIES INDICATED THAT THERE IS SIGNIFICANT COMPRESSION STRESS ON THE CLADDING AT TEMPERATURES BELOW 150 C. MUCH OF THIS DAMAGE IS EXPECTED TO ANNEAL OUT AT HIGHER OPERATING TEMPERATURES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*FAILURE, CLADDING + \*RADIATION EFFECT + \*STEEL, STAINLESS + \*STRESS RUPTURE + \*ZIRCALOY + ELECTRON MICROSCOPY + FISSION RECOIL + STRESS STRAIN DATA + TESTING

7-15178

GPIESS JC + ENGLISH JL  
MATERIALS COMPATIBILITY AND CORROSION STUDIES FOR THE ARGONNE ADVANCED RESEARCH REACTOR  
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE  
ORNL-4034 +. 42 PAGES, 12 FIGURES, 13 TABLES, 15 REFERENCES, NOVEMBER 1966

A MATERIAL COMPATIBILITY AND CORROSION INVESTIGATION WAS CONDUCTED TO DETERMINE THE EXTENT OF CORROSION TO BE EXPECTED IN CERTAIN PARTS OF THE ARGONNE ADVANCED RESEARCH REACTOR. THE AREAS OF CONCERN WERE THE BERYLLIUM REFLECTOR, THE ALUMINUM BEAM TUBES, AND THE STAINLESS-STEEL CLADDING ON THE FUEL ELEMENTS, ALL OF WHICH ARE EXPOSED TO THE PRIMARY COOLANT (WATER). ALL EXPERIMENTS WERE MADE IN DEIONIZED WATER (SPECIFIC RESISTIVITY, 1 MILLION OHM-CM OR GREATER).

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*AARR (ARGONNE ADVANCED RESEARCH REACTOR) + \*CORROSION + \*FAILURE, CLADDING + \*STEEL, STAINLESS + REACTOR, GENERAL + REACTOR, WATER

7-15181

SANNIER J + CHAMPEIX L + DAPRAS R + GRAFF W  
NIORIUM CORROSION IN FLOWING LIQUID SODIUM AT 400 TO 600 DEGREES C  
CENTRE D ETUDES NUCLEAIRES, SACLAY, FRANCE  
CEA-R-3028 +. 30 PAGES, 18 FIGURES, 6 TABLES, OCTOBER 1966, IN FRENCH

THE CORROSION OF NIOBIUM AND TWO OF ITS ALLOYS HAS BEEN STUDIED UNDER TEMPERATURE, RATE OF FLOW, AND PURITY CONDITIONS OF LIQUID SODIUM SIMILAR TO THOSE LIKELY TO OCCUR IN A FAST REACTOR. THE RESULTS OBTAINED ARE DISCUSSED WITH REFERENCE TO THE FOLLOWING PARAMETERS - PURIFICATION METHOD USED FOR THE SODIUM, TEMPERATURE, METALLURGICAL CONDITION OF THE STRUCTURAL METAL. GENERALLY SPEAKING, AN IMPORTANT ROLE IS PLAYED BY THE OXYGEN CONTENT OF THE LIQUID METAL TOWARDS THE CORROSION OF THE NIOBIUM. ALTHOUGH THE METAL BEHAVES VERY SATISFACTORILY WHEN HOT-TRAP PURIFICATION IS USED, IT UNDERGOES CORROSION IN THE PRESENCE OF SODIUM WHICH HAS BEEN PURIFIED BY A COLD TRAP ONLY.

AVAILABILITY - MICROCARD EDITIONS INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN, 54669

\*CORROSION + \*METAL, LIQUID + \*NIOBIUM + \*SODIUM + ALLOY + FILTER, TRAP + OXYGEN

7-15182

NORMAN EC  
SUMMARIES OF FAST REACTOR FUELS AND MATERIALS DEVELOPMENT PROGRAMS

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-15182 \*CONTINUED\*  
DIVISION OF REACTOR DEVELOPMENT AND TECHNOLOGY (AEC), WASHINGTON, D. C.  
TID-6506 (PT. 3) (4TH ED.) +. 259 PAGES, TABLES, MAY 1966

THIS DOCUMENT COMPRISES THE THIRD OF THREE PARTS OF THE REPORT TID-6506 (4TH EDITION). THIS PART DESCRIBES THE FUELS AND MATERIALS RESEARCH AND DEVELOPMENT PROGRAMS (UNCLASSIFIED PORTION) UNDERTAKEN IN SUPPORT OF THE LIQUID METAL FAST BREEDER REACTOR PROGRAM (LMFBR) THAT ARE SPONSORED BY THE DIVISION OF REACTOR DEVELOPMENT AND TECHNOLOGY. THE OTHER PARTS OF TID-6506 (4TH EDITION) ARE - (PART ONE) RESEARCH ON FUELS AND MATERIALS DIRECTED BY THE FUELS AND MATERIALS BRANCH OF THE DIVISION OF REACTOR DEVELOPMENT AND TECHNOLOGY. (PART TWO) CLASSIFIED RESEARCH ON FUELS AND MATERIALS UNDER DTI CATEGORY NO. C-44A, NUCLEAR TECHNOLOGY MATERIAL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*REACTOR, BREEDER + \*REACTOR, FAST + \*REACTOR, LIQUID METAL COOLED + ALLOY + CARBIDE + CORROSION + METAL, LIQUID + NITRIDE + OXIDE + PLUTONIUM + PLUTONIUM DIOXIDE + URANIUM

7-15183  
KELLER DL  
PROGRESS RELATING TO CIVILIAN APPLICATIONS DURING JULY THROUGH SEPTEMBER 1966  
BATTELLE MEMORIAL INSTITUTE  
BMI-1784 +. 30 PAGES, FIGURES, TABLES, OCTOBER 1, 1966

WORK ON THE FOLLOWING PROBLEMS IS PRESENTED ON THIS PROGRESS REPORT - URANIUM-PLUTONIUM MONONITRIDE FUEL MATERIALS (AEC-DRD), IRRADIATION EFFECTS IN REACTOR CLADDING MATERIALS (AFC-DRD), COATED-PARTICLE FUEL MATERIALS (AEC-DRD), DEVELOPMENT OF FUELS FOR GAS-COOLED REACTORS (AEC-DRD), UO<sub>2</sub>-PuO<sub>2</sub> FUEL DEVELOPMENT (SA), EFFECTS OF HIGH BURNUP ON UO<sub>2</sub>-CeO<sub>2</sub> AND UO<sub>2</sub>-ZrO<sub>2</sub> FUELS (CE).

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPT. COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*COATED PARTICLE + \*NITRIDE + \*OXIDE + \*PLUTONIUM + \*PLUTONIUM DIOXIDE + BERYLLIUM + CLAD + FISSION PRODUCT RELEASE, GENERAL + FUEL BURNUP + GRAPHITE + PYROLYTIC + STEEL, STAINLESS

7-15186  
HUNT DC  
RESTRICTED RELEASE OF PLUTONIUM  
DOW CHEMICAL CO., GOLDEN COLO  
RFP-799 +. 69 PAGES, FIGURES, 7 TABLES, OCTOBER 17, 1966

A STUDY WAS MADE OF THE POSSIBLE HAZARD OUTSIDE AN ENCLOSURE DUE TO THE UNCONTROLLED OXIDATION OF PLUTONIUM WITHIN THE ENCLOSURE. THE REPORT FIRST REVIEWS OBSERVATIONAL DATA ON SUCH RESTRICTED PLUTONIUM RELEASE AND THEN CONSTRUCTS A RELEASE MODEL RELATING THE FREE-RELEASE SOURCE STRENGTH AND THE PARAMETERS DESCRIBING THE RELEASE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*AIRBORNE RELEASE + \*ANALYTICAL MODEL + \*OXIDATION + \*PLUTONIUM + AEROSOL + FISSION PRODUCT RELEASE, GENERAL

7-15187  
EVERETT RJ + POSNER S  
EVALUATION OF THE MIDGET IMPINGER FOR SAMPLING U308 AND GRAPHITE AEROSOLS  
SANDIA CORPORATION + LOVELACE FOUNDATION FOR MEDICAL EDUCATION AND RESEARCH  
SC-PR-66-597 + LF-32 +. 13 PAGES, 4 FIGURES, REFERENCES, OCTOBER 1966

PYROLYTIC GRAPHITE AND U308 DUST DISTRIBUTIONS WERE PREPARED AND AEROSOLIZED INTO A CHAMBER EQUIPPED WITH BALANCING FLOW SAMPLING PORTS. AEROSOL SAMPLES WERE TAKEN BY STANDARD MIDGET IMPINGERS AND MILLIPORE TYPE AA MEMBRANE FILTERS. PARTICLE-SIZE DISTRIBUTIONS WERE DETERMINED. FROM THESE DATA, COMPARISONS WERE MADE TO EVALUATE FRACTURING OF PARTICLES BY IMPINGEMENT, CLUSTER BREAKDOWN, EFFECTS OF SAMPLING SOLUTIONS, AND THE EFFECT OF ULTRASOUND USED TO KEEP SAMPLES IN SUSPENSION. RESULTS INDICATE THE EXISTENCE OF A CRITICAL TIME FACTOR FOR COUNTING THE DUST. THIS FACTOR IS CAUSED BY THE BREAKDOWN OF PYROLYTIC GRAPHITE PARTICLE CLUSTERS IN SOLUTION. NO SIGNIFICANT FRACTURING DUE TO IMPINGEMENT OR ULTRASONIC STIRRING WAS OBSERVED. ULTRASONIC AGITATION TENDS TO ACCELERATE THE BREAKDOWN PROCESS IN PYROLYTIC GRAPHITE SUSPENSIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*AEROSOL + \*AEROSOL PRODUCTION + \*FILTER THEORY, IMPACTION + \*PARTICLE SIZE DISTRIBUTION + \*SAMPLING + GRAPHITE + OXIDE + PYROLYTIC + URANIUM

7-15188

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-15188 \*CONTINUED\*

JOHNE R

THE RATE OF SINKING OF PARTICLES

3 PAGES, 3 FIGURES, 1 TABLE, 5 REFERENCES, CHEMIE-ING-TECHN. 38(4) PAGES 428-430, (APRIL 1966)

THE RATE OF SINKING OF PARTICLES IN A MONODISPERSE SUSPENSION WAS INVESTIGATED IN RELATION TO THEIR CONCENTRATION BY LABELLING INDIVIDUAL PARTICLES, CONTAINED IN A SUSPENSION OF PARTICLES OF UNIFORM SIZE, WITH RADIOACTIVE TRACERS. THE MEASUREMENTS ARE INTERPRETED ON THE BASIS OF A SIMPLE PHYSICAL MODEL.

\*ANALYTICAL MODEL + PARTICLE SIZE DISTRIBUTION + TRACER, RADIOACTIVE

7-15191

COLLINS JT

CRITERIA FOR HIGH-EFFICIENCY FILTER INSTALLATIONS AT THE NATIONAL REACTOR TESTING STATION

IDAHO OPERATIONS OFFICE (AEC), IDAHO FALLS

100-12045 +. 59 PAGES, REFERENCES, DECEMBER 15, 1965

THIS MANUAL PROVIDES GENERAL CRITERIA FOR DETERMINING THE NEED FOR HIGH-EFFICIENCY FILTERS, DESIGN OF FILTER ENCLOSURES, AND SPECIFICATIONS FOR FIRE-RESISTIVE FILTERS. IT FURTHER OUTLINES PROCEDURES FOR HANDLING, INSPECTING AND STORING HIGH-EFFICIENCY FILTERS, TOGETHER WITH PROCEDURES FOR INSTALLATION, MAINTENANCE AND IN-PLACE TESTING OF HIGH-EFFICIENCY FILTERS AND FILTER SYSTEMS. IT UPDATES AND SUPERSEDES 100-12032, HAZARDOUS MATERIAL FILTER MANUAL FOR THE NATIONAL REACTOR TESTING STATION, DATED AUGUST 26, 1963.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*DESIGN CRITERIA + \*FILTER INSTALLATION + \*FILTER SYSTEM + FILTER DESIGN + FILTER, HIGH EFFICIENCY + TEST, FILTER + TESTING

7-15192

HOOKE R

DIPOD SAMPLING. A METHOD FOR STUDYING THE DISTRIBUTION OF FINITE PARTICLES.

WESTINGHOUSE RESEARCH LABS., PITTSBURGH, PA.

WERL-8844-10 +. 17 PAGES, 1 REFERENCES, JUNE 17, 1965

THE SUBJECT IS THE STUDY OF DISTRIBUTIONS OF PARTICLES WHOSE SIZE IS NOT NEGLIGIBLE. THE PROBLEM IS TO TEST WHETHER A COLLECTION OF PARTICLES SHOWS A TENDENCY TOWARD ATTRACTION OR REPULSION OTHER THAN THAT CAUSED BY THEIR PHYSICAL SIZE. SINCE THERE SEEM TO BE VARIOUS NONEQUIVALENT WAYS OF DESCRIBING A RANDOM DISTRIBUTION OF SUCH PARTICLES, AND SINCE THESE WAYS LEAD TO INTRICATE PROBLEMS OF GEOMETRIC PROBABILITY, A DIFFERENT APPROACH IS USED. THIS APPROACH IS THROUGH THE SAMPLING PROCEDURE, SPECIFICALLY A PROCEDURE INVOLVING TWO SAMPLE POINTS A FIXED DISTANCE D APART. THIS PAIR IS CALLED A DIPOD, AND BY STUDYING THE RESULTS OF DIPOD SAMPLING FOR VARIOUS VALUES OF D, ONE CAN OBTAIN A TEST FOR THE PRESENCE OF ATTRACTION OR REPULSION OF PARTICLES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*PARTICLE SIZE + \*PARTICLE SIZE DISTRIBUTION + \*SAMPLING + PARTICULATE

7-15193

SMITH ML

REMOVING FISSION GASES AND IODINE FROM REACTOR EXHAUST AIR BY FOG SPRAY AND FOAM

GENERAL ELECTRIC CO., RICHLAND, WASHINGTON, HANFORD ATOMIC PRODUCTS OPERATION

RL-SA-50 + CONF-651101-35 +. 3 PAGES, 3 FIGURES, AUGUST 2, 1965

THE ABILITY OF LARGE-SCALE FOG-SPRAY SYSTEM TO REMOVE I-128 FROM THE EXHAUST AIR WAS DETERMINED IN A TEST CONDUCTED AT ONE OF THE PLUTONIUM PRODUCTION REACTORS AT HANFORD. A TECHNIQUE WAS DEVELOPED FOR IRRADIATION AND RELEASE OF 100-CURIE QUANTITIES OF I-128 INTO THE REACTOR EXHAUST AIR STREAM. THE CLEANUP FACTOR RESULTING FROM THE FOG-SPRAY SYSTEM WAS MEASURED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*CHARCOAL + \*DECONTAMINATION SPRAY + \*FILTER, MAY PACK + \*FOAM + \*FOG + ARGON + FILTER + FILTER, TRAP + FISSION GAS RELEASE + FISSION PRODUCT, IODINE + PLUTONIUM + TEST, FILTER

7-15194

SMITH ML

MEASUREMENT OF FILTER EFFICIENCY WITH A CONDENSATION NUCLEI COUNTER.

GENERAL ELECTRIC CO., RICHLAND, WASHINGTON, HANFORD ATOMIC PRODUCTS OPERATION

RL-SA-47 + CONF-651101-34 +. 2 PAGES, FROM 13TH CONFERENCE ON REMOTE SYSTEMS TECHNOLOGY WASHINGTON, D. C., JULY 23, 1965

THE INTEGRITY OF THE CONFINEMENT FILTER SYSTEM USED ON THE PLUTONIUM REACTORS HAS BEEN



CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-15194 \*CONTINUED\*

DEPENDENT ON DIOCTYL PHTHALATE (DOP) TESTING WHILE THE FILTER SYSTEM IS OUT OF SERVICE. IF FAILURES OF THE FILTERS OCCUR WHILE THE SYSTEM IS IN SERVICE, THE LOSS OF INTEGRITY COULD GO UNDETECTED UNTIL THE NEXT ROUTINE TESTS WITH (DOP) IS PERFORMED. A NEW TECHNIQUE, USING CONDENSATION NUCLEI, WAS DEVELOPED. IT PERMITS THE MEASUREMENT OF THE EFFICIENCY OF THE CONFINEMENT FILTER SYSTEM WHILE IN SERVICE. THIS PERMITS EITHER PERIODIC OR CONTINUOUS MEASUREMENT OF EFFICIENCY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*FAILURE, GENERAL + \*FILTER + \*OPERATING EXPERIENCE + \*TEST, FILTER SYSTEM + FILTER EFFICIENCY + PLUTONIUM + TEST, DOP FILTER + TESTING

7-15195

LARUSHKIN VG + POLEV NM + RUZER LS  
DETERMINING THE SELF-ABSORPTION OF ALPHA RADIATION IN A SAMPLE DURING AIR FILTRATION  
2 PAGES, 1 FIGURE, ATOMNAYA ENERGIYA 19(1), PAGE 39, (JULY 1965)

ONE SOURCE OF ERROR IN MEASUREMENTS OF THE CONCENTRATION OF ALPHA-ACTIVE AEROSOLS IN AIR IS ABSORPTION OF ALPHA RADIATION IN THE SAMPLE LAYER. THIS PAPER CONTAINS EXPERIMENTAL MEASUREMENTS OF THE ABSORPTION COEFFICIENT FOR ALPHA-PARTICLES FROM RAC (PRIME) IN A SPECIMEN WITH DUST CONTENT ON THE FILTER OF 0-18 MC/SQ. CM. THE MEASUREMENTS WERE MADE WITH ARTIFICIAL AEROSOLS OF AMMONIUM CHLORIDE FORMED BY THE INTERACTION OF GASEOUS HCL AND AMMONIA. THE COEFFICIENT OF ABSORPTION OF ALPHA PARTICLES FROM RAC (PRIME) WITH THE BETA PARTICLES FROM RAC IN EQUILIBRIUM WITH IT.

\*ALPHA EMITTER + \*ALPHA FACILITIES + \*TEST, FILTER + \*TRACER, RADIOACTIVE + ADSORPTION + AEROSOL + AEROSOL PROPERTIES + AIR CLEANING

7-15196

HWANG ST + KAMMERMEYER K  
SURFACE DIFFUSION IN MICROPOROUS MEDIA  
UNIVERSITY OF IOWA, IOWA, CITY, IOWA  
7 PAGES, 7 FIGURES, 10 TABLES, 30 REFERENCES, THE CANADIAN JOURNAL OF CHEMICAL ENGINEERING 44(2), PAGES 82-88, (APRIL 1966)

THE SURFACE DIFFUSION OF HE, NE, H<sub>2</sub>, AR, O<sub>2</sub>, N<sub>2</sub> AND CO<sub>2</sub> THROUGH VYCOR MICROPOROUS GLASS WAS ANALYZED THEORETICALLY AND EXPERIMENTALLY IN THE LOW PRESSURE RANGE AS A FUNCTION OF TEMPERATURE. A STATISTICAL-MECHANICAL TREATMENT WAS CARRIED OUT IN TERMS OF PARTITION FUNCTIONS TO DERIVE A GENERAL EQUATION OF SURFACE FLOW. IT WAS POSSIBLE TO SEPARATE THE SURFACE DIFFUSION FROM THE TOTAL FLOW BY A SIMPLIFIED WORKING EQUATION. THE CONVENTIONAL METHOD, WHICH ASSUMES THAT THERE IS NO ADSORBED FLOW FOR HELIUM, SHOULD BE DISCARDED, BECAUSE THE FRACTION OF SURFACE DIFFUSION FOR HELIUM RANGES FROM 0.133 TO 0.247. IT IS ALSO ILLUSTRATED HOW TO PREDICT THE PERMEABILITY OF A NEW GAS FOR THE SAME POROUS MEDIUM.

\*DIFFUSION + \*MATHEMATICAL STUDY + \*POROUS MEDIA + \*THEORETICAL INVESTIGATION + ARGON + CARBON DIOXIDE + HELIUM + HYDROGEN + NITROGEN + OXYGEN

7-15197

DEVIR SF  
ON THE COAGULATION OF AEROSOLS II. SIZE DISTRIBUTION CHANGES IN A COAGULATING AEROSOL  
ISRAEL INSTITUTE FOR BIOLOGICAL RESEARCH, NESS-ZIONA, ISRAEL  
15 PAGES, 4 FIGURES, 3 TABLES, 25 REFERENCES, JOURNAL OF COLLOID AND INTERFACE SCIENCE, 21 (1), PAGES 9-23  
1966

THE SIZE DISTRIBUTION OF AN INITIALLY HOMOGENEOUS AEROSOL OF DIOCTYL PHTHALATE (DOP) WAS STUDIED UNDER ESSENTIALLY UNIFORM EXPERIMENTAL CONDITIONS. THE CHANGES IN SIZE DISTRIBUTION OF THE AEROSOL COAGULATING AND DEPOSITING ON THE WALLS OF A CLOSED CHAMBER (2-1/4 CU. METERS) UNDER STILL AIR CONDITIONS WERE MEASURED DURING 5-6 HOURS OF THE EXPERIMENT. A FORWARD-ANGLE LIGHT-SCATTERING CAMERA WAS USED FOR THE SIZE-DISTRIBUTION DETERMINATIONS, BY RECORDING PHOTOGRAPHICALLY THE RATE OF FALL OF DOP PARTICLES IN AN ULTRAMICROSCOPE CELL. A MATHEMATICAL SOLUTION OF THE PROBLEM, PUBLISHED BY FRIEDMAN, WAS USED TO ANALYZE THE EXPERIMENTAL DATA. THE EFFECT OF HETEROGENEITY ON THE EXPERIMENTAL VALUES OF K (SMOLUCHOWSKIS COAGULATION CONSTANT) REPORTED IN PART I WAS EVALUATED, BASED ON THE SIZE-DISTRIBUTION MEASUREMENTS. THE EFFECT OF HETEROGENEITY WAS SHOWN TO BE NEGLIGIBLE, IN CORRESPONDENCE WITH THE KNOWN THEORIES.

\*AEROSOL + \*PARTICLE SIZE DISTRIBUTION + \*THEORETICAL INVESTIGATION + AEROSOL PRODUCTION + AEROSOL PROPERTIES + PARTICLE SIZE

7-15198

AVERINK JW + REERINK H + BOERMA J + JASPERS WJ  
DETERMINATION OF PARTICLE SIZE DISTRIBUTIONS OF LATICES BY VELOCITY ULTRACENTRIFUGATION USING ABSORPTION OPTICS  
KONINKLIJKE/SHELL-LABORATORIUM, AMSTERDAM  
13 PAGES, 5 FIGURES, 8 REFERENCES, JOURNAL OF COLLOID AND INTERFACE SCIENCE 21(1), PAGES 66-78, (JANUARY 1966)

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-15198 \*CONTINUED\*

A METHOD WAS DEVELOPED FOR DETERMINING THE WEIGHT DISTRIBUTION OF LATTICES BY VELOCITY ULTRACENTRIFUGATION, USING ABSORPTION OPTICS. SINCE THE RATIO OF THE LIGHT SCATTERED BY A LATEX PARTICLE TO ITS WEIGHT DEPENDS UPON ITS SIZE, THE CONCENTRATION IN A SEDIMENTING BOUNDARY, IN THE CASE OF POLYDISPERSITY, IS NOT LINEARLY PROPORTIONAL TO THE MEASURED OPTICAL DENSITY. THE PROBLEM OF DETERMINING THE CONCENTRATION WAS SOLVED BY DIVIDING THE BOUNDARY REGION IN A NUMBER OF NARROW SECTIONS, THEN FIRST BY CALCULATING THE PARTICLE RADIUS FROM THE MEASURED SEDIMENTATION COEFFICIENT, AND SECOND BY DETERMINING THE PROPORTIONALITY FACTOR BETWEEN THE INCREASE IN CONCENTRATION AND THE INCREASE IN OPTICAL DENSITY FROM THE RADIUS, USING MIES THEORY. BY A SUITABLE EXTRAPOLATION PROCEDURE, THE INFLUENCE OF RADIAL DILUTION IS ELIMINATED. RESULTS SHOW THAT OUR METHOD FOR THE DETERMINATION OF SIZE DISTRIBUTIONS IS RELIABLE. THE LIMITS OF PARTICLE SIZES THAT CAN BE DETERMINED ARE DISCUSSED. THE METHOD IS COMPARED WITH A SIMILAR ONE RECENTLY DEVELOPED BY CANTOW.

\*ANALYTICAL TECHNIQUE, GENERAL + \*PARTICLE SIZE DISTRIBUTION + PARTICLE SIZE + THEORETICAL INVESTIGATION

7-15199

PICH J

THEORY OF FILTRATION OF HIGHLY DISPERSED AEROSOLS

CZECHOSLOVAK ACADEMY OF SCIENCES, PRAGUE

16 PAGES, 1 FIGURE, 18 REFERENCES, COLLECTION OF CZECHOSLOV CHEMICAL COMMUN. 31(9), PAGES 3721-3736, (SEPTEMBER 1966)

AN EQUATION FOR CALCULATING THE EFFICIENCY OF FIBROUS FILTERS WAS DERIVED BY USING THE VELOCITY FIELD OF KUWABARA AND HAPPEL AND BY ASSUMING THAT THE ONLY FILTRATION MECHANISM IS THE DIFFUSION PRECIPITATION OF PARTICLES. THE EQUATION TAKES INTO ACCOUNT THE DISCONTINUITY OF VELOCITIES ON THE SURFACE OF THE INDIVIDUAL FIBRES. WHEN NEGLECTING THIS EFFECT WE OBTAIN THE NATANSONS EQUATION AS A SPECIAL CASE OF THE PRESENT THEORY. THE LIMITS OF APPLICABILITY OF THE EQUATION ARE DISCUSSED, AND THE THEORY IS COMPARED WITH EXPERIMENT.

\*ANALYTICAL MODEL + \*FILTER EFFICIENCY + \*FILTER THEORY, DIFFUSION + AEROSOL + DIFFUSION + MATHEMATICAL STUDY + PARTICULATE + THEORETICAL INVESTIGATION

7-15200

METCALFE JE

CARBON MOLECULAR SIEVES

THE PENNSYLVANIA STATE UNIVERSITY

1 PAGE, DISSERTATION ABSTRACTS B 27(3) PAGES 803-804 (SEPTEMBER 1966)

THE OBJECT OF THIS WORK WAS TO PRODUCE CARBON MOLECULAR SIEVES. THE SIEVE PROPERTIES OF CHARs DERIVED FROM TWO SARANS AND PURE POLYVINYLIDENE CHLORIDE WERE STUDIED AS A FUNCTION OF CARBONIZATION TEMPERATURE. THE PROPERTIES WERE EVALUATED BY DETERMINING THE ADSORPTIVE CAPACITIES OF THE CHARs FOR NITROGEN, CARBON DIOXIDE, N-BUTANE, ISOBUTANE, AND NEOPENTANE IN A STATIC ADSORPTION SYSTEM. THE PRODUCTION OF PELLETIZED CARBON MOLECULAR SIEVES WITH A 900 C SARAN CHAR AS THE FILLER MATERIAL AND FOUR DIFFERENT BINDERS WAS STUDIED. CARBONS HAVING LARGE ADSORPTIVE CAPACITIES AND EXHIBITING MOLECULAR SIEVE PROPERTIES CAN BE PRODUCED. FOR EXAMPLE, A SARAN 489 CHAR HEATED TO 900 C HAD A N-BUTANE SURFACE AREA OF 970 SQ. METERS PER G, AN ISOBUTANE SURFACE AREA OF 950, AND A NEOPENTANE SURFACE AREA OF 40.

\*CARBON + \*MOLECULAR SIEVE + \*PROPERTY, PHYSICAL + ADSORPTION

7-15201

PICTON G + SACKMAN JF

THE CORROSION AND IGNITION BEHAVIOR OF SOME URANIUM/PLUTONIUM/IRON ALLOYS

UKAEA, ATOMIC WEAPONS RESEARCH ESTABLISHMENT, ALDERMASTON, BERKS., UK

13 PAGES, 19 FIGURES, 1 TABLE, 12 REFERENCES, JOURNAL OF NUCLEAR MATERIALS, 18(3), PAGES 292-304 (MARCH 1966)

THE CORROSION, BOTH ATMOSPHERIC AND ACCELERATED, AND IGNITION BEHAVIOUR OF URANIUM/PLUTONIUM ALLOYS CONTAINING IRON AT APPROXIMATELY 5, 7, 8, AND 16 AT .% WAS STUDIED. ALL IGNITED IN AIR AT SOME TEMPERATURE BETWEEN 100 AND 315 C, AND ONLY CHILL-CAST SPECIMENS SHOWED GOOD CORROSION RESISTANCE WHEN EXPOSED TO MOIST AIR. UNDER ACCELERATED CORROSION CONDITIONS THE 16 AT .% IRON ALLOY CAN CORRODE FASTER AT ABOUT 0% THAN AT 95% RELATIVE HUMIDITY, OWING TO CRACKING AND DISINTEGRATION. IT IS CONCLUDED THAT CASTING CONDITIONS ARE THE MOST IMPORTANT FACTORS IN GOOD CORROSION AND IGNITION BEHAVIOUR.

\*CORROSION + \*IGNITION + \*PLUTONIUM + \*URANIUM + ALLOY + IRON + OXIDATION

7-15203

KEIHOLTZ GW

REMOVAL OF RADIOACTIVE NOBLE GASES FROM OFF-GAS STREAMS

OAK RIDGE NATIONAL LABORATORY

5 PAGES, 15 REFERENCES, NUCLEAR SAFETY, 8(2) PAGES 155-160, (WINTER 1966-1967)

RADIOACTIVE NOBLE GASES, PARTICULARLY KRYPTON AND XENON, MUST EITHER BE REMOVED FROM THE OFF-GAS STREAMS OF REACTORS AND NUCLEAR FUEL-PROCESSING PLANTS OR DILUTED TO LOW CONCENTRATIONS BEFORE THE OFF-GASES ARE RELEASED TO THE ATMOSPHERE. FOR PRACTICAL PURPOSES THEY CAN BE REMOVED ONLY FROM SMALL VOLUMES OR FROM LOW-VELOCITY GAS STREAMS AND ONLY BY

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-15203 \*CONTINUED\*  
PHYSICAL PROCESSES. SOME CURRENT TECHNOLOGICAL DEVELOPMENTS ARE REVIEWED.

\*CHARCOAL + \*FILTER SYSTEM + \*MOLECULAR SIEVE + \*NOBLE GAS + \*REACTOR OFFGAS + AIR CLEANING +  
FILTER, LIQUID + FILTER, TRAP + KRYPTON + XENON

7-15204  
ROOTHROYD RG  
PRESSURE DROP IN DUCT FLOW OF GASEOUS SUSPENSIONS OF FINE PARTICLES  
DEPARTMENT OF MECHANICAL ENGINEERING, THE UNIVERSITY OF BIRMINGHAM, BIRMINGHAM, ALABAMA  
8 PAGES, 12 FIGURES, 2 TABLES, 21 REFERENCES, TRANS. INSTN CHEM. ENGRS., 44(8), PAGES 306-313 (OCTOBER 1966)

AN INVESTIGATION HAS BEEN CONDUCTED INTO THE PRESSURE DROP OCCURRING IN VERTICAL TUBES OF 1, 2, AND 3 IN. BORE, IN WHICH THERE IS UPWARD FLOW OF AIR-FLUIDIZED SUSPENSIONS OF SMALL PARTICLES. THERE WAS EVIDENCE THAT THE FLUID TURBULENCE IS SUBSTANTIALLY AFFECTED BY THE PRESENCE OF THE SOLIDS AND THAT THE FLOW DEPENDS MARKEDLY ON THE TUBE SIZE. WHEREAS THE FRICTIONAL PRESSURE DROP IN THE 1-IN. PIPE WAS ALWAYS BELOW THAT FOR AIR ALONE, THE PRESSURE DROP IN THE LARGER PIPES WAS USUALLY HIGHER THAN THAT FOR AIR ALONE, BUT STILL LESS THAN THAT FOR A ONE-PHASE FLUID OF THE SAME DENSITY. AIR-FLOW VELOCITIES VARIED FROM A MINIMUM OF 20 FT/S IN THE 3-IN. TUBE TO A MAXIMUM OF 140 FT/S IN THE 1-IN. TUBE. THE RESULTS ARE EXAMINED IN TERMS OF NONDIMENSIONAL SCALING FACTORS, THE RELEVANCE OF WHICH IS DISCUSSED FROM A THEORETICAL STANDPOINT. WHEREAS THE VARIATION OF PRESSURE DROP IN TUBES CONTAINING A SUSPENSION OF LARGE PARTICLES IS USUALLY LINEAR WITH THE SOLIDS LOADING, THIS BECOMES PROGRESSIVELY LESS TRUE WITH SMALLER PARTICLES. IT APPEARS THAT THE SMALLER PARTICLES SIGNIFICANTLY INTERFERE WITH THE PATTERN OF TURBULENCE GENERATION AND DISSIPATION NORMALLY ASSOCIATED WITH PIPES CONTAINING PURE GAS.

\*AIR + \*FLOW THEORY AND EXPERIMENTS + \*FLOW, TUBE + \*THEORETICAL INVESTIGATION + DEPOSITION + PARTICULATE

7-15205  
KAYE BH + TREASURE CRG  
DATA HANDLING TECHNIQUES FOR PARTICLE SIZE ANALYSIS  
2 PAGES, 4 FIGURES, BRITISH CHEMICAL ENGINEERING, 11, (10) PAGES 1220-1221, (OCTOBER 1966)

IT IS SOMETIMES NECESSARY TO CONVERT PARTICLE-SIZE DATA FROM A NUMBER DISTRIBUTION TO A MASS DISTRIBUTION. THE AUTHORS SHOW HOW THIS CAN BE DONE BY A SIMPLE GRAPHICAL TECHNIQUE, DEVOID OF TEDIUM. ITS USE CAN CUT THE COST OF DATA TRANSFORMATION BY AN ORDER OF MAGNITUDE AND REDUCE THE TIME REQUIRED FOR DATA HANDLING.

\*ANALYTICAL TECHNIQUE, CALIBRATION + \*MATHEMATICAL STUDY + \*PARTICLE SIZE + \*PARTICLE SIZE DISTRIBUTION + AEROSOL + AEROSOL PROPERTIES + DATA PROCESSING

7-15206  
BERGMANN CA  
EFFECT OF LOW COBALT IMPURITY STAINLESS STEEL ON COOLANT ACTIVITY OF PRESSURIZED WATER REACTORS  
RTTIS ATOMIC POWER LABORATORY, PITTSBURGH, PENNSYLVANIA  
WAPP-T-1653 + CONF-179-19 +. 9 PAGES, TABLES, APRIL 5, 1964, FROM AMERICAN CHEMICAL SOCIETY,  
RADIOISOTOPIC EXCHANGE ON SOILS, MINERALS, AND RESINS, PHILADELPHIA, APRIL 1964

SINCE EARLY OPERATION OF PRESSURIZED WATER REACTORS, THE IMPURITY LEVEL OF COBALT IN MATERIALS EXPOSED TO THE PRIMARY COOLANT HAS BEEN RECOGNIZED AS A MAJOR CONTRIBUTOR TO LONG-LIVED AFTER-SHUTDOWN RADIATION LEVELS. NEUTRON BOMBARDMENT OF COBALT PRODUCES CO-60, WHICH HAS A HALF-LIFE OF OVER FIVE YEARS AND EMITS 2.5-MEV GAMMA RAYS. THE CO-60 IS TRANSPORTED THROUGHOUT THE PRIMARY SYSTEM AND DEPOSITS ON COMPONENTS LOCATED OUT OF THE REACTOR VESSEL, SUCH AS THE STEAM GENERATOR AND PIPING.

CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*ACTIVITY BUILDUP + \*COBALT + \*OPERATING EXPERIENCE + ACTIVATION PRODUCT + REACTOR, PRESSURIZED WATER + STEEL, STAINLESS

7-15207 ALSO IN CATEGORY 11  
KOZIAL JJ + CHRISTOPHER SS  
CORRELATIONS BETWEEN SENSITIZATION AND STRESS CORROSION CRACKING OF 300 SERIES STAINLESS STEELS, FINAL SUMMARY REPORT  
COMBUSTION ENGINEERING, INC., WINDSOR, CONNECTICUT  
FEND-3256-264 + EURAEC-1568 +. 82 PAGES, FIGURES, TABLES, REFERENCES, SEPTEMBER 1966

THE EFFECTS OF PREOXIDATION AND VARIATIONS IN SURFACE CONDITIONS ON THE SUSCEPTIBILITY TO TRANSGRANULAR CRACKING OF TYPES 304 AND 347 STAINLESS STEEL WERE STUDIED. TUBING WITH ANNEALED, DRAWN, SWAGED, AND DIFFUSED NICKEL SURFACES WAS EXPOSED TO AN AQUEOUS ENVIRONMENT TO EVALUATE THE DIFFERENCES IN BEHAVIOR OF NONSTABILIZED AND STABILIZED TYPES (304 AND 347) OF STAINLESS STEELS UNDER IDENTICAL TEST CONDITIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-15207 \*CONTINUED\*  
\*EMBRITTEMENT + \*OXIDATION + CORROSION + STEEL, STAINLESS

7-15208 ALSO IN CATEGORY 11  
STEELE LE + HAWTHORNE JR + SERPAN CZ  
IRRADIATION EFFECTS ON REACTOR STRUCTURAL MATERIALS, FEBRUARY 1- APRIL 30, 1966  
NAVAL RESEARCH LABORATORY, WASHINGTON, D. C.  
NRL-MEMO-1700 + AD-635 844 +. 62 PAGES, REFERENCES, MAY 16, 1966

THE RESEARCH PROGRAM OF THE NRL METALLURGY DIVISION, REACTOR MATERIALS BRANCH, IS DEVOTED TO THE DETERMINATION OF THE EFFECTS OF NUCLEAR RADIATION UPON THE PROPERTIES OF STRUCTURAL MATERIALS. THIS PROGRESS REPORT INCLUDES THE FOLLOWING - (1) THE RELATIVE RADIATION SENSITIVITY OF A302-B STEELS PREPARED BY SPECIAL MELTING AND HEAT-TREATMENT PRACTICE, (2) THE EVALUATION OF NICKEL CONTENT AS A RADIATION-SENSITIVITY VARIABLE, (3) COMPARATIVE IRRADIATION EMBRITTEMENT OF SELECTED HIGHER-STRENGTH STEELS, AND (4) THE EFFECT OF NEUTRON SPECTRA UPON THE OBSERVED CHANGES IN THE NOTCH DUCTILITY OF IRRADIATED STEELS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*EMBRITTEMENT + \*RADIATION EFFECT + \*STEEL + BRITTLE FRACTURE + IMPACT PROPERTY

7-15209  
GOW HB + MARSH WR  
THE EFFECT OF HYDROGEN AND WATER ON THE RADIATION INDUCED REACTION OF CARBON DIOXIDE WITH GRAPHITE  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, HARWELL  
AERF-R-4839 +. 31 PAGES, 8 FIGURES, 14 TABLES, 11 REFERENCES, 1965

THE RADIATION-INDUCED REACTION OF CARBON DIOXIDE WITH GRAPHITE WAS STUDIED IN THE PRESENCE OF ADDED HYDROGEN AND WATER AT TEMPERATURES BETWEEN 100 AND 600 C. AT 600, HYDROGEN REACTS RAPIDLY, AND AN EQUI MOLAR AMOUNT OF CARBON MONOXIDE IS FORMED, THE ONLY OTHER PRODUCT OF THE REACTION BEING WATER. THE REACTION IS TEMPERATURE-DEPENDENT, HAVING AN APPARENT ACTIVATION ENERGY OF 21 KCAL/G.MOLE. THE SUBSEQUENT RATE OF PRODUCTION OF CARBON MONOXIDE AFTER COMPLETE REACTION OF HYDROGEN IS THE SAME AS THAT FROM PURE CARBON DIOXIDE. AT 100 C, THE REACTION RATE IS SLOWER BUT STILL MUCH GREATER THAN THAT DUE TO THERMAL PROCESSES, WHICH ARE NEGLIGIBLE AT THIS TEMPERATURE. THE EFFECT OF ADDED WATER IS ALSO TEMPERATURE DEPENDENT. ABOVE 350 C THERE IS LITTLE EFFECT OF THE ADDITION OF WATER ON THE PRODUCTION OF CARBON MONOXIDE, BUT AT 100 C A MUCH LOWER RATE OF CARBON MONOXIDE PRODUCTION IS OBSERVED, AND, IN ADDITION, HYDROGEN IS FORMED.

AVAILABILITY - HER MAJESTY'S STATIONERY OFFICE, LONDON

\*CARBON DIOXIDE + \*CHEMICAL REACTION + \*GRAPHITE + \*OXIDATION + \*RADIATION EFFECT + \*WATER VAPOR + HYDROGEN + MODERATOR + REACTOR, GAS COOLED + STEAM

7-15210  
POINTUD ML + ROMBERG E  
ORIGINALIEN. AN ASSESSMENT OF THE CARBON TRANSPORT PROBLEM IN HIGH TEMPERATURE GAS COOLED REACTORS  
ATOMIC ENERGY ESTABLISHMENT, WINFIRTH  
10 PAGES, 11 FIGURES, 4 TABLES, 13 REFERENCES, NUKLEONIK 8(4), PAGES 179-188, (APRIL 1966)

IN A HIGH-TEMPERATURE, HELIUM-COOLED, GRAPHITE MODERATED REACTOR, (HTR), THE INLEAKAGE OF OXIDISING IMPURITIES CONSTITUTES A PROBLEM. GRAPHITE CORROSION AND CARBON DEPOSITION MAY REDUCE CONSIDERABLY THE EFFECTIVE LIFE OF THE CORE AND THE HEAT EXCHANGERS. IN ORDER TO MINIMISE THIS PROBLEM THE OXIDISING IMPURITIES MUST BE KEPT IN CERTAIN LIMITS. THE PRESENT STUDY, WHICH WAS CARRIED OUT IN SUPPORT OF THE DEVELOPMENT, OF THE OECD - HTR DRAGON TRIES TO EXPLAIN AND TO DETAIL THE CARBON TRANSPORT PROBLEM BY ASSESSING THE IMPORTANCE OF THE DIFFERENT PARAMETERS. EQUATIONS ARE PRESENTED RELATING THE MAXIMUM PERMISSIBLE CORROSION TO THE ATTACK OF THE FUEL-PARTICLE COATING. OTHER EXPRESSIONS ALLOW ONE TO ESTIMATE THE PURIFICATION FLOW OR THE MAXIMUM PERMISSIBLE WATER INLEAKAGE FOR AVOIDING EXCESSIVE GRAPHITE CORROSION AND CARBON DEPOSITION AS FUNCTION OF CORROSION RATES, HEAT EXCHANGER REACTIVITIES, TOTAL FLOW, THERMODYNAMIC EQUILIBRIA, ETC.

\*CARBON DIOXIDE + \*COATED PARTICLE + \*DRAGON (UK) + \*GRAPHITE + \*HYDROGEN + \*MODERATOR + \*OXIDATION + \*REACTOR, GAS COOLED + \*STEAM + CHEMICAL REACTION + PYROLYTIC

7-15211  
STEVENS DW  
THE THERMAL CONDUCTIVITY OF BEDS OF COATED FUEL PARTICLES  
GENERAL ATOMIC, SAN DIEGO  
GA-7241 +. 18 PAGES, FIGURES, 2 TABLES, 19 REFERENCES, ANS TRANSACTIONS 9(2), PAGE 424 (NOVEMBER 1966)

THE THERMAL CONDUCTIVITY OF LOOSE, PYROLYTIC-CARBON-COATED FUEL PARTICLES IN HELIUM WAS STUDIED AT TEMPERATURES FROM 1800 TO 2700 F, USING A CONVENIENT COMPARATIVE TECHNIQUE. THE CONDUCTIVITIES OF COATED PARTICLES WITH BOTH 150- AND 795-MICRON DIAMETERS WERE SHOWN TO RISE AND THEN REMAIN CONSTANT AS THE HELIUM PRESSURE WAS INCREASED TO 4 ATM. MEASUREMENTS ON PARTICLES WITH VARIOUS COATING THICKNESSES AND STRUCTURES INDICATED THAT BED CONDUCTIVITY WAS RELATIVELY INSENSITIVE TO THE PROPERTIES OF THE COATING.

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-15211 \*CONTINUED\*  
\*CARBIDE + \*CARBON + \*COATED PARTICLE + \*HELIUM + \*PARTICLE SIZE + \*PYROLYTIC + \*REACTOR, GAS COOLED + \*THORIUM + \*URANIUM CARBIDE + HEAT TRANSFER, CONDUCTION

7-15213  
REAGAN PE  
FISSION-GAS RELEASE AND IRRADIATION DAMAGE TO AVR PYROLYTIC-CARBON COATED THORIUM-URANIUM CARBIDE PARTICLES  
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.  
ORNL-4053 +. 19 PAGES, 11 FIGURES, 1 TABLE, 11 REFERENCES, JANUARY 1967

PYROLYTIC-CARBON-COATED THORIUM-URANIUM CARBIDE PARTICLES, PREPARED COMMERCIALY FOR USE IN THE GERMAN AVR, WERE IRRADIATED TO 10 AT. % HEAVY-METAL BURNUP AT 1300 C IN THE AVR. THE PARTICLES WERE A BLEND OF SEVERAL BATCHES OF DUPLEX-COATED PARTICLES SELECTED AS REPRESENTATIVE OF THOSE TO BE USED IN THE FIRST FUEL LOADING. THE FRACTIONAL FISSION-GAS RELEASE FOR KR-88 WAS  $5 \times 10^{-6}$  AT THE BEGINNING OF THE TEST AND INCREASED WITH BURNUP TO  $4 \times 10^{-5}$  AT THE END OF THE TEST. NO BURSTS OF FISSION GAS WERE RELEASED DURING THE TEST, AND NO BROKEN COATINGS WERE FOUND ON POSTIRRADIATION EXAMINATION. METALLOGRAPHY SHOWED SOME DAMAGE TO THE INNER COATING, BUT NOTHING THAT INDICATED POTENTIAL FAILURE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*CARBIDE + \*COATED PARTICLE + \*FUEL ELEMENT + \*GERMANY + \*IN PILE EXPERIMENT + \*INTEGRITY + \*KRYPTON + \*PARTICULATE + \*PYROLYTIC + \*REACTOR, GAS COOLED + \*THORIUM + \*URANIUM CARBIDE + FISSION GAS RELEASE + RADIATION DAMAGE

7-15221  
ROSENBAUM HS + ARMIJO JS + WOLFF UE  
FISSION FRAGMENT DAMAGE TO TYPE-304 STAINLESS STEEL FUEL CLADDING  
GENERAL ELECTRIC, SAN JOSE, CALIF., ATOMIC POWER EQUIPMENT, DEPT.  
GEAP-5002 +. 33 PAGES, 16 FIGURES, REFERENCES, JANUARY 1966

DURING THE EXAMINATION OF IRRADIATED CLADDING FROM HIGH POWER DENSITY PROGRAM EXPERIMENTAL FUEL RODS, THE INNER SURFACE OF THE TYPE-304 STAINLESS STEEL CLADDING WAS FOUND TO HAVE A DUPLEX-LAYERED STRUCTURE 5 TO 10 MICRONS THICK. THIS STRUCTURE IS WITHIN THE RANGE OF RECOILING FISSION FRAGMENTS AND IS BELIEVED TO BE A FISSION-DAMAGED ZONE. EXAMINATION OF THE ZONE BY METALLOGRAPHY, ELECTRON MICROSCOPY, AND WITH COLLOIDAL MAGNETITE SHOWED THAT BOTH LAYERS OF THE DUPLEX STRUCTURE ARE AUSTENITE AND HAVE THE SAME CRYSTALLOGRAPHIC ORIENTATION AS THE UNDERLYING AUSTENITIC MATRIX. BOTH LAYERS ARE HARDER THAN THE UNDERLYING MATRIX, YET THEY ARE READILY DISTINGUISHED BY THEIR DIFFERENT ETCHING CHARACTERISTICS. POSSIBLE REASONS FOR THE EXISTENCE OF THE DUPLEX, RATHER THAN A SINGLE LAYER, ARE DISCUSSED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*FAILURE, CLADDING + \*RADIATION EFFECT + \*STEEL, STAINLESS + CLAD + FISSION RECOIL

7-15228  
KUMAR OF S  
MOLECULAR SIEVES  
INDIAN ASSOCIATION FOR THE CULTIVATION OF SCIENCE, JADAVPUR, CALCUTTA  
4 PAGES, 1 TABLE, 48 REFERENCES, JOURNAL OF SCIENTIFIC AND INDUSTRIAL RESEARCH 25(1), PAGES 28-31,  
(JANUARY 1966)

MOLECULAR SIEVES ARE CRYSTALLINE ALUMINOSILICATES OR ZEOLITES. THE SIEVE-LIKE PROPERTIES OF THESE ZEOLITES ARE MAINLY DUE TO THEIR UNIQUE MOLECULAR ARCHITECTURE. THE FUNDAMENTAL BUILDING BLOCK OF ALL ZEOLITES IS AN ALUMINOSILICATE FRAMEWORK COMPOSED OF (SI, AL)O<sub>4</sub> TETRAHEDRA. THE ARTICLE PRESENTS THE FOLLOWING SUBJECTS - SYNTHESIS OF ZEOLITES, ADSORPTION BY MOLECULAR SIEVES, DESORPTION, CHARACTERISTIC PROPERTIES OF MOLECULAR SIEVES, USES.

\*ADSORPTION + \*ION EXCHANGE + \*MOLECULAR SIEVE + \*PROPERTY, PHYSICAL + DESORPTION

7-15248  
HACKE J + JACOBI W + TRAMME K  
ON THE DEPOSITION OF RADIOIODINE IN FILTERS OF A SMALL REACTOR SAFETY DEVICE (AUR)  
HAHN-MEITNER-INSTITUT FUER KERNFORSCHUNG, BERLIN  
AFG-TR-6829 + HMI-B-48 +. 26 PAGES, FIGURES, FEBRUARY 1966

THE COMBINATION FILTER OF THE EMERGENCY DEVICE, WHICH CONSISTS OF A SUSPENSION FILTER AND AN ACTIVE CHARCOAL FILTER, EFFECTIVELY FILTERS ALL FISSION PRODUCTS AND ESPECIALLY ALSO (AS SHOWN IN THIS INVESTIGATION) RADIOIODINE.

AVAILABILITY - JOHN CRERAR LIBRARY, 35 WEST 33RD. ST., CHICAGO, ILL. 60616, \$2.60 COPY, \$0.98 MICROFICHE

\*CHARCOAL + \*DEPOSITION + \*FILTER + \*FILTER, COMBINATION + \*FILTER, FIBER + \*FISSION PRODUCT, IODINE + \*PERSONNEL PROTECTIVE DEVICE + FISSION PRODUCT RELEASE, GENERAL

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-15249  
DUKEISEN CA + MALABY KL  
IN-PLACE TESTING OF CHARCOAL FILTER BANKS AT AMES LABORATORY RESEARCH REACTOR (ALRR)  
AMES LABORATORY, IOWA STATE UNIVERSITY OF SCIENCE AND TECHNOLOGY  
IS-1425 +. 13 PAGES, 2 REFERENCES, SEPTEMBER 1966

THE AIR EXHAUST SYSTEM AT THE ALRR IS DESCRIBED. AN EXPERIMENTAL PROGRAM WAS CONDUCTED TO DEVELOP AN APPROPRIATE IN-PLACE IODINE TEST FOR THE CHARCOAL FILTER BANKS. THREE TECHNIQUES WERE TESTED - SPECTROPHOTOMETRIC ANALYSIS, NEUTRON ACTIVATION, AND IODINE-131 TRACER. COMPARISONS OF THE RESULTS AND EXPERIENCE ARE ENUMERATED, WITH COMMENTS AND RECOMMENDATIONS. THE NEUTRON-ACTIVATION AND THE IODINE-131 TRACER TECHNIQUES WERE THE MOST APPROPRIATE METHODS FOR IN-PLACE IODINE TESTING OF THE ALRR CHARCOAL FILTER BANKS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*ACTIVATION PRODUCT + \*CHARCOAL + \*FILTER SYSTEM + \*REACTOR, RESEARCH + \*TEST, FILTER SYSTEM + \*TRACER, RADIOACTIVE + FISSION PRODUCT RELEASE, GENERAL

7-15250 ALSO IN CATEGORY 17  
RIGGS CO + HASSELL LD  
RADIOACTIVE IODINE RELEASE FROM PM-3A CONTAINMENT VESSELS  
MARTIN CO., BALTIMORE, MD.  
MND-M3A-3108 (PT. B) +. 29 PAGES, REFERENCES, JANUARY 28, 1964

A CONSERVATIVE ANALYSIS OF THE IODINE RELEASE FROM THE PM-3A NUCLEAR POWER PLANT, BASED ON THE METHOD OF TID 14844 MODIFIED FOR LEAK RATES TO 5%/DAY AND DIFFERENT METEOROLOGICAL CONDITIONS, ESTABLISHED THAT THE 72-HR INTEGRATED DOSE TO THE THYROID WOULD NOT EXCEED 243 RADS IN THE WORST CASE. IT IS CONCLUDED THAT UNDUE HAZARD TO PERSONNEL DOES NOT EXIST IN THE EVENT OF A MAXIMUM CREDIBLE ACCIDENT

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*ACCIDENT, MAXIMUM CREDIBLE (MCA) + \*DOSE CALCULATION, INTERNAL + \*FISSION PRODUCT, IODINE + \*METEOROLOGY + \*PERSONNEL EXPOSURE, RADIATION + \*PM 3A (PORTABLE MEDIUM NUCLEAR POWER PLANT) + \*TEST, LEAK RATE + FISSION PRODUCT RELEASE, GENERAL + REACTOR, ARMY + REACTOR, PRESSURIZED WATER

7-15251 ALSO IN CATEGORY 17  
DEMMITT TF  
AUTOMATING REACTOR COOLANT QUALITY ANALYSES  
GENERAL ELECTRIC COMPANY, HANFORD ATOMIC PRODUCTS OPERATION, RICHLAND, WASHINGTON  
HW-SA-3099 + CONF-179-21 +. 6 PAGES, 5 FIGURES, APRIL 10, 1964, FROM AMERICAN CHEMICAL SOCIETY  
RADIOISOTOPIC EXCHANGE ON SOILS, MINERALS, AND RESINS, PHILADELPHIA, APRIL 1964

THE PRACTICE OF PERFORMING ROUTINE COOLANT-QUALITY-CONTROL ANALYSES MANUALLY, USING GRAB SAMPLES, IS RAPIDLY BECOMING OBSOLETE IN MODERN REACTOR SYSTEMS. THIS IS A DESIRABLE SITUATION SINCE THE RESULTS OF AUTOMATING THE SAMPLING AND ANALYSIS FUNCTIONS ARE THE GENERATION OF MORE DATA, WITH A HIGHER ACCURACY THAN IS GENERALLY ATTAINABLE MANUALLY, AND IN A FORM THAT IS MORE USEFUL FOR CONTROL PURPOSES. IN THIS PAPER, THE ANALYTICAL PROCEDURES AND THE INSTRUMENTS ARE THOSE THAT HAVE BEEN SELECTED FOR THE 100-N REACTOR APPLICATION. HOWEVER, IT MUST BE EMPHASIZED THAT THEY ARE NOT NECESSARILY OPTIMUM. IN NEARLY EVERY CASE MORE THAN ONE PROCEDURE AND ONE TYPE OF INSTRUMENT ARE AVAILABLE TO PERFORM A GIVEN CHEMICAL ANALYSIS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*ANALYTICAL TECHNIQUE, WATER + \*COOLANT QUALITY + \*HANFORD SITE + \*REACTOR, PRESSURIZED WATER + REACTOR COOLANT

7-15252 ALSO IN CATEGORY 17  
FARMER FR  
DISCUSSION ON - CONSIDERATIONS ON FISSION PRODUCT RELEASE SUPPRESSION FACTORS FOR ENGINEERED SAFEGUARDS FOR NUCLEAR POWER PLANTS BY T. TAGAMI  
SAFEGUARDS DIVISION, U.K.A.E.A. HEALTH AND SAFETY BRANCH, RISLEY, WARRINGTON, LANCs., ENGLAND  
1 PAGE, NUCLEAR ENGINEERING AND DESIGN, 4, PAGE 490, (SEPTEMBER 1966)

IT IS ARGUED THAT THROUGH ENGINEERING SAFEGUARDS A REDUCTION IN IODINE RELEASE MAY BE ACHIEVED BY FOUR TO SIX ORDERS OF MAGNITUDE. IF THE SAFETY OF THE PUBLIC IS TO BE ENSURED BY SUCH MEANS, THEN A CORRESPONDINGLY HIGH DEGREE OF PLANT RELIABILITY MUST BE DEMONSTRATED... IN PRACTICE, SUCH HIGH ORDERS OF RELIABILITY ARE EXTREMELY DIFFICULT TO ACHIEVE. CONCLUSIONS - (1) WE KNOW MORE ABOUT IODINE AND ITS BEHAVIOR THAN WE DO ABOUT PLANT PERFORMANCE. (2) IF PROTECTION OF MANY ORDERS OF MAGNITUDE IS TO BE ESTABLISHED BY ENGINEERED SAFEGUARDS, THEN THEIR PERFORMANCE NEEDS TO BE ESTABLISHED TO A CORRESPONDINGLY HIGH DEGREE OF RELIABILITY. (3) IT IS SURELY BETTER TO SPEND EFFORT ON PREVENTING CORE MELTING THAN ON SUBSEQUENT REARGUARD DEFENSIVE MEASURES.

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-15252 \*CONTINUED\*  
\*FILTER EFFICIENCY + \*FISSION PRODUCT RETENTION + \*FISSION PRODUCT, IODINE + \*SAFETY EVALUATION +  
ENGINEERED SAFETY SYSTEM

7-15253  
ZISIK MN + CHEN PC  
EFFECTS OF GEOMETRY FOR DEPOSITION OF RADIOACTIVE MOLECULES FROM STAGNANT GAS IN CONTAINMENT VESSELS.  
PROGRESS REPORT NO. 2  
DEPARTMENT OF MECHANICAL AND AEROSPACE ENGINEERING, NORTH CAROLINA STATE UNIVERSITY, RALEIGH, N. C.  
TID-23351 +. 38 PAGES, REFERENCES, AUGUST 1966

EFFECTS OF GEOMETRY ON DEPOSITION OF RADIOACTIVE MOLECULES FROM STAGNANT GAS TO THE VESSEL WALLS ARE THEORETICALLY INVESTIGATED FOR THREE DIFFERENT GEOMETRIES - PARALLEL PLATES, LONG CYLINDER, AND SPHERE. IN FORMULATING THE BOUNDARY-VALUE PROBLEM, IT IS ASSUMED THAT THE DIFFUSION FLUX IN THE IMMEDIATE VICINITY OF THE WALL SURFACE IS PROPORTIONAL TO THE CONCENTRATION OF RADIOACTIVE MOLECULES IN THE GAS. THE EFFECTS OF REMOVAL OF MOLECULES FROM THE WALL SURFACE ARE ALSO INCLUDED IN THE BOUNDARY CONDITION. FINITE INTEGRAL TRANSFORM TECHNIQUE IS EMPLOYED TO REDUCE THE COUPLED PARTIAL DIFFERENTIAL EQUATIONS TO A SINGLE INTEGRAL EQUATION. THE QUANTITY OF DEPOSITION AT ANY TIME FOR THESE THREE DIFFERENT GEOMETRIES HAVING THE SAME CHARACTERISTIC LENGTH IS HIGHEST FOR THE PARALLEL PLATES, AND LOWEST FOR THE SPHERE, THE LONG CYLINDER HAVING A VALUE BETWEEN THEM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*COMPARISON, THEORY AND EXPERIENCE + \*DEPOSITION + \*THEORETICAL INVESTIGATION + FISSION PRODUCT TRANSPORT

7-15255  
PARSLY LF  
FISSION-PRODUCT TRANSPORT  
OAK RIDGE NATIONAL LABORATORY  
5 PAGES, NUCLEAR SAFETY, 6(1), PAGES 65-69, (FALL 1964)

FISSION-PRODUCT TRANSPORT OF THE TYPE THAT WOULD OCCUR AFTER A CORE MELTDOWN IN A LOSS-OF-COOLING ACCIDENT HAS BEEN THE BASIS FOR A NUMBER OF STUDIES RELATING PRIMARILY TO THE BEHAVIOR AND CONTROL OF IODINE AND THE BEHAVIOR OF PARTICULATE MATERIAL. THE BEHAVIOR OF IODINE IS RATHER COMPLEX BECAUSE OF THE POSSIBILITY OF IODINE BEING IN ONE OR MORE CHEMICAL FORMS IN ANY GIVEN SITUATION, AS WELL AS BEING ASSOCIATED WITH PARTICLES. THE CHEMICAL FORMS OF IODINE WHICH HAVE BEEN AT LEAST TENTATIVELY IDENTIFIED IN IODINE-RELEASE EXPERIMENTS INCLUDE MOLECULAR IODINE, INORGANIC IODIDES, AND ALKYL IODIDES.

\*AGGLOMERATE + \*AIR + \*CHEMICAL REACTION + \*DEPOSITION + \*DIFFUSION + \*FISSION PRODUCT, IODINE + \*ORGANIC IODIDE + \*PARTICULATE + \*STEAM + \*THERMAL CONSIDERATION + \*URANIUM + \*URANIUM DIOXIDE + FISSION PRODUCT RELEASE, GENERAL + FISSION PRODUCT TRANSPORT

7-15345 ALSO IN CATEGORY 11  
COTTRELL WB  
ORNL NUCLEAR SAFETY RESEARCH AND DEVELOPMENT PROGRAM BIMONTHLY REPORT FOR SEPTEMBER-OCTOBER 1966  
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE  
ORNL-TM-1680 +. 58 PAGES, FIGURES, TABLES, NOVEMBER 1, 1966

INCLUDED IN THIS PROGRESS REPORT IS WORK ON VARIOUS CHEMICAL REACTIONS, AS WELL AS THE RELEASE, CHARACTERIZATION, AND TRANSPORT OF FISSION PRODUCTS IN CONTAINMENT SYSTEMS UNDER VARIOUS ACCIDENT CONDITIONS AND ON PROBLEMS ASSOCIATED WITH THE REMOVAL OF THESE FISSION PRODUCTS FROM GAS STREAMS. ALTHOUGH MOST OF THE WORK HAS BEEN AND CONTINUES TO BE IN GENERAL SUPPORT OF WATER POWER-REACTOR TECHNOLOGY, INCLUDING SOME IN DIRECT SUPPORT OF THE LOFT AND CSE PROGRAMS, SEVERAL PROJECTS WERE STARTED THE FIRST OF THE CALENDAR YEAR IN SUPPORT OF THE HIGH-TEMPERATURE GAS-COOLED REACTOR (HTGR) PROGRAM. THESE PROJECTS INCLUDE BOTH IN-PILE AND OUT-PILE STUDIES OF REACTION RATES AND FISSION PRODUCT RELEASE AND TRANSPORT PHENOMENA RELEVANT TO POTENTIAL HTGR ACCIDENT SITUATIONS. OTHER MAJOR PROJECTS INCLUDE FUEL TRANSPORT SAFETY INVESTIGATIONS, A SERIES OF DISCUSSION PAPERS ON VARIOUS ASPECTS OF WATER REACTOR TECHNOLOGY, AND THE STUDIES ON PRESSURE VESSEL TECHNOLOGY. EXPERIMENTAL WORK RELATIVE TO PRESSURE VESSEL TECHNOLOGY INCLUDES INVESTIGATIONS OF THE ATTACHMENT OF NOZZLES TO SHELLS AND THE VARIABILITY OF IMPACT DATA ON LOW-ALLOY STEELS.

AVAILABILITY - W. B. COTTRELL, OAK RIDGE NATIONAL LABORATORY, PO BOX Y, OAK RIDGE, TENNESSEE 37830

\*CHEMICAL KINETICS + \*CONTAINMENT, GENERAL + \*CONTAINMENT, PRESSURE VESSEL + \*CSE (CONTAINMENT SYSTEMS EXPERIMENT) + \*FISSION PRODUCT RETENTION + \*FISSION PRODUCT, AIRBORNE + \*IMPACT PROPERTY + \*IN PILE EXPERIMENT + \*LOFT (LOSS OF FLUID TEST) + \*NOZZLE + \*OUT OF PILE LOOPS AND EXPERIMENTS + \*STEEL + FISSION PRODUCT RELEASE, GENERAL + FISSION PRODUCT TRANSPORT + HTGR (HIGH TEMPERATURE GAS COOLED REACTOR)

7-15346  
PARSLY LF + ROW TH  
BEHAVIOR OF FISSION PRODUCTS RELEASED FROM SYNTHETIC HIGH-BURNUP UO-2 IN STEAM ATMOSPHERES (NUCLEAR SAFETY PILOT PLANT RUNS 10-12)  
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-15346 \*CONTINUED\*  
ORNL-TM-1698 +. 80 PAGES, TABLES, FIGURES, FEBRUARY 1967

IN ALL THREE RUNS REPORTED, MIXTURES OF STABLE AND RADIOACTIVE TRACER ISOTOPES OF FISSION PRODUCTS SIMULATING UO<sub>2</sub> IRRADIATED TO HIGH BURNUPS WERE RELEASED BY MELTING STAINLESS-STEEL-CLAD UO<sub>2</sub> TO WHICH THE SIMULANTS HAD BEEN ADDED. THE RUNS WERE MADE WITH A 50-50 STEAM-AIR MIXTURE IN THE CONTAINMENT VESSEL AT THE TIME THE UO<sub>2</sub> WAS MELTED. REDUCING CONDITIONS WERE MAINTAINED IN THE FURNACE DURING FUEL MELTING IN TWO RUNS, WHILE OXIDIZING CONDITIONS WERE MAINTAINED IN THE THIRD. THE REPORT PRESENTS DATA ON FISSION PRODUCT RELEASE AND DISTRIBUTION, AIRBORNE FISSION PRODUCT CONCENTRATION AS A FUNCTION OF TIME, COLLECTION OF CONDENSATE AND OF FISSION PRODUCTS IN THE CONDENSATE, DEPOSITION ON SURFACES, TESTS OF RECIRCULATING FILTER SYSTEMS, FIELD TESTS OF REMOTE SAMPLING DEVICES FOR THE LOSS-OF-FLUID TEST, AND OTHER PERTINENT DETAILS OF THE EXPERIMENTS. THE FURNACE ATMOSPHERE HAD A MAJOR EFFECT ON THE RELEASE AND TRANSPORT OF IODINE AND RUTHENIUM AND LESS SIGNIFICANT EFFECTS ON SR, BA, AND CE. UNDER REDUCING CONDITIONS, THE RELEASE OF RU AND I WAS SUPPRESSED, AND VERY RAPID DEPOSITION OF THE I OCCURRED IN THE CONTAINMENT VESSEL. NO SIGNIFICANT CONCENTRATIONS OF RU WERE FOUND IN CONTAINMENT VESSEL ATMOSPHERE SAMPLES. THE AMOUNTS OF FISSION PRODUCTS FOUND IN THE CONTAINMENT VESSEL ATMOSPHERE SAMPLES WERE ALWAYS LESS THAN ASSUMED IN THE TID-14844 ACCIDENT-ANALYSIS CRITERIA.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*BARIUM + \*CERIUM + \*CONDENSATION + \*DEPOSITION + \*FILTER EFFICIENCY + \*FILTER, RECIRCULATING + \*FISSION PRODUCT TRANSPORT + \*FUEL ELEMENT + \*FUEL MELTDOWN + \*IODINE + \*LOFT (LOSS OF FLUID TEST) + \*NSPP (NUCLEAR SAFETY PILOT PLANT) + \*RUTHENIUM + \*SAMPLING + \*SIMULATION + \*STEAM + \*STRONTIUM + \*URANIUM DIOXIDE + CONTAINMENT, GENERAL + FISSION PRODUCT RELEASE, GENERAL

7-15349  
GILLESPIE FE  
CALIBRATION OF IODINE MONITOR, ORNL MODEL Q-2725  
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE  
ORNL-TM-1710 +. 9 PAGES, 4 FIGURES, DECEMBER 14, 1966

ALL STACKS FOR RADIOACTIVE OFF-GAS DISPOSAL AT ORNL ARE EQUIPPED WITH IODINE MONITORS, ORNL MODEL Q-2725, TO SOUND AN ALARM WHEN AN EXCESSIVE QUANTITY OF I-131 IS RELEASED FROM THE STACK AND TO PROVIDE COUNT-RATE DATA FOR CALCULATING THE QUANTITY BEING DISCHARGED FROM THE STACK. THE SENSITIVITY OF ONE SUCH MONITOR WAS DETERMINED BY RELEASING MICROCURIE AMOUNTS OF I-131 DIRECTLY TO THE CHARCOAL TRAP AND COUNTING THE RADIOACTIVITY OF THE TRAPPED IODINE. WITH BARNEY-CHENEY NO. 727 CHARCOAL IN THE TRAP, THE SENSITIVITY WAS 425 COUNTS PER MIN PER MICROCURIE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*CHARCOAL + \*FISSION PRODUCT, IODINE + \*MONITOR, RADIATION, AIR + \*REACTOR OFFGAS + ANALYTICAL TECHNIQUE, GAS + FILTER, TRAP + INSTRUMENTATION, AIR SAMPLING + MONITOR, RADIATION, GAS + MONITOR, RADIATION, SAMPLING

7-15359  
GOLDMAN AE + KAPLIN SI  
U.S. RESEARCH ON THE OXIDATION AND IRRADIATION BEHAVIOR OF CARBON  
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE  
9 PAGES, 9 REFERENCES, FOR PRESENTATION AT THE CREST CONFERENCE, PARIS, NOVEMBER 2-4, 1966

THE WORK ON CARBONS AND GRAPHITES MAY BE BROKEN DOWN INTO TWO BROAD AREAS COVERING MODERATOR GRAPHITES AND FUELED GRAPHITES. THE MODERATOR GRAPHITE RESEARCH MAY BE SUBDIVIDED INTO STUDIES ON PURITY, CHEMICAL REACTIVITY, STRENGTH, THERMAL CONDUCTIVITY, IRRADIATION-INDUCED CREEP, AND DIMENSIONAL STABILITY. IN ADDITION, RESEARCH HAS BEEN CARRIED OUT ON THE INFLUENCES OF MANUFACTURING VARIABLES UPON NUCLEAR REACTOR PERFORMANCE, ON MECHANICAL AND CHEMICAL TRANSFORMATIONS AS A RESULT OF BOTH THE NORMAL REACTOR ENVIRONMENT AND ACCIDENT CONDITIONS, AND ON RADIATION DAMAGE EFFECTS TO SINGLE CRYSTALS. MOST OF THE IRRADIATION WORK HAS BEEN CARRIED OUT AT 500 TO 1200 C. THE FUELED-GRAPHITE RESEARCH COVERED SUCH TOPICS AS METHODS OF PRODUCTION, PHYSICAL AND MECHANICAL PROPERTIES UNDER IRRADIATION, AND THE BEHAVIOR OF FUELED-GRAPHITE COMPONENTS UNDER EXTREMES OF ENVIRONMENT (UNDER ACCIDENT-CONDITIONS WHERE THE COOLANT MAY BE CONTAMINATED WITH STEAM, AIR, ETC.) AND WHERE THE TEMPERATURES OF THE FUEL MAY EXCEED 1600 C.

AVAILABILITY - A.E. GOLDMAN, S.I. KAPLIN, OAK RIDGE NATIONAL LABORATORY, P. O. BOX Y, OAK RIDGE, TENNESSEE 37830

\*COATED PARTICLE + \*GRAPHITE + \*IRRADIATION TESTING + \*OXIDATION + \*RADIATION EFFECT + CARBON + CREEP PROPERTY + PYROLYTIC + RADIATION DAMAGE + THERMAL PROPERTY

7-15458 ALSO IN CATEGORIES 12 AND 18  
QUESTION VI F (2) - DESIGN CRITERIA FOR FAN COOLER FILTER  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE F (2)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

STATE THE DESIGN CRITERIA FOR THE PARTICLE FILTERS AND DEMISTERS IN THE FAN-COOLER SYSTEM.



CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-15458 \*CONTINUED\*  
WHAT PRESSURE DROP IS ASSUMED ACROSS THE DEMISTER.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT AIR COOLING + DESIGN CRITERIA + FILTER + REACTOR, PRESSURIZED WATER + ROBINSON 2

7-15484 ALSO IN CATEGORIES 11 AND 18  
QUESTION VII (F) - IODINE REMOVAL EFFICIENCY OF CONTAINMENT SPRAY (SODIUM THIOSULPHATE)  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, 3 FIGURES, PAGES F (1-3)-1 AND F (1-3)-2 OF THIRD SUPPLEMENT FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. R. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

PROVIDE GRAPHS OUT TO 30 DAYS WHERE G EQUALS THE EFFECTIVE REDUCTION RATE OF SOLUBLE IODINE, AND R EQUALS THE PRODUCTION RATE OF INSOLUBLE FORMS OF IODINE (STOPPING WHEN THE 25% INITIALLY ASSUMED TO PLATE OUT HAS BEEN DISSIPATED.) (1) PLOT THE AMOUNT OF IODINE REMAINING AIRBORNE FOR G EQUALS 0, 5, AND 10 FOR EACH OF THE VALUES OF R EQUAL TO 0, 0.02, 0.1, AND 0.5. (2) THE INCREASE IN DOSE PER UNIT TIME AT THE SITE BOUNDARY AND LOW POPULATION ZONE, AS A FUNCTION OF TIME USING THE ASSUMPTIONS IN (1). (3) THE INTEGRAL OF THE CURVES IN (2) SHOWING THE TOTAL DOSE AS A FUNCTION OF TIME IF THE PERSISTENCE MODIFI USED FOR TIMES IN EXCESS OF TWO HOURS IS THE SAME AS DESCRIBED IN THE APPLICATION. EXPLAIN WHY THE FREQUENCY OF OBSERVATIONS OF INSTANCES OF PERSISTENCE IS MORE APPLICABLE TO ACCIDENT ANALYSES THAN THE OVERALL HOURLY FREQUENCY OF PERSISTENCE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + AIRBORNE RELEASE + CONTAINMENT SPRAY + DOSE + FISSION PRODUCT RETENTION + FISSION PRODUCT, IODINE + REACTOR, PRESSURIZED WATER + ROBINSON 2 + WIND STATISTICS

7-15529  
LAZZARINI F ET AL  
ON THE DISTRIBUTION OF SOME FISSION PRODUCTS BETWEEN CORE AND RECOMBINER OF L54M REACTOR. PART 5. EFFECT OF CU-2+ CONCENTRATION IN THE FUEL ON THE ESCAPE PROBABILITY OF IODINE  
CENTRO DI STUDI NUCLEARI ENRICO FERMI, MILAN, ITALY  
2 PAGES, 1 TABLE, 10 REFERENCES, ENERGIA NUCLEARE, 13(2), PAGES 82 TO 84 (FEBRUARY, 1966)

COPPER IONS IN THE FUEL OF L54M REACTOR DISPLACE THE IODINE FROM ELEMENTARY FORM TO OTHERS, PERHAPS IODINE AND IODATE, WHICH HAVE NEGLIGIBLE VAPOUR PRESSURE. AS A CONSEQUENCE, THE TRANSFER OF IODINE FROM CORE TO RECOMBINER IS LOWERED BY COPPER IONS IN THE FUEL.

\*CHEMICAL REACTION + \*COPPER + \*FISSION PRODUCT RETENTION + \*FISSION PRODUCT, IODINE + \*REACTOR, HOMOGENEOUS + \*REACTOR, RESEARCH + \*RECOMBINER + FISSION PRODUCT RELEASE, GENERAL

7-15530  
A STUDY ON THE RELEASE OF FISSION GASES FROM UO<sub>2</sub> SAMPLES IRRADIATED TO VARIED DOSES. QUARTERLY REPORT NO. 4, JULY-SEPTEMBER 1966  
CENTRO RICERCHE NUCLEARI, SALUGGIA, ITALY  
EUR-1772 + EUR-3319 +. 19 PAGES

OBJECTIVE - STUDY THE PHENOMENA INVOLVED IN THE APPARENT DIFFUSION COEFFICIENT OF FISSION GASES IN RELATION TO THE IRRADIATION DOSE, AS MEASURED BY POSTIRRADIATION ANNEALING. USED SINTERED UO<sub>2</sub> (IRRADIATED UP TO 8000 MWD/TON) AND FUSED UO<sub>2</sub> (IRRADIATED UP TO 2000 MWD/TON).

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151 \$3.00 COPY, \$0.65 MICROFICHE

\*DIFFUSION COEFFICIENT + \*FISSION PRODUCT, IODINE + \*IRRADIATION TESTING + \*NOBLE GAS + \*URANIUM DIOXIDE + FISSION PRODUCT RELEASE, GENERAL

7-15531  
FLETCHER WD + PICONE LF  
FISSION PRODUCTS FROM FUEL DEFECT TEST AT SAXTON  
WESTINGHOUSE ELECTRIC CORPORATION, ATOMIC POWER DIVISION, PITTSBURGH, PA.  
WCAP-3269-63 +. PAGES 54, FIGURES 10, TABLES 8, REFERENCES 7, APRIL 1966

AN INTENTIONAL FUEL-CLADDING DEFECT WAS PLACED IN THE SAXTON NUCLEAR PLANT, AND THE REACTOR WAS OPERATED AT AND NEAR FULL POWER FOR 57 DAYS. PRIMARY COOLANT SAMPLES WERE ANALYZED FOR FISSION PRODUCTS, AND ESCAPE-RATE COEFFICIENTS FOR THE IODINES AND FISSION GASES WERE ESTIMATED THEREFROM. COMPUTATIONS OF NUCLIDE ATOM RATIOS IN THE COOLANT ARE, AT BEST, A QUALITATIVE INDICATION THAT THE SOURCE OF FISSION PRODUCTS WAS THE DEFECTIVE CLADDING.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*CFSTUM + \*CLAD + \*FISSION PRODUCT, IODINE + \*FUEL ELEMENT + \*KRYPTON + \*MAIN COOLING SYSTEM + \*NOBLE GAS + \*REACTOR, PRESSURIZED WATER + \*SAXTON + \*XENON + FISSION PRODUCT RELEASE, GENERAL

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-15533 ALSO IN CATEGORY 14  
ALBRETHSEN AE + SCHWENDIMAN LC  
VOLATILIZATION OF FISSION PRODUCTS FROM HIGH LEVEL CERAMIC WASTES  
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON  
BNWL-338 +. 30 PAGES, 9 FIGURES, 10 TABLES, 7 REFERENCES, FEBRUARY 1967

VOLATILIZATION HAS BEEN ESTABLISHED AS THE PREDOMINANT MECHANISM OF FISSION-PRODUCT RELEASE FROM SIMULATED HIGH-LEVEL CERAMIC WASTES WHEN EXPOSED TO HIGH TEMPERATURES. THE VOLATILITY OF CESIUM APPEARS CONSISTENT AND INDEPENDENT OF CERAMIC COMPOSITION WHEN THE CERAMIC IS MOLTEN. THE RATE -- ABOUT 1%/HR FROM A SAMPLE 1 CM THICK -- INDICATES THE PROBABILITY OF DIFFUSION CONTROL. VOLATILITY OF RUTHENIUM IS ERRATIC AND PROBABLY DUE TO INCOMPLETE DEOXIDATION OF THE CERAMIC. THE RELEASES OF SR-90 AND CE-144 WERE ONE THOUSANDTH OR LESS THE RATE OF CESIUM RELEASE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*AIRBORNE RELEASE + \*CERAMICS + \*CERIUM + \*CESIUM + \*FIRE + \*FISSION PRODUCT RELEASE, GENERAL + \*HIGH TEMPERATURE + \*PHOSPHATE + \*RUTHENIUM + \*WASTE TRANSPORTATION + \*WASTE TREATMENT, FIXATION + \*STRONTIUM

7-15684  
LAVRENCHIK VN  
USE OF THE AUTORADIOGRAPHIC TECHNIQUE FOR STUDYING RADIOACTIVE AEROSOLS  
5 PAGES, 4 FIGURES, ATOMNAYA ENERGIYA 18(5) PAGES 640-644 (MAY 1965)

THE PROCESS IN WHICH BLACK SPOTS ARE PRODUCED IN NUCLEAR EMULSIONS BY BETA AND GAMMA EMITTERS WITH DIMENSIONS FROM 10 MICRONS DOWN TO HUNDRETHS OF MICRONS IS DISCUSSED. A CALIBRATION CURVE IS PRESENTED WHICH RELATES ACTIVITY TO SPOT SIZE FOR LOCALLY PRODUCED TYPE XX FILM AFTER 10-DAY EXPOSURES. BY MEANS OF THE TECHNIQUE, A SPOT-SIZE DISTRIBUTION WAS OBTAINED FOR FALLOUT SAMPLES COLLECTED IN THE NORTHERN HEMISPHERE IN DECEMBER 1962 AND MAY 1963. IT IS SHOWN THAT THE DISTRIBUTION IS OF A HYPERBOLIC TYPE WITH A TENDENCY TOWARD INCREASED SLOPE WITH THE PASSAGE OF TIME AFTER THE INSTANT OF AEROSOL INJECTION INTO THE STRATOSPHERE.

\*AEROSOL, RADIOACTIVE + \*ANALYTICAL TECHNIQUE, CALIBRATION + \*BETA EMITTER + \*GAMMA EMITTER + \*RADIOGRAPHY + AEROSOL + ANALYTICAL TECHNIQUE, GENERAL

7-15688 ALSO IN CATEGORY 11  
HARRIES DP  
NEUTRON IRRADIATION EMBRITTLEMENT OF AUSTENITIC STAINLESS STEELS AND NICKEL BASE ALLOYS  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, ENGLAND  
14 PAGES, 15 FIGURES, 7 TABLES, 93 REFERENCES, JOURNAL OF THE BRITISH NUCLEAR ENERGY SOCIETY 5(1) PAGES 74-87 (JAN.-1966)

IT IS NOW WELL ESTABLISHED THAT THE HIGH-TEMPERATURE MECHANICAL PROPERTIES OF AUSTENITIC STEELS AND NICKEL-BASE ALLOYS ARE ADVERSELY AFFECTED BY NEUTRON IRRADIATION. THE EFFECTS ARE PRIMARILY ASSOCIATED WITH THE PRODUCTION OF SMALL AMOUNTS OF HELIUM, EITHER BY THERMAL TRANSMUTATION OF THE BORON-10 ISOTOPE OR BY FAST-NEUTRON REACTIONS WITH ISOTOPES OF A LARGE NUMBER OF ELEMENTS PRESENTED IN THE ALLOYS. HOWEVER, ADDITIONAL INVESTIGATIONS ARE REQUIRED TO FURTHER OUR UNDERSTANDING OF THE EMBRITTLEMENT MECHANISM.

\*EMBRITTLEMENT + \*RADIATION DAMAGE + \*RADIATION EFFECT + \*STEEL, STAINLESS + ALLOY + NICKEL

7-15692  
DELISLE JP + EPERONNAT P + LIONS N  
DETECTOR FOR THE LIQUID CARRIED OVER IN A GAS  
CENTRE D ETUDES NUCLEAIRES DE CADARACHE, FRANCE  
CEA-R-2811 +. 17 PAGES, 2 FIGURES, 3 TABLES, 1965, IN FRENCH

DESCRIBES AN OPTICAL DETECTOR FOR DETECTING A LIQUID CARRIED OVER BY A GAS. THE DEVICE IS SENSIBLE TO A CUMULATED QUANTITY OF LIQUID EQUAL TO A FEW CUBIC MILLIMETRES AND IS CAPABLE OF OPERATING AN ALARM FROM A DISTANCE. THE PROTOTYPE WAS TESTED AS DETECTOR FOR THE OIL LEAKING INTO THE ARGON COMPRESSED BY A DIAPHRAGM COMPRESSOR.

AVAILABILITY - DOCUMENTATION FRANCAISE, SECRETARIAT GENERAL DU GOVERNMENT, DIRECTION DE LA DOCUMENTATION, 16 RUE LORD BYRON, PARIS VIIIEME

\*ANALYTICAL TECHNIQUE, CALIBRATION + ANALYTICAL TECHNIQUE, GAS + ANALYTICAL TECHNIQUE, LIQUID + ARGON

7-15693  
SILVERMAN MD + TRUITT J + BROWNING WE + FRANZEN LF  
CHARACTERIZATION OF RADIOACTIVE PARTICULATE AEROSOLS BY THE FIBROUS FILTER ANALYZER  
OAK RIDGE NATIONAL LABORATORY  
ORNL-4047 +. 59 PAGES, 17 FIGURES, 5 TABLES, 18 REFERENCES, MARCH, 1967

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-15693 \*LUNIIINUED\*

THE FIBROUS FILTER ANALYZER (FFA) WAS DEVELOPED TO MEASURE THE CHARACTERISTICS OF RADIOACTIVE AEROSOLS IN TERMS OF THEIR RESPONSE TO FILTRATION PROCESSES BY DETERMINING THEIR DISTRIBUTION VS DEPTH IN A FILTER UNDER CAREFULLY CONTROLLED CONDITIONS. MOISTURE DID NOT SIGNIFICANTLY AFFECT THE PERFORMANCE OF THE FFA, ALTHOUGH THE TEST AEROSOL ITSELF WAS AFFECTED. THE FILTRATION-EFFICIENCY DATA AGREED WELL WITH THE THEORETICAL TREATMENT OF FILTRATION DEVELOPED BY TORGESON. THE ANALYZER WAS CALIBRATED AGAINST PARTICLES 150 TO 1500 ANGSTROMS IN DIAMETER.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*AEROSOL + \*AEROSOL, RADIOACTIVE + \*ANALYTICAL TECHNIQUE, CALIBRATION + \*PARTICLE SIZE + FILTER + SAMPLING

7-15694 ALSO IN CATEGORY 11

WATSON RD

WEAR AND CORROSION IN WATER

ATOMIC ENERGY OF CANADA LTD., CHALK RIVER

AECL-2566 + EDI-67 +. 85 PAGES, 43 FIGURES, 18 TABLES, 7 REFERENCES, FEB. 19, 1966

THE WEAR RESISTANCE OF A NUMBER OF DIFFERENT COMBINATIONS OF MATERIALS WAS INVESTIGATED IN WATER AT ROOM TEMPERATURE. FOR JOURNAL-BEARING APPLICATIONS, THE DIFFERENT COMBINATIONS COULD BE DIVIDED INTO TWO GROUPS - (1) THOSE THAT WEAR AT A CONSTANT RATE, (2) THOSE THAT WEAR AT A CONTINUALLY DECREASING RATE. GROUP 1 COVERS THESE COMBINATIONS THAT CANNOT PROVIDE A SUITABLE SURFACE FINISH ON THE RUBBING SURFACES THROUGH WEAR TO ALLOW THE FORMATION OF A THIN SUPPORTING FILM OF FLUID. GROUP-2 COMBINATIONS PRODUCE FINE-ABRASIVE WEAR AND PROVIDE POLISHED SURFACES THAT CAN SUSTAIN THIN FILMS ABLE TO SUPPORT ALL OR PART OF THE LOAD. THE WEAR RESISTANCE OF THIN, STABLE, METALLIC OXIDES WAS INVESTIGATED. THE CREVICE-CORROSION RESISTANCE OF A NUMBER OF COMPATIBLE COMBINATIONS WAS STUDIED IN DIFFERENT AQUEOUS ENVIRONMENTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151

\*CORROSION + \*LUBRICATION + \*WATER, GENERAL

7-15695

LAMBERTI JM + SAUNDERS NT

COMPATIBILITY OF CESIUM VAPOR WITH SELECTED MATERIALS AT TEMPERATURES TO 1200 F

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, WASHINGTON

NASA-TND-1739 +. 43 PAGES, 22 FIGURES, 5 TABLES, 21 REFERENCES, AUGUST 1963

COMPATIBILITY STUDIES OF CESIUM VAPOR WITH SELECTED MATERIALS TESTED FOR 48 HR AT 500, 800, AND 1200 F IN A CESIUM-VAPOR ATMOSPHERE AT PRESSURES OF APPROXIMATELY 0.5, 28, AND 267 TORR ARE PRESENTED. FOR COMPARISON, CONTROL SAMPLES WERE TESTED UNDER SIMILAR CONDITIONS OF TIME AND TEMPERATURE IN A VACUUM OF APPROXIMATELY 10 TO THE MINUS 6TH TORR. THE TEST MATERIALS INCLUDED THE FOLLOWING - REFRACTORY METALS (TUNGSTEN, MOLYBDENUM, AND TANTALUM), IRON-BASE ALLOYS (L-NICKEL, A-NICKEL, INCONEL X, AND B-MONEL), COPPER-BASE ALLOYS (COPPER - ELECTROLYTIC TROUGH PITCH), BRONZE (LEADED PHOSPHOR BRONZE), AND BRASS (MUNTZ METAL), PRECIOUS METALS (PLATINUM, GOLD, AND SILVER), LIGHT METALS (ALUMINUM - AL-CLAD 24ST - AND MAGNESIUM), NONMETALS (MYCALEX, MYKROY, LAVA, MORGANITE, AND SAPPHIRE). THE FOLLOWING MATERIALS WERE ATTACKED BY CESIUM VAPOR TO VARYING DEGREES - COPPER, BRASS, BRONZE, GOLD, SILVER, ALUMINUM, MAGNESIUM, MYCALEX, MYKROY, AND LAVA.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*CERAMICS + \*CESIUM + \*CORROSION + \*HIGH TEMPERATURE + \*METAL, REFRACTORY

7-15696

MANISTA EJ + SHELDON JW

PRELIMINARY EXPERIMENTS WITH A VELOCITY SELECTED ATOMIC-BEAM APPARATUS

LEWIS RESEARCH CENTER, CLEVELAND, OHIO

NASA-TND-2557 +. 31 PAGES, 14 FIGURES, 3 TABLES, 18 REFERENCES, DECEMBER 1964

AN ATOMIC-BEAM APPARATUS WAS DESIGNED AND BUILT TO STUDY VELOCITY-DEPENDENT TOTAL-COLLISION CROSS SECTIONS AT THERMAL ENERGIES. THE BEAM MAY BE VELOCITY-SELECTED OVER THE RANGE OF 7000 TO 100,000 CENTIMETERS PER SECOND TO PROVIDE AN INTENSE, MONOENERGETIC (VELOCITY SPREAD AT HALF-MAXIMUM CALCULATED TO BE ABOUT 5%) BEAM OF ATOMS. THE EFFECT OF ATOMIC SCATTERING BY A CLOUD OF BEAM ATOMS NEAR THE SOURCE SLIT IS INVESTIGATED. ABSOLUTE TOTAL COLLISION CROSS SECTIONS FOR THE CESIUM-NITROGEN AND CESIUM-ARGON INTERACTIONS WERE MEASURED BY TOTAL BEAM ATTENUATIONS WITH AN ANGULAR RESOLUTION OF 3.2 MINUTES. THE CESIUM-BEAM TEMPERATURE WAS 447 K, AND THE SCATTERING GAS TEMPERATURE WAS 293 K. A HARD-SPHERE CROSS SECTION OF  $710 \times 10^{-20}$  TO THE MINUS 16TH SQUARE CENTIMETER WAS MEASURED FOR THE CS-N<sub>2</sub> INTERACTION, AND A CROSS SECTION OF  $700 \times 10^{-20}$  TO THE MINUS 16TH SQUARE CENTIMETER FOR THE CS-AR INTERACTION. THE ABSOLUTE VALUES OF THE CROSS SECTIONS ARE ACCURATE TO PLUS OR MINUS 10%.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*ARGON + \*CESIUM + \*CROSS SECTION + \*NITROGEN + ANALYTICAL TECHNIQUE, CALIBRATION

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-15697  
HEIMEL S  
THERMODYNAMIC PROPERTIES OF CESIUM UP TO 1500 K  
LEWIS RESEARCH CENTER, CLEVELAND, OHIO  
NASA-TND-2906 +. 30 PAGES, 3 FIGURES, 11 TABLES, 27 REFERENCES, JULY 1965

CONSISTENT TABLES OF THERMODYNAMIC PROPERTIES OF ELEMENTAL CESIUM WERE COMPILED FOR BOTH THE PURE SPECIES AND THE EQUILIBRIUM VAPOR ON THE SATURATION LINE, USING SELECTED VALUES OF 10,500 CALORIES PER MOLE FOR THE HEAT OF DISSOCIATION OF THE DIMER AND -18,920 CALORIES PER MOLE FOR THE HEAT OF CONDENSATION OF THE MONOMER. THE EQUILIBRIUM VAPOR PROPERTIES AND PROPERTIES OF CONDENSED CESIUM ARE GIVEN TO 1500 K, WHILE PROPERTIES OF GASEOUS MONOMER AND DIMER ARE GIVEN TO 2500 K. THERMODYNAMIC FUNCTIONS FOR THE GASES WERE GENERATED FROM ATOMIC AND MOLECULAR DATA, WHEREAS THE FUNCTIONS OF THE CONDENSED PHASE WERE BASED ON SELECTED EXPERIMENTAL DATA THAT WERE SMOOTHED AND MADE SELF-CONSISTENT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*CESIUM + \*HIGH TEMPERATURE + \*PROPERTY, PHYSICAL + \*THERMODYNAMICS + METAL, LIQUID + THERMAL PROPERTY

7-15841 ALSO IN CATEGORIES 13 AND 12  
MISHIMA J  
PLUTONIUM RELEASE STUDIES. II. RELEASE FROM IGNITED, BULK METALLIC PIECES  
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON  
BNWL-357 +. 22 PAGES, TABLES, REFERENCES, NOVEMBER 10, 1966

METALLIC PLUTONIUM PIECES RANGING IN WEIGHT FROM 455.5 TO 1770 WERE IGNITED AND ALLOWED TO OXIDIZE COMPLETELY IN AIR WITH A VELOCITY OF 525 CM/SEC. RELEASE RATES OF 0.032 TO 0.0045 WEIGHT PERCENT PER HR WERE FOUND FOR THE BARE METAL. COVERING THE IGNITED METAL DURING OXIDATION WITH MAGNESIUM OXIDE SAND REDUCES THE RELEASE TO 0.00029 WEIGHT PERCENT PER HR. THE MEDIAN MASS DIAMETER OF THE PARTICLES AIRBORNE DURING THE RELEASE FROM THE BARE METAL WAS FOUND TO BE 4.2 MICRONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

AIR + AIRBORNE RELEASE + FIRE + FUEL REPROCESSING + IGNITION + METAL + OXIDATION + PARTICULATE + PLUTONIUM + RADIOCHEMICAL PLANT SAFETY

7-15933  
GETHARD PE + ZUMWALT LR  
DIFFUSION OF METALLIC FISSION PRODUCTS IN PYROLYTIC CARBON  
GENERAL ATOMIC DIVISION OF GENERAL DYNAMICS  
GA-7478 +. 20 PAGES, 6 FIGURES, 1 TABLE, 13 REFERENCES, DEC. 15, 1966

THE DIFFUSION OF STRONTIUM AND CESIUM THROUGH THIN LAYERS (100 MICRONS) OF ISOTROPIC PYROLYTIC CARBON WAS MEASURED OVER THE TEMPERATURE RANGE 1000 TO 1700 C. DIFFUSION COEFFICIENTS FOR CESIUM WERE ORDERS OF MAGNITUDE LOWER THAN THOSE FOR STRONTIUM. THE DIFFUSION RATES FOR BOTH SPECIES WERE MUCH LOWER THAN THOSE OBSERVED FOR POLYCRYSTALLINE GRAPHITE, WHERE LITTLE DIFFERENCE IS SEEN BETWEEN CESIUM AND STRONTIUM. WHEN CONSTANT CHEMICAL POTENTIAL SOURCES ARE USED, CHEMICAL- AND SELF-DIFFUSION MEASUREMENTS FOR STRONTIUM GIVE IDENTICAL RESULTS IN THE CONCENTRATION RANGE 0.001 G TO 0.002 G SR/G GRAPHITE. THERE IS APPARENTLY NO CONCENTRATION EFFECT FOR CESIUM OVER THE RANGE  $1.0 \times 10^{-7}$  G TO THE MINUS 7TH G TO 0.0015 G CS/G GRAPHITE. THE DIFFERENCE BETWEEN STRONTIUM AND CESIUM DIFFUSION IN PYROLYTIC CARBON IS ATTRIBUTED TO THE GREATER STERIC EFFECT OF THE PYROLYTIC CARBON DEFECT STRUCTURE RELATIVE TO THAT OF CESIUM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*CARBON + \*CESIUM + \*COATED PARTICLE + \*COMPARISON, THEORY AND EXPERIENCE + \*DIFFUSION + \*DIFFUSION COEFFICIENT + \*GRAPHITE + \*HIGH TEMPERATURE + \*HTGR (HIGH TEMPERATURE GAS COOLED REACTOR) + \*STRONTIUM + FISSION PRODUCT RELEASE, GENERAL + PYROLYTIC

7-15940 ALSO IN CATEGORY 12  
KEILHOLTZ GW + WEBSTER CC  
METHOD FOR ANALYZING INERT GAS FOR PRESENCE OF OXYGEN OR WATER VAPOR  
OAK RIDGE NATIONAL LABORATORY  
U.S. PATENT 3,262,756 +. 3 PAGES, 1 FIGURE, JULY 26, 1966

WHAT IS CLAIMED IS - A METHOD OF QUALITATIVELY ANALYZING AN INERT GAS FOR THE POSSIBLE PRESENCE OF OXYGEN OR WATER VAPOR THEREIN COMPRISING THE STEPS OF EVACUATING A TRANSPARENT GLASS BULB CONTAINING A TUNGSTEN FILAMENT THEREIN, FLOWING AN INERT GAS SAMPLE THROUGH SAID BULB, CONNECTING A FIRST SELECTED VOLTAGE ACROSS AND FILAMENT FOR A SHORT TIME INTERVAL TO HEAT SAID FILAMENT TO A DULL RED COLOR, SAID FILAMENT TURNING BLACK TO PROVIDE A FIRST INDICATION OF THE PRESENCE OF ANY OXYGEN OR WATER VAPOR THAT MAY BE PRESENT IN SAID INERT GAS SAMPLE, AND CONNECTING A SECOND SELECTED VOLTAGE ACROSS SAID FILAMENT FOR A SECOND SHORT TIME

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-15940 \*CONTINUED\*

INTERVAL TO HEAT SAID FILAMENT TO NEAR INCANDESCENCE, SAID FILAMENT FLASHING OFF A WHITE CLOUD TO PROVIDE A SECOND INDICATION OF THE PRESENCE OF ANY OXYGEN OR WATER VAPOR THAT MAY BE PRESENT IN SAID INERT GAS SAMPLE.

AVAILABILITY - THE U.S. PATENT OFFICE, DEPT. OF COMMERCE, WASHINGTON, D.C., \$0.25 COPY

\*OXYGEN + \*REACTOR, GAS COOLED + \*WATER VAPOR + \*WELDING + ANALYTICAL TECHNIQUE, GAS

7-15941

CROCKER IH + HART RG  
DETERMINATION OF FISSION PRODUCT XENON DISTRIBUTION IN URANIUM CERAMICS BY ISOTOPE DILUTION AND MASS SPECTROMETRY  
ATOMIC ENERGY OF CANADA LIMITED, CHALK RIVER  
3 PAGES, 2 FIGURES, ANALYTICAL CHEMISTRY, 38(6), PAGES 781-783 (MAY 1966)

PRESENTS A METHOD FOR DETERMINING THE DISTRIBUTION OF STABLE FISSION PRODUCT XENON IN HIGHLY IRRADIATED UO<sub>2</sub> OR UC FUEL ELEMENTS THAT IS ACCURATE TO PLUS OR MINUS 3%. THE PRESENT METHOD IS ACCURATE TO PLUS OR MINUS 10 TO 25% AND REQUIRES SAMPLES THAT ARE TOO LARGE TO ALLOW DETECTION OF SHARP IRREGULARITIES IN THE XENON CONCENTRATION GRADIENT. THE INCREASED ACCURACY AND SENSITIVITY RESULT FROM AN IMPROVED SAMPLING TECHNIQUE AND AN IMPROVED METHOD OF DETERMINING THE XENON CONTENT OF THE SAMPLES.

ANALYTICAL TECHNIQUE, GAS + CERAMICS + FISSION PRODUCT RETENTION + MEASUREMENT, GENERAL + URANIUM CARBIDE + URANIUM DIOXIDE + XENON

7-15942 ALSO IN CATEGORIES 12 AND 13

BAKER L + BINGLE JD  
THE KINETICS OF OXIDATION OF URANIUM BETWEEN 300 AND 625 C  
ARGONNE NATIONAL LABORATORY, ARGONNE ILLINOIS  
11 PAGES, 7 FIGURES, 5 TABLES, JOURNAL OF NUCLEAR MATERIALS 20(1), PAGES 11-21 (JULY, 1966)

STUDIES OF THE ISOTHERMAL OXIDATION OF URANIUM IN THE 300 TO 625 C RANGE WERE CARRIED OUT IN A METAL HEAT-SINK REACTION CELL DESIGNED TO MINIMIZE SELF-HEATING. DATA WITH TWO SOURCES OF PURE URANIUM AS WELL AS 1 AT.% COPPER AND 1 AT.% ALUMINUM ALLOYS OF URANIUM SHOWED SUBSTANTIALLY IDENTICAL SELF-ACCELERATING REACTION RATES UP TO 400 C. OXIDATION OF PURE URANIUM AND THE COPPER ALLOY UNDERWENT A TRANSITION TO A SLOWER REACTION IN WHICH THE OXIDE WAS SOMEWHAT PROTECTIVE ABOVE 500 C, WITH THE COPPER ALLOY CONSIDERABLY MORE PROTECTIVE THAN THE PURE METAL. THE SELF-ACCELERATING REACTION CONTINUED TO HIGHER TEMPERATURES FOR THE ALUMINUM ALLOY. THE RESULTS OF ISOTHERMAL OXIDATION STUDIES FOR THE BETA-QUENCHED PURE URANIUM METAL WERE EXPRESSED IN THE FORM OF EMPIRICAL EQUATIONS.

\*ALLOY + \*ALUMINUM + \*CHEMICAL KINETICS + \*COPPER + \*OXIDATION + FIRE + URANIUM

7-15954

PORTER KE  
THE EFFECT OF CONTACT-TIME DISTRIBUTION ON GAS ADSORPTION WITH CHEMICAL REACTION  
UNIVERSITY OF BIRMINGHAM  
12 PAGES, 9 FIGURES, 26 REFERENCES, TRANS. INSTN. CHEM. ENGRS. VOL 44, PAGES T25-T26 (1966)

A METHOD IS PROPOSED TO OVERCOME THE PROBLEM OF THE UNKNOWN CONTACT-TIME DISTRIBUTION IN GAS-LIQUID CONTACTING EQUIPMENT USED FOR ABSORPTION WITH CHEMICAL REACTION. THE METHOD IS DEVELOPED FOR ABSORPTION WITH IRREVERSIBLE SECOND-ORDER REACTION. THE EXTENSION OF THE METHOD TO OTHER REACTING SYSTEMS IS DISCUSSED. IT IS CONCLUDED THAT FOR DESIGN CALCULATIONS, THE USE OF A MEAN CONTACT TIME WILL USUALLY BE SUFFICIENTLY ACCURATE.

\*CHEMICAL REACTION + \*EQUIPMENT DESIGN + \*SCRUBBER + \*THEORETICAL INVESTIGATION + FISSION PRODUCT, IODINE

7-16586

COTTELL WB  
ORNL NUCLEAR SAFETY RESEARCH AND DEVELOPMENT PROGRAM BIMONTHLY REPORT FOR JANUARY - FEBRUARY 1967  
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE  
ORNL-TM-1792 + 58 PAGES, FIGURES, TABLES, MARCH 6, 1967

INCLUDED IN THIS PROGRESS REPORT IS WORK ON VARIOUS CHEMICAL REACTIONS, AS WELL AS THE RELEASE, CHARACTERIZATION, AND TRANSPORT OF FISSION PRODUCTS IN CONTAINMENT SYSTEMS UNDER VARIOUS ACCIDENT CONDITIONS AND ON PROBLEMS ASSOCIATED WITH THE REMOVAL OF THESE FISSION PRODUCTS FROM GAS STREAMS. ALTHOUGH MOST OF THE WORK HAS BEEN AND CONTINUES TO BE IN GENERAL SUPPORT OF WATER POWER-REACTOR TECHNOLOGY, INCLUDING SOME IN DIRECT SUPPORT OF THE LOFT AND GSE PROGRAMS, SEVERAL PROJECTS WERE STARTED THE FIRST OF THE CALENDAR YEAR IN SUPPORT OF THE HIGH-TEMPERATURE GAS-COOLED REACTOR (HTGR) PROGRAM. THESE PROJECTS INCLUDE BOTH IN-PILE AND OUT-PILE STUDIES OF REACTION RATES AND FISSION PRODUCT RELEASE AND TRANSPORT PHENOMENA RELEVANT TO POTENTIAL HTGR ACCIDENT SITUATIONS. OTHER MAJOR PROJECTS INCLUDE FUEL TRANSPORT SAFETY INVESTIGATIONS, A SERIES OF DISCUSSION PAPERS ON VARIOUS ASPECTS OF WATER REACTOR TECHNOLOGY, AND THE STUDIES ON PRESSURE VESSEL TECHNOLOGY. EXPERIMENTAL WORK RELATIVE TO PRESSURE VESSEL TECHNOLOGY INCLUDES INVESTIGATIONS OF THE ATTACHMENT OF NOZZLES TO SHELLS AND THE VARIABILITY OF IMPACT DATA ON LOW-ALLOY STEELS.

CATEGORY 7  
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-16586 \*CONTINUED\*

AVAILABILITY - W. B. COTTRELL, OAK RIDGE NATIONAL LABORATORY, PO BOX Y, OAK RIDGE, TENNESSEE 37830

\*CHEMICAL KINETICS + \*CONTAINMENT, GENERAL + \*CONTAINMENT, PRESSURE VESSEL +  
\*CSE (CONTAINMENT SYSTEMS EXPERIMENT) + \*FISSION PRODUCT RETENTION + \*FISSION PRODUCT, AIRBORNE +  
\*IMPACT PROPERTY + \*IN PILE EXPERIMENT + \*LOFT (LOSS OF FLUID TEST) + \*NOZZLE +  
\*OUT OF PILE LOOPS AND EXPERIMENTS + \*STEEL + FISSION PRODUCT RELEASE, GENERAL +  
FISSION PRODUCT TRANSPORT + HTGR (HIGH TEMPERATURE GAS COOLED REACTOR)

7-16587

COTTRELL WB

ORNL NUCLEAR SAFETY RESEARCH AND DEVELOPMENT PROGRAM BIMONTHLY REPORT FOR MARCH - APRIL, 1967  
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE

ORNL-TM-1864 +. 58 PAGES, FIGURES, TABLES, MAY 5, 1967

INCLUDED IN THIS PROGRESS REPORT IS WORK ON VARIOUS CHEMICAL REACTIONS, AS WELL AS THE RELEASE, CHARACTERIZATION, AND TRANSPORT OF FISSION PRODUCTS IN CONTAINMENT SYSTEMS UNDER VARIOUS ACCIDENT CONDITIONS AND ON PROBLEMS ASSOCIATED WITH THE REMOVAL OF THESE FISSION PRODUCTS FROM GAS STREAMS. ALTHOUGH MOST OF THE WORK HAS BEEN AND CONTINUES TO BE IN GENERAL SUPPORT OF WATER POWER-REACTOR TECHNOLOGY, INCLUDING SOME IN DIRECT SUPPORT OF THE LOFT AND CSE PROGRAMS, SEVERAL PROJECTS WERE STARTED THE FIRST OF THE CALENDAR YEAR IN SUPPORT OF THE HIGH-TEMPERATURE GAS-COOLED REACTOR (HTGR) PROGRAM. THESE PROJECTS INCLUDE BOTH IN-PILE AND OUT-PILE STUDIES OF REACTION RATES AND FISSION PRODUCT RELEASE AND TRANSPORT PHENOMENA RELEVANT TO POTENTIAL HTGR ACCIDENT SITUATIONS. OTHER MAJOR PROJECTS INCLUDE FUEL TRANSPORT SAFETY INVESTIGATIONS, A SERIES OF DISCUSSION PAPERS ON VARIOUS ASPECTS OF WATER REACTOR TECHNOLOGY, AND THE STUDIES ON PRESSURE VESSEL TECHNOLOGY. EXPERIMENTAL WORK RELATIVE TO PRESSURE VESSEL TECHNOLOGY INCLUDES INVESTIGATIONS OF THE ATTACHMENT OF NOZZLES TO SHELLS AND THE VARIABILITY OF IMPACT DATA ON LOW-ALLOY STEELS.

AVAILABILITY - W. B. COTTRELL, OAK RIDGE NATIONAL LABORATORY, PO BOX Y, OAK RIDGE, TENNESSEE 37830

\*CHEMICAL KINETICS + \*CONTAINMENT, GENERAL + \*CONTAINMENT, PRESSURE VESSEL +  
\*CSE (CONTAINMENT SYSTEMS EXPERIMENT) + \*FISSION PRODUCT RETENTION + \*FISSION PRODUCT, AIRBORNE +  
\*IMPACT PROPERTY + \*IN PILE EXPERIMENT + \*LOFT (LOSS OF FLUID TEST) + \*NOZZLE +  
\*OUT OF PILE LOOPS AND EXPERIMENTS + \*STEEL + FISSION PRODUCT RELEASE, GENERAL +  
FISSION PRODUCT TRANSPORT + HTGR (HIGH TEMPERATURE GAS COOLED REACTOR)

7-16588

COTTRELL WB

ORNL NUCLEAR SAFETY RESEARCH AND DEVELOPMENT PROGRAM BIMONTHLY REPORT FOR NOVEMBER - DECEMBER 1966  
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE

ORNL-TM-1742 +. 58 PAGES, FIGURES, TABLES, JANUARY 1, 1967

INCLUDED IN THIS PROGRESS REPORT IS WORK ON VARIOUS CHEMICAL REACTIONS, AS WELL AS THE RELEASE, CHARACTERIZATION, AND TRANSPORT OF FISSION PRODUCTS IN CONTAINMENT SYSTEMS UNDER VARIOUS ACCIDENT CONDITIONS AND ON PROBLEMS ASSOCIATED WITH THE REMOVAL OF THESE FISSION PRODUCTS FROM GAS STREAMS. ALTHOUGH MOST OF THE WORK HAS BEEN AND CONTINUES TO BE IN GENERAL SUPPORT OF WATER POWER-REACTOR TECHNOLOGY, INCLUDING SOME IN DIRECT SUPPORT OF THE LOFT AND CSE PROGRAMS, SEVERAL PROJECTS WERE STARTED THE FIRST OF THE CALENDAR YEAR IN SUPPORT OF THE HIGH-TEMPERATURE GAS-COOLED REACTOR (HTGR) PROGRAM. THESE PROJECTS INCLUDE BOTH IN-PILE AND OUT-PILE STUDIES OF REACTION RATES AND FISSION PRODUCT RELEASE AND TRANSPORT PHENOMENA RELEVANT TO POTENTIAL HTGR ACCIDENT SITUATIONS. OTHER MAJOR PROJECTS INCLUDE FUEL TRANSPORT SAFETY INVESTIGATIONS, A SERIES OF DISCUSSION PAPERS ON VARIOUS ASPECTS OF WATER REACTOR TECHNOLOGY, AND THE STUDIES ON PRESSURE VESSEL TECHNOLOGY. EXPERIMENTAL WORK RELATIVE TO PRESSURE VESSEL TECHNOLOGY INCLUDES INVESTIGATIONS OF THE ATTACHMENT OF NOZZLES TO SHELLS AND THE VARIABILITY OF IMPACT DATA ON LOW-ALLOY STEELS.

AVAILABILITY - W. B. COTTRELL, OAK RIDGE NATIONAL LABORATORY, PO BOX Y, OAK RIDGE, TENNESSEE 37830

\*CHEMICAL KINETICS + \*CONTAINMENT, GENERAL + \*CONTAINMENT, PRESSURE VESSEL +  
\*CSE (CONTAINMENT SYSTEMS EXPERIMENT) + \*FISSION PRODUCT RETENTION + \*FISSION PRODUCT, AIRBORNE +  
\*IMPACT PROPERTY + \*IN PILE EXPERIMENT + \*LOFT (LOSS OF FLUID TEST) + \*NOZZLE +  
\*OUT OF PILE LOOPS AND EXPERIMENTS + \*STEEL + FISSION PRODUCT RELEASE, GENERAL +  
FISSION PRODUCT TRANSPORT + HTGR (HIGH TEMPERATURE GAS COOLED REACTOR)

CATEGORY 8  
SOURCES OF ENERGY RELEASE UNDER ACCIDENT CONDITIONS

8-13548 ALSO IN CATEGORY 7  
LAUREN GN  
INITIAL EXPERIENCE WITH LARGE SODIUM FIRES EXPERIMENTS (LF-1)  
ATOMICS INTERNATIONAL  
NAA-SR-12041 +. 41 PAGES, 14 FIGURES, 3 TABLES, 15 REFERENCES, AUGUST 1, 1966

IN THE SAFEGUARDS ANALYSIS OF SODIUM-COOLED REACTORS, A SERIOUS DISPERSION OF RADIOACTIVITY IS POSTULATED TO RESULT FROM A LARGE PRIMARY-COOLANT (SODIUM) FIRE IN A GALLERY OR VAULT. TO EVALUATE AND/OR MITIGATE THIS DISPERSION, IT IS NECESSARY TO DETERMINE THE EFFECTS OF TIME, INITIAL-CONDITION VARIABLES, AND SYSTEM PARAMETERS ON THE SPATIAL DISTRIBUTION OF ENERGY, THE AMOUNT OF SODIUM RELEASED (PRESUMABLY AS SODIUM OXIDE), AND THE AMOUNT OF SELECTED FISSION PRODUCTS RELEASED. EARLY SODIUM-FIRE INVESTIGATIONS GAVE WIDELY VARYING RESULTS OF BURNING AND RELEASE RATES WHICH SEEMED TO BE VERY SENSITIVE TO GEOMETRY AND AIR FLOW. FOR EXAMPLE, IT HAS BEEN REPORTED THAT SHALLOW POOLS BURN AS NODULES ON AN IRREGULAR OXIDE SURFACE, WHEREAS DEEPER, WELL-INSULATED POOLS BURNED ON THE MOLTEN METAL SURFACE. REPORTED HEREIN ARE THE RESULTS OF THE CURRENT INVESTIGATION, INCLUDING RESULTS OF A FIRE, DESIGNATED AS LARGE FIRE NO. 1, IN WHICH THE GEOMETRIC AND CONVECTIVE CONDITIONS WHICH MIGHT BE FOUND IN A REACTOR GALLERY OR VAULT WERE SIMULATED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$2.00 COPY, \$0.50 MICROFICHE

\*FIRE + \*IODINE + \*SODIUM + FISSION PRODUCT TRANSPORT + FISSION PRODUCT, IODINE + REACTOR, BREEDER + REACTOR, FAST + REACTOR, LIQUID METAL COOLED

8-13833 ALSO IN CATEGORIES 12 AND 13  
BIG K CHEMICAL COMMOION  
ATOMIC ENERGY COMMISSION  
2 PAGES, HEALTH AND SAFETY BULLETIN NO. 207, MARCH 22, 1965

BRIEFLY DISCUSSES THE CHEMICAL ACTIVITY AND HAZARD POTENTIAL OF POTASSIUM. POTASSIUM HAS A VIOLENT AFFINITY FOR OXYGEN AND WATER. IT IS USUALLY STORED UNDER OIL IN CLOSED CONTAINERS, BUT IT IS NOW RECOGNIZED THAT METALLIC POTASSIUM MAY OXIDIZE WHILE STORED IN THIS MANNER AND CHANGE FROM WHITE TO BLACK. THE OXIDATION RESULTS IN THE FORMATION OF K<sub>2</sub>O OR K<sub>2</sub>O<sub>2</sub>. EITHER CAN EXPLODE WHEN CHAFED OR CUT. METHODS OF STORING RECOMMENDED ARE (1) USE A CLOSED GLASS OR PLASTIC CONTAINER WITH K IMMERSED IN KEROSENE OR MINERAL OIL, OR (2) USE A GLASS CAPSULE, EVACUATED OR FILLED WITH INERT ATMOSPHERE AND SEALED.

AVAILABILITY - AEC, DIVISION OF PUBLIC INFORMATION, WASHINGTON, D.C. 20545

\*EXPLOSION + \*OXIDATION + \*POTASSIUM + CHEMICAL REACTION + MISSILE GENERATION AND PROTECTION + STORAGE CONTAINER + TRANSPORTATION AND HANDLING

8-13945 ALSO IN CATEGORIES 5 AND 7  
MORRISON DL + GENCO JM + GIESEKE JA + RITZMAN RL + WALTERS CT + SUNDERMAN DN  
AN EVALUATION OF THE APPLICABILITY OF EXISTING DATA TO THE ANALYTICAL DESCRIPTION OF A NUCLEAR-REACTOR ACCIDENT  
BATTELLE MEMORIAL INSTITUTE  
BMT-1779 +. 228 PAGES, 60 FIGURES, 20 TABLES, 336 REFERENCES, AUGUST 12, 1966

THE COMPLEX SEQUENCE OF CHEMICAL AND PHYSICAL PROCESSES IN A LOSS-OF-COOLANT ACCIDENT FOR A NUCLEAR POWER REACTOR WAS SUBJECTED TO AN ANALYTICAL STUDY. DATA AND THEORIES ON THESE PROCESSES WERE EXAMINED AND EMPLOYED FOR AN ANALYTICAL DESCRIPTION OF THE ACCIDENT. A DIGITAL-COMPUTER CODE, NURLOC, WAS DEVELOPED TO PERFORM THE TWO-DIMENSIONAL, TRANSIENT-HEAT-TRANSFER CALCULATIONS FOR A GIVEN REACTOR SYSTEM. EXPERIMENTAL DATA ON FISSION-PRODUCT RELEASE WERE EXAMINED, AND A MODEL WAS CONSTRUCTED TO DESCRIBE THE TIME-DEPENDENT RELEASE OF FISSION PRODUCTS DURING AN ACCIDENT. A DIGITAL-COMPUTER CODE, FRACREL, WAS WRITTEN FOR THE MODEL, WITH THE TEMPERATURE DATA FROM NURLOC USED DIRECTLY FOR INPUT. THE SENSITIVITY OF THE OUTPUT FROM FRACREL TO UNCERTAINTIES IN THE EXPERIMENTAL DATA WAS INVESTIGATED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*ACCIDENT, MAXIMUM CREDIBLE (MCA) + \*AEROSOL + \*FISSION PRODUCT TRANSPORT + \*HEAT TRANSFER + \*THERMODYNAMICS + ACCIDENT, LOSS OF COOLANT + ACCIDENT, LOSS OF PRESSURE + COMPUTER PROGRAM + DECAY HEAT + FISSION PRODUCT RELEASE, GENERAL + FLOW, TWO PHASE + PARTICULATE + PHASE CHANGE

8-14169 ALSO IN CATEGORY 5  
VESSELS OR + STEINDLER MJ  
LABORATORY INVESTIGATIONS IN SUPPORT OF FLUID-BED FLUORIDE VOLATILITY PROCESSES. PART X. A LITERATURE SURVEY ON THE PROPERTIES OF TELLURIUM, ITS OXYGEN AND FLUORINE COMPOUNDS.  
ARGONNE NATIONAL LABORATORY  
ANL-7142 +. 83 PAGES, 3 FIGURES, 11 TABLES, FEBRUARY 1966

THE RESULTS OF A LITERATURE SURVEY OF THE PROPERTIES OF TELLURIUM, ITS OXIDES, FLUORIDES, AND OXYFLUORIDES WERE ASSEMBLED. THE PERTINENT DATA FOR THE PHYSICAL AND CHEMICAL PROPERTIES AS

CATEGORY 8  
SOURCES OF ENERGY RELEASE UNDER ACCIDENT CONDITIONS

8-14169 \*CONTINUED\*

WELL AS THE BEHAVIOR OF TELLURIUM IN PROCESSING OF NUCLEAR FUELS BY FLUORIDE VOLATILITY METHODS ARE INCLUDED. AN APPENDIX CONTAINING TABULATED VAPOR PRESSURES AND ABSTRACTS OF ALL PERTINENT REFERENCES IS FURNISHED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY

\*CHEMICAL REACTION + \*PROPERTY, PHYSICAL + \*TELLURIUM + \*THERMODYNAMICS + CHEMICAL EQUILIBRIUM + FISSION PRODUCT, SEPARATION FROM WASTE + THERMAL PROPERTY

8-14170 ALSO IN CATEGORIES 5 AND 7  
SCHICK HL

THERMODYNAMICS OF CERTAIN REFRACTORY COMPOUNDS. (VOLUME I, DISCUSSION OF THEORETICAL STUDIES. VOLUME II, THERMODYNAMIC TABLES, BIBLIOGRAPHY, AND PROPERTY FILE)  
1403 PAGES, 24 FIGURES, 250 TABLES, REFERENCES, 1966, ACADEMIC PRESS, NEW YORK, N.Y. AND LONDON

THIS IS A COMPREHENSIVE COMPILATION OF THERMOCHEMICAL DATA, GIVING THE SPECIFIC HEAT, ENTROPY, FULL ENERGY FUNCTION, HEATS OF FORMATION, FREE ENERGY OF FORMATION, AND THE EQUILIBRIUM CONSTANT OF FORMATION FOR TEMPERATURES FROM 0 TO 6000 K. THE DATA REPORTED WAS COMPILED BETWEEN 1 JUNE 1962 AND 31 DECEMBER 1963. THIS WORK INCLUDES A STUDY OF THE THERMODYNAMICS OF THE BORIDES, CARBIDES, NITRIDES, AND OXIDES OF 31 ELEMENTS IN THE TEMPERATURE RANGE FROM 0 TO 6000 DEGREES K. THE ELEMENTS ARE (A) GROUP IIA--BERYLLIUM, MAGNESIUM, CALCIUM, AND STRONTIUM, (B) GROUP IVB--TITANIUM, ZIRCONIUM, HAFNIUM, AND LANTHANUM, (C) GROUP IVA--SILICON, (D) GROUP IVB--TITANIUM, ZIRCONIUM, AND HAFNIUM, (E) GROUP VB--VANADIUM, NIOBIUM, AND TANTALUM, (F) GROUP VIB--CHROMIUM, MOLYBDENUM, AND TUNGSTEN, (G) GROUP VIIB--MANGANESE, TECHNETIUM, AND RHENIUM, (H) GROUP VIII--RHODIUM, OSMIUM, IRIDIUM, AND PLATINUM, (I) RARE EARTHS--CERIUM, NEODYMIUM, SAMARIUM, GADOLINIUM, AND DYSPROSIUM, AND (J) ACTINIDES--URANIUM AND THORIUM. MORE THAN 160 THERMODYNAMIC TABLES, TOGETHER WITH COMPREHENSIVE DISCUSSIONS, HAVE BEEN PREPARED. THE WORK HAS BEEN SUMMARIZED IN TWO VOLUMES. VOLUME 1, PRESENTS A SUMMARY OF THE TECHNIQUES USED TO ANALYZE THERMODYNAMIC DATA AND GIVES THE DATA ANALYSES FOR REFRACTORIES CONSIDERED. VOLUME 2, IS A COMPILATION OF THERMODYNAMIC TABLES GENERATED ON THIS PROJECT. IT ALSO CONTAINS A BIBLIOGRAPHY AND SUBJECT INDEX.

AVAILABILITY - ACADEMIC PRESS, INC., 111 FIFTH AVENUE, NEW YORK, NY, 10003, \$38.00 A SET

\*CHEMICAL EQUILIBRIUM + \*CHEMICAL REACTION + \*PROPERTY, PHYSICAL + \*THERMAL PROPERTY + \*THERMODYNAMICS + HEAT TRANSFER

8-14312  
SANTON JP

A KINETIC STUDY OF THE REACTION OF WATER VAPOR AND CARBON DIOXIDE ON URANIUM  
CENTRE D'ETUDES NUCLEAIRES DE GRENOBLE  
ORNL-TR-725 + CEA-R-2596 +. 88 PAGES, 1965

THE KINETIC STUDY OF THE REACTION OF WATER VAPOR AND CARBON DIOXIDE ON URANIUM WAS PERFORMED BY THERMOGRAVIMETRIC METHODS AT TEMPERATURES BETWEEN 160 AND 410 C IN THE FIRST CASE, 350 AND 1050 C IN THE SECOND. THREE FORMS OF URANIUM SPECIMENS WERE USED - URANIUM POWDER, THIN EVAPORATED FILMS, AND SMALL SPHERES OBTAINED FROM A PLASMA FURNACE. THE EXPERIMENTAL RESULTS LED, IN THE CASE OF WATER VAPOR, TO A LINEAR RATE OF REACTION CONTROLLED BY DIFFUSION AT THE LOWER TEMPERATURES, AND BY A SURFACE REACTION AT THE UPPER ONES. FOR CARBON DIOXIDE, A PARABOLIC LAW WAS FOUND, CONTROLLED BY DIFFUSIONAL PROCESSES.

AVAILABILITY - JOHN CRERAR LIBRARY, 35 WEST 33RD STREET, CHICAGO, ILLINOIS 60616 \$8.10 COPY, \$2.84 MICRONEGATIVE

\*CARBON DIOXIDE + \*CHEMICAL REACTION + \*DIFFUSION + \*METAL WATER REACTION + \*STEAM + \*URANIUM

8-14385 ALSO IN CATEGORY 7

KOONTZ RL + LAUBEN GN  
NUCLEAR SAFETY, GASEOUS EFFLUENT STUDIES. CHARACTERIZATION OF SODIUM FIRES AND FISSION PRODUCT RELEASE ATOMICS INTERNATIONAL  
NAA-SR-12175 +. 14 PAGES, 3 TABLES, 7 FIGURES, QUARTERLY TECHNICAL PROGRESS REPORT AEC UNCLASSIFIED PROGRAMS, JULY-SEPTEMBER 1966, PAGES 161-174

THE GENERAL OBJECTIVE OF THIS PROJECT IS TO DEVELOP EXPERIMENTAL INFORMATION AND ANALYTICAL METHODS WHICH CHARACTERIZE THE RELEASE AND TRANSPORT OF EFFLUENTS AND ENERGY GENERATED DURING A PRIMARY-COOLANT (SODIUM) ACCIDENT. THE SOURCE OF ENERGY GENERATION MAY BE FROM THE ESCAPING COOLANT (BY RAPID THERMAL ENERGY TRANSFER) AND/OR SUBSEQUENT COMBUSTION OF THE SODIUM. THE EFFLUENTS ARE SODIUM (AS SODIUM-24) OR ITS OXIDE IN PARTICULATE FORM AND SELECTED FISSION PRODUCTS AVAILABLE AS POTENTIALLY SERIOUS DISPERSIONS OF RADIOACTIVITY. THE INFORMATION TO BE DEVELOPED IS REQUIRED FOR THE DESIGN AND SAFEGUARDS ANALYSIS OF ECONOMICAL, SODIUM-COOLED FAST REACTORS. A MAJOR EFFORT WILL BE DEVOTED TO EXPERIMENTS ON THE CHARACTERIZATION OF I-131 RELEASE FROM SODIUM FIRES. THESE TESTS WILL BE CONDUCTED IN THE LABORATORY TEST CHAMBER AND IN THE PARTICLE GENERATOR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*AEROSOL + \*ANALYTICAL MODEL + \*FIRE + \*PARTICLE SIZE + \*SODIUM + FISSION PRODUCT TRANSPORT + METAL, LIQUID + OUT OF PILE LOOPS AND EXPERIMENTS + REACTOR, LIQUID METAL COOLED + SMOKE



CATEGORY 8  
SOURCES OF ENERGY RELEASE UNDER ACCIDENT CONDITIONS

8-14740 ALSO IN CATEGORY 6  
ADAMS RM + GLASSNER A  
CHEMICAL AND ASSOCIATED ENERGY PROBLEMS (THERMAL)  
ARGONNE NATIONAL LABORATORY  
ANL-7249 +. 6 PAGES, 14 REFERENCES, REACTOR DEVELOPMENT PROGRAM PROGRESS REPORT, AUGUST 1966, PAGES  
82-87, SEPTEMBER 23, 1966

THE EXPERIMENTS ON METAL-WATER REACTORS PREVIOUSLY PERFORMED BY LASER-BEAM HEATING OF ALUMINUM  
POWDER IN WATER ARE QUALITATIVELY EXPLAINED, AND AN ANALYTICAL DESCRIPTION IS GIVEN.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*METAL WATER REACTION + ALUMINUM + LASER HEATING + THERMAL ANALYSIS

8-14787 ALSO IN CATEGORIES 14 AND 17  
DOUGLAS RE  
EFFECTS OF WATER LEAKAGE INTO TANKS CONTAINING SODIUM  
ATOMICS INTERNATIONAL, CANOGA PARK  
NAA-SR-MEMO-12239 +. 14 PAGES, NOVEMBER 10, 1966

ONE METHOD FOR DISPOSING OF THE HALLAM PRIMARY SODIUM IS TO BURY THE STORAGE TANKS WITHOUT  
PRIOR REACTION OF THE SODIUM. A TEST WAS PERFORMED TO DETERMINE THE EFFECTS OF GROUND WATER  
LEAKAGE INTO THE TANKS THROUGH PINHOLES OR CRACKS. A HALF QUART CAN WAS SUBMERGED AND  
VARIOUS SIZED HOLES DRILLED. RESULTS INDICATE THAT THE SODIUM-WATER REACTION WOULD TAKE  
PLACE AT A SELF-REGULATING RATE, AND NO EXCESSIVE INTERNAL PRESSURE INCREASE OR EXPLOSIVE  
CONDITION WOULD BE CREATED IN THE TANKS UNDER CONDITIONS SIMILAR TO THOSE IMPOSED FOR THE  
TEST.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U. S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*METAL WATER REACTION + \*REACTOR DECOMMISSIONING EXPERIENCE + \*SODIUM + \*WASTE DISPOSAL, TERRESTRIAL +  
EXPLOSION + HALLAM + REACTOR, GRAPHITE MODERATED + REACTOR, LIQUID METAL COOLED

8-15014 ALSO IN CATEGORIES 6 AND 5  
GENCO JM + RAINES GE  
METAL-WATER REACTIONS DURING A LOSS-OF-COOLANT ACCIDENT. THE ZIRCONIUM-STEAM REACTION  
RATTELLI MEMORIAL INSTITUTE  
2 PAGES, 1 FIGURE, 4 REFERENCES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PA., OCT. 30 -  
NOV. 3, 1966, ANS TRANS. 9(2), PAGES 555-556

A CALCULATION TECHNIQUE FOR EXTENT OF A METAL-WATER REACTION IN A REACTOR CORE DURING  
LOSS-OF-COOLANT ACCIDENT. RATE-LIMITING PHENOMENA - GAS-PHASE DIFFUSION OF STEAM AND  
SOLID-STATE DIFFUSION OF VARIOUS IONIC SPECIES THROUGH THE ZIRCONIUM DIOXIDE PRODUCT INTO THE  
BASE METAL. ASSUMPTION IS THAT THE STEAM-HYDROGEN MIXTURE BEHAVES AS AN INCOMPRESSIBLE FLUID.

\*ACCIDENT, LOSS OF COOLANT + \*COMPUTER, DIGITAL + \*METAL WATER REACTION + ZIRCONIUM

8-15091 ALSO IN CATEGORIES 6 AND 5  
SHERER DG + MEINHARDT WG  
AN ANALYSIS OF FAST REACTOR TRANSIENT RESPONSE AND SAFETY IN SELECTED ACCIDENTS  
GENERAL ELECTRIC, SAN JOSE  
GEAP-4797 +. 67 PAGES, FIGURES, TABLES, 26 REFERENCES, JUNE 1966

THE DOPPLER COEFFICIENT IS THE PRIMARY MEANS OF MITIGATING A REACTIVITY INSERTION ACCIDENT.  
THE NEGATIVE RADIAL CORE EXPANSION COEFFICIENT IS THE DOMINANT FACTOR IN MITIGATING A LOSS OF  
FLOW ACCIDENT. THE REACTIVITY EFFECTS OF SODIUM THERMAL EXPANSION CAN BE MADE SMALL. IF A  
SCRAM DOES NOT TERMINATE A REACTIVITY INSERTION ACCIDENT, FAILURES ARE WORST AT THE HIGHEST  
OPERATING TEMPERATURES. DURING A LOSS-OF-FLOW ACCIDENT WITHOUT SCRAM, FUEL FAILURE DUE TO  
WEAKENED CLADDING IS LIKELY. AMONG THE FACTORS TO BE CONSIDERED IN ESTABLISHING RADIAL POWER  
PROFILE IS THE PATTERN OF FAILURE AND SODIUM VOIDING THAT WILL RESULT IF A SUFFICIENTLY  
SEVERE ACCIDENT IS POSTULATED. IT MAY BE DESIRABLE TO MAINTAIN SOME COOLANT FLOW DURING  
REFUELING.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*ACCIDENT ANALYSIS + \*REACTOR, FAST + ACCIDENT, LOSS OF FLOW + ACCIDENT, REACTIVITY + CONTROL, GENERAL +  
DOPPLER COEFFICIENT + FAILURE, CLADDING + FAILURE, FUEL ELEMENT + REACTIVITY EFFECT, EXPANSION +  
SODIUM COEFFICIENT

8-15467 ALSO IN CATEGORIES 5 AND 18  
QUESTION VII A (1) (H,I,K) - METAL-WATER REACTION WITH VARIOUS EMERGENCY COOLING

CATEGORY 8  
SOURCES OF ENERGY RELEASE UNDER ACCIDENT CONDITIONS

8-15467 \*CONTINUED\*

CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
3 PAGES, PAGES A(1)(H),(I)-1 TO A(1)(H),(I)-2 AND A(1)(K)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

(H) WHAT IS THE PERCENT METAL-WATER REACTION, ASSUMING (1) TWO ACCUMULATORS AND MINIMUM SAFETY INJECTION, (2) ONE ACCUMULATOR AND MINIMUM SAFETY INJECTION, (3) SAME AS 1 BUT NO HEAT TRANSFER FROM CORE DURING BLOWDOWN FOR THE LARGEST BREAK. CONSIDER A SPECTRUM OF PIPE-BREAK SIZES EXCEPT FOR 3. (I) FOR THE WORST CASE IN H, PROVIDE A SIMILAR PLOT, ASSUMING THAT TWO ACCUMULATORS OPERATE BUT THAT THE SAFETY INJECTION IS DELAYED 2, 5, 10, AND 20 MINUTES. (K) PLOT THE WEIGHT PERCENTAGE OF CLAD AND FUEL AT A CERTAIN TEMPERATURE AS A FUNCTION OF TIME, ASSUMING THAT TWO ACCUMULATORS OPERATE ALONG WITH SAFETY INJECTION FOLLOWING VARIOUS PIPE-BREAK SIZES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT + ACCUMULATOR + EMERGENCY COOLING CONSIDERATIONS + FAILURE, CLADDING + METAL WATER REACTION + REACTOR, PRESSURIZED WATER + ROBINSON 2

8-15899

BAKER L

METAL-WATER REACTIONS

OAK RIDGE NATIONAL LABORATORY

7 PAGES, 2 FIGURES, 19 REFERENCES, NUCLEAR SAFETY 8(1), PAGES 20-25 (FALL 1966)

RECENT ADVANCEMENTS IN METAL-WATER REACTION INVESTIGATIONS ARE REPORTED FOR ZIRCONIUM, STAINLESS STEEL, AND ALUMINUM. IN ADDITION, SOME RECENT STUDIES OF THE REACTION OF UO<sub>2</sub> WITH WATER AND STEAM ARE REVIEWED. EXPERIMENTS WERE DESIGNED EITHER TO STUDY THE ISOTHERMAL REACTION WITH STEAM OR TO SIMULATE LOSS-OF-COOLANT OR NUCLEAR-EXCURSION ACCIDENTS. RECENT EXPERIMENTS HAVE SHOWN THE IMPORTANCE OF INTERACTIONS BETWEEN THE CLADDING METAL OR OXIDES AND THE FUEL UO<sub>2</sub>.

\*ALUMINUM + \*METAL WATER REACTION + \*STEAM + \*STEEL, STAINLESS + \*URANIUM DIOXIDE + \*ZIRCONIUM + ACCIDENT ANALYSIS

8-15900

PETERSON S

IGNITION AND COMBUSTION OF REACTOR FUELS, COOLANTS, AND STRUCTURAL MATERIALS

OAK RIDGE NATIONAL LABORATORY

6 PAGES, 3 TABLES, 54 REFERENCES, NUCLEAR SAFETY 8(1), PAGES 25-30 (FALL 1966)

OXIDATION REACTIONS THAT COULD OCCUR IN ACCIDENTS IN THE NUCLEAR INDUSTRY ARE REVIEWED BRIEFLY. CONDITIONS FOR AND CONSEQUENCES OF IGNITION ARE EMPHASIZED. MATERIALS TREATED INCLUDE REACTOR FUELS AND STRUCTURAL METALS USED IN NUCLEAR REACTORS, AS WELL AS ALKALI METALS, GRAPHITE, AND OTHER USEFUL COMBUSTIBLE MATERIALS. SIGNIFICANT DOCUMENTS ISSUED DURING THE REVIEW PERIOD INCLUDE A THOROUGH ANALYSIS OF THE FIRE HAZARD OF BERYLLIUM AND AN EXTENSIVE STUDY OF THE EXPLOSIVE TENDENCIES OF POWDERED METALS.

\*COMBUSTION + \*FUEL INTEGRITY + \*IGNITION + \*ORGANIC COOLANT + \*STRUCTURAL INTEGRITY + BERYLLIUM + GRAPHITE + METAL + METAL, ALKALI + ORGANIC COOLANT + PLUTONIUM

8-15902 ALSO IN CATEGORY 1

BLOOD CM + OVERHOLSER LG

COMPATIBILITY OF PYROLYTIC-CARBON COATED FUEL PARTICLES WITH WATER VAPOR

OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.

ORNL-4014 +. 29 PAGES, 13 FIGURES, 2 TABLES, NOVEMBER 1966

THE OXIDATION OF VARIOUS LOTS OF COATED FUEL PARTICLES BY WATER VAPOR WAS STUDIED AT 1000 C, USING HELIUM-WATER VAPOR MIXTURES HAVING PARTIAL PRESSURES OF 4.6, 46 AND 567 TORR AND A TOTAL PRESSURE OF 1 ATM. SURFACE AREA DEVELOPMENT BY OXIDATION WITH WATER VAPOR COULD NOT BE CORRELATED WITH REACTION RATES. THE EFFECTS OF PARTIAL PRESSURE OF WATER VAPOR ON THE REACTION RATES ALSO WERE OBSCURE. EXPERIMENTS MADE IN GRAPHITE CONTAINERS INDICATE THAT GRAPHITE CAN PROTECT THE COATED FUEL PARTICLES FROM OXIDATION BY WATER VAPOR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*COATED PARTICLE + \*GRAPHITE + \*HIGH TEMPERATURE + \*OXIDATION + \*WATER VAPOR

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-0775R ALSO IN CATEGORY 17

ROSS CP  
THE HEAVY WATER COMPONENTS TEST REACTOR SYSTEMS, FUEL FAILURE DETECTION, AND STANDBY CONDITION SAVANNAH RIVER PLANT, E. I. DUPONT DE NEMOURS AND COMPANY  
DP-1049 +. 25 PAGES, 10 FIGURES, 7 REFERENCES, AMERICAN NUCLEAR SOCIETY CONFERENCE ON REACTOR OPERATING EXPERIENCE, JACKSON LAKE LODGE, WYOMING, JULY 28-29, 1965, ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 8, PAGE 50

FOUR OF THE SIX ZIRCALOY ROD GUIDES FAILED AFTER 3 YEARS OF SERVICE, BY LONGITUDINAL SPLITS IN THE SHOCK-ABSORBER SECTION. FAILURE WAS DETECTED BY SHORTER ROD-DROP TIMES. IT MIGHT HAVE BEEN POSSIBLE TO DROP ROD ON A SPLIT, NOT ALL INTO CORE. TWICE A ROD FAILED TO DROP, DUE TO A CRACKED OVERRUNNING CAM CLUTCH. BORON INJECTION (BY SEPARATE HELIUM SUPPLY) WOULD NOT WORK IN CERTAIN PRESSURE AND FLOW SITUATIONS, SOLVED BY USING REACTOR COVER-GAS TO PRESSURIZE SYSTEM. GAS-RELIEF VALVES WERE CHANGED TO LIQUID-RELIEF VALVES, AS CODE CHANGED, TO PREVENT A VALVE FAILURE FROM RAPIDLY DEPRESSURIZING REACTOR. STEEL-DOME CONTAINMENT ON CONCRETE BELOW COULD NOT ACHIEVE LEAKAGE LESS THAN 2-3 PERCENT PER DAY AT 24 PSIG.

\*FAILURE, SCRAM MECHANISM + \*MODIFICATION, SYSTEM OR EQUIPMENT + \*OPERATING EXPERIENCE + \*SAFETY INJECTION + \*TEST, LEAK RATE + \*VALVE + CONTAINMENT, LOW PRESSURE + HWCTR (HEAVY WATER COMPONENT TEST REACTOR) + REACTOR, HEAVY WATER + REACTOR, PRESSURIZED WATER + REACTOR, TEST + STRESS

9-12195 ALSO IN CATEGORIES 17 AND 18

TOMLINSON RL  
ANNUAL SUMMARY OF CHANGES, TESTS AND EXPERIMENTS PERFORMED ON THE AEROJET-GENERAL NUCLEONICS INDUSTRIAL REACTOR (AGNIR)  
AEROJET-GENERAL NUCLEONICS, SAN RAMON  
15 PAGES, AUGUST 13, 1966, DOCKET NO. 50-228, PDR

A FUEL-CLAD LEAK OCCURRED OCT. 15, 1965. MOST OF THE 79 SCRAMS CAME FROM RANGE-SWITCHING ERRORS WHILE USING THE PICOAMMETER. APPENDIX I. - DRIVE-MOTOR SPEEDS WERE REDUCED AS RCDS WERE WORTH MORE THAN CALCULATED. AUTOMATIC RESET SWITCH NOW TURNS ON BF3 HV, THEN 40 SEC LATER RESTORES BF3 TO SCRAM CIRCUIT. THIS AVOIDS FALSE SCRAMS ON POWER REDUCTION. COOLING FLOW ROUTED TANGENTIALLY TO REACTOR CORE TOP REDUCES POOL DOSE RATE FROM 10 TO 1 MREM/HR. A FIXED LOW-BLEED CURRENT WAS PUT INTO CHANNEL 2 TO AVOID FALSE PERIOD SCRAMS AS THAT CHANNEL CAME ON SCALE

\*OPERATING EXPERIENCE + \*OPERATIONS SUMMARY FOR AEC + CONTROL ROD DRIVE + INSTRUMENTATION, STARTUP RANGE + REACTOR, RESEARCH + SCRAM, SPURIOUS + TRIGA (TRAINING REACTOR, ISOTOPES, G.A.)

9-12297

MACKINNON DD  
AN EXPERIMENTAL STUDY OF A CLASS OF TIME-SHARED CONTROL SYSTEMS  
CORNELL UNIVERSITY, ITHACA, NEW YORK  
8 PAGES, 12 FIGURES, 5 REFERENCES, ISA TRANSACTIONS 4(2) PAGES 170-177, (APRIL 1965)

THIS PAPER DESCRIBES AN EXPERIMENTAL INVESTIGATION OF A CLASS OF SECOND- AND THIRD- ORDER TIME-SHARED SYSTEMS CHARACTERIZED BY IDENTICAL CHANNELS WITH PURE INTEGRATORS IMMEDIATELY ADJACENT TO THE OUTPUTS. EXPERIMENTAL TECHNIQUES ARE DISCUSSED AND ILLUSTRATED. EMPHASIS IS CONCENTRATED ON THE STEADY-STATE CHARACTERISTICS BY ADOPTING A TIME-AVERAGE INTEGRAL-SQUARE-ERROR CRITERION. THIS LEADS TO THE ILLUMINATION OF SOME OF THE INTERESTING PROPERTIES OF THESE SYSTEMS. THE APPLICATION OF AN ADAPTIVE ADJUSTMENT SEQUENCE GENERATOR IS SHOWN TO RESULT IN A SIGNIFICANT IMPROVEMENT IN PERFORMANCE.

\*CONTROL SYSTEM + \*INSTRUMENTATION, GENERAL + ANALYTICAL MODEL + COMPUTER, ANALOG + TEST, INSTRUMENT RESPONSE

9-13050 ALSO IN CATEGORY 17

HOWARD CL  
DEVELOPMENT PROGRAM ON THE GARIGLIANO NUCLEAR REACTOR.  
GENERAL ELECTRIC COMPANY  
GEAP-5144 + EUKAEC-1635 +. 19 PAGES, APRIL 1, 1966

JANUARY - MARCH 1966. MAINTENANCE AND INSPECTION HAS KEPT PLANT SHUT DOWN. RESTART WILL BE IN MAY 1966. A RECALCULATION ESTABLISHED A ROD WITHDRAWAL SEQUENCE (MCHF RATIO OF 1.7) FOR LOW-FLOW/SUBCOOLING CONDITIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*OPERATIONS REPORT, ANALYSIS + CONTROL ROD PROGRAM + ITALY + POWER DISTRIBUTION + REACTOR, BOILING WATER

9-13673 ALSO IN CATEGORY 18

PRIMARY COOLANT INSTRUMENTS

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-13673 \*CONTINUED\*  
PUBLIC SERVICE COMPANY OF COLORADO, DENVER, COLORADO  
2 PAGES, FORT ST. VRAIN NUCLEAR GENERATING STATION PRELIMINARY SAFETY ANALYSIS REPORT, VOL. II, SECTION VII, PAGES, 7.3-5 TO 7.3-6, SEPTEMBER 1966, DOCKET NO. 50-267

ACOUSTIC THERMOMETERS MAY BE USED TO MEASURE PRIMARY-CORE OUTLET TEMPERATURES BECAUSE OF THE HIGH-TEMPERATURE ENVIRONMENT (1400 TO 1500 F). SINCE THE VELOCITY OF SOUND IS PROPORTIONAL TO GAS TEMPERATURE AND IS INDEPENDENT OF THE GAS PRESSURE, ACCURACY SHOULD BE REALIZED. THE INSTRUMENT SHOULD ALSO PROVIDE LONG-LIFE CAPABILITY.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*INSTRUMENTATION, TEMPERATURE + FT. ST. VRAIN + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED + REACTOR, POWER

9-13882 ALSO IN CATEGORY 6  
HESS AL + KEENEY WP + CAUMETTE P + BOYER JP  
CRITICAL STUDIES FOR THE FRENCH FAST REACTOR RAPSODIE  
ARGONNE NATIONAL LABORATORY  
ANL-7044 +. 72 PAGES, 38 FIGURES, 26 TABLES, 10 REFERENCES, MARCH 1966

CRITICAL STUDIES ON ZPR-3 WITH A MOCKUP OF THE FRENCH FAST REACTOR, RAPSODIE. OBJECTIVES INCLUDED AMONG OTHERS, THE EVALUATION OF THE RAPSODIE DESIGN CONTROL SYSTEMS, REACTIVITY COEFFICIENTS, AND ROD-WORTH STUDIES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFO., NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 CY

\*FRANCE + CONTROL ROD WORTH + REACTIVITY COEFFICIENT

9-13891 ALSO IN CATEGORY 17  
GEKLER WC  
OPERATING EXPERIENCE OF NUCLEAR POWER PLANT SAFETY SYSTEMS  
HOLMES AND NARVER, INC.  
15 PAGES, 7 TABLES, 1 FIGURE, 1966, ANS TRANSACTIONS 9(2) PAGES 534-535 (1966 WINTER MEETING)

GIVES ANALYSIS OF SAFETY-SYSTEM DATA OBTAINED FROM FIVE POWER-GENERATING PLANTS. REAL AND SPURIOUS SCRAM RATES EXHIBITED ONLY A VERY WEAK DECREASING TREND WITH TIME. AFTER THE FIRST YEAR OF COMMERCIAL OPERATION, REAL AND SPURIOUS SCRAM-TRIP RATES ARE ABOUT EQUAL AND RELATIVELY CONSTANT AT 0.5 TRIPS PER MONTH OF OPERATION. MALFUNCTIONS THAT SUGGEST POTENTIAL BLOCKAGE OF A CORRECT SAFETY SYSTEM RESPONSE HAVE OCCURRED, PRIMARILY IN FLUX-LEVEL AND STARTUP-RATE CHANNELS, AND HAVE INCLUDED MALADJUSTED TRIP POINTS, STICKING OR DIRTY RELAYS AND SWITCHES, FAILURES OF ELECTRONIC PARTS, POOR SENSOR RESPONSE, AND DESIGN AND OPERATING ERRORS.

\*REACTOR SAFETY SYSTEM + \*RELIABILITY ANALYSIS + \*SCRAM, SPURIOUS + \*STATISTICAL ANALYSIS + INSTRUMENTATION, PROTECTIVE + OPERATING EXPERIENCE + REACTOR, POWER

9-13899 ALSO IN CATEGORY 12  
SPENCER EW  
THE EFFECT OF HIGH EXPANSION FIRE EXTINGUISHING FOAM ON OPERATING ELECTRONIC EQUIPMENT  
ATOMIC ENERGY COMMISSION  
2 PAGES, HEALTH AND SAFETY BULLETIN NO. 201, FEBRUARY 12, 1965

FOAM IS CREATED IN VOLUMES UP TO 1000 TIMES THE VOLUME OF WATER USED. BY DISPLACING THE FREE AIR AVAILABLE FOR COMBUSTION AND BY ACTUALLY WETTING THE COMBUSTIBLE MATERIAL, HIGH-EXPANSION FOAM PROVIDES A RAPID METHOD OF FIRE SUPPRESSION. ONE OBJECTION IS THE THOUGHT OF DAMAGE TO DELICATE EQUIPMENT FLOODED BY FOAM. MIT CONDUCTED A SERIES OF TESTS. DAMAGE RESULTING FROM 15 MIN EXPOSURE TO FOAM FOR OSCILLOSCOPES AND A PULSE GENERATOR. BLOWN FUSES AND VACUUM TUBE PUPTURES RESULTED. DAMAGE RESULTING FROM 24-HOUR EXPOSURE TO FOAM FOR BOOKS, MAGAZINES, COMPUTER TAPE, DATA PROCESSING CARDS, POWER SUPPLY, AND A SQUARE WAVE GENERATOR, WAS MINOR OR NIL.

AVAILABILITY - AEC, DIVISION OF PUBLIC INFORMATION, WASHINGTON, D.C. 20545

\*FAILURE, INSTRUMENT + DAMAGE + FIRE + TEST, DESTRUCTIVE

9-13904 ALSO IN CATEGORY 6  
PASTOGI BP + SRINIVASAN KP + NAKRA AN + BHATIA HK + HURIA HC + BALAKRISHNAN K + PURANDARE HD  
PHYSICS STUDIES OF PROTOTYPE POWER REACTOR PROJECT  
ATOMIC ENERGY ESTABLISHMENT, TROMBAY, INDIA  
AEET-239 +. 69 PAGES, 1965

OF SAFETY INTEREST ARE - REACTIVITY WORTH OF THE CENTRAL FUEL ROD, VARIATION OF FLUX WITH TIME ON ADDITION OF A SMALL POSITIVE REACTIVITY, TEMPERATURE COEFFICIENT OF REACTIVITY FOR HOT AND CLEAN CONDITIONS, CONTROL-ROD CALCULATIONS, SOME COMMENTS ON SAFETY AND CONTROL, CHANGE IN REACTIVITY DUE TO LOSS OF COOLANT.

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-13904 \*CONTINUED\*  
AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT WEST SALEM,  
WISCONSIN 54669

\*INDIA + CONTROL ROD WORTH + MODERATOR COEFFICIENT + REACTOR DYNAMICS + TEMPERATURE COEFFICIENT

9-13964 ALSO IN CATEGORY 19  
OPERATION OF KUKLA (APFA III) AT GENERAL ATOMIC WITH ACCELERATOR-PULSING  
DIVISION OF REACTOR LICENSING  
26 PAGES, NOVEMBER 28, 1966, DOCKET NO. 50-253

ACCELERATOR-PULSED FAST-ASSEMBLY III AT GENERAL ATOMICS IS THE LRL KUKLA, TO BE OPERATED AT 1  
KW OR TO BE ACCELERATOR-PULSED WHEN THE REACTOR IS MADE 50.86 SUPERCRITICAL. AEC REVIEW  
FOUND A FEW INSTANCES WHERE A SINGLE FAILURE WOULD INTERFERE WITH SAFETY-SYSTEM ACTION.  
TECHNICAL SPECIFICATIONS INCLUDED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + ACCELERATOR + SAFETY EVALUATION

9-13988 ALSO IN CATEGORY 17  
BARTHOFF S + WEISMAN J + LAYMAN WH  
CHEMICAL SHIM CONTROL OPERATING EXPERIENCE IN THE SAXTON REACTOR  
WESTINGHOUSE ATOMIC POWER DIVISION, PITTSBURGH + SAXTON NUCLEAR EXPERIMENTAL CORP.  
4 PAGES, JANUARY 1, 1964, PAPER DELIVERED AT THE AMERICAN NUCLEAR SOCIETY MEETING, NOVEMBER 30 - DECEMBER  
1, 1964, SAN FRANCISCO

AFTER EXTENDED OPERATION WITH BORIC ACID CHEMICAL SHIM UNDER A WIDE VARIETY OF OPERATING  
CONDITIONS, THE PRELIMINARY RESULTS ARE VERIFIED ALONG WITH SUCCESS WITH BORIC ACID DISSOLVED  
IN THE MODERATOR COOLANT IN THE SAXTON REACTOR. THE FOLLOWING SPECIFIC CONCLUSIONS WERE  
REPORTED - (1) NO SIGNIFICANT AMOUNT OF BORON-CONTAINING MATERIAL WAS DEPOSITED ON CORE  
SURFACES, (2) CORE LIFETIME WAS NOT DECREASED BECAUSE OF CHEMICAL SHIM CONDITIONS, (3) ALKALI  
ADDITIONS TO ENABLE OPERATION AT HIGH PH WERE SATISFACTORY, AND (4) HOT-CHANNEL FACTORS  
DURING CHEMICAL-SHIM OPERATION AGREED WITH PREDICTIONS.

\*BORON + CHEMICAL SHIM + SAXTON + MAIN COOLING SYSTEM + OPERATING EXPERIENCE

9-13998 ALSO IN CATEGORY 17  
CONTROL-ROD FUEL ELEMENTS CAUSE NUCLEATE BOILING AT STERLING FOREST REACTOR, OCTOBER 10, 1966  
UNION CARBIDE CORPORATION, TUXEDO, NEW YORK  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(2) PAGES 14-15 (JANUARY 9, 1967), DOCKET NO. 50-54

7FN HOURS AFTER ATTAINING FULL POWER, NUCLEATE BOILING INSTRUMENT INSTABILITY BEGAN. THE  
SENIOR OPERATOR DETERMINED THIS WAS DUE TO AN IRRADIATION SAMPLE, REMOVED IT, AND RESUMED  
OPERATION. ANALYSIS SHOWED THAT TWO CONTROL-ROD FUEL ELEMENTS (PLACED WITH CURVED SIDES  
ADJACENT) INTERFERED WITH EACH OTHERS COOLING FLOW THROUGH PORTS IN CURVED SIDE OF FUEL  
ELEMENTS. THE SAMPLE HAD NOT CAUSED TROUBLE IN THE SIX MONTHS PREVIOUS TO A FUEL CHANGE THAT  
INCREASED THE FUEL CONTENT FROM 8% TO 10% GRAMS OF U-235.

\*FLOW BLOCKAGE + IN PILE LOOP + INSTRUMENTATION, GENERAL + NUCLEATE BOILING + REFUELING +  
IN PILE EXPERIMENT + REACTOR, POOL TYPE

9-14007 ALSO IN CATEGORY 17  
APPENDIX III - DETAILS OF SHUTDOWNS OF THE FACILITY  
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.  
2 PAGES, INDIAN POINT STATION SEMI-ANNUAL OPERATIONS REPORT NO. 9 - FEBRUARY 1, 1966-SEPTEMBER 30, 1966 -  
PURSUANT TO PROVISIONAL OPERATING LICENSE DPR-5, PAGES 32-33, NOVEMBER 15, 1966, DOCKET 50-3

THE REACTOR WAS SCRAMMED WHEN THE FLOW OF POWER FROM BUCHANAN TO MILLWOOD SUBSTATION WAS  
REDUCED TO ZERO BECAUSE THE FLOW OF POWER TO THE ORANGE AND ROCKLAND COMPANY NEARLY EQUALLED  
THE OUTPUT OF THE INDIAN POINT GENERATOR. A ZERO POWER FLOW ACROSS THE MILLWOOD FEEDERS IS  
USED AS AN INDICATION OF A LOSS-OF-LOAD INCIDENT TO GIVE A REACTOR SCRAM.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*OPERATING EXPERIENCE + OPERATIONS SUMMARY FOR AEC + ACCIDENT, LOAD REJECTION + INDIAN POINT 1 +  
INSTRUMENTATION, ABNORMAL INDICATION + REACTOR SAFETY SYSTEM + REACTOR, PRESSURIZED WATER + SCRAM, REAL

9-14035  
GREEN AF + BOURNE AJ  
RELIABILITY CONSIDERATIONS FOR AUTOMATIC PROTECTIVE SYSTEMS  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY  
4 PAGES, 2 FIGURES, 2 TABLES, 12 REFERENCE, NUCLEAR ENGINEERING 10(111) PAGES 303-306 (AUGUST 1965)

THE AIM OF THIS ARTICLE IS TO INDICATE A METHOD BY WHICH A RELIABILITY MODEL FOR AN AUTOMATIC

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-14035 \*CONTINUED\*

PROTECTIVE SYSTEM MAY BE BUILT UP ON THE BASIS OF THE DEFINITION (RELIABILITY ~ THE PROBABILITY OF A DEVICE PERFORMING IN THE MANNER DESIRED FOR A SPECIFIED PERIOD OF TIME). MANY MODELS ARE POSSIBLE, DEPENDING ON THE MOST SUITABLE MATHEMATICAL TECHNIQUES AND PROBABILITY DISTRIBUTIONS WHICH FIT THE OBSERVED FACTS. NO GENERAL MERIT IS CLAIMED FOR THE METHOD INTRODUCED IN THIS ARTICLE EXCEPT TO SAY THAT IT HAS BEEN FOUND A USEFUL TOOL IN SAFETY ASSESSMENT.

\*ANALYTICAL MODEL + \*PLANT PROTECTIVE SYSTEM + FAILURE, EQUIPMENT + RELIABILITY, SYSTEM + UNITED KINGDOM

9-14036

HANSSON HA + SMITH RD  
ADVANCED IN-CORE INSTRUMENTATION FROM HALDEN  
INSTITUTT FOR ATOMENERGI, HALDEN, NORWAY  
7 PAGES, 9 FIGURES, 12 REFERENCES, NUCLEONICS 22(4) PAGES 49-56 (APRIL 1964)

TURBINE FLOWMETERS VOID GAGES, GAMMA THERMOMETERS, AND IN-PILE BURNOUT PROTECTORS DEVELOPED DURING DYNAMICS EXPERIMENTS AT THE HALDEN BOILING HEAVY WATER REACTOR ARE BEING APPLIED TO GAIN DATA THAT WILL LIBERALIZE HEAT-TRANSFER, MECHANICAL, METALLURGICAL, AND FUEL-DESIGN CRITERIA.

\*INSTRUMENTATION, IN CORE + \*NORWAY + \*REACTOR, BOILING WATER + INSTRUMENTATION, FLOW + INSTRUMENTATION, TEMPERATURE

9-14038

SCHALLOPP B  
REACTOR INSTRUMENTATION IN GERMANY  
3 PAGES, 3 FIGURES, NUCLEAR ENGINEERING 10(112) PAGES 338-340 (SEPTEMBER 1965)

A POUNDUP AND REVIEW ARTICLE OF NUCLEAR INSTRUMENTATION IN GERMANY. TRENDS ARE EXAMINED AND LEADING COMPANIES NAMED. BACKGROUND INFORMATION OF THE GERMAN INSTRUMENTATION INDUSTRY IS GIVEN. TOPICS RANGE FROM NEUTRON DETECTORS, NEUTRON FLUX MEASUREMENTS, SAFETY SYSTEMS, DATA HANDLING AND DIGITAL CONTROL RADIATION MONITORING, AND PROCESS INSTRUMENTATION.

\*GERMANY + \*INSTRUMENTATION, GENERAL + CHAMBER, COMPENSATED + CHAMBER, ION + COMPUTER, DIGITAL + INSTRUMENTATION, PROCESS + INSTRUMENTATION, RADIATION MONITORING + REACTOR SAFETY SYSTEM

9-14040

MAPLE BJ + COOPER AG  
STANDARD RELAY MODULES FOR SAFETY AND CONTROL CIRCUITS. PART 1. GENERAL DESCRIPTION  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, RISLEY  
TRG REPORT 933(R) PART 1 +. 4 PAGES, 4 FIGURES, MARCH 21, 1965

STANDARD RELAY MODULES HAVE BEEN DESIGNED TO MEET THE NEED FOR RELAY LOGIC IN AN EXPERIMENTAL PLANT. THE DESIGN CAN BE CONSTRUCTED WITHOUT PRIOR KNOWLEDGE OF THE PLANT REQUIREMENTS AND CAN BE MADE TO SUIT A PARTICULAR APPLICATION BY SIMPLY ARRANGING LINKS IN A REMOVABLE CONNECTOR. PART 1 IS A GENERAL DESCRIPTION OF THE UNIT, AND PART 2 IS THE INSTRUCTION AND MAINTENANCE MANUAL.

AVAILABILITY - BRITISH INFORMATION SERVICE, 845 THIRD AVENUE, NEW YORK, N. Y. 10022, \$0.60 COPY

\*INSTRUMENTATION, ABNORMAL INDICATION + \*INSTRUMENTATION, GENERAL + \*INSTRUMENTATION, RELAY + INSTRUMENTATION, PROTECTIVE

9-14042

ALSO IN CATEGORY 15

KRAMER G + CLOSSER WH + MENGALI OJ  
STUDY OF SEMICONDUCTOR FAST-NEUTRON DOSIMETER FOR RANGE 0-50,000 RADS  
RATTELLF MEMORIAL INSTITUTE  
AD-631742 + NDL-TR-55 +. 102 PAGES, APRIL 1966

RESULTS OF A STUDY OF A SEMICONDUCTOR NEUTRON DOSIMETER FOR THE RANGE 0 TO 50,000 RADS ARE PRESENTED. THE DOSIMETER IS A WIDE-BASE, CONDUCTIVITY-MODULATED, SILICON P-N JUNCTION WHOSE FORWARD RESISTANCE INCREASES UPON EXPOSURE TO NEUTRONS BECAUSE OF A DECREASE IN EXCESS CARRIER LIFETIME. THE RELATIONSHIP BETWEEN BULK PROPERTIES OF SILICON, VARIOUS PROCESSING STEPS, BASE WIDTH, AND FORWARD-CURRENT LEVEL ON DOSIMETER PERFORMANCE WERE STUDIED. PRESENT DOSIMETER RESPONSE IS ACCURATE TO PLUS OR MINUS 25 PERCENT AT 50 RADS (TISSUE) AND IMPROVES RAPIDLY AT HIGHER DOSES TO PLUS OR MINUS 2 PERCENT AT 50,000 RADS (TISSUE).

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$4.00 COPY, \$0.75 MICRONEGATIVE

\*DOSE MEASUREMENT, EXTERNAL + \*FAST NEUTRON + \*MONITOR, RADIATION, ENVIRONMENTAL + NUCLEAR DETONATION

9-14043

ALSO IN CATEGORIES 12 AND 17

COLLINS GB

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-14043 \*CONTINUED\*  
A.G.R. STEAM DRUM EXPERIMENT  
ATOMIC ENERGY ESTABLISHMENT, WINFRITH, ENGLAND  
AEEW-M-631 +. 38 PAGES, 1966

STEADY-STATE AND TRANSIENT MEASUREMENTS MADE ON A FORCED RECIRCULATION BOILER STEAM DRUM ARE DESCRIBED, AND CONCLUSIONS ARE DRAWN CONCERNING THE STEADY-STATE WATER SUBCOOLING AND THE DYNAMIC BEHAVIOUR OF THE WATER AND STEAM PHASES DURING TRANSIENTS. ATTEMPTS AT PARAMETER IDENTIFICATION USING A LINEARIZED MODEL SET UP ON AN ANALOG COMPUTER ARE DESCRIBED, AND IT IS CONCLUDED THAT AN ASYMMETRIC MODEL IS REQUIRED TO ADEQUATELY DESCRIBE BOTH INCREASING AND DECREASING PRESSURE EFFECTS. FURTHER DYNAMIC EXPERIMENTS ARE SUGGESTED, USING MORE REFINED MEASUREMENT TECHNIQUES.

AVAILABILITY - BRITISH INFORMATION SERVICE, 845 THIRD AVENUE, NEW YORK, NEW YORK 10022, \$1.10 COPY

\*ANALYTICAL MODEL + AGR (ADVANCED GASCOOLED REACTOR, WINDSCALE, UK) + STEAM GENERATOR

9-14059  
AZARY Z  
INCREASED TRANSISTOR RELIABILITY IN NUCLEAR ENVIRONMENTS  
EDGERTON, GERMESHAUSEN AND CRIER, INC.  
EGG-1183-2046 +. 195 PAGES, 24 FIGURES, 19 TABLES, OCTOBER 1965

THE TECHNIQUE USED TO INCREASE THE RELIABILITY OF TRANSISTORS IN A NUCLEAR ENVIRONMENT IS BASED ON PREAPPLICATION NEUTRON-IRRADIATION TO AN EXPOSURE LEVEL ABOVE THEIR DAMAGE THRESHOLD. RESULTS SHOW THE TECHNIQUE IS CAPABLE OF IDENTIFYING UNITS THAT WOULD LIKELY FAIL AND, IN ADDITION, GIVES A REFERENCE POINT ON WHICH STATISTICAL PREDICTION OF FAILURE CAN BE MADE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA. \$5.00 COPY, \$1.00 MICROFICHE

\*RELIABILITY, COMPONENT + MEASUREMENT, REACTIVITY + NEUTRON + TEST, COMPONENT

9-14060 ALSO IN CATEGORY 15  
ANDERSON ME  
AN ELEMENTARY GUIDE TO THE MEASUREMENT OF FAST NEUTRON FLUXES  
MOUND LABORATORY  
MLM-1326 +. 23 PAGES, 11 FIGURES, 3 TABLES, 11 REFERENCES, JUNE 1, 1965

THIS REPORT IS AN INTRODUCTION TO THE BASIC PHYSICS AND MATHEMATICS INVOLVED IN THE MEASUREMENT OF FAST-NEUTRON FLUXES. IT DESCRIBES METHODS FOR DETECTION OF NEUTRONS AND THE FACTORS WHICH MUST BE TAKEN INTO CONSIDERATION WHEN THE MEASUREMENTS ARE BEING MADE. A GLOSSARY OF SOME OF THE SIGNIFICANT TERMS IS INCLUDED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$2.00 COPY, \$0.50 MICROFICHE

\*FAST NEUTRON + \*MEASUREMENT, REACTIVITY + INSTRUMENTATION, RADIATION MONITORING

9-14061  
FOWLER FP  
LOGARITHMIC DC AMPLIFIERS USING ALL SOLID-STATE COMPONENTS  
ATOMIC ENERGY ESTABLISHMENT, WINFRITH  
AEEW-R-484 +. 40 PAGES, 13 FIGURES, 11 REFERENCES, MAY 1966

WIDE RANGE LOGARITHMIC AMPLIFIERS CAN NOW BE BUILT USING ALL SOLID-STATE COMPONENTS. THEY PROMISE TO BE RELIABLE, REQUIRE NO SETTING UP, AND FOR SPECIAL APPLICATIONS THEY MAY BE EXTREMELY SIMPLE. THE REPORT DESCRIBES THE DESIGN OF TWO SIMPLE AMPLIFIERS COVERING A RANGE OF FOUR DECADES OF INPUT CURRENT. THIS IS FOLLOWED BY A GENERAL PURPOSE AMPLIFIER COVERING THE RANGE OF INPUT CURRENTS FROM 10 TO THE (MINUS 10TH) A TO 0.001, WITH AN ACCURACY OF 0.05 OF A DECADE OVER THE TEMPERATURE RANGE 0 TO 50 C. THE CIRCUIT PRINCIPLE OF THE GENERAL PURPOSE AMPLIFIER IS SUITABLE FOR APPLICATION TO A COMBINED LOGARITHMIC AND LINEAR INSTRUMENT.

AVAILABILITY - WINFRITH SECRETARIAT, ATOMIC ENERGY ESTABLISHMENT, WINFRITH, DORCHESTER, DOSET, ENGLAND

\*INSTRUMENTATION, AMPLIFIER + \*INSTRUMENTATION, LOGARITHMIC + INSTRUMENTATION, WIDE RANGE

9-14062  
BALL SJ  
NUCLEAR DESALINATION DUAL-PURPOSE PLANT CONTROL STUDIES. INTERIM REPORT  
OAK RIDGE NATIONAL LABORATORY  
ORNL-TM-1618, PART 1 +. 77 PAGES, 30 FIGURES, 2 TABLES, 16 REFERENCES, OCTOBER 1966

GENERAL METHODS WERE DEVELOPED FOR PREDICTING THE DYNAMIC BEHAVIOR OF A LARGE DUAL-PURPOSE PLANT CONSISTING OF A PRESSURIZED-WATER REACTOR (PWR), A BACK-PRESSURE TURBINE GENERATOR PLANT, AND A MULTISTAGE FLASH (MSF) EVAPORATOR. A FLEXIBLE DIGITAL COMPUTER CODE HAS BEEN DEVELOPED WHICH CALCULATES THE TRANSFER FUNCTIONS FOR SINGLE-EFFECT MSF PLANTS. PRELIMINARY

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-14062 \*CONTINUED\*

RESULTS WERE OBTAINED FOR A 250-MGD REFERENCE PLANT, AND SOME OF THE MAJOR CONTROL PROBLEMS WERE DETERMINED. AN ANALOG COMPUTER STUDY WAS MADE OF A REFERENCE PWR PLANT, AND TRANSFER FUNCTIONS FOR A LARGE BACK-PRESSURE TURBINE WERE DERIVED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.75 MN.

\*ANALYTICAL MODEL + \*REACTOR, DESALINATION + \*SIMULATION

9-14072 ALSO IN CATEGORIES 12 AND 17

GARRICK BJ + GEKLER WC + POMREHN HP

AN ANALYSIS OF NUCLEAR POWER PLANT OPERATING AND SAFETY EXPERIENCE

HOLMES AND NARVER, INC.

HN-185(VOL. I) +. 110 PAGES, FIGURES, TABLES, REFERENCES, DECEMBER 15, 1966

EXAMINATION OF THE OPERATING RECORDS (TO MARCH 1966) AT 5 PLANTS SHOWED THAT RECORDS HAVE INADEQUATE INFORMATION FOR STATISTICAL SUMMARIES. SCRAM CAUSES AND MAJOR FAULTS IN ENGINEERED SAFEGUARDS WERE TABULATED. MEAN TIME BETWEEN FAILURES WERE COMPUTED FROM SCRAM DATA (FALSE AND REAL) AND FROM TESTS ON ENGINEERED SAFEGUARDS. VOL. I CONTAINS CONCLUSIONS AND 5 APPENDICES ON RELIABILITY MATHEMATICS. VOLUME II CONTAINS (FOR EACH REACTOR) A HISTORICAL DESCRIPTION, MANAGEMENT AND MAINTENANCE, AND THE SUMMARY DATA.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$4.00 COPY.

\*ENGINEERED SAFETY SYSTEM + \*OPERATING EXPERIENCE + \*REACTOR SAFETY SYSTEM + \*RELIABILITY ANALYSIS + DRESDEN 1 + HUMBOLDT BAY + INDIAN POINT 1 + MAINTENANCE AND REPAIR + REACTOR, BOILING WATER + REACTOR, PRESSURIZED WATER + SHIPPINGPORT + YANKEE

9-14182

DITTO SJ

FAILURES OF SYSTEMS DESIGNED FOR HIGH RELIABILITY

OAK RIDGE NATIONAL LABORATORY

3 PAGES, 11 REFERENCES, NUCLEAR SAFETY 8(1), PAGES 35-37, (FALL, 1966)

THREE FAILURES OF SYSTEMS DESIGNED FOR HIGH RELIABILITY ARE USED TO ILLUSTRATE SOME OF THE PROBLEMS ASSOCIATED WITH SUCH SYSTEMS. ONE FAILURE WAS RELATED TO A SINGLE DEVICE THAT COULD NOT BE TESTED AND YET WAS REQUIRED FOR OPERATION OF THE SYSTEM. ANOTHER INVOLVED THE INTERCONNECTION OF REDUNDANT DEVICES IN A WAY THAT ALLOWED A SINGLE SHORT CIRCUIT TO PREVENT OPERATION OF THE SYSTEM. THE THIRD FAILURE RESULTED WHEN ONE OF A PAIR OF REDUNDANT COMPONENTS FAILED IN SUCH A WAY THAT ITS COUNTERPART FAILED ALSO.

\*REACTOR SAFETY SYSTEM + \*REDUNDANCE + \*RELIABILITY, SYSTEM + RELIABILITY ANALYSIS

9-14183

FRY DN

SYMPOSIUM ON NEUTRON NOISE, WAVES, AND PULSE PROPAGATION

OAK RIDGE NATIONAL LABORATORY

4 PAGES, 1 TABLE, 2 REFERENCES, NUCLEAR SAFETY 8(1), PAGES 37-40, (FALL 1966)

AN INTERNATIONAL SYMPOSIUM ON NEUTRON NOISE, WAVES, AND PULSE PROPAGATION WAS HELD IN GAINESVILLE, FLA., FEB. 14-16, 1966. THE PURPOSE OF THIS CONFERENCE WAS TO DEFINE THE PRESENT STATE OF THE ART AND TO REVIEW ANY SIGNIFICANT ADVANCES MADE IN NOISE THEORY AND ANALYSIS TECHNIQUES. THE PAPERS PRESENTED AND THE AUTHORS ARE LISTED. IN ADDITION, THOSE PAPERS RELATED TO NUCLEAR SAFETY ARE DISCUSSED. TOPICS COVERED INCLUDE SHUTDOWN REACTIVITY MEASUREMENTS, BOILING AND ANOMALY DETECTORS, AND REACTOR TRANSFER-FUNCTION DETERMINATIONS.

\*MEASUREMENT, NOISE + \*NOISE ANALYSIS + \*PULSED NEUTRON TECHNIQUE + MEASUREMENT, REACTIVITY + REACTOR, PRESSURIZED WATER + SHUTDOWN MARGIN + TRANSFER FUNCTION

9-14184

RYALUSCHEWSKI H + FRICKE W + HONECKER G + LANDWEHR H

REACTOR CHARGING SYSTEM

1 PAGE, ATOMWIRTSCHAFT 11(5), PAGE 249, (MAY 1966)

THE CHARGING SYSTEM OF THE AVR REACTOR SERVED TO CONVEY FUEL ELEMENTS INTO THE REACTOR CORE, AND ALSO THE MODERATOR, BORON, AND TEST ELEMENTS, AND TO CARRY THESE AWAY. BY MEANS OF THIS UNIT, THE ELEMENTS CAN ALSO BE ROTATED. THE OPERATION AND CONSTRUCTION OF THE UNIT, WHICH ESSENTIALLY DIFFERS FROM THE LOADING AND UNLOADING MACHINES OF OTHER NUCLEAR POWER PLANTS, IS SUITABLE FOR THE SPHERICAL SHAPE OF ALL THE ELEMENTS.

\*FUEL HANDLING + \*REACTOR, PEBBLE BED + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED + SYSTEM DESCRIPTION



CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-14185  
PICKER W + GNUTZMANN H + HANDEL H + MUSER W  
SHUT-DOWN SYSTEM  
1 PAGE, ATOMWIRTSCHAFT 11(5), PAGE 246, (MAY 1966)

THE CONCEPT OF THE AVR REACTOR PROVIDES A SHUT-DOWN SYSTEM FOR WHICH THE SHUT-DOWN ROD AND ABSORBER WOULD RETRACT UNDERNEATH. NEVERTHELESS, A RAPID SHUTDOWN CAN BE EFFECTED THROUGH GRAVITY - A FREE-FALLING COUNTER ROD SLIDES OVER A GEAR DRIVE INTO THE SHUTDOWN ROD THROUGH AN OPENING IN THE CORE. IN THE INITIAL PHASE, AN ELECTRO-MECHANICAL DRIVE ENABLES THE OPERATING TO BE DONE IN SMALL STEPS. TO STUDY THE SAFE FUNCTIONING OF THE SYSTEM, SCALE STUDIES UNDER REACTOR CONDITIONS WERE CARRIED OUT.

\*REACTOR, PEBBLE BED + \*SHUTDOWN MECHANISM, SELF + CONTROL ROD DRIVE + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED

9-14188  
JACQUEMIN J + PFLUGER W + STEFFENS R + ZIERMAN E  
CONTROL EQUIPMENT FOR THE REACTOR CHARGING SYSTEM.  
1 PAGE, ATOMWIRTSCHAFT 11(5), PAGE 252, (MAY 1966)

THE POSSIBILITY FOR A SPHERICAL PILE REACTOR OF THE CONTINUOUS CONTROL OF THE FISSION-PRODUCT CONCENTRATION IN THE CORE THROUGH THE ADMITTANCE OF VARIOUS TYPES OF SPHERES, AND OF AN INTENDED LOADING THAT WOULD CORRESPOND TO THE TYPE OF ANTICIPATED OPERATION, ASSUMES A MEASURING SYSTEM THAT IS COUPLED TO THE CHARGING UNIT. FOR THE AVR REACTOR, AN ENUMERATION OF THE ENTRY AND EXIT PORTS FOLLOWS NEXT WITH RESPECT TO THE SEALED SPHERE. IN THE SEPARATION MEASURING UNIT BELOW THESE WERE IDENTIFIED ACCORDING TO THE BURN-UP MONITORING SYSTEM. ALL RESULTS WERE RECORDED AND TRANSFERRED TO A DATA HANDLING SYSTEM THAT CALCULATED THE LOADING PROGRAM.

\*FUEL PURNUP + \*FUEL HANDLING + \*INSTRUMENTATION, NUCLEAR + \*REACTOR, PEBBLE BED + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED

9-14189 ALSO IN CATEGORY 6  
PETERSON LR + WEAVER LE  
A GRAPHICAL DESIGN OF AN OPTIMUM CONTROL SYSTEM TO MINIMIZE BOILING REACTOR NOISE  
UNIVERSITY OF ARIZONA  
9 PAGES, 13 FIGURES, 2 TABLES, NUCLEAR SCIENCE AND ENGINEERING 21(1), PAGES 40-48, (JANUARY 1965)

IN THIS PAPER A NEW GRAPHICAL TECHNIQUE IS USED TO DETERMINE AN OPTIMUM REACTOR-CONTROL SYSTEM THAT WILL MINIMIZE BOILING REACTOR NOISE. THE TECHNIQUE PRACTICALLY ELIMINATES THESE SERIOUS DRAWBACKS AND PERMITS A CONSIDERABLE PHYSICAL INSIGHT INTO THE BASIC STRUCTURAL PROPERTIES OF OPTIMUM CONTROL SYSTEMS TO MINIMIZE REACTOR NOISE. IT WAS FOUND THAT A REACTOR CONTROL SYSTEM INDEPENDENT OF REACTOR POWER LEVEL EXCEPT FOR A GAIN CONSTANT COULD BE DESIGNED THAT WOULD MINIMIZE BOILING NOISE AT ALL POWER LEVELS.

\*NOISE ANALYSIS + \*REACTOR CONTROL + \*REACTOR, BOILING WATER + ANALYTICAL MODEL + REACTOR DYNAMICS

9-14190  
SRE ROD DROP-TIME MEASUREMENT  
GENERAL NUCLEAR ENGINEERING CORP.  
3 PAGES, 2 FIGURES, POWER REACTOR TECHNOLOGY 7(4), PAGES 377-379, (FALL 1964)

A SYSTEM WAS DEVELOPED TO DETERMINE THE SCRAM TIMES OF THE SAFETY RODS IN THE SODIUM REACTOR EXPERIMENT (SRE). THE SYSTEM USES TWO TIMERS (ELECTROMAGNETIC) TO MEASURE THE INDIVIDUAL COMPONENTS OF THE TOTAL TIME. THE FREE-FALL COMPONENT AND SNUBBER COMPONENT OF TOTAL DROP TIME ARE BOTH MEASURED. THE TIMING SYSTEM APPEARS TO BE ONE THAT WOULD BE ADAPTABLE TO VARIOUS REACTORS.

\*CONTROL ROD SCRAM MECHANISM + \*TEST, CONTROL ROD DRIVE + REACTOR, LIQUID METAL COOLED + RESPONSE TIME + SRE (SODIUM REACTOR EXPERIMENT)

9-14191  
EGCR CONTROL RODS  
GENERAL NUCLEAR ENGINEERING CORP.  
2 PAGES, 1 FIGURE, POWER REACTOR TECHNOLOGY 7(4), PAGES 376-377, (FALL 1964)

CONTROL RODS SUFFICIENTLY FLEXIBLE TO MOVE IN BOWED CHANNELS WERE DEVELOPED FOR THE EXPERIMENTAL GAS COOLED REACTOR (EGCR). FLEXIBILITY OF THE OVERALL ROD ASSEMBLY IS ACHIEVED BY ELASTIC BENDING OF THE CENTRAL ROD BETWEEN SPACER SUPPORT PLATES, WHEREAS THE SEGMENTS OF THE ROD CAN MOVE RELATIVE TO ONE ANOTHER BY MEANS OF CONNECTING BALL-AND-SOCKET JOINTS. A DESCRIPTION OF THE RODS IS CONTAINED IN THE REPORT.

\*CONTROL ROD + \*REACTOR, GAS COOLED + CONTROL ROD DRIVE + EGCR (EXPERIMENTAL GAS COOLED REACTOR) + REACTOR, GRAPHITE MODERATED

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-14192

PRESSURE-TUBE REACTOR COMPONENTS  
GENERAL NUCLEAR ENGINEERING CORP.  
5 PAGES, 6 FIGURES, 1 TABLE, POWER REACTOR TECHNOLOGY, 7(4), PAGES 379-383, (FALL 1964)

A DOME-TYPE NOZZLE CLOSURE AND SEAL WERE DEVELOPED FOR THE PLUTONIUM RECYCLE TEST REACTOR. THE SEAL WAS DEVELOPED FOR SERVICE AT 1500 F AND 500 PSI, AND PROVIDES A LOW-PRESSURE HELIUM-TIGHT SEAL. FIVE TYPES OF SEALS WERE TESTED - (1) COPPER O-RING, (2) ZIRCALOY O-RING, (3) R-F FERRULE, (4) STAINLESS STEEL O-RING, (5) ZIRCALOY-2 O-RING. SURGE SUPPRESSORS FOR FLOW METERS USED ON THE FUEL CHANNELS WERE NECESSARY TO ELIMINATE WIDE FLUCTUATION IN THESE SIGNALS.

\*CONTAINMENT, PRESSURE VESSEL + \*PRTR (PLUTONIUM RECYCLE TEST REACTOR) + INSTRUMENTATION, FLOW + REACTOR, HEAVY WATER + REACTOR, PRESSURE TUBE

9-14311

ALSO IN CATEGORY 6

MAXWELL DC  
EVSER TRANSIENT MODEL  
GENERAL ELECTRIC COMPANY, SAN JOSE  
GEAP-4780 +. 65 PAGES, FEBRUARY 1, 1965

A COMPLETE SYSTEM OF EQUATIONS FOR THE EVESR SUPERHEAT REACTOR. POSSIBILITIES FOR WHICH THE RESPONSE CAN BE OBTAINED ARE - (A) OUTLET FLOW CHANGES BY PROGRAMMING THE TURBINE FLOW, (B) OUTLET FLOW CONTROLLER CHANGES BY PROGRAMMING THE TEMPERATURE SET POINT, (C) INLET FLOW CONTROLLER CHANGES, (D) BOILER DISTURBANCES, (E) FEEDWATER DISTURBANCES. THE NUMERICAL VALUES OF THE VARIOUS PARAMETERS AND FUNCTIONS DESCRIBING THE EVESR REACTOR ARE GIVEN IN THE APPENDIX.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, \$3.00 COPY, \$0.55 MN.

\*REACTOR TRANSIENT + HYDRAULIC ANALYSIS + REACTIVITY COEFFICIENT

9-14325

FRAME RA + MILICH CP  
HYDRAULIC CONTROL ROD ACTUATORS FOR THE KIWI-TNT NUCLEAR REACTOR  
LOS ALAMOS SCIENTIFIC LABORATORY  
LA-DC-6941 + CONF-651-002-4 +. 12 PAGES, 1965

A NUCLEAR ROCKET REACTOR RECEIVED SEVERE STRUCTURAL DAMAGE DURING A PLANNED EXPERIMENT WHICH CONSISTED OF WITHDRAWING THE CONTROL RODS TO THE MAXIMUM REACTIVITY POSITION VERY RAPIDLY. THIS EXPERIMENT WAS AIMED AT PROVIDING INSIGHT INTO THE MECHANISM WHEREBY SUCH POWER EXCURSIONS BECOME SELF-LIMITING. HYDRAULIC ACTUATORS WHICH ROTATED THE CONTROL RODS AT A VELOCITY OF 4000 DEGREE/SEC ARE DESCRIBED ALONG WITH EXPERIMENTAL RESULTS FOR ACTUATOR VELOCITY AND TORQUE. DELAY CIRCUITS AND SIMULTANEITY MEASUREMENTS FOR 12 CONTROL RODS ARE ALSO PRESENTED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$1.00 COPY, \$0.50 MICRONEGATIVE

\*CONTROL ROD DRIVE + \*KIWI + CONTROL SYSTEM + NUCLEAR ROCKET + REACTOR TRANSIENT + REACTOR, SPACE + ROVE. PROGRAM

9-14329

ALSO IN CATEGORIES 14 AND 11

PERRET JD  
PERMISSIBLE HYDROGEN LEVELS IN THE HNPFC CONTROL ROD HELIUM SYSTEM  
ATOMIC INTERNATIONAL  
NAA-SR-MEMO-10167 +. 26 PAGES, NOVEMBER 18, 1964

BASED ON CONSERVATIVE ASSUMPTIONS AS STATED IN THIS REPORT (A 150-PPM MAXIMUM LEVEL FOR HYDROGEN IN ZIRCALOY, AND A REQUIRED 10-YEAR SERVICE LIFE), IT IS CALCULATED THAT THE MAXIMUM PERMISSIBLE LEVEL OF HYDROGEN IN THE CONTROL-ROD-THIMBLE GASES IS 700 PPM BY VOLUME. NEITHER EXPERIMENTAL RESULTS NOR A THEORETICAL TREATMENT OF THE DIFFUSION OF ONE SPECIES OF A MIXTURE OF GASES THROUGH A METAL CONTAINER WALL COULD BE FOUND IN THE LITERATURE. STANDARD CATALYTIC ADSORPTION THEORY WAS COMBINED WITH THE USUAL DIFFUSION THEORY TO DERIVE EQUATIONS USEFUL FOR THE CALCULATIONS OF INTEREST. THIS APPROACH MAY HAVE UTILITY IN SIMILAR PROBLEMS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$2.00 COPY

\*CONTROL ROD + \*CONTROL SYSTEM + \*HYDROGEN + MATHEMATICAL STUDY + TITANIUM

9-14332

ALSO IN CATEGORY 10

SHAFFSTALL FL

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-14332 \*CONTINUED\*  
A VOLTAGE BREAKDOWN DETECTOR  
SANDIA LABORATORY, ALBUQUERQUE  
SC-TM-64-2154 +. 7 PAGES, FEBRUARY 1965

THIS REPORT DESCRIBES THE APPLICATION OF A TUNNEL DIODE VOLTAGE LEVEL DETECTOR TO MONITOR COMPONENTS FOR VOLTAGE BREAKDOWN DURING PULSE TESTING.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$1.00 COPY

\*ELECTRIC POWER, GENERAL + \*FAILURE, EQUIPMENT + \*INSTRUMENTATION, PROCESS + INSTRUMENTATION, PROTECTIVE

9-14333 ALSO IN CATEGORY 6  
SPINKS N  
A METHOD FOR CALCULATING THE REACTIVITY WORTH OF PARTIALLY INSERTED CONTROL RODS USING TWO-DIMENSIONAL GEOMETRY  
AUSTRALIAN ATOMIC ENERGY COMMISSION RESEARCH ESTABLISHMENT  
AAEC/E-134 +. 14 PAGES, APRIL 1965

THE THREE-DIMENSIONAL PROBLEM OF A REACTOR WITH PARTIALLY INSERTED CONTROL RODS IS REDUCED TO A TWO-DIMENSIONAL ONE BY A REDISTRIBUTION OF CONTROL MATERIAL WITHIN THE REACTOR. THE TRANSFORMATION IS EXACT WHEN THE PITCH CIRCLE RADIUS OF THE RODS AND THE DEPTH OF INSERTION OF THE RODS INTO THE REACTOR ARE LARGE COMPARED WITH THE CONTROL ROD PITCH. THE EFFECT OF VARIATIONS IN PITCH ON THE ACCURACY OF THE TRANSFORMATION IS INVESTIGATED BY CALCULATION.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT WEST SALEM, WISCONSIN 54669

\*ANALYTICAL MODEL + \*CONTROL ROD + AUSTRALIA + CONTROL ROD INTERACTION + REACTIVITY EFFECT

9-14374  
GREEN AF  
ASSESSMENT OF SENSING CHANNELS FOR HIGH INTEGRITY PROTECTIVE SYSTEMS  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, HEALTH AND SAFETY BRANCH  
AHSB(S)P-113 +. 12 PAGES, 3 TABLES, 4 FIGURES, 4 REFERENCES, 1966

THE PAPER DISCUSSES THE METHODS OF PREDICTING THE RELIABILITY OF A 2-OUT-OF-3 SAFETY SYSTEM WITH PERIODIC TEST. TABLES OF FAILURE RATES FOR COMMON INSTRUMENT COMPONENTS ARE INCLUDED.

AVAILABILITY - UNITED KINGDOM ATOMIC ENERGY AUTHORITY, AUTHORITY HEALTH AND SAFETY BRANCH 11 CHARLES II STREET, LONDON, S.W.1, ENGLAND

\*REACTOR SAFETY SYSTEM + \*RELIABILITY ANALYSIS + RELIABILITY, COMPONENT + RELIABILITY, SYSTEM

9-14375 ALSO IN CATEGORY 17  
NISLE RG + PEERBOOM RA + ALLER DJ + ANDERSON KJ  
COMPUTER CODE FOR THE CALCULATION OF FUEL AND POISON CROSS SECTIONS FROM REACTIVITY MEASUREMENTS  
IDAHO NUCLEAR CORPORATION  
IN-1017 +. 11 PAGES, 1 FIGURE, 3 REFERENCES, AUGUST 1966

TRANSIENT REACTIVITY MEASUREMENTS ON IRRADIATED FUEL SAMPLES PROVIDE A MEANS OF MEASURING FUEL CONTENT AND GROSS FISSION PRODUCT CROSS SECTIONS BY A NONDESTRUCTIVE METHOD. HENCE AN ITERATIVE PROCEDURE MUST BE USED. THIS PROGRAM SOLVES FOR FUEL AND POISON CONTENT BY MEANS OF A DOUBLE ITERATION FOR FUEL CROSS SECTION AND FOR POISON CROSS SECTION BY THE USE OF REACTIVITY MEASUREMENTS MADE IN TWO LOCATIONS HAVING DIFFERENT RELATIVE WORTHS FOR NEUTRON ABSORPTION (PRIMARILY THERMAL) AND PRODUCTION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$1.00 COPY, \$0.50 MICRONEGATIVE

\*ANALYTICAL MODEL + \*FUEL BURNUP + FISSION PRODUCT RETENTION + FUEL ELEMENT

9-14376  
VOJNOVIC M  
THE EFFECT OF DRIVING PULSE DURATION ON THE THRESHOLD LEVEL OF TRIGGER CIRCUITS  
BORIS KIDRICH INSTITUTE OF NUCLEAR SCIENCES  
AEC-TR-6486/3 +. 8 PAGES, 5 FIGURES, 1 REFERENCE, AUGUST 1964, TRANSLATED FROM BILTEN INSTITUTA ZA NUKLEARNE NAUKE BORIS KIDRICH 16(3) PAGES 161-168 (1965)

THE EFFECT OF DRIVING PULSE DURATION ON THE THRESHOLD LEVEL IS ANALYZED BY USING RESPONSE FUNCTION OF THE AMPLIFIER OBTAINED BY OPENING THE FEEDBACK LOOP OF THE TRIGGER CIRCUIT. DRIVEN TRANSITION FUNCTION IS OBTAINED AND CONDITIONS FOR TRANSITION WITH RECTANGULAR DRIVING PULSE SHAPE ARE GIVEN. CALCULATED AND EXPERIMENTAL RESULTS REVEAL THE IMPORTANCE OF G-M/C-E FACTOR AND REQUIREMENTS FOR SHARP CUT-OFF AND CONSTANT TRANSCONDUCTANCE OF THE ACTIVE ELEMENT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.75 MICRONEGATIVE

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-14376 \*CONTINUED\*  
\*INSTRUMENTATION, NUCLEAR + INSTRUMENTATION, SWITCH

9-14378  
HERBST DA + TALBOY JH  
A STEADY-STATE DIFFERENTIAL CALORIMETER USED TO MEASURE GAMMA HEATING IN A REACTOR ENVIRONMENT  
ARGONNE NATIONAL LABORATORY  
ANL-7178 +. 31 PAGES, 18 FIGURES, 3 TABLES, 8 REFERENCES, MARCH 1966

THE THEORETICAL EXPLANATION FOR - AND THE MECHANICAL DETAILS OF - A TWO CELL CALORIMETER IS GIVEN. THE INSTRUMENT IS CAPABLE OF A REPRODUCIBILITY OF 2 PERCENT, AND TWO OF THE DEVICES HAVE AGREED TO WITH 5 PERCENT OF EACH OTHER. THE INSTRUMENTS MEASURE GAMMA HEATING IN A REACTOR ENVIRONMENT OVER THE RANGE OF 3 TO 500 MW/G, USING FOUR-GRAM COPPER SAMPLES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$2.00 COPY, \$0.65 MICRONEGATIVE

\*HEAT GENERATION, INTERNAL + \*IN CORE MEASUREMENT + INSTRUMENTATION, TEMPERATURE + MEASUREMENT, TEMPERATURE

9-14379 ALSO IN CATEGORIES 4 AND 6  
PACKE DR + SCHOENBERG AA + JEFFERIES KS + TEW RC  
ANALYSIS OF CONDENSING PRESSURE CONTROL FOR SNAP-8 SYSTEM  
LEWIS RESEARCH CENTER, CLEVELAND, OHIO, (NASA)  
NASA-TM-X-1292 +. 26 PAGES, 2 TABLES, 18 FIGURES, 1 REFERENCE, OCTOBER 1966

THE EXPECTED VARIATIONS OF CONDENSING PRESSURE AND METHODS FOR CONTROLLING THESE VARIATIONS IN THE SNAP-8 RANKINE CYCLE WERE INVESTIGATED. THE EFFECTS OF ENVIRONMENTAL DISTURBANCES AND COMPONENT DEGRADATION ON THE SYSTEM WERE STUDIED WITH A DIGITAL COMPUTER. THE STUDY COMPARED THE EFFECTIVENESS OF COOLANT BYPASS FLOW CONTROL WITH CONDENSATE INVENTORY CONTROL AND CONCLUDED THAT THE BYPASS SYSTEM HAD ADVANTAGES IN THIS APPLICATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$1.00 COPY, \$0.50 MICRONEGATIVE

\*MATHEMATICAL STUDY + \*SIMULATION + \*SNAP 8 (SYSTEMS FOR NUCLEAR AUXILIARY POWER) + ANALYTICAL MODEL + CONTROL SYSTEM + HEAT EXCHANGER + METAL, LIQUID

9-14542 ALSO IN CATEGORIES 12 AND 18  
QUESTION B1A - CRITERIA FOR DETERMINING WHICH FACILITIES CANNOT BE SHARED  
TENNESSEE VALLEY AUTHORITY  
2 PAGES, PAGES B.1.1 TO B.1.2 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966, DOCKET NO. 50-259/60

THE DESIGN INTENT IS TO SHAPE FACILITIES ONLY WHEN IT WILL NOT COMPROMISE SAFETY OR INTERFERE WITH INDEPENDENT OPERATION. SOME SHARED EQUIPMENT IS COMMON SPARE COMPONENTS (SPARE FUEL POOL FILTER-DEMINERALIZER), OR IS CONNECTED ONLY IN CASE OF NECESSITY.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + DESIGN CRITERIA + EMERGENCY SYSTEM + INDEPENDENCE + REACTOR, BOILING WATER + REDUNDANCE

9-14543 ALSO IN CATEGORIES 12 AND 18  
QUESTION B.1B - ADDITIONAL DESIGN CRITERIA TO PREVENT INTERACTION BETWEEN UNSHARED FACILITIES  
TENNESSEE VALLEY AUTHORITY  
PAGE B.1.3 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966, DOCKET NO. 50-295/260

EQUIPMENT CONTROLS WILL NOT BE INTERMIXED. CONTROL CONSOLES, EQUIPMENT AND VALVE-OPERATING PANELS WILL BE SEPARATED, AS WELL AS THE EQUIPMENT ITSELF.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + DESIGN CRITERIA + INDEPENDENCE + REACTOR, BOILING WATER

9-14573 ALSO IN CATEGORY 18  
QUESTION D.5 - SECONDARY SHUTDOWN SYSTEM DETAILS  
TENNESSEE VALLEY AUTHORITY  
PAGES D.5.1 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966, DOCKET NO. 50-259/260

(1) ACCUMULATORS ON EACH POSITIVE-DISPLACEMENT PUMP WILL PROTECT VESSEL-SPARGER RING FROM PULSATION. (2) FOREIGN MATERIAL WILL NOT CLOG SPARGER NOZZLES BECAUSE PUMP FILTERS AND SUCTION LINE ARE RAISED ABOVE TANK BOTTOM. (3) SPARGER RING AIDS IN QUICKER POISON

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-14573 \*CONTINUED\*  
DISTRIBUTION AND WILL BE RETAINED THOUGH EARLIER ANALYSIS SHOWED THAT THIS WAS UNNECESSARY.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + POISON, SOLUBLE + REACTOR, BOILING WATER + SHUTDOWN SYSTEM, SECONDARY

9-14574 ALSO IN CATEGORY 18  
QUESTION E.1 - DETAILS OF ANTICIPATORY SCRAM  
TENNESSEE VALLEY AUTHORITY  
PAGE E.1.1 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1967,  
DOCKET NO. 50-259/260

A LOSS-OF-LOAD SCRAM WILL COMPARE ELECTRICAL POWER (WATTMETER, ETC.) WITH TURBINE POWER (STEAM-PRESSURE DEVICE) TO SCRAM WHEN TURBINE LOAD IS GREATER THAN 50% AND ELECTRICAL LOAD IS LESS THAN 25%. THE USUAL REDUNDANCE, INDEPENDENCE, AND RELIABILITY CRITERIA WILL APPLY.

AVAILABILITY - PUBLIC DOCUMENT ROOM, USAEC, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + ACCIDENT, LOAD REJECTION + BROWNS FERRY + INSTRUMENTATION, POWER RANGE + INSTRUMENTATION, PROCESS + REACTOR SAFETY SYSTEM + REACTOR, BOILING WATER

9-14575  
QUESTION E.2 - NUMBER OF LPRMS CONNECTED TO EACH APRM  
TENNESSEE VALLEY AUTHORITY  
PAGE E.2.1 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966,  
DOCKET NO. 50-259/260

SOME NUMBER (BETWEEN 8 AND 24) OF LOCAL-POWER-RANGE MONITORS WILL BE CONNECTED INTO EACH AVERAGE-POWER-RANGE MONITOR.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + INSTRUMENTATION, IN CORE + INSTRUMENTATION, POWER RANGE + REACTOR, BOILING WATER

9-14576 ALSO IN CATEGORIES 5 AND 18  
QUESTION E.3 - NEW SYSTEM WITH INCREASED SENSITIVITY TO CONTROL ROD INDUCED LOCAL FLUX PEAKING  
TENNESSEE VALLEY AUTHORITY  
PAGE E.3.1 OF BROWNS FERRY CONSTRUCTION PERMIT, ANSWERS TO AEC QUESTIONS, AMENDMENT 3, NOVEMBER 10, 1966,  
DOCKET NO. 50-259/260

THIS SYSTEM IS THE RBM (ROD-BLOCK MONITOR) DESCRIBED IN APPENDIX G. FINAL LOGIC AND PERFORMANCE DATA WILL BE AVAILABLE LATER. THE SYSTEM USES SIGNALS FROM SEVERAL LOCAL-POWER-RANGE MONITORS NEAR THE ROD TO PREVENT POWER PEAKING IF THE ROD IS MOVED.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + CONTROL ROD + INSTRUMENTATION, IN CORE + POWER DISTRIBUTION + REACTOR, BOILING WATER

9-14577  
QUESTION E.4 - PROCESS COMPUTER  
TENNESSEE VALLEY AUTHORITY  
PAGE E.4.1 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966,  
DOCKET NO. 50-259/260

FUNCTION AND PURPOSE WERE DESCRIBED IN APPENDIX G. THE AUTOMATIC DATA PROCESSING WILL AID ACHIEVING HIGH POWER DENSITY BUT WILL NOT CONTROL THE REACTOR.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + CONTROL, COMPUTER + DATA PROCESSING + REACTOR, BOILING WATER

9-14578 ALSO IN CATEGORIES 5 AND 18  
QUESTION E.5 - DESCRIBE THE PROTECTION SYSTEM IN DETAIL, RELIABILITY, AND TESTING ASSOCIATED WITH STEAM LINE RUPTURE  
TENNESSEE VALLEY AUTHORITY  
PAGE E.5.1 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966,  
DOCKET NO. 50-259/260

INCLUDED IN ANSWER G-1.

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-14578 \*CONTINUED\*  
AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + REACTOR, BOILING WATER

9-14579  
QUESTION E.6 - EFFECTS OF HIGH TEMPERATURE ON CONTROL ROOM INSTRUMENTS  
TENNESSEE VALLEY AUTHORITY  
PAGE E.6.1 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3,, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966,  
DOCKET NO. 50-259/260

ALL COMPONENTS OF THE SAFETY SYSTEM TOLERATE HIGH TEMPERATURE BETTER THAN HUMANS. CIRCUIT ACCURACIES ARE 1% WITH 50 C.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + HIGH TEMPERATURE + INSTRUMENTATION, GENERAL + REACTOR SAFETY SYSTEM + REACTOR, BOILING WATER + RELIABILITY, SYSTEM

9-14580  
QUESTION E.7 - SAFETY SYSTEM CHARACTERISTIC IN THE REFUELING MODE  
TENNESSEE VALLEY AUTHORITY  
4 PAGES, 2 FIGURES, PAGES E.7.1 TO E.7.4 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966, DOCKET NO. 50-259/260

(1,3) VARIOUS INTERLOCKS PREVENT ROD OR FUEL MOVEMENT WITH ONE ROD WITHDRAWN, OR PREVENT ROD MOVEMENT WHEN HANDLING FUEL. (2) THESE INTERLOCKS CAN BE MANUALLY CHECKED IN THE REFUEL MODE. (4) THERE ARE TWO INDEPENDENT DEVICES WHICH PREVENT FUEL BEING OVER THE REACTOR WITH TWO RODS OUT.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + FUEL HANDLING + INSTRUMENTATION, GENERAL + INSTRUMENTATION, INTERLOCK + REACTOR SAFETY SYSTEM + REACTOR, BOILING WATER + SINGLE-FAILURE CRITERION

9-14581  
QUESTION E.8 - DO ANY INSTRUMENTS HAVE BOTH A SAFETY AND A CONTROL FUNCTION  
TENNESSEE VALLEY AUTHORITY  
PAGE E.8.1 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS NOVEMBER 10, 1966,  
DOCKET NO. 50-259/260

DESIGN INTENT IS TO SEPARATE THESE FUNCTIONS BUT TO ALLOW READOUT OF SAFETY SYSTEM BY THE OPERATORS, WHO MAY MANUALLY PERFORM CONTROL FUNCTIONS.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + CONTROL SYSTEM + REACTOR SAFETY SYSTEM + REACTOR, BOILING WATER + SAFETY PRINCIPLES AND PHILOSOPHY

9-14582  
QUESTION E.9 - CONTROL ROOM FIRE AFFECTING ORDERLY SHUTDOWN  
TENNESSEE VALLEY AUTHORITY  
PAGE E.9.1 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966,  
DOCKET NO. 50-259/260

AMOUNT OF FLAMMABLE MATERIAL IN CONTROL ROOM IS MINIMIZED. REDUNDANCY AND FAILURE-TO-SAFETY FEATURES WILL PROVIDE RELIABILITY.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + CONTROL SYSTEM + FIRE + REACTOR, BOILING WATER

9-14636 ALSO IN CATEGORY 18  
ZIFMANN DL  
PIQUA ROD DRIVE MODIFICATIONS  
PIQUA NUCLEAR POWER FACILITY, PIQUA, OHIO  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(6) PAGE 20 (FEBRUARY 6, 1967), DOCKET NO. 115-2

COMPREHENSIVE INVESTIGATION (AND RECOMMENDATIONS) OF PIQUA ROD DRIVE AND OTHER PROBLEMS IS SENT TO AEC-DRL AS - SAFETY EVALUATION OF PNPFF MODIFICATIONS - (NAA-SR-MEMO-12103), WITHHELD FROM PUBLIC INSPECTION.

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-14636 \*CONTINUED\*  
\*CONTROL ROD DRIVE + \*MODIFICATION, SYSTEM OR EQUIPMENT + \*OPERATING EXPERIENCE + PIGUA +  
REACTOR, ORGANIC COOLED

9-14640 ALSO IN CATEGORIES 12 AND 17  
BEARING WEAR PROBLEMS ON HFIR CONTROL PLATES  
DIVISION OF OPERATIONAL SAFETY, USAEC  
BUL. ROF-66-4 +. OPERATING EXPERIENCES, REACTOR SAFETY 66-4, 4 PAGES, 1 FIGURE, DECEMBER 22, 1966

FAILURE OF THE CONTROL-ROD-GUIDANCE STELLITE-BEARING ASSEMBLIES AS A RESULT OF EXCESSIVE WEAR WAS CAUSED BY FRETTING CORROSION AND EXCESSIVE VIBRATION. THE FAILURE WAS DISCOVERED DURING THE SHUTDOWN FOLLOWING THE FIRST 100-MWTH CYCLE WHEN TEN 3/16-IN.-DIAM BALLS WERE FOUND IN THE PRIMARY-SYSTEM STRAINER. ALTHOUGH THE PLATES WERE IN THE REACTOR ALMOST TWICE AS LONG AS THEIR DESIGN LIFE, AS A RESULT OF USE DURING HYDRAULIC AND LOW-POWER TESTING, MODIFICATIONS WERE MADE ANYWAY. RETAINERS WERE PROVIDED FOR BOTH THE BALLS AND RACE TO PREVENT THE BEARINGS FROM COMING APART, AND THE METHOD OF ATTACHING THE BEARINGS TO THE PLATES WAS MODIFIED TO IMPROVE REPLACEMENT. TIME-OF-FLIGHT TESTS JUST BEFORE THE DISCOVERY SHOWED THAT EXCESSIVE WEAR DID NOT AFFECT THE SCRAM RESPONSE.

AVAILABILITY - AEC, DIVISION OF PUBLIC INFORMATION, WASHINGTON, D. C. 20545

\*FAILURE, COMPONENT + \*FAILURE, SCRAM MECHANISM + CORROSION + HFIR (HIGH FLUX ISOTOPE REACTOR) + REACTOR, AEC OWNED + REACTOR, FLUX TRAP + VIBRATION

9-14641 ALSO IN CATEGORIES 1 AND 17  
GEKLER WC + POMREHN HP  
AN ANALYSIS OF NUCLEAR POWER PLANT OPERATING AND SAFETY EXPERIENCE. VOL. I  
HOLMES AND NARVER, INC.  
HN-185 +. 110 PAGES, 22 TABLES, 7 FIGURES, 6 REFERENCES, DECEMBER 15, 1966

OPERATING AND SAFETY EXPERIENCE, AT FIVE MAJOR NUCLEAR POWER PLANTS, REPRESENTING 20 REACTOR-YEARS OF OPERATION WAS STUDIED. RESULTS AND CONCLUSIONS ARE GIVEN WHICH ENUNCIATE THE RELIABILITY OF SAFETY SYSTEM AND ENGINEERED SAFEGUARDS. TECHNIQUES OF OBTAINING RELIABILITY ESTIMATES ARE BRIEFLY DESCRIBED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*OPERATING EXPERIENCE + \*RELIABILITY ANALYSIS + CONTAINMENT INTEGRITY + CONTROL ROD DRIVE + CONTROL ROD SCRAM MECHANISM + DRESDEN 1 + EMERGENCY COOLING CONSIDERATIONS + EMERGENCY POWER, ELECTRIC + EMERGENCY SYSTEM + ENGINEERED SAFETY SYSTEM + HUMBOLDT BAY + INDIAN POINT 1 + MAINTENANCE AND REPAIR + PLANT PROTECTIVE SYSTEM + REACTOR SAFETY SYSTEM + REACTOR, BOILING WATER + REACTOR, POWER + REACTOR, PRESSURIZED WATER + SAFETY REVIEW (OPERATIONS, EXPERIMENTS) + SAFETY STUDY + SCRAM, REAL + SCRAM, SPURIOUS + SHIPPINGPORT + SHUTDOWN SYSTEM, SECONDARY + YANKEE

9-14711 ALSO IN CATEGORY 18  
PROGRESS REPORT OF NORA PROJECT JANUARY 1-MARCH 31, 1966  
INSTITUTT FOR ATOMENERGI, KJELLER, NORWAY  
IAEA-3498-12 + NC-74 +. 24 PAGES, MAY 1966

THIS IS ONE OF A SERIES OF REPORTS ON THE FOLLOWING SUBJECT - REACTOR-NOISE STUDIES, PULSED NEUTRON RESEARCH, CONTROL RODS, MEASUREMENT AND ANALYSIS OF CELL PARAMETERS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*OPERATIONS REPORT, ANALYSIS + CONTROL ROD CALIBRATION + MEASUREMENT, NOISE + NOISE ANALYSIS + NORWAY + POWER DISTRIBUTION + PULSED NEUTRON TECHNIQUE + REACTOR, RESEARCH

9-14730 ALSO IN CATEGORY 4  
KFCK LJ  
RFD-2 TELEMETRY SYSTEM  
SANDIA CORPORATION, ALBUQUERQUE, NEW MEXICO  
SC-DR-65-205 +. 96 PAGES, JULY 1965

THIS REPORT DESCRIBES THE DESIGN AND PERFORMANCE OF THE TELEMETRY SYSTEM FLOWN ON RE-ENTRY FLIGHT DEMONSTRATION 2, WHICH WAS THE SECOND IN SANDIA'S SERIES OF OPERATIONAL-SAFETY FLIGHT TESTS OF SYSTEMS FOR NUCLEAR AUXILIARY POWER.

AVAILABILITY - CLEARINGHOUSE OF FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*AEROSPACE SAFETY + \*INSTRUMENTATION, GENERAL + \*TESTING

9-14735 ALSO IN CATEGORY 17

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-14735 \*CONTINUED\*  
CROIX O + PAOLI O + LECOMTE J + DOLLE L + LEGALLIC Y  
USE OF CADMIUM IN SOLUTION IN THE EL 4 REACTOR MODERATOR - IRREVERSIBLE FIXING OF CADMIUM ON THE METALLIC SURFACES  
ATOMIC ENERGY OF CANADA LIMITED, CHALK RIVER, ONTARIO  
AECL-2490 +. 26 PAGES, 7 FIGURES, 4 TABLES, OCTOBER, 1966

MEASUREMENTS WERE MADE BY TWO DIFFERENT METHODS OF THE RESIDUAL AMOUNTS OF CADMIUM (AND INDIUM DAUGHTER) LIABLE TO BE FIXED IRREVERSIBLY ON THE SURFACES (ALUMINUM, STAINLESS STEEL, OR ZIRCALOY) IN CONTACT WITH THE HEAVY WATER (AT 70 C WITH 13 PPM CADMIUM). A MARKED INFLUENCE OF THE PH WAS NOTICED. THE MECHANISM OF THE IRREVERSIBLE FIXING IS COMPATIBLE WITH THE HYPOTHESIS OF AN ION-EXCHANGE IN THE SURFACE OXIDE LAYER. IN A SUFFICIENTLY WIDE RANGE OF PH, THE CADMIUM THUS FIXED CAUSES VERY LITTLE RESIDUAL POISONING. THE STABILITY OF THE CADMIUM SULPHATE SOLUTIONS IS HOWEVER RATHER LOW IN THE CONDITIONS OF POISONING.

AVAILABILITY - ATOMIC ENERGY OF CANADA, LTD., CHALK RIVER, ONTARIO, CANADA, \$1.00 COPY

\*POISON, SOLUBLE + FRANCE + REACTIVITY EFFECT, ANOMALOUS + REACTOR, HEAVY WATER + REACTOR, PRESSURE TUBE

9-14767 ALSO IN CATEGORIES 5 AND 18  
TRUSHIN JT + MILLER JK + PETRIE TW  
PM-3A SAFETY SYSTEM SET POINT ANALYSIS  
MARTIN COMPANY, BALTIMORE, MARYLAND  
MND-M3A-3146 +. 95 PAGES, JUNE 5, 1964

A PERFORMANCE ANALYSIS OF THE PRIMARY SYSTEM IS PRESENTED IN DETAIL TO PERMIT REEVALUATION OF THE REACTOR SAFETY SYSTEM SET-POINTS UNDER CHANGED CONDITIONS. DETAILED THERMAL AND HYDRAULIC CHARACTERISTICS OF THE PRESENT CORE DESIGN ARE PRESENTED FOR THE CASE OF STEADY-STATE OPERATION. STEADY-STATE OPERATING LIMITS WERE ESTABLISHED FOR NO BULK BOILING IN THE HOT CHANNEL. TRANSIENT ANALYSES (NEITHER DNB NOR HOT-CHANNEL EXIT QUALITY ABOVE 15 PERCENT WERE ALLOWED) INCLUDED LOSS OF PUMPING POWER, LOCKED PUMP IMPELLER, COLD AND HOT ROD-WITHDRAWAL ACCIDENTS, AND STEAM-DEMAND LOAD TRANSIENTS. IN ALL CASES, THE RESTRICTION OF NO BULK BOILING DURING STEADY STATE PRECLUDED DNB DURING A TRANSIENT. THE SAFETY SYSTEM SET-POINTS ARE OBTAINED FROM THE THERMAL OPERATING LIMITS AND THE ACCURACY OF THE SYSTEM INSTRUMENTATION. A SAMPLE CALCULATION FOR DETERMINING THE MAXIMUM POWER SCRAM SET-POINT IS PRESENTED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*ANALOG SIMULATION + \*PERFORMANCE LIMIT + \*SAFETY ANALYSIS + HEAT TRANSFER ANALYSIS +  
PM 3A (PORTABLE MEDIUM NUCLEAR POWER PLANT) + REACTOR, ARMY + REACTOR, PRESSURIZED WATER

9-14773  
FINAL REPORT. CIRCULATING BALL REACTIVITY CONTROL  
GENERAL ELECTRIC COMPANY  
GEMP-299 +. 22 PAGES, 18 FIGURES, 1 TABLE, DECEMBER 7, 1964

SUMMARY OF EXPERIMENTAL STUDIES OF MEANS OF DRIVING EITHER BALLS OR ARTICULATED RODS FOR REACTIVITY CONTROL. ATTEMPTS WERE MADE TO DRIVE BALLS BY A LINEAR-INDUCTION AC MOTOR, DC SOLENOIDS, AND A MECHANICAL SCREW-TYPE DRIVE. LITTLE SUCCESS ACHIEVED. GREATER SUCCESS WITH DRIVING A CONTINUOUS ROD WITH A LINEAR-INDUCTION AC SYSTEM. POSITION READ OUT OF BALLS OR ARTICULATED RODS BY VARIABLE CAPACITANCE OR VARIABLE RELUCTANCE INVESTIGATED. VARIABLE-RELUCTANCE SENSOR APPEARED BEST.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*CONTROL ROD DRIVE + TEST, BENCH + TEST, CONTROL ROD DRIVE

9-14789 ALSO IN CATEGORY 17  
GARIGLIANO NUCLEAR POWER PLANT OPERATION REPORT FOR THE 1ST QUARTER OF 1966.  
ENTE NAZIONALE PER L ENERGIA ELETTRICA, ROME  
TID-23321 +. 7 PAGES, MARCH 31, 1966

REACTOR WAS SHUT DOWN THIS PERIOD TO REPAIR THE CRACKED DRAIN LINE ON THE REACTOR VESSEL AND TO RECOVER THE PIECES OF THE BROKEN POISON-SPARGER RING.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*OPERATIONS REPORT, GENERAL + FAILURE, PIPE + ITALY + MAINTENANCE AND REPAIR + REACTOR, BOILING WATER + SHUTDOWN SYSTEM, SECONDARY

9-14790 ALSO IN CATEGORIES 5 AND 17  
GARIGLIANO NUCLEAR POWER PLANT OPERATION REPORT FOR THE 4TH QUARTER OF 1965  
ENTE NAZIONALE PER L ENERGIA ELETTRICA, ROME  
TID-23320 +. 16 PAGES, DECEMBER 31, 1965



CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-14790 \*CONTINUED\*

REACTOR WAS SHUT DOWN ALL THIS PERIOD FOR ZIRCALOY CHANNEL REPLACEMENT OF 108 SS CHANNELS. THE 20TH-STAGE DISK, FIVE BLADES, AND SHROUD BANDS WERE FOUND FAILED BECAUSE OF COMPLEX VIBRATION. EROSION WAS HARDLY APPRECIABLE. ALL FUEL ELEMENTS WERE CLEANED OF CRUD (70% COPPER OXIDE). ONE REACTOR DRAIN PIPE LEAKED AT A SS CONNECTION BETWEEN THE PIPE AND THE INCONEL VESSEL-NOZZLE. THE POISON SPARGER WAS FOUND BROKEN INTO PIECES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*OPERATIONS REPORT, GENERAL + FAILURE, EQUIPMENT + FAILURE, FATIGUE + FAILURE, PIPE + HEAT SINK + ITALY + REACTOR, BOILING WATER + REFUELING + SHUTDOWN SYSTEM, SECONDARY + SURFACE FILM DEPOSIT

9-14791 ALSO IN CATEGORIES 6 AND 17  
HOWARD CL

DEVELOPMENT PROGRAM ON THE GARIGLIANO NUCLEAR REACTOR. QUARTERLY REPORT NO. 15. GENERAL ELECTRIC COMPANY, SAN JOSE, ATOMIC POWER EQUIPMENT DEPT. GEAP-5190 + EURAEC-1717 +. 35 PAGES, JULY 1, 1966

DURING PLANT STABILITY TESTS, THE ON-LINE COMPUTER AIDED GREATLY BY COMPILING OPERATING LIMITS (HEAT FLUX AND MCHF RATIO), CALIBRATION OF IN-CORE INSTRUMENTS, ETC. OFF-LINE USAGE IN DATA REDUCTION SAVED MANY DAYS BETWEEN TESTS, ALTHOUGH EACH SUCH USAGE PROHIBITS ITS ON-LINE MONITORING. FEEDWATER-HEATER BYPASSING FOR TESTS CAUSED DAMAGE FROM VIBRATION. HIGH-VOID TESTS GAVE HALF SCRAMS FROM THE FLOAT-ACTUATED REACTOR-WATER-LEVEL SWITCHES. ONE RECIRCULATION-LOOP OPERATION GAVE UNBALANCED POWER/VOID DISTRIBUTIONS, AND FLOW OSCILLATIONS. A STUCK ROD ALSO GAVE FLUX OSCILLATIONS LOCALLY (PLUS-OR-MINUS 10% AT 0.33 CPS) DUE TO HYDRODYNAMIC DISTURBANCES. THE REACTOR IS MORE STABLE THAN PREDICTED WITH CORE AVERAGE VOIDS AT 50%.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*OPERATIONS REPORT, ANALYSIS + DATA PROCESSING + FAILURE, PIPE + FAILURE, SCRAM MECHANISM + HYDRODYNAMIC ANALYSIS + INSTRUMENTATION, ABNORMAL INDICATION + INSTRUMENTATION, IN CORE + ITALY + POWER DISTRIBUTION + REACTOR STABILITY + REACTOR, BOILING WATER + TEST, PLANT RESPONSE

9-14793 ALSO IN CATEGORIES 6 AND 18  
MANGAN MA

CONNECTICUT YANKEE SET POINT STUDY  
WESTINGHOUSE ELECTRIC CORPORATION, ATOMIC POWER DIVISION  
NYO-3250-7 + WCAP-2940 +. 127 PAGES, JUNE 1966, DOCKET NO. 50-213

THIS STUDY FORMED THE BASIS FOR THE DEFINITION OF A CONSISTENT SET OF CONTROL SYSTEM SET POINTS TO BE USED DURING INITIAL PLANT TESTS AND OPERATION, BASED ON MAINTAINING ADEQUATE CONTROL-SYSTEM PERFORMANCE OVER THE WHOLE RANGE OF PREDICTED PLANT OPERATING CONDITIONS. ALSO PRESENTS AN INSIGHT INTO THE PREDICTED CONTROL-SYSTEM PERFORMANCE UNDER VARIOUS PLANT CONDITIONS. CONTROL SYSTEM PERFORMANCE IS PREDICTED FOR MORE PROBABLE OR BEST-ESTIMATE PLANT-DESIGN PARAMETERS FOR VARIOUS TIMES THROUGHOUT CORE LIFETIME AND MAY BE INDICATIVE OF WHAT MAY BE EXPECTED DURING OPERATION. THE SENSITIVITY OF CONTROL-SYSTEM PERFORMANCE TO VARIOUS CONTROL-PARAMETER SET POINTS IS ALSO INDICATED TO GIVE THE OPERATOR A FEEL FOR POSSIBLE ADJUSTMENTS IN CONTROL-SYSTEM PARAMETERS TO IMPROVE CERTAIN ASPECTS OF PLANT TRANSIENT RESPONSE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*ANALOG SIMULATION + \*REACTOR TRANSIENT + HADDAM NECK + PLANT PROTECTIVE SYSTEM + REACTOR CONTROL + REACTOR STABILITY + REACTOR, PRESSURIZED WATER

9-14795 ALSO IN CATEGORY 17  
SANDSTROM S

OPERATING EXPERIENCE AT THE AGESTA NUCLEAR POWER STATION. AKTIFORLAGET ATOMENERGI, STOCKHOLM, SWEDEN  
AE-246 +. 115 PAGES, FIGURES, TABLES, SEPTEMBER 1966

EXPERIENCES GIVEN TO END OF 1965, FOLLOWING REPORT OF INITIAL OPERATION. THE PLANT IS OVERLY COMPLICATED BECAUSE DIFFERENT COMPANIES DESIGNED AND PURCHASED DIFFERENT COMPONENTS AND BECAUSE DIFFERENT OFFICES WORKED ON THE SAME COMPONENT BUT WITH DIFFERENT STANDARDS. OPERATING EXPERIENCE AND DIFFICULTIES WITH COMPONENTS (VALVES, INSTRUMENTS, ETC.) ARE DISCUSSED. REACTOR CORE AND SYSTEM TESTS ARE SUMMARIZED. AFTER TWO YEARS, NUCLEAR WARMUPS ARE ROUTINE. COMPLICATIONS WERE THE LARGE FLAT-TOPPED VESSEL HEAD AND MAINTAINING POWER CONSTANT AS CHAMBER CURRENT VS POWER CHANGED. DURING CRITICAL TESTS WITH VARYING MODERATOR HEIGHTS, A SCRAM RESULTED IN THE CRUSHING OF 11 EMERGENCY CONTROL-ROD SHOCK-ABSORBERS, WHICH WERE APPARENTLY NOT PROPERLY WATER-FILLED.

AVAILABILITY - MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669

\*OPERATING EXPERIENCE + \*OPERATIONS REPORT, ANALYSIS + AGESTA (SWEDISH 65 MWTN REACTOR) + CONTAINMENT, PRESSURE VESSEL + FAILURE, EQUIPMENT + FAILURE, SCRAM MECHANISM + HEAT EXCHANGER + INSTRUMENTATION, GENERAL + REACTOR, HEAVY WATER + REACTOR, PRESSURIZED WATER + VALVE

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-14803 ALSO IN CATEGORIES 5 AND 17  
SMELTZER P  
EVALUATION OF CORE THERMAL AND HYDRAULIC DATA OBTAINED DURING THE OPERATION OF PWR CORE-I WITH THE FOURTH SEED. JANUARY 1963-FEBRUARY 1964  
BETTIS ATOMIC POWER LAB.  
WAPD-PWR-TE-151 +. 105 PAGES, FIGURES, DECEMBER 1964

IN-CORE THERMOCOUPLE CALIBRATION SHIFTED SEVERAL DEGREES WITHIN ONE YEAR. HALF THE 9 IN-CORE FLOW TRANSMITTERS WERE NOT WITHIN PLUS-OR-MINUS 1.25%. FLOW DISTRIBUTION WAS ADEQUATE. THE POWER SPLIT BETWEEN THE SEED AND BLANKET IS IN REASONABLE AGREEMENT OVER THE CYCLE WITH TNT CALCULATIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*OPERATIONS REPORT, ANALYSIS + FLOW DISTRIBUTION + FUEL BURNUP + INSTRUMENTATION, IN CORE + POWER DISTRIBUTION + REACTOR, PRESSURIZED WATER + REFUELING + SHIPPINGPORT

9-14821 ALSO IN CATEGORY 6  
GODELLE M  
SHUT-DOWN OF A HEAVY WATER REACTOR BY A SUDDEN REACTIVITY VARIATION  
EUR-548.F + ORNL-TR-383 +. 32 PAGES, FIGURES, TABLES, MAY 1964

THEORETICAL STUDY OF KINETIC BEHAVIOR OF NEUTRON FLUX FOLLOWING STEP REDUCTION IN REACTIVITY. REACTOR ORIGINALLY CRITICAL WITH DELAYED NEUTRONS AT EQUILIBRIUM. EFFECT OF PHOTONEUTRONS FROM HEAVY WATER INCLUDED BY INCREASING NUMBER OF DELAYED NEUTRON GROUPS. TABLES AND CURVES FOR MATHEMATICAL PARAMETERS ARE INCLUDED FOR NEGATIVE REACTIVITIES.

AVAILABILITY - JOHN CRERAR LIBRARY, 35 WEST 33RD. ST., CHICAGO, ILLINOIS 60616

\*REACTOR KINETICS + ANALYTICAL MODEL + DELAYED NEUTRON + HEAVY WATER + MATHEMATICAL STUDY + PROMPT NEUTRON LIFETIME + REACTIVITY EFFECT + REACTIVITY, NEGATIVE

9-14822  
SHEPWOOD DG  
CONTROL ROD DRIVE MECHANISM STUDY. TASK III REPORT, PHASE I.  
WESTINGHOUSE ELECTRIC CORP.  
NYO-3370-3 +. 91 PAGES, 8 FIGURES, 2 TABLES, MAY 12, 1965

DESIGN AND PROCEDURE CHANGES ARE RECOMMENDED IN DETAIL, INTENDED TO REMOVE OPERATING DIFFICULTIES EXPERIENCED ON THE PM-1 AND PM-3 REACTORS MAGNETIC-JACK ROD-ACTUATORS. SUBSTITUTION OF A LONG DIFFERENTIAL TRANSFORMER POSITION READOUT SYSTEM IS PROPOSED. CORROSION OF PRESSURE THIMBLES IS TO BE PREVENTED BY ELIMINATING WATER FROM THE GAP BETWEEN THE ARMATURE COIL STACK AND THE OUTSIDE OF THE ARMATURE HOUSING. IMPROVED PROCEDURES AND SPECIAL TOOLS WILL ENSURE THAT EACH CONTROL ROD IS LATCHED TO THE BUNDLE ASSEMBLY AND THAT THE ROD IS RAISED ABOVE THE CORE LOWER GRID DURING CERTAIN MAINTENANCE OPERATIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*CONTROL ROD DRIVE + DESIGN STUDY + EQUIPMENT DESIGN + FAILURE, EQUIPMENT + OPERATING EXPERIENCE + SHOCK ABSORBER + TEST, COMPONENT + TEST, CONTROL ROD DRIVE

9-14831  
HERNQUIST RA + BREIDPHL AM  
A COMPUTER PROGRAM, FOR PERFORMING RELIABILITY ANALYSES.  
SANDIA CORP.  
SC-TM-65-523 +. 39 PAGES, DECEMBER 1965

THE PROGRAM, AFTER RECEIVING COMPONENT AND WIRING DIAGRAM INFORMATION, CONSTRUCTS THE DUD AND PREMATURE EQUATIONS WHICH RELATE THE PROBABILITIES OF SYSTEM BEHAVIOR WITH THE PROBABILITIES OF THE VARIOUS SUBSYSTEM (COMPONENT) BEHAVIORS. THE ABILITY TO EVALUATE THE CONSEQUENCES OF ELECTRICAL SHORTS IN BOTH DUD AND PREMATURE STUDIES, AND THE ABILITY TO OBTAIN COMPONENT INFORMATION FROM SUCH TESTS AS QEST AND NMST, HAVE BEEN INCLUDED IN THE LOGIC. MUCH OF THIS REPORT DISCUSSES THE MODELING SCHEME USED BY A RELIABILITY ANALYST IN DESCRIBING COMPONENT INFORMATION FOR THE COMPUTER. SOME GENERAL COMMENTS CONCERNING THE TREATMENT OF ELECTRICAL SHORTS ARE ALSO INCLUDED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*RELIABILITY ANALYSIS + COMPUTER, DIGITAL

9-14833

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-14833 \*CONTINUED\*

MYERS JE  
HIGH TEMPERATURE HELIUM-3 DETECTORS  
FEUTER-STOKES ELECTRONIC COMPONENTS, INC.  
9 PAGES, 10 FIGURES, 2 REFERENCES, PRESENTED AT THE INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS  
NUCLEAR SCIENCE SYMPOSIUM, BOSTON, MASS., OCTOBER 19-21, 1966

A HELIUM-3 DETECTOR WAS DEVELOPED WHICH IS SUITABLE FOR APPLICATIONS INVOLVING THE DETECTION OF THERMAL AND EPITHERMAL ENERGY NEUTRONS OVER AN OPERATING TEMPERATURE RANGE EXTENDING TO ABOVE 200 C. THE DETECTOR EXHIBITS STABLE PLATEAU CHARACTERISTICS FOR FILL PRESSURES OF UP TO TEN ATMOSPHERES IN DETECTORS OF UP TO 1.75 INCH DIAMETER, AND IS RESISTANT TO DEGRADATION FROM THERMAL CYCLING AND OVER-TEMPERATURE OPERATION.

AVAILABILITY - FEUTER-STOKES ELECTRONIC COMPONENTS, INC. 18530 SOUTH MILES PARKWAY, CLEVELAND, OHIO 44128

\*INSTRUMENTATION, GENERAL + \*INSTRUMENTATION, STARTUP + \*NEUTRON + MEASUREMENT, REACTIVITY

9-14878 ALSO IN CATEGORIES 17 AND 15  
STATUS OF N S SAVANNAH OPERATIONS REVIEW  
FAST ANOMIC SHIP TRANSPORT INC.  
4 PAGES, DECEMBER 8, 1966, DOCKET NO. 50-238

(1) AT-SEA CHARCOAL-FILTER TESTING. THE MAST TEST DEVICE IS NOT RUGGED ENOUGH FOR USE AT SEA. REFON 112, I-127, AND HARVARD COLORIMETRIC TESTS ARE BEING EVALUATED FOR TESTS PRIOR TO PORT ENTRY. (2) RETESTS OF FILTERS WILL BE MADE FOR GASKET OR FILTER LEAKAGE. OILY RESIDUE FOUND ON ABSOLUTE FILTERS WAS NEITHER DOP NOR ROD-DRIVE OIL. (3) PROVISIONS FOR OPERATION WITH IMMOVABLE CONTROL RODS WERE MADE IN PROPOSED CHANGE 8. (4) SPECIFICATIONS WERE PREPARED FOR A RADIOLOGICAL INSTRUMENT TO PROVIDE POST-MCA RADIOLOGICAL INFORMATION TO THE MASTER. NO OTHER FACILITY IS KNOWN TO HAVE SUCH A SYSTEM. (5) REACTOR SAFETY SYSTEM REVIEW IS 25 PERCENT COMPLETE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY REVIEW (OPERATIONS, EXPERIMENTS) + CHARCOAL + FILTER + FILTER, DAMAGED + MONITOR, RADIATION, EMERGENCY + N S SAVANNAH + OPERATING EXPERIENCE + REACTOR SAFETY SYSTEM + REACTOR, MARITIME + REACTOR, PRESSURIZED WATER + SHUTDOWN MARGIN + TEST, FILTER

9-14891 ALSO IN CATEGORY 17  
FAILED FUEL IN BIG ROCK POINT  
CONSUMERS POWER COMPANY  
7 PAGES, 1 TABLE, REPORT OF OPERATION OF BIG ROCK POINT NUCLEAR PLANT, MAY 1, 1966-OCTOBER 31, 1966, PAGES 1-7, DECEMBER 20, 1966, DOCKET NO. 50-155

ON SEVERAL OCCASIONS THE POWER LEVEL WAS REDUCED FURTHER (EVENTUALLY TO 35 MWE) TO MAINTAIN OFF-GAS DISCHARGE BELOW 0.05 CURIE/SEC. FLUX TILTING INDICATED THE CENTRAL CORE REGION, AND DRY SLIPPING LOCATED THE 11 FAILED ELEMENTS. A LEAKING BUNDLE GAVE 100 TIMES THE XE-133 AS A GOOD BUNDLE. FOUR DEVELOPMENTAL (11-MIL INCOLOY CLAD, SWAGE-PACKED POWDER) AND 3 OTHER ELEMENTS (ZIRCALOY-2 CLAD, VIBRATORILY PACKED POWDER) FAILED GROSSLY DUE TO LONGITUDINAL SPLITS IN THE CLADDING OR TO CIRCUMFERENTIAL CRACKS AT PELLET INTERFACES. IN THE OTHER ZIRCALOY-2-CLAD ELEMENTS, THERE WERE ONLY VERY LOW LEAKAGE SIGNALS, BUT THE WELD AREA ON THE END PLUGS IS SMALLER THAN USUAL. THE PRIMARY ACTIVITY WAS FROM THE 4 INCOLOY-800-CLAD ELEMENTS (FAILED AT HALF DESIGN LIFE OF 15,000 MWD/T BECAUSE OF INTERGRANULAR STRESS CORROSION). ABOUT 4 KG OF URANIUM DIOXIDE ESCAPED THE CLAD.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*FAILURE, CLADDING + \*FAILURE, FUEL ELEMENT + \*FUEL, POWDER TYPE + \*INCONEL + \*OPERATIONS SUMMARY FOR AEC + BIG ROCK POINT + CORROSION + INSTRUMENTATION, DETECTION FAILED FUEL ELEMENT + REACTOR, BOILING WATER + STRESS

9-14892 ALSO IN CATEGORY 17  
CONTROL ROD PROBLEMS  
CONSUMERS POWER COMPANY  
2 PAGES, REPORT OF OPERATION OF BIG ROCK POINT NUCLEAR PLANT, MAY 1, 1966-OCTOBER 31, 1966, PAGE 1 AND 6, DECEMBER 20, 1966, DOCKET NO. 50-155

A CRACKED 3-IN. STAINLESS-STEEL TEE (WHERE ROD-DRIVE BYPASS WATER MIXES WITH CLEANUP-RETURN WATER) FAILED FROM THERMAL STRESS FATIGUE (DUE TO A DELTA T OF 400 F) EVEN THOUGH THERE IS A MIXING SLEEVE. PIPING WAS LATER MODIFIED. DRIVES D-2 AND B-5 COULD NOT BE WITHDRAWN AFTER THE REFUELING STARTUP. B-5 WAS JAMMED BY A BOLT FROM A GRID-BAR ASSEMBLY. FIVE CRACKED BOLTS WERE REPLACED ON THE ASSEMBLY. APPARENTLY INADEQUATE HEAT TREATMENT (UNDOCUMENTED BOLT HISTORY) AND COLD-WORKING AFTER INSTALLATION OR OVER-TORQUING MAY HAVE OCCURRED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*FAILURE, COMPONENT + \*FAILURE, SCRAM MECHANISM + \*OPERATIONS SUMMARY FOR AEC + BIG ROCK POINT + CONTROL ROD DRIVE + CORE COMPONENTS, MISCELLANEOUS + REACTOR, BOILING WATER

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-14893 ALSO IN CATEGORY 17  
BYPASS VALVE PROBLEMS ON LOSS OF LOAD INCIDENT  
CONSUMERS POWER COMPANY  
7 PAGES, 1 TABLE, REPORT OF OPERATION OF BIG ROCK POINT NUCLEAR PLANT, MAY 1, 1966-OCTOBER 31, 1966, PAGES 1-7, DECEMBER 20, 1966, DOCKET NO. 50-155

ON AUGUST 8, THE 138-KV BREAKER OPENED DURING A STORM. A NONOPTIMUM SETTING OPENED THE TURBINE BYPASS VALVE TOO SLOWLY TO PREVENT A HIGH-PRESSURE SCRAM. THE TURBINE HELD THE STATION LOAD FOR 4 MIN (A SNEAK-CIRCUIT TEST SIGNAL THROUGH THE INDICATING LIGHTS HELD THE BREAKER OPEN), BUT THE TURBINE WAS MANUALLY TRIPPED WHEN PRESSURE DECREASED TO 960 PSIG. ON THE RESULTING LOSS OF STATION POWER, THE BYPASS VALVE OPENED BEFORE THE DC-OPERATED ISOLATION VALVE CLOSED. THE PRESSURE BLEW THE TURBINE RUPTURE DIAPHRAGM. THE PILOT VALVES FOR THE BYPASS VALVES DID NOT HAVE THE PROPER MAGNETIC BIAS, AND THE VALVE WAS TEMPORARILY GIVEN A DC-CLOSING SIGNAL ON LOSS OF POWER.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*ACCIDENT, LOAD REJECTION + \*ACCIDENT, LOSS OF POWER + \*FAILURE, DESIGN ERROR +  
\*INCIDENT, ACTUAL, EQUIPMENT + \*INSTRUMENTATION, ABNORMAL INDICATION + \*OPERATIONS SUMMARY FOR AEC +  
ACCIDENT, STEAM LINE RUPTURE + BIG ROCK POINT + OPERATING EXPERIENCE + REACTOR, BOILING WATER

9-14945 ALSO IN CATEGORY 6  
KERLIN TW  
THE PSEUDO-RANDOM BINARY SIGNAL FOR FREQUENCY RESPONSE TESTING  
OAK RIDGE NATIONAL LABORATORY  
ORNL-TM-1662 +. 59 PAGES, FIGURES, TABLES, 19 REFERENCES, SEPTEMBER 23, 1966

PSEUDO-RANDOM TEST SIGNALS WERE EXAMINED AS A TOOL FOR THE FREQUENCY-RESPONSE TESTING OF REACTORS. RESULTS OF PSEUDO-RANDOM BINARY TESTS MADE ON THE MOLTEN-SALT REACTOR EXPERIMENT ARE INCLUDED. THESE RESULTS SUPPORT THE THEORETICAL CONCLUSIONS. THE FREQUENCY CHARACTERISTICS OF THE PSEUDO-RANDOM SIGNAL WERE DETERMINED. TWO TYPES OF DATA ANALYSIS WERE INVESTIGATED. ONE IS THE INDIRECT METHOD, WHICH REQUIRES AUTOCORRELATION OF THE INPUT SIGNAL, CROSS-CORRELATION OF INPUT AND OUTPUT SIGNALS, AND SUBSEQUENT FOURIER ANALYSIS. THE OTHER IS THE DIRECT METHOD, INVOLVING FILTERING, SQUARING, CROSS MULTIPLYING, AND TIME AVERAGING OF THE SIGNALS. THE ERROR DUE TO IMPROPER SELECTION OF ANALYSIS FREQUENCIES WAS DETERMINED FOR BOTH METHODS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*MATHEMATICAL STUDY + \*REACTOR DYNAMICS + OSCILLATOR, REACTIVITY + REACTOR STABILITY

9-14947 ALSO IN CATEGORY 17  
VANDERVELDE VD  
AN INSTRUMENT FOR LOCATING FAILED FUEL ELEMENTS IN THE HWCTR  
SAVANNAH RIVER LABORATORY  
DP-1049 +. 11 PAGES, FIGURES, TABLES, PAGES 21-31 OF THE HEAVY WATER COMPONENTS TEST REACTOR- SAFETY SYSTEMS, FUEL FAILURE DETECTION, AND STANDBY CONDITION, MAY 1966

FOUR SYSTEMS WERE INITIALLY USED (0.05-0.3 MEV GAMMA MONITOR, GROSS DELAYED-NEUTRON MONITOR, SCANNING NEUTRON MONITOR, AND THE LOW-ENERGY GAMMA) PROVED MOST RELIABLE FOR DETECTING FAILURES BUT NOT FOR LOCATING THEM. THEN A THIN-CRYSTAL GAMMA MONITOR WAS INSTALLED NEAR THE EFFLUENT OF THE MULTIPOINT FUEL-COOLANT SAMPLING VALVE, AND IN ONE CASE INDICATED A FUEL FAILURE LONG BEFORE THE OTHER FOUR. MULTIPOINT VALVE PROBLEMS LIMITED SYSTEM USE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*INSTRUMENTATION, DETECTION FAILED FUEL ELEMENT + \*OPERATING EXPERIENCE + FAILURE, FUEL ELEMENT + HWCTR (HEAVY WATER COMPONENT TEST REACTOR) + REACTOR, HEAVY WATER + REACTOR, PRESSURE TUBE + REACTOR, TEST

9-15011 ALSO IN CATEGORIES 17 AND 18  
STUCK CONTROL ROD AT GETR, FEBRUARY 1967  
GENERAL ELECTRIC, SAN JOSE  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(10), PAGES 23-24 (MARCH 6, 1967) DOCKET NO. 50-20

A SHORT BOLT FROM A FUEL TOOL FELL INTO A CONTROL-ROD GUIDE DURING RELOADING AND WAS DISCOVERED ON STARTUP CHECKS WHEN ROD 5 STUCK AT 22 IN. WITHDRAWN. ONLY SELF-LOCKING NUTS WILL BE USED FROM NOW ON.

\*FAILURE, SCRAM MECHANISM + \*INCIDENT, ACTUAL, EQUIPMENT + FUEL HANDLING MACHINE + GETR (GENERAL ELECTRIC TEST REACTOR) + REACTOR, TEST

9-15036 ALSO IN CATEGORY 18

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-15036 \*CONTINUED\*  
LARGE CLOSED-CYCLE WATER REACTOR RESEARCH AND DEVELOPMENT PROGRAM PROGRESS REPORT, APRIL 1 - JUNE 30, 1966  
ATOMIC POWER DIVISION, WESTINGHOUSE ELECTRIC CORP, PITTSBURGH, PA.  
WCAP-3269-18 +. 28 PAGES, 7 FIGURES, 3 TABLES, APRIL 1-JUNE 30, 1966

(PAGE 3.1). - A STUDY WAS BEGUN TO DETERMINE BOILING/TEMPERATURE EFFECT ON THE HYDRIDING OF ZIRCALOY CLADDING. (PAGE 3.10). - A ROD-CLUSTER CONTROL ELEMENT IN TEST SHOWED MARKING BUT NO SEVERE WEAR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*RESEARCH AND DEVELOPMENT PROGRAM + CLAD + CONTROL ROD + EMBRITTELEMENT + HYDROGEN + REACTOR, PRESSURIZED WATER + ZIRCALOY

9-15039 ALSO IN CATEGORIES 15 AND 17  
HAZARDS CONTROL QUARTERLY REPORT NO. 21, APRIL - JUNE, 1965  
ERNEST O. LAWRENCE RADIATION LABORATORY, UNIVERSITY OF CALIFORNIA, LIVERMORE, CALIFORNIA  
UCRL-14351 +. 37 PAGES, 29 FIGURES, APRIL - JUNE, 1965

(PAGES 1-9). - A PORTABLE BATTERY-OPERATED BETA AIR MONITOR WILL DETECT 1 MPC OF I-131 IN 10 MIN, OPERATES FOR 9 HR ON A RECHARGING. (PAGES 13-15). - A SMALL 60-W LOW-COST TRANSISTORIZED ALPHA AIR MONITOR WAS BUILT. (PAGES 35-36). - A CYCLONE SEPARATOR WORKED WELL FOR CONDENSING FOAM USED IN GLOVE-BOX FIRES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*FIRE + \*MONITOR, RADIATION, AIR + \*MONITOR, RADIATION, EMERGENCY + ALPHA EMITTER + FISSION PRODUCT, IODINE + GLOVE BOX

9-15041  
SWANSON CD + COUGHREN KD + THIEME GG  
DYNAMIC ANALYSIS OF THE HANFORD DUAL-PURPOSE REACTOR PLANT USING ANALOG SIMULATION METHODS  
BATTELLE-NORTHWEST, PACIFIC NORTHWEST LABORATORY, RICHLAND, WASHINGTON  
BNWL-SA-270 +. 41 PAGES, JULY, 1965

APPLICATIONS OF ANALOG-SIMULATION TECHNIQUES TO DETERMINE THE DYNAMIC CHARACTERISTICS AND DESIGN ADEQUACY OF A LARGE DUAL-PURPOSE NUCLEAR REACTOR PLANT ARE DESCRIBED. METHODS USED TO SIMPLIFY THE PLANT MODEL TO PERMIT SIMULATION WITH AVAILABLE COMPUTING FACILITIES ARE DISCUSSED. TYPICAL STUDIES INCLUDED EVALUATION OF PLANT SAFETY INSTRUMENTATION AND TRIP SETTINGS, CONTROLLER STABILITY AND PERFORMANCE FOR BOTH SMALL AND LARGE PLANT DISTURBANCES, AND VARIOUS PLANT OPERATING PROCEDURES. RESULTS OF TYPICAL STUDIES ARE SHOWN.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*ANALYTICAL MODEL + \*HANFORD PRODUCTION REACTOR + \*SIMULATION + COMPUTER, ANALOG + CONTROL SYSTEM + HEAT EXCHANGER + MAIN COOLING SYSTEM + REACTOR DYNAMICS + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED

9-15042  
SOMMER W  
REGULATION OF THE NEUTRON FLUX BY THE N TO THE SIXTEENTH ACTIVITY OF THE COOLANT IN THE MUNICH RESEARCH REACTOR  
UCRL-TRANS-10057 +. 25 PAGES, 17 REFERENCES, TRANSLATED FROM REGELUNGSTECH, 13 - 443-8 (1965)

AN AUTOMATIC FLUX-LEVEL CONTROL SYSTEM IS DESCRIBED WHICH USES THE N-16 RADIOACTIVITY AS THE CONTROL SIGNAL. A CORE ARRANGEMENT IS PRESENTED IN WHICH THE FLUX DISTRIBUTION IS NEARLY INDEPENDENT OF CONTROL-ROD POSITION. NEUTRON FLUX MEASUREMENTS AT DIFFERENT POISONING STATES CONFIRM THE VALIDITY OF THESE CORE ARRANGEMENTS.

AVAILABILITY - JOHN CRERAR LIBRARY, 35 WEST 33RD STREET, CHICAGO, ILLINOIS 60616, \$2.60 COPY, \$0.95 MICROFICHE

\*CONTROL SYSTEM + \*FLUX DISTRIBUTION + \*REACTOR CONTROL + REACTOR, RESEARCH

9-15049 ALSO IN CATEGORY 17  
RURAL COOPERATIVE POWER ASSOCIATIONS ELK RIVER REACTOR. FIFTY-FIRST MONTHLY OPERATING REPORT  
RURAL COOPERATIVE POWER ASSOCIATION  
COC-651-40 +. 28 PAGES, 4 FIGURES, JANUARY 1967, DOCKET NO. 115-1

(PAGE 1) HYDROTESTING SHOWED 41 NEW DEFECTIVE TUBES IN THE EVAPORATOR. ALMOST 80% OF THE 5 OUTER ROWS WERE DEFECTIVE. ALL WERE PLUGGED. THE NO. 2 EVAPORATOR FAILURES ARE FOLLOWING THE PATTERN OF THE NO. 1 FAILURES 5 YEARS AGO. (PAGE 9) STARTUP-CHANNEL COUNT-RATE-DECAY PLOTS INDICATED THAT COOLING PRIMARY WATER FROM 480 F TO 80 F DROPS THE COUNTING RATE TO HALF. (PAGE 18) WATER IN THE REACTOR CAVITY DRAIN IS APPARENTLY DUE TO CONDENSATION WHEN THE REACTOR IS COOLED AFTER A SCRAM.

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-15049 \*CONTINUED\*  
AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*OPERATIONS REPORT, GENERAL + ELK RIVER + FAILURE, PIPE + HEAT EXCHANGER + INSTRUMENTATION, ABNORMAL INDICATION + INSTRUMENTATION, LIQUID LEVEL DETECTION + INSTRUMENTATION, STARTUP RANGE + REACTOR, BOILING WATER

9-15054  
STFEL HJ  
RESEARCH OF CONTROL ROD DRIVE SYSTEMS FOR NUCLEAR REACTORS  
TECHNISCHE HOCHSCHULE, BRUNSWICK  
RMWF-FBK-66-13 +. 120 PAGES, FIGURES, TABLES, MAY 1966, IN GERMAN

REVIEW OF THE CONTROL-ROD DRIVES FOR THE MAJOR TYPES OF REACTORS. ADVANTAGES AND DISADVANTAGES OF THE VARIOUS TYPES ARE COMPARED. THE MAJOR TYPES CONSIDERED ARE - MAGNETIC JACK, RACK AND PINION, LEAD SCREW, CABLE HOIST, AND PNEUMATIC OR HYDRAULIC PISTON ROD DRIVES.

AVAILABILITY - DIVISION OF TECHNICAL INFORMATION, OAK RIDGE TENNESSEE

CONTROL ROD DRIVE + EQUIPMENT DESIGN + REVIEW

9-15055  
WOODWARD WJ  
A SCRAM BYPASS SYSTEM USING ZENER DIODES AS LOGIC ELEMENTS.  
SAVANNAH RIVER LABORATORY  
DP-926 +. 7 PAGES, 3 FIGURES, 1 REFERENCE, JUNE 1965

PROBLEM--PROVIDE POSITIVE CONTROL OVER THE CHOICE AND NUMBER OF NUCLEAR TRIPS THAT ARE ACTIVATED IN A TEST REACTOR. APPROACH--A CHASSIS WAS DEVELOPED THAT PROVIDES CONTROLLED BYPASSING OF SOME OF THE SEVEN SCRAM RELAYS WITH KEY-LOCKED SWITCHES. A ZENER DIODE LOGIC CIRCUIT IS USED TO GIVE A REACTOR SCRAM IF MORE THAN FOUR OF THE TRIP CIRCUITS ARE BYPASSED. PILOT LIGHTS INDICATE THE STATUS OF THE TRIP CIRCUITS. RESULT--SYSTEM HAS OPERATED SATISFACTORILY IN THE PROCESS DEVELOPMENT PILE-CONTROL SYSTEM FOR TWO YEARS. IT APPEARS TO BE MORE INTERLOCK-GRADE THAN PROTECTIVE-SYSTEM-GRADE EQUIPMENT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*INSTRUMENTATION, INTERLOCK + \*INSTRUMENTATION, PROTECTIVE + EQUIPMENT DESIGN + INSTRUMENTATION, NUCLEAR + REACTOR, TEST + SAVANNAH RIVER PLANT

9-15065  
LAWRENCE LA  
DEVELOPMENT OF REDUNDANCY TECHNIQUES FOR THE ACHIEVEMENT OF HIGHLY RELIABLE AUTOCONTROL FOR NUCLEAR REACTORS  
ATOMIC ENERGY ESTABLISHMENT, WINFRITH, DORSETSHIRE  
9 PAGES, 7 FIGURES, 1 TABLE, INSTITUTION OF MECHANICAL ENGINEERS PROCEEDING 1965-66, VOL. 180, PART I, NO. 10, PAGES 237-245

PROBLEM - DEVELOP A HIGHLY RELIABLE CONTROLLER THAT WILL IMPROVE PLANT AVAILABILITY BY AVOIDING SCRAMS CAUSED BY CONTROLLER FAILURE. APPROACH - THE OUTPUTS OF THREE NEUTRON FLUX CONTROLLERS ARE COMBINED IN A MAJORITY-VOTE TYPE OF DIFFERENTIAL GEAR BOX TO DRIVE A CONTROL POD. A MONITORING SYSTEM IS USED TO DETECT FAILURES IN AN INDIVIDUAL CONTROLLER CHANNEL. A SUBSYSTEM-REJECTION DEVICE TURNS OFF THE CHANNEL THAT HAS FAILED. THEORETICAL CONSIDERATION OF THE RELIABILITY IMPROVEMENT IS PRESENTED. RESULTS - A PROTOTYPE SYSTEM WAS BUILT AND IS BEING TESTED.

AVAILABILITY - UKAEA, CONTROL AND INSTRUMENTATION DIVISION, ATOMIC ENERGY ESTABLISHMENT, WINFRITH, DORSETSHIRE

\*INSTRUMENTATION, CONTROL + \*INSTRUMENTATION, REDUNDANT + \*RELIABILITY ANALYSIS + EQUIPMENT DESIGN + INSTRUMENTATION, NUCLEAR + REACTOR CONTROL + SERVOMECHANISM

9-15066  
RUGGLES R  
FAILURE-SURVIVAL AUTOMATIC FLIGHT CONTROL SYSTEMS FOR AIRCRAFT WITH PARTICULAR REFERENCE TO A HIGH RELIABILITY ELECTROHYDRAULIC ACTUATOR  
ATOMIC ENERGY ESTABLISHMENT, WINFRITH, DORSETSHIRE  
14 PAGES, 20 FIGURES, INSTITUTION OF MECHANICAL ENGINEERS PROCEEDINGS 1965-1966, VOL. 180, PART I, NO. 10, PAGES 246-259, (1966)

PROBLEM - DEVELOP A HIGHLY RELIABLE SYSTEM FOR AIRCRAFT FLIGHT CONTROL. APPROACH - SEVERAL TYPES OF REDUNDANT CONTROL SYSTEMS ARE EVALUATED. A CONTROLLER USING FOUR COMPLETE AND INDEPENDENT CHANNELS SEEMS TO OFFER THE HIGHEST RELIABILITY. A PROTOTYPE ACTUATOR WAS DEVELOPED THAT USES FOUR SEPARATELY CONTROLLED HYDRAULIC ACTUATORS COUPLED IN PARALLEL TO A COMMON OUTPUT MEMBER BY MEANS OF HYDRAULIC COUPLINGS AND BALL CLUTCHES. THE CLUTCHES DISENGAGE A FAILED ACTUATOR FROM THE COMMON OUTPUT. RESULT - PROTOTYPE SYSTEMS PERFORMED SATISFACTORILY. THE CONCEPTS AND THE ACTUATOR MIGHT BE USEFUL IN REACTOR CONTROL SYSTEMS.

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-15066 \*CONTINUED\*  
AVAILABILITY - UKAEA WIFRITH, DORSETSHIRE

\*INSTRUMENTATION, CONTROL + \*INSTRUMENTATION, REDUNDANT + \*RELIABILITY ANALYSIS + EQUIPMENT DESIGN +  
SERVOMECHANISM

9-15067 ALSO IN CATEGORY 6  
MCGAUGH JD  
THE EFFECT OF XENON SPATIAL VARIATIONS AND THE MODERATOR COEFFICIENT ON CORE STABILITY  
WESTINGHOUSE ELECTRIC CORP., PITTSBURGH, PENNSYLVANIA  
WCAP-2993 +. 52 PAGES, FIGURES, REFERENCES, AUGUST 1966

THE QUESTION OF SPATIAL INSTABILITIES IN LARGE PRESSURIZED-WATER REACTORS IS CONSIDERED. BOTH XENON SPATIAL OSCILLATIONS AND INSTABILITIES DUE TO A POSITIVE MODERATOR TEMPERATURE ARE CONSIDERED. IT IS CONCLUDED THAT THE POSITIVE MODERATOR COEFFICIENT DOES NOT GIVE RISE TO CORE INSTABILITIES. A CONTROL STRATEGY IS OUTLINED WHICH INCREASES CORE STABILITY AGAINST XENON-FLUX OSCILLATIONS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*MODERATOR COEFFICIENT + \*REACTOR, PRESSURIZED WATER + \*XENON OSCILLATION + REACTOR CONTROL +  
REACTOR STABILITY + SPACE DEPENDENT DYNAMICS

9-15123 ALSO IN CATEGORY 6  
WIBERG DM  
CONTROLLABILITY OF THE SPATIAL FLUX SHAPE  
UNIVERSITY OF CALIFORNIA, LOS ANGELES  
5 PAGES, NUCLEAR SCIENCE AND ENGINEERING, 27(3), PAGES 600-604, (MARCH 1967)

CONTROLLABILITY OF A FINITE NUMBER OF SPATIAL MODE SHAPES. EXTENSIONS TO THE CASE OF AN INFINITE NUMBER OF MODES. IT IS POSSIBLE TO CONTROL A GIVEN NUMBER OF UNSTABLE MODES WITH A SMALLER NUMBER OF INDEPENDENT CONTROLS. A PRACTICAL RESTRICTION IN CASE OF PHYSICAL SYSTEMS IN WHICH THE OBSERVABILITY OF THE MODE SHAPES IS HINDERED BY NOISE. FINALLY, APPLICATIONS ARE MADE TO AN EXAMPLE OF YASINSKY AND KAPLAN.

\*REACTOR CONTROL + \*SPACE DEPENDENT DYNAMICS

9-15148 ALSO IN CATEGORY 6  
KJAER-PEDERSEN N  
DYNAMIC ASPECTS OF BOILING-HEAVY-WATER NUCLEAR REACTORS. PART I.  
DANISH ATOMIC ENERGY COMMISSION, RISO  
RISO-128 +. 55 PAGES, REFERENCES, AUGUST 1966

GENERAL ASPECTS OF REACTOR DYNAMICS. TYPICAL FEATURES OF BOILING-WATER REACTORS. CORE DYNAMICS RELATED TO PLANT DYNAMICS. PHYSICAL EFFECTS DETERMINING DYNAMIC RESPONSE. LINEAR METHODS. TRANSFER FUNCTIONS. SEMILINEAR AND NONLINEAR METHODS DESCRIBING FUNCTIONS. DIGITAL COMPUTERS. STABILITY THEORY. LINEAR MODEL OF COOLING CHANNEL. PARTIAL TRANSFER FUNCTION. EXAMPLE.

AVAILABILITY - MICROCARD EDITION, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669

COMPUTER, DIGITAL + CONTROL SYSTEM + DESCRIBING FUNCTION + DOPPLER EFFECT + DYNAMICS, NONLINEAR +  
HEAT TRANSFER, BOILING + HEAT TRANSFER, CONVECTION + HYDRAULIC ANALYSIS + REACTOR DYNAMICS +  
REACTOR KINETICS + REACTOR STABILITY + REACTOR, BOILING WATER + REACTOR, HEAVY WATER +  
TEMPERATURE COEFFICIENT + THERMAL ANALYSIS + TRANSFER FUNCTION + VOID COEFFICIENT

9-15152 ALSO IN CATEGORY 6  
CLARKE WG  
SPARK A FORTRAN IV DIGITAL PROGRAM FOR SUB-POWER ANALYSIS OF REACTOR KINETICS TRANSIENTS.  
RETTIS ATOMIC POWER LAB., PITTSBURGH, PA.  
WAPD-TM-424 +. 74 PAGES, REFERENCES, APRIL 1966

FORTRAN IV DIGITAL COMPUTER PROGRAM FOR CONVENTIONAL POINT-REACTOR KINETICS EQUATIONS FOR TRANSIENTS WITH NO FEEDBACK REACTIVITY MECHANISMS. THE PROGRAM IS ESPECIALLY USEFUL IN DESCRIBING THE DYNAMIC BEHAVIOR OF THE FIRST (POINT KINETICS) AND SECOND MOMENTS (STOCHASTIC PROCESS) OF THE NEUTRON POPULATION DURING STARTUP. SIMULATION OF NUCLEAR INSTRUMENTATION, ANALYSIS OF INTERMEDIATE RANGE RATE PROTECTION, GRAVITY SCRAM, AND PERMISSIBLE TIME VARIATION OF BASIC KINETICS PARAMETERS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

COMPUTER, DIGITAL + INSTRUMENTATION, STARTUP RANGE + REACTOR KINETICS + SCRAM, REAL

9-15153 ALSO IN CATEGORY 6

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-15153 \*CONTINUED\*

HORST KM  
SOUTHWEST EXPERIMENTAL FAST REACTOR DEVELOPMENT PROGRAM. NINTH QUARTERLY REPORT. MAY-JUNE 1966  
GENERAL ELECTRIC CORP., SAN JOSE, ADVANCED PRODUCTS OPERATION.  
GEAP-5208 +. 98 PAGES, AUGUST 1966

BALANCED OSCILLATOR EXPERIMENT. EFFECTIVENESS OF DELAYED NEUTRONS. REACTIVITY TIME DEPENDENCE OF THE FRED AND THE REFLECTOR ROD. ESTIMATES OF ERRORS IN THE DOPPLER COEFFICIENT. INHERENT NEUTRON SOURCES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*SEFOR (SOUTHWEST EXP. FAST OXIDE REACTOR) + CONTROL ROD WORTH + DELAYED NEUTRON + DOPPLER EFFECT + OSCILLATOR, REACTIVITY + REACTOR STARTUP, LOW SOURCE

9-15176

HYMAN LG + SHEPPARD JF + SPINKA H  
AN IMPROVED CRYOGENIC LIQUID-LEVEL SENSOR  
ARGONNE NATIONAL LABORATORY, ARGONNE, ILLINOIS  
ANL-7243 +. 9 PAGES, 10 FIGURES, 4 REFERENCES, JULY, 1966

A NEW LIQUID-LEVEL INDICATOR, CONSISTING OF A DIODE HEATED BY A RESISTOR, IS DESCRIBED. THE EFFECTS OF DIODE CURRENT, RESISTOR POWER, HEATED PULSE DURATION, AND PRESSURE ARE DISCUSSED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*INSTRUMENTATION CALIBRATION + \*INSTRUMENTATION, LIQUID LEVEL DETECTION + HELIUM + HYDROGEN + NITROGEN + THERMAL EXPERIMENT + THERMAL PROPERTY

9-15216

ALSO IN CATEGORY 17

LARGE CLOSED-CYCLE WATER REACTOR RESEARCH AND DEVELOPMENT PROGRAM. PROGRESS REPORT, JANUARY 1 - MARCH 31, 1966  
WESTINGHOUSE ELECTRIC CORPORATION, ATOMIC POWER DIVISION, PITTSBURGH  
WCAP-3269-17 +. 42 PAGES, 11 FIGURES, 4 TABLES

LONG, SECTIONED, IONIZATION CHAMBERS WERE INSTALLED IN THE CVTR, APPROXIMATELY EQUAL IN LENGTH TO THE CORE HEIGHT. THE SECTIONS OF THE CHAMBERS WERE CONNECTED IN PARALLEL AND GIVE THE AVERAGE OR TOTAL AXIAL FLUX NEEDED TO REDUCE DETECTOR ERRORS DUE TO CONTROL-ROD MOVEMENTS. IN ADDITION, READOUTS CAN BE OBTAINED FOR THE BOTTOM AND TOP HALF OF THE CORE OR FROM INDIVIDUAL SECTIONS FOR INDICATIONS OF FLUX TILT. A WESTINGHOUSE FUEL PIN FAILED WHILE IN THE ETR. A LONGITUDINAL SPLIT ABOUT HALF AN INCH LONG HAD DEVELOPED IN THE 0.065-IN.-THICK ZIRCOLOY CLADDING. 8 OTHER SIMILAR PINS DID NOT FAIL. CENTER MELTING HAD OCCURRED AS A RESULT OF THE FUEL HAVING A (QUOTE) LINEAR POWER RATING 75% IN EXCESS OF THE DESIGN VALUE, ATTRIBUTED TO LARGE FLUX INHOMOGENEITIES. ALSO THE OVERPOWER CONDITION WAS AGGRAVATED BY A 22% HIGHER FLUX THAN WAS THOUGHT TO EXIST (UNQUOTE).

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*RESEARCH AND DEVELOPMENT PROGRAM + CENTERLINE MELTING + CHAMBER, ION + CVTR (CAROLINAS VIRGINIA TUBE REACTOR) + ETR (ENGINEERING TEST REACTOR) + FAILURE, CLADDING + FLUX DISTRIBUTION + FLUX TILT + INSTRUMENTATION, POWER RANGE + NEUTRON + REACTOR, AEC OWNED + REACTOR, HEAVY WATER + REACTOR, PRESSURE TUBE + REACTOR, TEST

9-15240

DUBRIDGE PA + NEISSEL JP + BOYD LR + GREEN WK + PIELAGE HW  
REACTOR CONTROL SYSTEMS BASED ON COUNTING AND CAMPBELLING TECHNIQUES. FULL-RANGE INSTRUMENTATION DEVELOPMENT PROGRAM. FINAL PROGRESS REPORT  
GENERAL ELECTRIC COMPANY, ATOMIC POWER EQUIPMENT DEPARTMENT, SAN JOSE, CALIFORNIA  
GEAP-4900 +. 196 PAGES, 70 FIGURES, 15 TABLES, 7 REFERENCES, JULY, 1965

FINAL PROGRESS REPORT AND SUMMARY OF THE DEVELOPMENT OF A FULL RANGE (TEN DECADE) NUCLEAR INSTRUMENTATION SYSTEM THAT USES EITHER IN-CORE OR OUT-OF-CORE ION CHAMBERS. COUNTING TECHNIQUES ARE USED FOR SOURCE AND INTERMEDIATE RANGE, AND CAMPBELL (OR MEAN-SQUARE VOLTAGE) TECHNIQUES ARE USED FOR INTERMEDIATE AND POWER-RANGE NEUTRON FLUXES. THE DETAILED REPORT GIVES A THOROUGH MATHEMATICAL TREATMENT AND EXPERIMENTAL RESULTS OF SYSTEM-PERFORMANCE TESTS. THE PROBLEMS WITH THE IN-CORE CHAMBERS AND IN-CORE TRANSMISSION CABLES ARE DISCUSSED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*INSTRUMENTATION, CAMPBELLING + \*INSTRUMENTATION, IN CORE + \*INSTRUMENTATION, LOGARITHMIC + \*INSTRUMENTATION, NUCLEAR + \*INSTRUMENTATION, PULSE + \*INSTRUMENTATION, WIDE RANGE + CHAMBER, FISSION + CHAMBER, ION + DESIGN STUDY + INSTRUMENTATION, LINEAR + INSTRUMENTATION, PERIOD + TEST, SYSTEM OPERABILITY

9-15241



CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-15241 \*CONTINUED\*

MARTIN J  
DEVELOPMENT OF A POWER-PERIOD CALCULATION UNIT FOR NUCLEAR REACTOR CONTROL  
CENTRE D ETUDES NUCLEAIRES, SACLAY, FRANCE  
CEA-R-3026 +. 125 PAGES, FIGURES, REFERENCES, OCTOBER 1966, IN FRENCH

PROBLEM - MEASURE AND READ OUT THE PERIOD AND POWER LEVEL IN DIGITAL FORM. APPROACH - THE PULSES FROM A FISSION CHAMBER ARE ANALYZED BY DIGITAL COMPUTING DEVICE TO CALCULATE A NUMERICAL READOUT OF REACTOR PERIOD AND POWER LEVEL FROM STARTUP RANGE TO FULL POWER. THE CALCULATION USES A LINEAR APPROXIMATION OF A LOGARITHM TO THE BASE TWO. RESULTS - ACCURACY OF PERIOD READOUT IS ABOUT 14%, AND ACCURACY OF POWER READOUT IS ABOUT 30%.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

\*COMPUTER, DIGITAL + \*INSTRUMENTATION, NUCLEAR + \*INSTRUMENTATION, PERIOD + \*INSTRUMENTATION, WIDE RANGE + EQUIPMENT DESIGN

9-15242

DAVIES NF + KURZEKA WJ + WARREN M  
IRRADIATION TEST OF SNAP 8 ACTUATORS, POSITION SENSORS, AND LIMIT SWITCHES  
ATOMICS INTERNATIONAL, CANOGA PARK, CALIFORNIA  
NAA-SR-12042 +. 48 PAGES, 4 TABLES, 25 FIGURES, NOVEMBER 15, 1966

PURPOSE - TEST THE SNAP-8 CONTROL-DRUM-DRIVE ACTUATORS, CONTROL-DRUM POSITION SENSORS, AND SHORTING-BAR LIMIT SWITCHES IN A COMBINED RADIATION, VACUUM, AND HIGH-TEMPERATURE ENVIRONMENT. RESULTS - DATA ON COIL RESISTANCES, ELECTRICAL-INSULATION RESISTANCES, AND TEMPERATURES WERE MEASURED DURING THE EXPERIMENT. THE TEST ENVIRONMENT HAD NO APPARENT EFFECT ON THE PERFORMANCE OF THE COMPONENTS DURING THE EXPERIMENT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*CONTROL ROD DRIVE + \*INSTRUMENTATION, POSITION + \*INSTRUMENTATION, SWITCH + \*TEST, CONTROL ROD DRIVE + ENVIRONMENTAL CONDITION + TEST, PROOF

9-15266

CHAPIN WE + DRENNAN JE + HAMMAN DJ  
THE EFFECT OF NUCLEAR RADIATION ON TRANSDUCERS  
BATTELLE MEMORIAL INSTITUTE, RADIATION EFFECTS INFORMATION CENTER AND TRANSDUCER INFORMATION CENTER, COLUMBUS, OHIO  
REIC-43 + TIC-3 +. 126 PAGES, 30 FIGURES, 9 TABLES, 106 REFERENCES, OCTOBER 31, 1966

EMPHASIS IS PLACED ON TRANSDUCER TYPES FREQUENTLY EMPLOYED IN MEASURING PRESSURE, TEMPERATURE, AND ACCELERATION FORCES. THE REPORT SUMMARIZES MANY LABORATORY EXPERIMENTS WHICH HAVE GENERATED INFORMATION PERTINENT TO DETERMINING RADIATION DAMAGE THRESHOLDS FOR EACH TYPE OF TRANSDUCER IN ACCORDANCE WITH THE OPERATING PRINCIPLES USED IN THEIR DESIGN AND MANUFACTURE. THE TECHNICAL CHARACTERISTICS OF EACH TYPE OF TRANSDUCER ARE DISCUSSED TO PROVIDE SOME INSIGHT INTO THE PROBLEMS OF RADIATION HARDENING.

AVAILABILITY - DEFENSE DOCUMENTATION CENTER, CAMERON STATION, ALEXANDRIA, VIRGINIA

\*INSTRUMENTATION, IN CORE + \*INSTRUMENTATION, PROCESS + \*RELIABILITY, COMPONENT + RADIATION DAMAGE

9-15268

JOWETT CF  
RELIABILITY OF ELECTRONIC COMPONENTS  
165 PAGES, FIGURES, TABLES, LONDON ILIFFE BOOKS LTD., 1966

THE OBJECT IN COMPILING THIS DATA AND INFORMATION WAS TO SORT OUT AND PRESENT THE RELEVANT FACTS DESCRIBING THE PROPERTIES AND STABILITIES OF VARIOUS CLASSES OF COMPONENTS AND MATERIALS USED IN ELECTRONICS, WITH THE OBJECT OF INDICATING THEIR PROPER APPLICATION. THE FOLLOWING SUBJECTS ARE COVERED - ENVIRONMENT, SOLDERING, RESISTORS, CAPACITORS, TUBES, TRANSISTORS, PRINTED CIRCUITS, RELAYS, AND OTHERS. THE BOOK IS SLANTED TOWARD THE CONSTRUCTION OF RELIABLE INSTRUMENTS RATHER THAN THE ANALYSIS OF RELIABILITY.

\*RELIABILITY, COMPONENT + \*RELIABILITY, SYSTEM + INSTRUMENTATION, GENERAL

9-15330

ALSO IN CATEGORY 13

HENSLEY G  
SAFETY CONSIDERATIONS IN THE INSTRUMENTATION OF A NUCLEAR FUEL RE-PROCESSING PLANT  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, AUTHORITY HEALTH AND SAFETY BRANCH  
AHSB (S) R94 +. 8 PAGES, 3 FIGURES, 3 REFERENCES, 1965

PRESENTS A GENERAL REVIEW OF THE DESIGN POLICIES FOR INSTRUMENTATION IN A FUEL REPROCESSING PLANT. THIS INCLUDES MONITORS FOR A NUCLEAR INCIDENT, GENERAL-ENVIRONMENT MONITORING, AND CONSIDERATIONS CONCERNING THE ELECTRICAL AND INSTRUMENT-AIR SUPPLIES TO THE PROCESS INSTRUMENTS.

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-15330 \*CONTINUED\*  
AVAILABILITY - UNITED KINGDOM ATOMIC ENERGY AUTHORITY, 11 CHARLES II STREET, LONDON, S. W. 1

\*DESIGN CRITERIA + \*INSTRUMENTATION, PROCESS + \*MONITOR, RADIATION, GENERAL PRACTICE +  
INSTRUMENTATION, GENERAL + MONITOR, RADIATION, ENVIRONMENTAL

9-15377 ALSO IN CATEGORY 18.  
QUESTION II A (1) - COMMON CONTROL ROOM  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, 1 FIGURE, DECEMBER 28, 1966, DOCKET NO. 50-261, H. B. ROBINSON UNIT NUMBER 2, FIRST SUPPLEMENT TO  
PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, PAGE A (1)-1-AND-A (1)-2

II. QUESTIONS ON NOVEL PLANT FEATURES. A. CONTROL. (1) PLEASE DESCRIBE THE CONTROL-ROOM  
LAYOUT AND LOCATE THE CONTROL BOARDS FOR EACH PLANT. DISCUSS YOUR REASONS FOR NOT LOCATING  
EACH BOARD IN A SEPARATE ROOM. IN THIS DISCUSSION, CONSIDER POSSIBLE INTERACTION OF ALARMS  
AND OPERATOR FUNCTION UNDER NORMAL AND ABNORMAL CONDITIONS FOR THESE TWO DIFFERENT-TYPE  
PLANTS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + BUILDING +  
CONTROL PANEL/ROOM + CONTROL, GENERAL + REACTOR, PRESSURIZED WATER + ROBINSON 2

9-15378 ALSO IN CATEGORIES 14 AND 18  
QUESTION II A (2) - WASTE DISPOSAL CONTROL BOARD  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, N. C.  
1 PAGE, DECEMBER 28, 1966, DOCKET NO. 50-261, H.B. ROBINSON UNIT NUMBER 2, FIRST SUPPLEMENT TO PRELIMINARY  
FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, PAGE A(2)-1

DESCRIBE THE LOCATION AND FUNCTION OF THE WASTE-DISPOSAL CONTROL BOARD. WHAT INDICATIONS  
RELATING TO THE RELEASE OF CONTAMINATED WASTES ARE ON THIS BOARD AND ON THE MAIN CONTROL  
BOARD.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTROL PANEL/ROOM +  
CONTROL, GENERAL + REACTOR, PRESSURIZED WATER + ROBINSON 2 + WASTE DISPOSAL, GENERAL

9-15380 ALSO IN CATEGORY 18  
QUESTION II B (1) - AUTOMATIC-LOAD-DISPATCH DETAILS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
4 PAGES, 1 FIGURE, DECEMBER, 1966, DOCKET NO. 50-261, H.B. ROBINSON UNIT NUMBER 2, THIRD SUPPLEMENT TO  
PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, PAGES B (1)(2)-1 TO B(1)(2)-4

B. AUTOMATIC LOAD DISPATCH. (1) PROVIDE A DIAGRAM OF ALL COMPONENTS FROM THE COMPUTER TO THE  
TURBINE THROTTLE VALVE. WHAT INTERLOCKS OR OPERATOR ACTIONS DEFEAT THE SYSTEM. WHAT IS THE  
FREQUENCY OF DEMAND SIGNAL AND CHANGE REQUESTED PER DEMAND. DISCUSS FAILURE MODES AND  
REDUNDANCY, INCLUDING THAT OF RATE-LIMITING EQUIPMENT. ARE POWER DEMANDS CONTINUOUSLY  
RECORDED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTROL, COMPUTER +  
REACTOR POWER + REACTOR, PRESSURIZED WATER + ROBINSON 2

9-15381 ALSO IN CATEGORY 18  
QUESTION II B(2) - COMPONENT FUNCTION IN AUTOMATIC-LOAD-DISPATCH SYSTEM  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
4 PAGES, 1 FIGURE, DECEMBER, 1966, DOCKET NO. 50-261, H. B. ROBINSON UNIT NUMBER 2, THIRD SUPPLEMENT TO  
PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, PAGES B (1)(2)-1-TO B(1)(2)-4

DESCRIBE THE FUNCTION OF EACH COMPONENT IN THE ALD SYSTEM PROPOSED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTROL, COMPUTER +  
REACTOR, PRESSURIZED WATER + ROBINSON 2

9-15382 ALSO IN CATEGORY 18  
QUESTION II B (3) - OPERATOR INTERACTION WITH AUTOMATIC-LOAD-DISPATCH SYSTEM  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, DECEMBER 1966, DOCKET NO. 50-261, H.B. ROBINSON UNIT NUMBER 2, THIRD SUPPLEMENT TO PRELIMINARY  
FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, PAGES B(3)-1 TO B(3)-2

INDICATE HOW THE CONTROL OPERATOR BECOMES AWARE THAT THE ALD SYSTEM HAS SIGNALLED FOR A CHANGE

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-15382 \*CONTINUED\*

IN REACTOR POWER. DOES THE CONTROL OPERATOR KNOW THE NEW DEMAND SETTING. INDICATE THE MINIMUM AMOUNT AND RATE OF POWER CHANGE WHICH WOULD BE INDICATED TO THE OPERATOR.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTROL, COMPUTER + REACTOR, PRESSURIZED WATER + ROBINSON 2

9-15384 ALSO IN CATEGORY 18  
QUESTION II B (5) - OPERATOR DISTINGUISHING AID FROM ROD-WITHDRAWAL INCIDENT  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, DECEMBER 1966, DOCKET NO. 50-261, H.B. ROBINSON UNIT NUMBER 2, THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, PAGE B (5)-1

HOW WOULD THE OPERATOR DISTINGUISH BETWEEN ROD WITHDRAWAL DEMANDED BY THIS SYSTEM VERSUS AN UNCONTROLLED ROD WITHDRAWAL.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, CONTROL ROD WITHDRAWAL + CONTROL, COMPUTER + REACTOR, PRESSURIZED WATER + ROBINSON 2

9-15387 ALSO IN CATEGORY 18  
QUESTION II C (3) - PROTECTIVE ACTION ON LOAD REJECTION IF CONTROL VALVES FAIL  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, DECEMBER 1966, DOCKET NO. 50-261, H. B. ROBINSON UNIT NUMBER 2, FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, PAGE C (3)-1

DISCUSS THE AUTOMATIC ACTION THAT WILL TAKE PLACE TO PROTECT THE CORE, TURBINE, AND STEAM SYSTEM IF THE CONTROL VALVES FAIL TO OPERATE AS ASSUMED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOAD REJECTION + FAILURE, COMPONENT + PLANT PROTECTIVE SYSTEM + REACTOR, PRESSURIZED WATER + ROBINSON 2

9-15388 ALSO IN CATEGORY 18  
QUESTION II C (4) - CHANGES TO CONTROL SYSTEM TO USE NET LOAD REJECTION  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, DECEMBER 1966, DOCKET NO. 50-261, H.B. ROBINSON UNIT NUMBER 2, FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, PAGE C (4)-1

DISCUSS THE CHANGES MADE IN THE CONTROL-ROD DRIVE SPEED AND DELTA-T PROGRAMMER TO ACCOMMODATE THIS FEATURE. HOW ARE THE CRITERIA ON ROD-WORTH LIMITS AFFECTED DURING LOAD REJECTION.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOAD REJECTION + CONTROLLER + REACTOR POWER + REACTOR, PRESSURIZED WATER + ROBINSON 2

9-15389 ALSO IN CATEGORY 18  
QUESTION II C (5) - SEPARABILITY OF SAFETY AND CONTROL IN NET-LOAD REJECTION CIRCUITS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, DECEMBER 1966, DOCKET NO. 50-261, H.B. ROBINSON UNIT NUMBER 2, FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, PAGES C (5)-1 AND C(5)-2

DESCRIBE AND DIAGRAM THE CONTROL CIRCUITS WHICH SIGNAL FOR OPERATION OF THE ADDITIONAL VALVES IN THE STEAM SYSTEM. INDICATE WHAT INFORMATION FROM SENSORS IN THE PRIMARY AND SECONDARY SYSTEM WILL BE USED FOR CONTROLLING THESE VALVES. WILL THERE BE SEPARABILITY OF CONTROL AND SAFETY FUNCTION.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOAD REJECTION + CONTROL SYSTEM + INDEPENDENCE + REACTOR SAFETY SYSTEM + REACTOR, PRESSURIZED WATER + ROBINSON 2

9-15390 ALSO IN CATEGORY 18  
QUESTION II C (6) - BORON CHANGES REQUIRED  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, DECEMBER 1966, DOCKET NO. 50-261, H.B. ROBINSON UNIT NUMBER 2, FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, PAGE C (6)-1

IS ANY RAPID CHANGE IN BORON CONCENTRATION REQUIRED.

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-15390 \*CONTINUED\*  
AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOAD REJECTION + CHEMICAL SHIM + REACTOR, PRESSURIZED WATER + ROBINSON 2

9-15399 ALSO IN CATEGORY 18  
QUESTION III F - CONTROL-ROOM OCCUPATION DURING ELECTRICAL-SYSTEM FIRE  
CAROLINA LIGHT AND POWER COMPANY, RALEIGH, NORTH CAROLINA  
3 PAGES, PAGES F-1 TO F-3 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

WE UNDERSTAND THAT THE CONTROL ROOM IS LOCATED ABOVE THE DIESEL GENERATOR AND SWITCH-GEAR ROOMS. IF A FIRE WERE TO OCCUR IN EITHER LOCATION, DISCUSS THE PROTECTION AVAILABLE TO ALLOW OPERATING PERSONNEL TO REMAIN IN THE CONTROL ROOM AND ALSO TO PROTECT VITAL CONTROL SYSTEMS. WHERE IS THE WIRING WHICH LEADS TO THE CONTROL SYSTEMS LOCATED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTROL PANEL/ROOM + FIRE + REACTOR, PRESSURIZED WATER + ROBINSON 2

9-15403 ALSO IN CATEGORIES 12 AND 18  
QUESTION IV - REDUNDANCY IN ENGINEERED SAFEGUARDS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGE A-1 AND A-2 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

IV. INSTRUMENTATION AND CONTROL. A. DISCUSS THE REDUNDANCY CRITERIA FOR THE INSTRUMENTATION, RELAYS, WIRING, ETC., TO BE PROVIDED FOR THE CIRCUITRY OF THE REMOTELY OPERABLE COMPONENTS IN THE SAFEGUARDS SYSTEM (INCLUDING VALVES). DISCUSS WHETHER A SINGLE SHORT WILL DISABLE THE CONTROL CIRCUITS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ENGINEERED SAFETY SYSTEM + REACTOR, PRESSURIZED WATER + REDUNDANCE + ROBINSON 2 + SINGLE-FAILURE CRITERION

9-15404 ALSO IN CATEGORIES 12 AND 18  
QUESTION IV B - POST-MCA INSTRUMENTATION  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGE B-1 AND B-2 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

STATE YOUR CRITERIA FOR PROVIDING INSTRUMENTS TO INDICATE THE REACTIVITY STATUS OF THE REACTOR, THE PRESSURE, TEMPERATURE, AND WATER LEVELS, AND ACTIVITY INSIDE THE CONTAINMENT AFTER THE MCA. DISCUSS THE DESIGN LIFETIME CRITERIA OF THE CRITICAL COMPONENTS ASSOCIATED WITH THIS EQUIPMENT WHEN OPERATED IN THE POST-MCA CONTAINMENT ENVIRONMENT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + DESIGN CRITERIA + INSTRUMENTATION, GENERAL + INSTRUMENTATION, SHUTDOWN REACTIVITY + REACTOR, PRESSURIZED WATER + ROBINSON 2 + SYSTEM OPERABILITY IN ACCIDENT CONDITIONS

9-15405 ALSO IN CATEGORIES 11 AND 18  
QUESTION IV C - CONTAINMENT PRESSURE MONITORING SYSTEM  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE C-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

DESCRIBE THE LOCATION, TYPE OF DETECTOR, AND CIRCUITRY ASSOCIATED WITH THE CONTAINMENT-PRESSURE MONITORING SYSTEM. WILL A CONTINUOUS RECORDING OF CONTAINMENT PRESSURE BE MADE. IF THIS IS CONSIDERED UNNECESSARY, DISCUSS YOUR REASONING.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT INSTRUMENTATION + PRESSURE, INTERNAL + REACTOR, PRESSURIZED WATER + ROBINSON 2

9-15406 ALSO IN CATEGORIES 12 AND 18  
QUESTION IV D - CONTROL-ROOM OPERABILITY IN CASE OF FIRE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGE D-1 AND D-2 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

CATEGORY 0  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-15406 \*CONTINUED\*

DISCUSS PROVISIONS INCORPORATED TO PREVENT CONTROL-ROOM FIRE. ANALYZE THE CONSEQUENCES OF THE CONTROL ROOM BECOMING UNINHABITABLE OR INEFFECTIVE. THIS SHOULD ALSO INCLUDE CONSIDERATION OF THE AVAILABILITY OF ENGINEERED SAFEGUARDS SYSTEMS POWER AND CONTROLS. WILL ALTERNATE CONTROL AREAS FOR OPERATION OF EMERGENCY EQUIPMENT BE FURNISHED.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTROL PANEL/ROOM + ENGINEERED SAFETY SYSTEM + FIRE + REACTOR, PRESSURIZED WATER + ROBINSON 2 + SYSTEM OPERABILITY IN ACCIDENT CONDITIONS

9-15407 ALSO IN CATEGORIES 12 AND 18  
QUESTION IV E - ACCIDENT-CAUSED FAULTS DISABLING SAFEGUARDS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE E-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

WHAT ASSURANCES ARE THERE THAT FAULTS CREATED WITHIN WIRING AS A CONSEQUENCE OF BEING LOCATED IN THE POST-ACCIDENT ENVIRONMENT SHOULD NOT BE REFLECTED INTO ESSENTIAL SAFEGUARDS CIRCUITS EXTERNAL TO CONTAINMENT.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ENGINEERED SAFETY SYSTEM + FAILURE, INSTRUMENT + REACTOR, PRESSURIZED WATER + ROBINSON 2 + SYSTEM OPERABILITY IN ACCIDENT CONDITIONS

9-15408 ALSO IN CATEGORIES 12 AND 18  
QUESTION IV F - INDEPENDENCE OF SAFETY AND CONTROL SYSTEMS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE F-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

PLEASE LIST THOSE INSTRUMENT CHANNELS WHICH PROVIDE BOTH SAFETY (SCRAM) AND CONTROL FUNCTIONS. CAN A SINGLE FAILURE WHICH INITIATES A CONTROL MALFUNCTION SIMULTANEOUSLY REMOVE THE REDUNDANCY OF THOSE SAFETY CHANNELS DESIGNED TO TERMINATE SUCH A MALFUNCTION. IF SO PLEASE JUSTIFY YOUR DESIGN.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTROL SYSTEM + INDEPENDENCE + PLANT PROTECTIVE SYSTEM + REACTOR, PRESSURIZED WATER + ROBINSON 2

9-15409 ALSO IN CATEGORIES 11 AND 18  
QUESTION IV G - CONTAINMENT ISOLATION VALVES  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGE G-1 AND G-2 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

SEVERAL LINES PENETRATE CONTAINMENT WHICH WOULD BE OPEN TO CONTAINMENT SUBSEQUENT TO MCA. HAS CONSIDERATION BEEN GIVEN TO PROVIDING DOUBLE, INDEPENDENT, AUTOMATIC ISOLATION VALVES ON SUCH LINES THAT ALSO TERMINATE IN OPEN (UNCONTAINED) SYSTEMS EXTERNAL TO CONTAINMENT. JUSTIFY YOUR ANSWER. WILL THE CONTAINMENT ISOLATION VALVES AUTOMATICALLY REOPEN (AFTER AN ACCIDENT) WHEN THE INITIATING PARAMETER (RADIATION, HIGH PRESSURE, ETC.) RETURNS TO A LOW VALUE AT THE SENSOR, OR IS A POSITIVE RESETTING ACTION REQUIRED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT PENETRATION, CLOSURE OF + CONTROL SYSTEM + REACTOR, PRESSURIZED WATER + ROBINSON 2

9-15410 ALSO IN CATEGORY 18  
QUESTION IV H - ROD-POSITION INDICATION  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGE H-1 AND H-2 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

ROD POSITION INDICATION AS MEASURED BY THE ELECTRICAL COIL STACKS (LVDTs) WILL BE READ OUT ON A RECORDER ON A (GROUP) SELECTED BASIS. SINCE ALL ROD POSITIONS WILL NOT BE INDICATED SIMULTANEOUSLY, DISCUSS WHY A STUCK ROD WOULD NOT GO UNNOTICED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTROL ROD + FAILURE, COMPONENT + INSTRUMENTATION, POSITION + INSTRUMENTATION, RECORDER + REACTOR, PRESSURIZED WATER + ROBINSON 2

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-15411 ALSO IN CATEGORY 18  
QUESTION IV I - SEPARATE RECORDERS FOR FLUX CHANNELS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE I-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B.  
ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

A TWO-PEN RECORDER IS PROVIDED TO RECORD AND INDICATE TWO LOG OR LINEAR FLUX CHANNELS IN TERMS OF COMPLETE COVERAGE (WITH VARIABLE GAIN) OR IN STEPS OF TWO DECADES. IN OUR OPINION, THIS CAN BE CONFUSING. DISCUSS THE CONSIDERATION THAT HAS BEEN GIVEN TO PROVIDING A SEPARATE RECORDER FOR THE LINEAR FLUX CHANNELS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + INSTRUMENTATION, POWER RANGE + INSTRUMENTATION, RECORDER + REACTOR, PRESSURIZED WATER + ROBINSON 2

9-15412 ALSO IN CATEGORIES 10 AND 18  
QUESTION IV J - RELIABILITY OF DIESEL CONTROL SYSTEM  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE J-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B.  
ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

IN THE EVENT OF A SIMULTANEOUS LOSS-OF-COOLANT LOSS OF OUTSIDE POWER, A COMPLICATED AUTOMATIC SEQUENCING ACTION TAKES PLACE TO START THE DIESEL GENERATORS AND (UPON THE FAILURE OF A PARTICULAR SAFEGUARD) CONNECT THE ALTERNATE SAFEGUARD. DISCUSS THE RELIABILITY, REDUNDANCY, FAIL-SAFETY, AND SINGLE-FAILURE ASPECTS. IS THERE MANUAL OVERRIDE WHEN THE CONTROL SYSTEM TAKES INAPPROPRIATE ACTION (NOT MERELY A PASSIVE FAILURE). WHAT TYPE OF PREOPERATIONAL AND PERIODIC TESTS ARE PLANNED.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + ACCIDENT, LOSS OF COOLANT + ACCIDENT, LOSS OF POWER + CONTROL SYSTEM + EMERGENCY POWER, ELECTRIC + ENGINEERED SAFETY SYSTEM + GENERATOR, DIESEL + REACTOR, PRESSURIZED WATER + REDUNDANCE + ROBINSON 2 + SAFE FAILURE CRITERION + SAFETY ANALYSIS REPORT, PRELIMINARY + SINGLE-FAILURE CRITERION

9-15413 ALSO IN CATEGORIES 10 AND 18  
QUESTION IV K - ROD-POSITION INDICATION  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE K-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B.  
ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

DO THE LINEAR VARIABLE DIFFERENTIAL TRANSFORMERS USED FOR ROD-POSITION INDICATION REQUIRE FORCED AIR COOLING. IF SO, WHAT EFFECT CAN LOSS OF COOLING HAVE ON POSITION INDICATION ACCURACY.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + AUXILIARY COOLING + CONTROL ROD + ELECTRIC POWER, AUXILIARY + INSTRUMENTATION, POSITION + REACTOR, PRESSURIZED WATER + ROBINSON 2

9-15414 ALSO IN CATEGORY 18  
QUESTION IV L - INSTRUMENTATION RESPONSE TO HIGH AMBIENT TEMPERATURE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE L-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B.  
ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

HOW SOON AFTER A TOTAL LOSS OF CONTROL ROOM VENTILATION (INCLUDING AIR CONDITIONING AND FORCED AIR COOLING AT THE INSTRUMENT CABINETS) WOULD THE REACTOR INSTRUMENTATION SIGNALS BE DEGRADED BELOW ACCEPTABLE ACCURACIES.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTROL PANEL/ROOM + HIGH TEMPERATURE + INSTRUMENTATION, GENERAL + REACTOR, PRESSURIZED WATER + ROBINSON 2 + VENTILATION SYSTEM

9-15415 ALSO IN CATEGORY 18  
QUESTION IV M - EFFECT OF HIGH AMBIENT TEMPERATURE ON ION CHAMBERS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE M-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B.  
ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

PLEASE ANALYZE THE METHOD OF DETECTION AND EFFECTS OF LOSS OF FORCED AIR COOLING AT THE ION.

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-15415 \*CONTINUED\*  
CHAMBERS.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + AUXILIARY COOLING + FAILURE, COMPONENT + HIGH TEMPERATURE + INSTRUMENTATION, POWER RANGE + REACTOR, PRESSURIZED WATER + ROBINSON 2

9-15416 ALSO IN CATEGORY 18  
QUESTION IV N - INSTRUMENTATION OPERABILITY IN LOSS-OF-COOLANT ACCIDENTS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE N-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

DESCRIBE THE OPERATION OF THE MAIN COOLANT PUMPS AFTER PRIMARY-SYSTEM PIPE BREAKS OF DIFFERENT SIZES. DESCRIBE THE CIRCUITS WHICH SIGNAL FOR SUCH OPERATION. WHAT ARE THE CONSEQUENCES TO THE MAIN COOLANT PUMPS AND MOTORS IF THE INSTRUMENTATION FAILS TO OPERATE AS DESIGNED.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT + INSTRUMENTATION, PROCESS + MAIN COOLING SYSTEM + PUMP + REACTOR, PRESSURIZED WATER + ROBINSON 2 + SYSTEM OPERABILITY IN ACCIDENT CONDITIONS

9-15419 ALSO IN CATEGORIES 5 AND 18  
QUESTION V R - SINGLE CONTROL-ROD EJECTION AFFECTING OTHER RODS BY MISSILE ACTION  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
4 PAGES, 1 FIGURE, PAGE B-1 TO B-4 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

PROVIDE A DRAWING OF THE CONTROL-ROD HOUSING ARRANGEMENT. DISCUSS IN DETAIL THE POSSIBILITY THAT A ROD EJECTION DUE TO CONTROL-ROD-DRIVE THIMBLE FAILURE COULD LEAD TO FAILURE OF ADJACENT THIMBLES. CONSIDER THE EFFECT OF THE THIMBLE HITTING THE MISSILE SHIELD ABOVE THE ROD HOUSINGS AND BEING DEFLECTED, CAUSING FAILURE OF ADJACENT THIMBLES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, CONTROL ROD EJECTION + MISSILE GENERATION AND PROTECTION + REACTOR, PRESSURIZED WATER + ROBINSON 2

9-15442 ALSO IN CATEGORIES 12 AND 18  
QUESTION VI B (4) - INSTRUMENTS TO VERIFY SAFETY INJECTION  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE B (4)-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

DESCRIBE WHAT METHODS AND INSTRUMENTS ARE AVAILABLE UNDER POSTACCIDENT CONDITIONS TO VERIFY THAT SAFETY INJECTION OR CORE DOUSING IS OPERATING TO COVER THE CORE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CORE REFLOODING SYSTEM + INSTRUMENTATION, PROCESS + REACTOR, PRESSURIZED WATER + ROBINSON 2

9-15472 ALSO IN CATEGORIES 5 AND 18  
QUESTION VII A (2) - EFFECT OF LOSS OF COOLANT ON SCRAM CAPABILITY  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE A(2)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, (H. B. ROBINSON UNIT NUMBER 2,) DECEMBER 1966, DOCKET 50-261

IF SCRAM IS NEEDED TO LIMIT THE CONSEQUENCES OF THE ACCIDENT, INCLUDE THE FOLLOWING INFORMATION FOR THE SPECTRUM OF BREAK SIZES - SCRAM SIGNAL, TIME TO SCRAM INITIATION, EFFECT OF BLOWDOWN FORCES ON SCRAM TIME.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT + CONTROL ROD, SHIM SAFETY + REACTOR, PRESSURIZED WATER + ROBINSON 2 + SCRAM, REAL + SYSTEM OPERABILITY IN ACCIDENT CONDITIONS

9-15477 ALSO IN CATEGORIES 5 AND 18  
QUESTION VII B (2) - DETAILS OF ROD-EJECTION ACCIDENT  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-15477 \*CONTINUED\*  
3 PAGES, 1 FIGURE, PAGE B (2)-1-TO-B (2)-3 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, (H. B. ROBINSON UNIT NUMBER 2,) DECEMBER 1966, DOCKET 50-261

WCAP-2940 ROD-EJECTION RESULTS WERE SENSITIVE TO THE SCRAM-DELAY TIME. PLEASE DISCUSS THE EXPERIMENTAL JUSTIFICATION FOR THE RANGE OF VALUES USED AND INDICATE THEIR APPLICABILITY TO ROBINSON. IN ADDITION, DISCUSS THE EFFECT THAT ACCIDENT CONDITIONS WITHIN THE CORE WILL HAVE ON THE PERFORMANCE OF THE SCRAM FUNCTION. CONSIDER SUCH ITEMS AS - THE EFFECT OF THERMAL-HYDRAULIC CONDITIONS ON THE EXPULSION OF WATER FROM THE RCC GUIDE TUBES AS RODS COME IN, TRANSIENT-INDUCED PRESSURE EFFECTS, ROD BOWING, ETC. ALSO, QUANTITATIVELY DISCUSS THE EFFECTS OF THE MODERATOR COEFFICIENT ON THE SENSITIVITY OF CONSEQUENCES OF THE ACCIDENT TO TRIP DELAY.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, CONTROL ROD EJECTION + CONTROL ROD SCRAM MECHANISM + MODERATOR COEFFICIENT + REACTOR, PRESSURIZED WATER + RESPONSE TIME + ROBINSON 2 + SYSTEM OPERABILITY IN ACCIDENT CONDITIONS

9-15526 ALSO IN CATEGORIES 11 AND 18  
QUESTION VIII E (1) - CONTAINMENT ACCEPTANCE TESTS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
3 PAGES, PAGE E (1)(A)-1 TO E (1)(C)-1 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

(A) DESCRIBE THE SEQUENCE OF CONTAINMENT PROOF-TESTING. PROVIDE THE CRITERIA FOR STRUCTURAL ACCEPTANCE AND THE GENERAL STRAIN AND DEFLECTION TOLERANCES THAT WILL BE PERMITTED. (B) PROVIDE THE INSTRUMENTATION PROGRAM TO VERIFY THE DESIGN, INCLUDING PROTECTIVE MEASURES TO BE TAKEN TO ENSURE PERFORMANCE OVER THE INTERVAL BETWEEN PLACEMENT AND USE. INCLUDE THE EXTENT TO WHICH THE LOCATION OF THESE INSTRUMENTS WILL PROVIDE VERIFICATION OF THE DESIGN. (C) DESCRIBE THE PROVISIONS TO MONITOR CONCRETE CREEP AND RELAXATION OF TENDON STRESS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT INSTRUMENTATION + CONTAINMENT, HIGH PRESSURE + CREEP BEHAVIOR + REACTOR, PRESSURIZED WATER + ROBINSON 2 + TEST, PROOF

9-15901 ALSO IN CATEGORIES 3 AND 12  
VALIUNAS A + POPLAWSKI B  
NUCLEAR SAFETY. ANNOTATED BIBLIOGRAPHY. SURVEYS OF SOVIET SCIENTIFIC AND TECHNICAL LITERATURE LIBRARY OF CONGRESS  
AD-623557 + N-66-11853 + ATD-B-65-76 +. 60 PAGES, OCTOBER 22, 1965

THIS ANNOTATED BIBLIOGRAPHY DEALS WITH CERTAIN ASPECTS OF NUCLEAR SAFETY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*BIBLIOGRAPHY + \*DOSIMETRY, GENERAL + \*FUEL HANDLING + \*INSTRUMENTATION, GENERAL + \*RADIATION PROTECTION, CHEMICAL + RADIATION PROTECTION, ORGANIZATION

9-15920  
SECRIST PW + FIORELLI AJ  
COMPONENT EXAMINATION PROGRAM ON PWR CORE 1 CONTROL ROD DRIVE MECHANISMS  
WESTINGHOUSE ELEC. CORP., BETTIS ATOMIC POWER LABORATORY  
WAPD-311 +. 93 PAGES, 34 FIGURES, 25 TABLES, JANUARY 1967

CONTROL-ROD DRIVES OF PWR CORE 1 WERE REMOVED AND INSPECTED AFTER 27,780 HR OF REACTOR OPERATION OF THE 32 CONTROL RODS. TWO STATORS, SEVERAL CONNECTORS, SEVERAL THERMOCOUPLES, AND NINE WATER JACKETS HAD FAILED DURING OPERATION. INSPECTION FOUND CONSIDERABLE CORROSION AND INCREASE IN FRICTION IN A LARGE PORTION OF THE DRIVES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*CONTROL ROD DRIVE + CONTROL ROD SCRAM MECHANISM + CORROSION + CRUD + DECONTAMINATION + FAILURE, EQUIPMENT + OPERATION + REACTOR, PRESSURIZED WATER + TEST, CONTROL ROD DRIVE

9-15921  
SPRACKLEN HP  
NUCLEAR RADIATION DETECTOR WITH CONTROL GRID  
U.S. PATENT 3,230,372 +. 5 PAGES, 5 FIGURES, 2 TABLES, JANUARY 18, 1966

A MULTI-ELECTRODE IONIZATION CHAMBER IS FORMED BY USING AT LEAST ONE GRID BETWEEN TWO COLLECTOR ELECTRODES. THE CHAMBER RESEMBLES A TRIODE ELECTION TUBE. THE CHAMBER IS CONNECTED TO AN EXTERNAL AMPLIFIER CIRCUIT WHICH ALTERS THE VOLTAGE DISTRIBUTION BETWEEN TWO OF THE ELECTRODES IN THE CHAMBER IN A MANNER TO CAUSE THE CURRENT COLLECTED BY THE SIGNAL



CATEGORY 9  
NUCLEAR INSTRUMENTATION, CONTROL, AND SAFETY SYSTEMS

9-15921 \*CONTINUED\*

ELECTRODE TO INCREASE AT A VALUE MUCH LOWER THAN THE ACTUAL RADIATION INCREASE. THUS, THE OUTPUT INDICATION CAN BE FROM THE MILLIREM TO THE KILOREM RANGE.

AVAILABILITY - U.S. PATENT OFFICE, DEPT. OF COMMERCE, WASHINGTON, D.C. \$0.25 COPY

\*CHAMBER, ION + \*INSTRUMENTATION, RADIATION MONITORING + CHAMBER, GAMMA + CHAMBER, GENERAL + INSTRUMENTATION, NUCLEAR + SURVEY, RADIATION, GENERAL

9-15922

MULLEN FW  
ELEMENTARY RELIABILITY TECHNOLOGY  
SANDIA CORP., ALBUQUERQUE, NEW MEXICO  
SC-R-64-198 +. 133 PAGES, FIGURES, JULY 1964

TUTORIAL DISCUSSION OF PROBABILITY AND RELIABILITY CONCEPTS. TOPICS INCLUDE MATHEMATICAL EXPRESSIONS OF PROBABILITY AND DEVELOPMENT OF SUCH EQUATIONS. SYSTEM RELIABILITY, SYSTEM EFFECTIVENESS, SYSTEM REQUIREMENTS, PROBABILITY DENSITY FUNCTIONS, AND SIMILAR CONCEPTS ARE TREATED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*MATHEMATICAL STUDY + \*RELIABILITY ANALYSIS + ACCIDENT, PROBABILITY OF + MATHEMATICAL TREATMENT + RELIABILITY, COMPONENT + RELIABILITY, SYSTEM

9-15923

LEFDS JV  
AUTOMATIC CORRECTION OF NUCLEAR INSTRUMENT TO COMPENSATE FOR NEUTRON ATTENUATION  
U.S. PATENT 3,238,370 +. 5 PAGES, 4 FIGURES, MARCH 1, 1966

COMPENSATION OF THE EFFECT OF WATER TEMPERATURE ON NEUTRON ATTENUATION IN WATER-REACTOR FLUX MEASUREMENT IS DESCRIBED. WATER TEMPERATURE CONTROLS GAIN OF THE AMPLIFIER TO REDUCE SIGNAL AT HIGH TEMPERATURE AND INCREASE SIGNAL AT LOW TEMPERATURE. HALL EFFECT PRODUCES MULTIPLICATION OF TWO SIGNALS. SEVERELY ABBREVIATED DESCRIPTION OF OPERATION OF CONTROL AMPLIFIER.

AVAILABILITY - U.S. PATENT OFFICE, DEPT. OF COMMERCE, WASHINGTON, D. C., \$0.25 COPY

\*CHAMBER, ION + \*INSTRUMENTATION, POWER RANGE + INSTRUMENTATION, NUCLEAR + REACTOR, PRESSURIZED WATER

9-15924

RULLOCK JB  
MERITS AND LIMITATIONS OF THE CONTROL-ROD-WORTH MINIMIZER  
OAK RIDGE NATIONAL LABORATORY  
2 PAGES, 5 REFERENCES, NUCLEAR SAFETY, 8(3), PAGES 236-237 (SPRING 1967)

THE CONTROL-ROD-WORTH MINIMIZER PROPOSED FOR BOILING-WATER POWER REACTORS INVOLVES AN ON-LINE DIGITAL COMPUTER TO PREVENT MALADJUSTMENT OF THE REACTOR CONTROL RODS. THIS CONCEPT REQUIRES A DETERMINATION OF THE POSITION OF THE POISON SECTION OF A CONTROL ROD THAT MAY HAVE ACCIDENTALLY SEPARATED FROM ITS DRIVE. THE COMPUTER IS THEN ONLY A BACKUP TO MANUAL ROD CONTROL.

\*ADMINISTRATIVE CONTROLS AND PRACTICES + \*COMPUTER, DIGITAL + \*CONTROL ROD PROGRAM + ACCIDENT, CONTROL ROD EJECTION + ACCIDENT, CONTROL ROD WITHDRAWAL + ACCIDENT, REACTIVITY + CONTROL ROD WORTH + FAILURE, EQUIPMENT + FAILURE, OPERATOR ERROR + OPERATION + REACTOR CONTROL + REACTOR, BOILING WATER + SAFETY PRINCIPLES AND PHILOSOPHY

CATEGORY 10  
ELECTRICAL POWER SYSTEMS

10-14332 ALSO IN CATEGORY 9  
SHAFFSTALL EL  
A VOLTAGE BREAKDOWN DETECTOR  
SANDIA LABORATORY, ALBUQUERQUE  
SC-TM-64-2154 +. 7 PAGES, FEBRUARY 1965

THIS REPORT DESCRIBES THE APPLICATION OF A TUNNEL DIODE VOLTAGE LEVEL DETECTOR TO MONITOR COMPONENTS FOR VOLTAGE BREAKDOWN DURING PULSE TESTING.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$1.00 COPY

\*ELECTRIC POWER, GENERAL + \*FAILURE, EQUIPMENT + \*INSTRUMENTATION, PROCESS + INSTRUMENTATION, PROTECTIVE

10-15412 ALSO IN CATEGORIES 9 AND 18  
QUESTION IV J - RELIABILITY OF DIESEL CONTROL SYSTEM  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE J-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

IN THE EVENT OF A SIMULTANEOUS LOSS-OF-COOLANT LOSS OF OUTSIDE POWER, A COMPLICATED AUTOMATIC SEQUENCING ACTION TAKES PLACE TO START THE DIESEL GENERATORS AND (UPON THE FAILURE OF A PARTICULAR SAFEGUARD) CONNECT THE ALTERNATE SAFEGUARD. DISCUSS THE RELIABILITY, REDUNDANCY, FAIL-SAFETY, AND SINGLE-FAILURE ASPECTS. IS THERE MANUAL OVERRIDE WHEN THE CONTROL SYSTEM TAKES INAPPROPRIATE ACTION (NOT MERELY A PASSIVE FAILURE). WHAT TYPE OF PREOPERATIONAL AND PERIODIC TESTS ARE PLANNED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + ACCIDENT, LOSS OF COOLANT + ACCIDENT, LOSS OF POWER + CONTROL SYSTEM + EMERGENCY POWER, ELECTRIC + ENGINEERED SAFETY SYSTEM + GENERATOR, DIESEL + REACTOR, PRESSURIZED WATER + REDUNDANCE + ROBINSON 2 + SAFE FAILURE CRITERION + SAFETY ANALYSIS REPORT, PRELIMINARY + SINGLE-FAILURE CRITERION

10-15413 ALSO IN CATEGORIES 9 AND 18  
QUESTION IV K - ROD-POSITION INDICATION  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE K-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

DO THE LINEAR VARIABLE DIFFERENTIAL TRANSFORMERS USED FOR ROD-POSITION INDICATION REQUIRE FORCED AIR COOLING. IF SO, WHAT EFFECT CAN LOSS OF COOLING HAVE ON POSITION INDICATION ACCURACY.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + AUXILIARY COOLING + CONTROL ROD + ELECTRIC POWER, AUXILIARY + INSTRUMENTATION, POSITION + REACTOR, PRESSURIZED WATER + ROBINSON 2

10-15461 ALSO IN CATEGORY 18  
QUESTION VI H - DETAILS OF EMERGENCY POWER SOURCE (DIESELS)  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
6 PAGES, PAGE H(1)-1 TO H(5)-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, (H. B. ROBINSON UNIT NUMBER 2,) DECEMBER 1966, DOCKET 50-261

FIVE QUESTIONS - (1) FUEL STORAGE AND RELIABILITY OF FULL SUPPLY. (2) TIME REQUIRED TO START AND BRING UP TO LOAD. (3) POWER RATING OF EACH UNIT. (4) REDUNDANCE OF DIESEL STARTING POWER. (5) FIRE PROTECTION.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + EMERGENCY POWER, ELECTRIC + GENERATOR, DIESEL + REACTOR, PRESSURIZED WATER + REDUNDANCE + RESPONSE TIME + ROBINSON 2

10-15460 ALSO IN CATEGORY 18  
QUESTION VII A (1) (1) - ALLOWABLE DIESEL DELAY TIME  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGES A(1)(1)-1 TO A(1)(1)-2 OF THIRD SUPPLEMENT TO PRELIMINARY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

WHAT IS THE MAXIMUM TIME INTERVAL THAT THE DIESELS COULD BE INOPERABLE AT VARIOUS TIMES AFTER THE LARGEST BREAK AND STILL PREVENT CORE MELTING.

CATEGORY 10  
ELECTRICAL POWER SYSTEMS

10-15469 \*CONTINUED\*

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT + EMERGENCY COOLING CONSIDERATIONS + GENERATOR, DIESEL + REACTOR, PRESSURIZED WATER + RESPONSE TIME + ROBINSON 2

10-15925

VERBER F + SCHMIDT HL

EXPERIMENTAL BREEDER REACTOR HAS HIGH-RELIABILITY POWER SUPPLY

ARGONNE NATIONAL LABORATORY

3 PAGES, 2 FIGURES, POWER ENGINEERING 70(12), PAGES 65-67 (DECEMBER 1966)

ELECTRIC POWER FOR EBR-II IS SUPPLIED BY A SINGLE 138-KV LINE SPLIT INTO TWO LINES AT THE NATIONAL REACTOR TESTING STATION. EBR-II DRIVES A 25.6-MW GENERATOR. ON-SITE EMERGENCY POWER IS SUPPLIED BY A 400-KW, A 200-KW, AND A 100-KW DIESEL-DRIVEN GENERATOR. A 240-V BATTERY BACKS UP THE CONTINUOUS POWER SUPPLY. EMERGENCY SODIUM PUMPING POWER IS SUPPLIED BY A 1.4-V BATTERY TO OPERATE A DC ELECTROMAGNETIC PUMP.

\*ELECTRIC POWER, NORMAL + \*EMERGENCY POWER, ELECTRIC + EBR 1 AND 2 (EXPERIMENTAL BREEDER REACTORS) + ELECTRIC POWER, AUXILIARY + ELECTRIC POWER, VITAL

10-15926

ARGONNE DISTRIBUTION SYSTEM IS DESIGNED FOR FLEXIBILITY

ARGONNE NATIONAL LABORATORY

3 PAGES, 4 FIGURES, POWER ENGINEERING 70(3), PAGES 62-64 (MARCH 1966)

DUPLICATE INCOMING LINES, TRANSFORMERS, AND FEEDERS SUPPLY ARGONNE NATIONAL LAB. MAJOR LOADS. STEAM-TURBINE OR DIESEL-DRIVEN GENERATORS FOR ON-SITE GENERATION ARE PROVIDED FOR IMPORTANT LOADS. GROUND FAULTS AND CABLE FAILURES HAVE OCCURRED. LIGHTLY LOADED CABLES HAVE FAILED MORE FREQUENTLY THAN FULLY LOADED CABLES. THERE HAS BEEN NO TOTAL INTERRUPTION OF POWER.

\*ELECTRIC POWER, NORMAL + ANL (ARGONNE NATIONAL LABORATORY) + ELECTRIC POWER, AUXILIARY + EMERGENCY POWER, ELECTRIC

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-0790J ALSO IN CATEGORY 17

ROSS CP  
THE HEAVY WATER COMPONENTS TEST REACTOR SYSTEMS, FUEL FAILURE DETECTION, AND STANDBY CONDITION  
SAVANNAH RIVER LABORATORY  
DP-1049 +. 1 PAGE- TRANS. AMERICAN NUCLEAR SOCIETY 8 (SUPPL.)- 50 (1965)- CONF-650710, ANS CONFERENCE ON  
REACTOR OPERATING EXPERIENCE, GRAND TETON NATIONAL PARK, WYOMING, JULY 28-29, 1965, CFSTI \$3.00 CY, \$0.65  
MN

PERFORMANCE OF HWCTR SAFETY SYSTEM. THIS PAPER DESCRIBES THE OPERATING EXPERIENCE WITH THE  
AUTOMATIC AND MANUALLY OPERATED SAFETY SYSTEMS OF THE HWCTR. CONTAINMENT. THE INITIAL  
LEAKAGE RATE WAS 0.6% OF THE BUILDING GAS CONTENT PER DAY AT 24 PSIG AND RESULTED IN  
ACCEPTABLE CALCULATED OFF-SITE DOSES. AFTER ALL BUILDING PENETRATIONS WERE MADE, HOWEVER,  
THE LEAKAGE RATE WAS 2 TO 3% PER DAY. TO REDUCE THE POSSIBLE OFF-SITE DOSES, HALOGEN  
ADSORBERS WERE INSTALLED TO REMOVE IODINE. A STEEL LINER IN THE CONCRETE PART OF THE  
BUILDING WOULD HAVE MINIMIZED THE LEAKAGE PROBLEM.

\*CONCRETE + \*HWCTR (HEAVY WATER COMPONENT TEST REACTOR) + \*OPERATING EXPERIENCE + \*TEST, LEAK RATE +  
ADSORPTION + CONTAINMENT, HIGH PRESSURE + HALOGEN + REACTOR, HEAVY WATER + REACTOR, PRESSURIZED WATER

11-10528 ALSO IN CATEGORY 18  
PROPOSED CHANGE 75 - CONTAINMENT LEAKAGE RATE RETEST SPECIFICATIONS  
YANKEE ATOMIC ELECTRIC COMPANY  
5 PAGES, OCTOBER 20, 1966, DOCKET NO. 50-29

PRESENT TECH. SPECS. HAVE NO PROVISION FOR CONTAINMENT INTEGRITY OR TESTING, SO THIS CHANGE  
BRINGS YANKEE TS TO PRESENT DRC STANDARDS. FIVE PAGES OF SPECIFICATIONS DESCRIBE THE KINDS  
OF TESTS (INTEGRATED LEAK RATE, INDIVIDUAL PENETRATION, ISOLATION VALVE TESTS, FREQUENCY, AND  
REPORTING. ALSO SET CRITERIA FOR CONTINUOUS-LEAKAGE MONITORING SYSTEM.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*CONTAINMENT, GENERAL + \*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + CONTAINMENT INTEGRITY +  
CONTAINMENT, CONTINUOUS MONITORING SYSTEM + REACTOR, PRESSURIZED WATER + TEST, LEAK RATE + YANKEE

11-12476 ALSO IN CATEGORIES 7 AND 2

COTTRELL WB  
ORNL NUCLEAR SAFETY RESEARCH AND DEVELOPMENT PROGRAM BIMONTHLY REPORT FOR MAY-JUNE 1966  
OAK RIDGE NATIONAL LABORATORY  
ORNL-CF-66-7-48 +. 50 PAGES, 2 TABLES, JULY 22, 1966

THE ACCOMPLISHMENTS OF THE RESEARCH AND DEVELOPMENT PROGRAM BEING UNDERTAKEN AT ORNL AS PART  
OF THE U.S. ATOMIC ENERGY COMMISSIONS REACTOR SAFETY PROGRAM DURING THE MONTHS OF MAY AND  
JUNE ARE SUMMARIZED. INCLUDED IN THIS REPORT ARE WORK ON VARIOUS CHEMICAL REACTIONS, AS WELL  
AS THE RELEASE, CHARACTERIZATION, AND TRANSPORT OF FISSION PRODUCTS IN CONTAINMENT SYSTEMS  
UNDER VARIOUS ACCIDENT CONDITIONS AND ON PROBLEMS ASSOCIATED WITH THE REMOVAL OF THESE  
FISSION PRODUCTS FROM GAS STREAMS. WHILE THESE STUDIES PROVIDE INFORMATION ON THE  
CONSEQUENCE OF POTENTIAL REACTOR ACCIDENTS AND THUS HAVE DIRECT RELEVANCE TO THE EVALUATION  
OF REACTOR SITES, A SEPARATE STUDY IS BEING UNDERTAKEN ON THE SAFETY AND FEASIBILITY OF THE  
OFF-SHORE SITING OF POWER REACTORS. ALTHOUGH MOST OF THE WORK HAS BEEN AND CONTINUES TO BE  
IN GENERAL SUPPORT OF WATER POWER REACTOR TECHNOLOGY, INCLUDING SOME IN DIRECT SUPPORT OF THE  
LOFT AND CSE PROGRAMS, SEVERAL PROJECTS WERE INITIATED THE FIRST OF THE CALENDAR YEAR IN  
SUPPORT OF THE HIGH-TEMPERATURE GAS-COOLED REACTOR (HTGR) PROGRAM. THESE PROJECTS INCLUDE  
BOTH IN-PILE AND OUT-PILE STUDIES OF REACTION RATES AND FISSION PRODUCT RELEASE AND TRANSPORT  
PHENOMENA RELEVANT TO POTENTIAL HTGR ACCIDENT SITUATIONS. TWO OTHER RECENT PROJECTS INCLUDE  
A SERIES OF DISCUSSION PAPERS ON VARIOUS ASPECTS OF WATER REACTOR TECHNOLOGY AND THE STUDIES  
ON PRESSURE VESSEL TECHNOLOGY. EXPERIMENTAL WORK RELATIVE TO PRESSURE VESSELS INCLUDES  
INVESTIGATIONS OF THE ATTACHMENT OF NOZZLES TO SHELLS AND THE VARIABILITY OF IMPACT DATA ON  
LOW-ALLOY STEELS. THE RECENT ACTIVITIES OF THE NSIC AND THE NUCLEAR SAFETY JOURNAL IN BEHALF  
OF THE NUCLEAR COMMUNITY ARE ALSO DISCUSSED.

AVAILABILITY - WM. B. COTTRELL, OAK RIDGE NATIONAL LAB., OAK RIDGE, TENN.

\*BRITTLE FRACTURE + \*CONTAINMENT, PRESSURE VESSEL + \*FISSION PRODUCT, IODINE + \*IN PILE EXPERIMENT +  
\*LOFT (LOSS OF FLUID TEST) + \*NSPP (NUCLEAR SAFETY PILOT PLANT) + \*OUT OF PILE LOOPS AND EXPERIMENTS +  
\*TREAT (TRANSIENT TEST REACTOR FACILITY) + AEROSOL + AEROSOL PRODUCTION + AEROSOL, RADIOACTIVE +  
FILTER SYSTEM + FISSION PRODUCT TRANSPORT + FUEL HANDLING + GRAPHITE + OXIDATION +  
TRANSPORTATION AND HANDLING

11-13070 ALSO IN CATEGORY 12

STEARNS EH  
ROOF SLAB DOORS FOR HOT CELLS.  
LAWRENCE RADIATION LABORATORY  
UCRL-14733 + CONF-661001-2 +. 7 PAGES, 4 FIGURES, FOR PRESENTATION AT THE 14TH CONFERENCE ON REMOTE  
SYSTEMS TECHNOLOGY, PITTSBURGH, MARCH 3, 1966

ROLLING DOORS FOR MATERIAL TRANSFERS THROUGH THE ROOF OF A HOT CELL ARE DESCRIBED. A  
TWO-PIECE DOOR DESIGN WAS CHOSEN TO GIVE MAXIMUM OPENING WITH A MINIMUM OF WEIGHT PER DOOR,

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-13070 \*CONTINUED\*

AND TO ALLOW FOR CENTERING THE OPENING IN THE CELL-ROOF SLAB. EACH CELL ROOF CONTAINS THREE OR MORE ROOF SLABS OF THE OVERLAPPED TYPE. EACH OF THE DOORS WAS INSTALLED IN A KEY SLAB. THE DOORS ARE EQUIVALENT TO THE 15-INCH MAGNETITE-CONCRETE ROOF SLABS IN THEIR SHIELDING CAPABILITIES. THE ENTIRE ASSEMBLY CAN BE LIFTED AS A UNIT WITH A FOUR-LEG SLING. THIS FOUR-POINT SUSPENSION IS NECESSARY TO KEEP THE ASSEMBLY STRAIGHT WHILE IT IS BEING LIFTED BECAUSE THE LIFTING POINTS ARE BELOW THE CENTER OF GRAVITY.

\*CONTAINMENT EQUIPMENT HATCH + \*HOT CELL + \*REMOTE MANIPULATING AND VIEWING

11-13543

VELJKOVIC SR + SCEPANOVIC A + STEFANOVIC V  
RADIATION DAMAGE IN STEEL WITH MEDIUM AND HIGH CARBON CONTENT  
BORIS KIDRIC INSTITUTE OF NUCLEAR SCIENCES, YUGOSLAVIA  
AEC-TR-6646/2 +. 82 PAGES, FIGURES, TABLES, REFERENCES, TRANSLATION OF BILTEN INST. NUKLEARNE NAUKE BORIS KIDRIC 17(2) PAGES 77-88 (1966)

THE RADIATION DAMAGE IN IRON AND SOME STEELS WITH A MEDIUM OR HIGH CARBON CONTENT WAS STUDIED. THE FAST-NEUTRON INTEGRAL FLUX WAS  $2.5 \times 10^{19}$  (TO THE 19TH) N/CM(SQUARED), AND THE TEMPERATURE OF THE IRRADIATION SITE WAS 70 PLUS-OR-MINUS 5 C. THE DAMAGE WAS MEASURED BY CHANGES OF THE ELECTRICAL RESISTIVITY OF SAMPLES. THE RESULTS INDICATE THAT A CARBON CONTENT IN THE CONCENTRATION RANGE 0.01%, 0.62-0.93% C HAD NO GREAT EFFECT ON THE INCREASE OF RESISTIVITY CAUSED BY THE IRRADIATION. HOWEVER, THERE WERE BIG VARIATIONS WITH STRUCTURE. SAMPLES ANNEALED AT 630 C BEFORE IRRADIATION SHOWED THE BIGGEST INCREASE OF RESISTIVITY AFTER THE IRRADIATION. IT WAS TWICE AS BIG AS THE INCREASE IN SAMPLES IN THE AS-DELIVERED STATE - BAINITE QUENCHED. ANNEALED AND COLD-WORKED SAMPLES ALSO DIFFERED IN THE EXTENT OF THE RADIATION DAMAGE. THE INTERACTION OF ALREADY-PRESENT AND INDUCED DEFECTS APPEARED TO BE CONSIDERABLE. INTERACTION OF THE CARBON WITH DEFECTS ALSO ASSUMED PROBABLY OCCURRED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY

\*PROPERTY, PHYSICAL + \*RADIATION EFFECT + \*STEEL + ALLOY + CARBON + RADIATION DAMAGE

11-13677

ALSO IN CATEGORY 18  
PRESTRESSED CONCRETE REACTOR VESSEL  
PUBLIC SERVICE COMPANY OF COLORADO, DENVER, COLORADO  
51 PAGES, 18 FIGURES, 4 TABLES, 32 REFERENCES, FORT ST. VRAIN NUCLEAR GENERATING STATION PRELIMINARY SAFETY ANALYSIS REPORT, VOL. I, SECTION V, SEPTEMBER 1966, DOCKET NO. 50-267

DISCUSSES PERFORMANCE OBJECTIVES OF THE PCRV AND DESIGN BASIS, PROPERTIES OF THE CONCRETE, EVALUATION OF THE LINER, PENETRATIONS AND CLOSURES, THERMAL BARRIER AND LINER COOLING, MISSILE PROTECTION, TESTS AND INSPECTION, AND REACTION TO LOAD CONDITIONS. THE DESIGN LIFE IS 30 YEARS. PEAK WORKING PRESSURE IS 704 PSIG. MAXIMUM TEMPERATURE OF INTERNAL SURFACE WILL BE 750 DEGREES F. CORROSION OF THE REINFORCEMENT IS NOT EXPECTED SINCE ALL IS COVERED BY THE CONCRETE, WHICH IS HELD TOGETHER BY A HYDRATED CONCRETE WHICH WILL PASSIVATE THE STEEL. EXPERIMENTS HAVE SHOWN THE RADIATION DAMAGE SHOULD NOT BE DISCERNIBLE FROM THE INTEGRATED NEUTRON DOSE OF 2 TIMES 10 TO THE 18 (GREATER THAN 1 MEV) AND 10 TO THE 10 RADS GAMMA.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*CONCRETE, PRESTRESSED + \*CONTAINMENT, PRESSURE VESSEL + CORROSION + FT. ST. VRAIN + RADIATION DAMAGE + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED + REACTOR, POWER

11-13748

ALSO IN CATEGORY 7  
PASHOS TJ  
STAINLESS STEEL FAILURE INVESTIGATION PROGRAM. SECOND QUARTERLY REPORT, JULY-SEPTEMBER 1965  
GENERAL ELECTRIC COMPANY, SAN JOSE, CALIFORNIA  
GFAP-4968 + EURAEC-1541 +. 57 PAGES, OCTOBER 1965

A RESEARCH AND DEVELOPMENT PROGRAM WAS STARTED ON FEBRUARY 15, 1965, UNDER PROJECT AGREEMENT 45 OF CONTRACT AT(04-3)-189 TO INVESTIGATE THE CAUSE OF FAILURE OF STAINLESS STEEL CLADDING ON BOILING WATER REACTOR FUEL. THE PROGRAM CONSISTS OF THE INVESTIGATION OF THE EFFECTS OF MATERIAL COMPOSITION, COOLANT ENVIRONMENT, IRRADIATION DAMAGE, AND OPERATING STRESSES ON CLAD CRACKING.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.75 MICRONEGATIVE

\*CORROSION + \*FAILURE, CLADDING + \*STEEL, STAINLESS + EMBRITTLEMENT + HYDROGEN + RADIATION DAMAGE + STRESS

11-13749

MOWBRAY DF  
FATIGUE CRACK PROPAGATION IN LOW CARBON STEELS  
KNOLLS ATOMIC POWER LABORATORY, SCHENECTADY, NEW YORK  
TID-23138 +. 9 PAGES, JUNE 1, 1966

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-13749 \*CONTINUED\*

KNOLLS ATOMIC POWER LABORATORY HAS IN PROGRESS AN INVESTIGATION TO OBTAIN FATIGUE CRACK GROWTH RATE DATA FOR UNIRRADIATED A302-B AND SA336 STEELS. THE PROGRAM WAS DESIGNED TO OBTAIN CRACK GROWTH RATE DATA FROM SPECIMEN GEOMETRIES FOR WHICH STRESS-INTENSITY FACTOR ANALYSES ARE AVAILABLE. PLATE SPECIMENS CONTAINING TWO TYPES OF FLAW GEOMETRY ARE BEING TESTED. ONE TYPE HAS CRACKS EMANATING FROM A CENTRALLY LOCATED THROUGH-THE-THICKNESS HOLE. THE SECOND TYPE HAS A SURFACE CRACK WITH A SEMI-ELLIPTICAL FRONT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151 \$1.00 COPY, \$0.50 MICRONEGATIVE

\*FAILURE, FATIGUE + \*STEEL + CONTAINMENT STRUCTURE + STRESS + STRESS ANALYSIS

11-13750

VAN ELST HC

A NEW DETERMINATION OF THE EMBRITTLEMENT IN STEEL USING SMALL SPECIMENS (APPROXIMATELY 0.2 CC) IN PARTICULAR WITH RESPECT TO IRRADIATION. PROGRESS REPORT JANUARY 1, 1966-MARCH 31, 1966

NIJVERHEIDSORGANISATIE (TNO), THE HAUGE, NETHERLANDS

EURAC-1617 + EUR-2830 +. 25 PAGES, APRIL 14, 1966

THE DETERMINATION OF THE EMBRITTLEMENT OF 4 PRESSURE VESSEL STEELS, I.E., T-1(U.S.S.), SODDOTENAX (COCKERILL-UGREE), HSB 55 C (PHOENIX RHEINROHR) AND 1.2 MD 07 (CREUSOT) AFTER INCREASING NEUTRON RADIATION DOSES AT 80 C WAS CONTINUED. SERIES OF SMALL SAMPLES IRRADIATED WITH FLUXES BETWEEN CA.  $1 \times 10$  TO THE 18TH AND  $13 \times 10$  TO THE 18 N/CM<sup>2</sup> WERE INVESTIGATED IN THE STRESS WAVE ATTENUATION TEST (S.A.T.). IN THE DUCTILE REGION, A DECREASE OF ENERGY ABSORPTION AFTER IRRADIATION WAS ALWAYS CLEARLY NOTICEABLE. IT WAS, HOWEVER, SOMETIMES MORE DIFFICULT TO RECOGNIZE THE SHIFT IN THE BRITTLE-DUCTILE REGION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$1.00 COPY, \$0.50 MICRONEGATIVE

\*BRITTLE FRACTURE + \*RADIATION EFFECT + \*STEEL + EMBRITTLEMENT + IMPACT PROPERTY + TENSILE PROPERTY + TEST, PRESSURE VESSEL

11-13752

CHIU RH + TAKAHASHI SK

STATIC AND DYNAMIC BEHAVIOR OF ANTISYMMETRICALLY LOADED ARCHES

U.S. NAVAL CIVIL ENGINEERING LABORATORY, PORT HUENEME, CALIFORNIA

NCFL-TR-474 +. 152 PAGES, SEPTEMBER 1966

STATIC AND DYNAMIC LOADING TESTS WERE MADE ON ANTISYMMETRICALLY LOADED TWO-HINGED CIRCULAR STEEL ARCHES. PLASTIC AS WELL AS ELASTIC BEHAVIOR WAS OBSERVED. COMPARISONS WERE MADE BETWEEN THEORY AND EXPERIMENT. DYNAMIC LOADS WERE APPLIED WITH THE NCEL BLAST SIMULATOR. THE MODEL ARCHES WERE COLD-ROLLED. HOWEVER, FAILURE OCCURRED WITH LITTLE WARNING, INDICATING THAT COLD-ROLLED MATERIAL IS NOT SUITABLE FOR ARCH CONSTRUCTION.

AVAILABILITY - DEFENSE DOCUMENTATION CENTER, CAMERON STATION, ALEXANDRIA, VIRGINIA

\*COMPARISON, THEORY AND EXPERIENCE + \*PLASTICITY + BUCKLING + COMPUTER PROGRAM + DEFORMATION + DESIGN CRITERIA + MOCKUP + PRESSURE, EXTERNAL + TEST, DESTRUCTIVE

11-13836

ALSO IN CATEGORIES 7 AND 12

DURANT WS + MILHAM RC + MUHLBAIER DR + PETERS AH  
ACTIVITY CONFINEMENT SYSTEM OF THE SAVANNAH RIVER PLANT REACTORS  
SAVANNAH RIVER LABORATORY, AIKEN, SOUTH CAROLINA

DP-1071 +. 150 PAGES, 31 FIGURES, 16 TABLES, 71 REFERENCES, AUGUST 1966

A FILTRATION-ADSORPTION SYSTEM IS INSTALLED IN THE VENTILATION EXHAUST OF EACH REACTOR BUILDING AT THE SAVANNAH RIVER PLANT FOR CONFINEMENT OF AIRBORNE PARTICULATE AND IODINE VAPOR ACTIVITY THAT MIGHT BE RELEASED IN THE HIGHLY UNLIKELY EVENT OF A REACTOR ACCIDENT. AIR FROM THE PROCESS AREAS OF EACH BUILDING IS PASSED CONTINUOUSLY THROUGH MOISTURE SEPARATORS, THEN THROUGH PARTICULATE FILTERS, AND FINALLY THROUGH IODINE ADSORBER BEDS OF ACTIVATED CARBON. THE SYSTEM HAS THE EXPERIMENTALLY DEMONSTRATED ABILITY TO CONFINE MORE THAN 99 PERCENT OF AIRBORNE PARTICULATE ACTIVITY AND MORE THAN 99.9 PERCENT OF AIRBORNE HALOGEN ACTIVITY, EVEN WITH ALLOWANCE FOR METHYL IODIDE, UNDER EMERGENCY CONDITIONS THAT COULD EXIST FOLLOWING A REACTOR ACCIDENT. A MECHANISM FOR METHYL IODIDE FORMATION WAS DEVELOPED FROM PUBLISHED DATA FOR GENERAL APPLICATION TO REACTOR CONFINEMENT. UNDER SAVANNAH RIVER PLANT CONDITIONS, LESS THAN 0.0001 PERCENT OF THE TOTAL IODINE INVENTORY IN THE REACTOR WOULD BE CONVERTED TO METHYL IODIDE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$4.00 COPY, \$1.00 MICROFICHE

\*ADSORPTION + \*CONTAINMENT, PRESSURE VENTING + \*FILTER SYSTEM + \*FILTER, EFFICIENCY OF + \*PARTICULATE + \*SAVANNAH RIVER PRODUCTION REACTORS + CARBON + FILTER + IODINE + OPERATING EXPERIENCE + ORGANIC IODIDE + VENTILATION SYSTEM

11-13837

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-13837 \*CONTINUED\*  
SUMMARY STATUS OF THE PRESTRESSED CONCRETE REACTOR STRUCTURE PROGRAM  
GENERAL ATOMIC DIV., GENERAL DYNAMICS CORP.  
GA-5800 +. 80 PAGES, FIGURES 1 TABLE, 23 REFERENCES, NOVEMBER 3, 1964

STUDIES PERFORMED IN THE U.S. DURING THE PAST FEW YEARS, PARTICULARLY AT GENERAL ATOMIC, HAVE MADE SIGNIFICANT CONTRIBUTIONS TO THE TECHNOLOGY NECESSARY FOR THE SAFE AND ECONOMICAL USE OF THE PRESTRESSED CONCRETE REACTOR CONCEPT IN THIS COUNTRY. HOWEVER, MUCH DEVELOPMENT REMAINS TO BE DONE BEFORE THE BENEFITS OF WIDESPREAD USE OF THE CONCEPT CAN BE REALIZED. IT IS THE PURPOSE OF THIS REPORT TO DESCRIBE THE AREAS OF WORK THAT SHOULD BE EXPLORED, TO REVIEW THE CURRENT STATUS OF DEVELOPMENT BOTH HERE AND ABROAD, AND TO REPORT THE GENERAL ATOMIC PROGRAM OF ANALYSIS, DESIGN, AND TESTING DEVELOPMENT TO ACQUIRE THE TECHNOLOGY NECESSARY FOR USE OF THE CONCEPT WITH NUCLEAR POWER REACTORS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFO., NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 CY

\*CONCRETE, PRESTRESSED + \*CONTAINMENT, PRESSURE VESSEL + \*DESIGN CRITERIA +  
CONTAINMENT RESEARCH AND DEVELOPMENT + MOCKUP + STRESS ANALYSIS + TESTING + THERMAL ANALYSIS +  
THERMAL INSULATION

11-13839 ALSO IN CATEGORY 13  
KELSCH RD  
CONTAINMENT METHODS FOR ALPHA-GAMMA RADIOACTIVITY AT SAVANNAH RIVER LABORATORY CAVES  
SAVANNAH RIVER LABORATORY  
DP-MS-66-16 +. 1 PAGE, ANS TRANSACTIONS 9(2) PAGE 609 (WINTER 1966) PITTSBURGH, PENNSYLVANIA, OCTOBER 30-NOVEMBER 3, 1966, AMERICAN NUCLEAR SOCIETY

THE HIGH-LEVEL CAVES ARE USED ROUTINELY FOR WORK INVOLVING ALPHA-GAMMA ACTIVITY. ALPHA CONTAINMENT IS ACHIEVED BY - (1) MAINTAINING THE AIR INLET VELOCITY THROUGH ALL OPENINGS IN THE CELL SHIELD GREATER THAN 100 FT/MIN AT ALL TIMES, (2) USING LAMINAR FLOW PATTERNS IN THE CELL TO FLUSH OUT AIRBORNE ACTIVITY, (3) FILTERING EXHAUSTED AIR THROUGH TWO ABSOLUTE AND ONE CHARCOAL FILTER, (4) CONTROLLING AIR-FLOW PATTERNS IN THE AREAS ADJACENT TO THE CELLS WITH AIR LOCKS AND PROPERLY LOCATED AIR-SUPPLY VENTS, (5) USING DOUBLE-BAGGING METHODS FOR TRANSFERRING CONTAMINATED EQUIPMENT FROM THE CELLS.

\*AIR CLEANING + \*ALPHA EMITTER + \*CONTAINMENT, PRESSURE VENTING + \*DECONTAMINATION + \*HOT CELL +  
CONTAINMENT, FUEL REPROCESSING + FILTER SYSTEM + GAMMA EMITTER

11-13840 ALSO IN CATEGORY 13  
POTT G + STOCKSCILADER F  
BASIC PLAN AND SPECIAL BOX TECHNIQUES FOR THE ALPHA-BETA-GAMMA HOT LABORATORY WITHIN THE THTR PROJECT  
JULICH NUCLEAR RESEARCH CENTER  
2 PAGES, ANS TRANSACTIONS 9(2) PAGES 609-610 (WINTER 1966) PITTSBURGH, PENNSYLVANIA, OCTOBER 30-NOVEMBER 3, 1966, AMERICAN NUCLEAR SOCIETY

THIS REPORT DESCRIBES THE BASIC REQUIREMENTS IN THE PLANNING OF AN ALPHA-BETA-GAMMA HOT LABORATORY ASSOCIATED WITH A FUEL-DEVELOPMENT PROGRAM FOR A GAS-COOLED HIGH-TEMPERATURE REACTOR PROJECT. PLANNING OF THE LABORATORY IS BASED ON A CONSTRUCTION AND PLANNING TIME OF 2.5 YEARS, A COST LIMIT OF \$750,000, A GIVEN POST-IRRADIATION PROGRAM ON FUEL BALLS (6-CM DIAM), AND OPERATION USING ALPHA-BETA-GAMMA TECHNIQUE IN BOXES.

\*DESIGN CRITERIA + \*HOT CELL + ALPHA EMITTER + BETA EMITTER + CONTAINMENT, FUEL REPROCESSING +  
GAMMA EMITTER

11-13841 ALSO IN CATEGORY 13  
MATHERNE JL + KING LJ  
CONTAINMENT OF RADIOACTIVE MATERIAL IN THE TRANSURANIUM PROCESSING PLANT  
OAK RIDGE NATIONAL LABORATORY  
1 PAGE, ANS TRANSACTIONS 9(2) PAGE 610 (WINTER 1966) PITTSBURGH, PENNSYLVANIA, OCTOBER 30-NOVEMBER 3, 1966, AMERICAN NUCLEAR SOCIETY

THE TRANSURANIUM PROCESSING PLANT (TRUP) AT OAK RIDGE NATIONAL LABORATORY IS OPERATED IN CONJUNCTION WITH THE HIGH FLUX ISOTOPE REACTOR (HFIR) TO PROVIDE GRAM QUANTITIES OF MANY OF THE TRANSURANIUM ELEMENTS AND MILLIGRAM QUANTITIES OF SOME OF THE TRANSALFURNIUM ISOTOPES FOR USE IN RESEARCH. MANY OF THE DESIGN FEATURES OF THE FACILITY ARE GOVERNED BY THE SPECIAL PROBLEMS ASSOCIATED WITH THE CONTAINMENT OF THE HIGH-SPECIFIC-ACTIVITY ACTINIDE ELEMENTS. THESE ELEMENTS ARE PRIMARILY ALPHA EMITTERS - IN ADDITION, SOME UNDERGO SPONTANEOUS FISSION. HIGH DOSE RATES OF PENETRATING RADIATION, INCLUDING THE FAST NEUTRONS FROM SPONTANEOUS FISSION, NECESSITATE THICK SHIELDING (54 IN. OF HIGH-DENSITY CONCRETE) AND REQUIRE ALL MAINTENANCE TO BE DONE REMOTELY. THIS PAPER DESCRIBES THE SPECIAL CONTAINMENT FEATURES OF THE PLANT.

\*CONTAINMENT, FUEL REPROCESSING + \*DESIGN CRITERIA + \*HOT CELL + \*TRANSURANIUM ELEMENT +  
CONTAINMENT, PRESSURE VENTING + FILTER SYSTEM

11-13842  
MARTIN RL + STORHOK VW + GATES JE

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-13842 \*CONTINUED\*  
HANDLING AND CONTAINMENT OF ACTIVITY IN THE BATTELLE-COLUMBUS ALPHA-GAMMA FACILITY  
BATTELLE MEMORIAL INSTITUTE  
2 PAGES, 1 FIGURE, ANS TRANSACTIONS 9(2) PAGES 610-611 (WINTER 1966) PITTSBURGH, PENNSYLVANIA OCTOBER  
30-NOVEMBER 3, 1966, AMERICAN NUCLEAR SOCIETY

THE BATTELLE-COLUMBUS ALPHA-GAMMA CELLS HAVE BEEN IN OPERATION FOR OVER TWO YEARS WITH NO  
SERIOUS CONTAMINATION INCIDENTS. WASTE-HANDLING PROCEDURES HAVE BEEN ESTABLISHED THAT INSURE  
AGAINST THE SPREAD OF CONTAMINATION. A DEVICE IS USED TO REMOVE WASTE FROM THE DRY BOXES  
THAT UTILIZES STANDARD PAINT CANS AND STANDARD 10-LB FRICTION-TOP CANS WITHOUT CONTAMINATING  
THE OUTSIDE OF THE CANS.

\*CONTAINMENT, PRESSURE VENTING + \*HOT CELL + ALPHA EMITTER + FILTER SYSTEM + GAMMA EMITTER

11-13843  
DENHAM DH + CURTIS JR  
A DOWNDRAFT TABLE FOR HANDLING HIGH RADIOTOXICITY ALPHA EMITTERS  
LAWRENCE RADIATION LABORATORY  
1 PAGE, 2 FIGURES, 1 REFERENCE, ANS TRANSACTIONS 9(2) PAGE 611 (WINTER 1966) PITTSBURGH, PENNSYLVANIA,  
OCTOBER 30-NOVEMBER 3, 1966, AMERICAN NUCLEAR SOCIETY

A DOWNDRAFT TABLE IN A SPECIALLY CONSTRUCTED STAINLESS-STEEL ROOM IS USED FOR OPEN-AIR  
OPERATIONS ON HIGHLY TOXIC ALPHA-EMITTERS. THE FACILITY PERMITS THE PRECISE MANIPULATION OF  
PLUTONIUM-BEARING PARTS WITH FEW RESTRICTIONS. CONTAMINATION IS CONTROLLED BY THE  
HIGH-VELOCITY AIR STREAM THAT PASSES DOWN OVER THE EXPOSED MATERIAL AND ON THROUGH THE  
DOWNDRAFT TABLE.

\*ALPHA EMITTER + \*HOT CELL + \*VENTILATION SYSTEM + AIR CLEANING + FILTER SYSTEM + PLUTONIUM

11-13844 ALSO IN CATEGORY 13  
GAITANIS MJ + TRIPP LF  
OPERATIONAL EXPERIENCE AT THE QUEHANNA, PA. FACILITY - A 2-MCI SR-90 CONVERSION AND ENCAPSULATION PLANT  
MARTIN COMPANY  
2 PAGES, ANS TRANSACTIONS 9(2) PAGES 611-612 (WINTER 1966) PITTSBURGH, PENNSYLVANIA, OCTOBER 30-NOVEMBER  
3, 1966, AMERICAN NUCLEAR SOCIETY

THE SECOND GENERATION OF SR-90 PROCESSING EQUIPMENT WENT HOT IN AUGUST 1965 AND FOUR FUEL  
CAPSULES WERE PREPARED FOR FOUR GENERATORS. DOUBLE-CONTAINMENT WAS MAINTAINED THROUGHOUT  
CONSTRUCTION. THE NEW SYSTEM OPERATED QUANTITATIVELY AND PRESENTED FEW PROBLEMS. THE USE OF  
ABSOLUTE FILTERS IN PARALLEL AND AT LEAST FOUR IN SERIES IN THE BOX VENTILATION SYSTEM WAS  
FOUND NECESSARY TO CONTAIN BALL-MILLED TITANATE POWDER.

\*DESIGN-CRITERIA + \*HOT CELL + CONTAINMENT, FUEL REPROCESSING + CONTAINMENT, PRESSURE VENTING +  
CONTAINMENT, SOURCE + FILTER SYSTEM + STRONTIUM + TITANIUM

11-13845  
CONCRETE PRESSURE VESSELS  
2 PAGES, 1 FIGURE, 1 TABLE, ENERGY INTERNATIONAL 3(10), PAGES 14-15, (OCTOBER 1966)

A SHORT, GENERALIZED DISCUSSION OF THE DEVELOPMENT OF PRESTRESSED-CONCRETE PRESSURE-VESSEL  
TECHNOLOGY FOR GAS-COOLED REACTORS OVER THE PAST 10 YEARS.

\*CONCRETE, PRESTRESSED + \*CONTAINMENT, PRESSURE VESSEL + \*DESIGN CRITERIA + REACTOR, GAS COOLED

11-13970 ALSO IN CATEGORY 18  
QUESTION IX-B. CONTAINMENT PROTECTION AGAINST STACK FALLING  
COMMONWEALTH EDISON COMPANY  
2 PAGES, NOVEMBER 1966, DOCKET NO. 50-254, 50-265, PAGES 58-59 FROM QUAD-CITIES STATION UNITS 1 AND 2.  
AMENDMENT 4

WIND VELOCITIES 300-500 MPH COULD OVERTURN THE STACK. THE SHIELD PLUG ABOVE THE VESSEL WOULD  
WITHSTAND A 1,000,000 FT-LB IMPACT, EQUIVALENT TO 3-4 FT SECTIONS OF THE STACK DROPPING THE  
FULL 310-FT HEIGHT, WHICH IS NOT LIKELY BECAUSE OF THE DISTANCE FROM THE STACK.

AVAILABILITY - USAFC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + MISSILE GENERATION AND PROTECTION + QUAD CITIES 1 AND 2 +  
REACTOR, BOILING WATER + STACK

11-13971 ALSO IN CATEGORY 18  
QUESTION IX-C. CONTAINMENT PROTECTION AGAINST TURBINE ROTOR FRAGMENTS  
COMMONWEALTH EDISON COMPANY  
3 PAGES, 1 TABLE, NOVEMBER 1966, DOCKET NO. 50-254, 50-265, PAGES 60-62, FROM QUAD-CITIES STATION, UNITS 1  
AND 2 - AMENDMENT 4



CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-13971 \*CONTINUED\*

A MORE DETAILED ANALYSIS SHOWS THAT 80-100% OF THE ROTATIONAL ENERGY OF A MISSILE IS LOST IN THE TURBINE CASING, AS WELL AS 60% OF THE TRANSLATIONAL ENERGY. AN ADDED MISSILE CONSIDERED IS 1/4 THE LP TURBINE SHAFT. NO MISSILE WOULD PENETRATE MORE THAN 12 INCHES INTO THE SHIELD PLUG.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + HEAT SINK + MISSILE GENERATION AND PROTECTION + QUAD CITIES 1 AND 2 + REACTOR, BOILING WATER

11-13973 ALSO IN CATEGORY 18

QUESTION 1X-E. CRITERIA FOR LEAK DETECTION OF PRIMARY SYSTEM INSIDE DRYWELL  
COMMONWEALTH EDISON COMPANY

3 PAGES, NOVEMBER 1966, DOCKET NO. 50-254, 50-265, PAGES 67-69 FROM QUAD-CITIES STATION, UNITS 1 AND 2, AMENDMENT 4

WHEN THE HEAD IS REPLACED, A HYDRO-TEST IS MADE. DRYWELL PRESSURE, TEMPERATURE, AND HUMIDITY ARE MONITORED BY A SAMPLING SYSTEM. VARIOUS COMPONENTS WILL HAVE MONITORS, E.G., THE VESSEL DOUBLE O-RING HAS A LEAK-DETECTION SYSTEM, AS WELL AS STEAM LEAKOFFS FROM VALVES.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + QUAD CITIES 1 AND 2 + REACTOR, BOILING WATER + TEST, LEAK LOCATION

11-13975 ALSO IN CATEGORY 17

WIMUNC EA

HOW SERIOUS ARE VESSEL CLADDING FAILURES

ARGONNE NATIONAL LABORATORY

9 PAGES, 11 FIGURES, POWER REACTOR TECHNOLOGY 9(3), PAGES 101-109, (SUMMER 1966)

REVIEWS EXPERIENCE AT ELK RIVER (ADDITIONAL CRACKS FOUND AFTER OPERATION, BUT IN AREAS KNOWN TO BE MARTENSITIC), AT EBWR (CRACKS IN ABOVE-WATER PORTIONS OF STITCH-WELD CLAD WERE TRACED TO THERMAL STRESS WHEN THE COURSES WERE COOLED AFTER A 1700 F ROLLING). MANY INTRA-MATERIAL CRACKS WERE FOUND BY GRINDING (EVEN AFTER DYE CHECKS SHOWED NO SURFACE DEFECTS), AND AT YANKEE (PRESSURIZER CRACKS, LIKE EBWR, DID NOT PENETRATE INTO BASE METAL EVEN AT SPOT-WELDS. VESSEL CLAD WAS WORN THROUGH BY LOOSE IRRADIATION CAPSULES. NO PROBLEM IS EXPECTED FROM CORROSION OR EMBRITTLEMENT).

\*CONTAINMENT, PRESSURE VESSEL + \*FAILURE, CLADDING + \*FAILURE, PRESSURE VESSEL + \*OPERATING EXPERIENCE + EBWR (EXPERIMENTAL BOILING WATER REACTOR) + ELK RIVER + EXAMINATION + PRESSURIZER + REACTOR, BOILING WATER + REACTOR, PRESSURIZED WATER + YANKEE

11-13987 ALSO IN CATEGORY 18

ADDENDUM B TO PROPOSED CHANGE 22 - ADDITIONAL INFORMATION ON REACTIVITY ACCIDENTS AND ON REACTOR VESSEL INSPECTION PROGRAM

PACIFIC GAS AND ELECTRIC COMPANY

24 PAGES, 6 FIGURES, OCTOBER 31, 1966, DOCKET NO. 50-133

IN RESPONSE TO ORL REQUEST, HUMBOLDT BAY SENDS A DESCRIPTION OF ROUTINE REACTOR VESSEL INSPECTIONS DURING REFUELING OUTAGES. DETAILED BORESCOPE INSPECTION WILL BE EVERY 5 YEARS. 1966 WILL COMPLETE INSPECTION BEGUN IN 1964. OTHERWISE, VISUAL INSPECTION IS MADE ON ALL ACCESSIBLE VESSEL SURFACES, NOZZLES, GASKETS, AND SPRAY RINGS. SPRAY NOZZLES ARE CHECKED TO ENSURE THAT THEY ARE OPEN. INSULATION REMOVED FROM STEAM LINE TO CHECK AGAINST CHLORIDE LEACHING FROM INSULATION. ALSO, A LOWER-HEAD INSULATION PANEL WAS REMOVED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + CONTAINMENT, PRESSURE VESSEL + EXAMINATION + HUMBOLDT BAY + REACTOR, BOILING WATER

11-14047

HOWL DA

CREEP EQUATION FOR 10-12 PERCENT COLD-WORKED AISI TYPE 304 STAINLESS STEEL UNDER PRESSURIZED WATER REACTOR CONDITIONS

UNITED KINGDOM ATOMIC ENERGY AUTHORITY, SPRINGFIELDS

TRG-REPORT-1265 +. 20 PAGES, 6 FIGURES, 2 TABLES, 13 REFERENCES, JULY 25, 1966

THE OUT-OF-PILE, ISOTHERMAL, CONSTANT-STRESS CREEP BEHAVIOR OF COLD-WORKED 304 STAINLESS STEEL HAS BEEN DESCRIBED BY A SIMPLE EMPIRICAL EXPRESSION OF THE HYPERBOLIC-SINE TYPE. IT IS SUGGESTED THAT IN THE HIGHEST FLUX POSITION OF A PWR THE CREEP COULD BE THREE AND A HALF TIME AS FAST AT 350 C, BUT EVEN THEN, CREEP IS NOT A PROBLEM IN THE PRESENT CONCEPT OF PWR CLADDING.

AVAILABILITY - UNITED KINGDOM ATOMIC ENERGY AUTHORITY, (REACTOR GROUP), RISLEY, WARRINGTON, LANCASHIRE

\*CLAD + \*CREEP BEHAVIOR + \*CREEP PROPERTY + \*STEEL, STAINLESS + DEFORMATION + FAILURE, CLADDING +

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-14047 \*CONTINUED\*  
HIGH TEMPERATURE + METAL + STRESS RUPTURE + TENSILE PROPERTY

11-14048  
JANICHE W + STOLTE E + LITZKE H  
PROTECTION AGAINST FRACTURE OF REINFORCING STEELS IN REINFORCED AND PRESTRESSED CONCRETE STRUCTURES  
ORNL-TR-1305 +. 28 PAGES, 18 FIGURES, 2 TABLES, MATERIALPRUF 7(12), PAGES 449-458, (DECEMBER 1965)

THE STATISTICAL SCATTER OF THE STRENGTH OF REINFORCING AND PRESTRESSING STEELS HAS A RATHER SMALL EFFECT ON THE SAFETY FACTOR, COMPARED WITH OTHER UNCERTAINTIES. FABRICATION DEFECTS AND HEAT OR CORROSION ATTACK HAVE A MORE IMPORTANT EFFECT. THESE PROBLEMS ARE DISCUSSED IN DETAIL.

AVAILABILITY - SPECIAL LIBRARIES ASSOCIATION TRANSLATION CENTER, JOHN CRERAR LIBRARY, 35 WEST 33RD STREET, CHICAGO, ILLINOIS 60616, \$2.60 COPY, \$1.36 MICROFICHE

\*CONCRETE + \*CONCRETE, PRESTRESSED + CORROSION + FLAW + METAL + STEEL + STRESS

11-14049  
PRESTRESSED CONCRETE IN NUCLEAR PRESSURE VESSELS. A BIBLIOGRAPHY OF CURRENT LITERATURE  
OAK RIDGE NATIONAL LABORATORY  
ORNL-TM-1675 +. 357 PAGES, DECEMBER 1966

THIS IS AN INDEXED, ANNOTATED BIBLIOGRAPHY ON ALL PHASES OF CONCRETE TECHNOLOGY RELATED TO THE DESIGN, ANALYSIS, AND CONSTRUCTION OF PRESTRESSED-CONCRETE PRESSURE VESSELS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$4.25 COPY

\*BIBLIOGRAPHY + \*CONCRETE + \*CONCRETE, PRESTRESSED + CONTAINMENT DESIGN + CONTAINMENT STRUCTURE + CREEP BEHAVIOR + DEFORMATION + DESIGN CRITERIA + STEEL LINER + STRESS

11-14050  
HULT JA  
CREEP IN ENGINEERING STRUCTURES  
CHALMERS UNIVERSITY OF TECHNOLOGY, GOTHENBURG, SWEDEN  
110 PAGES, FIGURES, TABLES, REFERENCES, BLAISDELL PUBLISHING COMPANY, 1966

THIS BOOK CONTAINS AN EXTREMELY CLEAR PRESENTATION OF THE BASIC EQUATIONS GOVERNING UNIAXIAL AND MULTIAXIAL CREEP IN STRUCTURAL COMPONENTS. APPLICATIONS TO TRUSSES, BEAMS, COLUMN BUCKLING, THICK AND THIN-WALLED TUBES ARE INCLUDED. ALSO INCLUDED IS AN EXPLANATION OF THE USE OF TENSOR NOTATION IN MULTIAXIAL STRESS ANALYSIS.

AVAILABILITY - BLAISDELL PUBLISHING COMPANY, WALTHAM, MASS., \$4.50 COPY

\*CREEP BEHAVIOR + \*CREEP PROPERTY + DEFORMATION + PLASTICITY + STRESS + STRESS ANALYSIS + STRESS RUPTURE

11-14290 ALSO IN CATEGORIES 3 AND 1  
GULLEY RL  
PLUTONIUM HANDLING AND CONTROL PRACTICES AT PACIFIC NORTHWEST LABORATORY  
BATTELLE-NORTHWEST  
BNWL-287 +. 11 PAGES, 7 FIGURES, 2 TABLES, 3 REFERENCES, OCTOBER 1966

ONE OF TWO MAJOR FACILITIES USED FOR PLUTONIUM FUELS RESEARCH AND DEVELOPMENT STUDIES AT BATTELLE-NORTHWEST IS THE PLUTONIUM FUELS LABORATORY (PFL). THE DESIGN AND OPERATIONAL POLICY OF THE PFL IS ONE OF COMPLETE PLUTONIUM CONTAINMENT. PRIMARY PLUTONIUM CONTAINMENT IS PROVIDED BY GLOVE BOXES, SECONDARY CONTAINMENT BY INDIVIDUAL LABORATORIES, AND TERTIARY BY THE BUILDING PROPER. AIR SAMPLES, TAKEN THROUGHOUT THE FACILITY, ARE CONSTANTLY MONITORED FOR FREE CONTAMINATION. RULES FOR THE PREVENTION OF AN ACCIDENTAL CRITICALITY IN THE PFL ARE BASED ON THE CRITERION THAT AT LEAST TWO CONTROL CONDITIONS MUST FAIL BEFORE CRITICALITY IS IMMINENT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*CONTAINMENT, GENERAL + \*PLUTONIUM + \*SAFETY PRINCIPLES AND PHILOSOPHY + GLOVE BOX + PERSONNEL EXPOSURE, RADIATION

11-14291 ALSO IN CATEGORY 1  
NUCLEAR MATERIALS MANAGEMENT  
INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA  
STI-PUB-110 + CONF-650803 +. 902 PAGES, FIGURES, TABLES, REFERENCES, PROCEEDINGS OF THE SYMPOSIUM, HELD IN VIENNA, AUGUST 30-SEPTEMBER 3, 1965

THE VOLUME ON NUCLEAR MATERIALS MANAGEMENT CONSTITUTES THE PROCEEDINGS OF THE SYMPOSIUM ON

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-14291 \*CONTINUED\*

NUCLEAR MATERIALS MANAGEMENT HELD BY THE INTERNATIONAL ATOMIC ENERGY AGENCY, AUGUST 30 TO SEPTEMBER 3, 1965. THE VOLUME IS 888 PAGES LONG AND CONTAINS THE FOLLOWING SUBTOPICS - (1) MATERIAL CONTROL SYSTEMS, (2) RECORDING, REPORTING AND GENERATION OF QUANTITATIVE DATA, (3) EVALUATION OF MEASUREMENT METHODS, NUCLEAR SAFETY AND CRITICALITY CONTROL, (4) ECONOMIC CONSIDERATIONS, GOVERNMENT ACTIVITIES, (5) CHEMICAL AND ISOTOPIC ANALYSES, AND (6) BURN-UP AND PRODUCTION.

AVAILABILITY - INTERNATIONAL ATOMIC ENERGY AGENCY, \$18.00 COPY

\*CONTROL, GENERAL + \*IAEA (INTERNATIONAL ATOMIC ENERGY AGENCY) + \*MATERIAL + ECONOMIC STUDY + RADIOCHEMICAL ANALYSIS + SAFETY PRINCIPLES AND PHILOSOPHY

11-14329 ALSO IN CATEGORIES 9 AND 14

DEPRET JD  
PERMISSIBLE HYDROGEN LEVELS IN THE HNPFC CONTROL ROD HELIUM SYSTEM  
ATOMIC INTERNATIONAL  
NAA-SR-MEMO-10167 +. 26 PAGES, NOVEMBER 18, 1964

BASED ON CONSERVATIVE ASSUMPTIONS AS STATED IN THIS REPORT (A 150-PPM MAXIMUM LEVEL FOR HYDROGEN IN ZIRCALOY, AND A REQUIRED 10-YEAR SERVICE LIFE), IT IS CALCULATED THAT THE MAXIMUM PERMISSIBLE LEVEL OF HYDROGEN IN THE CONTROL-ROD-TIMBLE GASES IS 700 PPM BY VOLUME. NEITHER EXPERIMENTAL RESULTS NOR A THEORETICAL TREATMENT OF THE DIFFUSION OF ONE SPECIES OF A MIXTURE OF GASES THROUGH A METAL CONTAINER WALL COULD BE FOUND IN THE LITERATURE. STANDARD CATALYTIC ADSORPTION THEORY WAS COMBINED WITH THE USUAL DIFFUSION THEORY TO DERIVE EQUATIONS USEFUL FOR THE CALCULATIONS OF INTEREST. THIS APPROACH MAY HAVE UTILITY IN SIMILAR PROBLEMS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$2.00 COPY

\*CONTROL ROD + \*CONTROL SYSTEM + \*HYDROGEN + MATHEMATICAL STUDY + TITANIUM

11-14330 ALSO IN CATEGORIES 7 AND 17

SWANKS JH  
IN-PLACE IODINE FILTER TESTS AT THE HIGH FLUX ISOTOPE REACTOR  
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE  
ORNL-TM-1677 +. 17 PAGES, 6 TABLES, 5 FIGURES, 4 REFERENCES, DECEMBER 1966

EFFICIENCY TESTS ON 1/2-IN. ACTIVATED-CHARCOAL FILTERS USED IN THE AIR DECONTAMINATION SYSTEM WERE UNSATISFACTORY. IODINE REMOVAL EFFICIENCY WAS 99.65 PERCENT. NEW FILTERS WERE INSTALLED WHICH ARE 1-1/8 IN. THICK, WITH IMPREGNATED ACTIVATED-CHARCOAL FILLER CONTAINED BY PERFORATED STAINLESS-STEEL. THE FIRST TESTS ON THE NEW FILTERS WERE VERY UNSATISFACTORY. THE FILTERS WERE DISASSEMBLED AND IT WAS FOUND THAT THE CHARCOAL HAD SETTLED, SO THAT LARGE AIR GAPS HAD FORMED AT THE TOP OF THE FILTERS. AFTER THE FILTERS WERE FILLED, EFFICIENCY WAS 99.994 PERCENT FOR ELEMENTAL IODINE AND 99.97 PERCENT FOR METHYL IODIDE. THE AIR RESIDENCE TIME IN THE CHARCOAL IS 0.28 SEC. METHOD OF TESTING IS DESCRIBED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*CHARCOAL + \*FAILURE, DESIGN ERROR + \*FILTER + \*TEST, FILTER + FISSION PRODUCT, IODINE + HFIR (HIGH FLUX ISOTOPE REACTOR) + IODINE + ORGANIC IODIDE + REACTOR, FLUX TRAP

11-14346 ALSO IN CATEGORY 13

KING LJ + MATHERNE JL  
CONTAINMENT OF RADIOACTIVE MATERIAL IN THE TRANSURANIUM PROCESSING PLANT  
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE  
ORNL-P-2408 + CONF-661001-21 +. 19 PAGES, 1966, PRESENTED AT THE 14TH CONFERENCE ON REMOTE SYSTEMS TECHNOLOGY, PITTSBURGH, PENNSYLVANIA

CONTAINMENT OF RADIONUCLIDES IN THE TRANSURANIUM PROCESSING PLANT IS COMPLICATED BECAUSE MANY OF THE ISOTOPES OF THE TRANSURANIUM ELEMENTS HAVE HIGH SPECIFIC TOXICITY AND BECAUSE THE PLANT AND EQUIPMENT MUST BE CAPABLE OF ACCOMMODATING EXTENSIVE CHANGES. CELL PROCESS EQUIPMENT IS ENCLOSED IN THE PRIMARY CELLS, WHICH IN TURN ARE ENCLOSED BY THE BUILDING SHELL. EACH ENCLOSURE IS SEPARATELY VENTILATED WITH DIFFERENTIAL PRESSURES, MAINTAINED AUTOMATICALLY, SO THAT EACH ENCLOSURE IS AT A LOWER PRESSURE THAN ITS IMMEDIATE ENVELOPE. VARIOUS DEVICES, ALL MODIFICATIONS OF BAGGING TECHNIQUES, ARE USED TO TRANSFER MATERIALS AND TO PERFORM MAINTENANCE THROUGH THE CONTAINMENT BARRIERS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$1.00 COPY, \$0.50 MICRONEGATIVE

\*CONTAINMENT STRUCTURE + \*CONTAINMENT, GENERAL + \*ORNL (OAK RIDGE NATIONAL LABORATORY) + \*TRANSURANIUM PROGRAM + CONTAINMENT AIR LOCK + RADIOCHEMICAL PLANT SAFETY + RADIOCHEMICAL PROCESSING

11-14382

CARTEP JW  
THE EFFECTS OF IRRADIATION COLD WORK AND ANNEALING ON THE MARTENSITE CONTENT OF TWO AUSTENITIC STAINLESS

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-14382 \*CONTINUED\*  
STFELS  
BATTELLE-NORTHWEST  
BNWL-238 +. 22 PAGES, AUGUST 1966

THE PURPOSE OF THIS STUDY WAS TO INVESTIGATE THE EFFECTS OF COLD WORK, THERMAL EXPOSURE, CHEMICAL COMPOSITION, AND NEUTRON IRRADIATION ON THE DEFORMATION-INDUCED MARTENSITIC TRANSFORMATION IN TWO AUSTENITIC STAINLESS STEELS. A LOW NEUTRON DOSE AT 300 C DID NOT SIGNIFICANTLY CHANGE THE AMOUNT OF MARTENSITE PRESENT IN PREVIOUSLY COLD-WORKED SPECIMENS, COMPARED WITH THE CHANGES CAUSED BY THERMAL EFFECTS ALONE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$1.00 COPY, \$0.50 MICRONEGATIVE

\*RADIATION DAMAGE + \*STEEL, STAINLESS + PROPERTY, PHYSICAL + RADIATION EFFECT

11-14521  
TOTTENHAM H + KANCHI MB  
STRUCTURAL CHARACTERISTICS OF CYLINDRICAL PRESSURE VESSELS OF MEDIUM THICKNESS  
UNIVERSITY OF SOUTHAMPTON  
16 PAGES, 3 FIGURES, 2 TABLES, 24 REFERENCES NUCLEAR ENGINEERING AND DESIGN 4(2) PAGES 177-192 (AUGUST 1966)

THE CYLINDRICAL PRESSURE VESSEL WITH A FLAT HEAD IS ANALYSED FOR THE REDUNDANT FORCES AND STRESSES AT THE JUNCTION. THE ANALYSIS IS BASED ON A SHELL THEORY CORRECTED TO INCLUDE THE EFFECTS OF TRANSVERSE SHEAR AND NORMAL STRAIN. THE FLEXIBILITY COEFFICIENTS AND OTHER FUNCTIONS REQUIRED IN THE ANALYSIS WERE TABULATED FOR DIFFERENT RATIOS OF THICKNESS TO RADIUS. THIS ANALYSIS IS AN EXPEDIENT FOR ESTIMATING THE CORRECTIONS TO BE APPLIED IN THE ANALYSIS OF PRESTRESSED CONCRETE PRESSURE VESSELS WHEN USING THE THIN-WALLED-SHELL THEORY.

\*CYLINDER + \*ELASTICITY + \*SHELL + \*STRESS ANALYSIS + CONCRETE + CONCRETE, PRESTRESSED + CONTAINMENT, PRESSURE VESSEL + MATHEMATICAL STUDY + STRESS

11-14522  
STOKEY WF + PETERSON DB + WUNDER RA  
LIMIT LOADS FOR TUBES UNDER INTERNAL PRESSURE, BENDING MOMENT, AXIAL FORCE AND TORSION  
CARNegie INSTITUTE OF TECHNOLOGY + BETTIS ATOMIC POWER LABORATORY  
9 PAGES, 13 FIGURES, 3 REFERENCES, NUCLEAR ENGINEERING AND DESIGN 4(2) PAGES 193-201 (AUGUST 1966)

EXPRESSIONS ARE DERIVED FOR THE LOADS TO CAUSE COMPLETE YIELDING OF THIN AND THICK-WALLED TUBES UNDER INTERNAL PRESSURE, BENDING MOMENT, AXIAL FORCE AND TORQUE. THE TRESCA YIELD CRITERION IS USED. THE LOADS TO CAUSE COMPLETE YIELDING ARE DETERMINED BY USING STATICALLY ADMISSABLE STRESS FIELDS, AND IT CAN BE SHOWN THAT THESE LOADS ARE ALWAYS LOWER BOUNDS OF THE ACTUAL LOADS TO CAUSE YIELDING.

\*BURST PRESSURE + \*CONTAINMENT, PRESSURE VESSEL + \*CYLINDER + \*FAILURE, PIPE + \*FAILURE, PRESSURE VESSEL + \*PLASTICITY + \*STRESS ANALYSIS + CONTAINMENT ANALYSIS + CONTAINMENT, HIGH PRESSURE + DEFORMATION + DESIGN CRITERIA + PRESSURE, INTERNAL + STEEL + STRESS + STRESS RUPTURE

11-14523  
WILSON WK  
ANALYTIC DETERMINATION OF STRESS INTENSITY FACTORS FOR THE MANJOINE BRITTLE FRACTURE TEST SPECIMEN  
WESTINGHOUSE RESEARCH LABORATORIES, PITTSBURGH, PA.  
WERL-0029-3 +. 45 PAGES, AUGUST 26, 1965

THE STRESS INTENSITY FACTOR FOR THE STANDARD MANJOINE BRITTLE-FRACTURE TEST-SPECIMEN IS DETERMINED BY THE COLLOCATION METHOD AND THE MUSKHELISHVILI COMPLEX-VARIABLE METHOD. THESE METHODS ARE ALSO APPLIED TO SPECIMENS HAVING DIFFERENT GEOMETRIC PROPORTIONS THAN THE STANDARD MANJOINE SPECIMEN. SOME OF THE RESULTS OF THIS ANALYTIC INVESTIGATION ARE COMPARED WITH THOSE OBTAINED FROM AN EXPERIMENTAL COMPLIANCE METHOD. ALSO SOME SIMPLIFIED ANALYTIC MODELS ARE PRESENTED WHICH MAY BE USED TO APPROXIMATE THE STRESS INTENSITY FACTORS FOR GEOMETRIES OF MANJOINE SPECIMENS NOT SPECIFICALLY COVERED IN THIS STUDY. IT WAS DETERMINED THAT ONLY THE TOTAL LOAD ON THE SPECIMEN, AND NOT ITS DISTRIBUTION, INFLUENCES THE STRESS INTENSITY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*BRITTLE FRACTURE + \*ELASTICITY + \*STRESS ANALYSIS + COMPARISON, THEORY AND EXPERIENCE + CONTAINMENT, PRESSURE VESSEL + FLAW + MATHEMATICAL STUDY + STRESS

11-14524 ALSO IN CATEGORIES 2 AND 1  
GILL S  
STRUCTURES FOR NUCLEAR POWER  
NORTHAMPTON COLLEGE OF ADVANCED TECHNOLOGY  
398 PAGES, 129 FIGURES, TABLES, REFERENCES, C.R. BOOKS LIMITED, LONDON, 1964

THIS BOOK CONTAINS A GENERAL DISCUSSION OF ALL THE CIVIL ENGINEERING PHASES OF A NUCLEAR POWER

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-14524 \*CONTINUED\*

PLANT. THE PRESENTATION IS FROM THE DESIGNERS POINT OF VIEW. GENERAL PRINCIPLES AND PROVEN DESIGN CRITERIA ARE EMPHASIZED. OF PARTICULAR CURRENT INTEREST ARE THE THREE CHAPTERS ON CONCRETE RESEARCH AND PRESTRESSED CONCRETE PRESSURE VESSELS. CHAPTER 14 CONTAINS THE ELASTIC ANALYSIS AND ULTIMATE LOAD CALCULATIONS FOR AN EXAMPLE PCRV DESIGN.

AVAILABILITY - CR BOOKS LIMITED, THE ADELPHI, JOHN ADAM STREET, LONDON W.C.2

\*CONCRETE + \*CONCRETE, PRESTRESSED + \*CONTAINMENT DESIGN + \*CONTAINMENT STRUCTURE + \*DESIGN CRITERIA + \*DESIGN STUDY + BIBLIOGRAPHY + CONTAINMENT, GENERAL + CONTAINMENT, PRESSURE VESSEL + EARTHQUAKE + GEOLOGICAL CONSIDERATION, GENERAL + STEEL + STRESS

11-14525 ALSO IN CATEGORIES 17 AND 18

MFHANN RD

TECHNICAL SPECIFICATION CHANGE NO. 12

FIRST ATOMIC SHIP TRANSPORT INC.

7 PAGES, DECEMBER 29, 1966, DOCKET NO. 50-238

CURRENT CRITERIA REQUIRING A DOP TEST PRIOR TO EACH PORT ENTRY MAY REQUIRE A DAILY TEST DURING A SERIES OF SHORT COASTAL RUNS. REVISION TO ALLOW PORT ENTRY WITHIN ONE WEEK OF A SATISFACTORY TEST WOULD NOT BE HAZARDOUS. IN THE PAST, THE ONLY REASON FOR CHANGING THE PARTICLE FILTERS WAS HIGH PRESSURE DROP FROM THE OILY DOP RESIDUE.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + \*TEST, DOP FILTER + CONTAINMENT FILTERING SYSTEM + N S SAVANNAH + REACTOR, MARITIME + REACTOR, PRESSURIZED WATER + VENTILATION SYSTEM

11-14546 ALSO IN CATEGORIES 12 AND 18

QUESTION B2 - HAVE ACRS COMMENTS ON DRESDEN 3 EMERGENCY COOLING BEEN CONSIDERED

TENNESSEE VALLEY AUTHORITY

5 PAGES, PAGES B.2.1 TO B.2.5 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966, DOCKET NO. 50-259/260

THE DESIGNER (GENERAL ELECTRIC) IS AWARE OF THESE COMMENTS. BROWNS FERRY IS IN MOST RESPECTS IDENTICAL TO DRESDEN 2 AND 3, AND GE STUDIES OF CORE COOLING, BLOWDOWN FORCES ON VESSEL AND CONTROL RODS, AND REACTOR VESSEL FABRICATION AND IN-SERVICE INSPECTION WILL BE MADE AVAILABLE TO THE AEC.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BLOWDOWN + BROWNS FERRY + CONTAINMENT, PRESSURE VESSEL + EMERGENCY COOLING CONSIDERATIONS + EXAMINATION + FABRICATION + REACTOR, BOILING WATER

11-14548 ALSO IN CATEGORY 18

QUESTION B4 - PROTECTION OF CRUCIAL SAFETY COMPONENTS AGAINST MISSILE

TENNESSEE VALLEY AUTHORITY

8 PAGES, PAGES B.4.1 TO B.4.18 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1967, DOCKET NO. 50-259/260

COMPONENTS DISCUSSED ARE - MAIN PUMP, FEEDWATER PUMP, EMERGENCY COOLING PUMP, TURBINE BLADE FAILURE, AND MAIN RECIRCULATION-PUMP FAILURES. THE DRY-WELL VESSEL IS INSIDE 4 TO 6 FEET OF REINFORCED CONCRETE, AND MANY COMPONENTS ARE INSIDE CONCRETE SHELLS OR SEPARATED BY CONCRETE FLOORS. A QUAD CITIES ANALYSIS (AMENDMENT 3, QUESTION 3) SHOWED MAXIMUM TURBINE-BLADE PENETRATION WOULD BE 67 INCHES OF DRY-WELL SHIELD. OTHER SURVEYS SHOWED NO DAMAGE FROM PUMP-MOTOR OR TURBINE FAILURES

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

11-14550 ALSO IN CATEGORY 17

TVA HIGH HORSEPOWER PUMP FAILURES ANALYZED FOR MISSILE GENERATION

TENNESSEE VALLEY AUTHORITY

PAGE B.4.7 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966, DOCKET NO. 50-259/260

ONLY ONE SUCH INSTANCE WAS DISCOVERED. A PARADISE STEAM PLANT FEEDWATER-PUMP FAILURE FRACTURED THE BALANCING DEVICE AND OVERSTRESSED THE SHAFT-SEAL HOUSING. THE BOLTS FAILED IN TENSION, AND SOME BOLT HEADS TRAVELED INTO THE IMMEDIATE AREA WITH NO DAMAGE TO OTHER EQUIPMENT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*FAILURE, COMPONENT + \*INCIDENT, ACTUAL, EQUIPMENT + \*MISSILE GENERATION AND PROTECTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + INCIDENT COMPILATION + PUMP + REACTOR, BOILING WATER

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-14552 ALSO IN CATEGORY 18  
QUESTION B.6 - ANALYSES AND TIEDOWN FOR DRYWELL PIPING TO WITHSTAND EARTHQUAKES  
TENNESSEE VALLEY AUTHORITY  
2 PAGES, PAGES B.6.1 TO B.6.2 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS,  
NOVEMBER 10, 1966, DOCKET NO. 50-259/260

TWO MAJOR CONDITIONS WILL BE SATISFIED - NORMAL OPERATION (EXPANSION, LIVE AND DEAD LOADS,  
SEISMIC FORCES), PLUS PIPE RUPTURE (JET-FORCE LOADINGS).

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY +  
DESIGN CRITERIA + PIPING + REACTOR, BOILING WATER + SEISMOLOGY

11-14553 ALSO IN CATEGORY 18  
QUESTION B.7.1 - INSPECTION PROCEDURES FOR CONSTRUCTION OF CONTAINMENT OR OTHER CRUCIAL STRUCTURES  
TENNESSEE VALLEY AUTHORITY  
6 PAGES, PAGES B.7.1 TO B.7.6 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS,  
NOVEMBER 10, 1966, DOCKET NO. 50-259/260

(1) PRIMARY CONTAINMENT - GE IS FURNISHING THESE VESSELS. LISTS FABRICATION PROCEDURES AND  
TESTS THAT GE MUST APPROVE. (2) SECONDARY CONTAINMENT - TVA WILL APPLY NORMAL QUALITY  
CONTROL (LISTED) FOR CONCRETE STRUCTURES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY +  
CONTAINMENT, PRESSURE VENTING + CONTAINMENT, PRESSURE VESSEL + EXAMINATION + FABRICATION +  
QUALITY CONTROL + REACTOR, BOILING WATER

11-14555 ALSO IN CATEGORY 18  
QUESTION C.1A - RELIABILITY OF VACUUM IN SECONDARY CONTAINMENT  
TENNESSEE VALLEY AUTHORITY  
2 PAGES, PAGES C.1.1 TO C.1.2 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS,  
NOVEMBER 10, 1966, DOCKET NO. 50-259/260

LEAKAGE WILL BE LESS THAN 100%/DAY. EXFILTRATION WILL NOT OCCUR AT WINDS LESS THAN 35 MPH.  
CALCULATIONS SHOW THAT EXFILTRATION DOES NOT INCREASE MCA DOSE. IN-LEAKAGE AND VACUUM ARE  
CONTINUOUSLY MONITORED. INITIALLY, ALL AREAS OF THE BUILDING WILL BE CHECKED FOR MINIMUM  
PRESSURE DIFFERENCE OF 0.25 INCH OF WATER.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY +  
CONTAINMENT LEAKAGE CONTROL + CONTAINMENT, PRESSURE VENTING + REACTOR, BOILING WATER

11-14556 ALSO IN CATEGORY 18  
QUESTION C.1B - ISOLATION VALVE REDUNDANCY, ZONING CONCEPT OF SECONDARY CONTAINMENT  
TENNESSEE VALLEY AUTHORITY  
2 PAGES, PAGES C.1.2 TO C.1.3 OF BROWNS FERRY CONSTRUCTION PERMIT, ANSWERS TO AEC QUESTIONS, AMENDMENT 3,  
NOVEMBER 10, 1966, DOCKET NO. 50-259/260

THE 3 ZONES AID IN LOCALIZING CONTAMINATION AND MINIMIZE LEAKAGE. IF ONLY ONE ZONE NEEDS TO  
BE ISOLATED, THE VACUUM WOULD BE GREATER BECAUSE THE EXHAUST IS FROM ONE ZONE ONLY TO THE  
GAS-TREATMENT SYSTEM. REDUNDANT ISOLATION VALVES HAVE BEEN INCLUDED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY +  
CONTAINMENT PENETRATION, CLOSURE OF + CONTAINMENT, PRESSURE VENTING + REACTOR, BOILING WATER + REDUNDANCE

11-14557 ALSO IN CATEGORY 18  
QUESTION C.1C - DESIGN BASIS FOR SECONDARY CONTAINMENT LEAKAGE RATE OF 100%/DAY  
TENNESSEE VALLEY AUTHORITY  
PAGES C.1.3 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966,  
DOCKET NO. 50-259/260

STANDBY GAS-TREATMENT SYSTEM DESIGNED TO MAINTAIN 0.25 IN. WATER VACUUM AT ANY POINT WHEN  
BUILDING IS ISOLATED. BUILDING IS DESIGNED (SPECIAL JOINTS AND PENETRATIONS) SO INLEAKAGE  
WILL NOT EXCEED 100%/DAY AT THIS VACUUM. AT 150%/DAY INLEAKAGE, OFF-SITE DOSES WOULD BE  
INCREASED ONLY 6%.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-14557 \*CONTINUED\*

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + CONTAINMENT LEAKAGE CONTROL + CONTAINMENT PENETRATION, CLOSURE OF + CONTAINMENT, PRESSURE VENTING + DESIGN CRITERIA + REACTOR, BOILING WATER

11-14558 ALSO IN CATEGORY 18

QUESTION C.1D - CONSEQUENCES OF FISSION PRODUCTS DIFFUSING THROUGH CONCRETE  
TENNESSEE VALLEY AUTHORITY

2 PAGES, PAGES C.1.3 TO C.1.4 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966, DOCKET NO. 50-259/260

AT LOW WIND SPEEDS, DIFFUSION AGAINST THE PRESSURE GRADIENT IS NEGLIGIBLE (REF. QUAD CITIES AMEND. 3, QUESTION 9B). WIND SPEEDS ABOVE 35 MPH MAY REVERSE THE PRESSURE DIFFERENCE LOCALLY, BUT DILUTION IS ENHANCED. THESE WINDS ARE USUALLY SHORT-TIME GUSTS. THE MILLSTONE POINT ANALYSIS SHOWED SITE-BOUNDARY DOSES FOR EXFILTRATION TO BE 1/10TH THE MCA DOSES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + AIRBORNE RELEASE + BROWNS FERRY + CONTAINMENT LEAKAGE CONTROL + CONTAINMENT, PRESSURE VENTING + DOSE + REACTOR, BOILING WATER

11-14559 ALSO IN CATEGORY 18

QUESTION C.2 - INTEGRITY OF SECONDARY CONTAINMENT AGAINST TORNADO  
TENNESSEE VALLEY AUTHORITY

2 PAGES, PAGES C.2.1 TO C.2.2 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966, DOCKET NO. 50-259/260

YIELD STRESS OF BUILDING STEEL WILL BE AT 300-MPH WIND FORCE, HOWEVER METAL SIDING AND ROOF WILL BE DESIGNED FOR 100-MPH WIND. A TORNADO MAY EXPOSE REFUELING FLOOR, BUT LITERATURE SEARCHES CONTAIN NO DATA INDICATING THAT TORNADOES MAY SUCK LARGE AMOUNTS OF WATER FROM POOLS OR PONDS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

11-14561 ALSO IN CATEGORY 18

QUESTION C.4A - CAPABILITY OF THREE-ZONE CONTAINMENT CROSS FLOW  
TENNESSEE VALLEY AUTHORITY

PAGE C.4.1 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966, DOCKET NO. 50-259/260

IN CASE ONE ZONE IS ON STANDBY GAS TREATMENT AND OTHERS IN NORMAL VENTILATION, DOORS WILL BE KEPT CLOSED. COMMON WALLS AND FLOORS ARE AS LEAKTIGHT AS THE SECONDARY-CONTAINMENT WALL.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + BROWNS FERRY + CONTAINMENT LEAKAGE CONTROL + CONTAINMENT PENETRATION, CLOSURE OF + CONTAINMENT, PRESSURE VENTING + REACTOR, BOILING WATER + SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS

11-14562 ALSO IN CATEGORY 18

QUESTION C.4B - WIND VELOCITY DESIGN CRITERIA FOR CONCRETE PORTIONS OF BUILDING  
TENNESSEE VALLEY AUTHORITY

2 PAGES, 2 REFERENCES, PAGES C.4.1 AND C.4.2 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966, DOCKET NO. 50-259/260

CONCRETE STRUCTURE WILL BE DESIGNED TO WITHSTAND 100-MPH WINDS (0.25 PSI DELTA P) OR GREATER. BLOWOUT PANELS WILL PREVENT STRUCTURE COLLAPSE. QUAD CITIES AMENDMENT 3 SHOWS THAT TORNADO-PROPELLED MISSILES WILL NOT DAMAGE EQUIPMENT.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + CONTAINMENT, PRESSURE VENTING + DESIGN CRITERIA + MISSILE GENERATION AND PROTECTION + REACTOR, BOILING WATER + WIND STATISTICS

11-14563 ALSO IN CATEGORY 18

QUESTION C.5 - JUSTIFICATION OF DAMPING LEVEL FOR REINFORCED CONCRETE STRUCTURES.  
TENNESSEE VALLEY AUTHORITY

5 PAGES, 1 FIGURE, PAGES C.5.1 TO C.5.5 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966, DOCKET NO. 50-259/260

LETTER FROM JOHN A. BLUME ASSOCIATES REVIEWS VARIOUS STUDIES (ALL RECOMMENDING CRITICAL DAMPING ABOVE 5%) AND NOTES THAT DAMPING INCREASES WITH DEFLECTION. ASSERTS THAT THE-ACTUAL DAMPING WOULD BE BETWEEN 5-8% WITH 95% PROBABILITY. CHOSEN 5% APPEARS CONSERVATIVE.

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-14563 \*CONTINUED\*  
AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + BUILDING + CONCRETE, PRESTRESSED + CONTAINMENT, PRESSURE VENTING + DESIGN CRITERIA + REACTOR, BOILING WATER + SEISMOLOGY

11-14564 ALSO IN CATEGORY 18  
QUESTION C.6 - LEAK TIGHTENERS OF METAL SIDING  
TENNESSEE VALLEY AUTHORITY  
2 PAGES, PAGES C.6.1 TO C.6.2 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966, DOCKET NO. 50-259/260

SPECIAL MASTIC-JOINT CAULKING WILL SEAL THE METAL PANELS. ALL 25,000 FT OF JOINTS COULD OPEN 6 MILS (OR ABOUT 200 SQUARE INCHES OF 1/8-1/2 INCH CRACKS COULD DEVELOP) BEFORE THE BUILDING VACUUM WOULD DROP BELOW 0.25 INCH (WATER GAGE).

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + CONTAINMENT LEAKAGE CONTROL + CONTAINMENT, PRESSURE VENTING + REACTOR, BOILING WATER

11-14565 ALSO IN CATEGORY 18  
QUESTION C.7 - STABILITY OF BUILDING CRANES DURING EARTHQUAKE  
TENNESSEE VALLEY AUTHORITY  
PAGE C.7.1 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966, DOCKET NO. 50-259/260

THE STEEL SUPPORTS WILL WITHSTAND EARTHQUAKES. THE VARIOUS CRANE AND BRIDGE WHEELS ARE DOUBLE FLANGED. VARIOUS SPRING-SET BRAKES LOCK THE CRANE IN PLACE.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + REACTOR, BOILING WATER + REMOTE MANIPULATING AND VIEWING + SEISMOLOGY

11-14566 ALSO IN CATEGORY 18  
QUESTION C.8 - DESIGN OF STACK, AND CONSEQUENCES OF STACK FAILURE  
TENNESSEE VALLEY AUTHORITY  
PAGE C.8.1 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966, DOCKET NO. 50-259/260

THE REINFORCED-CONCRETE STACK WILL BE LOCATED AWAY SO THAT THE CRUCIAL SAFETY SYSTEMS WILL NOT BE DAMAGED BY STACK FAILURE. WIND-LOAD DESIGN WILL BE 100-MPH GUSTS, WITH A DAMPING FACTOR OF 5% FOR WIND AND EARTHQUAKE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + REACTOR, BOILING WATER + SEISMOLOGY + STACK + STRESS ANALYSIS + WIND STATISTICS

11-14568 ALSO IN CATEGORY 18  
QUESTION D.1 - BASES FOR REACTOR VESSEL CHANGES FROM DRESDEN 3 DESIGN  
TENNESSEE VALLEY AUTHORITY  
2 PAGES, PAGES D.1.1 TO D.1.2 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966, DOCKET NO. 50-259/260

THE INSIDE HEIGHT IS 4 FT GREATER FOR LARGER STEAM DRYERS. OTHER VESSEL NOZZLES ARE LARGER BECAUSE OF THE HIGHER POWER AND FLOW RATES. OTHER NOZZLES ARE NOT THERE BECAUSE ISOLATION-CONDENSERS REPLACED BY RTC SYSTEM. 59 RATHER THAN 86 FLUX-MONITOR PENETRATIONS ARE NEEDED.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + CONTAINMENT PENETRATION + CONTAINMENT, PRESSURE VESSEL + REACTOR, BOILING WATER

11-14569 ALSO IN CATEGORIES 5 AND 18  
QUESTION D.2.1A - ANALYSIS OF BLOWDOWN EFFECTS ON REACTOR VESSEL INTERNALS  
TENNESSEE VALLEY AUTHORITY  
6 PAGES, PAGES D.2.1 TO D.2.6 OF BROWNS FERRY CONSTRUCTION PERMIT, ANSWERS TO AEC QUESTIONS, AMENDMENT 3, NOVEMBER 10, 1966, DOCKET NO. 50-259/260

ANALYSIS REPORTED TO SUPPLEMENT EARLIER ANALYSIS ON VESSEL ALONE. (1) RECIRCULATION LINE RUPTURE. PRESSURE CHANGE IS ONLY 35 PSI/SEC, BEING CHECKED BY TWO-PHASE FLOW AFTER THE



CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-14569 \*CONTINUED\*

INTERNAL PRESSURE SURGE OF 28 PSI (MAX). CORE DELTA P IS ONLY 18 PSI, WELL BELOW 42 PSI REQUIRED FOR FUEL-BUNDLE LIFTING. (2) STEAM LINE RUPTURE. INITIAL DEPRESSURIZATION IS 80 PSI/SEC, REDUCING TO 25 PSI/SEC WHEN TWO-PHASE BLOWDOWN BEGINS (ASSUMING BREAK IS UPSTREAM OF THE FLOW LIMITER). CORE DELTA P WOULD BE 7 PSI BELOW FUEL LIFT VALUE OF 42 PSI. A 25-PSI PRESSURE DIFFERENCE WOULD NOT BIND THE CONTROL RODS. THE PEAK CALCULATED VALUE IS 18 PSI.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + ACCIDENT, LOSS OF COOLANT + BLOWDOWN + BROWNS FERRY + CORE COMPONENTS, MISCELLANEOUS + DAMAGE + FLOW, TWO PHASE + REACTOR, BOILING WATER + STRUCTURAL INTEGRITY

11-14570 ALSO IN CATEGORIES 5 AND 18

QUESTION D.2.1B - ANALYSIS OF REACTIVITY-TRANSIENT EFFECTS ON REACTOR VESSEL OR INTERNALS  
TENNESSEE VALLEY AUTHORITY  
5 PAGES, 2 FIGURES, 1 TABLE, PAGES D.2.7 TO D.2.11 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966, DOCKET NO. 50-259/260

GIVES DAMAGES THAT WOULD RESULT FROM VARIOUS PEAK FUEL-ELEMENT ENTHALPIES. 170 CAL/GRAM GIVES FUEL-CLAD DAMAGE. 200-280 CAUSES FUEL FRAGMENTATION OR MELTING, BUT ONLY A SMALL FRACTION OF THE BURST ENERGY IS IN THIS FUEL. 300-400 WOULD GENERATE 10-100 PSI AND CAUSE CORE-COMPONENT DAMAGE. FOR EXCURSIONS YIELDING ENTHALPIES ABOVE 425 CAL/GRAM, THE THERMAL-TO-MECHANICAL ENERGY CONVERSION IS ABOVE A FEW PERCENT, SO PRIMARY-SYSTEM INTEGRITY WOULD BE THREATENED IF THE FUEL CONTAINED SUFFICIENT ENERGY.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + ACCIDENT, REACTIVITY + BROWNS FERRY + CORE COMPONENTS, MISCELLANEOUS + DAMAGE + REACTOR, BOILING WATER

11-14571 ALSO IN CATEGORY 18

QUESTION D.3 - EVALUATION OF CORE PIPING ABILITY TO WITHSTAND DISPLACEMENT  
TENNESSEE VALLEY AUTHORITY  
7 PAGES, 4 FIGURES, 1 TABLE, PAGES D.3.1 TO D.3.7 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, DOCKET NO. 50-259/260, NOVEMBER 10, 1966

FORCES DUE TO SYSTEM RUPTURE ARE 1 MILLION LB, WHILE VESSEL RESTRAINTS ARE DESIGNED TO HANDLE 7 MILLION. SKETCHES SHOW A 2-1/4-FT-THICK CONCRETE SACRIFICIAL SHIELD AROUND VESSEL. PIPING PENETRATIONS ARE 1 FT LARGER RADIUS THAN PIPING TO ALLOW VESSEL MOVEMENT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + CONTAINMENT, PRESSURE VESSEL + FAILURE, PIPE + REACTOR, BOILING WATER + SHIELDING + STRUCTURAL INTEGRITY + SUPPORT STRUCTURE

11-14634 ALSO IN CATEGORIES 17 AND 18

OPERATING EXPERIENCE WITH U.S. FIELD ASSEMBLED PRESSURE VESSELS  
NORTHERN STATES POWER COMPANY  
6 PAGES, 3 TABLES, ATOMIC ENERGY CLEARING HOUSE 13(6) PAGES 5-10 (FEBRUARY 6, 1967)

BRIEF HISTORY OF 200 CHICAGO BRIDGE AND IRON FIELD-ASSEMBLED (NONNUCLEAR) VESSELS. NINE HAVE CONDITIONS SIMILAR TO THE MONTICELLO VESSEL. ALL WERE PERFORMING SATISFACTORILY. LETTER SUMMARIZES CONDITIONS (SERVICE, DESIGN PRESSURE AND TEMPERATURE, ETC.).

\*CONTAINMENT, PRESSURE VESSEL + \*DESIGN STUDY + \*OPERATING EXPERIENCE + MONTICELLO + REACTOR, BOILING WATER

11-14647 ALSO IN CATEGORIES 5 AND 18

EXTERNAL COLLAPSING PRESSURE FOR ELK RIVER REACTOR FUEL ELEMENT TUBING  
ALLIS-CHALMERS MANUFACTURING COMPANY  
ACNP-64509 +. 21 PAGES, JANUARY 1964, DOCKET NO. 115-1

TEST AND CALCULATIONS WERE MADE ON THE COLLAPSING PRESSURE OF THE UNIRRADIATED 304L STAINLESS TUBING WITH 600 PPM BORON ADDED. TUBES WERE 62 INCHES LONG, 0.452 INCH OD, WITH A WALL THICKNESS 0.020 TO 0.018 INCH. COLLAPSE TESTS AT 600 F AVERAGED 2010 PSI (LOWEST 1800), AND 70 F AVERAGED 2750 PSI (LOWEST 2400). CALCULATIONS WERE 1500 PSI AT 600 F, AND 2500 PSI AT 70 F. OPERATING PRESSURE MAY REACH 1250 PSIG AT 600 F, AND 1375 DURING COLD HYDRO TEST. THE CRITICAL BUCKLING PRESSURE IS 1825 PSI AT 600 F.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*CLAD + \*FUEL ELEMENT + \*STRESS ANALYSIS + BUCKLING + ELK RIVER + REACTOR, BOILING WATER + TEST, PROOF

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-14648 ALSO IN CATEGORIES 17 AND 18  
BARROW WE  
CVTR VAPOR CONTAINER LEAK RATE TEST, SEPTEMBER 1966  
CAROLINAS VIRGINIA NUCLEAR POWER ASSOCIATES, INC.  
CVNA-266 +. 35 PAGES, NOVEMBER 18, 1966

THE 1966 LEAK-RATE TEST WAS PERFORMED AT 13 PSIG FOR 3 DAYS, BY THE REFERENCE METHOD, AND CHECKED BY TEMPERATURE AND ABSOLUTE-PRESSURE MEASUREMENTS. AT THE END OF THE TEST, A METERED AMOUNT OF AIR WAS ADDED TO MAKE THE ORIGINAL PRESSURE. THE LEAK RATE AT DESIGN PRESSURE (21 PSIG) IS CALCULATED TO BE 0.184 PERCENT/DAY, LESS THAN HALF OF TECH.-SPEC. LIMIT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*CONTAINMENT, HIGH PRESSURE + \*TEST, LEAK RATE + CONTAINMENT REFERENCE MEASURING SYSTEM + CVTR (CAROLINAS VIRGINIA TUBE REACTOR) + OPERATING LIMITS/TECHNICAL SPECIFICATIONS + REACTOR, HEAVY WATER + REACTOR, PRESSURE TUBE + REACTOR, PRESSURIZED WATER

11-14660 ALSO IN CATEGORY 1  
PRESSURE VESSEL CODES - THEIR APPLICATION TO NUCLEAR REACTOR SYSTEMS. FINDINGS FROM A SURVEY. TECHNICAL REPORTS SERIES NO. 56  
INTERNATIONAL ATOMIC ENERGY AGENCY, VIENNA, AUSTRIA  
STI-DOC-10/56 +. 36 PAGES, 2 TABLES, 1 FIGURE, 21 REFERENCES, MAY 1966

A SURVEY WAS MADE BY THE INTERNATIONAL ATOMIC ENERGY AGENCY OF HOW THE PROBLEMS OF APPLYING NATIONAL PRESSURE VESSEL CODES TO NUCLEAR REACTOR SYSTEMS HAVE BEEN TREATED IN THOSE MEMBER STATES THAT HAVE PRESSURIZED REACTORS IN OPERATION OR UNDER CONSTRUCTION AT THE BEGINNING OF 1963. FIFTEEN ANSWERS RECEIVED TO AN OFFICIAL INQUIRY FORM THE BASIS OF THIS REPORT, WHICH ALSO TAKES INTO ACCOUNT SOME RECENTLY PUBLISHED MATERIAL. IT HAS BEEN POSSIBLE TO APPLY THE NORMAL NATIONAL PRESSURE VESSEL CODES TO MOST OF THE PRESSURIZED REACTORS BUILT SO FAR, AND THE BODIES NORMALLY RESPONSIBLE FOR THE ADMINISTRATION OF CODES AND REGULATIONS HAVE STILL HAD THIS FUNCTION TO FULFIL, EVEN IF SOMETIMES THE PROCEDURES DIFFER FROM THE ROUTINE FOR BOILERS AND CONVENTIONAL VESSELS.

AVAILABILITY - NATIONAL AGENCY FOR INTERNATIONAL PUBLICATIONS, INC., 317 EAST 34TH STREET, NEW YORK, NEW YORK 10016, \$1.00 COPY

\*CODES AND STANDARDS + \*CONTAINMENT, PRESSURE VESSEL + AUSTRALIA + BELGIUM + DENMARK + GERMANY + INSPECTION AND COMPLIANCE + IRRADIATION TESTING + LAW + NEUTRON + NORWAY + SWEDEN + UNION OF SOVIET SOCIALIST REPUBLICS + UNITED STATES

11-14665 ALSO IN CATEGORIES 5 AND 18  
ACRS APPROVES QUAD CITIES 1 AND 2 CONSTRUCTION PERMIT  
UNITED STATES ATOMIC ENERGY COMMISSION  
3 PAGES, 6 REFERENCES, DECEMBER 14, 1966, DOCKET NOS. 50-254 AND 50-265

ACRS NOTES THAT MORE INFORMATION IS AVAILABLE ON THE EMERGENCY COOLING SYSTEM OF THIS DRESDEN-2 CLASS OF REACTOR, THAT IMPROVEMENTS WERE MADE IN THE PROCEDURES FOR INSPECTING THE REACTOR VESSEL DURING FABRICATION AND DURING OPERATION. ACRS MAY REVIEW REACTOR-VESSEL TESTS AT INTERVALS LATER, AND RECOMMENDS THAT APPLICANT TEST STEAM-LINE-ISOLATION VALVES UNDER ACCIDENT CONDITIONS AND THAT REGULATORY STAFF CHECK EMERGENCY-COOLING ANALYSES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) + \*CONTAINMENT PENETRATION, CLOSURE OF + \*SAFETY ANALYSIS REPORT, REVIEW OF + \*TEST, PROOF + CONTAINMENT, PRESSURE VESSEL + EXAMINATION + QUAD CITIES 1 AND 2

11-14666 ALSO IN CATEGORIES 7 AND 17  
MILLER CE + SHIELDS RP  
USED CHARCOAL FILTERS FROM N S SAVANNAH IGNITE AT LOWER TEMPERATURES  
OAK RIDGE NATIONAL LABORATORY  
ORNL-TM-1742 +. 2 PAGES, ORNL NUCLEAR SAFETY RESEARCH AND DEVELOPMENT PROGRAM BIMONTHLY REPORT FOR NOVEMBER-DECEMBER 1966, PAGES 70-71, JANUARY 13, 1967, DOCKET NO. 50-238

ORNL TESTS ON AGED (USED) CHARCOALS FROM THE CONTAINMENT FILTERS OF THE NS SAVANNAH SHOWED THE CHARCOALS IGNITE AT 150-200 C LOWER THAN SIMILAR NON-AGED ONES. IODINE-IMPREGNATED CHARCOALS GENERALLY HAVE A HIGHER IGNITION TEMPERATURE THAN NON-IMPREGNATED CHARCOALS.

AVAILABILITY - WM. B. COTTRELL, OAK RIDGE NATIONAL LABORATORY, P. O. BOX Y, OAK RIDGE, TENNESSEE

\*CHARCOAL + \*FILTER + \*IGNITION + \*OPERATING EXPERIENCE + FIRE + HIGH TEMPERATURE + N S SAVANNAH + REACTOR, MARITIME + REACTOR, PRESSURIZED WATER

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-14668

DUBOIS F + BONVALET C + DAWANCE G + MARECHAL JC

STUDY OF A REDUCED SCALE MODEL OF A PRESTRESSED CONCRETE VESSEL SUBJECTED TO A LARGE THERMAL GRADIENT  
ORNL-TR-1350 +. 35 PAGES, TRANSLATED FROM ANN. INST. TECH. BATIMENT TRAV. PUBLICS 18, PAGES 1290-1306  
(OCTOBER 1965)

FOLLOWING THE SATISFACTORY OPERATION OF G2 AND G3 IN MARCOULE, AND WITH CONSIDERATION OF THE DIFFICULTIES ENCOUNTERED IN THE CONSTRUCTION OF STEEL CONTAINMENT, THE FRENCH AEC DECIDED TO PURSUE STUDIES OF PRESTRESSED-CONCRETE CONTAINMENT. A REDUCED-SCALE MODEL WAS BUILT FOR HIGH-TEMPERATURE TESTS. PRELIMINARY STUDIES SHOWED THAT CONVENTIONAL CONCRETES WITH SILICEOUS AGGREGATES AND ARTIFICIAL PORTLAND CEMENTS CAN RESIST TEMPERATURE IN THE RANGE 200-250 C WITHOUT TOO MUCH DAMAGE.

AVAILABILITY - JOHN CRERAP LIBRARY, 35 WEST 33RD STREET, CHICAGO, ILLINOIS 60616, \$3.60 COPY, \$1.25 MICRONEGATIVE

\*CONCRETE, PRESTRESSED + \*CONTAINMENT, PRESSURE VESSEL + \*TEST, PRESSURE VESSEL + \*THERMAL ANALYSIS + FRANCE + MOCKUP + TESTING

11-14670

ALSO IN CATEGORIES 12 AND 7

KARWAT H

CURRENT PROBLEMS IN DESIGN AND EVALUATION OF CONTAINMENTS FOR LARGE WATER COOLED POWER REACTORS  
TECHNISCHE HOCHSCHULE MÜNCHEN, GERMANY

MFR-30 +. 15 PAGES, 2 FIGURES, 9 REFERENCES, OCTOBER 1966, FROM SECOND MEETING OF COMMITTEE ON REACTOR SAFETY TECHNOLOGY, PARIS, NOVEMBER 2-4, 1966

DESCRIBES FULL-PRESSURE AND PRESSURE-SUPPRESSION CONTAINMENT SYSTEMS AS USED IN GERMAN FEDERAL REPUBLIC. THERE FOLLOWS A DISCUSSION OF THE TYPES OF ACCIDENT AND ENGINEERED SAFEGUARDS THAT MUST BE CONSIDERED IN REACTOR SAFETY ANALYSIS.

\*CONTAINMENT, GENERAL + \*CONTAINMENT, HIGH PRESSURE + \*CONTAINMENT, PRESSURE SUPPRESSION + \*GERMANY + ACCIDENT ANALYSIS + CHARCOAL + ENGINEERED SAFETY SYSTEM + FILTER + FISSION PRODUCT TRANSPORT + METAL WATER REACTION

11-14672

COWAN A + NICHOLS RW

EFFECT OF IRRADIATION ON STEELS USED IN PRESTRESSED CONCRETE PRESSURE VESSELS

UNITED KINGDOM ATOMIC ENERGY AUTHORITY, CULCHETH, ENGLAND

TRG-REP/RI-1275 + JNPC-MWP-SSG/P(66)60 +. 16 PAGES, JUNE 1, 1966

REVIEWS THE EFFECT OF NEUTRON IRRADIATION ON STEELS USED IN PRESTRESSED CONCRETE PRESSURE VESSELS FOR AN ADVANCED GAS-COOLED REACTOR. THE EXPECTED CHANGES IN PROPERTIES ARE DISCUSSED IN RELATION TO DESIGN AND PERFORMANCE OF THE LINER AND THE PRESTRESSING TENDONS. DATA ARE GIVEN FROM EXPERIMENTAL IRRADIATIONS, AND IT IS CONCLUDED THAT IRRADIATION EFFECTS ON THE LINER AND TENDONS ARE NOT LIKELY TO LEAD TO PREMATURE FAILURE OR TO RESTRICTIONS ON OPERATING CONDITIONS.

AVAILABILITY - REACTOR GROUP, UNITED KINGDOM ATOMIC ENERGY AUTHORITY, CULCHETH, ENGLAND

\*CONCRETE, PRESTRESSED + \*IRRADIATION TESTING + \*NEUTRON + \*STEEL + CONTAINMENT, PRESSURE VESSEL + STEEL LINER + STRESS ANALYSIS + TENSILE PROPERTY

11-14673

ALSO IN CATEGORY 2

GLUCKMANN AL

CONTAINMENT STRUCTURES. REACTOR CONTAINMENT STRUCTURES ABROAD

GIBBS AND HILL, INC., NEW YORK

CONF-650,829-2 + GMELIN-AED-CONF-65-238-1 +. 35 PAGES, 9 FIGURES, AUGUST 1965, PRESENTED AT AMERICAN SOCIETY OF CORROSION ENGINEERS, DIVISION SPECIALTY CONFERENCE, DENVER, COLORADO, AUGUST 1965

DESCRIBES SOME CONTAINMENT STRUCTURES DESIGNED FOR PRESSURIZED WATER REACTORS IN BELGIUM, SPAIN, JAPAN, ITALY AND SWITZERLAND.

AVAILABILITY - GIBBS + HILL INC., NEW YORK, NEW YORK

\*CONTAINMENT STRUCTURE + \*CONTAINMENT, GENERAL + BELGIUM + CONTAINMENT DESIGN + EARTHQUAKE ENGINEERING + ITALY + JAPAN + REACTOR, PRESSURIZED WATER + SPAIN + SWITZERLAND

11-14674

MALAY FL

NUCLEAR REACTOR CONTAINMENT SYSTEM

WESTINGHOUSE ELECTRIC CORPORATION

U.S. PAT. 3,258,403 +. 8 PAGES, 4 FIGURES, 13 REFERENCES, MAY 24, 1963

A MULTIPLE-BARRIER CONTAINMENT SYSTEM FOR NUCLEAR REACTORS IS DESCRIBED. INFORMATION IS ALSO

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-14674 \*CONTINUED\*

GIVEN ON A SYSTEM FOR PUMP BACK TO THE INNER CONTAINER OF GASES THAT LEAK TO THE SPACE BETWEEN THE INNER AND OUTER CONTAINER.

AVAILABILITY - THE U. S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D. C. (\$0.25 PER COPY)

\*CONTAINMENT DESIGN + \*CONTAINMENT LEAKAGE CONTROL + \*CONTAINMENT, MULTIPLE + CONCRETE + CONTAINMENT AIR COOLING + CONTAINMENT VESSEL LOADING + REACTOR, WATER + STEEL + STEEL LINER

11-14692

HANSON A + PARR JG  
THE ENGINEERS GUIDE TO STEEL  
HANSON PARR ENGINEERING LTD. + UNIVERSITY OF WINDSOR  
406 PAGES, 79 TABLES, 122 FIGURES, 49 REFERENCES, 1965

THE PURPOSE OF THIS BOOK IS TO ACQUAINT THE USERS OF STEEL WITH THE TECHNOLOGY OF THE MATERIAL. PART ONE CONTAINS DISCUSSIONS OF THE STEEL-MAKING PROCESS, THE STRUCTURE OF STEEL, WELDING, BRITTLE FRACTURE, AND FATIGUE. PART TWO DISCUSSES SPECIFICATIONS AND TESTS, BOTH DESTRUCTIVE AND NONDESTRUCTIVE. PART THREE CONTAINS DATA ON PARTICULAR TYPES OF STEELS, INCLUDING HIGH-STRENGTH STEELS AND PRESSURE-VESSEL STEELS. SERVICE FAILURES DUE BOTH TO MECHANICAL CAUSES AND TO CORROSION ARE ALSO DISCUSSED.

AVAILABILITY - ADDISON-WESLEY PUBLISHING COMPANY, INC., READING, MASSACHUSETTS, \$13.75

\*METAL + \*STEEL + BRITTLE FRACTURE + CODES AND STANDARDS + CORROSION + CREEP PROPERTY + DESIGN CRITERIA + FAILURE, FATIGUE + FLAW + IMPACT PROPERTY + STEEL, STAINLESS + STRESS STRAIN DATA + TENSILE PROPERTY + TEST, DESTRUCTIVE + TEST, NONDESTRUCTIVE + WELDING + WELDS

11-14710

LAUTZENHEISER CE  
EVALUATION OF THE SERVICEABILITY OF THE ELK RIVER REACTOR PRESSURE VESSEL. QUARTERLY REPORT, APRIL 1, 1966-JUNE 30, 1966  
SOUTHWEST RESEARCH INSTITUTE, SAN ANTONIO, TEXAS  
SWRI-1228-4-22 +. 21 PAGES, AUGUST 1, 1966

THIS IS ONE OF A SERIES OF PROGRESS REPORTS. THE GENERAL OBJECTIVE OF THE WORK IS TO EVALUATE THE SERVICEABILITY OF THE ELK RIVER REACTOR PRESSURE VESSEL BY DETERMINING THE EFFECTS OF FABRICATION PROCEDURES, IRRADIATION, DISSIMILAR WELD METALLURGY, AND GEOMETRY ON THE FATIGUE LIFE AND NIL-DUCTILITY TRANSITION TEMPERATURE OF THE COMPLETED VESSEL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*CONTAINMENT, PRESSURE VESSEL + \*ELK RIVER + \*IRRADIATION TESTING + \*NEUTRON + NDT DATA (NIL DUCTILITY TRANSITION) + REACTOR, BOILING WATER + TEST, NONDESTRUCTIVE + WELDS

11-14723 ALSO IN CATEGORIES 1 AND 18

TURKEY POINT INTERVENTION PETITION  
FLORIDA POWER AND LIGHT  
3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(7) PAGES 6-8 (FEBRUARY 13, 1967)

PAUL SIEGEL, MIAMI RESIDENT, FILES INTERVENTION PETITION TO ENSURE THOROUGH STUDY OF THE CONTAINMENT VESSELS ABILITY TO WITHSTAND A CONVENTIONAL BOMB BLAST, WHICH MIGHT BREACH CONTAINMENT AND INITIATE A LOSS-OF-COOLANT ACCIDENT. REFERENCE IS MADE TO CUBA BEING 200 MILES AWAY.

\*CONSTRUCTION PERMIT PROCESS + \*CONTAINMENT DESIGN + \*EXPLOSION + CIVIL DEFENSE + REACTOR, PRESSURIZED WATER + TURKEY POINT 3 + TURKEY POINT 4

11-14780

ALSO IN CATEGORIES 18 AND 5

LAWROSKI H  
THE ZERO-POWER PLUTONIUM REACTOR FACILITY  
ARGONNE NATIONAL LABORATORY  
4 PAGES, 2 FIGURES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PA., OCTOBER 30-NOVEMBER 3, 1966. ANS TRANS. 9(2), PAGE 552 (NOVEMBER 1966)

ZPPR IS A CRITICAL MACHINE FOR LARGE, FAST POWER REACTOR CORES (UP TO 1000 MWE, 3000 KG PU). FOR THE FACILITY ASSUMED, MAXIMUM CREDIBLE ACCIDENT IS A FIRE WITHOUT EXCURSION, AND ASSUMED DESIGN-BASIS ACCIDENT IS A VIGOROUS FIRE DUE TO VAPORIZATION OF FUEL DURING AN EXCURSION. FILTERING THROUGH A GRAVEL-SAND ROOF AND ADDITIONAL FILTERS LIMITS RELEASE OF PLUTONIUM TO ATMOSPHERE.

\*ACCIDENT, HYPOTHETICAL + \*ACCIDENT, MAXIMUM CREDIBLE (MCA) + \*ZPPR (ANL ZERO POWER PLUTONIUM REACTOR) + CRITICAL ASSEMBLY FACILITY + FILTER + PLUTONIUM

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-14849 ALSO IN CATEGORIES 17 AND 18  
ELK RIVER CHANGE 9A - EXTENDED DATE FOR CONTAINMENT LEAK RATE TEST  
DIVISION OF REACTOR LICENSING, AEC  
2 PAGES, JANUARY 1967, DOCKET NO. 115-1

DRL AUTHORIZES TEST BE POSTPONED NOT LATER THAN MAY 15, 1967, SINCE THE REFERENCE-SYSTEM REVISIONS ARE INCOMPLETE.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*CONTAINMENT REFERENCE MEASURING SYSTEM + \*MODIFICATION, SYSTEM OR EQUIPMENT +  
\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + \*TEST, LEAK RATE + ELK RIVER + REACTOR, BOILING WATER

11-14851 ALSO IN CATEGORY 18  
ELK RIVER REQUESTS DEFERRED LEAK RATE TESTS  
RURAL COOPERATIVE POWER ASSOCIATION  
2 PAGES, DECEMBER 15, 1966, DOCKET NO. 115-1

FURTHER DEFERMENT OF LEAK RATE TESTS (TO 15 MAY 67) IS DESIRABLE BECAUSE REFERENCE-MEASURING-SYSTEM MODIFICATIONS ARE DELAYED, AND NEW B4C RODS ARE ALSO DELAYED.

\*CONTAINMENT REFERENCE MEASURING SYSTEM + \*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + \*TEST, LEAK RATE +  
ELK RIVER + REACTOR, BOILING WATER

11-14861 ALSO IN CATEGORIES 7 AND 18  
N S SAVANNAH CHANGE 5 - MISC. ADMINISTRATION AND TESTING  
DIVISION OF REACTOR LICENSING, UNITED STATES ATOMIC ENERGY COMMISSION  
9 PAGES, FEBRUARY 5, 1967, DOCKET NO. 50-238

CHANGES ALLOWED ARE - (1) CHANGE IN ORGANIZATIONAL TITLES, (2) PROVIDE FOR TRITIUM MONITORING IN WASTE DISPOSAL, (3) LESS FREQUENT EVACUATION DRILLS, (4) CLARIFY REPORTING RESPONSIBILITY OF STAFF HEALTH PHYSICIST, (5) ALTER CHANNEL 10 AND 11 REQUIREMENTS OF RADIATION MONITORING DURING FILTER TESTS, AND (6) ALLOW PORT ENTRY IF A DOP TEST WITHIN 1 WEEK PAST SHOWED A FILTER FACTOR OF 1000 OR MORE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + \*SAFETY EVALUATION + ADMINISTRATIVE CONTROLS AND PRACTICES +  
CONTAINMENT FILTERING SYSTEM + INSTRUMENTATION, RADIATION MONITORING + N S SAVANNAH + REACTOR, MARITIME +  
REACTOR, PRESSURIZED WATER + TEST, DOP FILTER + TRITIUM + WASTE DISPOSAL, GENERAL

11-14992 ALSO IN CATEGORIES 3 AND 12  
HARRELL JE  
MIXING AND SAMPLING ENRICHED U-235 FLUIDS IN CYLINDRICAL STORAGE CONTAINERS. FINAL REPORT  
OAK RIDGE NATIONAL LAB., OAK RIDGE  
Y-1561 +. 124 PAGES, FIGURES, TABLES, JANUARY 17, 1967

A STUDY WAS PERFORMED THAT COMBINED THE MEASUREMENT OF SOME SAFE-TANK MIXING AND SAMPLING CHARACTERISTICS WITH A THEORETICAL ANALYSIS FOR THE GENERALIZATION OF MIXING CHARACTERISTICS FOR RECIRCULATION IN MIXED-TANK SYSTEMS. SAFE-TANK MIXING WAS SIMULATED IN FACILITY THAT CONSISTED OF BOTH HORIZONTALLY AND VERTICALLY ORIENTATED TANKAGE EQUIPPED WITH FLOW-RATE AND FLUID-CONCENTRATION MEASUREMENT COMPONENTS. THE THEORETICAL TREATMENT USED A COMBINATION OF THE TANKS-IN-SERIES MODEL AND THE DISPERSION MODEL, AND REQUIRED EITHER ANALOG OR DIGITAL COMPUTER SOLUTIONS. THE EFFECT OF THE PIPING ARRANGEMENT OF THE VARIOUS TANKAGE SYSTEMS UPON MIXING, SAMPLING, AND FUEL-INVENTORY UNCERTAINTIES WAS STUDIED AND RECOMMENDATIONS MADE FOR THE DESIGN AND OPERATION OF A TANKAGE SYSTEM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*FUEL STORAGE + \*SAMPLING + \*URANIUM + COMPARISON, THEORY AND EXPERIENCE

11-15006 ALSO IN CATEGORIES 5 AND 18  
GINNA CORE COOLING AND CONTAINMENT SPRAY REVISIONS  
ROCHESTER GAS AND ELECTRIC CORP., ROCHESTER  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(10) PAGE 26 (MARCH 6, 1967) DOCKET NO. 50-244

TWO PRESSURIZED ACCUMULATORS WILL BE ADDED FOR BORATED WATER INJECTION ON LOSS-OF-COOLANT ACCIDENT. SPACE PROBLEMS REQUIRED A THIOSULFATE SPRAY TO REPLACE 2 OF THE 4 IODINE (CHARCOAL) FILTERS. THE REMAINING 2 WILL BE ELIMINATED IF WESTINGHOUSE ANALYSIS SHOWS IT POSSIBLE.

\*CONTAINMENT FILTERING SYSTEM + \*CONTAINMENT SPRAY + \*EMERGENCY COOLING CONSIDERATIONS + GINNA +  
REACTOR, PRESSURIZED WATER

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-15045

FLEXURAL MECHANICS OF REINFORCED CONCRETE, PROCEEDINGS OF THE INTERNATIONAL SYMPOSIUM, MIAMI, FLORIDA  
AMERICAN SOCIETY OF CIVIL ENGINEERING  
601 PAGES, AMERICAN SOCIETY OF CIVIL ENGINEERS, PROCEEDINGS OF THE INTERNATIONAL SYMPOSIUM, MIAMI,  
FLORIDA, NOVEMBER 10-12, 1964

REINFORCED CONCRETE DEVIATES FROM ELASTIC BEHAVIOR APPRECIABLY AT LOW LOAD AND RADICALLY AT HIGH LOAD. PRESENT AMERICAN DESIGN PRACTICE, AS DEFINED BY ACI BUILDING CODE 318-63, SPECIFIES A NONELASTIC ANALYTICAL DETERMINATION OF THE ULTIMATE STRENGTH OF MEMBERS AT CROSS SECTIONS WHILE SPECIFYING AN ELASTIC ANALYTICAL DETERMINATION OF THE MOMENTS AND FORCES APPLIED TO THE CROSS SECTIONS. THIS BASIC CONTRADICTION IS SOMEWHAT CHARACTERISTIC OF MOST CURRENT CODES, AND ITS ELIMINATION AWAITS THE DEVELOPMENT OF NEW METHODS OF INELASTIC, NONLINEAR ANALYSIS APPROPRIATE TO REINFORCED CONCRETE. THE PURPOSE OF THIS SYMPOSIUM IS THE PRESENTATION OF RESULTS OF RECENT WORK DIRECTED SPECIFICALLY TOWARD THIS GOAL AND GENERALLY TOWARD A MORE BASIC UNDERSTANDING OF THE FLEXURAL BEHAVIOR OF REINFORCED CONCRETE.

AVAILABILITY - AMERICAN CONCRETE INSTITUTE, P.O. BOX 4754, REDFORD STATION, DETROIT, MICHIGAN 48219  
\$10.00 COPY

\*CONCRETE + ELASTICITY + EQUATION, NONLINEAR + PLASTICITY

11-15046

ALSO IN CATEGORY 1

ACI STANDARDS, 1966, CURRENT ACI STANDARDS  
500 PAGES, AMERICAN CONCRETE INSTITUTE, DETROIT, MICHIGAN, 1966

CURRENT STANDARDS OF THE AMERICAN CONCRETE INSTITUTE ARE PUBLISHED IN THIS VOLUME (EXCEPT MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES, ACI 315-57, WHICH APPEARS AS A SEPARATE PUBLICATION BECAUSE OF ITS SIZE). EACH STANDARD IS ALSO AVAILABLE AS A SEPARATE BOOKLET. NEW EDITIONS OF THE COLLECTED ACI STANDARDS ARE ISSUED AS RAPIDLY AS JUSTIFIED BY THE COMPLETION OF TECHNICAL COMMITTEE WORK.

AVAILABILITY - AMERICAN CONCRETE INSTITUTE, P. O. BOX 4754, REDFORD STATION, DETROIT, MICHIGAN 48219  
\$10.00 COPY

\*CODES AND STANDARDS + \*CONCRETE + COATING + CONCRETE, PRESTRESSED

11-15051

MARTIN WR + WEIR JR

SOLUTIONS TO THE PROBLEMS OF HIGH-TEMPERATURE IRRADIATION EMBRITTLEMENT

OAK RIDGE NATIONAL LABORATORY

ORNL-TM-1544 +. 29 PAGES, 7 FIGURES, 6 TABLES, 23 REFERENCES, JUNE 1966, PRESENTED AT THE SIXTY-NINTH ANNUAL MEETING OF THE AMERICAN SOCIETY FOR TESTING AND MATERIALS, ATLANTIC CITY, JUNE 27- JULY 1, 1966

THE EFFECT OF IRRADIATION ON THE HIGH-TEMPERATURE MECHANICAL PROPERTIES OF STRUCTURAL MATERIALS IS DESCRIBED USING TYPE 304 STAINLESS STEEL AS AN EXAMPLE. THE GENERAL EFFECT IS ONE IN WHICH THE GRAIN-BOUNDARY FRACTURE PROCESS, BUT NOT THE DEFORMATION PROCESS, IS AFFECTED. THE DATA SUGGEST THE PRIMARY CAUSE TO BE HELIUM GENERATED FROM (n, alpha) REACTIONS. SEVERAL METALLURGICAL TECHNIQUES FOR IMPROVING THE DUCTILITIES OF IRRADIATED ALLOYS ARE SUGGESTED, AND EXPERIMENTAL DATA ON TYPE 304 STAINLESS STEEL ARE GIVEN FOR WHICH THE DEGREE OF IMPROVEMENT IS DEMONSTRATED. TITANIUM ADDITIONS TO STAINLESS STEEL ARE BELIEVED TO FORM COMPLEX METAL BORIDES DISPERSED HOMOGENEOUSLY WITHIN THE MATRIX AND THE PRECIPITATE-MATRIX INTERFACES SERVE AS A DEPOSITORY FOR HELIUM. OTHER APPROACHES FOR IMPROVING HIGH-TEMPERATURE DUCTILITY ARE AVAILABLE, ONE OF THESE IS PROPER AGING OF PRESENT GRADES OF STAINLESS STEELS.

AVAILABILITY - W. R. MARTIN OR J. R. WEIR, OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE

\*BRITTLE FRACTURE + \*IRRADIATION TESTING + \*RADIATION EFFECT + \*STEEL, STAINLESS + \*TENSILE PROPERTY + ALLOY + BORON + CREEP PROPERTY + EMBRITTLEMENT + HELIUM + RADIATION DAMAGE + STRESS RUPTURE + TITANIUM

11-15076

ALSO IN CATEGORIES 17 AND 18

PATHFINDER CONTAINMENT INTEGRITY BROKEN, FEBRUARY 8, 1967

NORTHERN STATES POWER COMPANY

1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(11), PAGE 28, (MARCH 13, 1967) DOCKET NO. 50-130

ON FEB. 27, PATHFINDER REPORTED THAT BOTH PERSONNEL AIRLOCK DOORS WERE OPENED FOR 2 MINUTES TO REMOVE EQUIPMENT. WHILE REACTOR WAS SHUT DOWN, THE SYSTEM WAS ABOVE THE 250 PSIG AS SPECIFIED IN TS AS REQUIRING CONTAINMENT INTEGRITY.

\*CONTAINMENT AIR LOCK + \*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + CONTAINMENT INTEGRITY + FAILURE, ADMINISTRATIVE CONTROL + PATHFINDER + REACTOR, BOILING WATER + REACTOR, SUPERHEAT

11-15109

LEVEN MM

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-15109 \*CONTINUED\*  
STRESS DISTRIBUTION IN A PRESSURIZED CYLINDER WITH EXTERNAL LONGITUDINAL NOTCHES  
WESTINGHOUSE RESEARCH LABORATORY, PITTSBURGH, PA.  
WERL-1114-2 +. 41 PAGES, TABLES, AUGUST 1965

A CYLINDRICAL VESSEL WITH FOUR EXTERNAL LONGITUDINAL NOTCHES WAS SUBJECTED TO INTERNAL PRESSURE. A PHOTOELASTIC ANALYSIS OF THE PRINCIPAL STRESSES ALONG THE SECTION OF SYMMETRY OF SIX TRANSVERSE SECTIONS THROUGH THE SHORTEST AND MOST SHALLOW NOTCH WAS MADE AND IS PRESENTED. THE MAXIMUM STRESSES AT THE TIP OF THE NOTCH WERE 20.0 TIMES THE NOMINAL STRESS S IN THE CIRCUMFERENTIAL DIRECTION AND 7.1 S IN THE LONGITUDINAL DIRECTION. A MAXIMUM RADIAL STRESS OF ABOUT 3.0 S IS DEVELOPED AT A DISTANCE 1.7 TIMES THE RADIUS FROM THE NOTCH TIP. THE STRESS-FIELD PARAMETER FOR BRITTLE FRACTURE VARIED FROM 0.73 TO 0.97, AS CALCULATED BY VARIOUS METHODS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*CONTAINMENT, PRESSURE VESSEL + \*TEST, PRESSURE VESSEL + CYLINDER + MOCKUP + STRESS ANALYSIS + TEST, DESTRUCTIVE + TESTING

11-15110 ALSO IN CATEGORY 17  
MCDONALD J + WATSON PD  
INVESTIGATION OF THE EFFECTS OF FABRICATION ON THE PROPERTIES OF ERV PRESSURE VESSEL MATERIALS  
SOUTHWEST RESEARCH INSTITUTION, SAN ANTONIO  
SWRI-122P-4-17 +. 70 PAGES, TABLES, MARCH 14, 1966

INVESTIGATIONS WERE MADE TO DETERMINE THE EFFECTS OF FABRICATION HISTORY ON THE NIL-DUCTILITY TRANSITION TEMPERATURES AND THE LOW-CYCLE FATIGUE STRENGTHS OF THE ELK RIVER REACTOR PRESSURE VESSEL STEELS. THE PROBABLE SHELL-FORMING PROCEDURES FOR THE PRESSURE VESSEL WERE SIMULATED FOR A302 GRADE B BY COLD-STRAINING AND WARM-STRAINING (600 F) THE MATERIAL AN AMOUNT EQUIVALENT TO FORMING 3-IN-THICK MATERIAL TO A 7-FT DIAMETER. ON THE BASIS OF THE INFORMATION GENERATED IN THIS PROGRAM, IT WAS CONCLUDED THAT THE ORIGINAL NDTT ON THE ERV PRESSURE VESSEL STEEL WAS CONSERVATIVELY PLUS 50 F OR LESS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*COMPARISON, THEORY AND EXPERIENCE + \*CONTAINMENT, PRESSURE VESSEL + \*NDT DATA (NIL DUCTILITY TRANSITION) + \*TEST, PRESSURE VESSEL + ELK RIVER + NOZZLE + STEEL

11-15111  
CRAMER TL  
SITE ASSEMBLY. A NEW APPROACH FOR U.S. REACTOR VESSELS  
4 PAGES, 4 FIGURES, NUCLEONICS 24(11), PAGES 58-61, (NOVEMBER 1966)

KNOWLEDGEABLE PEOPLE ON ALL SIDES AGREE THAT PRESSURE VESSELS CAN BE ASSEMBLED AT THE SITE WITH THE SAME QUALITY ATTAINABLE IN THE SHOP. NECESSARY DEPARTURES FROM SHOP PRACTICE, HOWEVER, WILL PROMPT AEC TO LOOK CAREFULLY AT HOW WELL THE PROPOSED METHODS WILL ASSURE QUALITY. OF MAJOR CONCERN WILL BE HEAT TREATMENT TO STRESS-RFIFVF WELDS AND RADIOGRAPHIC INSPECTION. THIS ARTICLE SUMMARIZES PAST EXPERIENCE AND DESCRIBES PROCEDURES TO BE FOLLOWED IN SITE ASSEMBLY OF LARGE STEEL PRESSURE VESSELS.

\*CONTAINMENT, PRESSURE VESSEL + \*SITE ASSEMBLY + PRESSURE, INTERNAL + SEAL + STEEL + TEST, NONDESTRUCTIVE + TESTING + WELDING

11-15121  
SPECIAL SAFEGUARDS REPORT. ANNEALING OF THE SM-1A REACTOR VESSEL  
U.S. ARMY ENGINEER REACTORS GROUP, FT. BELVIER, VIRGINIA + NUS CORPORATION, WASHINGTON, D. C.  
NUS-306 +. 145 PAGES, 14 FIGURES, 17 TABLES, OCTOBER 1966

THE U. S. NAVAL RESEARCH LABORATORY (NRL) HAS STUDIED THE EXTENT OF NEUTRON EMBRITTLEMENT OF THE SM-1A REACTOR PRESSURE VESSEL AND THE POSSIBILITIES FOR RESTORATION OF NOTCH DUCTILITY BY HEAT TREATMENT. THE VESSEL MATERIAL IS TYPE A 350-LF-1 LOW ALLOY, CARBON STEEL. THE NRL WORK PRESENTED IN SECTION III DEMONSTRATES THAT FULL RECOVERY OF NOTCH DUCTILITY MAY BE ACHIEVED BY POSTIRRADIATION ANNEALING AT TEMPERATURES IN EXCESS OF 700 F. ALTERNATIVELY, IT IS INDICATED THAT A ONE-WEEK ANNEAL AT ABOUT 600 F WOULD PROVIDE SIGNIFICANT, THOUGH INCOMPLETE, RESTORATION OF NOTCH DUCTILITY.

AVAILABILITY - SAFETY OFFICE, OFFICE OF THE CHIEF OF ENGINEERS, DEPT. OF THE ARMY, WASHINGTON, D. C.

\*CONTAINMENT, PRESSURE VESSEL + \*HEAT TREATMENT + \*NDT DATA (NIL DUCTILITY TRANSITION) + EMBRITTLEMENT + REACTOR, ARMY + REACTOR, PRESSURIZED WATER + SM 1A (STATIONARY MEDIUM POWER PLANT, ALASKA) + STEEL

11-15122  
HOT LABORATORIES  
3 PAGES, FIGURES, NUCLEAR ENGINEERING, 11(123), PAGES 603-605, (AUGUST 1966)

CONSOLIDATION OF TECHNIQUES AND BETTER UNDERSTANDING OF HAZARDS IS THE CURRENT PATTERN OF

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-15122 \*CONTINUED\*

DEVELOPMENT IN HIGH-ACTIVITY LABORATORY WORK. BUT THIS IS A FIELD IN WHICH THE UK HAS A RATHER DIFFERENT OUTLOOK FROM THAT OF MOST OTHER COUNTRIES. WHILE MANY COUNTRIES ARE DEVELOPING INCREASINGLY SOPHISTICATED AND EXPENSIVE ANSWERS TO HIGH-ACTIVITY PROBLEMS, THE U.K. AEA SEEM TO BE PRODUCING RESULTS EVERY BIT AS GOOD, IF NOT BETTER, ADAPTING COMPONENTS WHICH CAN BE BOUGHT IN THE HARDWARE STORE DOWN THE ROAD.

\*DESIGN CRITERIA + \*HOT CELL + UNITED KINGDOM

11-15125 ALSO IN CATEGORIES 12 AND 18  
ACRS APPROVES TURKEY POINT CONSTRUCTION PERMIT  
U.S. ATOMIC ENERGY COMMISSION  
PRESS REL. K-20 +. 1 PAGE, JANUARY 27, 1967, DOCKET NO. 50-250, 50-251

ACRS NOTES USE OF ACCUMULATORS FOR VERY RAPID INJECTION OF BORATED WATER AFTER A LOSS-OF-COOLANT ACCIDENT, AND POSITIVE MODERATOR COEFFICIENT, PLUS HURRICANE AND ASSOCIATED WAVES. ACRS FEELS REVIEW WILL BE NECESSARY LATER ON THE QUESTION OF CONTINUED OPERATION IF ONE OF TWO REDUNDANT ENGINEERED SAFEGUARDS BECOMES INOPERABLE.

AVAILABILITY - AEC, DIVISION OF PUBLIC INFORMATION, WASHINGTON, D. C. 20545

\*ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) + CONSTRUCTION PERMIT PROCESS + CONTAINMENT DESIGN + EMERGENCY COOLING CONSIDERATIONS + MODERATOR COEFFICIENT + REACTOR, PRESSURIZED WATER + REDUNDANCE + REVIEW + TURKEY POINT 3 + TURKEY POINT 4

11-15129 ALSO IN CATEGORY 4  
BLUMENTHAL JL + KUENZLY JD + SANTY MJ  
STUDY OF THE CHEMICAL INTEGRITY OF RADIOISOTOPE CONTAINMENT MATERIALS IN LAUNCH ABORT ENVIRONMENTS  
TRW SYSTEMS, REDONDO BEACH, CALIFORNIA  
SC-CR-66-2044 +. 240 PAGES, APRIL 1966

HIGH-TEMPERATURE EXPERIMENTAL SCREENING TESTS ON A NUMBER OF COMBINATIONS OF CONTAINMENT MATERIALS AND LAUNCH-ABORT ENVIRONMENTS WERE CONDUCTED. THE SPECIFIC COMBINATIONS OF MATERIALS AND ENVIRONMENTS CHOSEN FOR THE STUDIES WERE THOSE FOR WHICH THERE WAS EITHER NO INFORMATION OR INSUFFICIENT INFORMATION IN THE LITERATURE TO ESTABLISH THEIR CHEMICAL REACTIVITY. BOTH QUANTITATIVE REACTION KINETICS EXPERIMENTS AND QUALITATIVE OBSERVATIONS OF THE BEHAVIOR OF MATERIALS IN SELECTED FLAME ENVIRONMENTS WERE CONDUCTED. THE OBJECTIVE WAS TO DETERMINE, AS A FUNCTION OF TEMPERATURE AND TIME, THE EXTENT OF CHEMICAL REACTION WHICH WOULD OCCUR WITH THE ABOVE-MENTIONED COMBINATIONS OF MATERIALS AND ENVIRONMENTS. CONCLUSIONS ARE PRESENTED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*AEROSPACE SAFETY + \*ALLOY + \*CHEMICAL REACTION + \*STEEL, STAINLESS + \*TANTALUM + \*TESTING + \*TUNGSTEN + ACCIDENT ANALYSIS + CONTAINMENT INTEGRITY + CONTAINMENT, GENERAL

11-15131  
POCKENHAUSER W  
PRESTRESSED CONCRETE PRESSURE VESSELS FOR POWER REACTORS  
GENERAL ATOMIC DIVISION, GENERAL DYNAMICS CORPORATION, SAN DIEGO  
CONF 660429-10 + GA-7162 +. 15 PAGES, 6 FIGURES, 7 REFERENCES, FROM AMERICAN POWER CONFERENCE, 26TH ANNUAL MEETING, CHICAGO, (JUNE 8, 1966)

PRESTRESSED CONCRETE PRESSURE VESSELS ARE CONSIDERED AS ALTERNATIVES TO STEEL VESSELS FOR GAS-COOLED REACTOR SYSTEMS. CONCRETE VESSELS OFFER THE REACTOR DESIGNER THE FOLLOWING MAJOR ADVANTAGES - (1) IT IS FREE FROM THE SIZE LIMITATIONS IMPOSED BY FABRICATION OR CONSTRUCTION TECHNIQUES. WITHIN REASON AND EXISTING TECHNOLOGY, CONCRETE VESSELS CAN BE BUILT TO ANY DESIRED SIZE FOR PRESSURES WELL ABOVE 1000 PSI. (2) FOR THE FIRST TIME, THE ABSENCE OF SIZE LIMITATIONS MAKES IT POSSIBLE TO SERIOUSLY CONSIDER THE INTEGRATED SYSTEM CONCEPT WHERE ALL PRIMARY PARTS OF A PRESSURIZED REACTOR SYSTEM ARE HOUSED WITHIN ONE LARGE PRESSURE VESSEL. THIS IN TURN OFFERS ECONOMIC AS WELL AS SAFETY ADVANTAGES. (3) BECAUSE OF THEIR COMPOSITE CHARACTERISTICS AND THE EXTREME REDUNDANCY INHERENT IN THE LARGE NUMBER OF LOAD-BEARING TENDONS, IT IS AN EXCEEDINGLY SAFE STRUCTURE WHICH CAN BE DESIGNED SUCH THAT A SERIOUS IN-SERVICE FAILURE WOULD BE INCREDIBLE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*CONCRETE, PRESTRESSED + \*CONTAINMENT, PRESSURE VESSEL + CONTAINMENT RESEARCH AND DEVELOPMENT + ECONOMICS + REACTOR, GAS COOLED

11-15132  
ANDERSON CJ  
INVESTIGATION OF BLAST WAVES FROM A SPHERICAL CHARGE USING THE AX-TNT CODE  
PATT + WHITNEY AIRCRAFT  
TIM-950 +. 5 PAGES, JULY 28, 1965,



CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-15132 \*CONTINUED\*

AMONG THE IMPORTANT CRITERIA FOR REACTOR CONTAINMENT DESIGN IS THE TRANSIENT LOADING OF THE CONTAINMENT VESSEL BY PRESSURE WAVES PRODUCED IN HYPOTHETICAL REACTOR ACCIDENTS. FOR THE PURPOSE OF OBTAINING ESTIMATES OF BLAST LOADINGS OF THE CONTAINMENT VESSEL THE ESTIMATED ENERGY AVAILABLE FOR MECHANICAL WORK HAS OFTEN BEEN CONVERTED TO AN EQUIVALENT WEIGHT OF TNT. IT IS FELT THAT - (1) THE AX-TNT CODE IS A USEFUL TOOL IN THE INVESTIGATION OF BLAST WAVES FROM SPHERICAL CHARGES, (2) BLAST-WAVE RESULTS OBTAINED BY THE AX-TNT CAN BE SCALED, (3) A CONSIDERABLE DIFFERENCE EXISTS BETWEEN HIGH AND LOW ENERGY DENSITY PEAK OVERPRESSURE RESULTS, (4) SMALL CHANGES IN THE SIZE OF A REACTOR CONTAINMENT VESSEL IN THE BREAK POINT REGION WILL NOT RESULT IN AN APPRECIABLE DECREASE OF CONTAINMENT LOADING, (5) REFLECTION OF A SHOCK WAVE BY A CONTAINMENT VESSEL INCREASES THE VESSEL LOADING APPRECIABLY. IN THE CASE CONSIDERED, LOADINGS WERE INCREASED BY A FACTOR OF 2.6.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*ANALYTICAL MODEL + \*CONTAINMENT, SHOCK GENERATION AND PROTECTION + \*EXPLOSIVE, CONVENTIONAL + COMPUTER PROGRAM + CONTAINMENT RESEARCH AND DEVELOPMENT

11-15133

GUNKEL WA + LAUTZENHEISER CE + LOWENBERG AL + NORRIS EB  
EVALUATION OF THE SERVICEABILITY OF THE ELK RIVER REACTOR PRESSURE VESSEL. PROGRESS REPORT NO. 12. MAY 1, 1965 THROUGH JULY 31, 1965  
SOUTHWEST RESEARCH INSTITUTE, SAN ANTONIO, TEXAS  
SWRI-1228-75 +. 31 PAGES, SEPTEMBER 29, 1965

THIS IS ONE OF A SERIES OF REPORTS ON AN INVESTIGATION TO EVALUATE THE SERVICEABILITY OF THE ELK RIVER REACTOR PRESSURE VESSEL BY DETERMINING THE EFFECTS OF FABRICATION PROCEDURES, IRRADIATION, DISSIMILAR WELD METALLURGY, AND GEOMETRY ON THE FATIGUE LIFE AND NIL-DUCTILITY-TRANSITION TEMPERATURE OF THE COMPLETED VESSEL AND TO DEVELOP REMOTE NONDESTRUCTIVE TESTING PROCEDURES FOR USE ON THE ELK RIVER REACTOR PRESSURE VESSEL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*COMPARISON, THEORY AND EXPERIENCE + \*CONTAINMENT, PRESSURE VESSEL + \*NDT DATA (NIL DUCTILITY TRANSITION) + \*TEST, PRESSURE VESSEL + ELK RIVER + NOZZLE + STEEL

11-15134

NUCLEX 66 CONFERENCE REPORT-PART 2  
4 PAGES, 6 FIGURES, NUCLEAR ENGINEERING, 11(126), PAGES 878-881 (NOVEMBER 1966)

THE SECOND PART OF A SUMMARY REPORT ON THE NUCLEX 1966 CONFERENCE. PAPERS ON PRESSURE VESSELS AND COMPONENTS, ECONOMIC PLANNING AND CONTAINMENT, SHIP PROPULSION, AND DESALINATION ARE REVIEWED.

CONTAINMENT, GENERAL + ECONOMICS + REACTOR, FAST + REACTOR, GAS COOLED + REACTOR, MARITIME

11-15135

FABRICATION OF FORGED PRESSURE VESSELS  
2 PAGES, 2 TABLES, NUCLEAR ENGINEERING, 11(126), PAGES 869-870 (NOVEMBER 1966)

THE FABRICATION OF THE CYLINDRICAL BODY OF A PRESSURE VESSEL FROM A NUMBER OF FORGED, SEAMLESS PINGS, RATHER THAN WELDING TOGETHER A NUMBER OF PREFORMED PLATES, IS A TECHNIQUE WIDELY ADOPTED IN EUROPE. ADVANTAGES OF THE TECHNIQUE ARE GIVEN.

\*CONTAINMENT, PRESSURE VESSEL + \*FABRICATION + STEEL

11-15139

LUDWIG DL  
KULATD. A COMPUTER PROGRAM USED IN THE DESIGN OF A COOLING SYSTEM FOR A CONCRETE REACTOR VESSEL. GENERAL DYNAMICS CORP., SAN DIEGO  
GAMD-6928 +. 110 PAGES, 9 FIGURES, 2 REFERENCES, MARCH 7, 1966

KULATD IS A FORTRAN-IV COMPUTER CODE WRITTEN FOR THE IBM-7044 DIGITAL COMPUTER, AND USED AS AN AID IN THE ANALYSIS AND DESIGN OF A COOLING SYSTEM FOR A CONCRETE REACTOR VESSEL. IT CARRIES OUT TWO MAIN FUNCTIONS. FIRST, USING A ONE-DIMENSIONAL MODEL, IT PERFORMS THE HEAT-TRANSFER CALCULATIONS NECESSARY TO DETERMINE THE PROPER SPACING OF THE COOLING TUBES ATTACHED TO THE CONCRETE VESSEL LINER. SECOND, IT CALCULATES THE TOTAL COST OF THE ENTIRE VESSEL COOLING SYSTEM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*AUXILIARY COOLING + \*CONTAINMENT ANALYSIS + \*CONTAINMENT, PRESSURE VESSEL + COMPUTER PROGRAM + CONCRETE

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-15170 ALSO IN CATEGORY 7  
EFFECT OF HIGH TEMPERATURE SODIUM ON AUSTENITIC AND FERRITIC STEELS. MECHANICAL PROPERTIES OF MATERIALS.  
QUARTERLY PROGRESS REPORT, JULY-SEPTEMBER 1966  
MSA RESEARCH CORPORATION, EVANS CITY, PENNSYLVANIA  
MSAR-66-220 +. 30 PAGES, OCTOBER, 1966

THE CURRENT PROGRAMS ARE NEARING THE END OF THE OPERATIONAL STAGES. WE ARE ACTIVELY ENGAGED IN THE COMPLETION OF TESTS 6 AND 7 (MECHANICAL PROPERTY TESTS IN HIGH OXYGEN SODIUM AND HIGH CARBON SODIUM)- THE ANALYSES OF THE COLD TRAPS FROM TESTS 3 AND 5 AND THE TESTING OF LVDTs FOR THE EXTENSOMETER DEVELOPMENT PROGRAM. CONCLUSIONS ARE NOT AVAILABLE AT THIS TIME, BUT THE STATUS OF EACH PROGRAM IS DISCUSSED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*CREEP PROPERTY + \*FAILURE, FATIGUE + \*IMPACT PROPERTY + \*SODIUM + \*STEEL + \*STEEL, STAINLESS + FILTER, TRAP + PROPERTY, PHYSICAL

11-15179  
STEELE LE + HAWTHORNE JR + WATSON HE  
IRRADIATION EFFECTS ON REACTOR STRUCTURAL MATERIALS  
NAVAL RESEARCH LABORATORY, WASHINGTON, D. C.  
NRL-MEMO-1534 + AD-602,159 +. 19 PAGES, FIGURES, TABLES, 5 REFERENCES, MAY 15, 1964

THE RESEARCH PROGRAM OF THE NRL METALLURGY DIVISION, RADIATION OPERATIONS SECTION, IS DEVOTED TO THE DETERMINATION OF THE EFFECTS OF NUCLEAR RADIATION UPON THE PROPERTIES OF STRUCTURAL MATERIALS. THIS REPORT, COVERING RESEARCH FOR THE PERIOD 1 FEBRUARY - 30 APRIL 1964, INCLUDES DATA ON THE FOLLOWING - (1) SIMULATION OF PERIODIC IN-SERVICE ANNEALING OF PRESSURE VESSEL STEELS FOR EMBRITTLEMENT RELIEF, (2) SURVEILLANCE OF RADIATION EMBRITTLEMENT IN ARMY SM-1A REACTOR, AND (3) EQUIPMENT FOR IN-REACTOR STUDIES OF LOW-CYCLE-FATIGUE PERFORMANCE OF STEELS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*BRITTLE FRACTURE + \*FAILURE, FATIGUE + \*RADIATION EFFECT + ALLOY + EMBRITTLEMENT + FAILURE, CLADDING + FAILURE, PRESSURE VESSEL + STEEL

11-15207 ALSO IN CATEGORY 7  
KOZIOLO JJ + CHRISTOPHER SS  
CORRELATIONS BETWEEN SENSITIZATION AND STRESS CORROSION CRACKING OF 300 SERIES STAINLESS STEELS, FINAL SUMMARY REPORT  
COMBUSTION ENGINEERING, INC., WINDSOR, CONNECTICUT  
CEND-3256-264 + EURAEC-1568 +. 82 PAGES, FIGURES, TABLES, REFERENCES, SEPTEMBER 1966

THE EFFECTS OF PREOXIDATION AND VARIATIONS IN SURFACE CONDITIONS ON THE SUSCEPTIBILITY TO TRANSGRANULAR CRACKING OF TYPES 304 AND 347 STAINLESS STEEL WERE STUDIED. TUBING WITH ANNEALED, DRAWN, SWAGED, AND DIFFUSED NICKEL SURFACES WAS EXPOSED TO AN AQUEOUS ENVIRONMENT TO EVALUATE THE DIFFERENCES IN BEHAVIOR OF NONSTABILIZED AND STABILIZED TYPES (304 AND 347) OF STAINLESS STEELS UNDER IDENTICAL TEST CONDITIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*EMBRITTLEMENT + \*OXIDATION + CORROSION + STEEL, STAINLESS

11-15208 ALSO IN CATEGORY 7  
STEELE LE + HAWTHORNE JR + SERPAN CZ  
IRRADIATION EFFECTS ON REACTOR STRUCTURAL MATERIALS, FEBRUARY 1- APRIL 30, 1966  
NAVAL RESEARCH LABORATORY, WASHINGTON, D. C.  
NRL-MEMO-1700 + AD-635 844 +. 62 PAGES, REFERENCES, MAY 16, 1966

THE RESEARCH PROGRAM OF THE NRL METALLURGY DIVISION, REACTOR MATERIALS BRANCH, IS DEVOTED TO THE DETERMINATION OF THE EFFECTS OF NUCLEAR RADIATION UPON THE PROPERTIES OF STRUCTURAL MATERIALS. THIS PROGRESS REPORT INCLUDES THE FOLLOWING - (1) THE RELATIVE RADIATION SENSITIVITY OF A302-B STEELS PREPARED BY SPECIAL MELTING AND HEAT-TREATMENT PRACTICE, (2) THE EVALUATION OF NICKEL CONTENT AS A RADIATION-SENSITIVITY VARIABLE, (3) COMPARATIVE IRRADIATION EMBRITTLEMENT OF SELECTED HIGHER-STRENGTH STEELS, AND (4) THE EFFECT OF NEUTRON SPECTRA UPON THE OBSERVED CHANGES IN THE NOTCH DUCTILITY OF IRRADIATED STEELS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*EMBRITTLEMENT + \*RADIATION EFFECT + \*STEEL + BRITTLE FRACTURE + IMPACT PROPERTY

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-15217 ALSO IN CATEGORY 17  
COOGLER AL + DEILY GJ + HALE RJ  
EVOLUTION OF THE HIGH LEVEL CAVES AT THE SAVANNAH RIVER LABORATORY  
SAVANNAH RIVER LABORATORY, SAVANNAH  
CONF-651101-26 +. 39 PAGES, FOR PRESENTATION AT 13TH CONFERENCE ON REMOTE SYSTEMS TECHNOLOGY, WASHINGTON,  
D. C., AUGUST 5, 1965

SAVANNAH RIVER LABORATORY HAS OPERATED A HIGH-LEVEL SHIELDED FACILITY SINCE 1954. THIS FACILITY HAS BEEN EXPANDED TWICE. THE FIRST EXPANSION WAS COMPLETED IN 1959, AND THE SECOND IN EARLY 1965. TAKEN IN ORDER, THESE THREE CONSTRUCTION PHASES ILLUSTRATE AN EVOLUTION IN DESIGN OF A SHIELDED FACILITY FOR GENERAL PURPOSE USE. ADOPTION OF THE MODULE-SIZED EQUIPMENT RACK PROVIDED SEVERAL OPERATING ADVANTAGES WHICH ALLOWED SOME SIMPLIFICATION IN CELL DESIGN. THESE ADVANTAGES ARE - (1) ACCESS TO THE CELL IS REQUIRED ONLY THROUGH THE ROOF. (2) SERVICES CAN BE LOCATED FOR REMOTE CONNECTION. (3) CELL EXHAUST CAN BE INTEGRATED WITH EQUIPMENT FOR IMPROVED CONTAMINATION CONTROL. (4) FRAMES CAN BE READILY CONVERTED TO SEALED ENCLOSURES FOR HIGH ALPHA WORK. (5) INSTALLATION AND REMOVAL OF EQUIPMENT CAN BE MORE READILY ACCOMPLISHED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*HOT CELL + \*OPERATING EXPERIENCE + AIR CLEANING + ALPHA FACILITIES + CONTAINMENT EQUIPMENT HATCH + CONTAINMENT INSPECTION AND MAINTENANCE + VENTILATION SYSTEM

11-15218  
ZIEGLER A + PETERSEN G + WEISHAUP T E  
SAFETY ARRANGEMENT FOR THE CONTAINMENT OF POWER REACTORS  
SIEBENS-SCHUCKERTWERKE AKTIENGESELLSCHAFT, GERMAN  
ORNL-TR-1449 + GERMAN PATENT 1,207,024 +. 5 PAGES, FIGURES, DECEMBER 16, 1965

THE INVENTION IS A DEVICE FOR CONDENSING STEAM RELEASED IN A POWER-REACTOR ACCIDENT. IT CONSISTS OF A WATER-FILLED VESSEL WITH A PERFORATED BOTTOM IN THE FORM OF A SPRAY SIEVE CONTAINED IN THE CROWN OF A GAS TANK BELOW ITS DOME, WHICH IS IN PRESSURE EQUILIBRIUM WITH THE INTERNAL VOLUME OF THE CROWN. THE CONNECTING LINES OPEN INTO THE AIR-FILLED DOME OF A SIEVE-LIKE PERFORATED STEAM DISTRIBUTOR CAP, WHICH IS PERMANENTLY INSTALLED WITHIN THE CROWN BELOW THE LEVEL OF THE SEALING WATER.

AVAILABILITY - JOHN CREPAR LIBRARY, 35 WEST 33RD ST., CHICAGO, ILL. 60616

\*CONDENSATION + \*CONTAINMENT, PRESSURE SUPPRESSION + SPRAY, GENERAL

11-15219  
KORNBIHLER H  
SAFETY DEVICE FOR THE PRESSURE SHELL OF A NUCLEAR REACTOR  
LICENTIA PATENT-VERWALTUNGS-G.M.B.H.  
ORNL-TR-1450 + GERMAN PATENT 1,208,017 +. 6 PAGES, FIGURES, DECEMBER 30, 1965

THE INVENTION CONCERNS A DEVICE FOR THE REDUCTION OF THE STEAM PRESSURE FORMING DURING THE RUPTURE OF A PART OF THE PRIMARY COOLING CIRCUIT OF A NUCLEAR REACTOR, THE DEVICE BEING LOCATED WITHIN THE PRESSURE CONTAINER AND CONDUCTING THE FORMING STEAM THROUGH COLD WATER FOR CONDENSATION, IN WHICH DEVICE A HORIZONTAL PARTITION IS ARRANGED ABOVE THE NUCLEAR REACTOR WHICH SEPARATES THE PRESSURE VESSEL INTO TWO CHAMBERS, WHERE A LAYER OF COLD WATER WITH A FREE WATER SURFACE IS LOCATED ON THIS PARTITION AND WHERE OPENINGS ARE PROVIDED IN THE PARTITION, THE CLOSING DEVICES OF WHICH BURST AT AN OVERPRESSURE THAT FORMS DUE TO RUPTURE OF THE PRIMARY COOLING CIRCUIT, SO THAT THE STEAM FLOWS THROUGH THE WATER LAYER.

AVAILABILITY - JOHN CREPAR LIBRARY, 35 WEST 33RD ST., CHICAGO, ILL. 60616

\*CONDENSATION + \*CONTAINMENT, PRESSURE SUPPRESSION

11-15220  
GERARD VJ + MARTIN JA  
CLOSING DEVICE FOR THE VESSEL BOTTOM OPERATURES OF NUCLEAR REACTORS  
GROUPEMENT-ATOMIQUE ALSACIENNE ATLANTIQUE, FRANCE  
ORNL-TR-1451 + GERMAN PATENT 1,210,495 +. 5 PAGES, 3 FIGURES, FEBRUARY 10, 1966

THE INVENTION CONCERNS A CLOSING DEVICE FOR THE BOTTOM OF THE PRESSURE VESSEL CONSISTING OF A HOLLOW CAPSULE WHICH CAN BE INSERTED AND LOCKED IN A DUCT, AND LATER UNLOCKED AND PULLED OUT. THE CLOSING UNIT IS ARRANGED IN THE INTERIOR OF THE HOLLOW CAPSULE, AND IT UNDERGOES ELASTIC DEFORMATION DURING INSERTION AND REMOVAL OF THE EXTRACTOR IN SUCH A MANNER THAT THE TWO ENDS OF THE LOCKING UNIT EMERGE THROUGH OPENINGS IN THE HOLLOW CAPSULE, ENGAGE IN A CORRESPONDING ANNULAR GROOVE OF THE CONTAINER WALL AND CONSEQUENTLY LOCK THE HOLLOW CAPSULE. IN THIS EXTREMELY SIMPLE DESIGN, THE FORCES WHICH NEED TO ACT SOLELY ON THE ELASTICALLY DEFORMABLE LOCKING UNIT ARE DIRECTLY SUPPLIED BY THE EXTRACTOR AND NOT OVER ADDITIONAL MECHANICAL SYSTEMS WHICH ARE PERMANENTLY INSTALLED IN THE HOLLOW CAPSULE.

AVAILABILITY - JOHN CREPAR LIBRARY, 35 WEST, 33 RD ST., CHICAGO, ILL. 60616

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-15220 \*CONTINUED\*  
\*CONTAINMENT PENETRATION, CLOSURE OF + \*CONTAINMENT, PRESSURE VESSEL + STEEL

11-15250  
TAYLOR JH  
N.S. SAVANNAH CONTAINMENT INTEGRITY - ITS MEASUREMENT AND IMPROVEMENT  
BARCOCK AND WILCOX COMPANY, GALVESTON, TEXAS  
TID-22316 + STS-3 +. 52 PAGES, FEBRUARY 1964

WITH THE DATA ACCUMULATED, SEVERAL CONCLUSIONS MAY BE PRESENTED - 1. SUCCESSFUL CONTAINMENT TESTS HAVE BEEN CONDUCTED AT PRESSURES UP TO 60 PSIG, ELIMINATING ANY UNCERTAINTY THAT MIGHT HAVE BEEN DUE TO EXTRAPOLATION. 2. PROCEDURES NOW IN EFFECT PROVIDE DAY-TO-DAY CONTAINMENT INTEGRITY AND WILL YIELD AS-IS TESTS WITHIN THE ALLOWABLE LIMITS. 3. A CONSISTENT EXPERIMENTAL RELATION BETWEEN VESSEL PRESSURE AND LEAKAGE HAS BEEN PRODUCED FOR THE SAVANNAH CONTAINMENT UP TO A PRESSURE OF 60 PSIG. 4. INDIVIDUAL ELECTRICAL PENETRATION TESTS WERE SATISFACTORILY CONDUCTED UP TO 180 PSIG, INDICATING THAT THE INSTALLED UNITS HAVE NOT DETERIORATED WITH AGE AND MAY BE EXPECTED TO SERVE THEIR INTENDED FUNCTION FOLLOWING THE MCA.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*CONTAINMENT PENETRATION + \*CONTAINMENT STRUCTURE + \*CONTAINMENT, HIGH PRESSURE + \*N S SAVANNAH + \*TEST, LEAK RATE + CONTAINMENT REFERENCE MEASURING SYSTEM

11-15345 ALSO IN CATEGORY 7  
COTTRELL WB  
ORNL NUCLEAR SAFETY RESEARCH AND DEVELOPMENT PROGRAM BIMONTHLY REPORT FOR SEPTEMBER-OCTOBER 1966  
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE  
ORNL-TM-1680 +. 58 PAGES, FIGURES, TABLES, NOVEMBER 1, 1966

INCLUDED IN THIS PROGRESS REPORT IS WORK ON VARIOUS CHEMICAL REACTIONS, AS WELL AS THE RELEASE, CHARACTERIZATION, AND TRANSPORT OF FISSION PRODUCTS IN CONTAINMENT SYSTEMS UNDER VARIOUS ACCIDENT CONDITIONS AND ON PROBLEMS ASSOCIATED WITH THE REMOVAL OF THESE FISSION PRODUCTS FROM GAS STREAMS. ALTHOUGH MOST OF THE WORK HAS BEEN AND CONTINUES TO BE IN GENERAL SUPPORT OF WATER POWER-REACTOR TECHNOLOGY, INCLUDING SOME IN DIRECT SUPPORT OF THE LOFT AND CSE PROGRAMS, SEVERAL PROJECTS WERE STARTED THE FIRST OF THE CALENDAR YEAR IN SUPPORT OF THE HIGH-TEMPERATURE GAS-COOLED REACTOR (HTGR) PROGRAM. THESE PROJECTS INCLUDE BOTH IN-PILE AND OUT-PILE STUDIES OF REACTION RATES AND FISSION PRODUCT RELEASE AND TRANSPORT PHENOMENA RELEVANT TO POTENTIAL HTGR ACCIDENT SITUATIONS. OTHER MAJOR PROJECTS INCLUDE FUEL TRANSPORT SAFETY INVESTIGATIONS, A SERIES OF DISCUSSION PAPERS ON VARIOUS ASPECTS OF WATER REACTOR TECHNOLOGY, AND THE STUDIES ON PRESSURE VESSEL TECHNOLOGY. EXPERIMENTAL WORK RELATIVE TO PRESSURE VESSEL TECHNOLOGY INCLUDES INVESTIGATIONS OF THE ATTACHMENT OF NOZZLES TO SHELLS AND THE VARIABILITY OF IMPACT DATA ON LOW-ALLOY STEELS.

AVAILABILITY - W. B. COTTRELL, OAK RIDGE NATIONAL LABORATORY, PO BOX Y, OAK RIDGE, TENNESSEE 37830

\*CHEMICAL KINETICS + \*CONTAINMENT, GENERAL + \*CONTAINMENT, PRESSURE VESSEL + \*CSE (CONTAINMENT SYSTEMS EXPERIMENT) + \*FISSION PRODUCT RETENTION + \*FISSION PRODUCT, AIRBORNE + \*IMPACT PROPERTY + \*IN PILE EXPERIMENT + \*LOFT (LOSS OF FLUID TEST) + \*NOZZLE + \*OUT OF PILE LOOPS AND EXPERIMENTS + \*STEEL + FISSION PRODUCT RELEASE, GENERAL + FISSION PRODUCT TRANSPORT + HTGR (HIGH TEMPERATURE GAS COOLED REACTOR)

11-15392 ALSO IN CATEGORY 18  
QUESTION III A (1) - LOCATION (AND DAMAGE TO) CLASS-I EQUIPMENT  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, 1 FIGURE, DECEMBER 1966, DOCKET NO. 50-261, H.B. ROBINSON UNIT NUMBER 2, FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, PAGE A(1)-1

III. PLANT LAYOUT. A. DISCUSSION AND UPDATED DRAWINGS. (1) LOCATION OF ALL CLASS-I EQUIPMENT AND BUILDINGS. DISCUSS THE POTENTIAL DAMAGE (UNDER THE 0.2G EARTHQUAKE LOADINGS) WHICH COULD OCCUR AT THESE LOCATIONS AND DESCRIBE HOW PROTECTION IS PROVIDED. WHAT ALTERNATE EQUIPMENT IS PROVIDED TO BACK UP THIS CLASS-I EQUIPMENT FOR THE APPLICABLE POSTULATED ACCIDENTS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + BUILDING + FOUNDATION ENGINEERING + REACTOR, PRESSURIZED WATER + ROBINSON 2

11-15393 ALSO IN CATEGORIES 12 AND 18  
QUESTION III A (2) - PIPING EXTERNAL TO CONTAINMENT  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, DECEMBER 1966, DOCKET NO. 50-261, H.B. ROBINSON UNIT NUMBER 2, THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, PAGES A(2)-1 AND A(2)-2

THE GENERAL LOCATION OF ALL PIPING PENETRATIONS AND PIPING RUNS EXTERNAL TO THE CONTAINMENT. FOR THOSE ASSOCIATED WITH THE ENGINEERED SAFEGUARDS, SHOW THE EXTERNAL PIPING AND VALVE LOCATIONS. INCLUDE LOCATION OF, AND CRITERIA FOR, NECESSARY MISSILE SHIELDING.

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-15393 \*CONTINUED\*

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ENGINEERED SAFETY SYSTEM + MISSILE GENERATION AND PROTECTION + PIPING + REACTOR, PRESSURIZED WATER + ROBINSON 2

11-15395 ALSO IN CATEGORY 18

QUESTION III B - CONSEQUENCES OF TURBINE (BLADE) MISSILES  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

14 PAGES, 4 FIGURES, 4 TABLES, PAGES 8-1 TO 8-14 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

DISCUSS THE CONSEQUENCES OF A TURBINE-GENERATOR FAILURE IN WHICH MISSILES ARE GENERATED. REFERRING TO THE DRAWING PROVIDED IN A ABOVE, PRESENT AN ANALYSIS OF THE ABILITY OF ALL CRITICAL STRUCTURES AND COMPONENTS, INCLUDING THE CONTROL ROOM, TO MAINTAIN THE NO-LOSS-OF-FUNCTION CRITERIA IF THEY ARE IN A POTENTIAL TRAJECTORY OF SUCH MISSILES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, RALEIGH, NORTH CAROLINA

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ENGINEERED SAFETY SYSTEM + FAILURE, EQUIPMENT + HEAT SINK + MISSILE GENERATION AND PROTECTION + REACTOR, PRESSURIZED WATER + ROBINSON 2

11-15396 ALSO IN CATEGORIES 2 AND 18

QUESTION III C - CONCRETE REINFORCEMENT, SO PIECES WONT FALL DURING EARTHQUAKES  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

1 PAGE, PAGE C-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

CLASS-I STRUCTURES (EXCLUDING CONTAINMENT) ARE DESIGNED USING A CRITICAL DAMPING OF 5.0 PERCENT. DISCUSS THE CRITERIA FOR PLACEMENT OF REINFORCING STEEL OR MESH STEEL IN ALL CLASS-I STRUCTURES (OTHER THAN CONTAINMENT) TO ENSURE THAT CRACKING OF CONCRETE WILL NOT RESULT IN LARGE PIECES FALLING DURING AN EARTHQUAKE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONCRETE + DAMPING + DISPLACEMENT, DESIGN FOR + EARTHQUAKE + REACTOR, PRESSURIZED WATER + ROBINSON 2

11-15401 ALSO IN CATEGORY 18

QUESTION III H - MAIN SUMP LINER  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

1 PAGE, PAGE H-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

WHERE IS THE LINER PLACED IN RELATION TO THE CONCRETE IN THE MAIN SUMP.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + BUILDING + CONTAINMENT SPRAY + REACTOR, PRESSURIZED WATER + ROBINSON 2

11-15402 ALSO IN CATEGORY 18

QUESTION III I - ADDITIONAL VERTICAL-SECTION DRAWINGS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

1 PAGE, 11 FIGURES, PAGE I-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

ONLY ONE VERTICAL SECTION DRAWING OF THE CONTAINMENT INTERNALS APPEARS IN THE APPLICATION. PLEASE PROVIDE SIMILAR DRAWINGS TO LOCATE ALL THE PRINCIPAL SYSTEM COMPONENTS AND SHIELDING.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + BUILDING + REACTOR, PRESSURIZED WATER + ROBINSON 2

11-15405 ALSO IN CATEGORIES 9 AND 18

QUESTION IV C - CONTAINMENT PRESSURE MONITORING SYSTEM  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

1 PAGE, PAGE C-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

DESCRIBE THE LOCATION, TYPE OF DETECTOR, AND CIRCUITRY ASSOCIATED WITH THE CONTAINMENT-PRESSURE MONITORING SYSTEM. WILL A CONTINUOUS RECORDING OF CONTAINMENT PRESSURE BE MADE. IF THIS IS CONSIDERED UNNECESSARY, DISCUSS YOUR REASONING.

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-15405 \*CONTINUED\*

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY +  
CONTAINMENT INSTRUMENTATION + PRESSURE, INTERNAL + REACTOR, PRESSURIZED WATER + ROBINSON 2

11-15409 ALSO IN CATEGORIES 9 AND 18

QUESTION IV G - CONTAINMENT ISOLATION VALVES

CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

2 PAGES, PAGE G-1 AND G-2 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

SEVERAL LINES PENETRATE CONTAINMENT WHICH WOULD BE OPEN TO CONTAINMENT SUBSEQUENT TO MCA. HAS CONSIDERATION BEEN GIVEN TO PROVIDING DOUBLE, INDEPENDENT, AUTOMATIC ISOLATION VALVES ON SUCH LINES THAT ALSO TERMINATE IN OPEN (UNCONTAINED) SYSTEMS EXTERNAL TO CONTAINMENT. JUSTIFY YOUR ANSWER. WILL THE CONTAINMENT ISOLATION VALVES AUTOMATICALLY REOPEN (AFTER AN ACCIDENT) WHEN THE INITIATING PARAMETER (RADIATION, HIGH PRESSURE, ETC.) RETURNS TO A LOW VALUE AT THE SENSOR, OR IS A POSITIVE RESSETTING ACTION REQUIRED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY +  
CONTAINMENT PENETRATION, CLOSURE OF + CONTROL SYSTEM + REACTOR, PRESSURIZED WATER + ROBINSON 2

11-15417 ALSO IN CATEGORY 18

QUESTION V A (1) - SHIELDING AGAINST MISSILES FROM MAIN PUMPS

CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

2 PAGES, PAGES V(A)1-1 AND V(A)1-2 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

IT IS NOT STATED THAT PROTECTION WILL BE PROVIDED FOR MISSILES GENERATED FROM FAILURE OF A MAIN COOLANT PUMP. PLEASE DISCUSS THE ABILITY OF THE PRIMARY AND SECONDARY SYSTEM TO REMAIN INTACT UPON FAILURE OF THE IMPELLER, FLYWHEEL, OR ROTOR OF A MAIN COOLANT PUMP. ALSO, DISCUSS THE ABILITY OF THE MISSILE SHIELDING TO PRECLUDE SUCH MISSILES FROM DAMAGING THE CONTAINMENT LINER OR SAFEGUARDS SYSTEMS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT, HIGH PRESSURE +  
MAIN COOLING SYSTEM + MISSILE GENERATION AND PROTECTION + PUMP + REACTOR, PRESSURIZED WATER + ROBINSON 2 +  
SHIELDING

11-15418 ALSO IN CATEGORY 18

QUESTION V A (2) - MISSILE SHIELDING AGAINST PRESSURIZER FAILURE

CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

1 PAGE, PAGE A(2)-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

ON PAGES 1-42, IT IS STATED THAT THE PRESSURIZER IS COMPLETELY ENCLOSED IN CONCRETE. WOULD THIS CONCRETE PROVIDE SUFFICIENT SHIELDING TO WITHSTAND MISSILES GENERATED FROM MASSIVE FAILURE OF THE PRESSURIZER.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONCRETE +  
MISSILE GENERATION AND PROTECTION + PRESSURIZER + REACTOR, PRESSURIZED WATER + ROBINSON 2 + SHIELDING

11-15421 ALSO IN CATEGORY 18

QUESTION V C (2) A - REACTOR VESSEL AND INTERNALS - NDT

CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

5 PAGES, PAGES C(2)A-1 TO C(2)A-5 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

DETAILS OF THE SURVEILLANCE PROGRAM INDICATING LOCATION OF SAMPLE CAPSULES AND NUMBER AND TYPE OF SAMPLES. WHAT IS THE EXPECTED INTEGRATED FAST NEUTRON FLUX AT THE VESSEL WALL.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY +  
CONTAINMENT, PRESSURE VESSEL + CORE COMPONENTS, MISCELLANEOUS + NDT DATA (NIL DUCTILITY TRANSITION) +  
REACTOR, PRESSURIZED WATER + ROBINSON 2

11-15422 ALSO IN CATEGORIES 5 AND 18

QUESTION V C (2) (B) - BLOWDOWN FORCES ON REACTOR VESSEL INTERNALS

CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-15422 \*CONTINUED\*

2 PAGES, PAGES C (2) (B)-1 AND C (2) (B)-2 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

STATE THE MAGNITUDE OF FORCES ON THE REACTOR VESSEL INTERNALS DURING BLOWDOWN ACCIDENTS RESULTING FROM HOT-LINE OR COLD-LINE BREAKS, AND DISCUSS THE ABILITY OF THESE COMPONENTS TO WITHSTAND SUCH FORCES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT + BLOWDOWN + CORE COMPONENTS, MISCELLANEOUS + HYDRODYNAMIC ANALYSIS + REACTOR, PRESSURIZED WATER + ROBINSON 2

11-15423 ALSO IN CATEGORY 18

QUESTION V C (2) (C) - EFFECT OF VESSEL INSULATION ON INSPECTION OR ON POST-MCA COOLING CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE C (2) (C)-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

INDICATE THE TYPE OF INSULATION (AND CLEARANCE) TO BE USED ON THE OUTER SURFACE OF THE VESSEL. IS THIS MATERIAL DESIGNED TO ALLOW FOR WATER FLOW IN CONTACT WITH THE VESSEL AFTER AN MCA. IS SUFFICIENT SPACE PROVIDED TO PERMIT UT OR OTHER METHODS OF INSPECTION.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT, PRESSURE VESSEL + EMERGENCY COOLING CONSIDERATIONS + REACTOR, PRESSURIZED WATER + ROBINSON 2 + TEST, NONDESTRUCTIVE + THERMAL INSULATION

11-15424 ALSO IN CATEGORY 18

QUESTION V C (2) (D) - THERMAL SHOCK TO REACTOR VESSEL AS A RESULT OF WATER INJECTION CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
5 PAGES, PAGES C (2) (D)-1 TO C (2) (D)-5 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2 DECEMBER 1966, DOCKET 50-261

SHOW THAT THE REACTOR VESSEL ACCOMMODATES AT THE END OF ITS FATIGUE LIFE THERMAL SHOCK DUE TO SAFETY INJECTION. STATE YOUR FAILURE CRITERION. ESTIMATE THE INITIAL VESSEL TEMPERATURE WHICH COULD CAUSE VESSEL FAILURE UPON INJECTION. RELATE THIS TO THE MAXIMUM DELAYED INJECTION TIME BEFORE VESSEL WALL TEMPERATURE COULD REACH THE LIMIT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT, PRESSURE VESSEL + CORE REFLOODING SYSTEM + REACTOR, PRESSURIZED WATER + ROBINSON 2 + THERMAL MECHANICAL EFFECT

11-15425 ALSO IN CATEGORY 18

QUESTION V C (3) (A) - STEAM-GENERATOR TEST FOR STEAM-LINE-RUPTURE CONDITIONS CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE C (3) (A)-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2 DECEMBER 1966, DOCKET 50-261

IT IS STATED THAT THE STEAM-GENERATOR TUBE SHEETS WILL REMAIN WITHIN 90% OF YIELD IN A STEAM-LINE-RUPTURE ACCIDENT. WILL A HYDROSTATIC TEST AT 100 F AND 3110 PSI SIMULATE THE LOAD CONDITIONS THAT WOULD APPLY STRESSES EQUIVALENT TO 90% OF YIELD AT 650 F AND PRESSURE EQUIVALENT TO THE PRIMARY-SYSTEM SAFETY-VALVE SETTING. IS AN AMPLE MARGIN TO FAILURE ASSURED BY THE 90%-YIELD CRITERIA. DISCUSS THE APPROPRIATENESS OF YOUR DESIGN LIMITS RELATING TO SECTION-III REQUIREMENTS.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, STEAM LINE RUPTURE + FAILURE, TUBING + HEAT EXCHANGER + REACTOR, PRESSURIZED WATER + ROBINSON 2 + TEST, NONDESTRUCTIVE

11-15426 ALSO IN CATEGORY 18

QUESTION V D (1) - VENTILATION SYSTEM - COMPONENT LOCATION CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
4 PAGES, 1 FIGURE, PAGES D (1)-1 TO D (1)-4 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2 DECEMBER 1966, DOCKET 50-261

PROVIDE A DIAGRAM OF THE LISTED VENTILATION SYSTEMS. LOCATE ALL INTERCONNECTIONS, VALVES, FANS, AND FILTERS

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + REACTOR, PRESSURIZED WATER +

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-15426 \*CONTINUED\*  
ROBINSON 2 + VENTILATION SYSTEM

11-15427 ALSO IN CATEGORY 18  
QUESTION V D (2) - POST-MCA CONTROL-ROOM FILTRATION AND OPERATOR DOSE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, 1 FIGURE, PAGES D (2)-1 AND D (2)-2 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND  
SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2 DECEMBER 1966, DOCKET 50-261

DESCRIBE THE POSTACCIDENT VENTILATION AND FILTRATION OF THE CONTROL ROOM. PLOT THE THYROID  
DOSE AS A FUNCTION OF TIME AFTER THE MCA RECEIVED DURING EGRESS FROM THE CONTROL ROOM OR IN  
AREAS INSIDE THE AUXILIARY BUILDING, ASSUMING 100% CORE MELTING. HOW WILL RESTRICTED EGRESS  
AFFECT THE ABILITY TO MANUALLY OPERATE SAFEGUARDS EQUIPMENT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTROL PANEL/ROOM +  
DOSE CALCULATION, INTERNAL + FILTER + FISSION PRODUCT, IODINE + REACTOR, PRESSURIZED WATER + ROBINSON 2 +  
VENTILATION SYSTEM

11-15428 ALSO IN CATEGORY 18  
QUESTION V D (3) - CONTAINMENT PRESSURE-CONTROL SYSTEM  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE D (3)-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT,  
H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

DESCRIBE THE VALVE TYPE, ARRANGEMENT, AND CONTROL CIRCUIT TO BE USED TO MAINTAIN THE  
CONTAINMENT PRESSURE BELOW 0.3 PSIG. IS THIS AN AUTOMATIC CONTROL SYSTEM. IS IT DISABLED  
UPON ISOLATION.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT, HIGH PRESSURE +  
CONTROLLER + PRESSURE, INTERNAL + REACTOR, PRESSURIZED WATER + ROBINSON 2

11-15429 ALSO IN CATEGORY 18  
QUESTION V E (1) - LEAK RATE TESTING OF CONTAINMENT PENETRATION  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE E (1)-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT,  
H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

V.F. PENETRATION ISOLATION SYSTEM. STATE YOUR CRITERIA IN TERMS OF LEAKAGE THROUGH BOTH  
ELECTRICAL AND PIPING PENETRATIONS. WHAT TESTS AND EQUIPMENT WILL BE USED TO VERIFY THIS  
RATE. WHAT IS THE ACCURACY OF THE METHOD.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT PENETRATION +  
DESIGN CRITERIA + REACTOR, PRESSURIZED WATER + ROBINSON 2 + TEST, LEAK RATE

11-15430 ALSO IN CATEGORY 18  
QUESTION V E (2) - NEW ISOLATION-VALVE WATER-SEAL SYSTEM  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
4 PAGES, PAGES E (2)-1 TO E (2)-4 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY  
ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

DESCRIBE YOUR DIFFERENT ISOLATION-VALVE WATER-SEAL SYSTEM AND ITS OPERATION. HOW IS THE  
SYSTEM PERIODICALLY TESTED TO ENSURE INJECTION FLOW INTO ALL LINES PROVIDED WITH THE  
INJECTION SYSTEM. CAN THE SYSTEM BE TESTED FOR INJECTION FLOW DURING REACTOR OPERATION.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY +  
CONTAINMENT PENETRATION, CLOSURE OF + REACTOR, PRESSURIZED WATER + ROBINSON 2 + TEST, LEAK RATE

11-15431 ALSO IN CATEGORY 18  
QUESTION V E (3) - DETAILS OF ALL PIPING PENETRATIONS AND CLOSURES  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
15 PAGES, 1 FIGURE, PAGES E (3)-1 TO E (3)(M)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION  
AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

PROVIDE PIPING DIAGRAM, SHOW MISSILE SHIELDING, TYPES OF VALVES AND ACTUATION,  
INSTRUMENTATION, POWER SOURCE, PENETRATION TESTING.

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CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-15431 \*CONTINUED\*

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT PENETRATION + CONTAINMENT PENETRATION, CLOSURE OF + REACTOR, PRESSURIZED WATER + REDUNDANCE + RELIABILITY, COMPONENT + ROBINSON 2 + TEST, LEAK RATE + VALVE

11-15433 ALSO IN CATEGORIES 2 AND 18

QUESTION V G - INTEGRATED LEAK-RATE TEST AT DESIGN PRESSURE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE G-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

WILL PROVISIONS BE MADE FOR INSTALLING THE NECESSARY EQUIPMENT TO PERFORM AN ACCURATE INTEGRATED CONTAINMENT LEAK-RATE TEST AT DESIGN PRESSURE.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT, HIGH PRESSURE + PRESSURE, INTERNAL + REACTOR, PRESSURIZED WATER + ROBINSON 2 + TEST, LEAK RATE

11-15440 ALSO IN CATEGORIES 5 AND 18

QUESTION VI B (2) - THERMAL SHOCK TO VESSEL NOZZLES FOLLOWING A SAFETY INJECTION  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGES B (2)-1 AND B (2)-2 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

ASSUME THAT SAFETY INJECTION HAS BEEN DELAYED FOLLOWING A PIPE RUPTURE AND THAT THE TEMPERATURE OF THE PRIMARY PIPE AND INJECTION NOZZLE HAS INCREASED. WILL THE THERMAL SHOCK UPON INJECTION BE ACCOMMODATED BY THE NOZZLE WITHOUT FAILURE. WHAT IS THE LIMITING INITIAL TEMPERATURE.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT + CONTAINMENT, PRESSURE VESSEL + CORE REFLOODING SYSTEM + REACTOR, PRESSURIZED WATER + ROBINSON 2 + THERMAL MECHANICAL EFFECT

11-15443 ALSO IN CATEGORIES 12 AND 18

QUESTION VI B (5) - EARTHQUAKE EFFECT ON WATER STORAGE TANK  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE B (5)-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

PROVIDE DETAILS OF THE REFUELING-WATER STORAGE TANK. PRESENT THE RESULTS AND METHODS OF A DETAILED STRESS ANALYSIS THAT INDICATES THAT THE TANK CAN WITHSTAND THE STRESSES DUE TO A HYPOTHETICAL EARTHQUAKE. WHAT IS YOUR ALLOWABLE STRESS CRITERION FOR THESE LOADS.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CORE REFLOODING SYSTEM + EARTHQUAKE ENGINEERING + REACTOR, PRESSURIZED WATER + ROBINSON 2 + STORAGE CONTAINER

11-15450 ALSO IN CATEGORIES 12 AND 18

QUESTION VI G (1) - CONTAINMENT-SPRAY DESIGN DETAILS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
6 PAGES, PAGE G(1)(A)-1 TO G(1)(F) OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, (H. B. ROBINSON UNIT NUMBER 2,) DECEMBER 1966, DOCKET 50-261

SIX QUESTIONS ON THE CONTAINMENT SPRAY/SODIUM THIOSULFATE SOLUTION SYSTEM. (A) REDUNDANCY OF EQUIPMENT. (B) RECRYSTALLIZATION PROBLEMS. (C) CHECKING PIPING FOR FLOW RESTRICTIONS. (D) REFRESHING SOLUTION. (E) PERIODIC FLOW-RATE CHECKS.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT SPRAY + FISSION PRODUCT RETENTION + REACTOR, PRESSURIZED WATER + ROBINSON 2 + TEST, SYSTEM OPERABILITY

11-15460 ALSO IN CATEGORIES 12 AND 18

QUESTION VI G (2) - CONTAINMENT SPRAY SYSTEM (SODIUM THIOSULPHATE) TESTING PROGRAM  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
5 PAGES, PAGE G (2)(A),(B)-1 TO G(2)(E)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

FIVE QUESTIONS - (A) DETAILS OF PROPOSED TEST PROGRAM. (B) EFFECTIVENESS AGAINST VARIOUS FORMS OF IODINE, PARTICULARLY AFTER REUSE. (C) LIST OF PARAMETERS TO BE STUDIED. (D) SCALEUP FACTORS. (E) WHAT WILL YOU DO IF THE R AND D PROGRAM SHOWS SYSTEM WILL NOT BE AS

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-15460 \*CONTINUED\*  
EFFECTIVE AS DESIRED.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT SPRAY + FISSION PRODUCT RETENTION + REACTOR, PRESSURIZED WATER + RESEARCH AND DEVELOPMENT PROGRAM + ROBINSON 2

11-15467 ALSO IN CATEGORIES 12 AND 18  
QUESTION VII A (1) - POST-ACCIDENT CONTAINMENT PRESSURES  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
19 PAGES, 23 FIGURES, PAGE A(1)(A), (B)(C)-1-TO-A(1)(N)-2 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, (H. B. ROBINSON UNIT NUMBER 2,) DECEMBER 1966, DOCKET 50-261

FOURTEEN QUESTIONS TO ENABLE DRL TO ASCERTAIN ADEQUACY OF CONTAINMENT TO WITHSTAND POSTACCIDENT PRESSURES. INCLUDES MANY PLOTS OF PRESSURE VS TIME FOR VARIOUS CONDITIONS (METAL-WATER REACTIONS, ONE OF THREE SAFEGUARDS WORKING, ETC.).

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT + CONTAINMENT DESIGN + CONTAINMENT, HIGH PRESSURE + PERFORMANCE LIMIT + PRESSURE, INTERNAL + REACTOR, PRESSURIZED WATER + ROBINSON 2

11-15474 ALSO IN CATEGORY 18  
QUESTION VII A (4) - EFFECT ON CONTAINMENT POST-MCA PRESSURE OF STEAM-GENERATOR FAILURE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, 1 FIGURE, PAGES A (4)-1 AND A (4)-2 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

WHAT IS THE VOLUME OF THE SECONDARY SIDE OF A STEAM GENERATOR. INDICATE THE FRACTION OCCUPIED BY WATER AND THE TEMPERATURE OF THE WATER AT 10% AND 100% POWER LEVEL. WHAT ADDITIONAL CONTAINMENT PRESSURE WOULD RESULT IF THE MCA OCCURRED ALONG WITH A STEAM-GENERATOR FAILURE AT EITHER POWER LEVEL.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, MAXIMUM CREDIBLE (MCA) + CONTAINMENT DESIGN + CONTAINMENT, HIGH PRESSURE + FAILURE, PIPE + FAILURE, SEQUENTIAL + HEAT EXCHANGER + PRESSURE, INTERNAL + REACTOR, PRESSURIZED WATER + ROBINSON 2

11-15484 ALSO IN CATEGORIES 7 AND 18  
QUESTION VII (F) - IODINE REMOVAL EFFICIENCY OF CONTAINMENT SPRAY (SODIUM THIOSULPHATE)  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, 3 FIGURES, PAGES F (1-3)-1 AND F (1-3)-2 OF THIRD SUPPLEMENT FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

PROVIDE GRAPHS OUT TO 30 DAYS WHERE G EQUALS THE EFFECTIVE REDUCTION RATE OF SOLUBLE IODINE, AND R EQUALS THE PRODUCTION RATE OF INSOLUBLE FORMS OF IODINE (STOPPING WHEN THE 25% INITIALLY ASSUMED TO PLATE OUT HAS BEEN DISSIPATED.) (1) PLOT THE AMOUNT OF IODINE REMAINING AIRBORNE FOR G EQUALS 0, 5, AND 10 FOR EACH OF THE VALUES OF R EQUAL TO 0, 0.03, 0.1, AND 0.5. (2) THE INCREASE IN DOSE PER UNIT TIME AT THE SITE BOUNDARY AND LOW POPULATION ZONE, AS A FUNCTION OF TIME USING THE ASSUMPTIONS IN (1). (3) THE INTEGRAL OF THE CURVES IN (2) SHOWING THE TOTAL DOSE AS A FUNCTION OF TIME IF THE PERSISTENCE MODEL USED FOR TIMES IN EXCESS OF TWO HOURS IS THE SAME AS DESCRIBED IN THE APPLICATION. EXPLAIN WHY THE FREQUENCY OF OBSERVATIONS OF INSTANCES OF PERSISTENCE IS MORE APPLICABLE TO ACCIDENT ANALYSES THAN THE OVERALL HOURLY FREQUENCY OF PERSISTENCE.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + AIRBORNE RELEASE + CONTAINMENT SPRAY + DOSE + FISSION PRODUCT RETENTION + FISSION PRODUCT, IODINE + REACTOR, PRESSURIZED WATER + ROBINSON 2 + WIND STATISTICS

11-15485 ALSO IN CATEGORIES 5 AND 18  
QUESTION VII G - HYDROGEN FOLLOWING MCA  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
3 PAGES, PAGE G-1 TO G-3 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

ASSUMING A LOSS OF COOLANT WITH NO CORE COOLING, HOW MUCH HYDROGEN COULD BE FORMED FROM (A) METAL-WATER REACTION, (B) DECOMPOSITION OF UO2 TO U3O8 AND (C) RADIOLYTIC DECOMPOSITION OF WATER. (1) DISCUSS THE LOCAL EFFECTS DUE TO THE HYDROGEN BURNING UPON EXIT FROM THE PRIMARY PIPE. (2) WHAT WOULD CONTAINMENT PRESSURE BE IF THE HYDROGEN WERE RAPIDLY BURNED. (3) DISCUSS IN DETAIL THE MODEL USED FOR RADIOLYTIC DECOMPOSITION.

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CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-15485 \*CONTINUED\*

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT + CONTAINMENT, HIGH PRESSURE + HYDROGEN + PRESSURE, INTERNAL + REACTOR, PRESSURIZED WATER + ROBINSON 2

11-15486 ALSO IN CATEGORY 18

QUESTION VII H - CAPABILITY FOR SHUTTING DOWN THE PLANT, ASSUMING THAT EMERGENCY TURBINE-DRIVEN FEEDWATER PUMP DOES NOT OPERATE UPON LOSS OF OFF-SITE POWER AND TURBINE TRIP  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGES H-1 AND H-2 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

PROVIDE THE RESULTS OF THE STUDY OF THE CAPABILITY TO SHUT DOWN THE PLANT, ASSUMING THAT THE EMERGENCY TURBINE-DRIVEN FEEDWATER PUMP DOES NOT OPERATE UPON LOSS OF OFF-SITE POWER AND TURBINE TRIP. INDICATE WHICH SYSTEMS MUST OPERATE TO EFFECT SAFE SHUTDOWN.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF POWER + REACTOR, PRESSURIZED WATER + ROBINSON 2

11-15497 ALSO IN CATEGORY 18

QUESTION VIII A (1) - CONSERVATIVENESS OF DESIGN ANALYSIS FOR CONTAINMENT STRUCTURE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
3 PAGES, PAGES A (1)-1 TO A (1)-3 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

SECTION VIII. CONTAINMENT STRUCTURE. A. STRUCTURAL DESIGN. (1) SOME OF THE APPARENT MARGIN PRESENT IN THE LOAD-FACTOR DESIGN APPROACH MIGHT BE ASSOCIATED WITH UNCERTAINTIES IN THE CALCULATIONAL METHODS AND DESIGN EQUATIONS. IF THE MARGINS ARE TO BE CONSIDERED PRIMARILY AS OVERLOAD MARGINS (PSAR 5-17), AN EVALUATION OF THE VALIDITY OF USING THESE MARGINS IN THIS MANNER IS REQUIRED. IN PARTICULAR, SHOW THAT YOUR DESIGN-ANALYSIS PROCEDURES ENSURE THAT ALL STRUCTURAL ELEMENTS ARE TREATED CONSERVATIVELY, PLACING NO RELIANCE ON THE SPECIFIED FACTORS TO PROVIDE FOR UNDER-STRENGTH DUE TO ANALYTICAL SIMPLIFICATION AND ASSUMPTIONS IN THE STRUCTURAL ANALYSIS.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ANALYTICAL MODEL + CONTAINMENT STRUCTURE + CONTAINMENT, HIGH PRESSURE + PERFORMANCE LIMIT + REACTOR, PRESSURIZED WATER + ROBINSON 2 + STRESS ANALYSIS

11-15502 ALSO IN CATEGORY 18

QUESTION VIII A (6) - EFFECT OF WIND ON CONTAINMENT STRUCTURE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, 1 FIGURE, PAGES A (6)-1 AND A (6)-2 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

ASA STANDARD 45R.1-1955 WAS USED TO CLASSIFY THE SITE WITHIN A 25-PSF ZONE. MORE DETAILED INFORMATION ON THE SELECTION OF THE 30-PSF LOADING MUST BE SUBMITTED. IN PARTICULAR, THE DESIGN WIND SPEED, STAGNATION PRESSURE, DRAG COEFFICIENT, GUST FACTORS, AND ASSUMED VERTICAL VARIATION OF PRESSURE ON THE STRUCTURE ARE OF INTEREST. WHAT IS THE BASIS FOR THE SELECTION OF THE VALUES SUPPLIED.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT STRUCTURE + DESTRUCTIVE WIND + REACTOR, PRESSURIZED WATER + ROBINSON 2 + STRESS ANALYSIS + WIND STATISTICS

11-15526 ALSO IN CATEGORIES 9 AND 18

QUESTION VIII E (1) - CONTAINMENT ACCEPTANCE TESTS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
3 PAGES, PAGE E (1)(A)-1 TO E (1)(C)-1 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

(A) DESCRIBE THE SEQUENCE OF CONTAINMENT PROOF-TESTING. PROVIDE THE CRITERIA FOR STRUCTURAL ACCEPTANCE AND THE GENERAL STRAIN AND DEFLECTION TOLERANCES THAT WILL BE PERMITTED. (B) PROVIDE THE INSTRUMENTATION PROGRAM TO VERIFY THE DESIGN, INCLUDING PROTECTIVE MEASURES TO BE TAKEN TO ENSURE PERFORMANCE OVER THE INTERVAL BETWEEN PLACEMENT AND USE. INCLUDE THE EXTENT TO WHICH THE LOCATION OF THESE INSTRUMENTS WILL PROVIDE VERIFICATION OF THE DESIGN. (C) DESCRIBE THE PROVISIONS TO MONITOR CONCRETE CREEP AND RELAXATION OF TENDON STRESS.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT INSTRUMENTATION + CONTAINMENT, HIGH PRESSURE + CREEP BEHAVIOR + REACTOR, PRESSURIZED WATER + ROBINSON 2 + TEST, PROOF

CATEGORY 11  
CONTAINMENT OF NUCLEAR FACILITIES

11-15527 ALSO IN CATEGORY 17

QUESTION VIII E (2) - CONTAINMENT SURVEILLANCE PROGRAM  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
7 PAGES, PAGES E (2)(A)-1 TO E (2)(C)-1 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND  
SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

WE BELIEVE THAT AN IN-SERVICE TENDON-SURVEILLANCE CAPABILITY IS ESSENTIAL. DESCRIBE THE SURVEILLANCE PROGRAM WHICH YOU PROPOSE. (B) WE BELIEVE THAT A CORROSION-CONTROL PROGRAM SHOULD BE PART OF THE SURVEILLANCE PROGRAM. DESCRIBE THE DESIGN CONSIDERATIONS AND PROGRAM PLANNED TO PROVIDE CORROSION PROTECTION OF (1) TENDONS, (2) REINFORCING STEEL, (3) LINER PLATES, AND (4) PILING, FROM THE EFFECTS OF STRAY CURRENTS AND THE ENVIRONMENT. INCLUDE SURVEILLANCE CONSIDERATIONS TO MEASURE THE EFFECTIVENESS OF THE CORROSION-CONTROL SYSTEM. (C) DESCRIBE ANY INSTRUMENTATION WHICH WILL BE PERMANENTLY INSTALLED IN THE STRUCTURE FOR LONG-TERM SURVEILLANCE.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT DESIGN + CONTAINMENT INSTRUMENTATION + REACTOR, PRESSURIZED WATER + ROBINSON 2 + SYSTEM OPERABILITY IN ACCIDENT CONDITIONS

11-15688 ALSO IN CATEGORY 7

HARRIES DR  
NEUTRON IRRADIATION EMBRITTLEMENT OF AUSTENITIC STAINLESS STEELS AND NICKEL BASE ALLOYS  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, ENGLAND  
14 PAGES, 15 FIGURES, 7 TABLES, 93 REFERENCES, JOURNAL OF THE BRITISH NUCLEAR ENERGY SOCIETY 5(1) PAGES  
74-87 (JAN. 1966)

IT IS NOW WELL ESTABLISHED THAT THE HIGH-TEMPERATURE MECHANICAL PROPERTIES OF AUSTENITIC STEELS AND NICKEL-BASE ALLOYS ARE ADVERSELY AFFECTED BY NEUTRON IRRADIATION. THE EFFECTS ARE PRIMARILY ASSOCIATED WITH THE PRODUCTION OF SMALL AMOUNTS OF HELIUM, EITHER BY THERMAL TRANSMUTATION OF THE BORON-10 ISOTOPE OR BY FAST-NEUTRON REACTIONS WITH ISOTOPIES OF A LARGE NUMBER OF ELEMENTS PRESENTED IN THE ALLOYS. HOWEVER, ADDITIONAL INVESTIGATIONS ARE REQUIRED TO FURTHER OUR UNDERSTANDING OF THE EMBRITTLEMENT MECHANISM.

\*EMBRITTLEMENT + \*RADIATION DAMAGE + \*RADIATION EFFECT + \*STEEL, STAINLESS + ALLOY + NICKEL

11-15689

BLOOM EE + MARTIN WR + STIEGLER JO + WEIR JR  
THE EFFECT OF IRRADIATION TEMPERATURE ON STRENGTH AND MICROSTRUCTURE OF STAINLESS STEEL  
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.  
ORNL-P-2691 + ORNL-TM-1535 +. 25 PAGES, 15 FIGURES, 1 TABLE, JOURNAL OF NUCLEAR MATERIALS (APRIL 1967)

THE EFFECTS OF IRRADIATION AT TEMPERATURES BETWEEN 93 AND 454 C UPON THE ROOM-TEMPERATURE MECHANICAL PROPERTIES AND ELECTRON MICROSTRUCTURES OF AISI TYPE 304 STAINLESS STEEL WERE DETERMINED. IRRADIATION AT TEMPERATURES BETWEEN 93 AND 300 C PRODUCED A HIGH DENSITY OF DEFECT CLUSTERS ABOUT 100 Å IN DIAMETER. THESE DEFECTS ARE RESPONSIBLE FOR THE INCREASED YIELD STRESS, FOR WHEN THE IRRADIATION TEMPERATURE WAS INCREASED TO 371 C, NO DEFECT CLUSTERS WERE OBSERVED AND THE YIELD STRESS DECREASED BY A FACTOR OF 2. AT IRRADIATION TEMPERATURES OF 371 C AND HIGHER, PRECIPITATES FORMED WITHIN THE GRAINS. DEFORMATION (10% BY ROLLING) IN A SPECIMEN CONTAINING THE DEFECT CLUSTERS WAS CONCENTRATED IN VERY NARROW SLIP BANDS, WHILE IN THE SPECIMEN CONTAINING PRECIPITATE PARTICLES, THE DEFORMATION WAS HOMOGENEOUS.

\*ELECTRON MICROSCOPY + \*RADIATION DAMAGE + \*STEEL, STAINLESS + \*TENSILE PROPERTY + PROPERTY, PHYSICAL

11-15694 ALSO IN CATEGORY 7

WATSON PD  
WEAR AND CORROSION IN WATER  
ATOMIC ENERGY OF CANADA LTD., CHALK RIVER  
AECL-2566 + EDI-67 +. 85 PAGES, 43 FIGURES, 18 TABLES, 7 REFERENCES, FEB. 19, 1966

THE WEAR RESISTANCE OF A NUMBER OF DIFFERENT COMBINATIONS OF MATERIALS WAS INVESTIGATED IN WATER AT ROOM TEMPERATURE. FOR JOURNAL-BEARING APPLICATIONS, THE DIFFERENT COMBINATIONS COULD BE DIVIDED INTO TWO GROUPS - (1) THOSE THAT WEAR AT A CONSTANT RATE, (2) THOSE THAT WEAR AT A CONTINUALLY DECREASING RATE. GROUP 1 COVERS THESE COMBINATIONS THAT CANNOT PROVIDE A SUITABLE SURFACE FINISH ON THE RUBBING SURFACES THROUGH WEAR TO ALLOW THE FORMATION OF A THIN SUPPORTING FILM OF FLUID. GROUP-2 COMBINATIONS PRODUCE FINE-ABRASIVE WEAR AND PROVIDE POLISHED SURFACES THAT CAN SUSTAIN THIN FILMS ABLE TO SUPPORT ALL OR PART OF THE LOAD. THE WEAR RESISTANCE OF THIN, STABLE, METALLIC OXIDES WAS INVESTIGATED. THE CREVICE-CORROSION RESISTANCE OF A NUMBER OF COMPATIBLE COMBINATIONS WAS STUDIED IN DIFFERENT AQUEOUS ENVIRONMENTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151

\*CORROSION + \*LUBRICATION + \*WATER, GENERAL

CATEGORY 12  
PLANT SAFETY FEATURES

12-09286 ALSO IN CATEGORIES 1 AND 18  
PROCEDURES FOR DISMANTLING RICE UNIVERSITY REACTOR  
RICE UNIVERSITY  
11 PAGES, JULY 11, 1965, DOCKET NUMBER 50-114, PDR

PROCEDURES FOR DISMANTLING RICE UNIV. REACTOR ARE GIVEN FOR FUEL-ELEMENT REMOVAL, PERSONNEL PROTECTION, DISPOSAL OF COMPONENTS, DISPOSAL OF SHIELDING WATER, RECORDS, AND CLEANING THE WATER TANK.

\*LICENSING STATUS OF NUCLEAR PROJECTS + \*PROCEDURES AND MANUALS + \*REACTOR, TRAINING + FUEL HANDLING + PERSONNEL PROTECTIVE DEVICE + TRANSPORTATION AND HANDLING

12-13070 ALSO IN CATEGORY 11

STEARNS FH

ROOF SLAB DOORS FOR HOT CELLS.

LAWRENCE RADIATION LABORATORY

UCRL-14733 + CONF-661001-2 +. 7 PAGES, 4 FIGURES, FOR PRESENTATION AT THE 14TH CONFERENCE ON REMOTE SYSTEMS TECHNOLOGY, PITTSBURGH, MARCH 3, 1966

ROLLING DOORS FOR MATERIAL TRANSFERS THROUGH THE ROOF OF A HOT CELL ARE DESCRIBED. A TWO-PIECE DOOR DESIGN WAS CHOSEN TO GIVE MAXIMUM OPENING WITH A MINIMUM OF WEIGHT PER DOOR, AND TO ALLOW FOR CENTERING THE OPENING IN THE CELL-ROOF SLAB. EACH CELL ROOF CONTAINS THREE OR MORE ROOF SLABS OF THE OVERLAPPED TYPE. EACH OF THE DOORS WAS INSTALLED IN A KEY SLAB. THE DOORS ARE EQUIVALENT TO THE 15-INCH MAGNETITE-CONCRETE ROOF SLABS IN THEIR SHIELDING CAPABILITIES. THE ENTIRE ASSEMBLY CAN BE LIFTED AS A UNIT WITH A FOUR-LEG SLING. THIS FOUR-POINT SUSPENSION IS NECESSARY TO KEEP THE ASSEMBLY STRAIGHT WHILE IT IS BEING LIFTED BECAUSE THE LIFTING POINTS ARE BELOW THE CENTER OF GRAVITY.

\*CONTAINMENT EQUIPMENT HATCH + \*HOT CELL + \*REMOTE MANIPULATING AND VIEWING

12-13675 ALSO IN CATEGORY 18

DESIGN SAFETY FEATURES, INCLUDING ENGINEERED SAFEGUARDS

PUBLIC SERVICE COMPANY OF COLORADO, DENVER, COLORADO

3 PAGES, VOL. I, 2 FIGURES, 1 TABLE, 5 REFERENCES, FORT ST. VRAIN NUCLEAR GENERATING STATION PRELIMINARY SAFETY ANALYSIS REPORT, PAGES 1.3-6 TO 1.3-8, VOL. I AND SECTION VI, SEPTEMBER 1966, DOCKET NO. 50-267

THE PRINCIPAL SAFETY FEATURES ARE DISCUSSED. (1) THE FOUR COOLANT CIRCULATORS CAN BE DRIVEN BY EITHER STEAM OR AUXILIARY WATER TURBINES, THUS DECAY HEAT REMOVAL IS ASSURED. (2) A SECONDARY SHUTDOWN SYSTEM USES BORON CARBIDE IN GRANULAR FORM, WHICH IS ALLOWED TO FALL INTO CHANNELS IN THE CORE. (3) PRIMARY COOLANT MOISTURE-DETECTION SYSTEM AUTOMATICALLY SCRAMS REACTOR AND DUMPS WATER AND STEAM FROM THE LEAKING STEAM GENERATOR. (4) SECONDARY CONTAINMENT OF ALL PRESTRESSED CONCRETE REACTOR VESSEL PENETRATIONS. (5) AIR-GRAPHITE REACTION PROTECTION FOLLOWING A PRESTRESSED CONCRETE REACTOR VESSEL LEAK WOULD BE PREVENTED BY CONTINUOUS PURGE OF PURIFIED HELIUM, BACKED UP BY NITROGEN SYSTEM. THE COOLANT IS COLLECTED, FILTERED, AND RELEASED UP THE STACK.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*ENGINEERED SAFETY SYSTEM + ACCIDENT, LOSS OF COOLANT + AIR + COMBUSTION + CONCRETE, PRESTRESSED + CONTAINMENT LEAKAGE CONTROL + CONTAINMENT, PRESSURE VESSEL + EMERGENCY COOLING CONSIDERATIONS + FT. ST. VRAIN + GRAPHITE + INSTRUMENTATION, COOLANT QUALITY + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED + SAFETY ANALYSIS REPORT, PRELIMINARY + SHUTDOWN SYSTEM, SECONDARY

12-13831 ALSO IN CATEGORY 15

UKAEA AIR SAMPLER

ATOMIC ENERGY COMMISSION

2 PAGES, HEALTH AND SAFETY BULLETIN NO. 216, SEPTEMBER 13, 1965

DESCRIBES AN AIR SAMPLER FOR ASSESSING AIRBORNE CONTAMINATION. IT IS DESIGNED TO OPERATE FROM A LOW PRESSURE COMPRESSED AIR SYSTEM. THE AIR PASSES THROUGH A VENTURI AND THE RESULTING PRESSURE DROP DRAWS THE AIR TO BE SAMPLED THROUGH A FILTER PAPER. THE UNIT IS MOBILE, LIGHT, AND EASILY CARRIED BY HAND. IT OPERATES QUIETLY AND CHEAPLY.

AVAILABILITY - AEC, DIVISION OF PUBLIC INFORMATION, WASHINGTON, D.C. 20545

\*INSTRUMENTATION, AIR SAMPLING + \*MONITOR, RADIATION, AIR + AIRBORNE RELEASE + CONTAMINATION

12-13837

LABELING

ATOMIC ENERGY COMMISSION

4 PAGES, 6 REFERENCES, HEALTH AND SAFETY BULLETIN NO. 203, FEBRUARY 23, 1965

EMPHASIZES THE SIGNIFICANCE OF LABELING CONTAINERS AND PRODUCTS. SEVERAL CASE HISTORIES OF INCIDENTS ARE DESCRIBED IN WHICH MISUSE OR NONUSE OF LABELS RESULTED IN PERSONNEL AND/OR

CATEGORY 12  
PLANT SAFETY FEATURES

12-13832 \*CONTINUED\*  
EQUIPMENT DAMAGE. ONE EMPLOYEES ARM WAS BADLY CUT WHEN HE WASHED A BOTTLE WITH WATER CONTAINING SODIUM SHAVINGS WHICH HAD NOT BEEN LABELED AND AN EXPLOSION OCCURRED.

AVAILABILITY - AEC, DIVISION OF PUBLIC INFORMATION, WASHINGTON, D.C. 20545

\*ADMINISTRATIVE CONTROLS AND PRACTICES + INCIDENT, ACTUAL, HUMAN ERROR + INCIDENT, ACTUAL, NONREACTOR + METAL WATER REACTION + SAFETY PRINCIPLES AND PHILOSOPHY

12-13833 ALSO IN CATEGORIES 8 AND 13  
BIG K CHEMICAL COMMISSION  
ATOMIC ENERGY COMMISSION  
2 PAGES, HEALTH AND SAFETY BULLETIN NO. 207, MARCH 22, 1965

BRIEFLY DISCUSSES THE CHEMICAL ACTIVITY AND HAZARD POTENTIAL OF POTASSIUM. POTASSIUM HAS A VIOLENT AFFINITY FOR OXYGEN AND WATER. IT IS USUALLY STORED UNDER OIL IN CLOSED CONTAINERS, BUT IT IS NOW RECOGNIZED THAT METALLIC POTASSIUM MAY OXIDIZE WHILE STORED IN THIS MANNER AND CHANGE FROM WHITE TO BLACK. THE OXIDATION RESULTS IN THE FORMATION OF K<sub>2</sub>O OR K<sub>2</sub>O<sub>2</sub>. EITHER CAN EXPLODE WHEN CHAFED OR CUT. METHODS OF STORING RECOMMENDED ARE (1) USE A CLOSED GLASS OR PLASTIC CONTAINER WITH K IMMERSED IN KEROSENE OR MINERAL OIL, OR (2) USE A GLASS CAPSULE, EVACUATED OR FILLED WITH INERT ATMOSPHERE AND SEALED.

AVAILABILITY - AEC, DIVISION OF PUBLIC INFORMATION, WASHINGTON, D.C. 20545

\*EXPLOSION + \*OXIDATION + \*POTASSIUM + CHEMICAL REACTION + MISSILE GENERATION AND PROTECTION + STORAGE CONTAINER + TRANSPORTATION AND HANDLING

12-13834 ALSO IN CATEGORY 7  
HIGH-EFFICIENCY FILTERS GET UL LABEL  
ATOMIC ENERGY COMMISSION  
2 PAGES, HEALTH AND SAFETY BULLETIN NO. 206, MARCH 15, 1965

BRIEFLY DESCRIBES THE QUALIFICATIONS OF HIGH-EFFICIENCY FILTERS NECESSARY TO MEET THE UNDERWRITERS LABORATORIES STANDARDS. TO QUALIFY, FILTERS MUST WITHSTAND PENETRATION TESTS WITH DIOCTYL PHTHALATE (DOP), EXPOSURE TO FLOWING AIR HEATED AT 700 F, A SPOT FLAME TEST, RELATIVE HUMIDITY OF 90%, AND A LOW TEMPERATURE TEST OF 27 F.

AVAILABILITY - AEC, DIVISION OF PUBLIC INFORMATION, WASHINGTON, D.C. 20545

\*FILTER SAFETY EVALUATION + \*FILTER, HIGH EFFICIENCY + DESIGN CRITERIA + FILTER INSPECTION + FILTER, COMMERCIAL

12-13835 ALSO IN CATEGORIES 17 AND 18  
STANFORD LE + WEBSTER CC  
OPERATING SAFETY LIMITS FOR THE OAK RIDGE NATIONAL LABORATORY BULK SHIELDING REACTOR (BSR)  
OAK RIDGE NATIONAL LABORATORY  
ORNL-TM-1667 +. 10 PAGES, OCTOBER 19, 1966

LISTS THE NEW OPERATING SAFETY LIMITS FOR THE 2-MW (WITH), LIGHT-WATER-MODERATED-AND-COOLED, ENRICHED-U<sub>235</sub>, POOL-TYPE TESTING REACTOR. THE POWER LEVEL HAS BEEN UPGRATED FROM 1 TO 2 MW. LIMITS ARE GIVEN FOR THE REACTOR BUILDING CONTAINMENT, MODES OF OPERATION, CORE REACTIVITY, PRIMARY AND SECONDARY COOLING SYSTEM TEMPERATURE AND QUALITY, CONTROL AND SAFETY SYSTEM, EXPERIMENTS, AND RADIATION. NO EMERGENCY COOLING PROVISIONS FOR AFTER-HEAT REMOVAL ARE REQUIRED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$1.00 COPY, \$0.50 MICROFICHE.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + BSR (BULK SHIELDING REACTOR) + POWER UPGRATING + REACTOR, AEC OWNED + REACTOR, POOL TYPE

12-13836 ALSO IN CATEGORIES 7 AND 11  
DURANT WS + MILHAM RC + MUHLBAIER DR + PETERS AH  
ACTIVITY CONFINEMENT SYSTEM OF THE SAVANNAH RIVER PLANT REACTORS  
SAVANNAH RIVER LABORATORY, AIKEN, SOUTH CAROLINA  
DP-1071 +. 150 PAGES, 31 FIGURES, 16 TABLES, 71 REFERENCES, AUGUST 1966

A FILTRATION-ADSORPTION SYSTEM IS INSTALLED IN THE VENTILATION EXHAUST OF EACH REACTOR BUILDING AT THE SAVANNAH RIVER PLANT FOR CONFINEMENT OF AIRBORNE PARTICULATE AND IODINE VAPOR ACTIVITY THAT MIGHT BE RELEASED IN THE HIGHLY UNLIKELY EVENT OF A REACTOR ACCIDENT. AIR FROM THE PROCESS AREAS OF EACH BUILDING IS PASSED CONTINUOUSLY THROUGH MOISTURE SEPARATORS, THEN THROUGH PARTICULATE FILTERS, AND FINALLY THROUGH IODINE ADSORBER BEDS OF ACTIVATED CARBON. THE SYSTEM HAS THE EXPERIMENTALLY DEMONSTRATED ABILITY TO CONFINE MORE THAN 99 PERCENT OF AIRBORNE PARTICULATE ACTIVITY AND MORE THAN 99.9 PERCENT OF AIRBORNE HALOGEN ACTIVITY, EVEN WITH ALLOWANCE FOR METHYL IODIDE, UNDER EMERGENCY CONDITIONS THAT COULD EXIST FOLLOWING A REACTOR ACCIDENT. A MECHANISM FOR METHYL IODIDE FORMATION WAS DEVELOPED FROM PUBLISHED DATA FOR GENERAL APPLICATION TO REACTOR CONFINEMENT. UNDER SAVANNAH RIVER PLANT CONDITIONS, LESS THAN 0.0001 PERCENT OF THE TOTAL IODINE INVENTORY IN THE REACTOR WOULD BE CONVERTED TO METHYL

CATEGORY 12  
PLANT SAFETY FEATURES

12-13836 \*CONTINUED\*  
IODIDE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$4.00 COPY, \$1.00 MICROFICHE

\*ADSORPTION + \*CONTAINMENT, PRESSURE VENTING + \*FILTER SYSTEM + \*FILTER, EFFICIENCY OF + \*PARTICULATE + \*SAVANNAH RIVER PRODUCTION REACTORS + CARBON + FILTER + IODINE + OPERATING EXPERIENCE + ORGANIC IODIDE + VENTILATION SYSTEM

12-13838 ALSO IN CATEGORY 17

PONMREHM HP + GARPICK BJ  
RELIABILITY OF ENGINEERED SAFEGUARDS IN NUCLEAR POWER REACTORS  
HOLMES AND NARVER

1 PAGE, 2 REFERENCES, ANS TRANSACTIONS 9(2) PAGE 533 (WINTER 1966) PITTSBURGH, PENNSYLVANIA, OCTOBER 30-NOVEMBER 3, 1966, AMERICAN NUCLEAR SOCIETY

THIS PAPER DISCUSSES THE PROBLEM OF ESTABLISHING SYSTEM RELIABILITY AND GIVES EXAMPLES OF RELIABILITY ESTIMATES OF INSTALLED REACTOR SAFEGUARD SYSTEMS. THE BASIS IS A STUDY OF POWER REACTOR OPERATING EXPERIENCE CARRIED OUT UNDER THE SPONSORSHIP OF THE USAFC. ENGINEERED SAFEGUARD SYSTEMS ARE CONSIDERED IN FOUR BROAD FUNCTIONAL CLASSES - EMERGENCY CORE COOLING - EMERGENCY POWER - SECONDARY NUCLEAR SHUTDOWN - AND CONTAINMENT (INCLUDING CONTAINMENT COOLING AND FILTERS).

\*ENGINEERED SAFETY SYSTEM + \*OPERATING EXPERIENCE + \*RELIABILITY ANALYSIS + \*RELIABILITY, COMPONENT + \*RELIABILITY, SYSTEM + CONTAINMENT, GENERAL + EMERGENCY COOLING CONSIDERATIONS + EMERGENCY POWER, ELECTRIC + SHUTDOWN SYSTEM, SECONDARY

12-13887 ALSO IN CATEGORY 17

BLUMBERG R  
MAINTENANCE OF RADIOACTIVE SYSTEMS AND COMPONENTS AT THE MSRE  
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE

4 PAGES, 1966, ANS TRANSACTIONS 9(2) PAGE 530 (1966 WINTER MEETING)

MAINTENANCE OPERATIONS ARE PERFORMED AT MSRE WITH PORTABLE SHIELDS. LONG TOOLS ARE MANIPULATED THROUGH ACCESS HOLES PROVIDED IN THE SHIELD. THE SHIELDS ARE OF A STANDARD DESIGN WHICH ALLOWS INTERCHANGE OR REDESIGN OF TOOLS. SEVERAL FAILED PUMPS AND VALVES CONTAINING LIQUID FUEL HAVE BEEN REPLACED, WHILE THE RADIATION DOSE RATE TO THE OPERATOR HAS NOT EXCEEDED 1 MR/HR. ONE OF THE PRIMARY GOALS OF THE MSRE PROGRAM HAS BEEN DEMONSTRATED, I.E., THE MAINTAINABILITY OF CIRCULATING-FUEL REACTORS.

\*MAINTENANCE AND REPAIR + \*REMOTE MANIPULATING AND VIEWING + MSRE (MOLTEN SALT REACTOR EXPERIMENT) + OPERATING EXPERIENCE + RADIATION SAFETY AND CONTROL + REACTOR, AEC OWNED + REACTOR, CIRCULATING FUEL + REACTOR, MOLTEN SALT + SHIELDING

12-13890 ALSO IN CATEGORY 17

LARSON PD  
HOT MAINTENANCE PLANNING AND PREPARATION AT GENERAL ELECTRIC ESADA-VALLACITOS EXPERIMENTAL SUPERHEAT REACTOR

GENERAL ELECTRIC COMPANY, PLEASANTON  
8 PAGES, 1966, ANS TRANSACTIONS 9(2) PAGE 529 (1966 WINTER MEETING) DOCKET NO. 50-183

THE PRODUCTIVITY OF CRAFTSMEN IN THE ATOMIC ENERGY FIELD IS ONLY HALF THAT OF INDUSTRIAL CRAFTSMEN BECAUSE OF PRECAUTIONS REQUIRED FOR RADIATION AND CONTAMINATION CONTROL. STEPS TAKEN BY GE TO IMPROVE PRODUCTIVITY INCLUDE (1) USE OF PROCEDURE MANUALS, (2) VOICE TAPES AND COLOR SLIDES EXPLAINING PROCEDURES, AND (3) LECTURES ON PLANT DESIGN. COMMON EVERYDAY ITEMS TO MAINTAIN PRODUCTIVITY (SUCH AS A GOOD COMMUNICATION SYSTEM) ARE DISCUSSED. THE LIST OF PLANNING AIDS FOR SUPERVISORS INCLUDE (1) MAPS INDICATING RADIATION LEVELS, (2) PREPARATION OF WORK PERMITS PRIOR TO JOB, (3) DAY TO DAY MAINTENANCE OF PERSONNEL-EXPOSURE RECORDS, AND (4) PHOTOGRAPHS OF INACCESSIBLE AREAS.

\*MAINTENANCE AND REPAIR + ADMINISTRATIVE CONTROLS AND PRACTICES + OPERATING EXPERIENCE + RADIATION SAFETY AND CONTROL + REACTOR, BOILING WATER + REACTOR, SUPERHEAT + VESR (VALLECITOS EXP. SUPERHEAT REACTOR-ESADA)

12-13899 ALSO IN CATEGORY 9

SPENCER EW  
THE EFFECT OF HIGH EXPANSION FIRE EXTINGUISHING FOAM ON OPERATING ELECTRONIC EQUIPMENT  
ATOMIC ENERGY COMMISSION

2 PAGES, HEALTH AND SAFETY BULLETIN NO. 201, FEBRUARY 12, 1965

FOAM IS CREATED IN VOLUMES UP TO 1000 TIMES THE VOLUME OF WATER USED. BY DISPLACING THE FREE AIR AVAILABLE FOR COMBUSTION AND BY ACTUALLY WETTING THE COMBUSTIBLE MATERIAL, HIGH-EXPANSION FOAM PROVIDES A RAPID METHOD OF FIRE SUPPRESSION. ONE OBJECTION IS THE THOUGHT OF DAMAGE TO DELICATE EQUIPMENT FLOODED BY FOAM. MIT CONDUCTED A SERIES OF TESTS. DAMAGE RESULTING FROM 15 MIN EXPOSURE TO FOAM FOR OSCILLOSCOPES AND A PULSE GENERATOR. BLOWN FUSES AND VACUUM TUBE RUPTURES RESULTED. DAMAGE RESULTING FROM 24-HOUR EXPOSURE TO FOAM FOR BOOKS, MAGAZINES, COMPUTER TAPE, DATA PROCESSING CARDS, POWER SUPPLY, AND A SQUARE WAVE GENERATOR, WAS MINOR OR

CATEGORY 12  
PLANT SAFETY FEATURES12-13899 \*CONTINUED\*  
NIL.

AVAILABILITY - AEC, DIVISION OF PUBLIC INFORMATION, WASHINGTON, D.C. 20545

\*FAILURE, INSTRUMENT + DAMAGE + FIRE + TEST, DESTRUCTIVE

12-13934  
HEATHERINGTON R + FRIES W  
CATION EXCHANGE RESIN MINIMIZES ORGANIC FOULING  
ROHM AND HAAS COMPANY  
4 PAGES, POWER, PAGES 75-78, (SEPTEMBER 1966)

PRESENTS EVIDENCE THAT POLYSTYRENE CATION EXCHANGE RESINS SLOUGH OFF ORGANICS, WHICH FOUL STRONG-BASE ANION-EXCHANGE RESINS. TESTS PROVED THAT OXYGEN IN WATER, OR ADSORBED BY THE POLYMERIC STRUCTURE OF THE RESIN, ACCELERATES RESIN DEGRADATION. ALSO, DEGRADATION IS A FUNCTION OF CONTACT TIME. RECOMMENDS THE USE OF MACRORETICULAR CATION EXCHANGE RESIN AS THE LEAST EXPENSIVE AND MOST CONVENIENT METHOD OF MINIMIZING THE SLOUGHING.

\*RESIN + \*WATER TREATMENT + ECONOMICS + ION EXCHANGE

12-13935  
HEATHERINGTON R + DOWNING DG  
A FRESH LOOK AT 3-BED DEMINERALIZING  
ROHM AND HAAS COMPANY  
4 PAGES, 6 FIGURES, 4 TABLES, 3 REFERENCES, POWER, PAGES 76-79, (NOVEMBER 1966)

THE DEVELOPMENT OF MACRORETICULAR WEAK-BASE ANION RESIN PROVIDES ECONOMIC JUSTIFICATION FOR USING THREE-BED WATER-DEMINERALIZATION SYSTEMS. THE RESINS HAVE EXCELLENT CAPACITY FOR ORGANICS, PLUS THE ABILITY TO RELEASE THEM UPON REGENERATION. ALTHOUGH THE INITIAL CAPACITY IS SLIGHTLY LESS THAN THAT OF OTHERS, ITS STABILITY IS FAR SUPERIOR. A COMPARISON OF THE ECONOMICS OF TWO-BED AND THREE-BED SYSTEMS INDICATES AN ANNUAL SAVINGS OF 30%.

\*RESIN + \*WATER TREATMENT + ECONOMICS + ION EXCHANGE

12-13948  
RYAN JT + DOUGLASS JD  
STUDIES OF DECONTAMINATION EFFECTIVENESS  
RESEARCH TRIANGLE INSTITUTE  
AD-626727 + RM-156-11 +. 95 PAGES, REFERENCES, AUGUST 5, 1964

THIS REPORT EXAMINES, BY THEORY AND BY ANALYSIS OF REAL STRUCTURES, THE REDUCTIONS IN INTENSITY INSIDE AND OUTSIDE NFSS BUILDINGS THAT CAN BE BROUGHT ABOUT BY DECONTAMINATING THE ACCESSIBLE SURFACES ON AND AROUND THE BUILDINGS. SPECIFICALLY, THE REPORT PRESENTS THE THEORY AND APPLIES IT TO NINE NFSS BUILDINGS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.75 MICROFICHE

\*DECONTAMINATION + DECONTAMINATION FACTOR + TESTING

12-13950 ALSO IN CATEGORY 2  
REACTOR SITE AND SAFETY MEASURES (REPORT ON THE TECHNICAL DISCUSSION OF THE INSTITUTE FOR REACTOR SAFETY AT MUNICH)  
TECHNICAL UNIVERSITY OF MUNICHEN, WEST GERMANY  
1 PAGES, ATOMWIRTSCHAFT 11(7), PAGE 379, (JULY 1966) IN GERMAN

REPORT ON A REACTOR-SITING MEETING IN MUNICH. PAPER BY O. KELLERMANN (SEE NSIC BIBLIOGRAPHIC REPORT). O. GROOS SAYS GERMAN ATOMIC COMMISSION CONSIDERS LIMITING MAN-REMS. H. BRESSER SAYS LIQUID EFFLUENTS CAN BE CONTROLLED, BUT FOR GASEOUS EFFLUENTS THIS IS DIFFICULT. H. GOPPELL REPORTED ON CONTAINMENT TESTING. A. TRETZE DISCUSSED DOUBLE CONTAINMENT. H. G. SEIPEL DISCUSSED CONTAINMENT LOAD IN MCA. TRANSACTIONS AVAILABLE FROM INSTITUT FUR REACTORSICHERHEIT, MUNCHEN.

\*GERMANY + \*SAFETY PRINCIPLES AND PHILOSOPHY + \*SITING, REACTOR + CONTAINMENT ANALYSIS + CONTAINMENT INTEGRITY + CONTAINMENT VESSEL LOADING + CONTAINMENT, MULTIPLE + EFFLUENT

12-13966 ALSO IN CATEGORIES 17 AND 18  
OPERATING SAFETY LIMITS FOR THE HIGH FLUX ISOTOPE REACTOR (HFIR)  
OAK RIDGE NATIONAL LABORATORY  
ORNL-TM-1532(REV.) +. 13 PAGES, SEPTEMBER 16, 1966

LISTS THE OPERATING SAFETY LIMITS FOR THE 100-MW(TH), LIGHT-WATER-MODERATED, COOLED, BERYLLIUM-REFLECTED, ENRICHED U-235, FLUX-TRAP REACTOR. LIMITS ARE GIVEN FOR THE CONTAINMENT SYSTEM, CORE REACTIVITY, INSTRUMENTATION, EXPERIMENTS, PRIMARY COOLING SYSTEM, AND RADIATION



CATEGORY 12  
PLANT SAFETY FEATURES

12-13966 \*CONTINUED\*  
MONITORING. ADMINISTRATIVE AND PROCEDURAL SAFEGUARDS ARE INCLUDED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$1.00 COPY, \$0.50 MICROFICHE

HFIR (HIGH FLUX ISOTOPE REACTOR) + OPERATING LIMITS/TECHNICAL SPECIFICATIONS + REACTOR, AEC OWNED + REACTOR, RESEARCH + REACTOR, TEST

12-13968 ALSO IN CATEGORY 18  
QUAD CITIES 1 AND 2. AMENDMENT 4 - EMERGENCY CORE COOLING  
COMMONWEALTH EDISON COMPANY  
55 PAGES, TABLES, NOVEMBER 1966, DOCKET NO. 50-254, 50-265

DESCRIBES CHANGES MADE AFTER THE DRESDEN-3 REVIEW BY AEC, AND ADOPTS BY REFERENCE DRESDEN-3 AMENDMENT 5 (CORE-SPRAY-PERFORMANCE EVALUATION). THIS DOCUMENT EMPHASIZES THE LOW-PRESSURE COOLANT-INJECTION AND CONTAINMENT-COOLING SYSTEMS. TWO PUMPS (IN EACH LOOP) TAKE SUCTION FROM THE SUPPRESSION POOL AND PASS WATER THROUGH A HEAT EXCHANGE TO EITHER A PRIMARY RECIRCULATION LINE OR TO A DRYWELL SPRAY SYSTEM. 3 OF 4 PUMPS ARE ENOUGH TO MEET COOLING REQUIREMENTS. (SECTION VIII) DIFFERENCES FROM DRESDEN 3 ARE - (1) ISOLATION CONDENSERS REPLACED BY REACTOR-CORE-ISOLATION COOLING (RCIC) SYSTEMS, (2) LPCI/CC SYSTEM ALSO PERFORMS SHUTDOWN COOLING FUNCTION, (3) QUAD CITIES HAS ONLY ONE PUMP AND ONE VALVE INSTEAD OF TWO EACH AT DRESDEN 3.

AVAILABILITY - USAEC DOCUMENT (PUBLIC) ROOM, WASHINGTON, D.C.

\*CONSTRUCTION PERMIT PROCESS + \*EMERGENCY COOLING CONSIDERATIONS + CONTAINMENT SPRAY + CORE REFLOODING SYSTEM + CORE SPRAY + QUAD CITIES 1 AND 2 + REACTOR, BOILING WATER + SHUTDOWN COOLING SYSTEM

12-13985 ALSO IN CATEGORY 5  
ROY GM  
GETTING MOPE OUT OF RWRS  
GENERAL ELECTRIC COMPANY, SAN JOSE  
? PAGES, 2 FIGURES, 2 TABLES, NUCLEONICS (24)11 PAGES 41-43, (NOVEMBER 1966)

CORE SIZED FOR RATED CONDITIONS, RATHER THAN FOR 120% OF RATED CONDITION. ALLOWABLE HEAT-FLUX VALUE 1.9 TIMES ACTUAL HEAT-FLUX VALUE. USE OF THREE FUEL-ROD ENRICHMENTS WITHIN EACH BUNDLE AND ON-LINE PROCESS COMPUTER REDUCES PEAK TO AVERAGE RATE FROM PREVIOUS VALUE OF 3 TO 2.6. MAXIMUM FLUX TAKEN AT MIDPLANE. NEW HENCH-LEVY HEAT-TRANSFER CORRELATION BASED ON 700 MULTI-ROD DATA DOES NOT DROP OFF WITH STEAM QUALITY AS SHARPLY AS THE OLD CORRELATION. REACTOR-CORE-ISOLATION SYSTEM REPLACES ISOLATION CONDENSER.

EMERGENCY COOLING CONSIDERATIONS + HEAT TRANSFER CORRELATION + POWER DISTRIBUTION + POWER UPGRATING + REACTOR, BOILING WATER

12-14043 ALSO IN CATEGORIES 17 AND 9  
COLLINS GB  
A.G.R. STEAM DRUM EXPERIMENT  
ATOMIC ENERGY ESTABLISHMENT, WINFRITH, ENGLAND  
AEEW-M-631 +. 38 PAGES, 1966

STEADY-STATE AND TRANSIENT MEASUREMENTS MADE ON A FORCED RECIRCULATION BOILER STEAM DRUM ARE DESCRIBED, AND CONCLUSIONS ARE DRAWN CONCERNING THE STEADY-STATE WATER SUBCOOLING AND THE DYNAMIC BEHAVIOUR OF THE WATER AND STEAM PHASES DURING TRANSIENTS. ATTEMPTS AT PARAMETER IDENTIFICATION USING A LINEARIZED MODEL SET UP ON AN ANALOG COMPUTER ARE DESCRIBED, AND IT IS CONCLUDED THAT AN ASYMMETRIC MODEL IS REQUIRED TO ADEQUATELY DESCRIBE BOTH INCREASING AND DECREASING PRESSURE EFFECTS. FURTHER DYNAMIC EXPERIMENTS ARE SUGGESTED, USING MORE REFINED MEASUREMENT TECHNIQUES.

AVAILABILITY - BRITISH INFORMATION SERVICE, 845 THIRD AVENUE, NEW YORK, NEW YORK 10022, \$1.10 COPY

\*ANALYTICAL MODEL + AGR (ADVANCED GASCOOLED REACTOR, WINDSCALE, UK) + STEAM GENERATOR

12-14072 ALSO IN CATEGORIES 9 AND 17  
GARRICK BJ + GEKLER WC + POMREHN HP  
AN ANALYSIS OF NUCLEAR POWER PLANT OPERATING AND SAFETY EXPERIENCE  
HOLMES AND NARVER, INC.  
HN-185(VOL. I) +. 110 PAGES, FIGURES, TABLES, REFERENCES, DECEMBER 15, 1966

EXAMINATION OF THE OPERATING RECORDS (TO MARCH 1966) AT 5 PLANTS SHOWED THAT RECORDS HAVE INADEQUATE INFORMATION FOR STATISTICAL SUMMARIES. SCRAM CAUSES AND MAJOR FAULTS IN ENGINEERED SAFEGUARDS WERE TABULATED. MEAN TIME BETWEEN FAILURES WERE COMPUTED FROM SCRAM DATA (FALSE AND REAL) AND FROM TESTS ON ENGINEERED SAFEGUARDS. VOL. I CONTAINS CONCLUSIONS AND 5 APPENDICES ON RELIABILITY MATHEMATICS. VOLUME II CONTAINS (FOR EACH REACTOR) A HISTORICAL DESCRIPTION, MANAGEMENT AND MAINTENANCE, AND THE SUMMARY DATA.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF

CATEGORY 12  
PLANT SAFETY FEATURES

12-14072 \*CONTINUED\*  
STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$4.00 COPY.

\*ENGINEERED SAFETY SYSTEM + \*OPERATING EXPERIENCE + \*REACTOR SAFETY SYSTEM + \*RELIABILITY ANALYSIS +  
DRESDEN 1 + HUMBOLDT BAY + INDIAN POINT 1 + MAINTENANCE AND REPAIR + REACTOR, BOILING WATER +  
REACTOR, PRESSURIZED WATER + SHIPPINGPORT + YANKEE

12-14193 ALSO IN CATEGORY 13

MCINTOSH JD + RAAB GJ  
REMOTE MAINTENANCE IN A LARGE SCALE SEPARATIONS PLANT  
ISOICHEM INC., RICHLAND

ISO-SA-25 + CONF-661001-16 +. 24 PAGES, 10 FIGURES, 1 TABLE, JULY 15, 1966, FOR PRESENTATION AT 14TH  
CONFERENCE ON REMOTE SYSTEMS TECHNOLOGY, PITTSBURGH, PA.

REMOTE MAINTENANCE IN THE LARGE PUREX SEPARATIONS PLANT HOT-PROCESSING CANYON CONSISTS ALMOST  
ENTIRELY OF EQUIPMENT REPLACEMENT. THE PUREX PLANT SEPARATES URANIUM, PLUTONIUM, AND  
NEPTUNIUM FROM HANFORD-IRRADIATED METAL. ORIGINAL DESIGN PROVIDED FOR REPLACEMENT OF ANY OR  
ALL EQUIPMENT IN THE FORTY-FOOT-DEEP SHIELDED PROCESSING CELLS BY THE VERSATILE REMOTE CANYON  
CRANES. FIFTY-SIX % OF THE ORIGINAL VALUE OF REMOTE CANYON PROCESSING VESSELS HAVE BEEN  
REPLACED FOR MAINTENANCE REASONS DURING THE TEN-YEAR PLANT HISTORY. EFFECTIVE USE OF A LARGE  
INVENTORY OF PRECISELY ENGINEERED REPLACEMENT EQUIPMENT HAS HELPED TO HOLD MAINTENANCE  
DOWNTIME TO LESS THAN 10%.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$1.00 COPY, \$0.50 MICROFICHE

\*MAINTENANCE AND REPAIR + \*RADIOCHEMICAL PROCESSING + HANFORD SITE

12-14194 ALSO IN CATEGORIES 18 AND 13

FISSION PRODUCT CONVERSION AND ENCAPSULATION PLANT (FPCE) USAEC HANFORD WORKS, BENTON COUNTY, WASHINGTON  
ISOICHEM INC.

39 PAGES, DECEMBER 7, 1966, DOCKET NO. 50-258

ISOICHEM, INC., IS SEEKING A PROVISIONAL CONSTRUCTION PERMIT FOR BUILDING AND SUBSEQUENTLY  
OPERATING A FISSION PRODUCT CONVERSION AND ENCAPSULATION PLANT (FPCE PLANT) AT HANFORD. THIS  
DOCUMENT CONTAINS DETAILS OF THE NOTICE OF HEARING ON THE APPLICATION AND REHASHES THE  
INFORMATION SUBMITTED IN PREVIOUS DOCUMENTS. A LETTER FROM THE CHAIRMAN OF THE ADVISORY  
COMMITTEE ON REACTOR SAFEGUARDS AND THE AEC DIVISION OF MATERIALS LICENSING SAFETY ANALYSIS  
SUPPORT THE APPLICATION BY CONCLUDING THAT THE PLANT CAN BE OPERATED WITHOUT UNDUE RISK TO  
THE HEALTH AND SAFETY OF THE PUBLIC.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*APPLICATION FOR AEC LICENSE + \*CERIUM + \*PROMETHIUM + \*RADIOCHEMICAL PROCESSING + \*STRONTIUM +  
FISSION PRODUCT, SEPARATION FROM WASTE + FPCE PLANT + HANFORD SITE + HAZARDS ANALYSIS +  
RADIOCHEMICAL PLANT SAFETY + SAFETY ANALYSIS REPORT, GENERAL

12-14344 ALSO IN CATEGORY 13

LANDLER G

SECONDARY SODIUM PIPING DESIGN WITHOUT BELLOWES. SODIUM COMPONENT TEST FACILITY FEASIBILITY STUDY REPORT  
ATOMICS INTERNATIONAL, CANOGA PARK, CALIFORNIA  
NAA-SR-MEMO-11941 +. 88 PAGES, MAY 2, 1966

BELLOWES-FREE DESIGN OF THE SECONDARY SODIUM SYSTEM IN THE SCTI IS FEASIBLE. THE RESULT OF THE  
STUDY IS AN ISOMETRIC LAY-OUT OF THE SODIUM INLET AND OUTLET LINES OF THE B AND W STEAM  
GENERATOR, WITHOUT BELLOWES TYPE EXPANSION JOINTS, AS SHOWN IN APPENDIX A. THE FEASIBILITY  
STUDIES PERFORMED ON THESE PIPING CONFIGURATIONS DEMONSTRATED COMPLIANCE WITH THE  
REQUIREMENTS OF THE AMERICAN STANDARD CODE FOR PRESSURE PIPING ASA B31.1 AND WITH THE  
MANUFACTURERS REQUIREMENTS ASSURING STRUCTURAL INTEGRITY OF THE PROCESS EQUIPMENT. A REVIEW  
BY THE C. F. BRAUN AND COMPANY HAS FOUND THE PIPING CONFIGURATIONS REASONABLE AND SOUND.  
SUPPORTING STUDIES RELATED TO THE ADEQUACY OF THE EQUIPMENT ARRANGEMENT AND TO COMPLIANCE  
WITH PROCESS REQUIREMENTS ARE INCLUDED IN THIS REPORT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.75 MICRONEGATIVE

\*ATOMICS INTERNATIONAL + \*DESIGN STUDY + \*EQUIPMENT DESIGN + PIPING + SODIUM

12-14446 ALSO IN CATEGORIES 18 AND 13

APPLICATION FOR LICENSES FPCE PLANT AMENDMENT NO. 2  
ISOICHEM INC.

360 PAGES, OCTOBER 17, 1966, DOCKET NO. 50-258

REPORT GIVES GENERAL AND DETAILED TECHNICAL INFORMATION NEEDED FOR LICENSING OF A  
RADIOCHEMICAL PLANT. SEE ORIGINAL APPLICATION.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

CATEGORY 12  
PLANT SAFETY FEATURES

12-14446 \*CONTINUED\*

\*APPLICATION FOR AEC LICENSE + \*CERIUM + \*CESIUM + \*FPCE PLANT + FISSION PRODUCT, SEPARATION FROM WASTE + HAZARDS ANALYSIS + ISOHEM, INC. + PROMETHIUM + RADIOCHEMICAL PLANT SAFETY + RADIOCHEMICAL PROCESSING + SAFETY ANALYSIS REPORT, GENERAL + STRONTIUM

12-14530

TSUJINO T

PLUTONIUM HANDLING TECHNIQUES ESPECIALLY IN FRENCH LABORATORIES  
JAPAN ATOMIC ENERGY RESEARCH INSTITUTE  
JAERI-4036 +. 39 PAGES, SEPTEMBER 30, 1966, IN JAPANESE

BASED ON THE EXPERIENCE WITH PLUTONIUM HANDLING IN FRANCE, THE TECHNIQUES IN CHEMICAL LABORATORIES ARE SUMMARIZED. LABORATORY FACILITIES, EQUIPMENT, REGULATIONS, AND TECHNIQUES FOR HANDLING PLUTONIUM ARE MAINLY DISCUSSED. THE CHEMICAL AND PHYSICAL PROPERTIES OF PLUTONIUM AND THE SAFETY PROBLEMS ARE ALSO OUTLINED. ABSTRACTS OF PAPERS ON PLUTONIUM HANDLING ARE GIVEN IN THE APPENDIX.

\*BIBLIOGRAPHY + \*FRANCE + \*FUEL HANDLING + \*PLUTONIUM + REGULATION, GENERAL

12-14542

ALSO IN CATEGORIES 9 AND 18

QUESTION B.1A - CRITERIA FOR DETERMINING WHICH FACILITIES CANNOT BE SHARED  
TENNESSEE VALLEY AUTHORITY

2 PAGES, PAGES B.1.1 TO B.1.2 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966, DOCKET NO. 50-259/60

THE DESIGN INTENT IS TO SHARE FACILITIES ONLY WHEN IT WILL NOT COMPROMISE SAFETY OR INTERFERE WITH INDEPENDENT OPERATION. SOME SHARED EQUIPMENT IS COMMON SPARE COMPONENTS (SPARE FUEL POOL FILTER-DEMINERALIZER), OR IS CONNECTED ONLY IN CASE OF NECESSITY.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + DESIGN CRITERIA + EMERGENCY SYSTEM + INDEPENDENCE + REACTOR, BOILING WATER + REDUNDANCE

12-14543

ALSO IN CATEGORIES 9 AND 18

QUESTION B.1B - ADDITIONAL DESIGN CRITERIA TO PREVENT INTERACTION BETWEEN UNSHARED FACILITIES  
TENNESSEE VALLEY AUTHORITY

PAGE B.1.3 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966, DOCKET NO. 50-295/260

EQUIPMENT CONTROLS WILL NOT BE INTERMIXED. CONTROL CONSOLES, EQUIPMENT AND VALVE-OPERATING PANELS WILL BE SEPARATED, AS WELL AS THE EQUIPMENT ITSELF.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + DESIGN CRITERIA + INDEPENDENCE + REACTOR, BOILING WATER

12-14544

ALSO IN CATEGORY 18

QUESTION B.1C - CRITERIA FOR THE SPECIFIC DESIGN OF EACH SHARED FEATURE  
TENNESSEE VALLEY AUTHORITY

4 PAGES, PAGES B.1.3 TO B.1.6 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966, DOCKET NO. 50-259/260

DISCUSSION RESTRICTED TO 11 SAFETY-RELATED SYSTEMS, INCLUDING SPENT FUEL STORAGE, ELECTRIC POWER SYSTEM, CONTROL ROOM, WASTE DISPOSAL, REACTOR SECONDARY CONTAINMENT, STACK AND GAS TREATMENT SYSTEM, AND SERVICE WATER SYSTEM.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + DESIGN CRITERIA + EMERGENCY SYSTEM + INDEPENDENCE + REACTOR, BOILING WATER

12-14546

ALSO IN CATEGORIES 11 AND 18

QUESTION B2 - HAVE AEC'S COMMENTS ON DRESDEN 3 EMERGENCY COOLING BEEN CONSIDERED  
TENNESSEE VALLEY AUTHORITY

5 PAGES, PAGES B.2.1 TO B.2.5 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966, DOCKET NO. 50-259/260

THE DESIGNER (GENERAL ELECTRIC) IS AWARE OF THESE COMMENTS. BROWNS FERRY IS IN MOST RESPECTS IDENTICAL TO DRESDEN 2 AND 3, AND GE STUDIES OF CORE COOLING, BLOWDOWN FORCES ON VESSEL AND CONTROL RODS, AND REACTOR VESSEL FABRICATION AND IN-SERVICE INSPECTION WILL BE MADE AVAILABLE TO THE AEC.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

CATEGORY 12  
PLANT SAFETY FEATURES

12-14546 \*CONTINUED\*

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BLOWDOWN + BROWNS FERRY + CONTAINMENT, PRESSURE VESSEL + EMERGENCY COOLING CONSIDERATIONS + EXAMINATION + FABRICATION + REACTOR, BOILING WATER

12-14640 ALSO IN CATEGORIES 9 AND 17

BEARING WEAR PROBLEMS ON HFIR CONTROL PLATES

DIVISION OF OPERATIONAL SAFETY, USAEC

RUL. ROE-66-4 +. OPERATING EXPERIENCES, REACTOR SAFETY 66-4, 4 PAGES, 1 FIGURE, DECEMBER 22, 1966

FAILURE OF THE CONTROL-ROD-GUIDANCE STELLITE-BEARING ASSEMBLIES AS A RESULT OF EXCESSIVE WEAR WAS CAUSED BY FRETTING CORROSION AND EXCESSIVE VIBRATION. THE FAILURE WAS DISCOVERED DURING THE SHUTDOWN FOLLOWING THE FIRST 100-MWTH CYCLE WHEN TEN 3/16-IN.-DIAM BALLS WERE FOUND IN THE PRIMARY-SYSTEM STRAINER. ALTHOUGH THE PLATES WERE IN THE REACTOR ALMOST TWICE AS LONG AS THEIR DESIGN LIFE, AS A RESULT OF USE DURING HYDRAULIC AND LOW-POWER TESTING, MODIFICATIONS WERE MADE ANYWAY. RETAINERS WERE PROVIDED FOR BOTH THE BALLS AND RACE TO PREVENT THE BEARINGS FROM COMING APART, AND THE METHOD OF ATTACHING THE BEARINGS TO THE PLATES WAS MODIFIED TO IMPROVE REPLACEMENT. TIME-OF-FLIGHT TESTS JUST BEFORE THE DISCOVERY SHOWED THAT EXCESSIVE WEAR DID NOT AFFECT THE SCRAM RESPONSE.

AVAILABILITY - AEC, DIVISION OF PUBLIC INFORMATION, WASHINGTON, D. C. 20545

\*FAILURE, COMPONENT + \*FAILURE, SCRAM MECHANISM + CORROSION + HFIR (HIGH FLUX ISOTOPE REACTOR) + REACTOR, AEC OWNED + REACTOR, FLUX TRAP + VIBRATION

12-14643 ALSO IN CATEGORIES 1 AND 17

GEKLER WC + POMREHN HP

RELIABILITY TECHNIQUES

HOLMES AND NARVER, INC.

HN-185 +. 16 PAGES, 2 TABLES, AN ANALYSIS OF NUCLEAR POWER PLANT OPERATING AND SAFETY EXPERIENCE. VOL. 1, PAGES 52-67, DECEMBER 15, 1966

OPERATING AND SAFETY EXPERIENCE, AT FIVE MAJOR NUCLEAR POWER PLANTS, REPRESENTING 20 REACTOR-YEARS OF OPERATION WAS ANALYZED. THE TECHNIQUES AND PROCEDURES USED IN COLLECTING AND TREATING THE DATA ARE GIVEN. NO NEW IDEAS OR MATHEMATICS WERE DEVELOPED. THE LEVEL OF THE ANALYSIS FOR PREDICTING RELIABILITY OF SYSTEMS EXTENDED DOWN TO THE COMPONENTS AND NOT TO THE PARTS OF THE COMPONENTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*OPERATING EXPERIENCE + \*RELIABILITY ANALYSIS + MATHEMATICAL STUDY + PROCEDURES AND MANUALS + REACTOR, POWER

12-14670 ALSO IN CATEGORIES 11 AND 7

KARWAT H

CURRENT PROBLEMS IN DESIGN AND EVALUATION OF CONTAINMENTS FOR LARGE WATER COOLED POWER REACTORS

TECHNISCHE HOCHSCHULE MUNCHEN, GERMANY

MRR-30 +. 15 PAGES, 2 FIGURES, 9 REFERENCES, OCTOBER 1966, FROM SECOND MEETING OF COMMITTEE ON REACTOR SAFETY TECHNOLOGY, PARIS, NOVEMBER 2-4, 1966

DESCRIBES FULL-PRESSURE AND PRESSURE-SUPPRESSION CONTAINMENT SYSTEMS AS USED IN GERMAN FEDERAL REPUBLIC. THERE FOLLOWS A DISCUSSION OF THE TYPES OF ACCIDENT AND ENGINEERED SAFEGUARDS THAT MUST BE CONSIDERED IN REACTOR SAFETY ANALYSIS.

\*CONTAINMENT, GENERAL + \*CONTAINMENT, HIGH PRESSURE + \*CONTAINMENT, PRESSURE SUPPRESSION + \*GERMANY + ACCIDENT ANALYSIS + CHARCOAL + ENGINEERED SAFETY SYSTEM + FILTER + FISSION PRODUCT TRANSPORT + METAL WATER REACTION

12-14678 ALSO IN CATEGORY 18

ACRS APPROVES INDIAN POINT 2 CONSTRUCTION PERMIT

UNITED STATES ATOMIC ENERGY COMMISSION

4 PAGES, 7 REFERENCES, AUGUST 16, 1966, DOCKET NO. 50-247

ACRS NOTED THE CONTAINMENT-LEAKAGE CONTROL BY PRESSURIZATION OF WELD AREAS, INTERNAL RECIRCULATION OF SODIUM THIOSULPHATE CONTAINMENT SPRAY, AND AIR RECIRCULATION-COOLING UNITS (TO PROVIDE LONG-TERM COOLING WITHOUT PUMPING RADIOACTIVE LIQUID OUTSIDE THE CONTAINMENT), PROTECTION AGAINST MISSILES FROM REACTOR VESSEL. ACRS RECOMMENDS ATTENTION TO EMERGENCY COOLING SYSTEM, REFRACTORY-LINED PIT BENEATH THE CORE, USE OF SOLID BURNABLE POISONS TO REDUCE POSITIVE MODERATOR COEFFICIENT (DUE TO CHEMICAL SHIM).

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) + \*CONSTRUCTION PERMIT PROCESS + CHEMICAL SHIM + EMERGENCY COOLING CONSIDERATIONS + INDIAN POINT 2 + REACTOR, PRESSURIZED WATER

CATEGORY 12  
PLANT SAFETY FEATURES

12-14731

HOLM HI + LIND JE

PREVENTIVE MAINTENANCE IN CHEMICAL AND MINING INDUSTRIES. A LITERATURE SEARCH  
AKTIFEROLAGET ATOMENERGI, STOCKHOLM, SWEDEN  
VD0IT-94 +. 10 PAGES, SEPTEMBER 1965

TO MINIMIZE UNEXPECTED BREAKDOWNS AND CORRECTIVE MAINTENANCE, PROGRAMS ARE ESSENTIAL. SEVERAL PROGRAMS HAVE BEEN DESCRIBED IN TECHNICAL PUBLICATIONS. A LIST OF 44 PAPERS WITH ABSTRACTS IS GIVEN. THE LIST IS NOT COMPREHENSIVE, AND IT COVERS ONLY THOSE ASPECTS OF THE SUBJECT WHICH WOULD BE OF INTEREST IN CHEMICAL AND MINING INDUSTRIES. MAJOR SOURCES WERE - APPLIED SCIENCE AND TECHNOLOGY INDEX AND ENGINEERING INDEX. THE PERIOD COVERED IS JULY 1963 - JUNE 1965

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

\*MAINTENANCE AND REPAIR + \*MINING

12-14762

ALSO IN CATEGORIES 2 AND 18

ARNOLD HG + GALL WR + MORRIS G

FEASIBILITY OF OFFSHORE DUAL-PURPOSE NUCLEAR POWER AND DESALINATION PLANTS  
OAK RIDGE NATIONAL LABORATORY  
ORNL-TM-1329 +. 105 PAGES, 23 FIGURES, 3 TABLES, JANUARY 1966

THE SURGE PRESSURE FROM THE MAXIMUM CREDIBLE ACCIDENT WILL PROBABLY BE LESS THAN ATMOSPHERIC IF THE RELEASED VAPORS ARE ALLOWED TO EXPAND INTO THE EVAPORATOR SPACE. IF THE ENTIRE VOLUME OF THE CONTAINING SHELL IS SUBMERGED BELOW THE SURFACE OF THE SEA, THE EXTERNAL PRESSURE WILL BE GREATER THAN THE INTERNAL PRESSURE AT ALL TIMES. THIS MAY ENSURE THAT NO RADIOACTIVE FISSION PRODUCTS CAN ESCAPE. WITH THE LOW-PRESSURE STAGES OF THE EVAPORATOR AS A PRESSURE-SUPPRESSION CHAMBER AND THE SURROUNDING SEAWATER AS HEAT SINK, THE SAFETY OF THE PLANT TO THE PUBLIC MIGHT BE ENHANCED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*ACCIDENT ANALYSIS + ACCIDENT, MAXIMUM CREDIBLE (MCA) + CONTAINMENT LEAKAGE CONTROL + CONTAINMENT, PRESSURE SUPPRESSION + REACTOR, DESALINATION + SITING, OFF SHORE

12-14801

ALSO IN CATEGORIES 1 AND 17

ROMANKO J

INVESTIGATION OF EXPLOSIONS IN IRRADIATED LIQUID-NITROGEN DEWARs  
GENERAL DYNAMICS

N-65-13092 + NASA-CR-68435 + FZK-219 +. 122 PAGES, FIGURES, TABLES, REFERENCES, DEC. 15, 1965

LIQUID NITROGEN WITH VARIOUS IMPURITIES WAS IRRADIATED UNDER CONTROLLED CONDITIONS (OPEN AND CLOSED) TO GIVE INFORMATION ON CONDITIONS THAT CAUSE EXPLOSIONS. THE X-RAY IRRADIATIONS WERE CARRIED TO COMPLETION. THE REACTOR IRRADIATIONS PROGRAM WAS TERMINATED BEFORE THE COMPLETION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*EXPLOSION + \*NITROGEN + \*TEST, DESTRUCTIVE + IN PILE LOOP + IRRADIATION TESTING

12-14844

ALSO IN CATEGORIES 1 AND 18

AEC AUTHORIZED FERMI TO USE PROTECTION FACTORS FOR RESPIRATORY DEVICES

DIVISION OF REACTOR LICENSING

6 PAGES, 1 TABLE, JANUARY 1967, DOCKET NO. 50-16

PENDING AMENDMENT OF 10 CFR 20, A SET OF FILTER FACTORS (TO ADJUST THE CONCENTRATION INHALED ACCORDING TO RESPIRATORY DEVICE USED) WAS ESTABLISHED. FERMI PERSONNEL MAY NOW USE THESE.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*PERSONNEL PROTECTIVE DEVICE + FERMI + FILTER EFFICIENCY + RADIATION SAFETY AND CONTROL + REACTOR, BREEDER + REACTOR, FAST

12-14992

ALSO IN CATEGORIES 3 AND 11

HARRELL JE

MIXING AND SAMPLING ENRICHED U-235 FLUIDS IN CYLINDRICAL STORAGE CONTAINERS. FINAL REPORT

OAK RIDGE NATIONAL LAB., OAK RIDGE

Y-1561 +. 124 PAGES, FIGURES, TABLES, JANUARY 17, 1967

A STUDY WAS PERFORMED THAT COMBINED THE MEASUREMENT OF SOME SAFE-TANK MIXING AND SAMPLING CHARACTERISTICS WITH A THEORETICAL ANALYSIS FOR THE GENERALIZATION OF MIXING CHARACTERISTICS

CATEGORY 12  
PLANT SAFETY FEATURES

12-14992 \*CONTINUED\*

FOR RECIRCULATION IN MIXED-TANK SYSTEMS. SAFE-TANK MIXING WAS SIMULATED IN FACILITY THAT CONSISTED OF BOTH HORIZONTALLY AND VERTICALLY ORIENTATED TANKAGE EQUIPPED WITH FLOW-RATE AND FLUID-CONCENTRATION MEASUREMENT COMPONENTS. THE THEORETICAL TREATMENT USED A COMBINATION OF THE TANKS-IN-SERIES MODEL AND THE DISPERSION MODEL, AND REQUIRED EITHER ANALOG OR DIGITAL COMPUTER SOLUTIONS. THE EFFECT OF THE PIPING ARRANGEMENT OF THE VARIOUS TANKAGE SYSTEMS UPON MIXING, SAMPLING, AND FUEL-INVENTORY UNCERTAINTIES WAS STUDIED AND RECOMMENDATIONS MADE FOR THE DESIGN AND OPERATION OF A TANKAGE SYSTEM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*FUEL STORAGE + \*SAMPLING + \*URANIUM + COMPARISON, THEORY AND EXPERIENCE

12-15032 ALSO IN CATEGORY 13

BLACK R + WENTZ R

1967 CONTAMINATION CONTROL DIRECTORY AND BUYERS GUIDE  
120 PAGES, BLACKWENT PUBLISHING COMPANY, 1967

1967 CONTAMINATION CONTROL DIRECTORY AND BUYERS GUIDE.

AVAILABILITY - BLACKWENT PUBLISHING COMPANY, 1605 CAHUENGA BLVD., LOS ANGELES, CALIFORNIA 90028, \$10.00 COPY

\*AIR CLEANING + \*EQUIPMENT DESIGN + \*FILTER + ADSORPTION + ATMOSPHERIC POLLUTION + DECONTAMINATION + FILTER PACK + MATERIAL + MONITOR, RADIATION, AIR

12-15034

FONTAINE A + BERGER D

APPLICATION OF THE CHEMICAL PROPERTIES OF RUTHENIUM TO DECONTAMINATION PROCESSES  
CENTRE DE PRODUCTION DE PLUTONIUM DE MARCOULE, FRANCE  
CEA-R-2842 +. 78 PAGES, DECEMBER 1965

THE CHEMICAL PROPERTIES OF RUTHENIUM IN THE FORM OF AN AQUEOUS SOLUTION OF THE NITRATE AND IN ORGANIC TRIBUTYL PHOSPHATE SOLUTION WERE REVIEWED. FROM THE DATA OBTAINED, SOME KNOWN EXAMPLES ARE GIVEN TO DEMONSTRATE THE PROCESSES OF SEPARATION OF RUTHENIUM FROM RADIOACTIVE WASTE.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

\*DECONTAMINATION + \*FRANCE + \*RUTHENIUM

12-15113 ALSO IN CATEGORY 7

TAGAMI T

CONSIDERATIONS ON FISSION PRODUCT RELEASE SUPPRESSION FACTORS OF ENGINEERED SAFEGUARDS FOR NUCLEAR POWER PLANTS  
NATIONAL REACTOR TESTING STATION, IDAHO FALLS, IDAHO  
10 PAGES, 10 FIGURES, 1 TABLE, 8 REFERENCES, NUCLEAR ENGINEERING AND DESIGN, 4(2), PAGES 214-223, (AUGUST 1966)

IN A LOSS-OF-COOLANT ACCIDENT, THE AMOUNT OF A SPECIFIED NUCLIDE AMONG FISSION PRODUCTS RELEASED TO ATMOSPHERE FROM THE ENGINEERED SAFEGUARD CONSISTING OF AN N-FOLD MULTIPLE BARRIER CAN BE APPROXIMATELY ESTIMATED BY A SIMPLE FORMULA. WITH THIS FORMULA, FUNCTIONS OF VARIOUS ENGINEERED SAFEGUARDS PROPOSED CURRENTLY FOR LIGHT-WATER-MODERATED POWER PLANTS IN THE USA ARE REVIEWED WITH RESPECT TO THE RADIOACTIVE IODINE RELEASE SUPPRESSION EFFECTS.

\*ENGINEERED SAFETY SYSTEM + \*MATHEMATICAL STUDY + \*THEORETICAL INVESTIGATION + FISSION PRODUCT RELEASE, GENERAL + FISSION PRODUCT, IODINE + RADIOACTIVITY, RELEASE

12-15125 ALSO IN CATEGORIES 11 AND 18

ACRS APPROVES TURKEY POINT CONSTRUCTION PERMIT

U.S. ATOMIC ENERGY COMMISSION

PRESS REL. K-20 +. 1 PAGE, JANUARY 27, 1967, DOCKET NO. 50-250, 50-251

ACRS NOTES USE OF ACCUMULATORS FOR VERY RAPID INJECTION OF BORATED WATER AFTER A LOSS-OF-COOLANT ACCIDENT, AND POSITIVE MODERATOR COEFFICIENT, PLUS HURRICANE AND ASSOCIATED WAVES. ACRS FEELS REVIEW WILL BE NECESSARY LATER ON THE QUESTION OF CONTINUED OPERATION IF ONE OF TWO REDUNDANT ENGINEERED SAFEGUARDS BECOMES INOPERABLE.

AVAILABILITY - AEC, DIVISION OF PUBLIC INFORMATION, WASHINGTON, D. C. 20545

\*ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) + CONSTRUCTION PERMIT PROCESS + CONTAINMENT DESIGN + EMERGENCY COOLING CONSIDERATIONS + MODERATOR COEFFICIENT + REACTOR, PRESSURIZED WATER + REDUNDANCE + REVIEW + TURKEY POINT 3 + TURKEY POINT 4

CATEGORY 12  
PLANT SAFETY FEATURES

12-15126 ALSO IN CATEGORIES 16 AND 18  
ACRS APPROVES PALISADES POINT CONSTRUCTION PERMIT  
U.S. ATOMIC ENERGY COMMISSION  
PRESS PFL. K-18 +. 1 PAGE, JANUARY 24, 1967, DOCKET NO. 50-255

ACRS NOTES THAT EMERGENCY CORE-COOLING WILL BE DESIGNED TO PREVENT FUEL/CLAD DAMAGE AND LIMIT METAL-WATER REACTIONS TO 1% ON LOSS-OF-COOLANT ACCIDENTS. POSITIVE MODERATOR COEFFICIENT WILL BE EVALUATED AND MADE MORE NEGATIVE IF NECESSARY BY BURNABLE POISON. A METEOROLOGICAL PROGRAM WILL JUSTIFY USE OF MORE RAPID ATMOSPHERIC DIFFUSION THAN GIVEN IN TID-14844. HOWEVER, A CONTAINMENT IODINE-REMOVAL SYSTEM CAPABILITY IS PROVIDED.

AVAILABILITY - AEC, DIVISION OF PUBLIC INFORMATION, WASHINGTON, D. C. 20545

\*ACPS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) + CONSTRUCTION PERMIT PROCESS + EMERGENCY COOLING CONSIDERATIONS + MODERATOR COEFFICIENT + PALISADES POINT + REACTOR, PRESSURIZED WATER + REVIEW + WIND STATISTICS

12-15130  
ELLIS JM + TAYLOR WH  
PREVENTION OF ON-STREAM FAILURE OF COOLING TOWER FAN BLADES  
OAK RIDGE GASEOUS DIFFUSION PLANT  
K-M-6013 +. 8 PAGES, JUNE 15, 1966

THE ON-STREAM FAILURE OF COOLING-TOWER FAN BLADES IS A SAFETY HAZARD TO PERSONNEL AND NECESSITATES EXPENSIVE REPAIRS ON AN EMERGENCY BASIS. REMOVAL OF ASSEMBLIES TO THE SHOP FOR CLEANING AND INSPECTION IS NEEDLESSLY EXPENSIVE. A DIFFERENT METHOD, IN-PLACE INSPECTION, HAS BEEN DEVELOPED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*EXAMINATION + \*FAILURE, COMPONENT + MAINTENANCE AND REPAIR

12-15245 ALSO IN CATEGORY 13  
SMILFY SH + PASHLEY JH + SCHAPPEL RB  
ORGDP FUEL REPROCESSING STUDIES SUMMARY PROGRESS REPORT. JANUARY THROUGH JUNE 1966  
OAK RIDGE NATIONAL LABORATORY  
K-1691 +. 60 PAGES, 11 FIGURES, 8 TABLES, JANUARY 18, 1967

THE OAK RIDGE GASEOUS DIFFUSION PLANT TECHNICAL DIVISION IS PARTICIPATING WITH ARGONNE AND OAK RIDGE NATIONAL LABORATORIES IN STUDIES OF A GROUP OF PROCESSES AIMED AT PURIFYING AND RECOVERING URANIUM AND PLUTONIUM FROM SPENT REACTOR FUELS. THE ORGDP PORTION OF THE PROGRAM INCLUDES TWO MAIN PHASES - (A) PREPARATION OF CONCEPTUAL PLANT STUDIES WITH CONCOMITANT DEFINITION OF PROBLEM AREAS ASSOCIATED WITH THE PROCESS AND TECHNOLOGY AND PLANT DESIGN, AND (B) COMPONENT DEVELOPMENT, INCLUDING SCALEUP AND TESTING OF CRUCIAL PROCESS EQUIPMENT AND AUXILIARIES. THE CURRENT REPORT IS THE THIRD IN A SERIES OF PROGRESS REPORTS TO BE ISSUED SEMIANNUALLY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*DESIGN STUDY + \*EQUIPMENT DESIGN + \*FLUIDIZED BED + \*FLUORIDE VOLATILITY PROCESSES + \*FLUORINE + \*RADIOCHEMICAL PROCESSING + \*SORPTION + CORROSION + CRITICALITY SAFETY + FILTER DESIGN + PLUTONIUM + URANIUM + VALVE

12-15246 ALSO IN CATEGORY 13  
GOTTWALD WL  
DISCHARGE VALVE FOR FLUIDIZED BED REACTOR OPERATING IN A HIGH RADIATION FIELD  
ARGONNE NATIONAL LABORATORY  
1 PAGE, 1 FIGURE, 1 REFERENCE, NUCLEAR APPLICATIONS 2(5), PAGE 429, (DEC. 1966)

BUILDUP OF FISSION PRODUCTS IN A FLUIDIZED-BED REACTOR IS PREVENTED BY PERIODICALLY DISCHARGING THE ALUMINA SOLIDS THROUGH A VALVE LOCATED AT THE BOTTOM OF THE REACTOR BED. THIS VALVE WAS DESIGNED TO WITHSTAND INTENSE RADIATION AND ABRASION FROM THE ALUMINA SOLIDS, TO BE MAINTAINED BY USE OF MASTER-SLAVE MANIPULATOR, AND PERMIT STRAIGHT-THROUGH RODDING OF A CAKED BED.

\*EQUIPMENT DESIGN + \*FLUIDIZED BED + \*VALVE + FLUORIDE VOLATILITY PROCESSES + RADIOCHEMICAL PROCESSING

12-15247 ALSO IN CATEGORY 13  
COCHRAN J + PIERSON G  
OUFHANNA PILOT PLANT FIRST GENERATION PROCESS OPERATIONS  
MARTIN COMPANY, BALTIMORE, MD.  
MND-3062-22 +. 54 PAGES, FIGURES, 19 REFERENCES, MAY 1965

CATEGORY 12  
PLANT SAFETY FEATURES

12-15247 \*CONTINUED\*

DURING THE LIFE OF THE ORIGINAL EQUIPMENT, OVER A MILLION CURIES OF STRONTIUM-90 WERE PROCESSED. SNAP 7B AND SNAP 7F THERMOELECTRIC GENERATORS WERE LOADED AT QUEHANNA WITH APPROXIMATELY 1/4 MILLION CURIES EACH. THE BALANCE OF THE MATERIAL WAS PLACED IN UNDERWATER STORAGE. MANY IMPROVEMENTS WERE MADE IN EQUIPMENT DESIGN AND MATERIAL FOR GREATER VERSATILITY, DEPENDABILITY, AND OPERATING EFFICIENCY. ALL THE FOREGOING WAS ACCOMPLISHED WITHOUT RADIATION-ASSOCIATED INJURY.

AVAILABILITY - CLEAPINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*HOT CELL + \*RADIOCHEMICAL PLANT SAFETY + \*RADIOCHEMICAL PROCESSING + \*STRONTIUM + OPERATIONS REPORT, GENERAL + SNAP, GENERAL (SYSTEMS FOR NUCLEAR AUX. POWER)

12-15319 ALSO IN CATEGORY 17  
ROWLANDS PP

PHYSIOLOGICALLY SAFE WORKING CONDITIONS FOR MEN WEARING PRESSURIZED SUITS  
UKAEA, RADIOLOGICAL PROTECTION DIVISION, AUTHORITY HEALTH AND SAFETY BRANCH, HARWELL, BERKSHIRE  
AHS(RP)R-70 +. 79 PAGES, FIGURES, TABLES, JUNE, 1966

EXPERIMENTS WERE CONDUCTED TO DETERMINE THE PHYSIOLOGICAL RESPONSES OF MAN IN A PRESSURIZED SUIT - APPLICABLE TO CONTAMINATED ENVIRONMENTS. CONTROL CHARTS WERE DEVELOPED FOR MAINTENANCE OF APPROPRIATE AIR SUPPLY AND THERMAL CONDITIONS. TESTS WERE RUN WITH VARIABLE CARBON DIOXIDE CONTENT AND TEMPERATURE.

AVAILABILITY - UNITED KINGDOM ATOMIC ENERGY AUTHORITY, 11 CHARLES II STREET, LONDON, S. W. 1

\*CONTAMINATION + \*PERSONNEL PROTECTIVE DEVICE + HIGH TEMPERATURE + RADIATION SAFETY AND CONTROL

12-15393 ALSO IN CATEGORIES 11 AND 18

QUESTION III A (2) - PIPING EXTERNAL TO CONTAINMENT  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, DECEMBER 1966, DOCKET NO. 50-261, H.B. ROBINSON UNIT NUMBER 2, THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, PAGES A(2)-1 AND A(2)-2

THE GENERAL LOCATION OF ALL PIPING PENETRATIONS AND PIPING RUNS EXTERNAL TO THE CONTAINMENT. FOR THOSE ASSOCIATED WITH THE ENGINEERED SAFEGUARDS, SHOW THE EXTERNAL PIPING AND VALVE LOCATIONS. INCLUDE LOCATION OF, AND CRITERIA FOR, NECESSARY MISSILE SHIELDING.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ENGINEERED SAFETY SYSTEM + MISSILE GENERATION AND PROTECTION + PIPING + REACTOR, PRESSURIZED WATER + ROBINSON 2

12-15394 ALSO IN CATEGORY 18

QUESTION III A (3) - RADIATION SHIELDING FOLLOWING MCA  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE A(3)-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

UPDATED DRAWING AND DISCUSSION OF PLANT LAYOUT, INCLUDING AREAS IN THE AUXILIARY BUILDING WHERE ACCESS TO THE RECIRCULATION LOOPS OF THE SAFETY INJECTION SYSTEM IS REQUIRED. STATE THE CRITERIA FOR THE LOCATION OF RADIATION SHIELDING WHICH WILL ENABLE THE OPERATOR TO PERFORM THE REQUIRED DUTY. WHAT IS THE DOSE CRITERION AT THESE LOCATIONS DURING THE 100%-CORE-MELT MCA.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, MAXIMUM CREDIBLE (MCA) + CORE REFLOODING SYSTEM + REACTOR, PRESSURIZED WATER + ROBINSON 2 + SHIELDING

12-15398 ALSO IN CATEGORIES 16 AND 18

QUESTION III E - PROTECTION AGAINST TORNADO-OR HURRICANE-DRIVEN MISSILES  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
3 PAGES, PAGE E-1 TO E-3 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

DISCUSS THE ABILITY OF ALL CLASS-I STRUCTURES AND SAFEGUARDS LOCATED EXTERNAL TO CLASS-I STRUCTURES TO WITHSTAND, WITHOUT LOSS OF FUNCTION, MISSILES GENERATED BY HURRICANES OR TORNADOES. WHAT SIZE AND VELOCITY CRITERIA ARE USED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + DESTRUCTIVE WIND + ENGINEERED SAFETY SYSTEM + MISSILE GENERATION AND PROTECTION + REACTOR, PRESSURIZED WATER + ROBINSON 2



CATEGORY 12  
PLANT SAFETY FEATURES

12-15403 ALSO IN CATEGORIES 9 AND 18  
QUESTION IV - REDUNDANCY IN ENGINEERED SAFEGUARDS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGE A-1 AND A-2 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

IV. INSTRUMENTATION AND CONTROL. A. DISCUSS THE REDUNDANCY CRITERIA FOR THE INSTRUMENTATION, RELAYS, WIRING, ETC., TO BE PROVIDED FOR THE CIRCUITRY OF THE REMOTELY OPERABLE COMPONENTS IN THE SAFEGUARDS SYSTEM (INCLUDING VALVES). DISCUSS WHETHER A SINGLE SHORT WILL DISABLE THE CONTROL CIRCUITS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ENGINEERED SAFETY SYSTEM + REACTOR, PRESSURIZED WATER + REDUNDANCE + ROBINSON 2 + SINGLE-FAILURE CRITERION

12-15404 ALSO IN CATEGORIES 9 AND 18  
QUESTION IV B - POST-MCA INSTRUMENTATION  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGE B-1 AND B-2 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

STATE YOUR CRITERIA FOR PROVIDING INSTRUMENTS TO INDICATE THE REACTIVITY STATUS OF THE REACTOR, THE PRESSURE, TEMPERATURE, AND WATER LEVELS, AND ACTIVITY INSIDE THE CONTAINMENT AFTER THE MCA. DISCUSS THE DESIGN LIFETIME CRITERIA OF THE CRITICAL COMPONENTS ASSOCIATED WITH THIS EQUIPMENT WHEN OPERATED IN THE POST-MCA CONTAINMENT ENVIRONMENT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + DESIGN CRITERIA + INSTRUMENTATION, GENERAL + INSTRUMENTATION, SHUTDOWN REACTIVITY + REACTOR, PRESSURIZED WATER + ROBINSON 2 + SYSTEM OPERABILITY IN ACCIDENT CONDITIONS

12-15406 ALSO IN CATEGORIES 9 AND 18  
QUESTION IV D - CONTROL-ROOM OPERABILITY IN CASE OF FIRE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGE D-1 AND D-2 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

DISCUSS PROVISIONS INCORPORATED TO PREVENT CONTROL-ROOM FIRE. ANALYZE THE CONSEQUENCES OF THE CONTROL ROOM BECOMING UNINHABITABLE OR INEFFECTIVE. THIS SHOULD ALSO INCLUDE CONSIDERATION OF THE AVAILABILITY OF ENGINEERED SAFEGUARDS SYSTEMS POWER AND CONTROLS. WILL ALTERNATE CONTROL AREAS FOR OPERATION OF EMERGENCY EQUIPMENT BE FURNISHED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTROL PANEL/ROOM + ENGINEERED SAFETY SYSTEM + FIRE + REACTOR, PRESSURIZED WATER + ROBINSON 2 + SYSTEM OPERABILITY IN ACCIDENT CONDITIONS

12-15407 ALSO IN CATEGORIES 9 AND 18  
QUESTION IV E - ACCIDENT-CAUSED FAULTS DISABLING SAFEGUARDS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE E-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

WHAT ASSURANCES ARE THERE THAT FAULTS CREATED WITHIN WIRING AS A CONSEQUENCE OF BEING LOCATED IN THE POST-ACCIDENT ENVIRONMENT SHOULD NOT BE REFLECTED INTO ESSENTIAL SAFEGUARDS CIRCUITS EXTERNAL TO CONTAINMENT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ENGINEERED SAFETY SYSTEM + FAILURE, INSTRUMENT + REACTOR, PRESSURIZED WATER + ROBINSON 2 + SYSTEM OPERABILITY IN ACCIDENT CONDITIONS

12-15408 ALSO IN CATEGORIES 9 AND 18  
QUESTION IV F - INDEPENDENCE OF SAFETY AND CONTROL SYSTEMS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE F-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

PLEASE LIST THOSE INSTRUMENT CHANNELS WHICH PROVIDE BOTH SAFETY (SCRAM) AND CONTROL FUNCTIONS. CAN A SINGLE FAILURE WHICH INITIATES A CONTROL MALFUNCTION SIMULTANEOUSLY REMOVE THE REDUNDANCY OF THOSE SAFETY CHANNELS DESIGNED TO TERMINATE SUCH A MALFUNCTION. IF SO PLEASE

CATEGORY 12  
PLANT SAFETY FEATURES

12-15408 \*CONTINUED\*  
JUSTIFY YOUR DESIGN.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTROL SYSTEM + INDEPENDENCE + PLANT PROTECTIVE SYSTEM + REACTOR, PRESSURIZED WATER + ROBINSON 2

12-15420 ALSO IN CATEGORIES 18 AND 18  
QUESTION C (1) - DESIGN ADEQUACY OF PRIMARY-SYSTEM EQUIPMENT  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
13 PAGES, 1 TABLE, PAGES C (1)(A)-1 TO C(1)(F)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

EQUIPMENT CONSISTS OF REACTOR VESSEL, STEAM GENERATORS, PIPING AND PUMP CASINGS, AND PRESSURIZER. INFORMATION DESIRED CONCERNS CODE VESSEL CLASSIFICATIONS, QUALITY CONTROL, LEAKAGE DETECTION, FIELD WELDING, IN-SERVICE INSPECTION, EARTHQUAKE DESIGN CRITERION.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT, PRESSURE VESSEL + DESIGN CRITERIA + EARTHQUAKE ENGINEERING + EXAMINATION + HEAT EXCHANGER + PIPING + PRESSURIZER + QUALITY CONTROL + REACTOR, PRESSURIZED WATER + ROBINSON 2 + TEST, LEAK LOCATION + WELDING

12-15438 ALSO IN CATEGORIES 5 AND 18  
QUESTION VI A - DETAILS OF ACCUMULATOR SYSTEM FOR RAPID CORE REFLOODING  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
14 PAGES, 2 FIGURES, PAGES A (1)-1 TO A (12)-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

VI. ENGINEERED SAFEGUARDS. (A). TWELVE QUESTIONS ABOUT VARIOUS DESIGN, EQUIPMENT, AND PERFORMANCE DETAILS REQUESTED FOR ACCUMULATOR SYSTEM FOR RAPID INJECTION OF BORATED WATER INTO REACTOR VESSEL FOLLOWING A PRIMARY-PIPE RUPTURE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CORE REFLOODING SYSTEM + REACTOR, PRESSURIZED WATER + ROBINSON 2

12-15439 ALSO IN CATEGORIES 5 AND 18  
QUESTION VI B (1) SAFETY INJECTION SYSTEM  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE B (1)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

VI. B. SAFETY INJECTION SYSTEM. (1) WHAT CRITERIA PERTAINING TO PIPE MOTION UNDER HYPOTHETICAL EARTHQUAKE FORCES WILL BE USED IN THE DESIGN OF THE PIPING AND NOZZLES ASSOCIATED WITH THE INJECTION LINES CONNECTED TO THE PRIMARY SYSTEM.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CORE REFLOODING SYSTEM + EARTHQUAKE ENGINEERING + PIPING + REACTOR, PRESSURIZED WATER + ROBINSON 2

12-15441 ALSO IN CATEGORY 18  
QUESTION VI B (3) - SAFETY-INJECTION-PUMP-HEAD CURVES  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, 2 FIGURES, PAGE B (3)-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

PLOT THE APPROXIMATE HORSEPOWER REQUIREMENTS AND FLOW AS A FUNCTION OF DISCHARGE PRESSURE FOR THE RESIDUAL-HEAT-REMOVAL PUMPS, CHARGING PUMPS, AND THE HIGH-HEAD INJECTION PUMPS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CORE REFLOODING SYSTEM + PUMP + REACTOR, PRESSURIZED WATER + ROBINSON 2

12-15442 ALSO IN CATEGORIES 9 AND 18  
QUESTION VI B (4) - INSTRUMENTS TO VERIFY SAFETY INJECTION  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE B (4)-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

CATEGORY 12  
PLANT SAFETY FEATURES

12-15442 \*CONTINUED\*

DESCRIBE WHAT METHODS AND INSTRUMENTS ARE AVAILABLE UNDER POSTACCIDENT CONDITIONS TO VERIFY THAT SAFETY INJECTION OR CORE DOWSING IS OPERATING TO COVER THE CORE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CORE REFLOODING SYSTEM + INSTRUMENTATION, PROCESS + REACTOR, PRESSURIZED WATER + ROBINSON 2

12-15443 ALSO IN CATEGORIES 11 AND 18

QUESTION VI B (5) - EARTHQUAKE EFFECT ON WATER STORAGE TANK  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE B (5)-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT,  
H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

PROVIDE DETAILS OF THE REFUELING-WATER STORAGE TANK. PRESENT THE RESULTS AND METHODS OF A DETAILED STRESS ANALYSIS THAT INDICATES THAT THE TANK CAN WITHSTAND THE STRESSES DUE TO A HYPOTHETICAL EARTHQUAKE. WHAT IS YOUR ALLOWABLE STRESS CRITERION FOR THESE LOADS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CORE REFLOODING SYSTEM + EARTHQUAKE ENGINEERING + REACTOR, PRESSURIZED WATER + ROBINSON 2 + STORAGE CONTAINER

12-15444 ALSO IN CATEGORY 18

QUESTION VI B (6) - EARTHQUAKE ENGINEERING OF PIPE FROM STORAGE TANKS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, 1 FIGURE, PAGES B (6)-1 AND B (6)-2 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

DESCRIBE THE ENVIRONMENT AND DESIGN DETAILS OF THE SINGLE HEADER LEADING FROM THE REFUELING WATER STORAGE TANK UP TO THE VARIOUS PUMP INTAKES. ALSO PROVIDE A STRESS ANALYSIS SIMILAR TO THAT REQUESTED IN VI B (5) ABOVE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CORE REFLOODING SYSTEM + EARTHQUAKE ENGINEERING + EQUIPMENT DESIGN + PIPING + REACTOR, PRESSURIZED WATER + ROBINSON 2 + STORAGE CONTAINER

12-15445 ALSO IN CATEGORY 18

QUESTION VI B (7) - BACKUP FOR SINGLE PIPE IN HIGH-HEAD SYSTEM  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGES B (7)-1 AND B (7)-2 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

THERE APPEARS TO BE ONLY A SINGLE HIGH-PRESSURE PIPE LEADING FROM THE HIGH-HEAD PUMP DISCHARGE TO THE INJECTION SYSTEM IN THE CONTAINMENT. DISCUSS WHETHER THERE IS A BACKUP TO THE HIGH-HEAD INJECTION SYSTEM, AND ANALYZE THE CONSEQUENCES, ASSUMING ONLY THAT THE BACKUP OPERATES FROM DIESEL POWER. THIS SHOULD BE DONE FOR A SPECTRUM OF SMALL BREAK SIZES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CORE REFLOODING SYSTEM + EMERGENCY POWER, ELECTRIC + REACTOR, PRESSURIZED WATER + REDUNDANCE + ROBINSON 2 + SINGLE-FAILURE CRITERION

12-15448 ALSO IN CATEGORIES 5 AND 18

QUESTION VI B (10) - HIGH-HEAD INJECTION VS RECIRCULATION  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE B (10)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT,  
H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

IN FIGURE 6-1 IT APPEARS THAT PROVISIONS HAVE BEEN MADE TO PERMIT HIGH-HEAD INJECTION AFTER RECIRCULATION HAS BEEN STARTED. DISCUSS THE CIRCUMSTANCES THAT WOULD REQUIRE SUCH OPERATION. IS OPERATION OF A RESIDUAL-HEAT-REMOVAL PUMP REQUIRED. IF SO, DISCUSS THE INDEPENDENCE AND RELIABILITY OF THIS MODE OF OPERATION.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CORE REFLOODING SYSTEM + FLOW, RECIRCULATION + INDEPENDENCE + REACTOR, PRESSURIZED WATER + RELIABILITY, SYSTEM + ROBINSON 2 + SHUTDOWN COOLING SYSTEM

12-15449 ALSO IN CATEGORY 18

CATEGORY 12  
PLANT SAFETY FEATURES

12-15449 \*CONTINUED\*

QUESTION VI C (1) - RELIEF VALUES FOR EXTERNAL RECIRCULATION COOLING LOOP  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGES C (1)-1 AND C (1)-2 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

SECTION VI C. EXTERNAL RECIRCULATION COOLING LOOP. (1) WHEN FIGURE 6-1 IS REVISED, PLEASE INCLUDE ALL RELIEF VALVES AND ASSOCIATED PIPING IN THE REVISION. DESCRIBE THE BASIS FOR SIZING EACH RELIEF VALVE. IF RELIEF IS TO OTHER THAN A CLOSED SYSTEM OR CONTAINMENT, DISCUSS THE CONSEQUENCES OF RELEASE OF CONTAMINATED WATER TO THE ENVIRONMENT.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + FLOW, RECIRCULATION + PRESSURE RELIEF + REACTOR, PRESSURIZED WATER + ROBINSON 2 + VALVE

12-15450 ALSO IN CATEGORY 18

QUESTION VI C (2) - PROTECTION FOR SINGLE SUMP LINE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE C (2)-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

DISCUSS THE LOCATION OF THE SINGLE SUMP RETURN LINE FOR RECIRCULATION AND PROTECTION PROVIDED TO PREVENT DAMAGE UP TO THE RESIDUAL-HEAT-REMOVAL PUMPS. WHAT MARGIN IS INCORPORATED IN THE DESIGN TO WITHSTAND FORCES (EARTHQUAKE, PRESSURE, AND TEMPERATURE) WITHOUT LOSS OF FUNCTION. ARE WORKING STRESS LIMITS EXCEEDED UNDER HYPOTHETICAL EARTHQUAKE LOADINGS.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CORE REFLOODING SYSTEM + DESIGN CRITERIA + EARTHQUAKE ENGINEERING + REACTOR, PRESSURIZED WATER + ROBINSON 2

12-15451 ALSO IN CATEGORY 18

QUESTION VI C (3) - DEBRIS PICKUP FROM CONTAINMENT SUMP  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, 1 FIGURE, PAGES C (3)-1 AND C (3)-2 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

STATE CRITERIA AND PROVIDE DRAWING FOR SIZE OF DEBRIS WHICH WILL BE SCREENED FROM ENTRY TO THE RECIRCULATION SYSTEM. WHAT SIZE DEBRIS WOULD RESULT IN FLOW RESTRICTIONS OR FAILURE. WHAT IS THE INLET VELOCITY. HOW MUCH WATER MUST BE INJECTED IN THE CONTAINMENT BEFORE RECIRCULATION CAN BEGIN. DESCRIBE THE PREOPERATIONAL PROGRAM TO REMOVE CONSTRUCTION DEBRIS ACCUMULATED IN THE PIPING. OF PARTICULAR INTEREST ARE THE SUMP RETURN AND CONTAINMENT SPRAY LINES.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CORE REFLOODING SYSTEM + FLOW BLOCKAGE + REACTOR, PRESSURIZED WATER + ROBINSON 2

12-15452 ALSO IN CATEGORY 18

QUESTION VI C (4) - REDUNDANCE OF COMPONENTS IN RECIRCULATION LOOP  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE C (4)-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

WHICH COMPONENTS IN THE LOOP WILL BE ALLOWED TO BE INOPERABLE DURING REACTOR OPERATION. IS REDUNDANCY OF FUNCTION STILL AVAILABLE.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CORE REFLOODING SYSTEM + REACTOR, PRESSURIZED WATER + REDUNDANCE + ROBINSON 2

12-15453 ALSO IN CATEGORY 18

QUESTION VI C (5) - RECIRCULATION COOLING RESPONSE FOLLOWING MCA  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, 3 FIGURES, PAGE C (5)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, (H. B. ROBINSON UNIT NUMBER 2,) DECEMBER 1966, DOCKET 50-261

PROVIDE A PLOT OF PRESSURES AND TEMPERATURES IN THE RESIDUAL HEAT REMOVAL, COMPONENT COOLING, AND SERVICE WATER SYSTEMS AS A FUNCTION OF TIME AFTER THE ACCIDENT. ASSUME MINIMUM SAFEGUARDS.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT + CORE REFLOODING SYSTEM + REACTOR, PRESSURIZED WATER + ROBINSON 2

CATEGORY 12  
PLANT SAFETY FEATURES

12-15454 ALSO IN CATEGORY 18  
QUESTION VI C (6) - AUXILIARY BUILDING VENTILATION  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
3 PAGES, PAGES C (6)-1 TO C (6)-3 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

DESCRIBE DETAILED CRITERIA FOR LEAK TIGHTNESS OR POSITIVE FLOW OF AIR IN THE PRIMARY AUXILIARY BUILDING THROUGH THE FILTER UNITS. DESCRIBE THE PROVISIONS AT THE ENTRANCES TO MAINTAIN A VACUUM. WHAT IS THE FLOW RATE, VACUUM, MOTOR AND FAN SIZE, AND DUCT LOCATION OF THE EXHAUST SYSTEM. DESCRIBE THE FILTERS AND INDICATE REDUNDANCY AND VALVING. COMPARE THE LARGEST INLEAKAGE THAT COULD BE ACCOMMODATED BY THE BUILDING VENTILATION SYSTEM WITH THE MAXIMUM LEAKAGE DUE TO PACKING OR SEAL FAILURE IN ONE OF THE PUMPS OR VALVES.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + BUILDING + CORE REFLOODING SYSTEM + DESIGN CRITERIA + REACTOR, PRESSURIZED WATER + ROBINSON 2 + VENTILATION SYSTEM

12-15458 ALSO IN CATEGORIES 7 AND 18  
QUESTION VI F (2) - DESIGN CRITERIA FOR FAN COOLER FILTER  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE F (2)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

STATE THE DESIGN CRITERIA FOR THE PARTICLE FILTERS AND DEMISTERS IN THE FAN-COOLER SYSTEM. WHAT PRESSURE DROP IS ASSUMED ACROSS THE DEMISTER.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT AIR COOLING + DESIGN CRITERIA + FILTER + REACTOR, PRESSURIZED WATER + ROBINSON 2

12-15459 ALSO IN CATEGORIES 11 AND 18  
QUESTION VI G (1) - CONTAINMENT-SPRAY DESIGN DETAILS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
6 PAGES, PAGE G (1)(A)-1 TO G (1)(F) OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, (H. B. ROBINSON UNIT NUMBER 2,) DECEMBER 1966, DOCKET 50-261

SIX QUESTIONS ON THE CONTAINMENT SPRAY/SOLUTION THIOSULPHATE SOLUTION SYSTEM. (A) REDUNDANCY OF EQUIPMENT. (E)(R) RECRYSTALLIZATION PROBLEMS. (C) CHECKING PIPING FOR FLOW RESTRICTIONS. (D) REFRESHING SOLUTION. (F) PERIODIC FLOW-RATE CHECKS.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT SPRAY + FISSION PRODUCT RETENTION + REACTOR, PRESSURIZED WATER + ROBINSON 2 + TEST, SYSTEM OPERABILITY

12-15460 ALSO IN CATEGORIES 11 AND 18  
QUESTION VI G (2) - CONTAINMENT SPRAY SYSTEM (SODIUM THIOSULPHATE) TESTING PROGRAM  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
5 PAGES, PAGE G (2)(A),(B)-1 TO G(2)(E)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

FIVE QUESTIONS - (A) DETAILS OF PROPOSED TEST PROGRAM. (B) EFFECTIVENESS AGAINST VARIOUS FORMS OF IODINE, PARTICULARLY AFTER REUSE. (C) LIST OF PARAMETERS TO BE STUDIED. (D) SCALEUP FACTORS. (F) WHAT WILL YOU DO IF THE R AND D PROGRAM SHOWS SYSTEM WILL NOT BE AS EFFECTIVE AS DESIRED.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT SPRAY + FISSION PRODUCT RETENTION + REACTOR, PRESSURIZED WATER + RESEARCH AND DEVELOPMENT PROGRAM + ROBINSON 2

12-15462 ALSO IN CATEGORIES 11 AND 18  
QUESTION VII A (1) - POST-ACCIDENT CONTAINMENT PRESSURES  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
19 PAGES, 23 FIGURES, PAGE A(1)(A), (B)(C)-1 TO A(1)(N)-2 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, (H. B. ROBINSON UNIT NUMBER 2,) DECEMBER 1966, DOCKET 50-261

FOURTEEN QUESTIONS TO ENABLE DRL TO ASCERTAIN ADEQUACY OF CONTAINMENT TO WITHSTAND POSTACCIDENT PRESSURES. INCLUDES MANY PLOTS OF PRESSURE VS TIME FOR VARIOUS CONDITIONS (METAL-WATER REACTIONS, ONE OF THREE SAFEGUARDS WORKING, ETC.).

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CATEGORY 12  
PLANT SAFETY FEATURES

12-15462 \*CONTINUED\*

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT + CONTAINMENT DESIGN + CONTAINMENT, HIGH PRESSURE + PERFORMANCE LIMIT + PRESSURE, INTERNAL + REACTOR, PRESSURIZED WATER + ROBINSON 2

12-15464 ALSO IN CATEGORIES 5 AND 18

QUESTION VII A (1)(D) AND (G) - REACTOR-VESSEL WATER LEVEL FOLLOWING PIPE RUPTURE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, 5 FIGURES, PAGES A(1)(D)-1 AND A(1)(G)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, (H. B. ROBINSON-UNIT NUMBER 2,) DECEMBER 1966, DOCKET 50-261

PLOT WATER LEVEL IN THE REACTOR VESSEL AS A FUNCTION OF TIME FOLLOWING A SPECTRUM OF BREAK SIZES, ASSUMING (1) THAT TWO ACCUMULATORS OPERATE AND (2) THAT ONLY ONE OPERATES. IN BOTH CASES ASSUME THAT THE MINIMUM INJECTION FLOW EXISTS AFTER ACCUMULATOR INJECTION. (G) PLOT CORE REACTIVITY AND POWER AS A FUNCTION OF TIME FOR DIFFERENT SIZE BREAKS, ASSUMING A CONSERVATIVE POSITIVE MODERATOR COEFFICIENT. INDICATE THE TIME AT WHICH SCRAM WOULD BE ASSUMED TO OCCUR, BUT, FOR PURPOSES OF ANALYSIS, ASSUME NO SCRAM.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT + ACCUMULATOR + BLOWDOWN + CONTAINMENT, PRESSURE VESSEL + CORE REFLOODING SYSTEM + REACTOR, PRESSURIZED WATER + ROBINSON 2

12-15465 ALSO IN CATEGORIES 5 AND 18

QUESTION VII A (1) (E) - SAFETY INJECTION VESSEL NOZZLE PRESSURE DURING LOSS-OF-COOLANT ACCIDENTS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, 4 FIGURES, PAGE A(1)(E)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, (H. B. ROBINSON UNIT NUMBER 2,) DECEMBER 1966, DOCKET 50-261

PLOT PRESSURE AT THE SAFETY-INJECTION NOZZLES BOTH IN THE HOT AND COLD LEGS AS A FUNCTION OF TIME FOR BREAKS OF VARIOUS SIZES.

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12-15466 ALSO IN CATEGORIES 5 AND 18

QUESTION VII A (1) (F) - COOLANT ACCUMULATING IN CONTAINMENT PUMP  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, 8 FIGURES, PAGE A(1)(F)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, (H. B. ROBINSON UNIT NUMBER 2,) DECEMBER 1966, DOCKET 50-261

ASSUME NO CORE COOLING. PROVIDE A PLOT OF LIQUID VOLUME AND TEMPERATURE IN THE REACTOR SUMP AND CONTAINMENT FLOOR AS A FUNCTION OF TIME AFTER THE ACCIDENT. TWO PLOTS SHOULD BE PRESENTED, ONE ASSUMING THAT THE MOLTEN CORE HEATS THE SUBCOOLED WATER AND THE OTHER ASSUMING THAT THIS ENERGY GOES TO FLASHING STEAM.

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12-15494 ALSO IN CATEGORY 18

QUESTION VII Q - COOLING WATER SUPPLY IN CASE OF DAM FAILURE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE Q-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

DISCUSS THE PROVISIONS MADE TO ENSURE THAT SUFFICIENT COOLING WATER IS AVAILABLE IF THE DAM SHOULD FAIL. ARE THE STRUCTURES AND COMPONENTS WHICH WILL CONTAIN AND TRANSPORT THIS WATER TO THE COOLING SYSTEMS CLASS I. INDICATE WHICH COOLING SYSTEM WILL BE USED TO REMOVE DECAY HEAT FROM THE CORE. IS THIS COOLING WATER ALSO AVAILABLE TO ALL SAFEGUARDS SYSTEMS.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + EARTHQUAKE ENGINEERING + EMERGENCY COOLING CONSIDERATIONS + REACTOR, PRESSURIZED WATER + ROBINSON 2 + SHUTDOWN COOLING SYSTEM + STORAGE CONTAINER

12-15495 ALSO IN CATEGORIES 5 AND 18

QUESTION VII R - ANALYSIS OF THYROID DOSE IF FAN-COOLER TUBE RUPTURES AFTER MCA  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE R-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B.

CATEGORY 12  
PLANT SAFETY FEATURES

12-15495 \*CONTINUED\*  
ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

ANALYZE THE OFF-SITE THYROID DOSE RESULTING FROM COMPLETE RUPTURE OF A FAN-COOLER TUBE, ASSUMING 100% CORE MELT. PROVIDE ALL ASSUMPTIONS MADE. YOU MAY TERMINATE THE CALCULATION WHEN CONTAINMENT PRESSURE IS REDUCED BELOW THAT OF THE SERVICE WATER (ABOUT 3000 SECONDS).

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12-15498 ALSO IN CATEGORY 18

QUESTION VIII A (2) - STRESS ANALYSIS DESIGN PROCEDURES  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
3 PAGES, PAGES A (2)-1 TO A (2)-3 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

EXPLAIN IN DETAIL THE BASIS FOR THE LOAD FACTORS SELECTED. STATE IF ULTIMATE-STRENGTH OR ELASTIC-DESIGN PROCEDURES WILL BE USED IN THE DESIGN OF THE ELEMENTS OF THE CONTAINMENT, PARTICULARLY THOSE SUBJECTED TO BENDING AND SHEARS. DESCRIBE IN DETAIL WHAT IS MEANT BY, QUOTE, THE REQUIRED LIMITING CAPACITY OF ANY STRUCTURAL ELEMENT, UNQUOTE, AND DISCUSS THE DESIGN PROCEDURES IN THIS REGARD.

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12-15499 ALSO IN CATEGORY 18

QUESTION VIII A (3) - CONTAINMENT STRUCTURE STRESS DESIGN LIMITS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGES A (3)-1 AND A (3)-2 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

THE DESIGN LIMIT OF THE LONGITUDINAL PRESTRESSED ELEMENTS OF THE STRUCTURE ARE NOT CLEARLY SPECIFIED. PROVIDE THE STRESS LIMITS FOR CONCRETE AT TRANSFER OF PRESTRESS, UNDER SUSTAINED PRESTRESS, AND AT DESIGN LOADS. FOR THE FACTORED-LOAD CONDITIONS, IS FLEXURAL CRACKING PERMITTED, IS MEMBRANE TENSION PERMITTED, IS THE INTENT TO DESIGN TO THE ULTIMATE STRENGTH OF THE SECTION IN FLEXURE OR TENSION. AMPLIFY THE MEANING (IN PSAR 5-19), QUOTE, THE DESIGN LIMIT FOR TENSION MEMBERS (THE CAPACITY REQUIRED FOR THE DESIGN LOADS) WILL BE BASED ON THE YIELD STRESS...OF THE PRESTRESSING TENDON, UNQUOTE.

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12-15500 ALSO IN CATEGORY 18

QUESTION VIII A (4) - JUSTIFICATION FOR INCLUDING LIVE LOADS IN DEAD-LOAD FACTORS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGES A (4)-1 AND A (4)-2 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

STRUCTURE LIVE LOADS ARE INCORPORATED IN THE DEAD-LOAD FACTORS OF THE DESIGN CRITERIA. IN VIEW OF THE LARGER LOAD FACTORS NORMALLY ASSOCIATED WITH LIVE LOADS, THE BASIS FOR NEGLECTING IMPACT AND DYNAMIC LOAD CHARACTERISTICS OF SUCH EQUIPMENT SHOULD BE PROVIDED. CONSIDER PROVIDING A SEPARATE LOAD FACTOR FOR LIVE LOADS, OR JUSTIFY IN DETAIL YOUR PRESENT APPROACH.

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12-15501 ALSO IN CATEGORIES 5 AND 18

QUESTION VIII A (5 AND 9) - MORE DETAILS OF THERMAL-STRESS ANALYSIS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
3 PAGES, 10 FIGURES, PAGES A (5)-1 TO A (5)-2 AND A (9)-1 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

THE HANDLING OF THERMAL LOADS NEEDS AMPLIFICATION. IN PARTICULAR, PROVIDE THE THERMAL GRADIENT ACROSS THE CONTAINMENT LINER AND CONCRETE STRUCTURE AS A FUNCTION OF TIME, INDICATE THE DESIGN CONDITIONS UNDER WHICH THERMAL LOADING DUE TO LINER AND CONCRETE TEMPERATURE GRADIENTS ARE CRITICAL, AND PROVIDE THE LOADING DIAGRAMS FOR THE SEPARATE LINER AND CONCRETE THERMAL CONTRIBUTIONS. A 2-PSIG INTERNAL NEGATIVE PRESSURE RESULTS FROM AN 80 F DIFFERENTIAL. RELATE THE SELECTED OPERATING AND/OR ENVIRONMENTAL CONDITIONS THAT COULD CAUSE SUCH A DIFFERENTIAL, AND STATE WHY VACUUM RELIEF IS NOT CONSIDERED NECESSARY.

CATEGORY 12  
PLANT SAFETY FEATURES

12-15501 \*CONTINUED\*  
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12-15503 ALSO IN CATEGORIES 16 AND 18  
QUESTION VIII A (7 AND 8) - CONTAINMENT DESIGN FOR TORNADO LOADING  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
3 PAGES, PAGES A (7)-1 TO A (8)-1 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

IT IS INDICATED THAT THE STRUCTURE WILL BE ANALYZED FOR TORNADO LOADING. THE BASIS FOR THE SELECTED WIND SPEED, EQUIVALENT PRESSURE, AND 1.25 LOAD FACTOR IS REQUESTED. IN ADDITION, A DESIGN LOAD FACTOR EQUATION TO INDICATE HOW THIS LOADING WILL BE TREATED IN COMBINATION WITH DEAD AND LIVE LOADS IS REQUESTED. PSAR PAGE 2-29 SUGGESTS THAT THE DESIGN WIND AT THE SITE WILL BE THE ONCE-IN-FIFTY-YEARS WIND. THE BASIS FOR THIS SELECTION IS REQUESTED.

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12-15504 ALSO IN CATEGORY 18  
QUESTION VIII A (10) - JUSTIFICATION OF CONTAINMENT PROOF-TEST PRESSURE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
4 PAGES, PAGES A (10)-1 TO A (10)-4 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

TO JUSTIFY THE SELECTED PROOF-TEST PRESSURE OF THE COMPLETED CONTAINMENT, PROVIDE CHARTS OF THE CALCULATED STRESSES IN THE (A) CIRCUMFERENTIAL SHELL REINFORCING STEEL, (B) AXIAL SHELL TENDONS, (C) DOME REINFORCING STEEL, AND (D) BASE REINFORCING STEEL FOR (1) TEST CONDITION, (2) ACCIDENT CONDITION, AND (3) ACCIDENT PLUS EARTHQUAKE.

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12-15505 ALSO IN CATEGORY 18  
QUESTION VIII A (11) - EFFECT OF DAM FAILURE ON CONTAINMENT  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE A (11)-1 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

DISCUSS THE POSSIBILITY THAT FAILURE OF THE EARTH DAM WOULD HAVE AN ADVERSE AFFECT ON THE CONTAINMENT OR OTHER STRUCTURES IMPORTANT TO PLANT SAFETY.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT INTEGRITY + REACTOR, PRESSURIZED WATER + ROBINSON 2

12-15506 ALSO IN CATEGORY 18  
QUESTION VIII A (12) - METHODS OF HANDLING SHEAR LOADS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
6 PAGES, PAGES A(12)(A)-1 TO A(12)(D)-1 OF SECOND PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

THE CRITERIA CONCERNING METHODS BY WHICH YOU PROPOSE TO HANDLE SHEAR LOADS IS NOT CLEAR. PROVIDE ANSWERS TO 7 SPECIFIC QUESTIONS ON LONGITUDINAL, RADIAL, AND TANGENTIAL SHEAR. IN ALL CASES DESCRIBE FULLY THE EXTENT TO WHICH THE LINER WILL BE RELIED UPON TO CARRY SHEAR AND THE LINER SHEAR DEFORMATIONS REQUIRED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT LINER + CONTAINMENT STRUCTURE + DESIGN CRITERIA + REACTOR, PRESSURIZED WATER + ROBINSON 2 + STRESS ANALYSIS

12-15507 ALSO IN CATEGORIES 5 AND 18  
QUESTION VII A (13) - STRESS ANALYSIS IN THE VICINITY OF CONTAINMENT AIR LOCKS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
3 PAGES, PAGE A (13)-1 TO A (13)-3 OF SECOND PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT,



CATEGORY 12  
PLANT SAFETY FEATURES

12-15507 \*CONTINUED\*

H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

PROVIDE DRAWINGS, STRESS ANALYSIS, AND CONSTRUCTION DETAILS IN VICINITY OF PERSONNEL AND EQUIPMENT AIR LOCKS. DESCRIBE PROPOSED PING ANALYSIS, LOCAL MARGINS TO FAILURE IN SHEAR.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT AIR LOCK + CONTAINMENT EQUIPMENT HATCH + CONTAINMENT STRUCTURE + REACTOR, PRESSURIZED WATER + ROBINSON 2 + STRESS ANALYSIS

12-15508 ALSO IN CATEGORY 18

QUESTION VIII A (14) - CONTAINMENT AIR-LOCK VULNERABILITY TO EARTHQUAKE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE A (14)-1 OF SECOND PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

IT IS NOTED THAT THE EQUIPMENT HATCH AND PERSONNEL HATCH PROTRUDE SOME DISTANCE FROM THE CYLINDRICAL SURFACE OF THE MAIN STRUCTURE. DISCUSS THE POTENTIAL FOR INCREASED LEAKAGE OR IMPROPER OPERATION OF THE ACCESS DUE TO EARTHQUAKE AND PRESSURE FORCES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT AIR LOCK + CONTAINMENT EQUIPMENT HATCH + EARTHQUAKE ENGINEERING + REACTOR, PRESSURIZED WATER + ROBINSON 2

12-15509 ALSO IN CATEGORY 18

QUESTION VIII A (15) - ANALYSIS OF CONTAINMENT BASE SLAB  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, 1 FIGURE, PAGES A (15)-1 AND A (15)-2 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

THE ASSUMPTION THAT THE BASE SLAB WILL BEHAVE AS AN ANNULUS APPEARS IMPORTANT IN THE STRUCTURAL DESIGN OF THE CONTAINMENT. PLEASE PROVIDE INFORMATION ON THE VALIDITY AND CONSERVATISM OF THE ASSUMPTION THAT THE CENTRAL SUMP WILL OFFER NO BENDING OR DEFLECTION RESISTANCE TO THE BASE SLAB. IN ADDITION, DESCRIBE IN MORE DETAIL THE ANALYTICAL PROCEDURES TO BE USED IN THE BASE SLAB DESIGN.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT STRUCTURE + REACTOR, PRESSURIZED WATER + ROBINSON 2 + STRESS ANALYSIS

12-15510 ALSO IN CATEGORY 18

QUESTION VIII A (16 AND 17) - TENDON AND REINFORCEMENT ANALYSIS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGES A (16)-1 AND A (17)-1 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

(16) PROVIDE INFORMATION ON THE AMOUNT OF MILD-STEEL REINFORCEMENT REQUIRED TO PROVIDE CRACK CONTROL. IS FAILURE TO DEVELOP TENDON BOND TAKEN INTO ACCOUNT. (17) IT IS NOTED THAT THE DESIGN, AS IT NOW EXISTS, PROVIDES FOR USE OF GROUTED TENDONS. WHAT ARE THE BOND-DEVELOPMENT LENGTHS FOR THE TENDON SYSTEMS PROPOSED. GIVEN AN ANCHORAGE FAILURE AND THE BOND-DEVELOPMENT LENGTHS CITED, PRESENT AN ANALYSIS OF THE CONSEQUENCES OF THE FAILURE OR SERIES OF SUCH FAILURES UNDER DESIGN-BASIS-ACCIDENT LOADING.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONCRETE, PRESTRESSED + CONTAINMENT STRUCTURE + REACTOR, PRESSURIZED WATER + ROBINSON 2 + STRESS ANALYSIS

12-15511 ALSO IN CATEGORY 18

QUESTION VIII A (18) - STRESSES AT CYLINDER-TO-DOME TRANSITION  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, 1 FIGURE, PAGE A (18)-1 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

THE MEANS OF PROVIDING THE PRESTRESSING ANCHORAGE-ZONE REINFORCEMENT AT THE CYLINDER-DOME TRANSITION REQUIRES AMPLIFICATION. PROVIDE THE ANALYTICAL PROCEDURES THAT WILL BE USED FOR CALCULATING THE BURSTING AND SPALLING STRESSES. ALSO PROVIDE A DESCRIPTION OF THE SIZE OF THESE STRESSES AND A DETAIL OF THE REINFORCING THAT WILL BE USED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT STRUCTURE + REACTOR, PRESSURIZED WATER + ROBINSON 2 + STRESS ANALYSIS

CATEGORY 12  
PLANT SAFETY FEATURES

12-15512 ALSO IN CATEGORY 18  
QUESTION VIII A (19 THROUGH 21) - EARTHQUAKE ENGINEERING OF CONTAINMENT STRUCTURE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
4 PAGES, 2 FIGURES, PAGE A (19)-1 TO A (21)-2 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

(19) DISCUSS CRANE DESIGN PROVISIONS TO RESIST SEISMIC LOADING. (20) WILL A CRITICAL DAMPING OF TWO PERCENT ALSO BE USED FOR THE DOME AND OTHER PORTIONS OF THE ENTIRE CONTAINMENT STRUCTURE. (21) A MORE DETAILED DESCRIPTION OF THE PILE DESIGN IS REQUIRED. HOW IS THE BEHAVIOR AFFECTED BY THE SOIL PROPERTIES AROUND AND BELOW THE PILES. PROVIDE INFORMATION ON EXPECTED LIQUEFACTION, NEGATIVE SKIN FRICTION DUE TO COMPRESSION OF SOFTER OVERLYING STRATA, AND UPLIFT-FORCE EFFECTS ON PILE ACTION. CONSIDER THE EFFECTS DUE TO THE HYPOTHETICAL EARTHQUAKE AS IT MIGHT LEAD TO A SERIOUS INSTABILITY IN THIS CASE. PRESENT THE PILE LOAD TEST DATA.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT STRUCTURE + DAMPING + DISPLACEMENT, DESIGN FOR + EARTHQUAKE ENGINEERING + FOUNDATION ENGINEERING + REACTOR, PRESSURIZED WATER + ROBINSON 2 + STRESS ANALYSIS

12-15513 ALSO IN CATEGORY 18  
QUESTION VIII A (22) - STRESS-ANALYSIS MODEL (THREE-LUMPED-MASS SYSTEM)  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE A (22)-1 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

THE PROPOSED IDEALIZATION OF THE STRUCTURE OF A THREE-LUMPED-MASS-SYSTEM MODEL IS NOT UNDERSTOOD. PROVIDE DETAILED INFORMATION TO SHOW THE ADEQUACY OF THIS IDEALIZATION UNDER THE VARIOUS COMBINED LOADINGS.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ANALYTICAL MODEL + CONTAINMENT STRUCTURE + REACTOR, PRESSURIZED WATER + ROBINSON 2 + STRESS ANALYSIS

12-15514 ALSO IN CATEGORY 18  
QUESTION VIII B (1) - CONTAINMENT LINER ATTACHMENT DETAILS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, 1 FIGURE, PAGE B (1)-1 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

SECTION VIII B. LINER DESIGN. (1) DISCUSS THE METHOD CHOSEN FOR LINER ATTACHMENT. PROVIDE DETAILS OF THE ATTACHMENT SPACING AND TYPE, AND TYPICAL DISCONTINUITY DETAILS FOR THE SLAB-CYLINDER AND SLAB-SUMP TRANSITIONS.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT LINER + REACTOR, PRESSURIZED WATER + ROBINSON 2

12-15515 ALSO IN CATEGORY 18  
QUESTION VIII B (2) - ELASTIC STABILITY OF CONTAINMENT LINER  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGE B (2)-1 AND B (2)-2 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

PROVIDE AN ANALYSIS OF THE ELASTIC STABILITY OF THE LINER UNDER THE APPLIED COMPRESSIVE LOADS DUE TO PRESTRESS AND DESIGN-BASIS ACCIDENT CONDITIONS.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT LINER + CONTAINMENT STRUCTURE + REACTOR, PRESSURIZED WATER + ROBINSON 2 + STRESS ANALYSIS

12-15516 ALSO IN CATEGORY 18  
QUESTION VIII B (3) - CONTAINMENT-LINER FATIGUE FAILURE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGES B (3)-1 AND B (3)-2 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

PROVIDE THE FATIGUE LOADINGS CONSIDERED IN THE DESIGN OF THE LINER AND ITS ATTACHMENTS. DISCUSS THE EFFECTS OF VIBRATION LOADING OF THE LINER FROM ITS PENETRATIONS UNDER BOTH NORMAL OPERATING AND ACCIDENT CONDITIONS. DISCUSS THE PROVISION TO PRECLUDE EXCESSIVE LOADINGS OF

CATEGORY 12  
PLANT SAFETY FEATURES

12-15516 \*CONTINUED\*

THIS TYPE FROM CAUSING INCREASED LEAKAGE OF THE LINER.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT LINER + CONTAINMENT PENETRATION + CONTAINMENT STRUCTURE + FAILURE, FATIGUE + REACTOR, PRESSURIZED WATER + ROBINSON 2 + STRESS ANALYSIS

12-15517

ALSO IN CATEGORIES 5 AND 18

QUESTION VIII B (4) - STURDINESS OF PIPING JOINED TO CONTAINMENT LINER

CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

1 PAGE, PAGE B (4)-1 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

PROPOSED PIPING PENETRATIONS THAT PENETRATE AND ARE JOINED TO THE CONTAINMENT LINER WILL BE ANCHORED AT THE WALL OF THE CONTAINMENT. STATE THE DESIGN CRITERION TO BE USED TO ENSURE THAT, UNDER A POSTULATED PIPE RUPTURE, THE TORSIONAL, AXIAL, AND BENDING FORCES TRANSMITTED TO THE PENETRATION WILL NOT BREACH THE CONTAINMENT. ALSO INCLUDE THE DESIGN CRITERION WHICH WILL BE APPLIED TO ENSURE THAT PIPE RUPTURE IS PRECLUDED BETWEEN THE PENETRATION AND CONTAINMENT ISOLATION VALVES, SINCE THESE PIPE SECTIONS REPRESENT AN EXTENSION OF THE CONTAINMENT BOUNDARY.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT INTEGRITY + CONTAINMENT LINER + CONTAINMENT PENETRATION + CONTAINMENT PENETRATION, CLOSURE OF + CONTAINMENT STRUCTURE + DESIGN CRITERIA + REACTOR, PRESSURIZED WATER + ROBINSON 2 + STRESS ANALYSIS

12-15519

ALSO IN CATEGORY 18

QUESTION VIII C (2) - CONSTRUCTION MATERIALS, TENDONS, AND ANCHORAGES

CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

10 PAGES, 8 FIGURES, PAGES C (2)(A)-1 TO C (2)(E)-4 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

FIVE DETAILED QUESTIONS - (A) TENDON-ANCHORAGE-SYSTEM DETAILS. (B) JUSTIFY YOUR CHOICE OF GALVANIZED/UNGALVANIZED WIRE/STRAND. (C) QUALITY CONTROL OF TENDON. (D) TENDON COUPLING AND ANTICORROSION PROTECTION. (E) TEST RESULTS ON PRESTRESSING SYSTEM CHOSEN.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONCRETE, PRESTRESSED + CONTAINMENT STRUCTURE + MATERIAL + REACTOR, PRESSURIZED WATER + ROBINSON 2

12-15520

ALSO IN CATEGORY 18

QUESTION VIII D (1) - GENERAL CONSTRUCTION PRACTICES

CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

2 PAGES, PAGES D (1)(A)-1 AND D (1)(B)-1 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261.

SECTION VIII D. CONSTRUCTION. (1) GENERAL. DETAIL THE CODES OF PRACTICE THAT WILL BE FOLLOWED FOR CONSTRUCTION. DESCRIBE WHERE AND TO WHAT EXTENT STANDARD PRACTICE FOR CONSTRUCTION WILL BE EQUALLED, EXCEEDED, AND, IF APPLICABLE, NOT MET. PROVIDE A LIST OF ALL MATERIALS OF CONTAINMENT CONSTRUCTION AND INDICATE THE ON-SITE USER TESTING THAT WILL BE DONE FOR EACH MATERIAL.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT CONSTRUCTION + REACTOR, PRESSURIZED WATER + ROBINSON 2

12-15521

ALSO IN CATEGORY 18

QUESTION VIII D (2) - DETAILS OF CONCRETE USED

CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

16 PAGES, PAGES D (2)(A)-1 TO D (2)(D)-1 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

DESCRIBE THE MIXING, TRANSPORTING, PLACING, AND CURING PROCEDURES TO BE USED. DESCRIBE THE QUALITY-CONTROL PROGRAM FOR THE CONCRETE. DESCRIBE PROCEDURES TO ENSURE PROPER BONDING BETWEEN LIFTS. SPECIFY THE CHLORIDE CONTENT LIMIT OF THE CONCRETE MIXING WATER.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONCRETE, PRESTRESSED + CONTAINMENT CONSTRUCTION + REACTOR, PRESSURIZED WATER + ROBINSON 2

CATEGORY 12  
PLANT SAFETY FEATURES

12-15522 ALSO IN CATEGORY 18  
QUESTION VIII D (3) - SPLICING OF BARS IN PRESTRESSED CONCRETE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGES D (3)(A)-1 AND D (3)(B)-1 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND  
SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

DETAIL THE METHODS TO BE USED FOR REINFORCING STEEL SPLICING AND THE QUALITY-CONTROL PROGRAM.  
PRESENT TEST DATA TO SHOW THE ADEQUACY OF THE SPLICING SYSTEM CHOSEN.

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CONTAINMENT CONSTRUCTION + CONTAINMENT STRUCTURE + REACTOR, PRESSURIZED WATER + ROBINSON 2

12-15523 ALSO IN CATEGORY 18  
QUESTION VIII D (4) - QUALITY CONTROL IN CONTAINMENT-LINER CONSTRUCTION  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
6 PAGES, PAGES D (4)(A)-1 TO D (4)(E)-2 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND  
SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

OUTLINE CODES TO BE USED IN THE MAKING AND TESTING THE LINER. PRESENT THE SEQUENCE OF THE  
LINER CONSTRUCTION WITH RESPECT TO CONCRETE CONSTRUCTION. OF PARTICULAR INTEREST IS THE  
PLACEMENT OF THE LINER ON THE BASE SLAB. JUSTIFY THE USE OF ONLY TWO PERCENT RADIOGRAPHY IN  
THE SEAM WELDING. DETAIL THE EXTENT TO WHICH WELD DUCTILITY WILL BE COMPARABLE TO THAT OF  
THE LINER MATERIAL. PROVIDE INSPECTION PROCEDURES FOR THE LINER ATTACHMENTS AND PENETRATION  
WELDS.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT CONSTRUCTION +  
CONTAINMENT LINER + QUALITY CONTROL + REACTOR, PRESSURIZED WATER + ROBINSON 2 + WELDING

12-15524 ALSO IN CATEGORY 18  
QUESTION VIII D (5) - COOLING FOR HOT PIPE PENETRATION  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE D (5)(A)-1 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS  
REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

DESCRIBE THE HOT PIPE PENETRATION COOLING WATER SYSTEM. WHAT IS THE SOURCE OF WATER. IS EACH  
PENETRATION MONITORED FOR PROPER COOLING.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT PENETRATION +  
REACTOR, PRESSURIZED WATER + ROBINSON 2

12-15525 ALSO IN CATEGORY 18  
QUESTION VII D 6(A THROUGH D) - CONSTRUCTION INSPECTION  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
3 PAGES, PAGES D (6)(A)-1 TO D (6)(D)-1 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND  
SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

(A) DESCRIBE THE ORGANIZATION FOR INSPECTION, THE QUALIFICATIONS AND AUTHORITY OF INSPECTORS,  
AND EXTENT OF DESIGN-GROUP PARTICIPATION IN THE INSPECTION. (B) JUSTIFY THE CONSTRUCTOR ALSO  
PERFORMING THE CONSTRUCTION INSPECTION. (C) DESCRIBE THE PRESTRESSING SEQUENCE, PROCEDURES,  
AND TENDON-STRESS VERIFICATION METHODS. (D) PROVIDE THE METHOD USED TO GROUT THE TENDONS.  
WHAT CLEANING AGENT WILL BE USED PRIOR TO GROUTING.

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EXAMINATION + QUALITY CONTROL + REACTOR, PRESSURIZED WATER + ROBINSON 2

12-15690  
LE SURF JE + BRYANT PE + TANNER MC  
THE USE OF AMMONIA TO SUPPRESS OXYGEN PRODUCTION AND CORROSION IN BOILING-WATER REACTORS  
ATOMIC ENERGY OF CANADA LTD., CHALK RIVER, ONTARIO  
AECL-2562 + CONF-660415-1 +. 12 PAGES, 6 FIGURES, 4 TABLES, 9 REFERENCES, APRIL 1966, FROM 22ND ANNUAL  
CONFERENCE OF THE NATIONAL ASSOCIATION OF CORROSION ENGINEERS, MIAMI BEACH, FLA.

RADIOLYSIS OF THE COOLANT IN REACTORS COOLED BY BOILING WATER RESULTS IN OXYGEN IN THE STEAM  
AND RECIRCULATED WATER. THIS HAS DICTATED THE USE OF STAINLESS STEELS AS THE MAJOR CIRCUIT  
MATERIALS FOR THESE REACTORS. IT IS SHOWN THAT AMMONIA ADDITIONS TO THE COOLANT ELIMINATE  
OXYGEN PRODUCTION, PERMITTING THE USE OF MILD STEEL FOR CIRCUIT CONSTRUCTION WITH CONSEQUENT

CATEGORY 12  
PLANT SAFETY FEATURES

12-15690 \*CONTINUED\*

SAVINGS IN CAPITAL COST. CORROSION DATA ARE PRESENTED FOR VARIOUS OUT-REACTOR MATERIALS (CARBON STEEL, LOW-ALLOY STEELS, STAINLESS STEELS, MONEL ALLOY 400, INCONEL ALLOY 600) EXPOSED TO THE COOLANT OF TWO-PHASE IN-REACTOR LOOPS WHEN OPERATED NEUTRAL AND WITH AMMONIA. THE ELEVATION IN PH RESULTING FROM AMMONIA IS A FURTHER ADVANTAGE FOR LOW-TEMPERATURE PARTS OF THE CIRCUIT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151

\*CORROSION + \*REACTOR, BOILING WATER + \*STEAM + ALLOY + CHEMICAL REACTION + OXYGEN + STEEL, STAINLESS

17-15841 ALSO IN CATEGORIES 7 AND 13

MISHIMA J

PLUTONIUM RELEASE STUDIES. II. RELEASE FROM IGNITED, BULK METALLIC PIECES  
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON  
BNWL-357 +. 22 PAGES, TABLES, REFERENCES, NOVEMBER 10, 1966

METALLIC PLUTONIUM PIECES RANGING IN WEIGHT FROM 455.5 TO 1770 WERE IGNITED AND ALLOWED TO OXIDIZE COMPLETELY IN AIR WITH A VELOCITY OF 525 CM/SEC. RELEASE RATES OF 0.032 TO 0.0045 WEIGHT PERCENT PER HR WERE FOUND FOR THE BARE METAL. COVERING THE IGNITED METAL DURING OXIDATION WITH MAGNESIUM OXIDE SAND REDUCES THE RELEASE TO 0.00029 WEIGHT PERCENT PER HR. THE MEDIAN MASS DIAMETER OF THE PARTICLES AIRBORNE DURING THE RELEASE FROM THE BARE METAL WAS FOUND TO BE 4.2 MICRONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

ATP + AIRBORNE RELEASE + FIRE + FUEL REPROCESSING + IGNITION + METAL + OXIDATION + PARTICULATE + PLUTONIUM + RADIOCHEMICAL PLANT SAFETY

17-15901 ALSO IN CATEGORIES 3 AND 9

VALIUNAS A + POPLAWSKI B

NUCLEAR SAFETY. ANNOTATED BIBLIOGRAPHY. SURVEYS OF SOVIET SCIENTIFIC AND TECHNICAL LITERATURE LIBRARY OF CONGRESS

AD-623557 + N-66-11853 + ATD-B-65-76 +. 60 PAGES, OCTOBER 22, 1965

THIS ANNOTATED BIBLIOGRAPHY DEALS WITH CERTAIN ASPECTS OF NUCLEAR SAFETY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*BIBLIOGRAPHY + \*DOSIMETRY, GENERAL + \*FUEL HANDLING + \*INSTRUMENTATION, GENERAL + \*RADIATION PROTECTION, CHEMICAL + RADIATION PROTECTION, ORGANIZATION

12-15913

GILLINGTON IJ + FITZSIMMONS TE

FINAL REPORT ON SHAFT SEAL DEVELOPMENT

DILWORTH, SECORD, MEAGHER AND ASSOCIATES LTD., TORONTO

AECL-2549 + DMS-203-358 (REV.) +. 26 PAGES, 10 FIGURES, MARCH 1966

SUMMARIZES THE RESULTS OF A 5-YEAR CONTROLLED-LEAKAGE SHIF-SEAL DEVELOPMENT PROGRAM WHEREIN IT WAS DEMONSTRATED THAT A SELF-ENERGIZED HYDROSTATIC SHAFT SEAL WOULD GIVE LONG-TERM RELIABILITY AND CONSISTENT PERFORMANCE USING NORMAL OR PH-10 WATER UNDER PRESSURE OF 930 PSI. THE BEST MATERIAL COMBINATION WAS 410 STAINLESS STEEL AND BARIUM-10 (COMPOSITE OF LEAD AND BRONZE). A SEAL OF THIS TYPE WAS INSTALLED IN A PRIMARY COOLANT PUMP OF THE NPD REACTOR.

AVAILABILITY - ATOMIC ENERGY OF CANADA, LTD., CHALK RIVER, ONTARIO, CANADA, \$1.00 COPY

\*RESEARCH AND DEVELOPMENT PROGRAM + \*SEAL + MAIN COOLING SYSTEM + MAINTENANCE AND REPAIR + NPD 2 (NUCLEAR POWER DEMONSTRATION REACTOR 2) + PUMP + REACTOR, HEAVY WATER + REACTOR, POWER

12-15940 ALSO IN CATEGORY 7

KEILHOLTZ GW + WEBSTER CC

METHOD FOR ANALYZING INERT GAS FOR PRESENCE OF OXYGEN OR WATER VAPOR

OAK RIDGE NATIONAL LABORATORY

U.S. PATENT 3,262,756 +. 3 PAGES, 1 FIGURE, JULY 26, 1966

WHAT IS CLAIMED IS - A METHOD OF QUALITATIVELY ANALYZING AN INERT GAS FOR THE POSSIBLE PRESENCE OF OXYGEN OR WATER VAPOR THEREIN COMPRISING THE STEPS OF EVACUATING A TRANSPARENT GLASS BULB CONTAINING A TUNGSTEN FILAMENT THEREIN, FLOWING AN INERT GAS SAMPLE THROUGH SAID BULB, CONNECTING A FIRST SELECTED VOLTAGE ACROSS AND FILAMENT FOR A SHORT TIME INTERVAL TO HEAT SAID FILAMENT TO A DULL RED COLOR, SAID FILAMENT TURNING BLACK TO PROVIDE A FIRST INDICATION OF THE PRESENCE OF ANY OXYGEN OR WATER VAPOR THAT MAY BE PRESENT IN SAID INERT GAS SAMPLE, AND CONNECTING A SECOND SELECTED VOLTAGE ACROSS SAID FILAMENT FOR A SECOND SHORT TIME INTERVAL TO HEAT SAID FILAMENT TO NEAR INCANDESCENCE, SAID FILAMENT FLASHING OFF A WHITE CLOUD TO PROVIDE A SECOND INDICATION OF THE PRESENCE OF ANY OXYGEN OR WATER VAPOR THAT MAY BE PRESENT IN SAID INERT GAS SAMPLE.

CATEGORY 12  
PLANT SAFETY FEATURES

12-15940 \*CONTINUED\*

AVAILABILITY - THE U.S. PATENT OFFICE, DEPT. OF COMMERCE, WASHINGTON, D.C., \$0.25 COPY

\*OXYGEN + \*REACTOR, GAS COOLED + \*WATER VAPOR + \*WELDING + ANALYTICAL TECHNIQUE, GAS

12-15942 ALSO IN CATEGORIES 7 AND 13

BAKER L + BINGLE JD

THE KINETICS OF OXIDATION OF URANIUM BETWEEN 300 AND 625 C

ARGONNE NATIONAL LABORATORY, ARGONNE ILLINOIS

11 PAGES, 7 FIGURES, 5 TABLES, JOURNAL OF NUCLEAR MATERIALS 20(1), PAGES 11-21 (JULY, 1966)

STUDIES OF THE ISOTHERMAL OXIDATION OF URANIUM IN THE 300 TO 625 C RANGE WERE CARRIED OUT IN A METAL HEAT-SINK REACTION CELL DESIGNED TO MINIMIZE SELF-HEATING. DATA WITH TWO SOURCES OF PURE URANIUM AS WELL AS 1 AT.% COPPER AND 1 AT.% ALUMINUM ALLOYS OF URANIUM SHOWED SUBSTANTIALLY IDENTICAL SELF-ACCELERATING REACTION RATES UP TO 400 C. OXIDATION OF PURE URANIUM AND THE COPPER ALLOY UNDERWENT A TRANSITION TO A SLOWER REACTION IN WHICH THE OXIDE WAS SOMEWHAT PROTECTIVE ABOVE 500 C, WITH THE COPPER ALLOY CONSIDERABLY MORE PROTECTIVE THAN THE PURE METAL. THE SELF-ACCELERATING REACTION CONTINUED TO HIGHER TEMPERATURES FOR THE ALUMINUM ALLOY. THE RESULTS OF ISOTHERMAL OXIDATION STUDIES FOR THE BETA-QUENCHED PURE URANIUM METAL WERE EXPRESSED IN THE FORM OF EMPIRICAL EQUATIONS.

\*ALLOY + \*ALUMINUM + \*CHEMICAL KINETICS + \*COPPER + \*OXIDATION + FIRE + URANIUM

12-15958

GARDINI A + PERONA G + SESINI R

MAGNETIC FILTER FOR SMALL PARTICLES

CENTRO INFORMAZIONI STUDI ESPERIENZE, ITALY

8 PAGES, 11 FIGURES, 2 REFERENCES, NUCLEAR ENGINEERING AND DESIGN 5(2), PAGES 199-206 (MARCH 1967)

ONE OF THE PROBLEMS RAISED BY THE DEVELOPMENT OF STEAM POWER PLANTS AND NUCLEAR REACTORS IS THE FORMATION OF CRUD, MOSTLY CONSISTING OF MAGNETITE, WHICH IS FOUND IN SUSPENSION IN THE BOILER FEED-WATER. THE RATHER HIGH TEMPERATURE OF 250-300 C PRECLUDES USING RESIN FILTERS FOR THE DIRECT ELIMINATION OF THESE IMPURITIES. THEREFORE A MAGNETIC FILTER FOR THIS TASK WAS CONCEIVED AND PARTIALLY DEVELOPED. THE LARGE FORCE NEEDED TO ATTRACT AND REMOVE CRUD PARTICLES FLOWING WITH THE LIQUID IS OBTAINED BY MEANS OF FERROMAGNETIC PINS PLACED AXIALLY IN A UNIFORM MAGNETIC FIELD. THE THEORETICAL AND EXPERIMENTAL RESULTS OBTAINED ARE REPORTED. IN ADDITION, DESIGN PARAMETERS AND COST ESTIMATES FOR A 1000-TON-PER-HR SYSTEM ARE GIVEN.

\*CRUD + \*HIGH TEMPERATURE + \*MAIN COOLING SYSTEM + \*REACTOR, WATER + FILTER

CATEGORY 13  
RADIOCHEMICAL PLANT SAFETY

13-12308 ALSO IN CATEGORY 17

LEWIS WH  
NUCLEAR FUEL SERVICES NON-COMPLIANCE CITATION FOLLOWING JULY 25-29 INSPECTION  
NUCLEAR FUEL SERVICES, INC., WEST VALLEY, NEW YORK  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 12(47), PAGES 18-19, NOVEMBER 21, 1966, DOCKET 50-201

NFS WAS ADVISED OF NONCOMPLIANCE IN THAT INDIVIDUALS WORKING IN RESTRICTED AREAS WERE INADEQUATELY TRAINED, DOSE RATE AND AIRBORNE-ACTIVITY SURVEYS WERE NOT MADE, HAND DOSES WERE NOT MONITORED, SPECIAL WORK PERMITS WERE NOT ISSUED, AND OFF-GAS FILTERS WERE INADEQUATE OR UNTESTED.

\*FAILURE, ADMINISTRATIVE CONTROL + \*INSPECTION AND COMPLIANCE + NFS (NUCLEAR FUEL SERVICES) + TEST, FILTER

13-13525 ALSO IN CATEGORIES 2 AND 18

DESIGN AND ANALYSIS. MIDWEST FUEL RECOVERY PLANT. GENERAL ELECTRIC COMPANY, FUEL RECOVERY OPERATION, NUCLEAR ENERGY DIVISION  
GENERAL ELECTRIC COMPANY  
300 PAGES, 31 FIGURES, 12 TABLES, NOVEMBER 1966, DOCKET NO. 50-268

REPORT SUPPORTS GENERAL ELECTRIC COMPANY APPLICATION FOR A CONSTRUCTION PERMIT AND AEC LICENSE FOR THE MIDWEST FUEL RECOVERY PLANT (MFRP). PLANT UTILIZES THE GENERAL ELECTRIC AQUAFUOR PROCESS FOR THE SEPARATION AND PURIFICATION OF URANIUM AND PLUTONIUM PRODUCT MATERIALS FROM SPENT UO<sub>2</sub> REACTOR FUEL ELEMENTS CLAD WITH STAINLESS STEEL OR ZIRCONIUM ALLOYS. AQUAFUOR USES THE FOLLOWING UNIT OPERATIONS - MECHANICAL DISASSEMBLY, CHEMICAL LEACHING, SOLVENT EXTRACTION, ION EXCHANGE, AND FLUID-BED FLUORINATION. REPORT COVERS ALL PHASES OF HAZARDS INVOLVING NUCLEAR CRITICALITY, RADIOACTIVE CONTAMINATION, CHEMICAL, AND MECHANICAL OPERATIONS THAT ARE REQUIRED FOR OPERATION OF THE RADIOCHEMICAL PROCESSING PLANT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*RADIOCHEMICAL PLANT SAFETY + \*RADIOCHEMICAL PROCESSING + \*SAFETY ANALYSIS REPORT, GENERAL + \*WASTE DISPOSAL, GENERAL + CONTAINMENT, FUEL REPROCESSING + CRITICALITY SAFETY + MFRP (MIDWEST FUEL RECOVERY PLANT) + PLUTONIUM + URANIUM DIOXIDE + WASTE DISPOSAL, ATMOSPHERIC

13-13833 ALSO IN CATEGORIES 8 AND 12

BIG K CHEMICAL COMBUSTION  
ATOMIC ENERGY COMMISSION  
2 PAGES, HEALTH AND SAFETY BULLETIN NO. 207, MARCH 22, 1965

BRIEFLY DISCUSSES THE CHEMICAL ACTIVITY AND HAZARD POTENTIAL OF POTASSIUM. POTASSIUM HAS A VIOLENT AFFINITY FOR OXYGEN AND WATER. IT IS USUALLY STORED UNDER OIL IN CLOSED CONTAINERS, BUT IT IS NOW RECOGNIZED THAT METALLIC POTASSIUM MAY OXIDIZE WHILE STORED IN THIS MANNER AND CHANGE FROM WHITE TO BLACK. THE OXIDATION RESULTS IN THE FORMATION OF K<sub>2</sub>O OR K<sub>2</sub>O<sub>2</sub>. EITHER CAN EXPLODE WHEN CHAFED OR CUT. METHODS OF STORING RECOMMENDED ARE (1) USE A CLOSED GLASS OR PLASTIC CONTAINER WITH K IMMERSED IN KEROSENE OR MINERAL OIL, OR (2) USE A GLASS CAPSULE, EVACUATED OR FILLED WITH INERT ATMOSPHERE AND SEALED.

AVAILABILITY - AEC, DIVISION OF PUBLIC INFORMATION, WASHINGTON, D.C. 20545

\*EXPLOSION + \*OXIDATION + \*POTASSIUM + CHEMICAL REACTION + MISSILE GENERATION AND PROTECTION + STORAGE CONTAINER + TRANSPORTATION AND HANDLING

13-13839 ALSO IN CATEGORY 11

KELSCH PD  
CONTAINMENT METHODS FOR ALPHA-GAMMA RADIOACTIVITY AT SAVANNAH RIVER LABORATORY CAVES  
SAVANNAH RIVER LABORATORY  
DP-MS-66-16 +. 1 PAGE, ANS TRANSACTIONS 9(2) PAGE 609 (WINTER 1966) PITTSBURGH, PENNSYLVANIA, OCTOBER 30-NOVEMBER 3, 1966, AMERICAN NUCLEAR SOCIETY

THE HIGH-LEVEL CAVES ARE USED ROUTINELY FOR WORK INVOLVING ALPHA-GAMMA ACTIVITY. ALPHA CONTAINMENT IS ACHIEVED BY - (1) MAINTAINING THE AIR INLET VELOCITY THROUGH ALL OPENINGS IN THE CELL SHIELD GREATER THAN 100 FT/MIN AT ALL TIMES, (2) USING LAMINAR FLOW PATTERNS IN THE CELL TO FLUSH OUT AIRBORNE ACTIVITY, (3) FILTERING EXHAUSTED AIR THROUGH TWO ABSOLUTE AND ONE CHARCOAL FILTER, (4) CONTROLLING AIR-FLOW PATTERNS IN THE AREAS ADJACENT TO THE CELLS WITH AIR LOCKS AND PROPERLY LOCATED AIR-SUPPLY VENTS, (5) USING DOUBLE-BAGGING METHODS FOR TRANSFERRING CONTAMINATED EQUIPMENT FROM THE CELLS.

\*AIR CLEANING + \*ALPHA EMITTER + \*CONTAINMENT, PRESSURE VENTING + \*DECONTAMINATION + \*HOT CELL + CONTAINMENT, FUEL REPROCESSING + FILTER SYSTEM + GAMMA EMITTER

13-13840 ALSO IN CATEGORY 11

POTT G + STOCKSCHLADER F  
BASIC PLAN AND SPECIAL ROX TECHNIQUES FOR THE ALPHA-BETA-GAMMA HOT LABORATORY WITHIN THE THTR PROJECT  
JULICH NUCLEAR RESEARCH CENTER

CATEGORY 13  
RADIOCHEMICAL PLANT SAFETY

13-13840 \*CONTINUED\*  
2 PAGES, ANS TRANSACTIONS 9(2) PAGES 609-610 (WINTER 1966) PITTSBURGH, PENNSYLVANIA, OCTOBER 30-NOVEMBER 3, 1966, AMERICAN NUCLEAR SOCIETY

THIS REPORT DESCRIBES THE BASIC REQUIREMENTS IN THE PLANNING OF AN ALPHA-BETA-GAMMA HOT LABORATORY ASSOCIATED WITH A FUEL-DEVELOPMENT PROGRAM FOR A GAS-COOLED HIGH-TEMPERATURE REACTOR PROJECT. PLANNING OF THE LABORATORY IS BASED ON A CONSTRUCTION AND PLANNING TIME OF 2.5 YEARS, A COST LIMIT OF \$750,000, A GIVEN POST-IRRADIATION PROGRAM ON FUEL BALLS (6-CM DIAM), AND OPERATION USING ALPHA-BETA-GAMMA TECHNIQUE IN BOXES.

\*DESIGN CRITERIA + \*HOT CELL + ALPHA EMITTER + BETA EMITTER + CONTAINMENT, FUEL REPROCESSING + GAMMA EMITTER

13-13841 ALSO IN CATEGORY 11  
MATHERNF JL + KING LJ  
CONTAINMENT OF RADIOACTIVE MATERIAL IN THE TRANSURANIUM PROCESSING PLANT  
OAK RIDGE NATIONAL LABORATORY  
1 PAGE, ANS TRANSACTIONS 9(2) PAGE 610 (WINTER 1966) PITTSBURGH, PENNSYLVANIA, OCTOBER 30-NOVEMBER 3, 1966, AMERICAN NUCLEAR SOCIETY

THE TRANSURANIUM PROCESSING PLANT (TRU) AT OAK RIDGE NATIONAL LABORATORY IS OPERATED IN CONJUNCTION WITH THE HIGH FLUX ISOTOPE REACTOR (HFIR) TO PROVIDE GRAM QUANTITIES OF MANY OF THE TRANSURANIUM ELEMENTS AND MILLIGRAM QUANTITIES OF SOME OF THE TRANSCALIFORNIUM ISOTOPES FOR USE IN RESEARCH. MANY OF THE DESIGN FEATURES OF THE FACILITY ARE GOVERNED BY THE SPECIAL PROBLEMS ASSOCIATED WITH THE CONTAINMENT OF THE HIGH-SPECIFIC-ACTIVITY ACTINIDE ELEMENTS. THESE ELEMENTS ARE PRIMARILY ALPHA EMITTERS - IN ADDITION, SOME UNDERGO SPONTANEOUS FISSION. HIGH DOSE RATES OF PENETRATING RADIATION, INCLUDING THE FAST NEUTRONS FROM SPONTANEOUS FISSION, NECESSITATE THICK SHIELDING (54 IN. OF HIGH-DENSITY CONCRETE) AND REQUIRE ALL MAINTENANCE TO BE DONE REMOTELY. THIS PAPER DESCRIBES THE SPECIAL CONTAINMENT FEATURES OF THE PLANT.

\*CONTAINMENT, FUEL REPROCESSING + \*DESIGN CRITERIA + \*HOT CELL + \*TRANSURANIUM ELEMENT + CONTAINMENT, PRESSURE VENTING + FILTER SYSTEM

13-13844 ALSO IN CATEGORY 11  
GAIATANIS MJ + TRIPP LF  
OPERATIONAL EXPERIENCE AT THE QUEHANNA, PA. FACILITY - A 2-MCI SR-90 CONVERSION AND ENCAPSULATION PLANT  
MARTIN COMPANY  
2 PAGES, ANS TRANSACTIONS 9(2) PAGES 611-612 (WINTER 1966) PITTSBURGH, PENNSYLVANIA, OCTOBER 30-NOVEMBER 3, 1966, AMERICAN NUCLEAR SOCIETY

THE SECOND GENERATION OF SR-90 PROCESSING EQUIPMENT WENT HOT IN AUGUST 1965 AND FOUR FUEL CAPSULES WERE PREPARED FOR FOUR GENERATORS. DOUBLE-CONTAINMENT WAS MAINTAINED THROUGHOUT CONSTRUCTION. THE NEW SYSTEM OPERATED QUANTITATIVELY AND PRESENTED FEW PROBLEMS. THE USE OF ABSOLUTE FILTERS IN PARALLEL AND AT LEAST FOUR IN SERIES IN THE BOX VENTILATION SYSTEM WAS FOUND NECESSARY TO CONTAIN BALL-MILLED TITANATE POWDER.

\*DESIGN CRITERIA + \*HOT CELL + CONTAINMENT, FUEL REPROCESSING + CONTAINMENT, PRESSURE VENTING + CONTAINMENT, SOURCE + FILTER SYSTEM + STRONTIUM + TITANIUM

13-14060  
STEYER KG + STELLING HE  
PRELIMINARY DESIGN FOR A HEAD-END REPROCESSING FACILITY INTEGRAL WITH AN HTGR POWER PLANT  
GENERAL DYNAMICS CORP., GENERAL ATOMIC DIVISION  
GA-7107 + CONF-660524-22 +. 19 PAGES, 3 FIGURES, 2 TABLES, TO BE PRESENTED AT THE SECOND INTERNATIONAL THORIUM FUEL CYCLE SYMPOSIUM, MAY 3-6, 1966, GATLINBURG, TENNESSEE

REPROCESSING STUDIES DESCRIBED IN THIS REPORT ARE USED TO EVALUATE THE ADVANTAGES, THE DISADVANTAGES, AND THE COSTS OF HEAD-END REPROCESSING UNITS INTEGRAL WITH THE REACTOR AND WHICH MAKE MAXIMUM USE OF REACTOR FACILITIES. THEY CONCLUDE THAT ON-SITE HEADEND REPROCESSING IS TECHNICALLY FEASIBLE FOR LARGE HTGRS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$1.00 COPY, \$0.50 MICROFICHE

\*DESIGN STUDY + CRITICALITY SAFETY + RADIOCHEMICAL PROCESSING

13-14076 ALSO IN CATEGORIES 7 AND 18  
NFS AMENDMENT TO DELETE STACK MONITORING FOR ALPHA ACTIVITY  
NUCLEAR FUEL SERVICES, INC.  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(3) PAGE 14 (JANUARY 16, 1967) DOCKET NO. 50-201

PRESENT STACK MONITOR IS NOT SENSITIVE TO PLUTONIUM OR URANIUM PRODUCT, WHICH HAS BEEN ANALYZED FOR FISSION PRODUCTS. SINCE VENTILATION AIR WILL BE FILTERED, DELETION OF STACK-MONITORING PROVISION FOR PRODUCT-LOADOUT OPERATIONS IS JUSTIFIED.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + ALPHA EMITTER + MONITOR, RADIATION, STACK + NFS (NUCLEAR FUEL SERVICES)



CATEGORY 13  
RADIOCHEMICAL PLANT SAFETY

13-14081 ALSO IN CATEGORIES 17 AND 18  
NFS UTILITY OUTAGE DUE TO TRUCK WRECK  
NUCLEAR FUEL SERVICES, INC.  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(3) PAGES 21-22 (JANUARY 16, 1967) DOCKET NO. 50-201

ON AUGUST 29, 1966, AIR-BRAKE HOSE RUPTURE ON A NITRIC ACID TANK TRUCK ALLOWED THE TRUCK TO ROLL DOWNHILL THROUGH THE FIRE PUMP HOUSE INTO THE UTILITY BUILDING. AIR, WATER, AND STEAM SERVICE WAS INTERRUPTED FOR 10 HOURS.

\*INCIDENT, ACTUAL, EQUIPMENT + ACCIDENT, LOSS OF POWER + NFS (NUCLEAR FUEL SERVICES)

13-14082 ALSO IN CATEGORIES 17 AND 18  
CONTAMINATION OF ACID RECOVERY EQUIPMENT AT NFS, AUGUST 30, 1966  
NUCLEAR FUEL SERVICES, INC.  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(3) PAGES 21-22 (JANUARY 16, 1967) DOCKET NO. 53-201

THE LOW-LEVEL-WASTE EVAPORATOR 7C-2 RUPPED 75 GALLONS OF CONDENSATE INTO THE ACID CATCH TANK. FURTHER CONCENTRATION LED TO RADIATION LEVELS ABOVE 70 R/HR IN THE UNSHIELDED ACID-STORAGE-TANK AREA. A WEEK LATER, THE ACID WAS RETURNED TO SHIELDED CELLS. DECONTAMINATION OF EQUIPMENT WAS DIFFICULT BECAUSE SUCH PROVISION WAS NOT DESIGNED IN. SYSTEM MODIFICATIONS ARE LISTED.

\*INCIDENT, ACTUAL, EQUIPMENT + DECONTAMINATION + EVAPORATION + FAILURE, DESIGN ERROR + NFS (NUCLEAR FUEL SERVICES) + RADIOCHEMICAL PROCESSING + WASTE TREATMENT, GENERAL

13-14083 ALSO IN CATEGORIES 15 AND 17  
INHALATION EXPOSURE AT NFS DUE TO IMPROPER VENTILATION, NOVEMBER 28, 1966  
NUCLEAR FUEL SERVICES, INC.  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(3) PAGES 22-23 (JANUARY 16, 1967) DOCKET NO. 50-201

WHOLE-BODY COUNTS INDICATE THAT ONE MAN WILL RECEIVE A ONE-YEAR DOSE OF 360 MREMS(BONE), AND THE OTHER 280, DESPITE FOUR TWO-QUART NASAL IRRIGATIONS. THE WORKERS HAD OPENED BOTH AIRLOCK DOORS OF THE CONTAMINATED CRANE ROOM FOR MAINTENANCE, SO THAT WHEN A VENTILATION PRESSURE-CONTROLLER SET POINT WAS CHANGED NEARBY, AIR REVERSED FLOW TO MOVE FROM CRANE ROOM TO ANALYTICAL CLEAN ROOM. INVESTIGATION FOLLOWING A CAM ALARM FROM THE ANALYTICAL ROOM REVEALED THE SITUATION. AIR-SUPPLIED RESPIRATORY EQUIPMENT IS NOW REQUIRED, AS A FULL-FACE FILTER MASK WAS INEFFECTIVE. DIFFERENTIAL PRESSURE GAGES AND RECORDERS WILL GIVE PRESSURE ACROSS THE AIR LOCKS, AND ENTRY FORBIDDEN UNLESS THERE IS A 1/4-INCH PRESSURE.

\*PERSONNEL EXPOSURE, RADIATION + \*PERSONNEL PROTECTIVE DEVICE + \*VENTILATION SYSTEM + CONTAINMENT AIR LOCK + DOSE MEASUREMENT, INTERNAL + FAILURE, DESIGN ERROR + FAILURE, OPERATOR ERROR + INCIDENT, ACTUAL, HUMAN ERROR + NFS (NUCLEAR FUEL SERVICES)

13-14084 ALSO IN CATEGORIES 15 AND 17  
PERSONNEL EXPOSURE AT NUMEC OCTOBER 19/20, 1966  
NUCLEAR MATERIALS AND EQUIPMENT CORPORATION  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(3) PAGE 24 (JANUARY 16, 1967)

VALVE SETTINGS MADE IT POSSIBLE TO DRAW CONTAMINATED LIQUID INTO A STEAM CONDENSATE RECEIVER IN A WASTE EVAPORATOR. A TECHNICIAN WAS EXPOSED TO AIRBORNE PLUTONIUM NITRATE FOR 381.9 MPC HOURS DURING REPAIR OF A STEAM LEAK.

\*PERSONNEL EXPOSURE, RADIATION + FAILURE, OPERATOR ERROR + MAINTENANCE AND REPAIR + PLUTONIUM + WASTE HANDLING

13-14095 ALSO IN CATEGORIES 17 AND 18  
GLOVE BOX EXPLOSION AT NUMEC, NOVEMBER 30, 1966  
NUCLEAR MATERIALS AND EQUIPMENT CORPORATION  
4 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(3) PAGES 24-27 (JANUARY 16, 1967)

A CRWF WAS THERMALLY DECOMPOSING A FILTRATE SOLUTION (WASTE PRODUCT OF PLUTONIUM PEROXIDE PRECIPITATION) WHICH CONTAINS H2O2 AND PLUTONIUM PEROXIDE - DECOMPOSITION OF THE H2O2 BROKE THE GLASS VESSEL, PROJECTILES BROKE THE GLOVE BOX. THE OPERATOR RAN 4 TIMES THE QUANTITY DIRECTED, THE VENT WAS INADEQUATE, AND IMPURITIES COULD HAVE BEGUN CATALYTIC DECOMPOSITION. MEASUREMENTS OF UP TO 2,000,000 CPM WERE MADE, RESULTING FROM THE 0.1 GRAM PLUTONIUM LOST.

\*EXPLOSION + \*GLOVE BOX + \*PLUTONIUM + CHEMICAL REACTION + FAILURE, OPERATOR ERROR

13-14129 ALSO IN CATEGORY 17  
PENELLE G  
DESCRIPTION AND ANALYSIS OF THE CRITICALITY ACCIDENT WHICH AFFECTED THE VENUS REACTOR AT MOL, ON DECEMBER

CATEGORY 13  
RADIOCHEMICAL PLANT SAFETY

13-14129 \*CONTINUED\*  
30TH, 1965.

CENTRE D'ETUDE DE L'ENERGIE NUCLEAIRE, MOL  
13 PAGES, 4 FIGURES, PRESENTED AT THE FIRST INTERNATIONAL CONGRESS OF THE INTERNATIONAL RADIATION  
PROTECTION ASSOCIATION, ROME, ITALY, SEPTEMBER 5-10, 1966

THE INCIDENT WAS CAUSED BY THE TECHNICIAN, WHO MANUALLY WITHDREW A CONTROL ROD, APPLYING IN A  
MISTAKEN WAY AN OPERATING ORDER WHICH DID NOT COMPLY WITH THE OPERATING PROCEDURES.  
MODERATOR DRAINING WAS AUTOMATICALLY BEGUN ON THE HIGH RADIATION ALARM, BUT SHUTDOWN RESULTED  
FROM THE OPERATOR DROPPING THE ROD. PAPER TRACES THE CAUSE AND COURSE OF THE INCIDENT,  
ENERGY RELEASE, AND CONCLUSIONS.

AVAILABILITY - PROCEEDINGS OF THE FIRST CONGRESS OF THE INTERNATIONAL RADIATION PROTECTION ASSOCIATION,  
PERGAMON PRESS, OXFORD, 1967

\*ACCIDENT, CRITICALITY + \*FAILURE, OPERATOR ERROR + \*INCIDENT, ACTUAL, HUMAN ERROR + BELGIUM +  
CRITICAL ASSEMBLY FACILITY + FAILURE, ADMINISTRATIVE CONTROL + PERSONNEL EXPOSURE, RADIATION

13-14147 ALSO IN CATEGORY 18  
IRL REACTOR CHANGE 7 - SUBCRITICALITY STUDIES  
DIVISION OF REACTOR LICENSING, UNITED STATES ATOMIC ENERGY COMMISSION  
3 PAGES, JANUARY 6, 1967, DOCKET NO. 50-17

DRL PERMISSION GIVEN TO MEASURE SUBCRITICALITY IN VARIOUS ARRAYS OF MTR TYPE ELEMENTS (3 X 3,  
4 X 4, 5 X 5, AND 6 X 6), WITH EACH ROW SEPARATED BY 1/8-INCH BORAL PLATES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + \*SAFETY EVALUATION + CRITICALITY EXPERIMENT + FUEL STORAGE +  
REACTOR, POOL TYPE + TESTING

13-14193 ALSO IN CATEGORY 12

MCINTOSH JD + RAAB GJ  
REMOTE MAINTENANCE IN A LARGE SCALE SEPARATIONS PLANT  
ISOCEM INC., RICHLAND  
ISO-SA-25 + CONF-661001-16 +. 24 PAGES, 10 FIGURES, 1 TABLE, JULY 15, 1966, FOR PRESENTATION AT 14TH  
CONFERENCE ON REMOTE SYSTEMS TECHNOLOGY, PITTSBURGH, PA.

REMOTE MAINTENANCE IN THE LARGE PUREX SEPARATIONS PLANT HOT-PROCESSING CANYON CONSISTS ALMOST  
ENTIRELY OF EQUIPMENT REPLACEMENT. THE PUREX PLANT SEPARATES URANIUM, PLUTONIUM, AND  
NEPTUNIUM FROM HANFORD-IRRADIATED METAL. ORIGINAL DESIGN PROVIDED FOR REPLACEMENT OF ANY OR  
ALL EQUIPMENT IN THE FORTY-FOOT-DEEP SHIELDED PROCESSING CELLS BY THE VERSATILE REMOTE CANYON  
CRANES. FIFTY-SIX % OF THE ORIGINAL VALUE OF REMOTE CANYON PROCESSING VESSELS HAVE BEEN  
REPLACED FOR MAINTENANCE REASONS DURING THE TEN-YEAR PLANT HISTORY. EFFECTIVE USE OF A LARGE  
INVENTORY OF PRECISELY ENGINEERED REPLACEMENT EQUIPMENT HAS HELPED TO HOLD MAINTENANCE  
DOWNTIME TO LESS THAN 10%.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$1.00 COPY, \$0.50 MICROFICHE

\*MAINTENANCE AND REPAIR + \*RADIOCHEMICAL PROCESSING + HANFORD SITE

13-14194 ALSO IN CATEGORIES 18 AND 12  
FISSION PRODUCT CONVERSION AND ENCAPSULATION PLANT (FPCE) USAEC HANFORD WORKS, BENTON COUNTY, WASHINGTON  
ISOCEM INC.  
39 PAGES, DECEMBER 7, 1966, DOCKET NO. 50-258

ISOCEM, INC., IS SEEKING A PROVISIONAL CONSTRUCTION PERMIT FOR BUILDING AND SUBSEQUENTLY  
OPERATING A FISSION PRODUCT CONVERSION AND ENCAPSULATION PLANT (FPCE PLANT) AT HANFORD. THIS  
DOCUMENT CONTAINS DETAILS OF THE NOTICE OF HEARING ON THE APPLICATION AND REHASHES THE  
INFORMATION SUBMITTED IN PREVIOUS DOCUMENTS. A LETTER FROM THE CHAIRMAN OF THE ADVISORY  
COMMITTEE ON REACTOR SAFEGUARDS AND THE AEC DIVISION OF MATERIALS LICENSING SAFETY ANALYSIS  
SUPPORT THE APPLICATION BY CONCLUDING THAT THE PLANT CAN BE OPERATED WITHOUT UNDUE RISK TO  
THE HEALTH AND SAFETY OF THE PUBLIC.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*APPLICATION FOR AEC LICENSE + \*CERIUM + \*PROMETHIUM + \*RADIOCHEMICAL PROCESSING + \*STRONTIUM +  
FISSION PRODUCT, SEPARATION FROM WASTE + FPCE PLANT + HANFORD SITE + HAZARDS ANALYSIS +  
RADIOCHEMICAL PLANT SAFETY + SAFETY ANALYSIS REPORT, GENERAL

13-14295 ALSO IN CATEGORY 17  
SIX YEARS OPERATING EXPERIENCE (1957-63) AT THE PRODUCTION CONTROL LABORATORIES OF THE PLUTONIUM  
EXTRACTION PLANT AT MARCOULE.  
COMMISSARIAT A L'ENERGIE ATOMIQUE, CHUSCLAN  
CEA-R-2700 + ORNL-TR-583 +. 76 PAGES, OCTOBER 1964

A SUMMARY IS GIVEN OF THE CONDITIONS PREVAILING, AFTER SIX YEARS OF OPERATION, IN THE

CATEGORY 13  
RADIOCHEMICAL PLANT SAFETY

13-14295 \*CONTINUED\*

LABORATORIES OF THE PLUTONIUM EXTRACTION PLANT. THE ORIGINS AND OBJECTIVES ARE BRIEFLY REVIEWED, THE TECHNOLOGY AND STAFF RECRUITMENT POLICY ARE EXAMINED, AND PROGRESS MADE IS SHOWN. THE METHODS AS WELL AS THE SCOPE OF APPLICATION AND LIMITS IMPOSED AT THE PRESENT STATE ARE CONSIDERED. PAST ACHIEVEMENTS AND FUTURE POSSIBILITIES ARE EXAMINED. AN ATTEMPT WAS MADE TO BRING OUT THE OUTLOOK FOR THE MORE DISTANT FUTURE AND TO INVESTIGATE THE CONDITIONS REQUIRED FOR THE SUCCESSFUL CARRYING OUT OF THE PROGRAM.

AVAILABILITY - MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669

\*FUEL REPROCESSING + \*OPERATING EXPERIENCE + \*PLUTONIUM + FRANCE

13-14340

ABRAHAM GE + FINNEY RC

CALCULATED MAXIMUM TEMPERATURES OF SPENT YANKEE ATOMIC TYPE POWER REACTOR FUEL DURING SHEAR-LEACH PROCESSING

OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE

ORNL-3948 +. 81 PAGES, 40 FIGURES, 8 REFERENCES, NOVEMBER 1966

MAXIMUM TEMPERATURE CALCULATIONS FOR THE SHEAR-LEACH AND DISSOLUTION OPERATIONS OF A FUEL PROCESSING CYCLE USING YANKEE SUBASSEMBLIES INDICATED THAT THE EXCESSIVE TEMPERATURES THAT COULD PREVAIL WOULD NOT CREATE ANY SERIOUS PROCESSING PROBLEMS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.75 MICRONEGATIVE

\*FUEL HANDLING + \*HEAT TRANSFER ANALYSIS + \*RADIOCHEMICAL PLANT SAFETY + \*RADIOCHEMICAL PROCESSING + COMPUTER PROGRAM + DESIGN STUDY + FUEL BURNING + FUEL HANDLING MACHINES +  
ORNL (OAK RIDGE NATIONAL LABORATORY) + YANKEE

13-14341

GRANQUIST DP + SCHNEIDER RA

APPLICATION OF SAFEGUARDS TO NUCLEAR FUEL PROCESSING PLANTS

BATTELLE-NORTHWEST

BNWL-301 +. 52 PAGES, SEPTEMBER 1966

ARTICLE II OF THE STATUTE OF THE INTERNATIONAL ATOMIC ENERGY AGENCY STATES THAT THE AGENCY SHALL ENSURE, SO FAR AS IT IS ABLE, THAT ASSISTANCE PROVIDED BY IT OR AT ITS REQUEST OR UNDER ITS SUPERVISION OR CONTROL IS NOT USED IN SUCH A WAY AS TO FURTHER ANY MILITARY PURPOSE. TO IMPLEMENT THIS RESPONSIBILITY, THE AGENCY AND ONE OR MORE MEMBER STATES ENTER INTO SAFEGUARD AGREEMENTS IN WHICH THE MEMBER STATE(S) AGREES NOT TO USE CERTAIN ITEMS IN SUCH A WAY AS TO FURTHER ANY MILITARY PURPOSE, AND ALSO AGREES TO ALLOW THE AGENCY THE RIGHT TO REQUIRE COMPLIANCE WITH SUCH AN UNDERTAKING. COMPELLING REASONS NECESSITATE CAREFUL STUDY OF SAFEGUARDS APPLICATIONS TO NUCLEAR FUEL PROCESSING PLANTS. THE EVER-INCREASING USE OF NUCLEAR ENERGY, ESPECIALLY FOR ELECTRICITY PRODUCTION, WILL RESULT IN THE BY-PRODUCT PRODUCTION OF TONS OF PLUTONIUM ON A WORLD-WIDE BASIS. THIS REPORT CONTAINS A DISCUSSION OF THE FOLLOWING ITEMS - (1) SAFEGUARDS PROBLEMS IN TYPICAL FUEL-PROCESSING PLANTS, (2) INSPECTION PROCEDURES, (3) MEASUREMENT AND ACCOUNTING PROCEDURES, AND (4) EFFECTIVENESS OF MATERIAL BALANCE CONTROL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.50 MICRONEGATIVE

HANFORD SITE + INSPECTION AND COMPLIANCE + RADIOCHEMICAL PROCESSING + RELIABILITY ANALYSIS + SAFETY ANALYSIS REPORT, GENERAL

13-14342

GRANQUIST DP + SCHNEIDER RA

A MODEL SAFEGUARDS LABORATORY. AN APPENDIX TO BNWL-301 - APPLICATION OF SAFEGUARDS TO NUCLEAR FUEL PROCESSING PLANTS

BATTELLE-NORTHWEST

BNWL-301(APP.) +. 10 PAGES, SEPTEMBER 1966

REPORT IS AN APPENDIX TO BNWL-301.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$1.00 COPY, \$0.50 MICRONEGATIVE

HANFORD SITE + INSPECTION AND COMPLIANCE + RADIOCHEMICAL PROCESSING + RELIABILITY ANALYSIS + SAFETY ANALYSIS REPORT, GENERAL

13-14343

KESFL GP + LAWS RB

SEMI-REMOTELY MAINTAINED PLUTONIUM RECLAMATION FACILITY

ISOCHEM INC., RICHLAND, WASHINGTON

ISO-SA-14 + CONF-661001-15 +. 30 PAGES, JULY 8, 1966, PRESENTED AT THE 14TH CONFERENCE ON REMOTE SYSTEMS TECHNOLOGY, PITTSBURGH, PENNSYLVANIA

CATEGORY 13  
RADIOCHEMICAL PLANT SAFETY

13-14343 \*CONTINUED\*

THE PLUTONIUM RECLAMATION FACILITY, BUILT AT THE RICHLAND OPERATION IN 1964, UTILIZED A SEMI-REMOTELY MAINTAINED FACILITY CONCEPT AND OTHER UNIQUE FEATURES IN ITS DESIGN. EQUIPMENT CONTAINING LARGE RADIATION SOURCES IS CONFINED TO A CONCRETE CELL AND MOUNTED ON DUNNAGE WITH PLUGS THAT MATCH HOLES IN THE WALLS. PIPING AND ELECTRICAL LEADS PASS THROUGH THE PLUGS AND TERMINATE IN A STAINLESS-STEEL-FACED GLOVE BOX. PERSONNEL ARE THUS EXPOSED TO ONLY LIMITED RADIATION FROM SMALL-DIAMETER INTERCONNECTING PIPING, VALVES, PUMPS, CONTROLLERS, ETC., HOUSED IN THE GLOVE BOX. OPERATION AND MAINTENANCE EXPERIENCE HAS DEMONSTRATED THE SOUNDNESS OF THE DESIGN CONCEPTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$2.00 COPY, \$0.50 MICRONEGATIVE

\*ISOCHEM, INC. + \*PLUTONIUM + \*RADIOCHEMICAL PROCESSING + HANFORD SITE + RADIOCHEMICAL PLANT SAFETY

13-14344 ALSO IN CATEGORY 12

LANDLER G  
SECONDARY SODIUM PIPING DESIGN WITHOUT BELLOW. SODIUM COMPONENT TEST FACILITY FEASIBILITY STUDY REPORT  
ATOMICS INTERNATIONAL, CANOGA PARK, CALIFORNIA  
NAA-SR-MEMO-11941 +. 88 PAGES, MAY 2, 1966

BELLOW-FREE DESIGN OF THE SECONDARY SODIUM SYSTEM IN THE SCTI IS FEASIBLE. THE RESULT OF THE STUDY IS AN ISOMETRIC LAY-OUT OF THE SODIUM INLET AND OUTLET LINES OF THE B AND W STEAM GENERATOR, WITHOUT BELLOW TYPE EXPANSION JOINTS, AS SHOWN IN APPENDIX A. THE FEASIBILITY STUDIES PERFORMED ON THESE PIPING CONFIGURATIONS DEMONSTRATED COMPLIANCE WITH THE REQUIREMENTS OF THE AMERICAN STANDARD CODE FOR PRESSURE PIPING ASA 831.1 AND WITH THE MANUFACTURERS REQUIREMENTS ASSURING STRUCTURAL INTEGRITY OF THE PROCESS EQUIPMENT. A REVIEW BY THE C. F. BRAUN AND COMPANY HAS FOUND THE PIPING CONFIGURATIONS REASONABLE AND SOUND. SUPPORTING STUDIES RELATED TO THE ADEQUACY OF THE EQUIPMENT ARRANGEMENT AND TO COMPLIANCE WITH PROCESS REQUIREMENTS ARE INCLUDED IN THIS REPORT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.75 MICRONEGATIVE

\*ATOMICS INTERNATIONAL + \*DESIGN STUDY + \*EQUIPMENT DESIGN + PIPING + SODIUM

13-14345

BURCH WD + PEISHEL FL + YARBRO OC  
PHILOSOPHY OF CHEMICAL PROCESSING EQUIPMENT DESIGN AND INSTALLATION IN THE TRANSURANIUM PROCESSING PLANT  
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE  
ORNL-P-2406 + CONF-661001-19 +. 22 PAGES, 1966, PRESENTED AT THE 14TH CONFERENCE ON REMOTE SYSTEMS  
TECHNOLOGY, PITTSBURGH, PENNSYLVANIA

THE CHEMICAL PROCESSING OF THE ALPHA-ACTIVE TRANSURANIC ELEMENTS IN THE TRANSURANIUM PROCESSING PLANT (TRU), A FACILITY THAT MUST ALSO PROVIDE GAMMA AND NEUTRON SHIELDING, HAS NECESSITATED THE DEVELOPMENT OF UNIQUE METHODS OF EQUIPMENT FABRICATION AND INSTALLATION. THESE METHODS OVERCAME THE PROBLEMS ENCOUNTERED IN THE USE OF HARD-TO-FABRICATE MATERIALS, SUCH AS ZIRCALOY AND TANTALUM, AND PROVIDED A SYSTEM IN WHICH THIS EQUIPMENT MAY BE REMOTELY REPLACED WHILE MAINTAINING ALPHA CONTAINMENT. ALL PROCESSING EQUIPMENT, INCLUDING THE ENTIRE PIPING SYSTEM, WAS SHOP-FABRICATED CONCURRENTLY WITH THE CONSTRUCTION OF THE FACILITY. THE METHODS USED WILL ALLOW THIS EQUIPMENT TO BE REMOVED LATER AND TO BE REPLACED BY REMOTE TECHNIQUES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$1.00 COPY, \$0.50 MICRONEGATIVE

\*EQUIPMENT DESIGN + \*MAINTENANCE AND REPAIR + \*ORNL (OAK RIDGE NATIONAL LABORATORY) + \*TRANSURANIUM PROGRAM + RADIOCHEMICAL PLANT SAFETY + RADIOCHEMICAL PROCESSING

13-14346 ALSO IN CATEGORY 11

KING LJ + MATHERNE JL  
CONTAINMENT OF RADIOACTIVE MATERIAL IN THE TRANSURANIUM PROCESSING PLANT  
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE  
ORNL-P-2408 + CONF-661001-21 +. 19 PAGES, 1966, PRESENTED AT THE 14TH CONFERENCE ON REMOTE SYSTEMS  
TECHNOLOGY, PITTSBURGH, PENNSYLVANIA

CONTAINMENT OF RADIONUCLIDES IN THE TRANSURANIUM PROCESSING PLANT IS COMPLICATED BECAUSE MANY OF THE ISOTOPES OF THE TRANSURANIUM ELEMENTS HAVE HIGH SPECIFIC TOXICITY AND BECAUSE THE PLANT AND EQUIPMENT MUST BE CAPABLE OF ACCOMMODATING EXTENSIVE CHANGES. CELL PROCESS EQUIPMENT IS ENCLOSED IN THE PRIMARY CELLS, WHICH IN TURN ARE ENCLOSED BY THE BUILDING SHELL. EACH ENCLOSURE IS SEPARATELY VENTILATED WITH DIFFERENTIAL PRESSURES, MAINTAINED AUTOMATICALLY, SO THAT EACH ENCLOSURE IS AT A LOWER PRESSURE THAN ITS IMMEDIATE ENVELOPE. VARIOUS DEVICES, ALL MODIFICATIONS OF BAGGING TECHNIQUES, ARE USED TO TRANSFER MATERIALS AND TO PERFORM MAINTENANCE THROUGH THE CONTAINMENT BARRIERS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$1.00 COPY, \$0.50 MICRONEGATIVE

\*CONTAINMENT STRUCTURE + \*CONTAINMENT, GENERAL + \*ORNL (OAK RIDGE NATIONAL LABORATORY) + \*TRANSURANIUM PROGRAM + CONTAINMENT AIR LOCK + RADIOCHEMICAL PLANT SAFETY + RADIOCHEMICAL PROCESSING

CATEGORY 13  
RADIOCHEMICAL PLANT SAFETY

13-14446 ALSO IN CATEGORIES 12 AND 18  
APPLICATION FOR LICENSES FPCE PLANT AMENDMENT NO. 2  
ISOICHEM INC.  
360 PAGES, OCTOBER 17, 1966, DOCKET NO. 50-258

REPORT GIVES GENERAL AND DETAILED TECHNICAL INFORMATION NEEDED FOR LICENSING OF A  
RADIOCHEMICAL PLANT. SEE ORIGINAL APPLICATION.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*APPLICATION FOR AEC LICENSE + \*CERIUM + \*CESIUM + \*FPCE PLANT + FISSION PRODUCT, SEPARATION FROM WASTE +  
HAZARDS ANALYSIS + ISOICHEM, INC. + PROMETHIUM + RADIOCHEMICAL PLANT SAFETY + RADIOCHEMICAL PROCESSING +  
SAFETY ANALYSIS REPORT, GENERAL + STRONTIUM

13-14727 ALSO IN CATEGORIES 17 AND 18  
NUCLEAR FUEL SERVICES CITED FOR NONCOMPLIANCES  
NUCLEAR FUEL SERVICES, INC.  
3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(7) PAGES 22-24 (FEBRUARY 13, 1967) DOCKET NO. 50-201

VARIOUS VIOLATIONS ARE NOTED, MOSTLY WASTE DISCHARGE WITHOUT PROPER MONITORING, FOLLOWING AN  
OCTOBER COMPLIANCE INSPECTION. ABSENCE OF SAFETY COMMITTEE REVIEWS OR OPERATING PROBLEM  
INVESTIGATIONS, AND USE OF PARTS FROM STANDBY EQUIPMENT RATHER THAN SPARE PARTS INDICATES,  
AMONG OTHER ITEMS, THAT NUMEROUS FILTER FAILURES DUE TO HIGH DELTA P SHOW THAT THE STACK  
MONITOR IS AS SENSITIVE AS THE DOP TEST. FAILURE OF THE TOP LAYER OF HIGH-EFFICIENCY GLASS  
WOOL OCCURRED.

\*INSPECTION AND COMPLIANCE + \*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + FAILURE, ADMINISTRATIVE CONTROL +  
FILTER OPERATION + FILTER, DAMAGED + FUEL REPROCESSING + MONITOR, RADIATION, STACK +  
NFS (NUCLEAR FUEL SERVICES) + TEST, DOP FILTER

13-14728 ALSO IN CATEGORIES 17 AND 18  
LEWIS WH  
POTENTIAL INHALATION INCIDENT AT NFS, OCTOBER 1966  
NUCLEAR FUEL SERVICE  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(7) PAGES 24-25 (FEBRUARY 13, 1967) DOCKET NO. 50-201

TWO SUBCONTRACTOR EMPLOYEES SANDBLASTED A VAULT WITHOUT THE RESPIRATORY EQUIPMENT ORDERED BY A  
NFS FOREMAN. (THE VAULT HAD PREVIOUSLY BEEN DECONTAMINATED TO A MAXIMUM SURFACE READING OF  
23 MR/HR). TWO WEEKS LATER, SODIUM IODIDE COUNTS (GAMMA RAYS ABOVE 100 KEV) WERE ONLY 1  
PERCENT ABOVE CONTROLS. ALL SUBCONTRACT WORK NOW MUST HAVE A SPECIAL WORK PERMIT.

\*FAILURE, ADMINISTRATIVE CONTROL + \*INCIDENT, ACTUAL, HUMAN ERROR + FUEL REPROCESSING + INHALATION +  
NFS (NUCLEAR FUEL SERVICES)

13-14808 ALSO IN CATEGORIES 17 AND 18  
DRL ADVISES IMPROVEMENTS TO NFS ADMINISTRATIVE CONTROL  
DIVISION OF REACTOR LICENSING  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(8), PAGES 6-7 (FEBRUARY 20, 1967)

DRL HAS BECOME INCREASINGLY CONCERNED ABOUT SPREAD OF LOW-LEVEL CONTAMINATION, LACK OF  
INTERNAL COMMUNICATION, AND VARYING DEGREE OF EFFECTIVENESS OF CORRECTIVE ACTIONS. NEW  
DEFICIENCIES ARE FOUND AT EACH INSPECTION, SIMILAR TO PAST ONES. DRL REQUESTS MODIFICATIONS  
TO MANAGEMENT SYSTEM AND FACILITY SUFFICIENT TO DEMONSTRATE IN 60 DAYS THAT ABNORMAL  
SITUATIONS CAN BE PREVENTED OR CONTROLLED. DRL WILL SEND PROPOSED TECHNICAL-SPECIFICATION  
REVISIONS FOR RADIOACTIVE-EFFLUENT CONTROL, SINCE THIS HAS BEEN HANDLED DIFFERENTLY FROM THE  
FINAL SAFETY-ANALYSIS REPORT.

\*ADMINISTRATIVE CONTROLS AND PRACTICES + \*WASTE DISPOSAL, GENERAL + EFFLUENT + FUEL REPROCESSING +  
INSPECTION AND COMPLIANCE + MONITOR, RADIATION, STACK + NFS (NUCLEAR FUEL SERVICES) +  
OPERATING LIMITS/TECHNICAL SPECIFICATIONS

13-14866 ALSO IN CATEGORIES 3 AND 1  
KOLAR OC + MORTON JR + PRUVOST NL  
INTERACTION IN ARRAYS OF FISSIONABLE MATERIALS  
LAWRENCE RADIATION LABORATORY  
UCRL-14245 + CONF-651103-12 +. 32 PAGES, OCTOBER 5, 1965, FROM IAEA SYMPOSIUM ON CRITICALITY CONTROL OF  
FISSIONABLE MATERIALS, STOCKHOLM

A PROGRAM TO STUDY THE INTERACTION EFFECT IN ARRAYS OF FISSIONABLE MATERIALS WAS STARTED AT  
LAWRENCE RADIATION LABORATORY. THE PROGRAM CONSISTS OF EXPERIMENTAL AND THEORETICAL EFFORTS.  
THE PARTICULAR ARRAYS BEING STUDIED EXPERIMENTALLY ARE COMPOSED OF PU METAL UNITS. ARRAY  
GEOMETRIES ARE SIMPLE. THE BASIC UNITS ARE CYLINDERS, AND THE ARRAYS ARE CUBICAL. BARE  
ARRAYS ARE BEING STUDIED, AS WELL AS THOSE WITH INTERNAL MODERATION OR EXTERNAL REFLECTION.  
130 BASIC UNITS ARE AVAILABLE SO THAT ARRAYS UP TO 5 X 5 X 5 IN SIZE CAN BE STUDIED.

CATEGORY 13  
RADIOCHEMICAL PLANT SAFETY

13-14866 \*CONTINUED\*

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*CRITICALITY SAFETY + \*PLUTONIUM + CRITICALITY EXPERIMENT + NEUTRON INTERACTION + THEORETICAL INVESTIGATION

13-14868 ALSO IN CATEGORIES 3 AND 1

LANE RC + PERKINS OJE  
MEASUREMENT OF THE CRITICAL MASS OF 37 1/2 PERCENT ENRICHED URANIUM IN REFLECTORS OF WOOD, CONCRETE, POLYETHYLENE AND WATER  
ATOMIC WEAPONS RESEARCH ESTABLISHMENT, ALDERMASTON, ENGLAND  
AWRE-NR-1766 +. 20 PAGES, 8 FIGURES, 8 TABLES, 3 REFERENCES, FEBRUARY 1966

THIS REPORT DESCRIBES THE EXPERIMENTAL ARRANGEMENTS USED IN ATLAS, A VERTICAL ASSEMBLY MACHINE FOR MEASUREMENT OF THE CRITICAL MASS OF 37-1/2 PERCENT ENRICHED URANIUM IN REFLECTORS OF WOOD, CONCRETE, POLYETHYLENE, AND WATER. DATA PRESENTED INDICATES THE SIZES OF THE UNIFORMLY REFLECTED CRITICAL SYSTEMS, OBTAINED BY EXTRAPOLATION OF THE RECIPROCAL COUNT RATES AS DESCRIBED ABOVE. THE STANDARD DEVIATION OF THE ERRORS IN THE CRITICAL DIMENSIONS DUE TO UNCERTAINTY OF EXTRAPOLATION AND TO THE STATISTICS OF COUNTING ARE PLUS OR MINUS 0.005 PLUS OR MINUS 0.013 CM. THE STANDARD DEVIATIONS OF THE ERRORS OF MEASUREMENTS OF CORE DIMENSIONS, ESTIMATED FROM MEASUREMENTS OF THE HEIGHT OF STACKS OF FUEL PLATES (20 CM HIGH) ARE 0.021 CM, THE MAXIMUM ERROR RECORDED BEING 0.05 CM.

AVAILABILITY - BRITISH INFORMATION SERVICE, 845 THIRD AVENUE, NEW YORK, NEW YORK 10022, \$1.40 COPY

\*CRITICALITY SAFETY + \*REFLECTOR + FUEL ELEMENT + URANIUM

13-15007 ALSO IN CATEGORIES 17 AND 18

NUCLEAR FUEL SERVICES PLANT SHUTDOWN, FEBRUARY 17  
NUCLEAR FUEL SERVICES, INC., WHEATON

1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(10), PAGE 26 (MARCH 6, 1967) DOCKET NO. 50-101

NFS WILL SHUT DOWN FOR 30 DAYS FOR MAINTENANCE AND EXAMINE OPERATIONS FROM VIEW POINT OF AEC FEBRUARY 7 LETTER. A LETTER 14 FEBRUARY RELATED AN ACCIDENTAL TRANSFER OF LOW-LEVEL WASTE SOLUTIONS TO THE WASTE INTERCEPTOR.

\*ADMINISTRATIVE CONTROLS AND PRACTICES + \*INCIDENT, ACTUAL, HUMAN ERROR + FUEL REPROCESSING + NFS (NUCLEAR FUEL SERVICES) + WASTE HANDLING

13-15008 ALSO IN CATEGORIES 17 AND 18

NUCLEAR FUEL SERVICES TO REORGANIZE PLANT OPERATIONS, FEBRUARY 11, 1967  
NUCLEAR FUEL SERVICES, INC., WHEATON

1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(10), PAGES 26 (MARCH 6, 1967) DOCKET NO. 50-201

NFS REPLY TO AEC LETTER OF FEBRUARY 7 MENTIONS A FORTHCOMING REORGANIZATION AND APPOINTS DR. RUSSELL WISCHOW AS ASSISTANT GENERAL MANAGER FOR THE WEST VALLEY PLANT. HE WILL COORDINATE AEC MATTERS AND HAVE EXTENSIVE ADDITIONAL DUTIES.

\*ADMINISTRATIVE CONTROLS AND PRACTICES + \*RADIATION SAFETY AND CONTROL + \*STAFFING, TRAINING, QUALIFICATION + NFS (NUCLEAR FUEL SERVICES) + RADIOCHEMICAL PROCESSING

13-15032 ALSO IN CATEGORY 12

BLACK R + WENTZ R  
1967 CONTAMINATION CONTROL DIRECTORY AND BUYERS GUIDE  
120 PAGES, BLACKWENT PUBLISHING COMPANY, 1967

1967 CONTAMINATION CONTROL DIRECTORY AND BUYERS GUIDE.

AVAILABILITY - BLACKWENT PUBLISHING COMPANY, 1605 CAHUENGA BLVD., LOS ANGELES, CALIFORNIA 90028, \$10.00 COPY

\*AIR CLEANING + \*EQUIPMENT DESIGN + \*FILTER + ADSORPTION + ATMOSPHERIC POLLUTION + DECONTAMINATION + FILTER PACK + MATERIAL + MONITOR, RADIATION, AIR

13-15082 ALSO IN CATEGORIES 17 AND 18

NUCLEAR FUEL SERVICES SIX DAY SHUTDOWN FEB. 14, 1967  
NUCLEAR FUEL SERVICES, WEST VALLEY, NEW YORK

1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(11), PAGE 35 (MARCH 13, 1967) DOCKET NO. 50-201

NUCLEAR FUEL SERVICES REPORTS FEB. 15 THAT A PIPE LEAK IN THE ACID-RECOVERY SYSTEM DURING WASTE SYSTEM TRANSFER RELEASED NEUTRALIZED EVAPORATION BOTTOMS, WHICH WERE CAUGHT BY INTERCEPTOR GATE (0.001 CURIE/LITER). LAGOON ITSELF SHOWED NO INCREASE IN ACTIVITY. NO OTHER RELEASES OR EXPOSURES OCCURRED.

\*FAILURE, PIPE + \*INCIDENT, ACTUAL, EQUIPMENT + EVAPORATION + NFS (NUCLEAR FUEL SERVICES) +

CATEGORY 13  
RADIOCHEMICAL PLANT SAFETY

13-15082 \*CONTINUED\*  
RADIOCHEMICAL PROCESSING + WASTE DISPOSAL; LIQUID + WASTE HANDLING

13-15244  
BOND WR + JANSEN G + MUDGE LK  
HANFORD SALT CYCLE PROCESS. II. ENGINEERING DEVELOPMENT IN A HIGH LEVEL RADIOCHEMICAL FACILITY  
GENERAL ELEC. CO., RICHLAND, WASHINGTON, HANFORD ATOMIC PRODUCTS OPERATION  
HW-SA-3527 +. 16 PAGES, AUGUST 17, 1964

THE SALT-CYCLE PROCESS IS BEING DEVELOPED AT HANFORD LABORATORIES TO REPROCESS UO<sub>2</sub>-PUO<sub>2</sub> FUELS FOR RECYCLE TO THERMAL HETEROGENEOUS REACTORS. ECONOMIES ARE SOUGHT BY PROCESSING SHORT-COOLED IRRADIATED FUEL WITH A MINIMUM NUMBER OF REMOTE MANIPULATIONS. THE PLUTONIUM CHEMISTRY OF THE PROCESS WAS REPORTED IN PART I OF THIS SERIES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*RADIOCHEMICAL PLANT SAFETY + \*RADIOCHEMICAL PROCESSING + HANFORD SITE + PLUTONIUM DIOXIDE + URANIUM DIOXIDE

13-15245 ALSO IN CATEGORY 12  
SMILEY SH + PASHLEY JH + SCHAPPEL RB  
ORGP FUEL REPROCESSING STUDIES SUMMARY PROGRESS REPORT. JANUARY THROUGH JUNE 1966  
OAK RIDGE NATIONAL LABORATORY  
K-1691 +. 60 PAGES, 11 FIGURES, 8 TABLES, JANUARY 18, 1967

THE OAK RIDGE GASEOUS DIFFUSION PLANT TECHNICAL DIVISION IS PARTICIPATING WITH ARGONNE AND OAK RIDGE NATIONAL LABORATORIES IN STUDIES OF A GROUP OF PROCESSES AIMED AT PURIFYING AND RECOVERING URANIUM AND PLUTONIUM FROM SPENT REACTOR FUELS. THE ORGP PORTION OF THE PROGRAM INCLUDES TWO MAIN PHASES - (A) PREPARATION OF CONCEPTUAL PLANT STUDIES WITH CONCOMITANT DEFINITION OF PROBLEM AREAS ASSOCIATED WITH THE PROCESS AND TECHNOLOGY AND PLANT DESIGN, AND (B) COMPONENT DEVELOPMENT, INCLUDING SCALEUP AND TESTING OF CRUCIAL PROCESS EQUIPMENT AND AUXILIARIES. THE CURRENT REPORT IS THE THIRD IN A SERIES OF PROGRESS REPORTS TO BE ISSUED SEMIANNUALLY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*DESIGN STUDY + \*EQUIPMENT DESIGN + \*FLUIDIZED BED + \*FLUORIDE VOLATILITY PROCESSES + \*FLUORINE + \*RADIOCHEMICAL PROCESSING + \*SORPTION + CORROSION + CRITICALITY SAFETY + FILTER DESIGN + PLUTONIUM + URANIUM + VALVE

13-15246 ALSO IN CATEGORY 12  
GOTTWALD WL  
DISCHARGE VALVE FOR FLUIDIZED BED REACTOR OPERATING IN A HIGH RADIATION FIELD  
ARGONNE NATIONAL LABORATORY  
1 PAGE, 1 FIGURE, 1 REFERENCE, NUCLEAR APPLICATIONS 2(5), PAGE 429, (DEC. 1966)

BUILDUP OF FISSION PRODUCTS IN A FLUIDIZED-BED REACTOR IS PREVENTED BY PERIODICALLY DISCHARGING THE ALUMINA SOLIDS THROUGH A VALVE LOCATED AT THE BOTTOM OF THE REACTOR BED. THIS VALVE WAS DESIGNED TO WITHSTAND INTENSE RADIATION AND ABRASION FROM THE ALUMINA SOLIDS, TO BE MAINTAINED BY USE OF MASTER-SLAVE MANIPULATOR, AND PERMIT STRAIGHT-THROUGH RODDING OF A CAKED BED.

\*EQUIPMENT DESIGN + \*FLUIDIZED BED + \*VALVE + FLUORIDE VOLATILITY PROCESSES + RADIOCHEMICAL PROCESSING

13-15247 ALSO IN CATEGORY 12  
COCHRAN J + PIERSON G  
QUEHANNA PILOT PLANT FIRST GENERATION PROCESS OPERATIONS  
MARLIN COMPANY, BALTIMORE, MD.  
MND-3062-22 +. 54 PAGES, FIGURES, 19 REFERENCES, MAY 1965

DURING THE LIFE OF THE ORIGINAL EQUIPMENT, OVER A MILLION CURIES OF STRONTIUM-90 WERE PROCESSED. SNAP 7B AND SNAP 7F THERMOELECTRIC GENERATORS WERE LOADED AT QUEHANNA WITH APPROXIMATELY 1/4 MILLION CURIES EACH. THE BALANCE OF THE MATERIAL WAS PLACED IN UNDERWATER STORAGE. MANY IMPROVEMENTS WERE MADE IN EQUIPMENT DESIGN AND MATERIAL FOR GREATER VERSATILITY, DEPENDABILITY, AND OPERATING EFFICIENCY. ALL THE FOREGOING WAS ACCOMPLISHED WITHOUT RADIATION-ASSOCIATED INJURY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*HOT CELL + \*RADIOCHEMICAL PLANT SAFETY + \*RADIOCHEMICAL PROCESSING + \*STRONTIUM + OPERATIONS REPORT, GENERAL + SNAP, GENERAL (SYSTEMS FOR NUCLEAR AUX. POWER)

CATEGORY 13  
RADIOCHEMICAL PLANT SAFETY

13-15326 ALSO IN CATEGORY 3  
HOFFMAN TL  
STAINLESS STEEL TANKS FOR RADIOACTIVE WASTE STORAGE  
IDAHO NUCLEAR CORPORATION, IDAHO FALLS, IDAHO  
3 PAGES, 1 FIGURE, 1 TABLE, 8 REFERENCES, MATERIALS PROTECTION, 5(10), PAGES 13-15, (OCTOBER 1966)

AT THE IDAHO CHEMICAL PROCESSING PLANT, IDAHO FALLS, STAINLESS-STEEL TANKS ARE USED FOR LONG-TERM INTERIM STORAGE OF ACIDIC, RADIOCHEMICAL WASTES PRIOR TO THEIR CONVERSION TO SOLID BY FLUIDIZED BED CALCINATION. THESE TANKS (SEVEN 300,000-GALLON, TWO 30,000-GALLON) ARE CONTAINED IN CONCRETE VAULTS 10 FT UNDERGROUND AND CONTAIN MILLIONS OF CURIES OF FISSION PRODUCTS. THEY ARE DESIGNED SO THAT LEAKAGE WILL BE COLLECTED IN THE CONCRETE VAULTS AND JETTED TO AN EMPTY STANDBY TANK. ALL VESSELS ARE TUNGSTEN-INERT-GAS WELDED, AND THREE TYPES OF STAINLESS STEELS ARE USED (348, 304L, AND 316ELC). THE TANKS WERE WELL CHOSEN TO CONTAIN ACIDIC RADIOCHEMICAL WASTES. CONTINUOUS CORROSION TESTING OF ALL FORMS OF MATERIALS IN TANK CONSTRUCTION--TYPES 348, 304L, AND 316ELC STAINLESS STEEL--SHOWS MINIMUM CORROSION AND DETECTS EARLY LOCALIZED ATTACK.

\*WASTE STORAGE + STEEL, STAINLESS + STORAGE CONTAINER + TEST, NONDESTRUCTIVE + WASTE DISPOSAL, TERRESTRIAL + WELDING

13-15330 ALSO IN CATEGORY 9  
HENSLEY G  
SAFETY CONSIDERATIONS IN THE INSTRUMENTATION OF A NUCLEAR FUEL RE-PROCESSING PLANT  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, AUTHORITY HEALTH AND SAFETY BRANCH  
AHSR (S) P94 +. 8 PAGES, 3 FIGURES, 3 REFERENCES, 1965

PRESENTS A GENERAL REVIEW OF THE DESIGN POLICIES FOR INSTRUMENTATION IN A FUEL REPROCESSING PLANT. THIS INCLUDES MONITORS FOR A NUCLEAR INCIDENT, GENERAL-ENVIRONMENT MONITORING, AND CONSIDERATIONS CONCERNING THE ELECTRICAL AND INSTRUMENT-AIR SUPPLIES TO THE PROCESS INSTRUMENTS.

AVAILABILITY - UNITED KINGDOM ATOMIC ENERGY AUTHORITY, 11 CHARLES II STREET, LONDON, S. W. 1

\*DESIGN CRITERIA + \*INSTRUMENTATION, PROCESS + \*MONITOR, RADIATION, GENERAL PRACTICE + INSTRUMENTATION, GENERAL + MONITOR, RADIATION, ENVIRONMENTAL

13-15841 ALSO IN CATEGORIES 7 AND 12  
MISHIMA J  
PLUTONIUM RELEASE STUDIES. II. RELEASE FROM IGNITED, BULK METALLIC PIECES.  
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON  
BNWL-357 +. 22 PAGES, TABLES, REFERENCES, NOVEMBER 10, 1966

METALLIC PLUTONIUM PIECES RANGING IN WEIGHT FROM 455.5 TO 1770 WERE IGNITED AND ALLOWED TO OXIDIZE COMPLETELY IN AIR WITH A VELOCITY OF 525 CM/SEC. RELEASE RATES OF 0.032 TO 0.0045 WEIGHT PERCENT PER HR WERE FOUND FOR THE BARE METAL. COVERING THE IGNITED METAL DURING OXIDATION WITH MAGNESIUM OXIDE SAND REDUCES THE RELEASE TO 0.00029 WEIGHT PERCENT PER HR. THE MEDIAN MASS DIAMETER OF THE PARTICLES AIRBORNE DURING THE RELEASE FROM THE BARE METAL WAS FOUND TO BE 4.2 MICRONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

AIR + AIRBORNE RELEASE + FIRE + FUEL REPROCESSING + IGNITION + METAL + OXIDATION + PARTICULATE + PLUTONIUM + RADIOCHEMICAL PLANT SAFETY

13-15903  
BRESEE JC + LONG JT  
DESIGN PHILOSOPHY FOR DIRECT-MAINTENANCE RADIOCHEMICAL PROCESSING PLANTS  
OAK RIDGE NATIONAL LABORATORY  
ORNL-TM-153 +. 24 PAGES, 5 FIGURES, 5 TABLES, 10 REFERENCES, MARCH 7, 1962, CHEMICAL ENGINEERING PROGRESS, 60, SYMPOSIUM SERIES NO. 51, PAGES 15-21, (1964), NUCLEAR CONGRESS SESSION, RADIOCHEMICAL PROCESSING OF IRRADIATED REACTOR FUELS, NEW YORK, JUNE 4-7, 1962. PREPRINT PAPER NO. 80, NEW YORK ENGINEERS JOINT COUNCIL

THE PURPOSE OF THE PAPER IS TO DESCRIBE THE DESIGN PHILOSOPHY OF POWER REACTOR FUEL PROCESSING PLANTS USING DIRECT-MAINTENANCE TECHNIQUES. IN CONTRAST TO OLDER COMPARISONS BETWEEN COMPLETELY REMOTE AND CONTACT-MAINTAINED PLANTS, A SPECTRUM OF CHOICES IS PRESENTED WITHIN WHICH THE ENGINEER MAY OPTIMIZE THE PLANT DESIGN. OPTIMUM DESIGN DEPENDS TO A CONSIDERABLE EXTENT ON A COMPARISON OF EQUIPMENT AND PROCESS LIFE. AN ESTIMATED PROBABILITY FUNCTION FOR TROUBLE-FREE PLANT OPERATION IS PRESENTED AS AN EXAMPLE OF THE REQUIRED DESIGN INFORMATION. IN A DISCUSSION OF THE INFLUENCE OF PLANT MAINTENANCE DESIGN ON SAFETY, CONTAINMENT CRITERIA AND CALCULATION METHODS ARE EMPHASIZED WHICH CAN PROVIDE ACCEPTABLE PLANT SAFETY INDEPENDENT OF THE MAINTENANCE METHOD. MAINTENANCE DESIGNS OF TWO NEW RADIOCHEMICAL PLANTS ARE DISCUSSED BRIEFLY.

\*MAINTENANCE AND REPAIR + DESIGN STUDY + RADIOCHEMICAL PLANT SAFETY + RADIOCHEMICAL PROCESSING



CATEGORY 13  
RADIOCHEMICAL PLANT SAFETY

13-15918 ALSO IN CATEGORIES 3 AND 17  
SPONTANEOUS IGNITION OF URANIUM FOILS  
DIVISION OF OPERATIONAL SAFETY, USAEC  
2 PAGES, 1 FIGURE, SERIOUS ACCIDENTS BULLETIN NO. 278 (MARCH 17, 1967)

A CONTAINER WAS OPENED TO REMOVE 32 UNALLOYED 93% ENRICHED URANIUM FOILS FOR TRANSFER TO A DIFFERENT CONTAINER. LESS THAN A MINUTE AFTER THE FOILS WERE REMOVED, AND WHILE 25 FOILS WERE STILL HANDHELD, THE ENVELOPES BROKE OUT IN FLAMES. THE FIRE WAS EXTINGUISHED WITHOUT DAMAGE TO THE FACILITY, AND THE WORKERS DID NOT RECEIVE INTERNAL DEPOSITION EXCEEDING PERMISSIBLE LEVELS. THERE IS EVIDENCE THAT STORAGE OF URANIUM IN LOW-OXYGEN-CONTENT ATMOSPHERES, PARTICULARLY IN THE PRESENCE OF SMALL AMOUNTS OF WATER VAPOR, CAN LEAD TO SELF-IGNITION ON EXPOSURE TO AIR.

AVAILABILITY - AEC DIVISION OF PUBLIC INFORMATION, WASHINGTON, D. C. 20545

\*ACCIDENT, GENERAL + FIRE + FUEL STORAGE + IGNITION + URANIUM

13-15942 ALSO IN CATEGORIES 7 AND 12  
BAKER L + BINGLE JD  
THE KINETICS OF OXIDATION OF URANIUM BETWEEN 300 AND 625 C  
ARGONNE NATIONAL LABORATORY, ARGONNE ILLINOIS  
11 PAGES, 7 FIGURES, 5 TABLES, JOURNAL OF NUCLEAR MATERIALS 20(1), PAGES 11-21 (JULY, 1966)

STUDIES OF THE ISOTHERMAL OXIDATION OF URANIUM IN THE 300 TO 625 C RANGE WERE CARRIED OUT IN A METAL HEAT-SINK REACTION CELL DESIGNED TO MINIMIZE SELF-HEATING. DATA WITH TWO SOURCES OF PURE URANIUM AS WELL AS 1 AT.% COPPER AND 1 AT.% ALUMINUM ALLOYS OF URANIUM SHOWED SUBSTANTIALLY IDENTICAL SELF-ACCELERATING REACTION RATES UP TO 400 C. OXIDATION OF PURE URANIUM AND THE COPPER ALLOY UNDERWENT A TRANSITION TO A SLOWER REACTION IN WHICH THE OXIDE WAS SOMEWHAT PROTECTIVE ABOVE 500 C, WITH THE COPPER ALLOY CONSIDERABLY MORE PROTECTIVE THAN THE PURE METAL. THE SELF-ACCELERATING REACTION CONTINUED TO HIGHER TEMPERATURES FOR THE ALUMINUM ALLOY. THE RESULTS OF ISOTHERMAL OXIDATION STUDIES FOR THE BETA-QUENCHED PURE URANIUM METAL WERE EXPRESSED IN THE FORM OF EMPIRICAL EQUATIONS.

\*ALLOY + \*ALUMINUM + \*CHEMICAL KINETICS + \*COPPER + \*OXIDATION + FIRE + URANIUM

13-15951  
BUTZMAN RG + NEWBY BJ  
LABORATORY FEASIBILITY STUDIES OF AQUEOUS REPROCESSING OF ZIRCONIUM DIOXIDE-URANIUM DIOXIDE FUELS  
IDAHO NUCLEAR CORP., IDAHO FALLS  
IN-1069 +. 14 PAGES, 5 FIGURES, 4 TABLES, MARCH 1967

A THREE-STEP BATCH DISSOLUTION PROCESS FOR ZIRCALOY-CLAD ZIRCONIUM DIOXIDE-URANIUM DIOXIDE FUELS (SUCH AS PWR CORE 2 SEED 1) USING AQUEOUS HYDROFLUORIC ACID AND CHROMIC ACID SOLUTIONS IS PROPOSED, AND A CHEMICAL FLOWSHEET IS GIVEN WITH SUPPORTING DATA.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*DISSOLUTION + \*RADIOCHEMICAL PROCESSING + \*SOLVENT EXTRACTION PROCESS + CORROSION + IDAHO FALLS + REACTOR, PRESSURIZED WATER + SHIPPINGPORT + URANIUM DIOXIDE + WASTE TREATMENT, FIXATION + ZIRCALOY + ZIRCONIUM

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-13728  
GROVER JR  
SOLIDIFICATION AND LONG-TERM STORAGE OF HIGHLY RADIOACTIVE WASTES  
ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL, ENGLAND  
5 PAGES, 7 FIGURES, NUCLEAR ENGINEERING 11(120) PAGES 382-386 (MAY 1966)

THIS ARTICLE SURVEYS PROCESSES PROPOSED FOR USE IN SOLIDIFICATION AND LONG-TERM STORAGE OF HIGHLY RADIOACTIVE WASTES AND REVIEWS A SYMPOSIUM OF THE SAME TITLE HELD IN RICHLAND, WASHINGTON, FEBRUARY 14-18, 1966. PROCESSES FROM THE UNITED KINGDOM, FRANCE, THE U.S., GERMANY, AND EUROCHEMIC DISCUSSED.

\*WASTE MANAGEMENT + \*WASTE STORAGE + \*WASTE TREATMENT, FIXATION + CALCINATION + EUROCHEMIC + FRANCE + GERMANY + GLASS + UNITED KINGDOM + WASTE TREATMENT, ECONOMICS

14-13731  
POWER JP  
CHEMICAL AND PROCESS DEVELOPMENT BRANCH ANNUAL REPORT, FISCAL YEAR 1965  
PHILLIPS PETROLEUM COMPANY, IDAHO FALLS, IDAHO  
IDC-14661 +. 115 PAGES, 36 TABLES, 40 FIGURES, 84 REFERENCES, FEBRUARY 1966

THIS REPORT DESCRIBES THE MOST RECENT PROGRESS AT IDAHO FALLS IN PHILLIPS PETROLEUM COMPANY PROJECTS IN FUEL REPROCESSING, WASTE MANAGEMENT, AND REACTOR TECHNOLOGY SUPPORT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151 \$4.00 COPY, \$0.75 MICRONEGATIVE

\*FUEL REPROCESSING + \*IDAHO FALLS + \*WASTE MANAGEMENT + CALCINATION + CESIUM + DECONTAMINATION + HEAT TRANSFER + LOFT (LOSS OF FLUID TEST) + MONITOR, RADIATION, ENVIRONMENTAL + STRONTIUM + SURVEY, RADIATION, ENVIRONMENTAL + URANIUM + WASTE HANDLING + WASTE STORAGE + WASTE TREATMENT, FIXATION

14-13855  
STOLZENRACH CF  
CURRENT PRACTICES IN THE DISPOSAL OF WASTE RADIOACTIVE GASES FROM NUCLEAR REACTORS  
CONSOLIDATED EDISON COMPANY  
5 PAGES, 33 REFERENCES, NUCLEAR SAFETY 6(4), PAGES 436-440, (SUMMER 1965)

NUCLEAR REACTOR WASTE, THE REPORT REVIEWED HERE, IS ONE OF THREE SUMMARIES COMPLETED UNDER AMERICAN STANDARDS ASSOCIATION (ASA) SPONSORSHIP. THE WORK WAS CO-ORDINATED BY THE ASA NUCLEAR STANDARDS BOARD AND WAS LARGELY CARRIED OUT BY COMMITTEES REPRESENTING VARIOUS PHASES OF THE NUCLEAR INDUSTRY. THIS REVIEW ARTICLE IS A CONDENSATION OF THE ORIGINAL DOCUMENT (REVIEW OF CURRENT PRACTICES IN DISPOSAL OF WASTE RADIOACTIVE GASES FROM REACTORS, PREPARED BY ASA SUBCOMMITTEE N5.2, PUBLISHED BY AMERICAN INSTITUTE OF CHEMICAL ENGINEERS, NOVEMBER 1964), WHICH REVIEWS IN DETAIL THE DISPOSAL OF RADIOACTIVE GASES, INCLUDING THE SOURCES OF WASTE, MEANS OF DISPOSAL, LIMITATIONS OF DISPOSAL, AND CURRENT PRACTICES. THE FIRST OF THE THREE SUMMARIES, WHICH CONCERNED RADIOACTIVE-WASTE-DISPOSAL PRACTICES OF URANIUM MINES AND MILLS, WAS REVIEWED IN THE PREVIOUS ISSUE OF NUCLEAR SAFETY (VOLUME 6, NO. 3, PAGES 280-283). THE MEMBERSHIP OF THE GROUP INVOLVED IN PREPARATION OF THE ORIGINAL DOCUMENTS WAS GIVEN IN THAT REVIEW.

\*WASTE DISPOSAL, GAS + DILUTION + WASTE SOURCE AND TYPE + WASTE STORAGE + WASTE TREATMENT, GAS

14-13860  
BONNER WP + BEVIS HA + MORGAN JJ  
REMOVAL OF STRONTIUM FROM WATER BY ACTIVATED ALUMINA  
OAK RIDGE NATIONAL LAB., OAK RIDGE + UNIVERSITY OF FLA. + CALIF. INSTITUTE OF TECHNOLOGY  
13 PAGES, 9 FIGURES, 4 TABLES, 15 REFERENCES, HEALTH PHYSICS 12(12), PAGES 1691-1703, (DECEMBER 1966)

DATA ARE PRESENTED WHICH SHOW A MATHEMATICAL MODEL BASED ON THE LAW OF MASS ACTION TO BE APPLICABLE TO THE DESCRIPTION OF STRONTIUM REMOVAL FROM SOLUTIONS OF LOW IONIC STRENGTH BY ACTIVATED ALUMINA. USING RADIOCHEMICAL TECHNIQUES, THE CONCENTRATION OF STRONTIUM AND ALUMINA, THE PRESENCE OF COMPETING CATIONS, TOTAL IONIC STRENGTH, AND PH ARE SHOWN TO BE THE FACTORS CONTROLLING ADSORPTION. THE USE OF ACTIVATED ALUMINA FOR REMOVING STRONTIUM FROM NATURAL WATERS INDICATES THAT GREATER THAN 90% REMOVAL CAN BE OBTAINED WHEN THE CONCENTRATION OF CALCIUM AND STRONTIUM IS WITHIN THE RANGE OF CONCENTRATIONS NORMALLY FOUND IN WATER USED FOR HUMAN CONSUMPTION.

\*MINERAL EXCHANGE + \*STRONTIUM + ION EXCHANGE + WASTE TREATMENT, LIQUID

14-13913  
ROBERTSON DE  
THE REDUCTION OF REACTOR EFFLUENT WATER RADIONUCLIDES BY THE ADDITION OF SODIUM SILICATE TO PROCESS WATER.  
1050 HALF PLANT ADDITION  
BATTELLE-NORTHWEST, RICHLAND  
RNWL-282 +. 14 PAGES, 1 FIGURE, 2 TABLES, 22 REFERENCES, AUGUST 1966

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-13913 \*CONTINUED\*

RESEARCH AND DEVELOPMENT ON THE REDUCTION OF RADIONUCLIDES DISCHARGED TO THE COLUMBIA RIVER IN REACTOR EFFLUENT IS DESCRIBED. SODIUM SILICATE AS SiO<sub>2</sub> WAS ADDED TO THE PROCESS WATER SUPPLYING 1/2 OF THE D REACTOR AT AN AVERAGE CONCENTRATION OF 15 PPM, WHICH GRADUALLY REDUCED THE RADIONUCLIDE CONCENTRATION ENTERING THE COLUMBIA RIVER. AFTER THE 8TH MONTH EQUILIBRIUM WAS REACHED, AND THE LEVELS OF AS-76, CR-51, NP-239, P-32, SB-124, AND CU-64 WERE LOWERED BY FACTORS OF ABOUT 9.0, 7.0, 6.0, 3.0, 3.0 TO 5.0 AND 1.5 RESPECTIVELY. CONCENTRATION OF ZN-65 REMAINED UNCHANGED. THE ONLY SIGNIFICANT INCREASES WERE DUE TO NA-24, AND TRACE AMOUNTS OF LA-140 AND OTHER RARE-EARTH ELEMENTS. COBALT-60 AND SC-46 BEHAVED ERRATICALLY. THE STUDIES SUGGEST THAT IF SODIUM SILICATE WERE USED ON A FULL SCALE (5 REACTOR BASIS), RIVER CONCENTRATION OF RADIONUCLIDES COULD BE PROPORTIONALLY REDUCED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$1.00 COPY, \$0.50 MICROFICHE

\*WASTE TREATMENT, LIQUID + ANTIMONY + ARSENIC + BATTELLE NORTHWEST + CHROMIUM + COBALT + COPPER + LANTHANUM + NEPTUNIUM + PHOSPHORUS + RIVER, COLUMBIA + SODIUM + SURFACE WATER, NUCLIDE OCCURRENCE + WASTE DISPOSAL, PIPE + ZINC

14-13915

DISPOSITION AND CONTROL OF URANIUM MILL TAILINGS PILES IN THE COLORADO RIVER BASIN  
FEDERAL WATER POLLUTION CONTROL ADMINISTRATION, REGION VIII, DENVER, COLORADO  
NP-16094 +. 83 PAGES, MARCH 1966

THE RADIOACTIVITY CONTENT OF PILES OF URANIUM-MILL TAILINGS IN THE COLORADO RIVER BASIN AND THEIR RADIOACTIVITY WATER POLLUTION POTENTIAL WERE EVALUATED. A COST ANALYSIS OF SUGGESTED TAILINGS-PILE CONTROL MEASURES AT THE MILLS IS PRESENTED. RA-226 WAS DEMONSTRATED TO BE THE MAJOR FACTOR IN CAUSING RADIOACTIVITY INCREASES IN STREAMS. IT IS RECOMMENDED THAT INTERIM MEASURES TO PREVENT EROSION AND SPREAD OF TAILINGS BE UNDERTAKEN. ALL DISTRIBUTION OF TAILINGS FROM EITHER NONOPERATING OR OPERATING MILLS MUST BE HALTED UNTIL PROPER AND ADEQUATE REVIEW PROCEDURES CAN BE INSTITUTED AND AGREEMENTS BE REACHED ON LONG-TERM PUBLIC AND PRIVATE RESPONSIBILITY FOR MAINTENANCE OF THE TAILINGS PILES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA.

\*WASTE DISPOSAL, LIQUID + RADIUM + WASTE DISPOSAL, ECONOMICS + WASTE SOURCE AND TYPE

14-13923

KRAUSE H + RAMDORF H  
STUDY GROUP FOR DEEP STORAGE OF RADIOACTIVE WASTE. ANNUAL REPORT, 1964  
KERNFORSCHUNGSZENTRUM, KARLSRUHE, WEST GERMANY  
KFK-357 + ORNL-TR-1047 + AEC-TR-6702 +. 26 PAGES, MAY 1965

STUDIES ON THE DEVELOPMENT OF SAFE AND ECONOMIC METHODS FOR THE LONG-TERM REMOVAL OF RADIOACTIVE WASTE AND FOR THE DESIGN AND CONSTRUCTION OF AN INSTALLATION FOR THE FINAL COLLECTION AND PROCESSING OF RADIOACTIVE WASTES ARE REPORTED. THE BASIC CONCEPTS USED IN THE DETERMINATION OF THE REQUIREMENTS FOR LONG-TERM STORAGE OF RADIOACTIVE WASTES ARE REPORTED. EXPERIMENTAL WORK ON THE STORAGE OF RADIOACTIVE WASTES IN SALT CAVERNS IS DESCRIBED. THE ECONOMIC AND SAFETY FACTORS TO BE CONSIDERED IN THE DISPOSAL OF WASTE UNDER THE SEA WERE ALSO CONSIDERED.

AVAILABILITY - MICROCAP EDITIONS, INC., ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

\*WASTE DISPOSAL, GENERAL + GERMANY + WASTE DISPOSAL, ECONOMICS + WASTE DISPOSAL, OCEAN + WASTE DISPOSAL, SALT + WASTE DISPOSAL, TERRESTRIAL + WASTE STORAGE + WASTE TREATMENT, GENERAL

14-13926

ALSO IN CATEGORY 15  
RADIOACTIVE CONTAMINATION OF THE ENVIRONMENT BY NUCLEAR TESTS  
UNITED NATIONS. SCIENTIFIC COMMITTEE ON THE EFFECTS OF ATOMIC RADIATION  
NP-14556 +. 80 PAGES, 34 TABLES, 430 REFERENCES, REPORT OF THE UNITED NATIONS SCIENTIFIC COMMITTEE ON THE EFFECTS OF ATOMIC RADIATION, PAGES 11-80 (1964) GENERAL ASSEMBLY OFFICIAL RECORDS - NINETEENTH SESSION SUPPLEMENT NO. 14 (4/5814)

A DETAILED REVIEW IS PRESENTED OF DATA COLLECTED BETWEEN 1962 AND JUNE 1964 ON CONTAMINATION OF THE ENVIRONMENT BY FALLOUT FROM NUCLEAR EXPLOSIONS. IT IS POINTED OUT THAT THE MAJOR PART OF ALL FISSION PRODUCTS PRODUCED BY NUCLEAR EXPLOSIONS UP TO THE END OF 1962 WAS RELEASED INTO THE STRATOSPHERE AND THAT ESTIMATES OF FUTURE DEPOSITION RATES REQUIRE A KNOWLEDGE OF THE FISSION PRODUCT INVENTORY IN THE STRATOSPHERE AS WELL AS OF THE MECHANISMS BY WHICH IT IS BROUGHT DOWN TO THE GROUND.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151

\*FALLOUT + \*SURVEY, RADIATION, ENVIRONMENTAL + AEROSOL + BIOLOGICAL CONCENTRATION, FOOD + BIOLOGICAL CONCENTRATION, MAN + CARBON + CESIUM + CONTAMINATION + DEPOSITION + DOSE + DOSE MEASUREMENT, EXTERNAL + DOSE MEASUREMENT, INTERNAL + IODINE + KRYPTON + NUCLEAR EXPLOSION DEBRIS + OCEAN AND SEA + RAINOUT + SOIL, NUCLIDE OCCURRENCE + STRATOSPHERE + STRONTIUM + SURFACE WATER, NUCLIDE OCCURRENCE + UNITED NATIONS

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-13927 ALSO IN CATEGORY 15  
RADIATION CARCINOGENESIS IN MAN  
UNITED NATIONS. SCIENTIFIC COMMITTEE ON THE EFFECTS OF ATOMIC RADIATION  
NP-14556 +. 30 PAGES, 138 REFERENCES, PAGES 81-110 OF THE REPORT OF THE UNITED NATIONS SCIENTIFIC  
COMMITTEE ON THE EFFECTS OF ATOMIC RADIATION, GENERAL ASSEMBLY OFFICIAL RECORDS - NINETEENTH SESSION  
SUPPLEMENT NO. 14 (A/5814), 1964

DATA ON THE INDUCTION OF CANCER IN MAN BY IONIZING RADIATIONS ARE REVIEWED. EMPHASIS IS  
PLACED ON INFORMATION MADE AVAILABLE AFTER 1962. THE MECHANISMS OF CARCINOGENESIS IN GENERAL  
ARE NOT WELL UNDERSTOOD, AND MOST OF THE DATA ON RADIOINDUCED TUMORS IN MAN AND EXPERIMENTAL  
ANIMALS COMES FROM STUDIES OF THE EFFECTS OF HIGH DOSES OF RADIATION. FEW DATA ARE AVAILABLE  
ON THE CARCINOGENIC EFFECTS OF LOW DOSES OF RADIATION. RADIOINDUCED TUMORS ARE  
INDISTINGUISHABLE FROM CANCERS ARISING FROM OTHER CAUSES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151

\*BIOMEDICAL + DOSE + IODINE + PHOSPHORUS + RADIATION DAMAGE + RADIATION EFFECT + UNITED NATIONS

14-13928 ALSO IN CATEGORY 15  
LIST OF REPORTS RECEIVED BY THE COMMITTEE  
UNITED NATIONS. SCIENTIFIC COMMITTEE ON THE EFFECTS OF ATOMIC RADIATION  
NP-14556 +. 7 PAGES, PAGES 111-117, OF THE REPORT OF THE UNITED NATIONS SCIENTIFIC COMMITTEE ON THE  
EFFECTS OF ATOMIC RADIATION, GENERAL ASSEMBLY OFFICIAL RECORDS - NINETEENTH SESSION SUPPLEMENT NO. 14  
(A/5814), 1964

LISTS ABOUT 200 REPORTS RECEIVED BY THE SCIENTIFIC COMMITTEE ON THE EFFECTS OF ATOMIC  
RADIATION OF THE UNITED NATIONS BETWEEN MARCH 1962 AND JULY 1964 COVERING FALLOUT FISSION  
PRODUCTS AND RADIOINDUCED NEOPLASMS IN MAN.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151

\*BIBLIOGRAPHY + \*FALLOUT + RADIATION EFFECT + UNITED NATIONS

14-13939  
AMALRAJ BV + KHAN AA  
THE USE OF INCINERATORS FOR TREATMENT OF COMBUSTIBLE WASTES  
ATOMIC ENERGY ESTABLISHMENT, TROMBAY, INDIA  
AERT-220 +. 12 PAGES, 1965

IN CONTRAST TO ALL OTHER METHODS FOR DISPOSING OF COMBUSTIBLE WASTES, INCINERATION ALONE MEETS  
THE EXACTING HEALTH STANDARDS. WHILE THERE IS AS YET NO ULTIMATE INCINERATOR DESIGN,  
ENGINEERS CONTINUE TO STRIVE FOR EVER GREATER EFFICIENCY. FOR THE MANAGEMENT OF COMBUSTIBLE  
WASTES, A GENERALLY ACCEPTED CLASSIFICATION IS FOLLOWED, BASED ON WHICH THE SELECTION OF AN  
INCINERATOR IS MADE. POPULATION BOOMS, RAPID INDUSTRIALIZATION, AND INCREASING LAND VALUES  
IN LEADING INDIAN CITIES SHOULD FOCUS THE ATTENTION OF THE PUBLIC HEALTH EXPERTS ON THE  
PRESSING NEED FOR THE USE OF INCINERATORS FOR EFFECTIVE AND ECONOMICAL WASTE-DISPOSAL  
PURPOSES.

AVAILABILITY - MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISC.

\*INCINERATION + \*WASTE TREATMENT, SOLID + AIR CLEANING + ATMOSPHERIC POLLUTION + INDIA

14-13943 ALSO IN CATEGORIES 4 AND 16  
GOLDMAN MI  
SAFETY ASPECTS OF GROUND TESTING FOR LARGE NUCLEAR ROCKETS  
NUS CORPORATION  
5 PAGES, 2 FIGURES, 1 TABLE, 11 REFERENCES, NUCLEAR APPLICATIONS 2(2), PAGES 94-98, (APRIL 1966)

NORMAL TESTING OF LARGE NUCLEAR-ROCKET ENGINES AT NRDS COULD IMPOSE SOME RESTRICTIONS ON THE  
FUEL PERFORMANCE THAT WOULD NOT OTHERWISE BE REQUIRED BY SPACE-FLIGHT OPERATION. THE BEST  
APPARENT SOLUTION WOULD REQUIRE A CAPABILITY FOR DECONTAMINATING EFFLUENT GASES PRIOR TO  
RELEASE TO THE ATMOSPHERE. TESTS WILL ALSO BE CONTROLLED BY WIND AND ATMOSPHERIC STABILITY  
CONDITIONS, AND THE REQUIREMENTS FOR MONITORING AND CONTROL OF OFF-SITE EXPOSURES WILL BE  
MUCH MORE STRINGENT THAN AT PRESENT. AN ANALYSIS OF MAXIMUM ACCIDENTS INDICATES THAT  
PROJECTIONS OF PRESENT CREDIBLE OCCURRENCES CANNOT BE TOLERATED IN LARGER ENGINE TESTS. THE  
APPARENT ALTERNATIVES TO A SIGNIFICANT REDUCTION IN CREDIBLE ACCIDENT CONSEQUENCES ARE THE  
ESTABLISHMENT OF A FACILITY UNDERGROUND, IN AN AREA EQUIVALENT TO THE PACIFIC WEAPONS PROVING  
GROUND, OR IN SPACE.

\*FISSION PRODUCT RELEASE, GENERAL + \*REACTOR, SPACE + HAZARDS ANALYSIS + IODINE + KIWI + METEOROLOGY +  
POPULATION EXPOSURE

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-13951 ALSO IN CATEGORY 17  
COBALT STUCK IN KANSAS U RESEARCH REACTOR AROUSES GUBERNATORIAL ANTIPATHY  
1 PAGE, THE ARKANSAS CITY DAILY TRAVELER, PAGE 1, NOVEMBER 22, 1966

A PIECE OF COBALT, STUCK IN THE KANSAS U REACTOR FOR 2 YEARS, WAS REMOVED BY AN OUTSIDE AGENCY AND SENT TO KENTUCKY FOR DISPOSAL. THIS, PLUS PUBLIC APPREHENSION OVER THE LYONS SALT MINE DISPOSAL PLAN CAUSED THE GOVERNOR-ELECT TO MAKE CRITICAL REMARKS AGAINST KANSAS BECOMING A NUCLEAR GARBAGE DUMP.

\*RADIATION, PUBLIC EDUCATION/ACCEPTANCE + INCIDENT, ACTUAL, GENERAL + REACTOR, POOL TYPE + WASTE DISPOSAL, SALT

14-13960  
BLUMEKE JC + ROBERTS JT  
WASTE MANAGEMENT  
OAK RIDGE NATIONAL LABORATORY  
24 PAGES, 1 FIGURE, ANNUAL REVIEW OF NUCLEAR SCIENCE VOL. 15, PAGES 151-174, (1965)

WASTES ARE PRODUCED IN EVERY STEP OF THE REACTOR FUEL CYCLE. THIS REVIEW IS PRINCIPALLY CONCERNED WITH THE WASTE MANAGEMENT PROBLEMS ASSOCIATED WITH THE FUEL-PROCESSING REQUIREMENTS OF THE NUCLEAR POWER INDUSTRY AND INCLUDES A REVIEW OF TECHNIQUES, TOGETHER WITH THE NEEDS AND PROSPECTS FOR NEW METHODS.

\*WASTE MANAGEMENT + \*WASTE SOURCE AND TYPE + CALCINATION + FOAM + GLASS + ION EXCHANGE + WASTE STORAGE + WASTE TREATMENT, ECONOMICS + WASTE TREATMENT, FIXATION + WASTE TREATMENT, GAS + WASTE TREATMENT, LIQUID

14-13974 ALSO IN CATEGORIES 19 AND 7  
WASTE MANAGEMENT RESEARCH ABSTRACTS NO. 2  
INTERNATIONAL ATOMIC ENERGY AGENCY  
90 PAGES, 1966

ABSTRACTS FROM AUSTRALIA, CANADA, CZECHOSLOVAKIA, WEST GERMANY, JAPAN, POLAND, SOUTH AFRICA, UAR, UK, US, AND YUGOSLOVIA ARE INCLUDED. IT IS PROPOSED TO PUBLISH A SIMILAR SET OF ABSTRACTS EACH YEAR. THE ABSTRACTS WILL BE PUBLISHED IN THE LANGUAGE OF SUBMITTAL. THE TITLE AND THE NAMES OF AUTHORS AND OF THE INSTITUTE OF ABSTRACTS SUBMITTED IN RUSSIAN WILL BE TRANSLATED INTO ENGLISH.

AVAILABILITY - DIVISION OF HEALTH, SAFETY AND WASTE DISPOSAL, INTERNATIONAL ATOMIC ENERGY AGENCY, KARNTNERRING 11-13, A-1010 VIENNA, AUSTRIA, FREE

\*BIBLIOGRAPHY + \*WASTE MANAGEMENT

14-13978  
BAETSLE L + MAES WF + SOUFFRIAU J + STANER PI  
MIGRATION OF RADIO ELEMENTS IN SOIL. FINAL REPORT  
CENTRE DETUDE DE L'ENERGIE NUCLEAIRE, MOL  
EUR-2481.F +. 66 PAGES, REFERENCES, MARCH 1966

A CORRELATION OF METEOROLOGIC AND HYDROLOGIC OBSERVATIONS WITH CALCULATED TIMES OF RECHARGE OF THE WATER TABLE AND WITH ACTUAL RATES OF FILTRATION ARE PRESENTED FOR THE MCL SITE. A NEW APPARATUS WAS CONSTRUCTED FOR MEASURING THE RATE AND DIRECTION OF FLOW OF GROUND WATER IN SANDY BEDS. A STUDY OF DISPERSION OF RADIONUCLIDES IN THE SOIL DEMONSTRATED THAT THIS PHENOMENON IS INFLUENCED PRINCIPALLY BY MOLECULAR DIFFUSION. THE COEFFICIENTS OF DISPERSION VARY BETWEEN 0.001 AND 0.0001 SQ. CM/SEC FOR FLOW RATES RANGING FROM 0.01 TO 0.0001 CM/SEC. TWO TECHNIQUES WERE DEVELOPED FOR IMPROVING THE SAND FOR STRONTIUM RETENTION. ONE METHOD IS BASED ON THE INTRODUCTION OF LIGNITE TREATED WITH POTASSIUM FERROCYANIDE AND FERRIC CHLORIDE. THE SECOND INVOLVES TREATMENT OF THE SAND WITH HYDROFLUORIC ACID FOLLOWED BY ACID PYROPHOSPHATE. THE VOLUMES OF WATER THAT CAN BE TREATED PER UNIT VOLUME OF THE CHEMICAL BARRIERS ARE 200 AND 60, RESPECTIVELY.

AVAILABILITY - MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

\*DISPERSION + \*HYDROLOGICAL CONSIDERATION, RATE OF MOVEMENT + \*SOIL, RADIONUCLIDE MOVEMENT THROUGH + BARIUM + CALCIUM + CESIUM + HYDROLOGICAL CONSIDERATION, QUALITY OF WATER + IODINE + METEOROLOGY + STRONTIUM

14-14074 ALSO IN CATEGORIES 1 AND 18  
T. J. THOMPSON (MIT) PROTESTS NEW AEC APPROACH IN HAVING DIVISION OF COMPLIANCE REVIEW DETAILED EFFLUENT RELEASE RECORDS  
MASSACHUSETTS INSTITUTE OF TECHNOLOGY  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(3) PAGES 11-13 (JANUARY 16, 1967), DOCKET NO. 50-20

PROTEST MADE ON GROUNDS OF TIME SPENT BY AEC AND REACTOR OPERATOR, CHANGE IN RELATIONS WITH OPERATOR (NEW PROCESS SUPPOSE TO HAVE AEC MAKE TECHNICAL JUDGMENTS WHICH ARE A FUNCTION OF

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-14074 \*CONTINUED\*

REACTOR MANAGEMENT, WOULD ALSO CAUSE AEC TO ASSUME CERTAIN LEGAL LIABILITIES). SUGGESTS THIS MOVE AS A RESULT OF INTERJURISDICTIONAL DISPUTE WITH ORGANIZATIONS, SUCH AS PUBLIC HEALTH SERVICE.

\*INSPECTION AND COMPLIANCE + \*REGULATION, AEC + EFFLUENT + WASTE DISPOSAL, GENERAL

14-14127 ALSO IN CATEGORY 17

WALLIS LR

RADIOLOGICAL ASPECTS OF THE DEACTIVATION OF HANFORD PRODUCTION REACTORS  
GENERAL ELECTRIC COMPANY, ATOMIC POWER EQUIPMENT DEPARTMENT + USAEC, HEALTH AND SAFETY DIVISION  
59 PAGES, 22 FIGURES, PRESENTED AT THE FIRST INTERNATIONAL CONGRESS OF THE INTERNATIONAL RADIATION  
PROTECTION ASSOCIATION, ROME, ITALY, SEPTEMBER 5-10, 1966

DEACTIVATION OF DR IN DECEMBER 1964 WAS BEGUN BY A SPECIALLY FORMED UNIT, WHICH THEN ISSUED A DEACTIVATION MANUAL FOR H AND F REACTORS. FILLING THE COOLANT RETENTION PONDS TO COVER THE CONTAMINATED SLUDGE WAS TOO EXPENSIVE, SO THE CONCRETE WAS SPRAYED WITH ASPHALT. LIKewise, THE FUEL-STORAGE BASINS ARE KEPT WATER-FILLED TO SHIELD IRRADIATED EQUIPMENT. A TOTAL OF 37 MAN-ROENTGENS WAS RECEIVED FOR ALL THREE REACTORS, DUE TO CONSIDERABLE THOUGHT AND PLANNING.

AVAILABILITY - PROCEEDINGS OF THE FIRST CONGRESS OF THE INTERNATIONAL RADIATION PROTECTION ASSOCIATION, PERGAMON PRESS, OXFORD, 1967

\*PROCEDURES AND MANUALS + \*REACTOR DECOMMISSIONING EXPERIENCE + DECONTAMINATION + HANFORD PRODUCTION REACTOR + WASTE DISPOSAL, GENERAL

14-14133

ALBRETHSEN AE

VOLATILIZATION OF FISSION PRODUCTS FROM HIGH-LEVEL CERAMIC WASTES  
BATTELLE-NORTHWEST

BNWL-SA-453 + CONF-660209-5 +. 17 PAGES, 2 REFERENCES, FROM SYMPOSIUM ON SOLIDIFICATION AND LONG-TERM STORAGE OF HIGHLY RADIOACTIVE WASTES, RICHLAND, WASHINGTON, FEB. 8, 1966

VOLATILIZATION HAS BEEN ESTABLISHED AS THE PREDOMINANT MECHANISM OF FISSION-PRODUCT RELEASE FROM SIMULATED HIGH-LEVEL SOLIDIFIED WASTE OF DIFFERING PHOSPHATE CONTENT WHEN EXPOSED TO HIGH TEMPERATURES. WASTE REPRESENTATIVE OF FUEL RANGING FROM 20,000 TO 100,000 MWD/T EXPOSURE WAS USED. CESIUM-137 IS INDICATED TO BE THE ISOTOPE OF GREATEST RADIOLOGICAL CONCERN FROM THE STANDPOINT OF AIRBORNE RELEASE DURING A SHIPPING-ACCIDENT FIRE. FRACTIONAL RELEASE RATES AT 1100 C FOR CERIUM, RUTHENIUM, AND STRONTIUM WERE AT THE LOWER DETECTION LIMITS OF THE EXPERIMENT -- APPROXIMATELY 0.001%/HR - WHILE AVERAGE CESIUM RELEASE RATES OF ABOUT 1/2%/HR WERE OBSERVED UNDER THE SAME EXPOSURE CONDITIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$1.00 COPY, \$0.50 MICROFICHE

\*FISSION PRODUCT RELEASE, GENERAL + \*WASTE TREATMENT, FIXATION + CERIUM + CESIUM + RUTHENIUM + STRONTIUM

14-14154

SUDDATH JC + BLOMEKE JO

AN ECONOMIC ANALYSIS OF HIGH-LEVEL WASTE MANAGEMENT FOR FLUIDIZED-BED VOLATILITY PROCESSING OF POWER REACTOR FUELS

OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE

ORNL-TM-1441 +. 23 PAGES, 3 TABLES, 8 FIGURES, 8 REFERENCES, APRIL 1, 1966

COSTS ARE ESTIMATED FOR MANAGEMENT OF WASTES FROM FLUIDIZED-BED VOLATILITY PROCESSING OF ZIRCALOY- AND STAINLESS-STEEL-CLAD UO-2 REACTOR FUELS. ALTERNATIVES CONSIST OF ENCAPSULATING THE WASTES WITHOUT ADDITIONAL TREATMENT, ENCAPSULATION FOLLOWING PREPARATION OF GLASSY SOLIDS, AND ENCAPSULATION OF THE FISSION PRODUCTS AS A GLASS FOLLOWING THEIR SEPARATION FROM THE INERTS BY A PHOSPHORIC ACID LEACH. IN ALL CASES, THE FINAL PRODUCTS ARE SHIPPED TO A SALT MINE FOR FINAL DISPOSAL. THERE IS NOT A CLEAR-CUT ECONOMIC INCENTIVE TO MAKE GLASSES OR TO LEACH THE FISSION PRODUCTS, BUT IF THESE CONVERSIONS ARE DESIRABLE FOR GREATER SAFETY IN HANDLING AND SHIPMENT, A SUBSTANTIAL CREDIT FROM CHEAPER MANAGEMENT OF THE PRODUCTS CAN BE APPLIED AGAINST THE COST OF THE TREATMENT STEP. MORE ECONOMIC WASTE MANAGEMENT CANNOT BE CITED AS AN ADVANTAGE OF VOLATILITY OVER AQUEOUS PROCESSING IN THE FLUIDIZED-BED METHOD FOR LOW-ENRICHMENT FUEL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$1.00 COPY, \$0.50 MICRONEGATIVE

\*WASTE MANAGEMENT + WASTE SOURCE AND TYPE + WASTE STORAGE + WASTE TRANSPORTATION + WASTE TREATMENT, ECONOMICS

14-14158

LAI MG + GOYA HA

RADIOACTIVITY RELEASE FROM RADIONUCLIDE POWER SOURCES. III. RELEASE FROM PLUTONIUM METAL TO SEAWATER  
U.S. NAVAL RADIOLOGICAL DEFENSE LABORATORY

USNROL-TR-1050 +. 45 PAGES, JULY 11, 1966

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-14158 \*CONTINUED\*

AS PART OF A PROGRAM TO DETERMINE THE RATES OF RADIONUCLIDE RELEASE TO SEAWATER FROM VARIOUS ISOTOPIC FUEL MATERIALS, THE DISSOLUTION OF PLUTONIUM METAL IN NATURAL SEAWATER AND IN SEAWATER SOLUTIONS CONTAINING ADDED SALTS WAS EXAMINED. FROM THESE STUDIES, THE RATE AND EXTENT OF PU REACTION IN SEAWATER AND A POSSIBLE MECHANISM FOR THE REACTION HAS BEEN DETERMINED. IN ADDITION, SAMPLING CONDITIONS FACILITATING REPRODUCIBLE MEASUREMENT OF PU IN SOLUTION HAVE BEEN DEFINED. APPLICATION OF THIS WORK CAN BE MADE IN SUCH AREAS AS (1) FINDING THE LOCATION OF NUCLEAR BOMBS OR SNAP UNITS THAT HAVE ACCIDENTALLY BEEN PLACED IN THE OCEAN IN SUCH A WAY AS TO EXPOSE PLUTONIUM METAL TO SEAWATER, (2) DETERMINING THE RATE OF UPTAKE OF PLUTONIUM IN THE MARINE FOOD CHAIN AND (3) DETECTION OF UNDERWATER NUCLEAR EXPLOSIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$2.00 COPY, \$0.50 MICRONEGATIVE

\*FISSION PRODUCT RELEASE, GENERAL + ACCIDENT, HYPOTHETICAL + OCEAN AND SEA + PLUTONIUM

14-14159

WEISBECKER + LAI MG + GOYA HA + COPDOVA HI  
RADIONUCLIDE RELEASE FROM AEROSPACE NUCLEAR REACTOR FUELS. V. PHASE TWO - PULSED NEUTRON IRRADIATION OF FUEL IN WATER  
NAVAL RADIOLOGICAL DEFENSE LABORATORY, SAN FRANCISCO, CALIFORNIA  
USNRDL-TR-1046 +. 64 PAGES, MAY 24, 1966

ACCIDENTAL SEAWATER IMMERSION OF A NERVA/ROVER TYPE OF CORE WOULD RESULT IN A CRITICALITY EXCURSION, RELEASING FISSION-PRODUCT RADIONUCLIDES TO THE ENVIRONMENT. SPECIMENS OF NERVA/ROVER FUEL WERE IRRADIATED UNDER DIFFERENT PULSED-NEUTRON CONDITIONS IN A TRIGA MARK F REACTOR, THE KEWA REACTOR, AND THE KIWI-TNT REACTOR EXCURSION TEST. MOST OF THESE SPECIMENS WERE IRRADIATED IMMERSED IN WATER. MEASUREMENTS WERE MADE OF (1) THE FISSION-PRODUCT INVENTORIES OF FUEL SPECIMENS AND ENVIRONMENTAL WATER (2) INTERNAL CAPSULE PRESSURE GENERATED, (3) FUEL BODY AND MICROSTRUCTURE DAMAGE, AND (4) LEACHING PROPERTIES OF IRRADIATED FUEL. RELEASE OF FISSION PRODUCTS TO THE WATER APPEARED TO BE A FUNCTION OF EXPOSED SURFACE AREA OF THE FUEL. ALL FISSION PRODUCTS WHICH FRACTIONATED, EXCEPT I-131, HAVE A VOLATILE PRECURSOR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.75 MICRONEGATIVE

\*FISSION PRODUCT RELEASE, GENERAL + ACCIDENT, HYPOTHETICAL + RADIATION EFFECT + ROVER PROGRAM

14-14174

THOMAS HA  
OPERATIONS RESEARCH IN DISPOSAL OF LIQUID RADIOACTIVE WASTES IN STREAMS.  
HARVARD UNIVERSITY  
NYO-10447 +. 202 PAGES, DECEMBER 1965

A REVIEW AND SUMMARY OF THE GENERAL PRINCIPLES OF DISPOSAL OF LOW-LEVEL RADIOACTIVE WASTES IN STREAMS IS PRESENTED. A CLASSIFICATION OF PHYSICAL AND ECONOMIC FACTORS IMPORTANT IN RADIOACTIVE WASTE DISPOSAL IN STREAMS IS INCLUDED. A CLASSIFICATION OF RIVERS AND OTHER FRESH-WATER BODIES INTO FOUR BASIC TYPES WAS DEVELOPED. A DESCRIPTIVE MATHEMATICAL MODEL IS PRESENTED TO SHOW THE LOGICAL STRUCTURE OF THE SCHEME AND TO INDICATE THE WIDE VARIETY OF WASTE-DISPOSAL ENVIRONMENTS THAT OBTAIN IN DIFFERENT STREAMS. IN SOME TYPES OF STREAMS A POTENTIAL EXISTS FOR STORAGE AND SPORADIC RELEASE OF ACTIVITY FROM BENTHAL DEPOSITS AND BIOMASSES THAT MAY CONSTITUTE A PUBLIC HEALTH HAZARD. VARIOUS MECHANISMS OF RELEASE ARE DISCUSSED. THREE DIFFERENT MODELS ARE ALSO PRESENTED FOR ECONOMIC AND ENGINEERING ANALYSIS OF STREAM DISPOSAL SYSTEMS FOR RADIOACTIVE WASTES. TEST RESULTS OF MODEL LABORATORY STREAMS THAT WERE OPERATED TO SUPPLY INFORMATION ABOUT THE INTERACTION OF STREAM AND RADIO-CONTAMINANT COMPOUNDS AND PROCESSES THAT COULD NOT READILY BE OBTAINED FROM FIELD STUDIES ON PROTOTYPE STREAMS ARE DESCRIBED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$6.00 COPY, \$1.25 MICROFICHE

\*WASTE DISPOSAL, RIVER + RIVER, GENERAL + SURFACE WATER, DISPOSAL MEDIA + SURFACE WATER, SEDIMENT + WASTE DISPOSAL, LIQUID

14-14176

RYAN ES + VANCE JN + MAAS ME  
AQUEOUS RADIOACTIVE WASTE TREATMENT PLANT AT ROCKY FLATS  
DOW CHEMICAL COMPANY  
PFP-638 + CONF-651202-4 +. 14 PAGES, FROM SYMPOSIUM ON PRACTICES IN THE TREATMENT OF LOW AND INTERMEDIATE LEVEL RADIOACTIVE WASTE, VIENNA

THE OPERATION OF A PLANT FOR TREATING AQUEOUS RADIOACTIVE WASTE TREATMENT IS DESCRIBED, INCLUDING DETAILS OF CONSTRUCTION, FLOW CHARTS, OPERATING DATA, AND THE PROBLEMS ENCOUNTERED. PLANS FOR ADDITIONAL PROCESSING OF THE EFFLUENT ARE ALSO DISCUSSED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$1.00 COPY, \$0.50 MICROFICHE

\*ROCKY FLATS + \*WASTE DISPOSAL, LIQUID + \*WASTE MANAGEMENT + PLUTONIUM + WASTE DISPOSAL, ECONOMICS +

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-14176 \*CONTINUED\*  
WASTE SOURCE AND TYPE + WASTE TREATMENT, LIQUID

14-14178  
HONSTEAD JF  
DISPOSAL OF RADIOACTIVE WASTES INTO FRESH WATER  
BATTELLE-NORTHWEST, RICHLAND  
BNWL-SA-466 +. 36 PAGES, SEPTEMBER 24, 1965

STUDIES WERE MADE ON THE DILUTION, DISPERSION, DEPOSITION, REMOVAL, TRANSFORMATION, AND RECONCENTRATION OF RADIOACTIVE MATERIALS IN FRESH WATERS IN ORDER TO ESTIMATE THE MOVEMENT AND FATE OF THE RADIONUCLIDES IN A WATER SYSTEM AND ALSO TO ESTIMATE THE DEGREE OF HAZARD INVOLVED. THE PROCESSES OF METABOLIC CONCENTRATION BY FISH AND WILDLIFE ARE ALSO CONSIDERED. AQUATIC FOODSTUFFS WERE MONITORED FOR P-32 AND ZN-65. IT WAS CONCLUDED THAT DISCHARGE OF WASTE WATER INTO A FRESH WATER SYSTEM SHOULD BE ACCOMPANIED BY AN INTENSIVE MONITORING PROGRAM WHICH INCLUDES SPECIAL STUDIES THAT DETECT THE BEHAVIOR AND FATE OF RADIONUCLIDES IN THE BIOLOGICAL COMMUNITIES AFFECTED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$2.00 COPY, \$0.50 MICROFICHE

\*RIVER, COLUMBIA + \*WASTE DISPOSAL, RIVER + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + DILUTION + DISPERSION + ECOLOGICAL CONSIDERATION + PHOSPHORUS + SURFACE WATER, DISPOSAL MEDIA + SURFACE WATER, SEDIMENT + ZINC

14-14300 ALSO IN CATEGORY 15  
BEATLEY JC  
ECOLOGY OF THE NEVADA TEST SITE. IV, EFFECTS OF THE SEDAN DETONATION ON DESERT SHRUB VEGETATION IN NORTHEASTERN YUCCA FLAT, 1962-65  
UNIVERSITY OF CALIFORNIA, SCHOOL OF MEDICINE LABORATORY OF NUCLEAR MEDICINE AND RADIATION BIOLOGY  
UCLA 12-571 +. 55 PAGES, 6 FIGURES, 11 TABLES, 15 REFERENCES, SEPTEMBER 1965

VEGETATION AND ENVIRONMENTAL PHENOMENA WERE OBSERVED AND MEASURED THROUGH THE SEASONS OF THREE YEARS, ON THREE SITES IN NORTHEASTERN YUCCA FLAT WITHIN TWO MILES OF THE SEDAN UNDERGROUND THERMONUCLEAR DETONATION IN JULY 1962. CUMULATIVE GAMMA RADIATION DOSAGES RECORDED WERE IN THE RANGE 4000-13,000 R.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151

\*ECOLOGICAL CONSIDERATION + BIOLOGICAL CONCENTRATION, VEGETATION + FALLOUT + NEVADA TEST SITE + NUCLEAR DETONATION + NUCLEAR EXPLOSION DEBRIS + RADIATION DAMAGE + RADIATION EFFECT

14-14323  
LINDHE S + LINDER P  
THE HANDLING OF LIQUID WASTE AT THE RESEARCH STATION OF STUDEVIK, SWEDEN  
AKTIEBOLAGET ATOMENERGI, STOCKHOLM  
AE-182 +. 17 PAGES, MARCH 1965

RADIOACTIVE WASTE ALLOWED TO BE RELEASED INTO A STRAIT BETWEEN THE ISLANDS OF STORA BERGO AND STUDEVIKSHOLME ARE - TOTAL ALPHA ACTIVITY 0.2 CURIE/MONTH, TOTAL BETA ACTIVITY 36 CURIES/MONTH, OF WHICH CERIUM, YTTRIUM, RARE-EARTHS MAY TOTAL 15 CURIES/MONTH AND STRONTIUM 2.4 CURIES/MONTH. BEFORE RELEASE, THE RADIOACTIVE WASTE HAS TO BE COLLECTED AND CONTROLLED. QUANTITIES APPROACHING OR EXCEEDING THE DISPOSAL LIMITS ARE REMOVED AND CONCENTRATED BY EVAPORATION. THE LIQUID WASTE IS CLASSIFIED IN SEVERAL CATEGORIES DEPENDING ON THE LEVEL OF ACTIVITY - HIGH-ACTIVE AND MEDIUM-ACTIVE WASTE, LOW-ACTIVE WASTE, PROCESS WATER, SANITARY WATER, SURFACE WATER, AND REACTOR COOLING WATER. BASED UPON INFORMATION OBTAINED FROM HARWELL, PREDICTIONS WERE MADE OF THE PRODUCTION OF EACH CATEGORY. ACTUAL PRODUCTION FIGURES OBTAINED DURING 1963 AND THE FIRST HALF OF 1964 COMPARE WITH THE EXPECTED ONES.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

\*SWEDEN + \*WASTE DISPOSAL, LIQUID + CERIUM + EVAPORATION + GROSS ALPHA + GROSS BETA + RARE EARTH + STRONTIUM + WASTE MANAGEMENT + WASTE SOURCE AND TYPE + WASTE TREATMENT, LIQUID + YTTRIUM

14-14329 ALSO IN CATEGORIES 9 AND 11  
PERRET JD  
PERMISSIBLE HYDROGEN LEVELS IN THE HNPFC CONTROL ROD HELIUM SYSTEM  
ATOMIC INTERNATIONAL  
NAA-SR-MEMO-10167 +. 26 PAGES, NOVEMBER 18, 1964

BASED ON CONSERVATIVE ASSUMPTIONS AS STATED IN THIS REPORT (A 150-PPM MAXIMUM LEVEL FOR HYDROGEN IN ZIRCALOY, AND A REQUIRED 10-YEAR SERVICE LIFE), IT IS CALCULATED THAT THE MAXIMUM PERMISSIBLE LEVEL OF HYDROGEN IN THE CONTROL-ROD-THIMBLE GASES IS 700 PPM BY VOLUME. NEITHER EXPERIMENTAL RESULTS NOR A THEORETICAL TREATMENT OF THE DIFFUSION OF ONE SPECIES OF A MIXTURE OF GASES THROUGH A METAL CONTAINER WALL COULD BE FOUND IN THE LITERATURE. STANDARD CATALYTIC ADSORPTION THEORY WAS COMBINED WITH THE USUAL DIFFUSION THEORY TO DERIVE EQUATIONS USEFUL FOR



CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-14329 \*CONTINUED\*  
THE CALCULATIONS OF INTEREST. THIS APPROACH MAY HAVE UTILITY IN SIMILAR PROBLEMS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$2.00 COPY

\*CONTROL POD + \*CONTROL SYSTEM + \*HYDROGEN + MATHEMATICAL STUDY + TITANIUM

14-14427 ALSO IN CATEGORY 15  
CAIPE R + SUTRA-FOURCADE Y  
STUDY OF THE PERMEABILITY OF CERTAIN MATERIALS TO TRITIUM  
COMMISSARIAT A LENERGIE ATOMIQUE, CENTRE DE PRODUCTION DE PLUTONIUM DE MARCOULE  
CEA-R-3018 +. 20 PAGES, AUGUST 1966, IN FRENCH

THE AIM OF THIS WORK IS TO CLASSIFY CERTAIN MATERIALS INTENDED FOR USE AS A PROTECTION AGAINST GASEOUS TRITIUM AND TRITIATED WATER. THE FIRST PART DEALS WITH ACTIVE TESTS AND GIVES AN ACCOUNT OF PHENOMENA ENCOUNTERED WITH VERY SMALL QUANTITIES OF ELEMENT. THE SECOND PART OF THIS REPORT CONCERNS A SERIES OF TESTS MADE WITH HELIUM AND INACTIVE WATER. GASEOUS TRITIUM WAS USED FOR THE FIRST PART OF THE WORK WITHOUT A CARRIER, AND IT WAS NOT POSSIBLE TO HANDLE IT IN WEIGHABLE AMOUNTS. AT A CONCENTRATION OF ONE MCI/CUBIC METER, ONE HAS THEREFORE 10<sup>-7</sup> GM/CUBIC METER OF TRITIUM. UNDER THE SAME CONDITIONS, AT NORMAL PRESSURE, A CUBIC METER OF HYDROGEN WEIGHS 900 GM. THE AMOUNTS HANDLED DURING THE ACTIVE TESTS ARE 10 TO THE 10TH TIMES LESS THAN THOSE WHICH WOULD HAVE BEEN USED IN THE CASE OF HYDROGEN AT NORMAL PRESSURE.

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\*TRITIUM + PERSONNEL PROTECTIVE DEVICE

14-14500  
PROECKER WS + ROCCO GG  
THE VERTICAL DISTRIBUTION OF CESIUM-137 AND STRONTIUM-90 IN THE OCEANS II  
COLUMBIA UNIVERSITY  
TID-22411 APP. A +. FROM ANNUAL REPORT ON FALLOUT IN SEA WATER, 82 PAGES, 1965

FURTHER DATA ARE PRESENTED IN SUPPORT OF OUR PREVIOUS CONCLUSION THAT THE VERTICAL DISTRIBUTION OF CS-137 AND SR-90 ARE IN ACCORD WITH THE SLOW OCEAN MIXING RATES DEMANDED BY THE DISTRIBUTION OF NATURAL RADIOCARBON IN THE SEA. AS OF EARLY 1963, NO SIGNIFICANT ACTIVITY APPEARS TO HAVE PENETRATED BELOW 500 METERS IN EITHER THE NORTH ATLANTIC OR EQUATORIAL PACIFIC OCEANS. A METHOD FOR SHIPBOARD SEPARATION OF CS AND SR FROM 200-LITER BATCHES OF SEA WATER IS OUTLINED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONESATIVE

\*OCEAN AND SEA + \*SURFACE WATER, NUCLIDE OCCURRENCE + ANALYTICAL TECHNIQUE, WATER + CESIUM + FALLOUT + STRONTIUM

14-14501  
PROECKER WS + ROCCO GG + VOLCHOK HL  
COMPARISON OF OCEANIC AND LAND FALLOUT RATES  
COLUMBIA UNIVERSITY  
TID-22411 APP. B +. FROM ANNUAL REPORT ON FALLOUT IN SEA WATER, 82 PAGES, 1965

MEASUREMENTS OF SR-90 IN WATERS RESIDING ON THE BAHAMA BANKS FOR PERIODS BETWEEN 12 AND 180 DAYS SUGGEST THAT FALLOUT RATES ONTO THESE WATERS ARE SUBSTANTIALLY THE SAME AS THOSE MEASURED FOR THE AVERAGE OF ALL FALLOUT COLLECTION STATIONS IN THE 20- TO 30-DEGREE NORTH-LATITUDE BAND. ASSUMING THAT THE AMOUNT OF PRECIPITATION IN THE BAHAMA BANKS REGION WAS REASONABLY REPRESENTATIVE OF THE OCEANIC AREAS IN THE LATITUDE BAND, THESE RESULTS SUPPORT THE CONCLUSION THAT THE AMOUNT OF SR-90 DEPOSITION PER UNIT AREA OF OCEANIC SURFACE IS WITHIN A FACTOR OF TWO OF THAT ON LAND.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONESATIVE

\*OCEAN AND SEA + \*SURFACE WATER, NUCLIDE OCCURRENCE + DEPOSITION + FALLOUT + STRONTIUM

14-14502  
PROECKER WS  
RADIOISOTOPES AND THE RATE OF MIXING ACROSS THE MAIN THERMOCLINES OF THE OCEAN  
COLUMBIA UNIVERSITY  
TID-22411 APP. C +. FROM ANNUAL REPORT ON FALLOUT IN SEA WATER, 82 PAGES, 1965

A BOX MODEL OF OCEANIC MIXING IS PRESENTED WHICH PERMITS THE DISTRIBUTION OF LONG-LIVED NATURAL RADIOISOTOPES (C-14, RA-226, ETC.) TO BE QUANTITATIVELY COMPARED WITH THAT OF THOSE MADE BY MAN (SR-90, CS-137).

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-14502 \*CONTINUED\*  
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*OCEAN AND SEA + BARIUM + CARBON + CESIUM + FALLOUT + MIXING DEPTH + RADIUM + STRONTIUM +  
SURFACE WATER, NUCLIDE OCCURRENCE

14-14503  
BROECKER WS  
THE VERTICAL DISTRIBUTION OF RA-226 IN THE NORTHWESTERN PACIFIC OCEAN  
COLUMBIA UNIVERSITY  
TID-22411 APPD. D +. FROM ANNUAL REPORT ON FALLOUT IN SEA WATER, 82 PAGES, 1965

CALCULATED VALUES FOR THE RESIDENCE TIME OF RADIUM IN THE SURFACE WATER AND DEEP WATERS OF THE OCEAN EXCEED BY AN ORDER OF MAGNITUDE THOSE OBTAINED FROM THE DISTRIBUTION OF NATURAL RADIOCARBON. THUS, THE HIGHER CONCENTRATION OF RA-226 IN THE DEEP THAN IN THE SURFACE OCEAN WATERS IS PROBABLY NOT DUE TO A SLOW RATE OF MIXING BETWEEN THE WARM AND COLD WATERS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*OCEAN AND SEA + \*SURFACE WATER, NUCLIDE OCCURRENCE + CARBON + RADIUM

14-14504  
MOORE WS  
UNSUPPORTED RA-228 AND TH-228 IN SEA WATER  
COLUMBIA UNIVERSITY  
TID-22411 APP. E +. FROM ANNUAL REPORT ON FALLOUT IN SEA WATER, 82 PAGES, 1965

THE DISCOVERY OF UNSUPPORTED TH-228 (HALF-LIFE, 1.8 YEARS) IN OCEAN WATER HAS LEAD TO AN INVESTIGATION OF THE TH-232 SERIES IN SEA WATER. THE PRIMARY OBJECTIVE HAS BEEN TO DETERMINE IF THE EXCESS TH-228 IS SUPPORTED IN THE OCEAN BY RA-228, ITS PARENT (HALF-LIFE, 6.7 YRS.). TO DATE, THE MAJOR EFFORT HAS BEEN TO DEVISE ANALYTICAL TECHNIQUES FOR MEASURING ALL RADIUM AND THORIUM ISOTOPES IN THE WATER. THE PROCEDURES NOW SEEM TO WORK.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*OCEAN AND SEA + \*SURFACE WATER, NUCLIDE OCCURRENCE + ANALYTICAL TECHNIQUE, WATER + RADIUM + THORIUM

14-14505 ALSO IN CATEGORY 15  
JOHNSON WS  
PLUTONIUM CONTAMINATION OF LARGE LAND AREAS  
EBERLINE INSTRUMENT CORPORATION, SANTA FE, NEW MEXICO  
5 PAGES, 5 FIGURES, 1966, PRESENTED AT THE FIRST INTERNATIONAL CONGRESS OF THE INTERNATIONAL RADIATION PROTECTION ASSOCIATION, ROME, ITALY, SEPTEMBER 5-10, 1966

THE CONTAMINATION OF LARGE LAND AREAS WITH SIGNIFICANT QUANTITIES OF PLUTONIUM HAS BEEN ESSENTIALLY A SITUATION UNIQUE TO THE NONNUCLEAR DETONATION OF NUCLEAR WEAPONS. HOWEVER, WITH THE INCREASED USE OF PU-239 FOR NON-WEAPONS APPLICATIONS AND THE AVAILABILITY OF PU-238 IN QUANTITY, HEALTH PHYSICISTS NEED INFORMATION ON THE MAGNITUDE OF THE CONTAMINATION ASSOCIATED WITH PLUTONIUM ACCIDENTS. THE RESULTS OF THE MOST EXTENSIVE FIELD EXPERIMENTS TO DATE, OPERATION ROLLER COASTER SPONSORED BY THE UNITED STATES AND THE UNITED KINGDOM, PROVIDE AN INSIGHT INTO THE RADIOLOGICAL PROBLEMS OF SUCH ACCIDENTS. AS IS THE CASE IN ANY TRUE ACCIDENT INVOLVING RADIOACTIVE MATERIAL, IT IS NECESSARY TO FUNCTION AND EVALUATE UNDER CONDITIONS ENTIRELY DIFFERENT FROM ROUTINE PLUTONIUM OPERATIONS. SPECIAL EQUIPMENT WAS FIELD TESTED TO ENHANCE PLUTONIUM DETECTION BY LOW ENERGY ELECTROMAGNETIC RADIATIONS IN ADDITION TO MORE CONVENTION ALPHA MONITORING.

AVAILABILITY - PROCEEDINGS OF THE FIRST CONGRESS OF THE INTERNATIONAL RADIATION PROTECTION ASSOCIATION, PERGAMON PRESS, OXFORD, 1967

\*INSTRUMENTATION, RADIATION MONITORING + \*PLUTONIUM + ACCIDENT, GENERAL + DEPOSITION + FALLOUT + RADIATION SAFETY AND CONTROL

14-14506 ALSO IN CATEGORY 15  
TERRILL JG + BALES PE + HICKEY JL  
REMOVING RADIOACTIVITY FROM MILK  
U. S. DEPARTMENT PUBLIC HEALTH SERVICE  
22 PAGES, 8 FIGURES, 4 TABLES, 19 REFERENCES, 1966, PRESENTED AT THE FIRST INTERNATIONAL CONGRESS OF THE INTERNATIONAL RADIATION PROTECTION ASSOCIATION, SEPTEMBER 5-10, 1966, ROME, ITALY

THE RESEARCH, DEVELOPMENT, AND LARGE-SCALE TESTING OF METHODS FOR CONCURRENTLY REMOVING ANIONS AND CATIONS FROM MILK DURING PROCESSING WILL BE DESCRIBED, INCLUDING PRESENTATION OF DATA FROM BOTH LABORATORY AND LARGE-SCALE EXPERIMENTS. COST DATA RELATED TO SOME LARGE-SCALE EXPERIENCES WILL BE GIVEN WHERE IT WOULD BE USEFUL FOR COMPARATIVE PURPOSES.

AVAILABILITY - PROCEEDINGS OF THE FIRST CONGRESS OF THE INTERNATIONAL RADIATION PROTECTION ASSOCIATION, PERGAMON PRESS, OXFORD, 1967

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-14506 \*CONTINUED\*

\*ANALYTICAL TECHNIQUE, MILK + \*BIOLOGICAL CONCENTRATION, MILK + ECONOMICS + FALLOUT + IODINE + STRONTIUM

14-14507 ALSO IN CATEGORY 15

SCHULTZ NR

INHALATION CASES OF ENRICHED INSOLUBLE URANIUM OXIDES

OAK RIDGE GASEOUS DIFFUSION PLANT

28 PAGES, 11 FIGURES, 1 TABLE, 10 REFERENCES, 1966, PRESENTED AT THE FIRST INTERNATIONAL CONGRESS OF THE INTERNATIONAL RADIATION PROTECTION ASSOCIATION, SEPTEMBER 5-10, 1966, ROME, ITALY

THE RETENTION AND EXCRETION OF URANIUM OXIDES AND FLUORIDES BY ABOUT 80 EMPLOYEES ROUTINELY ASSIGNED TO CALCINING AND FLUORINATING URANIUM-BEARING MATERIALS ENRICHED IN THE U235 ISOTOPE HAVE BEEN STUDIED FOR MORE THAN A YEAR. PULMONARY FUNCTION TESTS OF THE EMPLOYEES REVEALED NORMAL RESPIRATORY FUNCTIONS. MEDICAL DATA, INCLUDING CHEST X-RAYS, URINALYSES FOR ALBUMIN, AND MICROSCOPIC EXAMINATION OF URINE FOR PATHOLOGICAL CELLS AND ORGANISMS, ARE NEGATIVE IN ALL CASES. THERE IS NO EVIDENCE OF INJURY FROM THESE TRANSIENT INTERNAL URANIUM DEPOSITIONS.

AVAILABILITY - PROCEEDINGS OF THE FIRST CONGRESS OF THE INTERNATIONAL RADIATION PROTECTION ASSOCIATION, PERGAMON PRESS, OXFORD, 1967

\*BIOLOGICAL CONCENTRATION, MAN + \*INHALATION + \*URANIUM + BIOMEDICAL + DOSE + PERSONNEL EXPOSURE, RADIATION + RADIATION SAFETY AND CONTROL

14-14532 ALSO IN CATEGORY 15

WALKER SM

RADIOLOGICAL RECOVERY REQUIREMENTS, STRUCTURES, AND OPERATIONS RESEARCH. VOLUME III. DECONTAMINATION

ANALYSIS OF SELECTED SITES AND FACILITIES IN SAN JOSE, CALIFORNIA, FINAL REPORT

RESEARCH TRIANGLE INST.

AD-635823 + USNRDL-TRC-16 (VOL. 3) +. 240 PAGES, 134 FIGURES, 97 TABLES, REFERENCES, JUNE 6, 1966

THIS IS VOLUME III OF FOUR VOLUMES THAT REPORT THE RESEARCH COMPLETED UNDER THE GENERAL TERMS OF THE OFFICE OF CIVIL DEFENSE SUBTASK NO. 3233B, RADIOLOGICAL RECOVERY REQUIREMENTS, STRUCTURES, AND OPERATIONS RESEARCH. THIS VOLUME CONTAINS THE SUPPORTING DATA RELATED TO DECONTAMINATION ANALYSES OF 16 SITES AND FACILITIES FROM SAN JOSE, CALIFORNIA.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*CIVIL DEFENSE + \*DECONTAMINATION + FALLOUT + RADIATION SAFETY AND CONTROL

14-14533 ALSO IN CATEGORY 15

RYAN JT + JOHNSON T

RADIOLOGICAL RECOVERY REQUIREMENTS, STRUCTURES, AND OPERATIONS RESEARCH, VOLUME II. DEVELOPMENT OF

ANALYTICAL, COMPUTER, AND SYSTEMS MODELS IN SUPPORT OF DECONTAMINATION ANALYSIS. FINAL REPORT

RESEARCH TRIANGLE INSTITUTE

AD-635822 + USNRDL-TRC-16 (VOL. 2) +. 243 PAGES, 15 FIGURES, 1 TABLE, REFERENCES, JUNE 6, 1966

THIS IS VOLUME II OF FOUR VOLUMES THAT REPORT THE RESEARCH COMPLETED IN FULFILLMENT OF OFFICE OF CIVIL DEFENSE WORK UNIT NO. 3233B, RADIOLOGICAL RECOVERY REQUIREMENTS, STRUCTURES, AND OPERATIONS RESEARCH. THIS VOLUME DESCRIBES SIX SUPPORTING STUDIES ALL PREVIOUSLY REPORTED TO THE OFFICE OF CIVIL DEFENSE IN RESEARCH MEMORANDA. VOLUME I DESCRIBES THE GENERAL ASPECTS OF THE INVESTIGATIONS AND PRESENTS THE CONCLUSIONS AND RECOMMENDATIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*ANALYTICAL MODEL + \*CIVIL DEFENSE + \*DECONTAMINATION + DOSE + FALLOUT + GAMMA EMITTER + RADIATION SAFETY AND CONTROL

14-14534 ALSO IN CATEGORY 15

RYAN JT + JOHNSON T + WALKER SM

RADIOLOGICAL RECOVERY REQUIREMENTS, STRUCTURES, AND OPERATIONS RESEARCH. VOLUME I. GENERAL

CONSIDERATIONS. FINAL REPORT

RESEARCH TRIANGLE INSTITUTE

AD-635821 + USNRDL-TRC-16 (VOL. 1) +. 94 PAGES, 16 FIGURES, 3 TABLES, JUNE 6, 1966

THIS STUDY EXAMINES THE APPLICATION OF DECONTAMINATION STRATEGIES TO EXTENSIVE URBAN AREAS. URBAN AREAS OF VARIOUS SIZES (FROM A FEW ACRES TO AN INTERCONNECTED SYSTEM INVOLVING HUNDREDS OF ACRES) WERE EXAMINED WITH REGARD TO DECONTAMINATING VITAL SECTIONS AND THEIR CONNECTING LINKS. THE TASK OF CREATING DECONTAMINATED ISLANDS OR MARSHALLING AREAS IS DETERMINED TO BE FEASIBLE. THE NATURE AND SCOPE OF COMMAND AND CONTROL-SYSTEM ELEMENTS REQUIRED FOR EFFECTIVE DECONTAMINATION IN PRACTICAL SITUATIONS IS DETERMINED TOGETHER WITH THE PREATTACK AND POSTATTACK DATA REQUIRED BY SUCH A SYSTEM. SEVERAL MODELS WERE DEVELOPED AND ARE DISCUSSED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*CIVIL DEFENSE + \*DECONTAMINATION + FALLOUT + GAMMA EMITTER + NUCLEAR EXPLOSION DEBRIS +

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-14534 \*CONTINUED\*  
RADIATION SAFETY AND CONTROL

14-14535 ALSO IN CATEGORY 15  
FILLMORE JW + MOULTROP HA  
SEALING OF PLASTIC FILM BY ELECTRONIC WELDING FOR ALPHA CONTAMINATION CONTROL.  
ISOCHEM INC.  
ISO-SA-23 + CONF-661001-11 +. 27 PAGES, FOR PRESENTATION AT 14TH CONFERENCE ON REMOTE SYSTEMS TECHNOLOGY,  
PITTSBURGH PA., JUNE 22, 1966

THE ISOCHEM PLUTONIUM MANUFACTURING FACILITY AT HANFORD, WASHINGTON, USES THE PLASTIC-BAG TECHNIQUE AND ELECTRONIC WELDING OR SEALING OF THE BAG AS AN AID IN ROUTINE ALPHA-CONTAMINATION CONTROL. THE BAG AND ELECTRONIC WELDING TECHNIQUES ASSIST IN THE MAINTENANCE OF HIGH-INTEGRITY CONTAINMENT OF ALPHA-CONTAMINATED MATERIALS AND EQUIPMENT. THE REQUIRED ELECTRONIC EQUIPMENT IS PORTABLE, RELIABLE, COMMERCIALY AVAILABLE, AND CONSISTS OF A HIGH-RADIOFREQUENCY GENERATOR AND A SEALING BAR CONSISTING OF TWO PLATES THAT CONDUCT THE RF FIELD AND FORM THE WELD SEAM AS THE HEATED PLASTIC FILMS FLOW TOGETHER.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*ALPHA EMITTER + \*RADIATION SAFETY AND CONTROL + INSTRUMENTATION, GENERAL + PLUTONIUM

14-14536  
REARD SJ + SMITH PW  
LARGE-SCALE PROCESSING AND SOURCE PREPARATION OF SEPARATED FISSION PRODUCTS  
GENERAL ELECTRIC, HANFORD ATOMIC PRODUCTS OPERATION + ISOCHEM INC.  
RL-SA-59 + CONF-660305-3 +. 22 PAGES FOR PRESENTATION AT AMERICAN NUCLEAR SOCIETY TOPICAL MEETING,  
AUGUSTA, GA., MARCH 21, 1966

THE CURRENT PROGRAM OF FISSION-PRODUCT RECOVERY INVOLVES SEPARATION OF STRONTIUM AND RARE EARTHS FROM PUPEX ACID WASTE BY LEAD-CARRIER SULFATE PRECIPITATION AND SUBSEQUENT SEPARATION OF RARE EARTHS FROM STRONTIUM BY OXALATE PRECIPITATION. STRONTIUM IS FURTHER PURIFIED BY DI(2-ETHYLHEXYL) PHOSPHORIC ACID SOLVENT EXTRACTION. CESIUM-137 IS RECOVERED FROM AGED ALKALINE WASTES BY PASSING THE ALKALINE SUPERNATANT THROUGH A BED OF ALUMINO-SILICATE RESIN. SEVERAL OTHER PROCESSES HAVE BEEN DEMONSTRATED WITH PROCESS SOLUTIONS IN PLANT EQUIPMENT. DESIGN IS NOW IN PROGRESS FOR BUILDING AND OPERATING A CONVERSION AND ENCAPSULATION PLANT TO HAVE AN ANNUAL PRODUCTION CAPACITY IN EXCESS OF 25 MEGACURIES OF EACH OF SEVERAL ISOTOPES. PRODUCTION OF SOURCES IN MEGACURIE QUANTITIES IS SCHEDULED FOR 1968.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*FISSION PRODUCT, SEPARATION FROM WASTE + BATTELLE NORTHWEST + CESIUM + ION EXCHANGE + STRONTIUM

14-14539 ALSO IN CATEGORY 18  
QUESTION A2. DILUTION BETWEEN REACTOR AND PUBLIC WATER INTAKE. AMOUNT OF LIQUID WASTE STORED ON SITE  
TENNESSEE VALLEY AUTHORITY  
PAGE A.2.1 OF BROWNS FERRY CONSTRUCTION PERMIT AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966,  
DOCKET NO. 50-259/60

ANSWER WILL BE PROVIDED LATER

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + DILUTION + REACTOR, BOILING WATER + WASTE DISPOSAL, RIVER + WASTE STORAGE + WATER, DRINKING

14-14541 ALSO IN CATEGORY 18  
QUESTION A4 - COMMUNITY DRINKING WATER STORAGE CAPACITY IN CASE OF RIVER CONTAMINATION  
TENNESSEE VALLEY AUTHORITY  
3 PAGES, PAGES A.4.1 TO A.4.3 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS,  
NOVEMBER 10, 1966, DOCKET NO. 50-259/60

THERE ARE ONLY FOUR SURFACE-WATER SUPPLIES WITHIN 50 MILES, THREE AT TVA DAMS OR STEAM PLANTS. THE SHEFFIELD, ALA., SUPPLY WOULD LAST 2 DAYS WITHOUT RATIONING.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + BROWNS FERRY + CONTAMINATION + REACTOR, BOILING WATER + SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + WATER, DRINKING

14-14583 ALSO IN CATEGORY 16  
QUESTION F.1 - BASIS FOR 1 CURIE/SEC OFF GAS LIMIT  
TENNESSEE VALLEY AUTHORITY

CATEGORY 14  
RADIOISOTOPE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-14583 \*CONTINUED\*

PAGE F.1.1 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966, DOCKET NO. 50-259/260

SPECIFIC CALCULATION FOR THIS SITE HAS NOT BEEN DONE, BUT SINCE THIS IS LARGELY A FUNCTION OF SITE SIZE AND STACK HEIGHT (RATHER THAN SITE METEOROLOGY), ESTIMATES WERE IN THE RANGE OF 0.5 - 1.0 CURIE/SEC. CALCULATIONS FOR THIS REACTOR WILL BE AVAILABLE BEFORE ISSUANCE OF THE OPERATING LICENSE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + REACTOR, BOILING WATER + SOURCE, CONTINUOUS + STACK

14-14584

QUESTION F.2 - DESCRIBE HOW GAS WASTE SYSTEM COUPLES WITH 10 CFR 20.106 (B) (1)

TENNESSEE VALLEY AUTHORITY

2 PAGES, PAGES F.2.1 TO F.2.2 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966, DOCKET NO. 50-259/260

SIX PROVISIONS LISTED - (1) HIGH-INTEGRITY ZIRCALOY-CLAD FUEL RODS. (2) 30-MINUTE HOLDUP BEFORE OFF-GAS DISCHARGE. (3) AUTOMATIC OFF-GAS MONITORING AND ISOLATION. (4) HIGH-EFFICIENCY FILTERS TO REMOVE NOBLE-GAS DAUGHTERS. (5) STACK IS TWICE HEIGHT OF NEARBY STRUCTURES. (6) CONTINUOUS STACK MONITORING BACKS UP AIR-EJECTOR MONITORS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + MONITOR, RADIATION, STACK + REACTOR OFFGAS + REACTOR, BOILING WATER + SOURCE, CONTINUOUS

14-14585

ALSO IN CATEGORY 17

QUESTION F.3 - ESTIMATE AND JUSTIFY TRITIUM DISCHARGE IN LIQUID

TENNESSEE VALLEY AUTHORITY

4 PAGES, PAGES F.3.1 TO F.3.4 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966, DOCKET NO. 50-259/260

STUDIES INDICATE TRITIUM IN THE LIQUID EFFLUENT IS A MILLIONTH OF THE OFF-SITE MPC (BASED ON ONLY ACTIVATION OF DEUTERIUM). NO SPECIAL MONITORING INSTRUMENTS ARE NECESSARY. EXPERIENCE SHOWS THAT LESS THAN 1% OF THE TRITIUM IN A ZIRCALOY-CLAD FUEL ROD LEAKS OUT BECAUSE OF HYDRIDE FORMATION, WHILE STAINLESS-CLAD FUEL ALLOWS IT TO LEAK.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + MONITOR, RADIATION, LIQUID + OPERATING EXPERIENCE + REACTOR, BOILING WATER + TRITIUM + WASTE DISPOSAL, LIQUID

14-14586

QUESTION F.4 - PROVIDE THE BASIS FOR LIQUID WASTE DISCHARGE RATES

TENNESSEE VALLEY AUTHORITY

5 PAGES, 1 TABLE, PAGES F.4.1 TO F.4.5 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966, DOCKET NO. 50-259/260

EXTRAPOLATION FROM DRESDEN-1 EXPERIENCE, (AND USING NONREGENERATIVE CONDENSATE DEMINERALIZERS) GIVES 1 MILLICURIE/DAY WITHOUT, AND 30 WITH FUEL LEAKS

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + COOLANT PURIFICATION SYSTEM + DRESDEN 1 + OPERATING EXPERIENCE + REACTOR, BOILING WATER + WASTE DISPOSAL, LIQUID

14-14588

ALSO IN CATEGORIES 17 AND 19

QUESTION F6. SENSITIVITY OF WASTE MONITORING

TENNESSEE VALLEY AUTHORITY

PAGE F5.1 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966, DOCKET NO. 50-259/260

(1) EXPERIENCE SHOWS THAT OFF-GAS AND STACK-MONITOR CALIBRATION VARIES BECAUSE OF CHANGING ISOTOPIC RATIOS, DEPENDING ON THE NATURE OF THE FUEL LEAKS. MONITOR CALIBRATION IS BASED ON GAMMA ANALYSIS OF GRAB SAMPLES (WHICH ARE TAKEN ROUTINELY OR ON INCREASED READINGS). (2) GRAB SAMPLES THEN ALLOW A CALIBRATION OF GROSS GAMMA VS MICROCURIES/SEC.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + INSTRUMENTATION CALIBRATION + MONITOR, RADIATION, STACK + OPERATING EXPERIENCE + REACTOR OFFGAS

CATEGORY 14  
RADIOISOTOPE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-14589  
QUESTIONS F-7. DETAILED DESCRIPTION OF LIQUID EFFLUENT SAMPLING  
TENNESSEE VALLEY AUTHORITY  
2 PAGES, PAGES F.7.1 TO F.7.2 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS,  
NOVEMBER 10, 1966, DOCKET NO. 50-259/260

VARIOUS RELEASE RATES WILL BE DETERMINED BY SAMPLING THE TANKS AND SETTING THE MONITORS  
ACCORDINGLY. A PROPORTIONAL SAMPLER AT THE DISCHARGE CULVERT WILL BE ANALYZED TWICE DAILY,  
AND MONTHLY FOR ISOTOPIC CONTENT. RECORDS WILL BE KEPT.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY +  
MONITOR, RADIATION, LIQUID + REACTOR, BOILING WATER

14-14590  
QUESTION F-8. DESIGN BASIS FOR ROD WASTE SYSTEM  
TENNESSEE VALLEY AUTHORITY  
PAGE F.8.1 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966,  
DOCKET NO. 50-259/260

DESIGN BASIS IS 5 MILLIREMS/YEAR AVERAGE TO PERSONS BEYOND EXCLUSION AREA, WHILE 500/YEAR IS  
ALLOWED BY 10 CFR 20.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY +  
DESIGN CRITERIA + MAXIMUM PERMISSIBLE DOSE (MPD) + REACTOR, BOILING WATER + WASTE DISPOSAL, GENERAL

14-14698 ALSO IN CATEGORY 15  
BASS PC  
ADDITIONAL HUGONIOT DATA FOR GEOLOGIC MATERIALS  
SANDIA CORPORATION, ALBUQUERQUE, NEW MEXICO  
SC-PR-66-548 +. 29 PAGES, OCTOBER 1966

HUGONIOT EQUATION-OF-STATE DATA HAVE BEEN OBTAINED FOR SEVERAL ADDITIONAL GEOLOGIC MATERIALS.  
INCLUDED ARE ANDESITE, VOLCANIC BRECCIA, GRANITE, LIMESTONE, OIL SHALE, TUFF, AND ALLUVIUM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*GEOLOGICAL CONSIDERATION, GENERAL + \*PLOWSHARE PROGRAM + EARTHQUAKE, GENERAL

14-14699 ALSO IN CATEGORY 15  
VIDEON FF  
PROJECT PALANQUIN - STUDIES OF THE APPARENT CRATER. FINAL REPORT  
ARMY ENGINEER NUCLEAR CRATERING GROUP, LIVERMORE, CALIFORNIA  
PNE-904 +. 34 PAGES, APRIL 1966

DETONATION OF THE PALANQUIN DEVICE PRODUCED AN APPARENT CRATER 72.6 METERS IN DIAMETER AND 24  
DEEP. THE PRODUCTION OF AN APPARENT CRATER WAS PROBABLY THE RESULT OF SCOUR BY THE ESCAPING  
GAS, WHICH VENTED PREMATURELY. THE ASYMMETRY OF THE CRATER AND THE SURROUNDING DISTURBANCE  
OF THE GROUND SURFACE INDICATE THE INFLUENCE OF GEOLOGY IN PRODUCING THE CRATER. THE LIP OF  
THE PALANQUIN CRATER RESULTED PRIMARILY FROM AN UPWARD DISPLACEMENT OF THE ORIGINAL GROUND  
SURFACE. THE DISTANCE TO THE EDGE OF THIS UPLIFTED ZONE IS ABOUT TWICE THE DEPTH OF BURST.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*GEOLOGICAL CONSIDERATION, GENERAL + \*PLOWSHARE PROGRAM

14-14703  
DODD JD  
THE BIOGEOCHEMICAL CYCLE OF CS-134 IN TWO NATIVE STANDS OF ANDROPOGON SCOPARIUS MICHX  
UNIVERSITY OF TEXAS, TEXAS AGRICULTURAL EXPERIMENT STATION  
ORO-3488-1 +. 10 PAGES, AUGUST 15, 1966

A STUDY TO COMPARE THE DISTRIBUTION OF CS-134 IN TWO NATIVE GRASSLANDS ON DIFFERENT SOIL TYPES  
WAS STARTED IN THE SPRING OF 1966. INJECTIONS OF 200 MICROCURIES OF CS-134 IN 0.1 ML OF  
SOLUTION, USING A NEEDLE AND SYRINGE, WERE MADE INTO THE BASE OF A GREEN CULM ON SELECTED  
CROWNS OF ANDROPOGON SCOPARIUS IN EACH SOIL TYPE. INITIAL DISTRIBUTION THROUGH THE CROWN WAS  
SLOW, APPARENTLY DUE TO UNSEASONABLY COOL WEATHER. A COMPLETELY UNIFORM DISTRIBUTION STILL  
IS NOT EVIDENT, PARTICULARLY IN THE CLAY SOIL.

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-14703 \*CONTINUED\*

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*ECOLOGICAL CONSIDERATION + BIOLOGICAL CONCENTRATION, VEGETATION + CESIUM + SOIL, PROPERTY

14-14705

PARKER FL + CHURCHILL MA + ANDREW RW + FREDERICK BJ + CARRIGAN PH + CRAGWALL JS + JONES SL + STRUXNESS EG + MORTON PJ

DILUTION, DISPERSION, AND MASS TRANSPORT OF RADIONUCLIDES IN THE CLINCH-TENNESSEE RIVERS  
OAK RIDGE NATIONAL LABORATORY + UNITED STATES PUBLIC HEALTH SERVICE + TENNESSEE VALLEY AUTHORITY  
ORNL-P-232R + SM-72/3 + CONF-660507-33 +. 33 PAGES, 1966, PRESENTED AT SYMPOSIUM ON THE DISPOSAL OF RADIOACTIVE WASTES INTO SEAS, OCEANS, AND SURFACE WATERS, VIENNA, AUSTRIA, MAY 16-20, 1966

THIS COMPREHENSIVE COOPERATIVE STUDY, BY STATE AND FEDERAL AGENCIES AND OAK RIDGE NATIONAL LABORATORY, OF THE FATE OF NUCLIDES DISCHARGED TO THE CLINCH RIVER WAS SUCCESSFULLY CONCLUDED. ANALYSES OF WATER SAMPLES INDICATED THAT THE MAJOR RADIONUCLIDES DISCHARGED TO THE CLINCH RIVER IN THE 20 YEARS, 1944 THROUGH 1963, HAVE BEEN SR-90, CS-137 (660 CURIES), RU-106 (6600 CURIES), TRU (1240 CURIES), AND CO-60 (270 CURIES). A MASS-BALANCE ANALYSIS OF THE SR-90, CS-137, CO-60, AND RU-106 IN CLINCH AND TENNESSEE RIVERS BELOW ORNL WAS MADE, COVERING A PERIOD OF 2 YEARS AND 160 RIVER MILES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*PISEP, CLINCH + \*SURFACE WATER, NUCLIDE OCCURRENCE + DILUTION + DISPERSION + SAMPLING + SURFACE WATER, PROPERTY + WASTE DISPOSAL, RIVER

14-14707

HAFPTFL L + OSTERBERG C

ECOLOGY OF THE COLUMBIA RIVER ESTUARY

OREGON STATE UNIVERSITY

RL0-1750-R +. 2 PAGES, ECOLOGICAL STUDIES OF RADIOACTIVITY IN THE COLUMBIA RIVER AND ADJACENT PACIFIC OCEAN, PROGRESS REPORT JULY 1, 1965 - JUNE 30, 1966, PAGES 29-30, JULY 1966

FAUNA OF THE COLUMBIA RIVER ESTUARY WERE SAMPLED REGULARLY FOR 21 MONTHS. ANALYSES OF PLANKTON SAMPLES INDICATED THAT THREE POPULATIONS EXISTED IN THE ESTUARY - A FRESHWATER GROUP, A MARINE GROUP, AND AN ENDEMIC ESTUARINE GROUP. THE MAJORITY OF THE FISH AND BENTHIC INVERTEBRATES FOUND IN THE ESTUARY ARE EURYHALINE. THE LARGEST NUMBER OF FISH SPECIES, AS WELL AS THE LARGEST NUMBERS OF INDIVIDUALS, OCCUPY THE SLIGHTLY BRACKISH WATERS OF THE CENTRAL PORTION OF THE ESTUARY. EXTENSIVE ANALYSES OF STOMACH CONTENTS CONFIRM THAT FOOD HABITS OF FISHES GENERALLY REFLECT THE AVAILABILITY OF PREY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*ECOLOGICAL CONSIDERATION + \*RIVER, COLUMBIA + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + OCEAN AND SFA + SAMPLING + SURFACE WATER, NUCLIDE OCCURRENCE + SURFACE WATER, SEDIMENT + ZINC

14-147P7

ALSO IN CATEGORIES 8 AND 17

DOUGLAS PE

EFFECTS OF WATER LEAKAGE INTO TANKS CONTAINING SODIUM

ATOMICS INTERNATIONAL, CANOGA PARK

NAA-SR-MEMO-12239 +. 14 PAGES, NOVEMBER 10, 1966

ONE METHOD FOR DISPOSING OF THE HALLAM PRIMARY SODIUM IS TO BURY THE STORAGE TANKS WITHOUT PRIOR REACTION OF THE SODIUM. A TEST WAS PERFORMED TO DETERMINE THE EFFECTS OF GROUND WATER LEAKAGE INTO THE TANKS THROUGH PINHOLES OR CRACKS. A HALF QUART CAN WAS SUBMERGED AND VARIOUS SIZED HOLES DRILLED. RESULTS INDICATE THAT THE SODIUM-WATER REACTION WOULD TAKE PLACE AT A SELF-REGULATING RATE, AND NO EXCESSIVE INTERNAL PRESSURE INCREASE OR EXPLOSIVE CONDITION WOULD BE CREATED IN THE TANKS UNDER CONDITIONS SIMILAR TO THOSE IMPOSED FOR THE TEST.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*METAL WATER REACTION + \*REACTOR DECOMMISSIONING EXPERIENCE + \*SODIUM + \*WASTE DISPOSAL, TERRESTRIAL + EXPLOSION + HALLAM + REACTOR, GRAPHITE MODERATED + REACTOR, LIQUID METAL COOLED

14-14864

ALSO IN CATEGORIES 3 AND 1

STAGG MS

IMPACT TESTING OF RADIOACTIVE SAMPLES

BERKELEY NUCLEAR LABORATORIES

3 PAGES, 5 FIGURES, 3 REFERENCES, NUCLEAR ENGINEERING 11(123) PAGES 606-608 (AUGUST 1966)

THE EMBRITTLEMENT OF STEELS BY NEUTRON IRRADIATION HAS BEEN KNOWN SINCE THE 1957 GENEVA CONFERENCE BUT IT IS STILL NOT COMPLETELY UNDERSTOOD. A CONVENIENT WAY OF DEFINING THESE CHANGES IS TO SPECIFY THE CHANGES IN THE BRITTLE/DUCTILE TRANSITION TEMPERATURE. SUCH TESTS

CATEGORY 14  
RADIOISOTOPE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-14864 \*CONTINUED\*

REQUIRE REMOTELY OPERATED IMPACT MACHINES FOR EXPERIMENTS ON ACTIVE MATERIALS. THIS REPORT DESCRIBES THE TESTING FACILITIES AT BERKELEY NUCLEAR LABORATORIES, PRIMARILY INSTALLED FOR TESTING THE MONITORING SAMPLES WHICH ARE NOW INCORPORATED IN THE GECB CIVIL REACTORS.

\*IMPACT SHOCK + CLAD + EMBRITTLEMENT + FAILURE, CLADDING + IRRADIATION TESTING

14-14948 ALSO IN CATEGORY 15

SCHREIBER B

ECOLOGY OF ACANTHARIA IN RELATION TO SR CIRCULATION IN THE SEA. PROGRESS REPORT, DECEMBER 1, 1965 - AUGUST 31, 1966

PARMA UNIVERSITY, ITALY

IAEA-2607-12 +. 32 PAGES, AUGUST 1966

TAXONOMIC STUDIES WERE MADE ON COLLECTIONS FROM THE GULF STREAM AND THE SARGASSO SEA. FORTY SPECIES OF ACANTHARIA (PROTOZOA RADIOLORIA) WERE DETERMINED. THE RADIOACTIVITY OF SR-90 OF PLANKTON IN RELATION TO THE PRESENCE OR ABSENCE OF ACANTHARIA WAS STUDIED. RADIOCHEMICAL ANALYSES FOR SR-90 WERE MADE ON PLANKTON SAMPLES FROM THE LIGURIAN AND ADRIATIC SEAS. ACANTHARIA ARE PRESENT IN THE LIGURIAN SEA BUT ABSENT IN THE ADRIATIC. THIS APPEARS TO BE RELATED TO A DIFFERENCE IN ACCUMULATION CAPACITY OF SR-90. COASTAL MARINE SEDIMENTS WERE ANALYZED FOR BETA ACTIVITY. METHODS OF COLLECTING AND IDENTIFYING FORAMINIFERA IN ADRIATIC SEDIMENTS ARE DESCRIBED. MICROPALAEONTOLOGICAL STUDIES ARE BEING MADE. RESEARCH IN PROGRESS CONSISTS OF CULTURE TECHNIQUES FOR CYSTS OF ACANTHARIA AND RADIOCHEMICAL ANALYSES OF COASTAL SEDIMENTS FOR SR-90, CE-144, AND EU-155.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION NATIONAL BUREAU OF STANDARDS, U. S. DEPT. OF COMMERCE, SPRINGFIELD, VA., 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*ECOLOGICAL CONSIDERATION + \*SURFACE WATER, NUCLIDE OCCURRENCE + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + FALLOUT + OCEAN AND SEA + STRONTIUM + SURFACE WATER, SEDIMENT

14-14949 ALSO IN CATEGORY 15

SCHULZE-RETTMER R

TREATMENT AND DISPOSAL OF RADIOACTIVE WASTE WATER. A REVIEW.

KERNFORSCHUNGSANLAGE, JUELICH

JUL-359-DF +. 53 PAGES, MARCH 1966, IN GERMAN

REVIEWS THE TREATMENT AND DISPOSAL OF RADIOACTIVE WASTE WATER AT A LARGE NUMBER OF REACTOR CENTERS AND OTHER NUCLEAR INSTALLATIONS. PROCEDURES USED IN THE GERMAN REPUBLIC (BERLIN, GARCHING, GEESTHACHT, GUNDEMMINGEN, HOECHST, JUELICH, KAHL, AND KARLSRUHE), CANADA (CHALK RIVER), DENMARK (RISO), FRANCE (FONTENAY-AUX-ROSES, GRENCBLE, MARCOULE, AND SACLAY), GREAT BRITAIN (ALDERMASTON, HARWELL, WINDSCALE), ITALY (ISPRA), NETHERLANDS (PETTEN), AUSTRIA (SEIBERSDORF), SWEDEN (STUDSVIK), SWITZERLAND (WURENLINGEN), AND THE UNITED STATES (ARGONNE, BROOKHAVEN DRESDEN, HANFORD, KNOLLS ATOMIC IN NEW YORK, OAK RIDGE, PENNSYLVANIA, AND SHIPPINGPORT) ARE REPORTED.

AVAILABILITY - MICROCARD EDITION INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669

\*WASTE DISPOSAL, GENERAL + \*WASTE TREATMENT, LIQUID + CANADA + DENMARK + FRANCE + GERMANY + ITALY + NETHERLANDS + UNITED KINGDOM + UNITED STATES + WASTE MANAGEMENT

14-14950 ALSO IN CATEGORY 15

ANNUAL REPORT FOR THE YEAR 1965

NATIONAL RADIATION LAB., CHRISTCHURCH, NEW ZEALAND

NP-16245 + NRL-AR-16 +. 41 PAGES, 1965

THE NATIONAL RADIATION LABORATORY OF NEW ZEALAND PROVIDES ASSISTANCE IN RADIOLOGICAL PHYSICS TO MEDICAL USERS OF X RADIATION, RA, AND SEALED AND UNSEALED RADIOISOTOPE SOURCES, AND PROVIDES RADIATION PROTECTION SERVICES FOR THE POPULATION. ACTIVITIES DURING 1965 INCLUDED THE ROUTINE MONITORING OF RADIOLOGY MEDICAL PERSONNEL AND FACILITIES, MEASUREMENTS OF THE DOSE RECEIVED BY PATIENTS DURING DIAGNOSTIC RADIOGRAPHY, AND MEASUREMENTS OF THE DOSE IN DENTAL SURGERIES. STUDIES ON ENVIRONMENTAL RADIOACTIVITY DUE TO FALLOUT OR TO NATURALLY OCCURRING PB-210, RA-226, OR RN-222, OR TO PO-210 IN TOBACCO ARE REPORTED. DATA ARE INCLUDED ON THE CONTENT OF SR-90 IN MILK, RAIN WATER, AND SOIL, AND THE CONTENT OF CS-137 IN MILK AND WHEAT FLOUR SAMPLED DURING 1965.

AVAILABILITY - MICROCARD EDITIONS INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669

\*BIOMEDICAL + \*FALLOUT + \*NEW ZEALAND + \*SURVEY, RADIATION, ENVIRONMENTAL + BIOLOGICAL CONCENTRATION, FOOD + BIOLOGICAL CONCENTRATION, MILK + BIOLOGICAL CONCENTRATION, VEGETATION + CESIUM + DOSE MEASUREMENT, EXTERNAL + LEAD + PERSONNEL EXPOSURE, RADIATION + POLONIUM + RADIUM + RAINOUT + SODIUM + SOIL, NUCLIDE OCCURRENCE + SOURCE, RADIATION + X-RAY

14-14952

MILLER CF

THE CONTAMINATION BEHAVIOR OF FALLOUT-LIKE PARTICLES EJECTED BY VOLCANO IRAZU  
STANFORD RESEARCH INST., MENLO PARK, CALIF.



CATEGORY 14  
RADIOISOTOPE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-14952 \*CONTINUED\*  
AD-534901 +. 67 PAGES, 57 FIGURES, APRIL 1966

PHOTOGRAPHS OF OBJECTS CONTAMINATED WITH PARTICLES EJECTED FROM VOLCANO IRAZU IN COSTA RICA ARE PRESENTED TO INDICATE THE NATURE OF PARTICLE BEHAVIOR IN VARIOUS ENVIRONMENTAL SITUATIONS. THE SIMILARITY BETWEEN THE PARTICLES EJECTED BY THE VOLCANO AND THE FALLOUT PARTICLES PRODUCED BY LAND-SURFACE NUCLEAR DETONATIONS SUGGESTS THAT THE CONTAMINATION BEHAVIOR OF THE RADIOACTIVE FALLOUT PARTICLES WOULD BE SIMILAR TO THAT OBSERVED FOR THE VOLCANIC PARTICLES. THE PECULIARITIES OF THE PARTICLE BEHAVIOR ARE DISCUSSED IN GENERAL TERMS IN THE FIGURE CAPTIONS FOR EACH SITUATION DEPICTED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*FALLOUT + \*GEOLOGICAL CONSIDERATION, GENERAL + ATMOSPHERIC DIFFUSION + PARTICULATE

14-14953 ALSO IN CATEGORY 15  
ENVIRONMENTAL RADIOACTIVITY IN NEW ZEALAND. QUARTERLY REPORT, JAN. - MARCH, 1966  
NATIONAL RADIATION LAB., CHRISTCHURCH. NEW ZEALAND  
NP-16270 + NRL-F-20 +. 24 PAGES, FIGURES, MARCH 1966

IN SEPTEMBER 1957 THE DEPT. OF HEALTH WAS CHARGED, UNDER A CABINET DIRECTIVE, WITH THE RESPONSIBILITY FOR MONITORING ENVIRONMENTAL RADIOACTIVE CONTAMINATION IN NEW ZEALAND AND THE PACIFIC AREAS WITH WHICH IT IS ASSOCIATED. LATER, THE NETWORK OF COLLECTING STATIONS WAS ESTABLISHED TO PROVIDE THE NECESSARY SAMPLES OF AIR, WATER, SOIL AND MILK. THE COLLECTIONS AND MEASUREMENTS ARE BEING MADE ROUTINELY, AND THE RESULTS ARE PUBLISHED IN THE PRESENT SERIES OF QUARTERLY REPORTS, I.E., FALLOUT IN NEW ZEALAND, DXRL-F1 TO F9 AND NRL-F10 ONWARDS.

AVAILABILITY - MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669

\*FALLOUT + \*NEW ZEALAND + \*SURVEY, RADIATION, ENVIRONMENTAL + AIR + BIOLOGICAL CONCENTRATION, MAN + BIOLOGICAL CONCENTRATION, MILK + CESIUM + GROSS BETA + RAINOUT + SAMPLING + SOIL, NUCLIDE OCCURRENCE + STRONTIUM + SURFACE WATER, NUCLIDE OCCURRENCE + TOPOGRAPHY

14-14954 ALSO IN CATEGORY 15  
KRIEGER HL + VELTEN RJ + BURMANN FJ  
RADIOISOTOPE ANALYSIS OF ENVIRONMENTAL SAMPLES. A LABORATORY MANUAL OF METHODOLOGY  
PUBLIC HEALTH SERVICE, WASHINGTON  
NP-16235 + P-59-6 +. 74 PAGES, DECEMBER 1959. REVISED FEBRUARY 1966

LABORATORY PROCEDURES FOR SEPARATING A PARTICULAR NUCLIDE FROM THE REMAINDER OF THE RADIOISOTOPES IN AN ENVIRONMENTAL SAMPLE ARE PRESENTED. FOR EACH PROCEDURE, THE METHOD CAPABILITIES REPRESENT THE STATISTICAL EVALUATION OF THE ANALYSIS, AND THE ACTUAL PROCEDURE TIME DOES NOT INCLUDE SUCH PROCESSES AS LONG EVAPORATION, DIGESTION, AND EQUIPMENT PREPARATION. DECONTAMINATION FACTORS WERE DETERMINED FOR THOSE FISSION PRODUCTS MOST LIKELY TO BE PRESENT AND ARE BASED ON THEIR SEPARATION FROM ABOUT 100,000 DPM OF THE INTERFERING NUCLIDES. INSTRUMENTATION, METHODOLOGY, AND REAGENT PREPARATION ARE DISCUSSED FOR DETERMINATIONS OF TRITIUM, SR-89, SR-90, I-131, CS-137, RA-226, RN, CA, AND STABLE SR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*ANALYTICAL TECHNIQUE, GENERAL + \*SURVEY, RADIATION, ENVIRONMENTAL + ANALYTICAL TECHNIQUE, MILK + ANALYTICAL TECHNIQUE, SOLID + ANALYTICAL TECHNIQUE, VEGETATION + ANALYTICAL TECHNIQUE, WATER + CALCIUM + CESIUM + COUNTER + INSTRUMENTATION, GENERAL + INSTRUMENTATION, NUCLEAR + INSTRUMENTATION, RADIATION MONITORING + IODINE + RADIUM + RADON + SAMPLING + STRONTIUM

14-14956 ALSO IN CATEGORY 15  
HONSTEAD JF + BRADY DN  
THE UPTAKE AND RETENTION OF P-32 AND ZN-65 FROM THE CONSUMPTION OF COLUMBIA RIVER FISH  
BATTELLE-NORTHWEST, RICHLAND  
RNWL-5A-45 +. 19 PAGES, JUNE 7, 1965

THE UPTAKE AND WHOLE-BODY RETENTION OF P-32 AND ZN-65 WERE STUDIED IN SUBJECTS WHOSE DIET CONTAINED MEASURED QUANTITIES OF COLUMBIA RIVER FISH. THE P-32 AND ZN-65 CONTENT OF DUPLICATE FISH SAMPLES WAS MEASURED. AN INSTRUMENT DEVELOPED FOR MEASURING P-32 IN VIVO GAVE GOOD AGREEMENT WITH WHOLE-BODY-COUNTING DATA. PRELIMINARY RESULTS INDICATED THAT ALL SUBJECTS ABSORBED MORE THAN 95% OF THE P-32 AVAILABLE IN THE FISH, WHILE ZN-65 ABSORPTION RANGED FROM 31 TO 50% OF THAT AVAILABLE. THE EFFECTIVE HALF-LIFE OF ZN-65 WAS 150 DAYS. THERE APPEARED TO BE GREATER VARIATION IN THE METABOLIC PARAMETERS OF FRACTIONAL ABSORPTION AND EFFECTIVE HALF-LIFE IN THE CASE OF ZN-65 THAN WAS APPARENT FOR P-32.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPT. OF COMMERCE, SPRINGFIELD, VA., 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + \*ECOLOGICAL CONSIDERATION + \*SURFACE WATER, NUCLIDE OCCURRENCE + BATTELLE NORTHWEST + BIOLOGICAL CONCENTRATION, MAN + COUNTER, WHOLE BODY + INSTRUMENTATION, RADIATION MONITORING + PHOSPHORUS + ZINC

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-14961

CLARK WE + FITZGERALD CL  
LABORATORY DEVELOPMENT OF PROCESSES FOR FIXATION OF HIGH-LEVEL RADIOACTIVE WASTES IN GLASSY SOLIDS. (5)  
CONTINUOUS FIXATION OF AQUEOUS WASTE. THE CON-POTGLASS PROCESS  
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE  
ORNL-4017 +. 19 PAGES, 5 FIGURES, 2 TABLES, 10 REFERENCES, JANUARY 1967

SIMULATED PUREX WASTES WERE SOLIDIFIED IN SEMI-ENGINEERING-SCALE EQUIPMENT BY USING A CONTINUOUS MELTING PROCESS. OPERATION WAS SIMPLER THAN THAT OF EITHER THE POT-CALCINATION (POTCAL) OR THE RISING-LEVEL GLASS (RL-POTGLASS) PROCESS PREVIOUSLY DEVELOPED AT ORNL. VOLATILITIES OF SIMULATED FISSION PRODUCTS WERE ABOUT THE SAME AS THOSE IN THE OTHER TWO PROCESSES. MELTS WITH VISCOSITIES EQUAL TO OR LESS THAN 20 POISES WERE PREFERRED. EXCESSIVE CORROSION OF THE MELTER VESSEL IS THE PRINCIPAL DISADVANTAGE OF THE PROCESS. RATES OF ATTACK ON POTENTIALLY USEFUL HIGH-NICKEL ALLOYS IN PHOSPHATE MELTS AT 900 C VARIED BETWEEN 120 AND 626 MILS/MONTH. LEAD SILICATE MELTS HAD THE LOWEST CORROSION RATES OF THE MELTS TESTED, WITH MAXIMUM PENETRATION OF ABOUT 20 MILS/MONTH.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., 22151, \$3.00 COPY- \$0.65 MICROFICHE

\*WASTE TREATMENT, FIXATION + \*WASTE TREATMENT, LIQUID + WASTE DISPOSAL, LIQUID + WASTE DISPOSAL, SOLID

14-14964

ROENZI D + DLOUHY Z + LENZI G  
A STUDY ON THE SORPTION PROPERTIES OF NATURAL TUFFS OCCURRING IN THE LAKE BRACCIANO REGION (ROME).  
COMITATO NAZIONALE PER L'ENERGIA NUCLEARE, ROME  
RT/PROT(65)19 +. 18 PAGES, JUNE 1965

THIS STUDY INCLUDES A PRELIMINARY CLASSIFICATION OF NATURAL TUFFS FROM THE LAKE BRACCIANO REGION, ACCORDING TO THEIR ABILITY TO TAKE IN MICROAMOUNTS OF CESIUM AND STRONTIUM. THE MATERIALS STUDIED WERE CLASSIFIED BY MEANS OF CRITERIA OF DISTRIBUTION COEFFICIENTS FOR BOTH RADIONUCLIDES. THE MOST PROMISING AMONG THESE SORBENTS WERE STUDIED IN MORE DETAIL. THE INFLUENCE OF GRANULOMETRY, OF PH, AND OF THE CONCENTRATION OF COMPETING NA AND CA IONS, AS WELL AS THE SORPTION KINETICS, WERE THE MAIN CRITERIA FOR COMPARISON.

AVAILABILITY - MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669

\*GEOLOGICAL CONSIDERATION, GEOCHEMICAL + \*ION EXCHANGE + \*SOIL, PROPERTY + CESIUM + GEOLOGICAL CONSIDERATION, GENERAL + SORPTION + STRONTIUM

14-14965

ALSO IN CATEGORY 15

ANNUAL REPORT, 1964-1965.  
AGRICULTURAL RESEARCH COUNCIL, WANTAGE  
ARCRL-14 +. 90 PAGES, SEPTEMBER 1965

DATA ARE PRESENTED ON THE RADIOACTIVITY DUE TO FALLOUT IN THE HUMAN DIET IN GREAT BRITAIN IN 1964 AND 1965. EMPHASIS IS PLACED ON THE CONTENT OF CS-137 AND SR-90 IN REPRESENTATIVE FOODS AND TOTAL DIET. RESULTS ARE INCLUDED FROM STUDIES ON THE BEHAVIOR OF IONS IN SOIL AND THE PHYSIOLOGY OF THEIR ABSORPTION AND DISTRIBUTION IN PLANTS, WITH EMPHASIS ON THE MOVEMENT OF CS-137 AND SR-90 IN SOIL AND THE EFFECT OF THEIR UPTAKE BY PLANTS ON THEIR CONTENT IN MILK.

AVAILABILITY - BRITISH INFORMATION SERVICE, 845 THIRD AVE., NEW YORK 10022

\*BIOLOGICAL CONCENTRATION, FOOD + \*BIOLOGICAL CONCENTRATION, MILK + \*FALLOUT + \*SURVEY, RADIATION, ENVIRONMENTAL + BIOLOGICAL CONCENTRATION, MAN + BIOLOGICAL CONCENTRATION, VEGETATION + CESIUM + ECOLOGICAL CONSIDERATION + SOIL, NUCLIDE OCCURRENCE + SOIL, PROPERTY + SOIL, RADIONUCLIDE MOVEMENT THROUGH + STRONTIUM + TRACER, RADIOACTIVE + UNITED KINGDOM

14-14966

ALSO IN CATEGORY 15

SCHREIBER R  
ECOLOGY OF ACANTHARIA IN RELATION TO SR CIRCULATION IN THE SEA  
ISTITUTO DI ZOOLOGIA E ANATOMIA COMPARATA, PARMA UNIVERSITY, ITALY  
YID-22193 +. 14 PAGES, JULY 1965

PROGRESS IS REPORTED IN AN ECOLOGICAL STUDY OF PLANKTON IN THE MEDITERRANEAN SEA AND ATLANTIC OCEAN. EMPHASIS WAS PLACED ON THE RADIOACTIVITY OF ACANTHARIA IN RELATION TO THEIR CAPACITY TO REMOVE SR-90 FROM SEA WATER. DATA ARE INCLUDED ON THE SR-90 CONTENT IN SAMPLES OF PLANKTON, SEA WATER, BONES OF CUTTLE FISH, MUSSEL SHELL, MARINE COASTAL SEDIMENTS, AND FALLOUT RADIOACTIVITY IN RAIN WATER DURING THE FIRST HALF OF 1965.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., 22151 \$3.00 COPY, \$0.65 MICROFICHE

\*BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + \*ECOLOGICAL CONSIDERATION + \*OCEAN AND SEA + FALLOUT + RAINOUT + STRONTIUM + SURFACE WATER, NUCLIDE OCCURRENCE + SURFACE WATER, SEDIMENT

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-14968            ALSO IN CATEGORY 15  
AYRES RU  
ENVIRONMENTAL EFFECTS OF NUCLEAR WEAPONS  
HUDSON INST., INC., HARMON-ON-HUDSON, N. Y.  
HT-518-RR(VOL. 2) +. 85 PAGES, REFERENCES, DECEMBER 1, 1965

INTERACTIONS OF RADIOLOGICAL, THERMAL, METEOROLOGICAL, AND SECONDARY EFFECTS FROM NUCLEAR WEAPONS WITH POST-ATTACK PROBLEMS ARE DISCUSSED, PARTICULARLY IN CONNECTION WITH AGRICULTURE. THE POTENTIAL CONFLICTS BETWEEN SHORT-TERM AND LONG-TERM OBJECTIVES ARE STRESSED. A NUMBER OF SPECIFIC COUNTERMEASURES ARE LISTED AND DISCUSSED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*CIVIL DEFENSE + \*DECONTAMINATION + \*ECOLOGICAL CONSIDERATION + FALLOUT + METEOROLOGY + NUCLEAR DETONATION + RADIATION DAMAGE + RADIATION EFFECT + THERMAL CONSIDERATION

14-14970            ALSO IN CATEGORY 15  
KRUMHOLZ LA  
A RADIOECOLOGICAL STUDY OF THE BIOTA OF DOE RUN, MEADE COUNTY, KENTUCKY. FINAL REPORT  
LOUISVILLE UNIVERSITY  
TID-22815 +. 92 PAGES, 1965

RESULTS ARE REPORTED FROM A STUDY MADE BETWEEN MAY 1959 AND OCTOBER 1964 ON THE GENERAL ECOLOGY OF DOE RUN, MEADE COUNTY, KENTUCKY. THE DATA DEMONSTRATE THE OVERALL ACCUMULATION OF RADIOACTIVITY FROM FALLOUT BY VARIOUS COMPONENTS OF THE ECOLOGICAL SYSTEM. A MARKED INCREASE IN THE AMOUNT OF RADIONUCLIDES ACCUMULATED BY ALL ORGANISMS WAS OBSERVED FOLLOWING INITIATION OF THE RUSSIAN NUCLEAR TESTS IN SEPTEMBER 1961. MEASUREMENTS WERE MADE OF GROSS BETA RADIOACTIVITY, CS-137, AND SP-90 IN SAMPLES OF ANIMALS, PLANTS, AND WATER.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*ECOLOGICAL CONSIDERATION + \*FALLOUT + \*SURVEY, RADIATION, ENVIRONMENTAL + BIOLOGICAL CONCENTRATION, ANIMAL + BIOLOGICAL CONCENTRATION, VEGETATION + CESIUM + GROSS BETA + STRONTIUM + SURFACE WATER, NUCLIDE OCCURRENCE

14-14974            ALSO IN CATEGORY 15  
STUDIES OF OCEANOGRAPHIC FACTORS AFFECTING THE USE OF NUCLEAR POWER SOURCES IN OR ADJACENT TO THE SEA.  
PROGRESS REPORT, OCTOBER 1, 1965 - JUNE 30, 1966  
JOHNS HOPKINS UNIVERSITY  
NYO-3100-19 +. 9 PAGES, JUNE 1966

PRESENT OCEANOGRAPHIC KNOWLEDGE WAS USED TO DEVELOP EQUATIONS FOR USE IN THE EVALUATION OF A SERIES OF OFFSHORE SITES ALONG THE CONTINENTAL SHELF OF THE ATLANTIC OCEAN OFF THE U.S. AS POSSIBLE LOCATIONS FOR SNAP-TYPE POWER SOURCES ON THE OCEAN BOTTOM. EMPHASIS WAS PLACED ON STUDIES ON THE EFFECTS OF HEATED WATER DISCHARGED INTO THE ESTUARINE OR COASTAL ENVIRONMENT ON PHYSICAL PROCESSES OF MOVEMENT AND DISPERSION OF RADIOACTIVE MATERIALS AND ALSO ON EXCESS HEAT. THE STUDIES LED TO THE CONCLUSION THAT A PROMISING METHOD FOR PROVIDING INITIAL MECHANICAL DILUTION OF HEATED EFFLUENT WOULD BE THE DISCHARGE OF THE EFFLUENT AS A JET HAVING EXCESS MOMENTUM AS COMPARED TO THE RECEIVING WATERS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*OCEAN AND SEA + \*SNAP, GENERAL (SYSTEMS FOR NUCLEAR AUX. POWER) + SURFACE WATER, PROPERTY + THERMAL CONSIDERATION

14-14976            ALSO IN CATEGORY 15  
MADSHUS K  
THE CORRELATION BETWEEN THE PRECIPITATION AND THE CONCENTRATION OF CS-137 IN COWS MILK IN NORWAY  
NORSK HYDROS INST. FOR CANCER RESEARCH, OSLO  
NYO-3364-22 +. 8 PAGES, FIGURES, 1966

THE RELATIONSHIP OF PRECIPITATION AND THE CONTENT OF CS-137 IN MILK IN NORWAY WAS DETERMINED DURING THE SPRING MONTHS OF 1966. DATA ARE COMPARED WITH RESULTS OF MEASUREMENTS MADE DURING 1965.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*BIOLOGICAL CONCENTRATION, MILK + \*CESIUM + FALLOUT + NORWAY + RAINOUT

14-15002

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-15002 \*CONTINUED\*

HEISKELL RH

DESIGN OF ROOF WASHDOWN SYSTEMS (FINAL REPORT)

U. S. NAVAL RADIOLOGICAL DEFENSE LABORATORY

USNRDL-TR-1064 +. 51 PAGES, 13 TABLES, 10 FIGURES, 18 REFERENCES, JANUARY 27, 1965

ROOF-WASHDOWN STUDIES WERE CONDUCTED ON TYPICAL ROOFING SURFACES, AND A BASIC WASHDOWN SYSTEM WAS DEVELOPED. AN ANALYSIS OF ROOF WASHDOWN SHOWED IT TO BE VALUABLE ONLY ON BUILDINGS WITH HEAVILY SHIELDED WALLS OR WHERE THE OCCUPANTS ARE CONFINED TO THE CENTER OF A BUILDING WITH A VERY LARGE FLOOR AREA. A COMPLETE RECIRCULATING ROOF-WASHDOWN SYSTEM WILL COST ONLY 45 PERCENT OF THE COST OF A CONCRETE ROOF THAT WOULD GIVE A SIMILAR REDUCTION OF 98 PERCENT IN THE ROOF CONTRIBUTION TO GAMMA RADIATION EXPOSURE INSIDE THE STRUCTURE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*CIVIL DEFENSE + \*DECONTAMINATION + FALLOUT + NUCLEAR DETONATION + RADIATION SAFETY AND CONTROL

14-15003

SELLERS R + PAPADOPOULOS J + ZIEGLER CA

RADIOISOTOPE GAUGE FOR MONITORING SUSPENDED SEDIMENT CONCENTRATION IN RIVERS AND STREAMS

PARAMETRICS, INC., WALTHAM, MASSACHUSETTS

NYO-2893-1 +. 56 PAGES, 9 FIGURES, 1 TABLE, 3 REFERENCES, APRIL 30, 1966

TO SATISFY THE NEED FOR A SELF-POWERED, CONTINUOUS MONITORING SYSTEM, A GAUGE BASED ON THE USE OF RADIATION FROM A RADIOISOTOPE SOURCE WAS DEVELOPED. THE GAUGE CAN MEASURE SEDIMENT CONCENTRATION OVER A CONCENTRATION RANGE OF 1000 TO 50,000 PPM OF SEDIMENT AND IS CAPABLE OF OPERATING AND RECORDING DATA UNATTENDED FOR 7-1/2 DAYS ON INTERNAL POWER. THUS IT CONSTITUTES A COMPLETELY AUTOMATIC MONITORING STATION. THE THEORY OF OPERATION, ERROR ANALYSIS, CALIBRATION METHODS, AND THE OPERATING PROCEDURES FOR USING THE GAUGE IN THE FIELD ARE PRESENTED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*INSTRUMENTATION, NUCLEAR + \*MEASUREMENT, GENERAL + \*SURFACE WATER, SEDIMENT + HYDROLOGICAL CONSIDERATION, GENERAL + SURFACE WATER, GENERAL

14-15004

ALSO IN CATEGORY 15

SANDERS FW

DECONTAMINATION OF TEST CELL C AT THE NUCLEAR ROCKET DEVELOPMENT STATION AFTER A REACTOR ACCIDENT

LOS ALAMOS SCIENTIFIC LABORATORY

LA-3633-MS +. 58 PAGES, 29 FIGURES, 1 TABLE, DECEMBER 1966

TEST CELL C, A FACILITY OF THE LOS ALAMOS SCIENTIFIC LABORATORY AT THE NUCLEAR ROCKET DEVELOPMENT STATION, WAS CONTAMINATED BY FUEL FRAGMENTS DURING TESTING OF THE PHOEBUS IA REACTOR, A PROTOTYPE NUCLEAR ROCKET REACTOR. ABOUT 10,000,000 CURIES OF RADIOACTIVE MATERIALS, AT 1 HR POST-TEST, WAS SPREAD OVER ABOUT 5 ACRES. DECONTAMINATION OF THE TEST CELL REQUIRED 60 DAYS. THE COST OF THE CLEANUP WAS ABOUT \$100,000, AND ALL PARTICIPANTS COMBINED RECEIVED A TOTAL DOSE OF 180 REMS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*DECONTAMINATION + \*INCIDENT, ACTUAL, RECOVERY FROM + \*LASL (LOS ALAMOS SCIENTIFIC LABORATORY) + \*REACTOR TEST FACILITY + \*REACTOR, RESEARCH + DOSE MEASUREMENT, EXTERNAL + PERSONNEL EXPOSURE, RADIATION

14-15005

ALSO IN CATEGORIES 15 AND 17

STATEMENT TO JOINT COMMITTEE ON ATOMIC ENERGY ON AEC BIOLOGY AND MEDICINE PROGRAM

JOINT COMMITTEE ON ATOMIC ENERGY

1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(10), PAGE 35 (MARCH 6, 1967)

INCLUDED IN REPORT ARE BRIEF SUMMARIES OF (1) UTAH CHILDREN EXPOSED TO I-131 FROM WEAPONS TESTS, (2) MEDICAL STUDIES ON RONGELAP ACCIDENTAL EXPOSURES, 1954, (3) URANIUM-MILL TAILING CONTAMINATION, (4) EXPOSURES OF URANIUM MINE AND MILL WORKERS, (5) ACCIDENTAL EXPOSURES TO PLUTONIUM. A PLUTONIUM REGISTRY WILL BE STARTED TO CHECK PEOPLE WHO HAVE INGESTED PLUTONIUM.

\*INCIDENT, ACTUAL, GENERAL + \*RADIATION INJURY, TREATMENT OF + FALLOUT + FISSION PRODUCT, IODINE + MILLING + MINING + PERSONNEL EXPOSURE, RADIATION + PLUTONIUM

14-15010

ALSO IN CATEGORIES 17 AND 18

MIT REACTOR HEAT EXCHANGER LEAK, FEBRUARY 21-23, 1967

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(10), PAGE 24 (MARCH 6, 1967) DOCKET NO. 50-20

15 GAL OF D2O (TRITIUM CONCENTRATION 1.3 MILLICURIES/CC) REACHED THE 20,000-GAL H2O SECONDARY SYSTEM. SOME CONTAMINATED SECONDARY WATER WAS RELEASED. THE HEAT EXCHANGER WILL BE FIXED. PERMISSION ASKED TO DISCHARGE SECONDARY WATER AT 5 GPM INTO SANITARY SEWER AND CHARLES RIVER.

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-15010 \*CONTINUED\*  
\*FAILURE, PIPE + \*INCIDENT, ACTUAL, EQUIPMENT + EFFLUENT + REACTOR, HEAVY WATER + REACTOR, RESEARCH + TRITIUM + WASTE DISPOSAL, RIVER

14-15033 ALSO IN CATEGORIES 7 AND 6  
TECHNICAL PUBLICATIONS OF BATTELLE-NORTHWEST DURING 1965  
BATTELL-NORTHWEST, RICHLAND, WASHINGTON, PACIFIC NORTHWEST LABORATORY  
BNWL-218 +. 52 PAGES, MARCH 1966

CATEGORIES ARE BIOLOGY AND MEDICINE, CHEMISTRY AND CHEMICAL ENGINEERING, EARTH AND ATMOSPHERIC SCIENCES, ELECTRONICS AND COMPUTER TECHNOLOGY, ENGINEERING AND EQUIPMENT, HEALTH AND SAFETY, METALS AND CERAMICS AND MATERIALS, PHYSICS, RADIATION EFFECTS, REACTOR TECHNOLOGY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*BIBLIOGRAPHY + CRITICALITY SAFETY + DOSE + ENVIRONMENTAL CONDITION + GRAPHITE + INSTRUMENTATION, GENERAL + RADIATION EFFECT + REACTOR COOLANT + REACTOR, FAST + REACTOR, GENERAL + ROVER PROGRAM + WASTE TREATMENT, GENERAL

14-15050 ALSO IN CATEGORY 17  
RURAL COOPERATIVE POWER ASSOCIATIONS ELK RIVER REACTOR. FIFTY-FIRST MONTHLY OPERATING REPORT. AIRBORNE ACTIVITY AT ELK RIVER JAN. 8, 1967  
RURAL COOPERATIVE POWER ASSOCIATION  
DOO-651-40 +. 28 PAGES, 4 FIGURES, JANUARY 1967, DOCKET NO. 115-1

THE PRIMARY SYSTEM WAS VENTED TO THE OVERHEAD STORAGE TANK BY A HOSE DURING WARMUP FOR HYDRO TEST. THE HOSE CAME OUT, SPILLING CONTAMINATED WATER. IODINE, COBALT, AND CESIUM WERE IDENTIFIED IN THE AIR AT LESS THAN THE MPC. ONE PERSON RECEIVED 1/100 THE I-131 BODY BURDEN.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*FAILURE, OPERATOR ERROR + \*INCIDENT, ACTUAL, HUMAN ERROR + AIRBORNE RELEASE + ELK RIVER + FAILURE, ADMINISTRATIVE CONTROL + PROCEDURES AND MANUALS + REACTOR, BOILING WATER

14-15052  
RDM AM  
INCORPORATION OF INTERMEDIATE-LEVEL WASTE IN ASPHALT. PRELIMINARY DESIGN AND COST ESTIMATE OF A FULL-SCALE PLANT FOR ORNL  
ORNL RIDGE NATIONAL LABORATORY  
ORNL-TM-1697 +. 23 PAGES, 6 FIGURES, 3 TABLES, 17 REFERENCES

THE WASTE-ASPHALT PROCESS IS AN EVAPORATION PROCESS. A WIPED-FILM EVAPORATOR OPERATING AT 320 F MIXES EMULSIFIED ASPHALT WITH CONCENTRATED INTERMEDIATE-LEVEL WASTE FROM THE ORNL WASTE EVAPORATOR, VOLATILIZES THE WATER, AND YIELDS A PRODUCT (CONSISTING OF WASTE SOLIDS DISPERSED IN ASPHALT) THAT, AFTER BEING COLLECTED IN 55-GAL DRUMS, IS SUITABLE FOR EITHER LONG-TERM STORAGE OR BURIAL. THE TOTAL CAPITAL COST FOR BUILDING AND EQUIPMENT WAS ESTIMATED TO BE \$320,500. THE UNIT OPERATING COST, BASED ON PROCESSING 400,000 GAL OF ILW PER YEAR, WAS ESTIMATED AT \$0.34/GAL ASSUMING 20-YEAR AMORTIZATION OF CAPITAL WITHOUT INTEREST, OR \$0.37/GAL, ASSUMING 20-YEAR AMORTIZATION WITH 4% INTEREST. ESTIMATES OF POSSIBLE REDUCTIONS IN OPERATING COSTS THROUGH THE DIRECT DISCHARGE OF THE ASPHALT PRODUCT INTO RADIAL TRENCHES FROM A SEMI-PORTABLE UNIT, WHICH WOULD ELIMINATE THE NEED FOR INDIVIDUAL BARRELS, ARE NOT AVAILABLE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*WASTE TREATMENT, FIXATION + \*WASTE TREATMENT, LIQUID + RADIATION DAMAGE + THERMAL CONSIDERATION + WASTE DISPOSAL, LIQUID + WASTE DISPOSAL, SOLID + WASTE TREATMENT, ECONOMICS + WASTE TREATMENT, EQUIPMENT

14-15077 ALSO IN CATEGORIES 17 AND 18  
NUCLEAR FUEL SERVICES ADVISED (FEBRUARY 24) OF EFFLUENT DISCHARGE TECHNICAL SPECIFICATIONS CHANGES  
NUCLEAR FUEL SERVICES, INC.  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 131(11), PAGES 28-29 (MARCH 13, 1967) DOCKET NO. 50-201

AEC DIVISION OF REACTOR LICENSING SUGGESTS TECHNICAL-SPECIFICATIONS CHANGES FOR NUCLEAR FUEL SERVICES CONSIDERATION. (A) GASEOUS EFFLUENTS (4), INCLUDES SPECIFYING METEOROLOGICAL PARAMETERS FOR DISCHARGES, QUANTITY, MONITORING AND PARTICULATES LIMITS FOR STACK DISCHARGE. (B) LIQUID EFFLUENTS (5) INCLUDING CONCENTRATION LIMITS, COLLECTION OF POTENTIALLY CONTAMINATED MATERIAL IN AN INTERCEPTOR TANK, (C) ADMINISTRATIVE REQUIREMENTS (4), INCLUDING RESPONSIBILITY FOR SAFETY REVIEW, PLANT PERSONNEL KNOWLEDGE OF EMERGENCY PROCEDURES, RECORDS OF INTERNAL INVESTIGATIONS, AND PERIODIC AUDITS.

\*EFFLUENT + \*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + ADMINISTRATIVE CONTROLS AND PRACTICES + NFS (NUCLEAR FUEL SERVICES) + RADIOCHEMICAL PROCESSING + WASTE DISPOSAL, GAS + WASTE DISPOSAL, LIQUID

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-15078 ALSO IN CATEGORIES 2 AND 18  
CALIFORNIA NUCLEAR DISCUSSES COMPLEX HYDROGEOLOGY OF SHEFFIELD ILL. WASTE BURIAL SITE  
CALIFORNIA NUCLEAR, INC.  
3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(11), PAGES 30-32 (MARCH 13, 1967) DOCKET NO. 27-39

CONVENTIONAL PUMPING AND GRAVITY INJECTION TESTS FAIL TO YIELD ANY UNDERGROUND-WATER TRANSMISSION MEASUREMENTS. CN DEFENDS USE OF AVERAGE TRANSMISSIBILITY VALUES BASED ON LAB MEASUREMENTS OF SMALL SAMPLES, AND NOTES VARIOUS INCONSISTANCIES IN AEC SUGGESTIONS.

\*HYDROLOGICAL CONSIDERATION, GENERAL + \*WASTE DISPOSAL, TERRESTRIAL + GROUND WATER, GENERAL + HYDROLOGICAL CONSIDERATION, RATE OF MOVEMENT + LICENSING STATUS OF NUCLEAR PROJECTS + OPERATING EXPERIENCE

14-15104 ALSO IN CATEGORY 15  
CUPKA S + PETRASOVA M + CARACH J  
SR-90 AND CS-137 CONTENTS OF AGRICULTURAL PRODUCTS FROM WEST SLOVAKIA IN 1963-64  
3 PAGES, ATOMNAYA ENERGIYA 21(3), PAGE 197, (1966), ABSTRACT FROM JOURNAL OF NUCLEAR ENERGY 21(2), PAGES 220-222, (FEBRUARY 1967)

THE SR-90 AND CS-137 LEVELS IN AGRICULTURAL PRODUCTS FROM WEST SLOVAKIA ARE REPORTED FOR THE PERIOD 1963-64. THE HIGHEST LEVELS OF BOTH OCCUR IN GRAIN PRODUCTS, RELATIVELY LOW ONES OCCUR IN BEANS, AND VERY LOW ONES IN PROPASH. THE VARIATION IN THE CS/SR RATIO IS DUE TO DIFFERENCES IN UPTAKE BY THE PLANTS, ESPECIALLY AS AFFECTED BY THE LEVEL OF FALLOUT.

\*CZECHOSLOVAKIA + \*FALLOUT + \*STRONTIUM + AGRICULTURAL CONSIDERATION + CESIUM

14-15106  
SAIDL J + RALKOVA J  
FIXATION OF RADIOACTIVE WASTES BY FUSION INTO BASALT  
3 PAGES, ATOMNAYA ENERGIYA 21(4), PAGE 285, (1966), ABSTRACT FROM JOURNAL OF NUCLEAR ENERGY 21(2), PAGES 222-224, (FEBRUARY 1967)

MELTED BASALT IS SUITABLE FOR BINDING RADIOACTIVE WASTES OF HIGH SPECIFIC ACTIVITY. CRYSTALLIZATION OF THE VITREOUS PHASE IN THE MELTED BASALT IMPROVES ITS PROPERTIES, ESPECIALLY THE CHEMICAL STABILITY AND MECHANICAL STRENGTH. THE DIFFUSION COEFFICIENTS ARE IN THE RANGE 10 TO THE MINUS 15TH - 17TH PER SQ. CM. PER SEC AT 30-70 C.

\*WASTE DISPOSAL, TERRESTRIAL + WASTE DISPOSAL, SOLID + WASTE TREATMENT, FIXATION

14-15175  
BRICKER NS  
RESEARCH AND DEVELOPMENT REPORT 206. SOLUTE AND WATER TRANSPORT ACROSS BIOLOGIC MEMBRANES  
WASHINGTON UNIVERSITY, ST. LOUIS, MISSOURI  
28 PAGES, 6 FIGURES, 1 TABLE, SEPTEMBER 1966

THIS REPORT DESCRIBES THE RESULTS OF RESEARCH PERFORMED UNDER THE AUSPICES OF THE OFFICE OF SALINE WATER (GRANT NO. 14-01-001-364) OVER THE TWO-YEAR PERIOD ENDING SEPTEMBER 1, 1965. THE PRIMARY PURPOSE WAS TO INVESTIGATE SOME OF THE FUNDAMENTAL ASPECTS OF ION TRANSPORT ACROSS BIOLOGIC MEMBRANES. IT IS BELIEVED THAT CONTINUED STUDY OF THE COUPLING BETWEEN ANAEROBIC METABOLISM AND TRANSEPITHELIAL SODIUM TRANSPORT MAY GREATLY CLARIFY THE INTRICACIES OF SALT AND WATER MOVEMENTS ACROSS LIVING MEMBRANES.

AVAILABILITY - U. S. GOVERNMENT PRINTING OFFICE, WASHINGTON, D. C. 20402, \$0.25 COPY

\*BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + \*FILTER, MEMBRANE + \*SALT + \*WASTE TREATMENT, LIQUID + WATER, GENERAL

14-15177  
GEORGE JH + SCHLAIKJER CR  
RESEARCH AND DEVELOPMENT REPORT 203. AN INVESTIGATION OF THE TRANSPORT PROPERTIES OF ION EXCHANGE MEMBRANES  
ARTHUR D. LITTLE, INCORPORATED, CAMBRIDGE, MASSACHUSETTS  
41 PAGES, 6 FIGURES, 2 TABLES, 7 REFERENCES, SEPTEMBER 1966

AS PART OF A CONTINUING STUDY OF THE FACTORS AFFECTING THE TRANSPORT OF IONS AND WATER THROUGH ION EXCHANGE MEMBRANES, CONDUCTIVITY AND WATER TRANSFER MEASUREMENTS WERE MADE IN A HIGHLY CROSSLINKED ORGANIC ANION EXCHANGE MEMBRANE FOR ANIONS OF A VARIETY OF CHARGE TYPES. THE MEASUREMENTS WERE MADE WITH THE MEMBRANE IN EQUILIBRIUM WITH SOLUTIONS SUFFICIENTLY DILUTE SO THAT ANION COUNTER-IONS WERE THE ONLY CONDUCTING SPECIES PRESENT IN THE MEMBRANE. THE MEASUREMENTS WERE MADE AT SEVERAL TEMPERATURES SO THAT ENERGIES OF ACTIVATION MIGHT BE OBTAINED FOR THE CONDUCTION PROCESS. CLOSER INSIGHTS INTO THE NATURE OF THE INTERACTIONS BETWEEN COUNTER-IONS AND EXCHANGE GROUPS ARE EXPECTED FROM A PROJECTED STUDY OF MODEL SYSTEMS OF SOLUTIONS OF ORGANIC ACIDS, BASES, AND POLYELECTROLYTES OF OVERALL COMPOSITION SIMILAR TO THAT OF THE MEMBRANE.

CATEGORY 14  
RADIOISOTOPE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-15177 \*CONTINUED\*

AVAILABILITY - U.S. GOVERNMENT PRINTING OFFICE, WASHINGTON, D. C. 20402, \$0.30 COPY

\*BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + \*FILTER, MEMBRANE + ANALYTICAL MODEL + SALT + WASTE TREATMENT, LIQUID

14-15223 ALSO IN CATEGORY 15

FOUQUIER L + BOVARD P + GRAUBY A

EXPERIMENTAL CONTAMINATION OF MARGARITANA MARGARITIFERA (L) (A FRESH WATER BIVALVE) BY CS-137

CENTRE D ETUDES NUCLEAIRES, CADARACHE, FRANCE

CEA-R-3054 +. 46 PAGES, TABLES, FIGURES, REFERENCES, 1966, IN FRENCH

THE HYDROBIOLOGICAL RESEARCH CARRIED OUT IN THE RADIO-ECOLOGY SECTION LED THE AUTHORS TO STUDY SOME MARGARITANA SAMPLING STATIONS SITUATED DOWN-STREAM FROM THE MONTS D AREE NUCLEAR POWER STATION. THEY DESCRIBE THE PRESERVATION AND CONTAMINATION METHODS USED FOR FIXING THE CS-137 CONCENTRATION FACTORS IN THE CASE OF MARGARITANA MARGARITIFERA (L). THE RESULTS OF EXPERIMENTS CARRIED OUT OVER A PERIOD OF 100 DAYS SHOW THAT THE SPECIFIC ACTIVITY OF THE VARIOUS ORGANS IS STABILIZED AFTER 30 TO 35 DAYS. THE AUTHORS NOTICED A RELATIVELY LOW ADSORPTION ON THE SHELL THROUGH THE INTERMEDIARY OF MICRO-ORGANISMS, AND A STRONG AND RAPID ADSORPTION IN THE SOFT PARTS. THE CONCENTRATION FACTORS HAVE VALUES, AT EQUILIBRIUM, OF AROUND 9 FOR THE SHELL, 300 FOR ALL THE ORGANS, AND 38 FOR THE WHOLE ANIMAL.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

\*BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + \*ECOLOGICAL CONSIDERATION + CESIUM + FRANCE

14-15233

MAMURO T + FUJITA A + MATSUNAMI T

ELECTRON MICROPROBE ANALYSIS OF FALLOUT PARTICLES

DEPARTMENT OF HEALTH PHYSICS AND INSTRUMENTATION, RADIATION CENTER OF OSAKA PREFECTURE, SHINKE-CHO 704, SAKAI, OSAKA, JAPAN

12 PAGES, 12 FIGURES, 3 TABLES, 9 REFERENCES, HEALTH PHYSICS 13(2), PAGES 197-204, (FEBRUARY 1967)

ELECTRON-MICROPROBE ANALYSIS WAS MADE ON THE HIGHLY RADIOACTIVE FALLOUT PARTICLES WHICH ORIGINATED FROM THE FIRST CHINESE NUCLEAR TEST EXPLOSION (LAND SURFACE). EIGHT ELEMENTS (FE, CA, SI, AL, K, MN, TI, AND P) WERE CONFIRMED TO BE PRESENT IN THE PARTICLES. IT WAS FOUND THAT FOUR ELEMENTS (FE, CA, SI, AND AL) WERE THE MAIN METALLIC ELEMENTS AND THAT THE DARKNESS OF PARTICLE COLOR INCREASED WITH THE FE COMPOSITION. THE DIFFERENCES IN THE KIND AND DISTRIBUTION OF THE ELEMENTS BETWEEN THE CHINESE AND THE SOVIET PARTICLES ARE ASCRIBED TO THE DIFFERENCES IN BURST CONDITIONS.

\*ANALYTICAL TECHNIQUE, SOLID + \*FALLOUT + ALUMINUM + CALCIUM + IRON + MANGANESE + PHOSPHORUS + POTASSIUM + SILICON + TITANIUM + X-RAY

14-15234

ALSO IN CATEGORY 15

GARNER RJ

MATHEMATICAL ANALYSIS OF THE TRANSFER OF FISSION PRODUCTS TO COWS MILK

RADIOLOGICAL PROTECTION DIVISION, AUTHORITY HEALTH AND SAFETY BRANCH, UKAEA, HARWELL, BERKSHIRE

7 PAGES, 2 FIGURES, 2 TABLES, 16 REFERENCES, HEALTH PHYSICS, 13(2), PAGES 205-212, (FEBRUARY 1967)

A MODEL IS DEVELOPED WHICH ALLOWS MATHEMATICAL TREATMENT OF THE ELIMINATION OF INGESTED FISSION PRODUCTS IN MILK. EQUATIONS ARE DERIVED FROM THE AVAILABLE EXPERIMENTAL DATA WHICH ARE USED TO PREDICT THE BEHAVIOUR OF A NUMBER OF PARENT-DAUGHTER MIXTURES.

\*BIOLOGICAL CONCENTRATION, ANIMAL + \*BIOLOGICAL CONCENTRATION, MILK + INGESTION + MATHEMATICAL STUDY

14-15235

ALSO IN CATEGORY 15

BLACK DE + DICKEY BR

MATHEMATICAL AND EXPERIMENTAL ANALYSIS OF HEAT DISSIPATION FROM CYLINDRICAL SOURCES BURIED IN SOIL  
IDAHO NUCLEAR CORPORATION, IDAHO FALLS

IN-1032 +. 140 PAGES, 34 FIGURES, REFERENCES, DECEMBER 1966

MATHEMATICAL MODELS ARE PROPOSED FOR PREDICTING THE STEADY-STATE AND TRANSIENT TEMPERATURE DISTRIBUTIONS IN SMALL- AND LARGE-DIAMETER, CYLINDRICAL, NUCLEAR HEAT SOURCES AND THE SURROUNDING SOIL. COMPUTER PROGRAMS ARE USED TO SOLVE THE TWO-DIMENSIONAL, TIME-DEPENDENT HEAT-TRANSFER EQUATIONS RESULTING FROM THE MODELS. THE THERMAL CONDUCTIVITY, SPECIFIC HEAT, AND MOISTURE CONTENT WERE EXPERIMENTALLY DETERMINED FOR SOILS AT AN EXPERIMENTAL TEST SITE. THESE PROPERTIES WERE REQUIRED FOR CALCULATING THE TEMPERATURES IN AND SURROUNDING A BURIED ELECTRICAL HEATER. AGREEMENT BETWEEN CALCULATED AND MEASURED TEMPERATURES WAS GOOD, GENERALLY WITHIN A FEW DEGREES. THE QUANTITATIVE EFFECTS OF SOIL AND HEAT SOURCE THERMAL CONDUCTIVITY, TIME-DEPENDENT HEAT GENERATION RATE, HEAT SOURCE DIMENSIONS, AND BURIAL DEPTH ON THE CALCULATED TEMPERATURE DISTRIBUTIONS IN AND SURROUNDING BURIED HEAT SOURCES ARE ILLUSTRATED BY NUMERICAL EXAMPLES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-15235 \*CONTINUED\*

\*MATHEMATICAL STUDY + \*SOIL, NUCLIDE OCCURRENCE + \*TEMPERATURE TRANSIENT + HEAT TRANSFER + SOIL, PROPERTY + TEMPERATURE GRADIENT + WASTE DISPOSAL, TERRESTRIAL

14-15239 ALSO IN CATEGORY 15

GARNIER A  
POSSIBILITY OF USING RADIOACTIVITY CONTROL MEASUREMENTS FOR DETERMINING CONTAMINATION PATHS IN NUTRITIONAL VECTORS  
CENTRE D ETUDES NUCLEAIRES, FONTENAY-AUX-ROSES, FRANCE  
CEA-R-3076 + EUR-3001.F +. 49 PAGES, 17 FIGURES, 9 TABLES, NOVEMBER 1966, IN FRENCH

THE OBJECT OF THE REPORT IS TO STUDY THE POSSIBILITY OF USING RESULTS OF RADIOACTIVITY CONTROLS FOR DETERMINING THE PATHS FOLLOWED BY CONTAMINATION IN NUTRITIONAL VECTORS. THESE ARE NECESSARY FOR CALCULATING PROTECTION NORMS. RADIOACTIVE CONTAMINATION OF A NUTRITIONAL VECTOR IS EXPRESSED IN TERMS OF PARAMETERS WHICH SUGGEST THAT A CERTAIN NUMBER OF CRITERIA MAY BE USED FOR CHOOSING THE RESULTS WHICH ARE TO BE EXPLOITED. AN ACTUAL EXAMPLE OF A VERTICAL STUDY BASED ON RESULTS OF MEASUREMENTS MADE PURELY FOR CONTROL PURPOSES SHOWS THE DIFFICULTIES WHICH MAY BE ENCOUNTERED. A LIST OF THE RESULTS OBTAINED BY THE CONTROL NETWORKS SET UP IN THE COMMUNITY COUNTRIES, EITHER FOR THE ATMOSPHERE, FOR MILK, OR FOR OTHER FOODSTUFFS, SHOWS THAT THESE NETWORKS ARE NOT AT THE PRESENT ORGANIZED IN SUCH A WAY AS TO MAKE SUCH A STUDY POSSIBLE. IT APPEARS DESIRABLE THAT A LARGE PART OF THE WORK CARRIED OUT BY THE CONTROL SERVICES BE ORIENTED IN SUCH A WAY AS TO YIELD THE COMPLEMENTARY INFORMATION REQUIRED FOR EXPERIMENTAL STUDIES OF RADIOACTIVE TRANSFERS.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

\*ECOLOGICAL CONSIDERATION + \*TRACER, RADIOACTIVE + BIOLOGICAL CONCENTRATION, AGRICULTURAL PRODUCE + BIOLOGICAL CONCENTRATION, ANIMAL + BIOLOGICAL CONCENTRATION, ANIMAL FEED + BIOLOGICAL CONCENTRATION, FOOD + BIOLOGICAL CONCENTRATION, MAN + BIOLOGICAL CONCENTRATION, MILK + BIOLOGICAL CONCENTRATION, VEGETATION + CESIUM + RAINOUT + STRONTIUM

14-15256

RZEKIECKI R  
SORPTION OF SR-90 ON AN ALUMINUM OXIDE  
CENTRE D ETUDES NUCLEAIRES, SACLAY, FRANCE  
CEA-R-2251 +. 59 PAGES, 16 FIGURES, 10 TABLES, NOVEMBER 1965

THE SORPTION MECHANISM OF AN ALKALINE-EARTH BIVALENT CATION ON ACTIVATED ALUMINUM OXIDE IS COMPARED TO THE SORPTION MECHANISM OF A MONOVALENT ION. THE SELECTIVE RETENTION OF THE ALKALINE-EARTH CATION IS MADE USE OF TO REMOVE TRACE AMOUNTS OF SR-90 FROM RADIOACTIVE WASTE WATERS. A KINETIC STUDY IS REPORTED, LEADING TO THE CALCULATION OF AN INDUSTRIAL COLUMN.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*MINERAL EXCHANGE + \*STRONTIUM + ION EXCHANGE + WASTE TREATMENT, LIQUID

14-15260

CEARLOCK DB  
TRANSPORT ANALYSIS. BASIC PREDICTIVE APPROACH OF THE MOVEMENT OF POLLUTANTS THROUGH SOIL  
RATTELLF-NORTHWEST, RICHLAND, WASHINGTON  
PNWL-SA-671 + CONF-660523-2 +. 18 PAGES, FIGURES, REFERENCES, MAY 3, 1966 FROM 21ST ANNUAL PURDUE INDUSTRIAL WASTE CONFERENCE, LAFAYETTE, IND.

TRANSPORT ANALYSIS FOR DETERMINING DISTRIBUTION OF POLLUTANTS THROUGH SOIL IS DISCUSSED. SINCE THE TRANSPORT EQUATION DESCRIBES TWO INDEPENDENT PHENOMENA, FLUID MOVEMENT AND POLLUTANT REACTIONS (THE REACTIONS OF THE POLLUTANT WITH ITS ENVIRONMENT), THE ANALYSIS WAS SIMPLIFIED BY INVESTIGATING THEM SEPARATELY. THE TRANSPORT EQUATION WAS THEN USED TO COMBINE THESE INTO ONE INTERRELATED EQUATION WHICH YIELDS THE CONCENTRATION DISTRIBUTION OF THE POLLUTANTS INVOLVED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*SOIL, RADIONUCLIDE MOVEMENT THROUGH + GROUND WATER, GENERAL + MINERAL EXCHANGE

14-15270

BOENZI D + DLOUHY Z + LENZI G  
A STUDY ON THE SORPTION PROPERTIES OF THE NATURAL TUFFS OCCURRING IN THE LAKE BRACCIANO REGION (ROME).  
REPORT 2  
COMITATO NAZIONALE PER L ENERGIA NUCLEARE, ROME, ITALY  
RT/PROT(65)29 +. 16 PAGES, OCTOBER 1965

SAMPLES OF 85 MATERIALS WERE STUDIED WITH RESPECT TO THEIR SORPTION CAPACITY FOR MICROAMOUNTS OF CS-137 AND SR-89 FROM LOW-ACTIVITY WASTE SOLUTIONS. THE CLASSIFICATION OF A TOTAL OF 175 SAMPLES, TUFFS (90 IN THE FIRST AND 85 IN THIS SECOND PART OF THE WORK), LED TO THE IDENTIFICATION OF A NUMBER OF VERY PROMISING MATERIALS, PREDOMINANTLY VOLCANIC TUFFS, WHICH



CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-15270 \*CONTINUED\*

MEET THE REQUIREMENTS OF GOOD NATURAL SORBENTS AND WHICH MAY BE USED TO ADVANTAGE IN THE TREATMENT OF CONTAMINATED LIQUIDS.

AVAILABILITY - MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669

\*MINERAL EXCHANGE + CESIUM + ION EXCHANGE + ITALY + STRONTIUM

14-15273 ALSO IN CATEGORY 15

COMAR CL + LENGEMANN FW + WASSERMAN RH + THOMPSON JC  
FISSION PRODUCT METABOLISM AND RESPONSE IN LABORATORY AND DOMESTIC ANIMALS AND PLANNING STUDY FOR EVALUATION OF RADIOACTIVE CONTAMINATION OF THE FOOD CHAIN. PROGRESS REPORT, JANUARY 1, 1964-DECEMBER 31, 1965

NEW YORK STATE VETERINARY COLLEGE, ITHACA  
TID-22626 +. 155 PAGES, DECEMBER 1965

PROGRESS IS REPORTED IN THE EVALUATION OF THE LEVELS OF CERTAIN FISSION PRODUCTS IN THE FOOD CHAIN, INVESTIGATION OF FACTORS GOVERNING THE MOVEMENT OF CERTAIN FISSION PRODUCTS IN THE CHAIN, STUDY OF FUNDAMENTAL PHYSIOLOGICAL PROCESSES THAT DETERMINE THE LEVELS OF FISSION PRODUCTS THAT WILL OCCUR IN THE HUMAN POPULATION, ESTIMATION OF RADIATION DOSAGE TO TISSUES FROM INGESTED RADIONUCLIDES AND FROM EXTERNAL RADIATION, STUDY OF THE TRANSPORT OF MATERIALS ACROSS BIOLOGICAL MEMBRANES, AND CERTAIN ASPECTS OF GENETICS AND ITS RELATION TO THE FUNCTIONING OF THE ORGANISM. EMPHASIS WAS PLACED ON THE ALKALINE-EARTHS, PARTICULARLY CALCIUM AND STRONTIUM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*ECOLOGICAL CONSIDERATION + BIOLOGICAL CONCENTRATION, FOOD + BIOLOGICAL CONCENTRATION, MAN + BIOLOGICAL CONCENTRATION, MILK + CESIUM + DIETARY HABIT + DOSE CALCULATION, EXTERNAL + DOSE CALCULATION, INTERNAL + IODINE + STRONTIUM

14-15276

EMPSON FM + BOEGLY WJ + BRADSHAW RL + MCCLAIN WC + PARKER FL + SCHAEFFER WF  
DEMONSTRATION OF DISPOSAL OF HIGH-LEVEL RADIOACTIVE SOLIDS IN SALT  
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.

ORNL-P-1568 + CONF-650554-1 +. 33 PAGES, 1964, FROM 2ND SYMPOSIUM ON SALT, CLEVELAND

DESCRIBES PROJECT SALT VAULT, A DEMONSTRATION USING IRRADIATED FTR FUEL ASSEMBLIES AND THE INACTIVE MINE OF THE CAREY SALT COMPANY AT LYONS, KANSAS. THE ENGINEERING AND SCIENTIFIC OBJECTIVES OF PROJECT SALT VAULT ARE OUTLINED. THE INSTRUMENTATION, CANNING, AND SHIPMENT OF THE FUEL ASSEMBLIES ARE DESCRIBED. THE STATUS OF THE PROJECT IS GIVEN.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*WASTE DISPOSAL, SALT + RADIATION EFFECT + THERMAL CONSIDERATION + WASTE DISPOSAL, SOLID

14-15277

LAING WR + LYNN EC  
ALKYLBENZENE SULFONATE (ABS) CONTROL FOR THE FOAM SEPARATION PROCESS  
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.

ORNL-P-1522 + CONF-650919-3 +. 10 PAGES, 4 FIGURES, 1965, FROM INTERNATIONAL CONFERENCE ON THE CHEMISTRY OF THE SOLVENT EXTRACTION OF METALS, HARWELL, ENGLAND

FOR THE DECONTAMINATION OF SLIGHTLY RADIOACTIVE PROCESS WASTE WATER, A FOAM SEPARATION PROCESS WAS DEVELOPED WHICH INVOLVES MIXING THE WATER WITH GRUNDITE CLAY, ADDING 2-9 PPM FERRIC IRON, ADJUSTING THE PH, REMOVING THE SLUDGE, ADDING DODECYLBENZENE SULFONATE, GENERATING FOAM, AND REMOVING THE FOAM. DECONTAMINATION FACTORS ARE GIVEN FOR CA, SR, CS, CO, RU, AND CE IN THE SLUDGE AND FOAM COLUMNS. AN AUTO ANALYZER IS DESCRIBED, AND DATA ON THE CALIBRATION AND ACCURACY OF THE METHOD ARE GIVEN.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*FOAM + \*WASTE TREATMENT, LIQUID + CALCIUM + CERIUM + CESIUM + COBALT + MINERAL EXCHANGE + RUTHENIUM + STRONTIUM + WASTE TREATMENT, EQUIPMENT

14-15278

NAPRAVNJK J + KEPAK F  
THE SORPTION OF FISSION PRODUCTS ON THE NATURAL SORBENTS COAGULATED IN AN ELECTRIC FIELD  
USTAV JADERNEHO VYZKUMU, CESHOSLOVENSKA AKADEMIE VED, REZ  
UJV-1296/65 +. 35 PAGES, FEBRUARY 1965

REPORTS RESULTS OF THE LABORATORY AND PILOT PLANT EXPERIMENTS OF THE SORPTION OF FISSION PRODUCTS ON THE SUSPENSION OF NATURAL ALUMINOSILICATES COAGULATED IN AN ELECTRIC FIELD. THIS METHOD PROVED SUITABLE FOR NATURAL SORBENTS BECAUSE NO LOSSES OF THEIR SORPTION CAPACITY OCCURRED, IN CONTRADICTION WITH THE CHEMICAL COAGULATION. THE INFLUENCE OF THE NATURE OF

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-15278 \*CONTINUED\*

ELECTRODES, CURRENT DENSITY, TEMPERATURE, AND PH ON ELECTROCOAGULATION WAS DETERMINED. THE INFLUENCE OF THE MODE OF THE COAGULATION ON THE SORPTION PROPERTIES OF USED SORBENTS WAS INVESTIGATED. ATTENTION WAS ALSO PAID TO THE SEDIMENTATION TIME AND TO THE VOLUME OF THE RESULTING SLUDGE.

AVAILABILITY - MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN, 54669

\*MINERAL EXCHANGE + ION EXCHANGE + SORPTION

14-15281 ALSO IN CATEGORY 15

SCHREIBER R  
ECOLOGY OF ACANTHARIA IN RELATION TO SR CIRCULATION IN THE SEA  
UNIVERSITA. ISTITUTO DI ZOOLOGIA E ANATOMIA, PARMA, ITALY  
TID-21131 +. 10 PAGES, JUNE 1964

PROGRESS IS REPORTED IN RESEARCH ON THE ECOLOGY OF PLANKTON OF THE ATLANTIC OCEAN. EMPHASIS WAS PLACED ON STUDIES OF THE VARIOUS PHYSIOGRAPHIC ENVIRONMENTS PROVIDED BY THE CONTINENTAL SHELF, CONTINENTAL SLOPE, LABRADOR CURRENT, GULF STREAM, SARGASSO SEA, AND THE NORTH EQUATORIAL CURRENT. RADIOCHEMICAL ANALYSES OF PLANKTON SAMPLES AND OF MARINE WATERS CONFIRMED THE PRESENCE OF SR-90, EU-155, AND SB-125 IN PLANKTON, AND ANALYSIS OF COASTAL SEDIMENTS FOR FALLOUT FISSION PRODUCTS SHOWED THAT THE FIRST 4 TO 6 CM RETAIN MOST OF THE SHORT-LIVED RADIONUCLIDES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65

\*ECOLOGICAL CONSIDERATION + \*OCEAN AND SEA + ANTIMONY + EUROPIUM + FALLOUT + RADIOCHEMICAL ANALYSIS + STRONTIUM + SURFACE WATER, NUCLIDE OCCURRENCE + SURVEY, RADIATION, ENVIRONMENTAL

14-15290 ALSO IN CATEGORY 15

WILSON DD + CLINE JF  
REMOVAL OF PLUTONIUM-239, TUNGSTEN-185 AND LEAD-210 FROM SOILS  
DEPARTMENT OF BIOLOGY, BATTELLE-NORTHWEST LABORATORY, RICHLAND, WASHINGTON  
2 PAGES, 2 TABLES, NATURE, 209(5026), PAGES 941-942, (FEBRUARY 26, 1966)

PRESENTS STUDIES ON THE DESCRIPTION OF PU, W, AND PB FROM SOILS. PLANT UPTAKES WERE HIGHEST FROM ACID SOILS FOR BOTH PU AND PB, BUT W UPTAKE WAS LOWER. RESULTS INDICATE THAT THE COMMONLY USED SOIL-EXTRACTING PROCEDURES DO NOT GIVE RELIABLE ESTIMATES OF THE QUANTITIES OF THESE RADIONUCLIDES THAT CAN BE REMOVED BY PLANTS.

\*MINERAL EXCHANGE + \*PLUTONIUM + \*TUNGSTEN + BIOLOGICAL CONCENTRATION, VEGETATION + ECOLOGICAL CONSIDERATION + LEAD + SOIL, PROPERTY

14-15292

NIFONTOV RI + PROTOPPOV DD + SITNIKOV IE + KULIKOV AV  
UNDERGROUND NUCLEAR EXPLOSIONS. PROBLEMS OF INDUSTRIAL NUCLEAR EXPLOSIONS  
AEC-TR-6777 + PNE-3004 +. 189 PAGES, TRANSLATION OF PODZEMNYE YADERNYE VZRYVY. PROBLEMY PROMYSHLENNYKH YADERNYKH VZVYVOV, ATOMIZDAT, MOSCOW. 1965

INDUSTRIAL USES OF UNDERGROUND NUCLEAR EXPLOSIONS ARE REVIEWED. THESE USES INCLUDE THE CONSTRUCTION OF LARGE CIVIL-ENGINEERING STRUCTURES, MINERAL MINING, EXTRACTION OF PETROLEUM FROM OIL SHALES, GENERATION OF ELECTRICAL POWER, ETC. ALSO DISCUSSED ARE THE OPTIMUM CONDITIONS UNDER WHICH UNDERGROUND NUCLEAR EXPLOSIVES ARE DETONATED, INTERNAL AND EXTERNAL EFFECTS, AND SEISMIC AND AIR-COMPRESSION EFFECTS. THE GNOME AND SEDAN EXPERIMENTS ARE ALSO REVIEWED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*NUCLEAR DETONATION + GROUND WATER, NUCLIDE OCCURRENCE + NUCLEAR EXPLOSION DEBRIS + PLOWSHARE PROGRAM + RADIATION EFFECT + SEISMOLOGY + SOIL, NUCLIDE OCCURRENCE + SOIL, RADIONUCLIDE MOVEMENT THROUGH

14-15302

REITER WG  
REPORT ON THE 1966 SYMPOSIUM ON SOLIDIFICATION AND LONG-TERM STORAGE OF HIGHLY RADIOACTIVE WASTES  
DIVISION OF REACTOR TECHNOLOGY, AEC  
10 PAGES, 1 TABLE, NUCLEAR SAFETY 8(2), PAGES 165-174, (WINTER 1966-67)

FORTY-SEVEN PAPERS WERE PRESENTED AND ONE PANEL DISCUSSION WAS HELD DURING THE SYMPOSIUM ON SOLIDIFICATION AND LONG-TERM STORAGE OF HIGHLY RADIOACTIVE WASTES HELD FEBRUARY 14-18, 1966, AT RICHLAND, WASH. THE SYMPOSIUM WAS NOTABLE IN THAT IT MARKED THE FIRST TIME U.S. INDUSTRY HAS ATTENDED A MEETING ON MANAGEMENT OF HIGH-LEVEL WASTE. THIS REPORT REVIEWS THE LONG-RANGE PLANS AND REQUIREMENTS FOR MANAGEMENT OF HIGH-ACTIVITY WASTE IN THE UNITED KINGDOM, FRANCE, GERMANY, BELGIUM (EUROCHEMIC), AND THE U.S., AS WELL AS THE TECHNICAL STATUS OF RESEARCH AND DEVELOPMENT ON WASTE SOLIDIFICATION AND LONG-TERM STORAGE.

\*WASTE MANAGEMENT + \*WASTE STORAGE + \*WASTE TREATMENT, FIXATION + WASTE TREATMENT, ECONOMICS

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-15302  
JACOBS DG  
BEHAVIOR OF RADIOACTIVE GASES DISCHARGED INTO THE GROUND  
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.  
4 PAGES, 20 REFERENCES, NUCLEAR SAFETY 8(2), PAGES 175-178, (WINTER 1966-67)

THE FEASIBILITY OF DISCHARGING RADIOACTIVE GASES AND AEROSOLS FROM A REACTOR CONTAINMENT VESSEL INTO THE GROUND FOLLOWING A FUEL-MELTDOWN INCIDENT WAS DISCUSSED BY AN AEC WORKING GROUP. THIS REVIEW INCORPORATES MUCH OF THE INFORMATION DISCUSSED. THE BEHAVIOR OF VARIOUS RADIONUCLIDES IN THE GROUND DEPENDS ON THE PHYSICAL PROPERTIES AFFECTING THE MOVEMENT OF FLUIDS IN THE GROUND AS MODIFIED BY REACTIONS BETWEEN THE RADIONUCLIDES AND THE GEOLOGIC FORMATION. WHEN INJECTION IS COMPLETED, THE SUBSEQUENT MOVEMENT OF THE RADIONUCLIDES RESULTS FROM NATURAL CONVECTIVE TRANSPORT OF THE FORMATION FLUIDS AND FROM MOLECULAR DIFFUSION. THE EXTENT OF MOVEMENT OF MOST OF THE GASEOUS RADIONUCLIDES IS LIMITED BY THEIR RADIOACTIVE DECAY.

\*WASTE DISPOSAL, GAS + \*WASTE DISPOSAL, TERRESTRIAL + MINERAL EXCHANGE + SOIL, RADIONUCLIDE MOVEMENT THROUGH + ADSORPTION

14-15304  
SHAIKH MU + JACOBS DG + PARKER FL  
STUDY OF THE MOVEMENT OF RADIONUCLIDES THROUGH SATURATED POROUS MEDIA  
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.  
ORNL-TM-1681 +. 115 PAGES, 17 FIGURES, 5 TABLES, 56 REFERENCES, JANUARY 1967

AN EQUATION FOR THE VELOCITIES IN THE BLOCK HAS ALSO BEEN DEVELOPED. EQUIPOTENTIAL CONTOURS, STREAMLINES, AND THE FLOW HISTORY OF THE SYSTEM WERE PLOTTED BY COMPUTER. FROM THE ADSORPTION DATA OBTAINED FROM LINEAR FLOW CORES, THE TIME REQUIRED FOR THE BREAKTHROUGH OF SR-89 AND CA-45 WAS 9.5 AND 6.2 TIMES THAT OF WATER, RESPECTIVELY. USING DIFFERENT LINEAR FLOW RATES, COEFFICIENTS OF DISPERSION WERE OBTAINED USING CORES OF SANDSTONE. BY COMBINING THE SOLUTION OF THE VELOCITY DISTRIBUTION ATTRIBUTED TO GEOMETRY WITH SOLUTION DISPERSION AT VARIOUS RATES OF LINEAR FLOW, NET SOLUTION BREAK-THROUGH CURVES WERE CONSTRUCTED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*HYDROLOGICAL CONSIDERATION, RATE OF MOVEMENT + \*SOIL, RADIONUCLIDE MOVEMENT THROUGH + CALCIUM + DISPERSION + GROUND WATER, TRACER + ION EXCHANGE + MATHEMATICAL STUDY + MINERAL EXCHANGE + STRONTIUM + TRITIUM

14-15305 ALSO IN CATEGORIES 17 AND 18  
THOMPSON TJ  
DRL EXEMPTS MIT FROM 10CFR20 TO ALLOW TRITIUM DISCHARGE  
MASS. INSTITUTE OF TECHNOLOGY, CAMBRIDGE, MASS.  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(13), PAGE 25, (MARCH 27, 1967)

AEC EXEMPTS MIT REACTOR FROM 10 CFR 20.203(D) TO ALLOW DISCHARGE OF 20,000 GAL OF SECONDARY COOLANT CONTAMINATED WITH 12 CURIES OF TRITIUM. THE LIQUID WILL BE DISCHARGED TO SANITARY SEWER (AND CHARLES RIVER) SUCH THAT IT WILL BE REDUCED TO LESS THAN THE MPC.

\*TRITIUM + \*IRIDIUM + \*WASTE DISPOSAL, RIVER + REACTOR, HEAVY WATER + REACTOR, RESEARCH

14-15311 ALSO IN CATEGORIES 17 AND 18  
BURTSVAVGE EM  
US RADIUM CORP. LISTS 87 TRITIUM RELEASES JULY - DECEMBER 1966  
U.S. RADIUM CORP., BLOOMSBURG, PA.  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(13), PAGES 32-33, (MARCH 27, 1967)

U.S. RADIUM REPORTS (FEB. 17, 1967) 51 RELEASES OF TRITIUM (TO UNRESTRICTED AREAS) IN EXCESS OF MPC, AND 36 RELEASES OF TRITIUM (TO UNRESTRICTED AREAS) OF 10 TIMES THE LICENSED LIMITS. ALL WERE STACK DISCHARGES OF HTO FROM FOUR FACILITIES, CAUSED BY VARIOUS LEAKS.

\*AIRBORNE RELEASE + \*STACK + \*TRITIUM + EFFLUENT

14-15316  
MAMURO T + MATSUNAMI T  
ALPHA-ACTIVITY OF HIGHLY RADIOACTIVE FALLOUT PARTICLES  
DEPARTMENT OF HEALTH PHYSICS AND INSTRUMENTATION, RADIATION CENTER OF OSAKA PREFECTURE SHINKE-CHO 704,  
SAKAI, OSAKA, JAPAN  
9 PAGES, 4 FIGURES, 5 TABLES, 18 REFERENCES, HEALTH PHYSICS, 13(1), PAGES 51-59, (JANUARY 1967)

ALPHA-ACTIVITIES DUE TO PU-239 AND PU-240 OF THE THREE KINDS OF HIGHLY RADIOACTIVE FALLOUT PARTICLES, WHICH ORIGINATED FROM A SOVIET LARGE SCALE AIR BURST CARRIED OUT IN AUTUMN 1962, THE FIRST CHINESE EXPLOSION (A SMALL-SCALE LAND-SURFACE BURST) AND THE SECOND CHINESE EXPLOSION (A SMALL-SCALE AIR BURST) WERE MEASURED X-RAY SPECTROMETRICALLY, WHILE THEIR

CATEGORY 14  
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14-15316 \*CONTINUED\*

ACTIVITIES OF CE-144 AND ZR-95 + NB-95 WERE MEASURED GAMMA-RAY SPECTROMETRICALLY. THE DIFFERENCES IN SPECIFIC ACTIVITIES AND COMPOSITION RATIOS OF THESE NUCLIDES FOUND AMONG THE THREE KINDS OF PARTICLES ARE DISCUSSED IN CONNECTION WITH THE DIFFERENCES IN BURST CONDITIONS AMONG THE THREE EXPLOSIONS FROM WHICH THEY ORIGINATED. THE RATIO OF X-ACTIVITY TO TOTAL ACTIVITY WAS CONSIDERABLY SMALLER IN THE PARTICLES THAN IN THE RAIN-WATER SAMPLES COLLECTED IN THE PERIODS JUST BEFORE AND AFTER THE DAYS WHEN THE PARTICLES WERE FOUND AND COLLECTED. THE PU CONCENTRATIONS IN THE MEAN RAIN-WATER SAMPLES COLLECTED IN THE PERIOD FROM 1962 TO 1965 WERE ABOUT  $3 \times 10$  TO THE MINUS 2 PCI/LITER.

\*FALLOUT + \*RADIOCHEMICAL ANALYSIS + ALPHA EMITTER + CERIUM + PLUTONIUM + RAINOUT + ZIRCONIUM

14-15373 ALSO IN CATEGORIES 2 AND 18

QUESTION I.A. - PREOPERATIONAL ENVIRONMENTAL MONITORING PROGRAM FOR THE SITE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, DECEMBER 28, 1966, DOCKET NO. 50-261, H. B. ROBINSON UNIT NUMBER 2, FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, PAGE A-1

I. QUESTIONS CONCERNING THE SITE. A. DESCRIBE THE SCOPE OF THE PREOPERATIONAL ENVIRONMENTAL MONITORING PROGRAM, PARTICULARLY WITH REFERENCE TO THE NATURAL ACTIVITY OF THE WATER, FISH, AND LAKE BOTTOM.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + MONITOR, RADIATION, ENVIRONMENTAL + REACTOR, PRESSURIZED WATER + ROBINSON 2 + SURVEY, RADIATION, ENVIRONMENTAL

14-15374 ALSO IN CATEGORIES 2 AND 18

QUESTION I B - BOATERS ON LAKE WITHIN EXCLUSION DISTANCE.  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, DECEMBER 28, 1966, DOCKET NO. 50-261, H.B. ROBINSON UNIT NUMBER 2, FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, PAGE B-1

WE NOTE THAT A CONSIDERABLE PORTION OF LAKE ROBINSON IS LOCATED WITHIN THE EXCLUSION DISTANCE AND THAT THE IMMEDIATE VICINITY OF THE PLANT AND THE WATER INTAKES ARE ACCESSIBLE TO THE PUBLIC. IN VIEW OF THIS, DISCUSS THE HAZARDS THIS COULD INVOLVE DURING BOTH NORMAL AND EMERGENCY OPERATIONS. WHAT TYPE OF CONTROL WILL BE IMPLEMENTED TO PROTECT THE PUBLIC IN THESE AREAS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ADMINISTRATIVE CONTROLS AND PRACTICES + POPULATION DISTRIBUTION + REACTOR, PRESSURIZED WATER + ROBINSON 2

14-15378 ALSO IN CATEGORIES 9 AND 18

QUESTION II A (2) - WASTE DISPOSAL CONTROL BOARD  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, N. C.  
1 PAGE, DECEMBER 28, 1966, DOCKET NO. 50-261, H.B. ROBINSON UNIT NUMBER 2, FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, PAGE A(2)-1

DESCRIBE THE LOCATION AND FUNCTION OF THE WASTE-DISPOSAL CONTROL BOARD. WHAT INDICATIONS RELATING TO THE RELEASE OF CONTAMINATED WASTES ARE ON THIS BOARD AND ON THE MAIN CONTROL BOARD.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTROL PANEL/ROOM + CONTROL, GENERAL + REACTOR, PRESSURIZED WATER + ROBINSON 2 + WASTE DISPOSAL, GENERAL

14-15533 ALSO IN CATEGORY 7

ALBRETHSEN AE + SCHWENDIMAN LC  
VOLATILIZATION OF FISSION PRODUCTS FROM HIGH LEVEL CERAMIC WASTES  
BATTELLE-NORTHWEST, RICHLAND, WASHINGTON  
BNWL-332 +. 30 PAGES, 9 FIGURES, 10 TABLES, 7 REFERENCES, FEBRUARY 1967

VOLATILIZATION HAS BEEN ESTABLISHED AS THE PREDOMINANT MECHANISM OF FISSION-PRODUCT RELEASE FROM SIMULATED HIGH-LEVEL CERAMIC WASTES WHEN EXPOSED TO HIGH TEMPERATURES. THE VOLATILITY OF CESIUM APPEARS CONSISTENT AND INDEPENDENT OF CERAMIC COMPOSITION WHEN THE CERAMIC IS MOLTEN. THE RATE -- ABOUT 1%/HR FROM A SAMPLE 1 CM THICK -- INDICATES THE PROBABILITY OF DIFFUSION CONTROL. VOLATILITY OF RUTHENIUM IS ERRATIC AND PROBABLY DUE TO INCOMPLETE OXIDATION OF THE CERAMIC. THE RELEASES OF SR-90 AND CE-144 WERE ONE THOUSANDTH OR LESS THE RATE OF CESIUM RELEASE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*AIRBORNE RELEASE + \*CERAMICS + \*CERIUM + \*CESIUM + \*FIRE + \*FISSION PRODUCT RELEASE, GENERAL +

CATEGORY 14  
RADIONUCLIDE RELEASE AND MOVEMENT IN THE ENVIRONMENT

14-15533 \*CONTINUED\*  
\*HIGH TEMPERATURE + \*PHOSPHATE + \*RUTHENIUM + \*WASTE TRANSPORTATION + \*WASTE TREATMENT, FIXATION +  
STRONTIUM

14-15908 ALSO IN CATEGORY 15  
PERKINS EJ + WILLIAMS RR  
THE BIOLOGY OF THE SOLWAY FIRTH IN RELATION TO THE MOVEMENT AND ACCUMULATION OF RADIOACTIVE MATERIALS.  
XI. GENERAL DISCUSSION  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, ANNON, SCOTLAND  
RG-REPORT-753 +. 7 PAGES 1966

RADIOACTIVE WASTE SOLUTIONS FROM THE WINDSCALE WORKS ENTER THE SOLWAY FIRTH OF THE IRISH SEA.  
RESULTS ARE SUMMARIZED FROM STUDIES CONDUCTED FROM 1961 THROUGH 1964 ON THE MOVEMENTS OF  
SILTS AND THE CONTENT OF RADIOACTIVITY IN VARIOUS LEVELS OF THE FOOD CHAIN, PARTICULARLY  
SHRIMP, SALMON, PLAICE, AND FLOUNDER. THE RADIOACTIVITY WAS DUE TO INSOLUBLE RU-106 AND  
SR-90. THE SOLUBLE EFFLUENT WAS RAPIDLY MIXED AND CARRIED SLOWLY OUT TO SEA. MEASUREMENTS  
OF THE CONTENT OF SR-90 AND RU-106 IN PLAICE AND FLOUNDER SHOWED THAT LITTLE OF THESE  
RADIONUCLIDES ARE PRESENT IN THE FLESH OF THE FISH WHERE THEY CAN BE TRANSFERRED TO MAN.

AVAILABILITY - BRITISH INFORMATION SERVICE, 845 THIRD AVE., N.Y. 10022, \$0.30 COPY

\*BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + RUTHENIUM + STRONTIUM + SURFACE WATER, NUCLIDE OCCURRENCE +  
SURFACE WATER, SEDIMENT + UNITED KINGDOM + WASTE DISPOSAL, LIQUID

14-15956 ALSO IN CATEGORY 15  
RYAN JT  
RADIOLOGICAL RECOVERY REQUIREMENTS, STRUCTURES, AND OPERATIONS RESEARCH. VOLUME IV. DECONTAMINATION  
ANALYSIS OF SELECTED SITES AND FACILITIES IN DETROIT. FINAL REPORT  
RESEARCH TRIANGLE INSTITUTE  
AD-635824 + USNRDL-TRC-16 (VOL. 4) +. 285 PAGES, 218 FIGURES, JUNE 6, 1966

THIS IS VOLUME IV OF FOUR VOLUMES THAT REPORT THE RESEARCH COMPLETED UNDER THE GENERAL TERMS  
OF THE OFFICE OF CIVIL DEFENSE SUBTASK NO. 3233B, RADIOLOGICAL RECOVERY REQUIREMENTS,  
STRUCTURES, AND OPERATIONS RESEARCH. THIS VOLUME CONTAINS THE SUPPORTING DATA RELATED TO  
DECONTAMINATION ANALYSES OF 12 SITES AND FACILITIES FROM DETROIT, MICHIGAN.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*CIVIL DEFENSE + \*DECONTAMINATION + FALLOUT + RADIATION SAFETY AND CONTROL

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-13075

MOORE RM + HOLM DM + RUESS H + ANDELIN RL  
DETECTION OF PLUTONIUM PENETRATION THROUGH CONTAINERS AT HIGH TEMPERATURES.  
UNIVERSITY OF CALIFORNIA, LOS ALAMOS SCIENTIFIC LAB.  
LA-DC-6973 + CONF-650602-15 +. 2 PAGES, 1965

INSTRUMENTATION WAS BUILT FOR MONITORING PLUTONIUM LEAKAGE (0.1 MICROGRAM) FROM CAPSULES AT 1100 C BY COUNTING THE ALPHA PARTICLES WITH SILICON SURFACE BARRIER DETECTORS. ALPHA PARTICLES FROM A PLUTONIUM LEAK LOSE ABOUT 1 MEV OF THEIR ENERGY IN TRAVERSING SIX NICKEL THERMAL-RADIATION FOILS PLACED BETWEEN THE CAPSULES AND THE DETECTORS. THIS ALSO PROVIDES AN ENERGY SEPARATION FROM THE AM-241 CALIBRATION SOURCES LOCATED NEXT TO EACH DETECTOR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*CONTAINMENT INTEGRITY + \*FUEL ELEMENT + \*MONITOR, RADIATION, SURFACE + \*PLUTONIUM + MONITOR, RADIATION, ENVIRONMENTAL + PLANT PROTECTIVE SYSTEM + SURFACE CONTAMINATION

15-13301

LIDEN K  
ACCUMULATION OF RADIONUCLIDES IN LICHENS AND MOSSES IN THE FOOD CHAIN-LICHEN, REINDEER AND MAN  
12 PAGES, 10 FIGURES, 1 TABLE, 7 REFERENCES, SUOMEN-KEMISTILEHTI 39(2), PAGE 18, (1966)

RADIOACTIVITY IS DEPOSITED ON THE SURFACE OF THE EARTH BY FALLOUT OR RAINOUT. THE ABILITY OF THE VEGETATION TO ACCUMULATE THE RADIONUCLIDES IS QUITE VARIABLE. IN THE ARCTIC AND NEAR ARCTIC REGIONS, LICHENS HAVE BEEN FOUND TO ACCUMULATE CESIUM TO A HIGH LEVEL AND TO TRANSMIT THIS NUCLIDE THROUGH THE FOOD CHAIN OF REINDEER MEAT TO THE LAPPS WHO POPULATE THE AREA.

\*BIOLOGICAL CONCENTRATION, ANIMAL + \*BIOLOGICAL CONCENTRATION, MAN +  
\*BIOLOGICAL CONCENTRATION, VEGETATION + \*ECOLOGICAL CONSIDERATION +  
BIOLOGICAL CONCENTRATION, ANIMAL FEED + CESIUM + FALLOUT + IRON + NORWAY + RAINOUT + SWEDEN

15-13346

FILM BADGE SYSTEM AND METHOD OF USING  
CANADIAN PAT. 728,751 +. 18 PAGES, 13 TABLES, 7 FIGURES, FEBRUARY 22, 1966

THE INVENTION RELATES TO A NOVEL DOSIMETER SYSTEM FOR INSERTION INTO FILM BADGES WORN BY PERSONNEL IN LOCATIONS WHERE RADIATION MONITORING IS PRACTICED, AND TO A METHOD FOR QUANTITATIVELY DETERMINING THEREFROM X-RAY DOSAGES, HIGH AND LOW ENERGY GAMMA DOSAGES, AND BETA DOSAGES FROM MIXED RADIATION.

AVAILABILITY - PHOTOCOPIES MAY BE OBTAINED FROM THE U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D.C. (\$0.30 PER PAGE)

\*DOSIMETRY, PHOTOGRAPHIC + GROSS BETA + GROSS GAMMA + NEUTRON + PERSONNEL EXPOSURE, RADIATION + X-RAY

15-13347

RUTTLAR HV  
TRITIUM CONCENTRATION OF GERMAN RIVER WATERS MEASURED WITH THE PROPORTIONAL-COUNTING TECHNIQUE  
TECHNICAL UNIVERSITY OF MUNICHEN  
5 PAGES, 7 FIGURES, 12 REFERENCES, NUCLEAR INSTRUMENTS AND METHODS 37(2), PAGES 288-92, (DECEMBER 1965)

SAMPLE WATER IS CONVERTED TO HYDROGEN GAS AND THEN CONTACTED WITH ETHYLENE TO YIELD ETHANE. THE TRITIUM RADIOACTIVITY IS COUNTED IN AN OESCHGER-TYPE COUNTER IN THE LIMITED PROPORTIONAL REGION. A TRANSISTORIZED ELECTRONIC CIRCUIT ALLOWS SIMULTANEOUS REGISTRATION OF TRITIUM COUNTS PLUS BACKGROUND BELOW, AND MAINLY BACKGROUND ABOVE ABOUT 15 KEV. WITH A GEOMETRIC VOLUME OF THE CENTRAL TRITIUM COUNTER OF 2.9 LITERS, THE ANTICOINCIDENCE BACKGROUND IS 2.74 PLUS-OR-MINUS 0.03 CPM IN THE TRITIUM CHANNEL. A SAMPLE OF 100 TU HAS A SAMPLE COUNTING RATE OF 1.32 CPM WHEN THE ETHANE PRESSURE IS 750 MM HG. DETAILS ABOUT BACKGROUND TRITIUM SPECTRUM, EFFICIENCY, RELIABILITY AND LONG-TIMES STABILITY ARE GIVEN. THE TRITIUM CONCENTRATIONS OF WATER SAMPLES FROM RHINE AND MAIN RIVER TAKEN BETWEEN 1961 AND 1964 SHOW PRONOUNCED MAXIMA IN THE SUMMER, ABOUT TWO MONTHS LATER AND A FACTOR 5 SMALLER THAN THE RAIN MAXIMA. WINTER MINIMA DIFFER BY A FACTOR OF 2.

\*ANALYTICAL TECHNIQUE, WATER + \*SURFACE WATER, NUCLIDE OCCURRENCE + \*TRITIUM + COUNTER + GERMANY

15-13348

FIERIG VR + JANSSEN U  
INFLUENCE OF AIR  
7 PAGES, 7 FIGURES, ATOMKERNENERGIE 11(3/4) PAGES 119-125 (MARCH-APRIL, 1966)

MEASUREMENTS OF THE RADIATION DOSES IN THE ENVIRONMENT OF THE CRITICAL FACILITY AT THE REACTOR STATION GEESTHACHT BEFORE FINAL REPLACEMENT OF THE CONCRETE SHIELDING ON THE ROOF ON THE REACTOR HALL SHOWED A STRONG CONTRIBUTION OF AIR-SCATTERED NEUTRONS AND GAMMAS TO DOSE RATES

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-13348 \*CONTINUED\*

IN ACCESSIBLE AREAS. THE NEUTRON DOSE RATES SHOW A WELL-DEFINED MAXIMUM 10 TO 20 M FROM THE WALL OF THE CRITICAL FACILITY. FAR FROM THE CRITICAL FACILITY, FOR CALCULATIONAL PURPOSES, AN UPPER BOUNDARY TO THE MEASUREMENTS IS GIVEN BY ASSUMING A POINT ISOTROPIC SOURCE NORMALIZED TO THE MEASURED DOSE RATES ON THE ROOF OF THE HALL. NO REDUCTION HAS TO BE MADE TO THE TOTAL SOURCE INTENSITY IN ACCORD TO THE ANGLE OF APERTURE. AT SHORTER DISTANCES (LESS THAN 100 M) CALCULATION OF ONCE-SCATTERED RADIATION, NEGLECTING ATTENUATION IN AIR, GIVES A GOOD RESEMBLANCE OF THE SLOPES, BUT IN ABSOLUTE VALUES A DISAGREEMENT OF BY A FACTOR OF 2 TO 3 LOWER THEORETICAL RESULTS COMPARED TO MEASUREMENTS OCCURS AFTER NORMALIZATION TO ROOF DOSE RATES. GAMMA-DOSE RATES IN THIS REGION RESULTS FROM LEAKAGE THROUGH THE WALL AND BEHAVE AS EXPECTED. THE METHODS OF CALCULATION THUS SHOW RELIABLE BY A COMMON FACTOR OF 3 FOR USE IN A CASE OF SKYSHINE FROM A CRITICAL FACILITY.

\*DOSE CALCULATION, EXTERNAL + \*DOSE MEASUREMENT, EXTERNAL + AIR + GROSS GAMMA + SURVEY, RADIATION, ENVIRONMENTAL

15-13429

LOCKHART LB + PATTERSON RL + SAUNDERS AW

AIRBORNE RADIOACTIVITY IN ANTARCTICA

U.S. NAVAL RESEARCH LABORATORY, WASHINGTON, D.C.

7 PAGES, 6 FIGURES, 1 TABLE, 20 REFERENCES, JANUARY 3, 1966, JOURNAL OF GEOPHYSICAL RESEARCH 71(8) PAGES 1985-1991 (APRIL 15, 1966)

THE RADIOACTIVE AEROSOL CONTENT OF THE SURFACE AIR IN ANTARCTICA HAS BEEN MEASURED CONTINUOUSLY SINCE 1956, FIRST AT LITTLE AMERICA STATION AND LATER AT THE SOUTH POLE STATION. ON-SITE MEASUREMENTS WERE MADE DAILY OF THE RADIOACTIVITY DUE TO BOMB-PRODUCED FISSION PRODUCTS AND TO NATURALLY OCCURRING RADIONUCLIDES OF THE RADON AND THORON SERIES. LATER, COMPOSITE SAMPLES COVERING 3-MONTH PERIODS WERE SUBJECTED TO RADIOCHEMICAL ANALYSIS FOR SUCH LONG-LIVED RADIONUCLIDES AS SR-90, CS-137, CE-144, PM-147, AND PB-210. THE NATURAL RADIOACTIVITY WAS LOWER IN ANTARCTICA THAN HAS BEEN OBSERVED AT ANY OTHER GEOGRAPHICAL LOCATION, AS MIGHT BE EXPECTED FROM THE SMALL AREA OF EXPOSED LAND SURFACE IN THE VICINITY. FISSION-PRODUCT CONCENTRATIONS, HOWEVER, OFTEN EXCEEDED THOSE FOUND IN THE SOUTHERNMOST PART OF SOUTH AMERICA AND EXHIBITED MORE WELL-DEFINED SEASONAL VARIATIONS, WITH MAXIMUMS IN THE ANTARCTIC SUMMER.

\*FALLOUT + \*SURVEY, RADIATION, ENVIRONMENTAL + CERIUM + CESIUM + LEAD + PROMETHIUM + STRONTIUM

15-13610

BACKGROUND FOR MILK RADIOACTIVITY REPORTS

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

PRESS REL. HEW-J98 +. 5 PAGES, 1 TABLE, MARCH 30, 1966

THIS PAPER IS ONE OF A SERIES OF PRESS RELEASES TABULATING LATEST AVAILABLE DATA ON RADIOACTIVITY IN MILK SAMPLES. THE RELEASES GIVE AVERAGE DAILY CONCENTRATIONS OF I-131, SR-90, SR-89, AND 12 MONTH TOTALS FOR THESE RADIONUCLIDES.

AVAILABILITY - AEC, DIVISION OF PUBLIC INFORMATION, WASHINGTON, D.C. 20545

\*BIOLOGICAL CONCENTRATION, MILK + \*IODINE + \*STRONTIUM

15-13635

ABEE HH

WHOLE-BODY COUNTING--AN ENVIRONMENTAL MONITORING TOOL

OAK RIDGE NATIONAL LABORATORY

3 PAGES, NUCLEAR SAFETY 7(2) PAGES 229-231 (WINTER 1965-1966)

THE USE OF WHOLE-BODY COUNTERS IN THE EVALUATION OF POPULATION EXPOSURE TO ENVIRONMENTAL RADIOACTIVE MATERIALS IS REVIEWED. THE RESULTS OF A NUMBER OF POPULATION-EXPOSURE STUDIES ARE DISCUSSED, AND SOME OF THE ADVANTAGES AND SHORTCOMINGS OF THE USE OF WHOLE-BODY COUNTERS FOR THIS PURPOSE ARE ENUMERATED. THE RESULTS OF THE STUDIES CONFIRM THE PLACE OF THE COUNTER AS AN ENVIRONMENTAL-MONITORING TOOL. WHERE AVAILABLE, IT CAN PROVIDE A VALUABLE ADDITION TO CONVENTIONAL ENVIRONMENTAL-MONITORING TECHNIQUES FOR THE DETERMINATION OF DOSE TO MAN FROM RADIOACTIVE MATERIALS IN THE ENVIRONMENT.

\*COUNTER, WHOLE BODY + CESIUM + IODINE + MONITOR, RADIATION, ENVIRONMENTAL + POPULATION EXPOSURE

15-13636

VALLARIC FJ + WASSON HR

THE WHY AND HOW OF NUCLEAR ACCIDENT DOSIMETRY

DIVISION OF OPERATIONAL SAFETY, USAEC + U.S. NAVAL RADIOLOGICAL DEFENSE LABORATORY

8 PAGES, 4 FIGURES, 2 TABLES, NUCLEAR SAFETY 7(2) PAGES 218-225 (WINTER 1965-1966)

THE OBJECTIVE OF AN EFFECTIVE NUCLEAR ACCIDENT DOSIMETRY PROGRAM IS TO ENSURE THAT A MEANS IS PROVIDED FOR ESTIMATING THE GAMMA AND NEUTRON DOSE FROM A NUCLEAR ACCIDENT. CERTAIN BASIC PARAMETERS SHOULD BE CONSIDERED IN THE DEVELOPMENT OF AN EFFECTIVE PROGRAM - (1) A METHOD FOR SCREENING PERSONNEL INVOLVED IN NUCLEAR ACCIDENTS, (2) A FIXED SYSTEM (PRIMARY UNIT) CAPABLE OF DETECTING FIRST-COLLISION DOSE WITHIN SOME ESTABLISHED DEGREE OF ACCURACY AT ITS POINT OF LOCATION, (3) THE POSSIBLE NEED FOR SECONDARY UNITS, AND (4) DEVICES WORN BY PERSONNEL WHICH

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-13636 \*CONTINUED\*

WOULD AFFORD SPECTRUM AND FLUX INFORMATION TO ASSIST IN DOSIMETRY EXTRAPOLATION FROM THE FIXED UNIT TO THE LOCATION OF THE WEARER. THE NEUTRON COMPONENT OF THE SYSTEM SHOULD YIELD FLUX AND SPECTRUM INFORMATION IN ORDER TO ARRIVE AT APPROPRIATE QUALITY FACTORS IN THE DOSE ESTIMATION. ACCURACIES SHOULD BE ESTABLISHED BASED UPON THE STATE OF THE ART. THE GAMMA-RAY COMPONENT OF THE SYSTEM SHOULD PERMIT MEASURING GAMMA RADIATION WITHIN THE BIOLOGICAL AREAS OF INTEREST, THAT IS FROM 10 TO 1000 R.

\*DOSIMETRY, GENERAL + ACCIDENT, CONSEQUENCES + ACCIDENT, CRITICALITY + ANL (ARGONNE NATIONAL LABORATORY) + BNL (BROOKHAVEN NATIONAL LABORATORY) + DOSE MEASUREMENT, EXTERNAL + GAMMA + IDAHO FALLS + LASL (LOS ALAMOS SCIENTIFIC LABORATORY) + LRL (LAWRENCE RADIATION LABORATORY) + MONITOR, RADIATION, EMERGENCY + MONITOR, RADIATION, PERSONNEL + NEUTRON + NRTS (NATIONAL REACTOR TEST STATION) + NUCLEAR INCIDENT DOSIMETER + ORNL (OAK RIDGE NATIONAL LABORATORY)

15-13720

HILL MJ + WILKINS K  
AN INSTRUMENT FOR THE SFMI-AUTOMATIC READING OF FILM BADGES USED IN PERSONAL RADIATION MONITORING CENTRAL ELECTRICITY GENERATING BOARD, BERKELEY NUCLEAR LABORATORIES, BERKELEY, GLOS.  
2 PAGES, 1 REFERENCE, J. SCI. INSTRUM. 43(8), PAGES 517-518 (AUGUST 1966)

AN INSTRUMENT IS DESCRIBED FOR USE IN READING FILM BADGES. THE MACHINE IS SEMIAUTOMATIC. THE OPERATOR CAN TYPE IN THE FILM IDENTIFICATION NUMBER BEFORE MEASUREMENT AND INSPECT THE FILM FOR ANOMALIES.

\*DOSIMETRY, PHOTOGRAPHIC + INSTRUMENTATION, RADIATION MONITORING + MONITOR, RADIATION, PERSONNEL

15-13730

RALLINGER ER + CAPR LJ + HARRIS PS + HIEBERT RD + LARKINS JH  
RADIATION DOSIMETER SYSTEM USING CADMIUM-BACKED COPPER FOIL  
U.S. PAT. 3,230,369 +. 6 PAGES, 5 FIGURES, 7 REFERENCES, JANUARY 18, 1966

THIS INVENTION IS A DOSIMETER FOR MEASURING THE NEUTRON DOSE RECEIVED BY PERSONNEL FROM RADIATION INCIDENTS IN A MIXED RADIATION FIELD.

AVAILABILITY - THE U.S. PATENT OFFICE, DEPARTMENT OF COMMERCE, WASHINGTON, D.C. (\$0.25 PER COPY)

\*DOSIMETRY, GENERAL + NEUTRON

15-13753

FERGUSON JM  
A COMPUTER CODE FOR ESTIMATING THE PROTECTION OFFERED BY SHIPS AGAINST FALLOUT, BASE SURGE, OR WATER POOL RADIATION  
U.S. NAVAL RADIOLOGICAL DEFENSE LABORATORY  
USNRDL-TR-1079 +. 24 PAGES, 2 TABLES, 1 FIGURE, 11 REFERENCES, SEPTEMBER 8, 1966

THIS REPORT DESCRIBES A METHOD FOR ESTIMATING THE SHIELDING EFFECTIVENESS OF SHIPS AGAINST VARIOUS TYPES OF GAMMA RADIATION FIELDS. THE METHOD ACTUALLY CAN BE USED FOR A WIDE VARIETY OF COMPLEX STRUCTURES. THE SHIP OR STRUCTURE IS REPRESENTED BY A SET OF RECTANGLES WHOSE NUMBER, ORIENTATIONS, SIZES, AND THICKNESSES ARE VARIABLE. THE DIRECT RADIATION IS CALCULATED EXACTLY, AND THE SCATTERED RADIATION IS APPROXIMATED BY BUILDUP FACTORS. THE CALCULATIONS AGREE WELL WITH EXPERIMENT IF IT IS ASSUMED THAT THE CONTRIBUTION DUE TO SCATTERED RADIATION IS ABOUT HALF THAT GIVEN BY INFINITE MEDIUM BUILDUP FACTORS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, 22151, \$1.00 COPY, \$0.50 MICROFISCHE

\*MATHEMATICAL STUDY + \*SHIELDING + GAMMA

15-13783

STATUS AND PROGRESS REPORT  
HEALTH AND SAFETY LABORATORY, USAEC, NEW YORK OPERATIONS OFFICE  
19 PAGES, JANUARY 1964

ACTIVITIES FOR JANUARY 1964 ARE REPORTED. DATA ARE REPORTED FOR ANALYSES OF ENVIRONMENTAL SAMPLES. PROGRESS IS REPORTED IN STUDIES RELATED TO RADIOLOGICAL HEALTH AND DEVELOPMENT OF RADIATION INSTRUMENTS.

AVAILABILITY - UNITED STATES ATOMIC ENERGY COMMISSION, NEW YORK OPERATIONS OFFICE

\*FALLOUT + AIR + ANTIMONY + BARIUM + CADMIUM + CERIUM + CESIUM + DEPOSITION + DOSIMETRY, GENERAL + GROSS GAMMA + INHALATION + INSTRUMENTATION, CALIBRATION + INSTRUMENTATION, COMPONENT + INSTRUMENTATION, RADIATION MONITORING + IRON + MANGANESE + MONITOR, RADIATION, AIR + PARTICLE SIZE + PLUTONIUM + PROMETHIUM + RADON + RAINOUT + SAMPLING + STRONTIUM + SURVEY, RADIATION, ENVIRONMENTAL + TRITIUM + URANIUM + YTTRIUM + ZIRCONIUM



CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-13811

LARSON KH + NEEL JW + HAWTHORNE HA + MORK HM + ROWLAND RH + BAURMASH L + LINDBERG RG + OLAFSON JH + KOWALEWSKY BW

DISTRIBUTION, CHARACTERISTICS, AND BIOTIC AVAILABILITY OF FALLOUT, OPERATION PLUMBBOB  
UNIVERSITY OF CALIFORNIA  
WT-1488 +. 281 PAGES, 84 FIGURES, 94 TABLES, JULY 26, 1966

THIS REPORT INCLUDES THE SIGNIFICANT FINDINGS OF CETO PROGRAM 37, RELATED TO THE DISTRIBUTION, CHARACTERISTICS, AND BIOLOGICAL AVAILABILITY OF FALLOUT DEBRIS ORIGINATING FROM THE PLUMBBOB TEST SERIES (1957) AT THE NEVADA TEST SITE. AERIAL RADIOMETRIC SURVEY WAS ADAPTED TO ROUTINE RADIATION SURVEYS. ISODOSE RATE AND TIME-OF-ARRIVAL CONTOUR MAPS ARE PRESENTED FOR SEVEN TOWER MOUNTED AND FOUR BALLOON MOUNTED SHOTS ALONG WITH THE PREDOMINANT PARTICLE SIZE FRACTION ON SEVERAL APCS ALONG EACH FALLOUT PATTERN.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFO., NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 CY, \$1.50 MN

\*AGRICULTURAL CONSIDERATION + \*ECOLOGICAL CONSIDERATION + \*FALLOUT + \*PLOWSHARE PROGRAM + AIR + BARIUM + BIOLOGICAL CONCENTRATION, ANIMAL + BIOLOGICAL CONCENTRATION, GENERAL + BIOLOGICAL CONCENTRATION, MILK + BIOLOGICAL CONCENTRATION, VEGETATION + CHEMICAL ANALYSIS + DEPOSITION + ENVIRONMENTAL CONDITION + IODINE + PARTICLE SIZE + SOIL, NUCLIDE OCCURRENCE + SPECTROMETRY, GAMMA + STRONTIUM + SURVEY, RADIATION, AERIAL + SURVEY, RADIATION, ENVIRONMENTAL

15-13826

BIOPHYSICS

COLUMBIA UNIVERSITY

NYO-2740-2 +. 50 PAGES, FIGURES, TABLES, REFERENCES, PAGES 166-215 FROM ANNUAL REPORT ON RESEARCH PROJECT, JANUARY 1, 1966

PROGRESS IS REPORTED ON STUDIES OF THE RELATIVE BIOLOGICAL EFFECTS (RBE) OF 0.43- AND 1.8-MEV NEUTRONS RELATIVE TO X RADIATION ON LENS OPACIFICATION AND CATARACT INDUCTION IN MICE AND PARRIS, THE CYTOGENETIC EFFECTS OF 14-MEV NEUTRONS ON MAIZE, THE RBE OF 0.43-MEV NEUTRONS AND X RADIATION ON EMBRYO LETHALITY FOLLOWING EXPOSURE OF PREGNANT MICE, THE EFFECTS OF LOW DOSES (BELOW 25 RAD) OF X RADIATION ON THE SURVIVAL OF CULTURED MAMMALIAN CELLS (HELA AND CHINESE HAMSTER V79) GROWN IN STANDARD MEDIUM WITH AND WITHOUT THE ADDITION OF C-14-COLCHICINE OR UNLABELED COLCHICINE, THE ULTRAVIOLET RADIOSENSITIVITY OF DEVELOPING ESCHERICHIA COLIPHAGE COMPLEXES, THE EFFECTS OF POSTIRRADIATION DARK TREATMENTS ON THE ULTRAVIOLET SENSITIVITY OF E. COLI, AND A COMPARISON OF THE MUTAGENIC AND LETHAL EFFECTS OF ULTRAVIOLET RADIATION, X RADIATION, AND THYMINE DEPRIVATION ON ESCHERICHIA COLI GROWN IN HIGH CONCENTRATIONS OF GLUCOSE OR TREATED WITH ACRIFLAVINE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$6.00 COPY, \$1.25 MICROFICHE

\*RADIATION EFFECT + ANL (ARGONNE NATIONAL LABORATORY) + ECOLOGICAL CONSIDERATION + RADIATION DAMAGE + X-RAY

15-13830

OAK RIDGE AND RICHLAND SUPPLYING M9 MASKS

ATOMIC ENERGY COMMISSION

2 PAGES, HEALTH AND SAFETY BULLETIN NO. 225, FEBRUARY 16, 1966

STATES THAT SUPPLIES OF M9 SERIES PROTECTIVE FIELD MASKS (ARMY ASSAULT MASK) ARE BEING MAINTAINED AT OAK RIDGE, TENN., AND RICHLAND, WASHINGTON, FOR REQUISITION BY AEC OFFICES AND COST-TYPE CONTRACTORS. PRICES AND ADDRESSES FOR REQUISITION ARE GIVEN.

AVAILABILITY - AEC, DIVISION OF PUBLIC INFORMATION, WASHINGTON, D.C. 20545

\*FILTER, GAS MASK + ADMINISTRATIVE CONTROLS AND PRACTICES + ECONOMICS + RADIATION SAFETY AND CONTROL

15-13831

ALSO IN CATEGORY 12

UKAFA AIP SAMPLER

ATOMIC ENERGY COMMISSION

2 PAGES, HEALTH AND SAFETY BULLETIN NO. 216, SEPTEMBER 13, 1965

DESCRIBES AN AIP SAMPLER FOR ASSESSING AIRBORNE CONTAMINATION. IT IS DESIGNED TO OPERATE FROM A LOW PRESSURE COMPRESSED AIR SYSTEM. THE AIP PASSES THROUGH A VENTURI AND THE RESULTING PRESSURE DROP DRAWS THE AIR TO BE SAMPLED THROUGH A FILTER PAPER. THE UNIT IS MOBILE, LIGHT, AND EASILY CARRIED BY HAND. IT OPERATES QUIETLY AND CHEAPLY.

AVAILABILITY - AEC, DIVISION OF PUBLIC INFORMATION, WASHINGTON, D.C. 20545

\*INSTRUMENTATION, AIR SAMPLING + \*MONITOR, RADIATION, AIR + AIRBORNE RELEASE + CONTAMINATION

15-13853

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-13853 \*CONTINUED\*

TIME VARIATION OF THE DOSE-RATE FROM RADIOACTIVITY INDUCED IN HIGH-ENERGY PARTICLE ACCELERATORS  
5 PAGES, 5 FIGURES, HEALTH PHYSICS 11(9), PAGES 1101-1105, (OCTOBER 1965)

THE DOSE-RATE DUE TO RADIOACTIVITY INDUCED IN HIGH-ENERGY PARTICLE ACCELERATORS COMPLICATES THE MAINTENANCE OF SUCH MACHINES, AND IT WILL BECOME A MAJOR CONSIDERATION, BOTH IN THE DESIGN OF NEW MACHINES AND IN PROJECTS FOR RAISING BEAM INTENSITIES IN PRESENT ONES. ONE METHOD OF ESTIMATING THE PROBABLE DOSE-RATES NEAR FUTURE ACCELERATORS IS TO EXTRAPOLATE FROM THE MEASURED DOSE-RATES NEAR EXISTING MACHINES. THE RADIOACTIVITY INDUCED IN A HIGH-ENERGY PARTICLE ACCELERATOR COMPRISES A COMPLICATED MIXTURE OF RADIOISOTOPES, EACH BUILDING UP AND DECAYING WITH ITS CHARACTERISTIC HALF-LIFE.

\*ACCELERATOR + \*DOSE MEASUREMENT, EXTERNAL + DOSE CALCULATION, EXTERNAL + PERSONNEL EXPOSURE, RADIATION

15-13856

FUJITA M + YABE A + AKAISHI J + OHTANI S  
RELATIONSHIP BETWEEN INGESTION, EXCRETION AND ACCUMULATION OF FALLOUT CESIUM-137 IN MAN ON A LONG-TERM SCALE  
JAPAN ATOMIC ENERGY RESEARCH INSTITUTE, TOKAI, JAPAN  
5 PAGES, 1 FIGURE, 5 TABLES, 12 REFERENCES, HEALTH PHYSICS 12(12), PAGES 1649-1653, (DECEMBER 1966)

INVESTIGATIONS WERE MADE TO FOLLOW THE INGESTION, EXCRETION, AND ACCUMULATION OF FALLOUT CS-137 IN FIVE VOLUNTEERS ON A LONG-TERM SCALE, AND, AT THE SAME TIME, USING THE DATA SO OBTAINED TO DETERMINE THE BIOLOGICAL HALF-LIFE OF CS AS WELL AS THE FRACTION OF THIS NUCLIDE IN URINE OF THAT IN TOTAL EXCRETA. THE DIETARY INTAKE, DAILY EXCRETION AND BODY BURDEN OF CS-137 INCREASED SINCE 1962 TO THE MAXIMA IN THE MIDDLE OF 1964, BUT THEREAFTER THE LEVELS BEGAN TO DECREASE. THE RELATIONSHIP BETWEEN THE BODY BURDEN AND THE TOTAL EXCRETION INDICATED BIOLOGICAL HALF-LIVES OF FROM 57 TO 138 DAYS. THE MEAN VALUE WAS 80 DAYS. IT WAS NOTICED THAT THE BIOLOGICAL HALF-LIVES VARIED SOMEWHAT BETWEEN AND FOR THE SAME INDIVIDUALS. URINARY EXCRETION DIVIDED BY TOTAL EXCRETA RANGED FROM 0.74 TO 0.91, AND THE MEAN VALUE WAS 0.86 IN THE SUBJECTS. THE CORRESPONDING VALUES FOR K ARE ALSO STUDIED AND COMPARED WITH THOSE FOR CS-137.

\*BIOLOGICAL CONCENTRATION, MAN + \*CESIUM + \*FALLOUT + JAPAN

15-13857

LENGEMANN FW + WENTWORTH RA  
PREDICTING THE TOTAL INTAKE OF RADIOIODINE OF HUMANS CONSUMING GOATS MILK  
CORNELL UNIVERSITY  
5 PAGES, 1 FIGURE, TABLE, 9 REFERENCES, HEALTH PHYSICS 12(12), PAGES 1655-1659, (DECEMBER 1966)

THIS PAPER PRESENTS DATA OBTAINED WHEN 14 GOATS WERE GIVEN RADIOIODINE DAILY FOR PERIODS UP TO 25 DAYS. AN EQUATION WAS DEVELOPED FROM THIS DATA THAT EXPRESSED THE CONCENTRATION OF RADIOIODINE IN MILK WITH TIME, ACCOUNTING FOR SUCH FACTORS AS RADIOACTIVE DECAY, PASTURE LOSSES, TIME FROM PRODUCTION TO CONSUMPTION, AND VOLUME OF MILK CONSUMED. INTEGRATION OF THE MODIFIED EQUATION FROM ZERO TO INFINITE TIME PRODUCED AN ESTIMATE OF THE TOTAL PROJECTED INTAKE. THIS TOTAL INTAKE VALUE WAS THEN DIVIDED BY THE CONCENTRATION OF RADIOIODINE IN MILK AT EACH DAY AFTER THE START OF INGESTION OF RADIOIODINE BY THE GOATS TO PRODUCE A SERIES OF RATIOS. THESE RATIOS CAN THEN BE APPLIED IN A PRACTICAL SITUATION TO PREDICT TOTAL INTAKE OF RADIOIODINE BY HUMANS FOLLOWING A SINGLE DEPOSITION OF I-131 IF THE CONCENTRATION OF RADIOIODINE IN A MILK SAMPLE AND THE TIME OF PRODUCTION OF THAT MILK SAMPLE IS KNOWN.

\*BIOLOGICAL CONCENTRATION, MAN + \*IODINE + BIOLOGICAL CONCENTRATION, ANIMAL + BIOLOGICAL CONCENTRATION, MILK

15-13858

COMAR CL + WASSERMAN RH + TWARDOCK AR + LENGEMANN FW  
EFFECT OF VARIOUS SUBSTANCES ON SECRETION OF RADIOSTRONTIUM INTO MILK  
CORNELL UNIVERSITY  
9 PAGES, 5 TABLES, 21 REFERENCES, HEALTH PHYSICS 12(12), PAGES 1661-1669, (DEC. 1966)

THE SECRETION OF CHRONICALLY INGESTED RADIOSTRONTIUM INTO THE MILK OF COWS AND GOATS AS AFFECTED BY VARIOUS TREATMENTS HAS BEEN STUDIED. SHORT-TERM EFFECTS ARE INDICATED BY CHANGES IN THE RADIOSTRONTIUM CONCENTRATION IN MILK. LONG-TERM EFFECTS CAN BE PREDICTED BY DOUBLE TRACER METHODS. ADDITION OF NAEDTA, DOWEX 50 AND KH<sub>2</sub>PO<sub>4</sub> TO DIETS IN AMOUNTS CALCULATED TO REACT WITH MOST OF DIETARY CALCIUM, GENERALLY CAUSED INCREASES IN THE AMOUNT OF INGESTED SR-85 SECRETED INTO MILK. MGSO<sub>4</sub> SIMILARLY ADDED CAUSED A SMALL DECREASE. THE NAEDTA INCREASED THE VALUE OF ORMILK/DIET WHEREAS THE OTHER SUBSTANCES DID NOT AFFECT IT. SUBCUTANEOUS INJECTION OF PARATHORMONE CAUSED SLIGHT DECREASES IN THE SECRETION OF INGESTED SR-85 INTO MILK AND THE EFFECT WAS REVERSED BY CORTISONE. IN GOATS, BOTH TREATMENTS CAUSED AN INCREASE IN VALUES OF ORMILK/DIET BUT THIS EFFECT WAS NOT OBSERVED IN THE COWS. CALCIUM GLUCONATE, NH<sub>4</sub>Cl, NAEDTA AND CAEDTA WERE ADMINISTERED BY CONTINUOUS INTRAVENOUS INFUSION OVER PERIODS OF UP TO 200 HR. AT THE LEVELS USED, CALCIUM GLUCONATE CAUSED ABOUT A 50% REDUCTION IN THE CONCENTRATION OF INGESTED SR-85 IN THE MILK. NH<sub>4</sub>Cl HAD NO EFFECT. THE SALTS OF EDTA CAUSED AN INCREASE.

\*BIOLOGICAL CONCENTRATION, MILK + \*STRONTIUM + CALCIUM

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-13859

REACH SA + DOLPHIN GW + DUNCAN KP + DUNSTER HJ

A BASIS FOR ROUTINE URINE SAMPLING OF WORKERS EXPOSED TO PLUTONIUM-239

UNITED KINGDOM ATOMIC ENERGY AUTHORITY, HARWELL, ENGLAND

12 PAGES, 7 FIGURES, 2 TABLES, 16 REFERENCES, HEALTH PHYSICS, 12(12), PAGES 1671-1682, (DECEMBER 1966)

A ROUTINE PROGRAMME FOR MEASURING PLUTONIUM IN URINE IS DISCUSSED IN RELATION TO THE OTHER METHODS OF CONTROLLING THE INTERNAL RADIATION DOSE OF THOSE WORKING WITH PLUTONIUM. THE URINARY EXCRETION PATTERN FOLLOWING INTAKES OF PLUTONIUM COMPOUNDS IS CONSIDERED, AND A VALUE FOR  $D_0$ , THE MAXIMUM BODY CONTENT APPLICABLE TO ALL COMPOUNDS, IS PROPOSED. A REFERENCE LEVEL AND AN ACTION LEVEL FOR URINARY EXCRETION RATES ARE SUGGESTED. FACTORS INFLUENCING THE CHOICE OF SAMPLING PROCEDURE AND FREQUENCY ARE DISCUSSED. AN EXAMPLE IS GIVEN SHOWING HOW THE REFERENCE LEVEL AND ACTION LEVEL ARE USED IN A TYPICAL SAMPLING PROGRAMME. SPECIAL MENTION IS MADE OF THE MANAGERIAL ACTIONS WHICH ARE TAKEN WHEN A WORKERS URINARY EXCRETION RATE EXCEEDS THE REFERENCE LEVEL AND THE ACTION LEVEL.

\*PERSONNEL EXPOSURE, RADIATION + \*PLUTONIUM + ANALYTICAL TECHNIQUE, URINE + BIOLOGICAL CONCENTRATION, MAN + SAMPLING

15-13861

TOCHILIN F + GOLDSTEIN

DOSE RATE AND SPECTRAL MEASUREMENTS FROM PULSED X-RAY GENERATORS

U.S. NAVAL RADIOLOGICAL DEFENSE LABORATORY

9 PAGES, 7 FIGURES, 1 TABLE 15 REFERENCES, HEALTH PHYSICS 12(12), PAGES 1705-1713, (DECEMBER 1966)

TYPICAL X-RAY SPECTRA FROM HIGH-INTENSITY PULSED X-RAY SOURCES WERE DETERMINED BY MEANS OF AN EQUIVALENT CONSTANT-VOLTAGE ACCELERATOR. THE PHOTON-ENERGY SPECTRUM FOR THE FORWARD X-RAY BEAM WAS MEASURED WITH VARIOUS X-RAY TARGET THICKNESSES AT ACCELERATOR VOLTAGES OF 1.0, 1.5 AND 2.0 MV. X-RAY SPECTRA WERE ALSO OBTAINED FROM A REFLECTION X-RAY TARGET AT ANGLES OF 7 DEGREES AND 45 WITH RESPECT TO THE X-RAY BEAM AT APPLIED POTENTIALS OF 0.55, 1.0, AND 2.0 MV. THE DOSE-RATE DEPENDENCE OF THERMOLUMINESCENT LIF, SILVER-ACTIVATED PHOSPHATE GLASS, AND DOSIMETRY FILM WAS INVESTIGATED OVER A RANGE OF DOSE RATES EXTENDING FROM 10 TO THE 4TH TO 10 TO THE 11TH RADS/SEC WITH THREE SEPARATE FLASH X-RAY SYSTEMS.

\*DOSE MEASUREMENT, EXTERNAL + \*X-RAY + DOSIMETRY, PHOTOGRAPHIC + DOSIMETRY, THERMOLUMINESCENCE

15-13862

FRANK AL

GAMMA-RADIATION CHARACTERISTICS-ANGULAR DISTRIBUTION OVER A DESERT TERRAIN FALLOUT FIELD

U.S. NAVAL RADIOLOGICAL DEFENSE LAB.

17 PAGES, 8 FIGURES, 1 TABLE, 10 REFERENCES, HEALTH PHYSICS 12(12), PAGES 1715-1731, (DECEMBER 1966)

A GAMMA-RADIATION SPECTROSCOPY EXPERIMENT WAS RUN AT THE NEVADA TEST SITE NEAR MERCURY, NEVADA, IN THE SUMMER OF 1962. A GAMMA-PAY NAI SCINTILLATION SPECTROMETER WAS TAKEN ONTO FALLOUT-CONTAMINATED DESERT TERRAIN. MEASUREMENTS WERE MADE AT TEN VERTICAL ANGLES AT 9 DAYS AFTER SHOT TIME. ALL DATA WERE FOR A DETECTOR HEIGHT OF 4 FT. THE PULSE-HEIGHT DATA WERE REDUCED TO PHOTON SPECTRA (PHOTONS/MIN-MEV-IN. SQUARE STERADIAN) BY MEANS OF A MATRIX-ITERATION PROCEDURE. SOME COMPARISONS WERE MADE BETWEEN THE VERTICAL-ANGLE PHOTON SPECTRA AND DATA FROM OTHER SOURCES. ALSO A CALCULATION OF THE EFFECTIVE GROUND ROUGHNESS OF THE DESERT TERRAIN WAS MADE BY THE ABSORRING OVERLAYER MODEL. THIS RESULTED IN A CALCULATED OVERLAYER OF APPROXIMATELY 24 EQUIVALENT FT OF AIR.

\*DOSE MEASUREMENT, EXTERNAL + \*FALLOUT + SPECTROMETRY, GAMMA

15-13912

MORGAN KZ

HEALTH PHYSICS AND SAFETY ANNUAL REPORT FOR 1965

OAK RIDGE NATIONAL LABORATORY

ORNL-3969 +. 91 PAGES, 32 FIGURES, 28 TABLES, JULY 1966

THE GASEOUS AND LIQUID WASTE RELEASES FROM ORNL WERE SUCH THAT THE CONCENTRATION OF RADIOACTIVE MATERIALS IN THE ENVIRONMENT WAS WELL BELOW THE MAXIMUM LEVELS RECOMMENDED BY THE NATIONAL COMMITTEE ON RADIATION (NCRR) AND FEDERAL RADIATION COUNCIL (FRC). THE AVERAGE CONCENTRATION OF RADIOACTIVE MATERIALS IN THE ATMOSPHERE AT THE X-10 SITE WAS LESS THAN 1% OF THE MAXIMUM PERMISSIBLE FOR PERSONS RESIDING IN THE NEIGHBORHOOD OF AN ATOMIC INSTALLATION, AND THE CONCENTRATION WAS EVEN LESS AT THE PERIMETER OF THE CONTROLLED AREA. THE CALCULATED AVERAGE CONCENTRATION OF RADIOACTIVE MATERIALS IN THE CLINCH RIVER AT THE POINT OF ENTRY OF WHITE OAK CREEK WAS ALSO LESS THAN 1% OF THE MAXIMUM PERMISSIBLE FOR PERSONS RESIDING IN THE NEIGHBORHOOD OF AN ATOMIC ENERGY INSTALLATION. NO EMPLOYEE RECEIVED RADIATION DOSE WHICH EXCEEDED THE MAXIMUM PERMISSIBLE LEVELS RECOMMENDED BY THE FRC. THE HIGHEST WHOLE BODY DOSE EQUIVALENT RECEIVED BY AN EMPLOYEE WAS ABOUT 4.4 REMS (37% OF THE MAXIMUM PERMISSIBLE ANNUAL DOSE). NO EMPLOYEE HAD A CUMULATIVE WHOLE BODY DOSE WHICH EXCEEDED THE RECOMMENDED MAXIMUM PERMISSIBLE DOSE AS BASED ON THE AGE PROPORTION FORMULA  $5(N-18)$ . THERE WERE NO CASES OF INTERNAL EXPOSURE WHERE THE DEPOSITION OF RADIOACTIVE MATERIALS WITHIN THE BODY WAS ESTIMATED TO HAVE AVERAGED GREATER THAN ONE-HALF OF A MAXIMUM PERMISSIBLE BODY BURDEN.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-13912 \*CONTINUED\*  
STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.75 MICROFICHE

\*ORNL (OAK RIDGE NATIONAL LABORATORY) + \*RADIATION SAFETY AND CONTROL + AIR + COUNTER, WHOLE BODY + DOSE + MONITOR, RADIATION, PERSONNEL + PERSONNEL EXPOSURE, RADIATION + POPULATION EXPOSURE + RADIATION PROTECTION, ORGANIZATION + RIVER, CLINCH + SURFACE WATER, NUCLIDE OCCURRENCE + SURVEY, RADIATION, ENVIRONMENTAL

15-13914  
DOUGHERTY TF  
RESEARCH IN RADIOBIOLOGY. ANNUAL REPORT OF PROGRESS IN THE INTERNAL IRRADIATION PROGRAM  
UTAH UNIVERSITY  
COO-119-234 +. 326 PAGES, FIGURES, TABLES, REFERENCES, MARCH 31, 1966

AN ANNUAL REPORT OF PROGRESS IN THE INTERNAL IRRADIATION PROGRAM AT THE UNIVERSITY OF UTAH FOR 1965. THE PROGRAM IS DEVOTED PRIMARILY TO ASSAYING THE EFFECTS OF INTERNALLY DEPOSITED RADIONUCLIDES. BEAGLE DOGS ARE USED AS THE TEST ANIMALS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFO., NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$7.00 CY, \$1.50 MN

\*RADIATION EFFECT + BIOLOGICAL CONCENTRATION, ANIMAL + CESIUM + DOSE + PLUTONIUM + RADIATION DAMAGE + RADIUM + STRONTIUM + THORIUM + X-RAY

15-13916  
CUSHING CF + WATSON DG  
ACCUMULATION AND TRANSPORT OF RADIONUCLIDES BY COLUMBIA RIVER BIOTA  
BATTELLE-NORTHWEST, RICHLAND  
BNWL-SA-623 + CONF-660507-5 +. 24 PAGES, MARCH 31, 1966, FROM SYMPOSIUM FOR THE DISPOSAL OF RADIOACTIVE WASTES INTO SEA, OCEANS, AND SURFACE WATERS, VIENNA

PRESENTS DATA FROM INVESTIGATIONS OF THE UPTAKE AND TRANSPORT OF RADIONUCLIDES BY PERIPHYTON, PLANKTON, FISH, AND SELECTED INVERTEBRATES. THE PURPOSE OF THE STUDIES WAS TO PROVIDE BASIC DATA TO USE IN DEVELOPING A MORE COMPREHENSIVE STUDY OF THE DYNAMIC BALANCE OF RADIONUCLIDES IN THE COLUMBIA RIVER. THE PERIPHYTON COMMUNITY COMPRISES THE MAIN SOURCE OF PRIMARY PRODUCTION IN STREAMS, ESPECIALLY IN THE SMALLER, RAPIDLY FLOWING ONES. LARGE RIVERS, SUCH AS THE COLUMBIA, USUALLY CONTAIN A SIGNIFICANT PHYTO-PLANKTON COMMUNITY. BOTH COMMUNITIES ARE BEING STUDIED IN THE COLUMBIA RIVER. THE AUTOTROPHIC NATURE OF THESE ORGANISMS AND THEIR LARGE SURFACE-TO-VOLUME RATIO RESULTS IN THE CONCENTRATION OF CERTAIN RADIONUCLIDES BY SEVERAL ORDERS OF MAGNITUDE OVER THAT OF THE AMBIENT WATER. THIS MAKES THE ALGAE OF CONSIDERABLE INTEREST FROM BOTH A RADIO-BIOLOGICAL AND ECOLOGICAL VIEWPOINT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$1.00 COPY, \$0.50 MICROFICHE

\*ECOLOGICAL CONSIDERATION + \*RIVER, COLUMBIA + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + ENVIRONMENTAL CONDITION + PHOSPHORUS + SURVEY, RADIATION, ENVIRONMENTAL + ZINC

15-13917  
FOLSON TP + SREEKUMARAN C  
THE URECHIS PROGRAM. RAPID SURVEY OF FALLOUT CESIUM IN THE OCEAN  
SCRIPPS INSTITUTION OF OCEANOGRAPHY, LA JOLLA, CALIF.  
CONF-660401-6 +. 15 PAGES, APRIL 15, 1966, FROM AMERICAN METEOROLOGICAL SOCIETY, AMERICAN GEOPHYSICAL UNION, ANNUAL JOINT MEETING, WASHINGTON, D.C.

A NEW METHOD FOR COLLECTING LARGE SAMPLES RAPIDLY AND AT ANY DEPTH FOR DISTRIBUTION STUDIES IS PRESENTED. OCEAN WATER IS FORCED THROUGH THIN BEDS OF GRANULAR POTASSIUM COBALT FERROCYANIDE (KCFC), A HIGHLY SELECTIVE CESIUM ABSORBENT, AS THEY ARE TOWED BEHIND A SHIP. IT IS POSSIBLE TO COLLECT ON ABOUT 50 GRAMS OF GRANULAR KCFC ALL THE CESIUM PRESENT IN ABOUT 100 LITERS OF SEA WATER IN ABOUT ONE HOUR. THE DISTRIBUTION OF NATURAL CESIUM IN THE OCEAN IS USED AS AN EFFICIENCY CONTROL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$1.00 COPY, \$0.50 MICROFICHE

\*CESIUM + \*FALLOUT + \*OCEAN AND SEA + SURFACE WATER, NUCLIDE OCCURRENCE

15-13919  
PAPKER HM  
ENVIRONMENTAL FACTORS RELATING TO LARGE WATER PLANTS  
BATTELLE-NORTHWEST, RICHLAND  
BNWL-SA-596 + CONF-660311-1 +. 29 PAGES, FROM SYMPOSIUM ON WATER PRODUCTION USING NUCLEAR ENERGY, TUCSON, ARIZONA

PRESENTS A REVIEW OF WORK DONE IN MARINE BIOLOGY, FISHERIES AND ENVIRONMENTAL SCIENCE, AQUATIC BIOLOGY, ENVIRONMENTAL SCIENCE, AND NUCLEAR AND DESALINATION ENGINEERING IN CONNECTION WITH WATER-PRODUCTION PLANTS.

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-13910 \*CONTINUED\*

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$2.00 COPY, \$0.50 MICROFICHE

\*ECOLOGICAL CONSIDERATION + \*REACTOR, DESALINATION + ENVIRONMENTAL CONDITION

15-13920

UNRUH CM + BAUMGARTNER WV + KOCHER LF + BRACKENBUSH LW + ENDRES GW  
PERSONNEL NEUTRON DOSIMETER DEVELOPMENTS  
BATTELLE-NORTHWEST, RICHLAND  
BNWL-SA-537 +. CONF-660807-1 +. 20 PAGES, FROM SYMPOSIUM ON NEUTRON MONITORING FOR RADIOLOGICAL PROTECTION, VIENNA, AUSTRIA

THREE APPROACHES TO THE PROBLEM OF PERSONNEL NEUTRON DOSIMETRY ARE DISCUSSED. THESE ARE THERMOLUMINESCENCE, SOLID-STATE TRACK DETECTION, AND ACTIVATION ANALYSIS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$1.00 COPY, \$0.50 MICROFICHE

\*MONITOR, RADIATION, PERSONNEL + \*NEUTRON + ACTIVATION + DOSIMETRY, GENERAL + DOSIMETRY, PHOTOGRAPHIC + DOSIMETRY, THERMOLUMINESCENCE

15-13921

DEWERD LA + CAMERON JR  
EFFECTS OF IRRADIATION TEMPERATURE IN LIF (TLD-100).  
UNIVERSITY OF WISCONSIN  
COC-1105-18 +. 10 PAGES, 4 FIGURES, 1 TABLE, 5 REFERENCES, JULY 15, 1966

PRESENTS EXPERIMENTAL RESULTS ON THE EFFECTS OF IRRADIATION ANNEALING ON THE THERMOLUMINESCENCE ON LIF (TLD-100) AT 290 AND MINUS 54 C. THE RESULTS ARE COMPARED WITH 4 PREVIOUS RESULTS FOR ROOM TEMPERATURE IRRADIATIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$1.00 COPY, \$0.50 MICROFICHE

\*DOSIMETRY, THERMOLUMINESCENCE + RADIATION EFFECT + THERMAL EXPERIMENT

15-13924

POREV S  
METHODS OF COMBATING RADIOACTIVE POLLUTION  
JPRS-34927 + TT-66-31365 +. 8 PAGES, TRANSLATED FROM PRIRODA 5, PAGES 14-17, (1965)

DISPOSAL OF INCREASING ACCUMULATIONS OF RADIOACTIVE MATERIALS IS DISCUSSED. METHODS FOR CONVERTING RADIOACTIVE REFUSE TO THE SOLID STATE, THE MOST CONVENIENT FORM FOR SAFE DISPOSAL, ARE EVALUATED. DECONTAMINATION OF FOOD, DRINKING WATER, AREAS, AND SURFACES IS CONSIDERED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$1.00 COPY, \$0.50 MICROFICHE

\*WASTE DISPOSAL, GENERAL + DECONTAMINATION + WASTE TREATMENT, FIXATION + WASTE TREATMENT, GENERAL

15-13925

TAKAHASHI T  
MEASUREMENT OF TRITIUM AT NATURAL LEVELS  
NSJ-TR-49 +. 10 PAGES, TRANSLATED FROM GENSHIRYOKU KOGYO 10(2) PAGES 65-8, (1964)

TO MEASURE THE CONCENTRATION OF TRITIUM IN NATURAL WATERS, THE DISTILLED SAMPLE AND NaOH WERE PUT INTO AN ELECTROLYTIC CELL, AND, BY USING ELECTRODES OF NI AND STAINLESS STEEL, ELECTROLYSIS WAS CARRIED OUT AT 0.15 AMP/CM OF CURRENT DENSITY AND 10.5 C. WHEN THE VOLUME OF SAMPLE WAS CONDENSED TO 1/12 OF THE INITIAL VOLUME, THE CONCENTRATION OF T WAS 8 TO 10 TIMES AS MUCH AS THAT IN THE INITIAL SAMPLE. THE INITIAL CONCENTRATION OF T CALCULATED FROM THE MEASURED VALUE ON THE BASIS OF THE CONCENTRATION RATIO OF HEAVY WATER WAS IN AGREEMENT WITH THE ACTUAL CONCENTRATION OF T. THE HYDROGEN GENERATED BY CONTACTING THE SAMPLE VAPOR WITH A MG CHIP AT 570 TO 600 C FILLED THE COUNTING TUBE. THE COUNTING TUBE IS SURROUNDED BY ANTICINCIDENCE TUBES. THE CONTENTS OF T IN RIVER WATER AND TAP WATER AT SEVERAL PLACES IN JAPAN WERE MEASURED. IN 1962, THE CONTENT OF T IN TAP WATER WAS ABOUT 100 T.U.

AVAILABILITY - FOR SALE BY THE SPECIAL LIBRARIES ASSOCIATION TRANSLATION CENTER, JOHN CRERAR LIBRARY, 35 WEST 33RD STREET, CHICAGO ILLINOIS 60616, \$1.10 COPY, \$0.80 MICROFICHE

\*ANALYTICAL TECHNIQUE, WATER + \*TRITIUM + JAPAN + SURFACE WATER, NUCLIDE OCCURRENCE

15-13926

ALSO IN CATEGORY 14  
RADIOACTIVE CONTAMINATION OF THE ENVIRONMENT BY NUCLEAR TESTS  
UNITED NATIONS. SCIENTIFIC COMMITTEE ON THE EFFECTS OF ATOMIC RADIATION

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-13926 \*CONTINUED\*

NP-14556 +. 80 PAGES, 34 TABLES, 430 REFERENCES, REPORT OF THE UNITED NATIONS SCIENTIFIC COMMITTEE ON THE EFFECTS OF ATOMIC RADIATION, PAGES 11-80 (1964) GENERAL ASSEMBLY OFFICIAL RECORDS - NINETEENTH SESSION SUPPLEMENT NO. 14 (A/5814)

A DETAILED REVIEW IS PRESENTED OF DATA COLLECTED BETWEEN 1962 AND JUNE 1964 ON CONTAMINATION OF THE ENVIRONMENT BY FALLOUT FROM NUCLEAR EXPLOSIONS. IT IS POINTED OUT THAT THE MAJOR PART OF ALL FISSION PRODUCTS PRODUCED BY NUCLEAR EXPLOSIONS UP TO THE END OF 1962 WAS RELEASED INTO THE STRATOSPHERE AND THAT ESTIMATES OF FUTURE DEPOSITION RATES REQUIRE A KNOWLEDGE OF THE FISSION PRODUCT INVENTORY IN THE STRATOSPHERE AS WELL AS OF THE MECHANISMS BY WHICH IT IS BROUGHT DOWN TO THE GROUND.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151

\*FALLOUT + \*SURVEY, RADIATION, ENVIRONMENTAL + AEROSOL + BIOLOGICAL CONCENTRATION, FOOD + BIOLOGICAL CONCENTRATION, MAN + CARBON + CESIUM + CONTAMINATION + DEPOSITION + DOSE + DOSE MEASUREMENT, EXTERNAL + DOSE MEASUREMENT, INTERNAL + IODINE + KRYPTON + NUCLEAR EXPLOSION DEBRIS + OCEAN AND SEA + RAINOUT + SOIL, NUCLIDE OCCURRENCE + STRATOSPHERE + STRONTIUM + SURFACE WATER, NUCLIDE OCCURRENCE + UNITED NATIONS

15-13927 ALSO IN CATEGORY 14

RADIATION CARCINOGENESIS IN MAN

UNITED NATIONS. SCIENTIFIC COMMITTEE ON THE EFFECTS OF ATOMIC RADIATION

NP-14556 +. 30 PAGES, 138 REFERENCES, PAGES 81-110 OF THE REPORT OF THE UNITED NATIONS SCIENTIFIC COMMITTEE ON THE EFFECTS OF ATOMIC RADIATION, GENERAL ASSEMBLY OFFICIAL RECORDS - NINETEENTH SESSION SUPPLEMENT NO. 14 (A/5814), 1964

DATA ON THE INDUCTION OF CANCER IN MAN BY IONIZING RADIATIONS ARE REVIEWED. EMPHASIS IS PLACED ON INFORMATION MADE AVAILABLE AFTER 1962. THE MECHANISMS OF CARCINOGENESIS IN GENERAL ARE NOT WELL UNDERSTOOD, AND MOST OF THE DATA ON RADIOINDUCED TUMORS IN MAN AND EXPERIMENTAL ANIMALS COMES FROM STUDIES OF THE EFFECTS OF HIGH DOSES OF RADIATION. FEW DATA ARE AVAILABLE ON THE CARCINOGENIC EFFECTS OF LOW DOSES OF RADIATION. RADIOINDUCED TUMORS ARE INDISTINGUISHABLE FROM CANCERS ARISING FROM OTHER CAUSES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151

\*BIOMEDICAL + DOSE + IODINE + PHOSPHORUS + RADIATION DAMAGE + RADIATION EFFECT + UNITED NATIONS

15-13928 ALSO IN CATEGORY 14

LIST OF REPORTS RECEIVED BY THE COMMITTEE

UNITED NATIONS. SCIENTIFIC COMMITTEE ON THE EFFECTS OF ATOMIC RADIATION

NP-14556 +. 7 PAGES, PAGES 111-117, OF THE REPORT OF THE UNITED NATIONS SCIENTIFIC COMMITTEE ON THE EFFECTS OF ATOMIC RADIATION, GENERAL ASSEMBLY OFFICIAL RECORDS - NINETEENTH SESSION SUPPLEMENT NO. 14 (A/5814), 1964

LISTS ABOUT 200 REPORTS RECEIVED BY THE SCIENTIFIC COMMITTEE ON THE EFFECTS OF ATOMIC RADIATION OF THE UNITED NATIONS BETWEEN MARCH 1962 AND JULY 1964 COVERING FALLOUT FISSION PRODUCTS AND RADIOINDUCED NEOPLASMS IN MAN.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151

\*BIBLIOGRAPHY + \*FALLOUT + RADIATION EFFECT + UNITED NATIONS

15-13929

FLORIN AA + FISHER HW + HENLE CB + BONDAR

EPIDEMIOLOGICAL FOLLOW-UP OF THE NEW JERSEY RADIUM CASES. PROGRESS REPORT TO APRIL 1964

NEW JERSEY STATE DEPARTMENT OF HEALTH

NYO-2181-2 +. 48 PAGES, TABLES, APRIL 1964

FIVE PREVIOUSLY UNREPORTED MALIGNANCIES ARE LISTED. FIVE RADIUM CASES DIED AND THREE POST-MORTEM EXAMINATIONS WERE PERFORMED. DIAGNOSES FROM DEATH CERTIFICATES OR POST-MORTEM EXAMINATIONS ARE PRESENTED. DEATH CERTIFICATES HAVE BEEN STUDIED FOR 212 PERSONS KNOWN OR BELIEVED TO HAVE BEEN RADIUM WORKERS. A TOTAL OF 70 CASES AMONG THE 212 HAD MALIGNANCIES MENTIONED ON THEIR DEATH CERTIFICATES. ELEVEN INDIVIDUALS SHOWED CHANGES ON ROENTGENOGRAMS IN THE INTERVAL BETWEEN INITIAL AND FOLLOW-UP EXAMINATIONS. A SINGLE CASE HAS DEVELOPED MULTIPLE MYELOMA SINCE THE INITIAL EXAMINATION. BONE SPECIMENS FROM 15 CASES HAVE BEEN STUDIED ROENTGENOGRAPHICALLY TO DATE. PRELIMINARY COMPARISONS OF ROENTGENOGRAPHIC AND GROSS AND HISTOLOGY EXAMINATIONS OF BONE SPECIMENS ARE PRESENTED. RESULTS OF SCORING ROENTGENOGRAPHS BY THE MIT AND ARGONNE NATIONAL LABORATORY SYSTEM, AND BY A PROPOSED NEW JERSEY RADIUM RESEARCH PROJECT SYSTEM, ARE PRESENTED, IN ADDITION TO A DETAILED CRITIQUE OF THE PROBLEMS INCLUDED IN DEVISING A SUITABLE SCORING SYSTEM. OSTEOSARCOMA, NECROSIS OF ARTICULAR ASPECT OF BONE, AND THE PRESENCE OF NUMEROUS PUNCHED-OUT RADIO-LUCENCIES IN BONE APPEAR ON PRELIMINARY EXAMINATION TO BE ASSOCIATED IN THE REPORTED CASES WITH BODY BURDENS OF RADIUM-226 IN EXCESS OF 0.0247 MICROCURIE.

AVAILABILITY - MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669

\*RADIUM + PERSONNEL EXPOSURE, RADIATION + POPULATION EXPOSURE + RADIATION DAMAGE + RADIATION EFFECT

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-13937  
BERMAN PG  
THE RADIATION ENVIRONMENT IN THE EXPERIMENTAL FACILITIES OF THE DIAMOND ORDNANCE RADIATION FACILITY.  
HARRY DIAMOND LABS., WASHINGTON  
AD-6277807 + TR-1307 +. 154 PAGES, FIGURES, REFERENCES, DECEMBER 1, 1965

NEUTRON FLUX, FLUX PER KILOWATT-HOUR, GAMMA-RAY EXPOSURE, AND GAMMA-RAY EXPOSURE RATE WERE  
MEASURED AT THE DIAMOND ORDNANCE RADIATION FACILITY. THE DATA ARE PRESENTED IN GRAPHICAL  
FORM TO FACILITATE THEIR USE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$5.00 COPY, \$1.00 MICROFICHE

\*SURVEY, RADIATION, GENERAL + DOSE + DOSE MEASUREMENT, EXTERNAL + GAMMA + NEUTRON +,  
RADIATION SAFETY AND CONTROL + REACTOR, FAST BURST + TRIGA (TRAINING REACTOR, ISOTOPES, G.A.)

15-13938  
AGNEFAL PD  
CALCIUM AND STRONTIUM IN SWEDISH WATERS AND FISH, AND ACCUMULATION OF SR-90  
AKTEBOLAGET ATOMENERGI, STOCKHOLM  
AF-224 +. 34 PAGES, FIGURES, TABLES, REFERENCES, APRIL 1966

THE CORRELATION BETWEEN CALCIUM AND STRONTIUM IN FISH IN RELATION TO THE CONCENTRATION OF  
THESE ELEMENTS IN THE WATER HAS BEEN INVESTIGATED. UPTAKE OF STRONTIUM-90 WAS ALSO STUDIED,  
AND PERMISSIBLE LEVELS OF STRONTIUM-90 IN THE WATER WAS CALCULATED, BASED UPON THE UPTAKE IN  
MUSCLE TISSUES. LAKES WITH CALCIUM CONCENTRATIONS BETWEEN 2 - 63 MG/L WERE STUDIED, AND  
SAMPLES FROM THE BALTIC COASTAL WATER WERE ALSO INCLUDED. STRONTIUM-90 MEASUREMENTS WERE  
MADE, SHOWING AN INCREASE IN BOTH WATER AND FISH. CALCULATIONS SHOW THAT IN WATER WITH ABOUT  
2 MG CA/L A 10-FOLD INCREASE OF THE EXISTING STRONTIUM-90 LEVEL MIGHT GIVE STRONTIUM-90  
CONCENTRATIONS IN FISH MUSCLE TISSUES CLOSE TO WHAT IS PERMISSIBLE. IN LAKES WITH CALCIUM  
CONCENTRATIONS 20 - 40 MG/L, THE PERMISSIBLE LEVELS FOR DRINKING WATER WILL BE EXCEEDED  
BEFORE THE FISH CONSUMPTION WOULD HAVE TO BE RESTRICTED.

AVAILABILITY - MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISC.

\*BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + \*CALCIUM + \*STRONTIUM + HAZARD, RELATIVE +  
POPULATION EXPOSURE + SURFACE WATER, NUCLIDE OCCURRENCE + SURFACE WATER, PROPERTY +  
SURVEY, RADIATION, ENVIRONMENTAL + SWEDEN

15-13940  
WILLEN T  
PHYTOPLANKTON FROM LAKE MAGELUNGEN, CENTRAL SWEDEN, 1960-1963  
UNIVERSITY OF UPPSALA, AKTEBOLAGET ATOMENERGI, SWEDEN  
AF-219 +. 45 PAGES, 20 FIGURES, 4 TABLES, REFERENCES, MARCH 1966

AN INVESTIGATION OF THE COMPOSITION OF PHYTOPLANKTON IN LAKE MAGELUNGEN, CENTRAL SWEDEN, WAS  
CARRIED OUT OVER A PERIOD OF THREE YEARS TO ILLUSTRATE THE CONDITIONS BEFORE THE RELEASE OF  
WASTE WATER FROM THE AGESTA HEAT AND POWER STATION BEGAN. VERTICAL SAMPLING SERIES WERE  
TAKEN ABOUT ONCE A MONTH, AND SAMPLES FROM THREE DIFFERENT STATIONS IN THE LAKE WERE ANALYSED  
AND COMPARED. MOST IMPORTANCE WAS LAID ON THE QUANTITATIVE COMPOSITION AND THE DIFFERENCES  
IN TOTAL VOLUMES BETWEEN THE DIFFERENT STATIONS. HIGHEST VOLUME VALUES WERE ALWAYS RECORDED  
IN LATE SPRING AND IN SUMMER. THE DIATOMS WERE WELL DEVELOPED ONLY DURING SHORT PERIODS.  
THE CHRYSOPHYCEANS WERE OF LITTLE SIGNIFICANCE, AS WERE ALL OTHER ALGAL GROUPS. THE TOTAL  
VOLUMES OF PHYTOPLANKTON IN LAKE MAGELUNGEN ALREADY ARE VERY HIGH, AND THE LAKE IS TO BE  
CONSIDERED AS HIGHLY EUTROPHIC. IT IS VERY POSSIBLE THAT CHANGES OR FURTHER ADDITIONS OF  
NUTRITIONAL ELEMENTS OR/AND CHANGES IN THE THERMAL BALANCE WILL INCREASE THE ALGAL  
POPULATIONS AND ACCELERATE THE NORMAL DEVELOPMENT OF THE LAKE.

AVAILABILITY - MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISC.

\*ENVIRONMENTAL CONDITION + ECOLOGICAL CONSIDERATION + SURFACE WATER, DISPOSAL MEDIA +  
SURFACE WATER, PROPERTY + SWEDEN

15-13941  
SWENGEL RM  
LOW-LEVEL ALPHA COUNTING. DESCRIPTION OF A DEVICE FOR INCREASING COUNTING EFFICIENCY ABOARD SUBMARINES.  
NAVAL SUBMARINE MEDICAL CENTER, GROTON, CONN.  
AD-627586 +. 18 PAGES, FIGURES, JUNE 7, 1965

THE DESIGN AND USE OF A NEW DEVICE FOR INCREASING LOW-LEVEL ALPHA-COUNTING EFFICIENCY OF THE  
STANDARD AN/PDR-56 ALPHA-PARTICLE METER IS DESCRIBED. DIRECTIONS FOR ITS CONSTRUCTION, LIST  
OF MATERIALS REQUIRED, PHOTOGRAPHS, AND DIAGRAMS ARE FURNISHED. THE PRACTICAL APPLICATION OF  
SHIPBOARD UTILIZATION OF SUCH A DEVICE IS POINTED OUT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$1.00 COPY, \$0.50 MICROFICHE

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-13941 \*CONTINUED\*  
\*ALPHA EMITTER + \*COUNTER + MONITOR, RADIATION, BACKGROUND

15-13942  
PARR WH + LODDE GM + MCPEAK DW  
BASE LINE ENVIRONMENTAL RADIATION LEVELS INCLUDING MORATORIUM AND POST-MORATORIUM VALUES. ON THE FORT KNOX RESERVATION  
ARMY MEDICAL RESEARCH LAB., FORT KNOX, KY.  
AD-627303 + AMRL-635 +. 34 PAGES, 16 FIGURES, 8 TABLES, REFERENCES, SEPTEMBER 27, 1965

AN ENVIRONMENTAL RADIOACTIVITY STUDY WAS CONDUCTED ON THE FORT KNOX RESERVATION TO ESTABLISH BASELINE RADIATION LEVELS. AIR SAMPLES WERE COLLECTED IN THE LABORATORY AREA DURING THE NORMAL WORK WEEK, WHEREAS WATER, SILT, AND SOIL SAMPLES WERE ROUTINELY COLLECTED AT MONTHLY INTERVALS FROM STRATEGIC LOCATIONS. DESCRIPTIONS OF SAMPLING PROCEDURES AND RADIOACTIVITY-MEASURING TECHNIQUES ARE INCLUDED. ACTIVITY MEASUREMENTS ON THE RESERVATION SHOW THAT RADIATION LEVELS ARE INFLUENCED BY WORLD-WIDE NUCLEAR DETONATIONS. LOW AND RELATIVELY STADY LEVELS ARE CORRELATED WITH THE MORATORIUM, WHILE FLUCTUATING BUT INCREASING VALUES ACCOMPANIED THE RESUMPTION OF THE NUCLEAR TESTING PROGRAMS. SAMPLING OF ONLY TWO AREAS IS SUFFICIENT FOR ROUTINE SURVEILLANCE OF RADIATION LEVELS ON THE RESERVATION, THUS SIMPLIFYING THE PROCEDURE FOR MAINTAINING A MONITORING OPERATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$2.00 COPY, \$0.50 MICROFICHE

\*FALLOUT + \*SURVEY, RADIATION, ENVIRONMENTAL + AIR + SAMPLING + SEDIMENT + SOIL + SURFACE WATER, NUCLIDE OCCURRENCE

15-13953  
PICKERING RJ + CARRIGAN PH + TAMURA T + ABEE HH + BEVERAGE JW + ANDREW RW  
RADIOACTIVITY IN BOTTOM SEDIMENT OF THE CLINCH AND TENNESSEE RIVERS  
OAK RIDGE NATIONAL LABORATORY + TENNESSEE VALLEY AUTHORITY + U.S. PUBLIC HEALTH SERVICE  
35 PAGES, 12 FIGURES, 7 TABLES, 19 REFERENCES, PRESENTED AT THE SYMPOSIUM ON THE DISPOSAL OF RADIOACTIVE WASTES INTO SEAS, OCEANS, SURFACE WATERS, VIENNA, MAY 1966

SINCE 1943, WHEN OAK RIDGE NATIONAL LABORATORY FIRST BEGAN PROCESSING RADIOACTIVE MATERIALS, THE LABORATORY HAS RELEASED WASTE WATERS CONTAINING LOW LEVELS OF RADIOACTIVITY TO THE CLINCH RIVER VIA WHITE OAK CREEK. THIS PRACTICE RESULTED IN THE INCORPORATION OF SOME OF THE RADIONUCLIDES IN FINE-GRAINED BOTTOM SEDIMENT IN THE CLINCH AND TENNESSEE RIVERS DOWNSTREAM FROM THE MOUTH OF WHITE OAK CREEK. THE RADIOACTIVE BOTTOM SEDIMENT OF THE CLINCH-TENNESSEE RIVER SYSTEM HAS BEEN INVESTIGATED AS PART OF THE CLINCH RIVER STUDY, A MULTI-AGENCY EFFORT TO EVALUATE THE EFFECT ON THE RIVER OF THE INTRODUCTION OF RADIOACTIVE WASTE.

AVAILABILITY - R. J. PICKERING, OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.

\*MINERAL EXCHANGE + \*RIVER, CLINCH + \*RIVER, TENNESSEE + \*SURFACE WATER, NUCLIDE OCCURRENCE + CESIUM + COBALT + DEPOSITION + DESORPTION + DILUTION + DISPERSION + ION EXCHANGE + ORNL (OAK RIDGE NATIONAL LABORATORY) + PARTICLE SIZE DISTRIBUTION + RADIOCHEMICAL ANALYSIS + RUTHENIUM + SAMPLING + SEDIMENT + STRONTIUM + SURFACE WATER, DISPOSAL MEDIA + SURFACE WATER, SEDIMENT + SURFACE WATER, SUSPENDED MATERIAL + SURVEY, RADIATION, ENVIRONMENTAL + ZIRCONIUM

15-13958  
LOVE CM  
PHYSICAL, CHEMICAL, AND BIOLOGICAL DATA FROM THE NORTHEAST PACIFIC OCEAN. COLUMBIA RIVER EFFLUENT AREA, JANUARY-OCTOBER 1962  
UNIVERSITY OF WASHINGTON  
RLO-1725-18 +. 197 PAGES, AUGUST 1965

PHYSICAL, CHEMICAL, AND BIOLOGICAL DATA COLLECTED DURING CRUISE 309 OF THE RESEARCH VESSEL BROWN BEAR DURING THE MONTHS OF JUNE AND JULY 1962 IN AN AREA WITHIN 220 MILES OF THE COASTS OF WASHINGTON AND OREGON ARE TABULATED. THESE DATA WERE COLLECTED AS PART OF A YEAR-ROUND STUDY WHICH HAS AS ITS OBJECTIVE THE DETERMINATION OF THE GROSS FEATURES OF THE MOVEMENT AND DISPERSION OF COLUMBIA RIVER EFFLUENT WATER IN THE NORTHEAST PACIFIC.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$5.00 COPY, \$1.00 MICROFICHE

\*ENVIRONMENTAL CONDITION + DISPERSION + OCEAN AND SEA + SURFACE WATER, PROPERTY + SURVEY, RADIATION, ENVIRONMENTAL

15-13959  
LOVE CM  
PHYSICAL, CHEMICAL, AND BIOLOGICAL DATA FROM THE NORTHEAST PACIFIC OCEAN. COLUMBIA RIVER EFFLUENT AREA, JANUARY-OCTOBER 1962  
UNIVERSITY OF WASHINGTON  
RLO-1725-19 +. 272 PAGES, AUGUST 1965

PHYSICAL, CHEMICAL, AND BIOLOGICAL DATA COLLECTED DURING CRUISE 312 OF THE RESEARCH VESSEL BROWN BEAR DURING THE MONTHS OF SEPTEMBER AND OCTOBER 1962 IN AN AREA WITHIN 300 MILES OF THE



CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-13959 \*CONTINUED\*

COASTS OF WASHINGTON, OREGON, AND NORTHERN CALIFORNIA ARE TABULATED. THESE DATA WERE COLLECTED AS PART OF A YEAR-ROUND STUDY WHICH HAS AS ITS OBJECTIVE THE DETERMINATION OF THE CROSS FEATURES OF THE MOVEMENT AND DISPERSION OF COLUMBIA RIVER EFFLUENT WATER IN THE NORTHEAST PACIFIC.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$6.00 COPY, \$1.50 MICROFICHE

\*ENVIRONMENTAL CONDITION + DISPERSION + OCEAN AND SEA + SURFACE WATER, PROPERTY + SURVEY, RADIATION, ENVIRONMENTAL

15-13965

MORGAN KZ

DOSE COMMITMENTS

OAK RIDGE NATIONAL LABORATORY

13 PAGES, 1 TABLE, 3 REFERENCES, 1965, PRESENTED AT THE INTERNATIONAL CONFERENCE ON THE RADIOLOGICAL PROTECTION IN THE INDUSTRIAL USES OF RADIOISOTOPES, PARIS, FRANCE, DECEMBER 13-15, 1965

A DISCUSSION OF RECOMMENDATIONS FOR RADIATION PROTECTION IS MADE BASED ON THE CONCEPTS OF DOSE COMMITMENT COUPLED WITH CREDIT UNITS THAT ARE TIME DEPENDENT. THE CONCEPT OF THE CREDIT UNIT IS DISCUSSED AS AN ANALOGY TO AN INHERITED BANK BALANCE THAT CAN BE USED UP OR ADDED TO WITH TIME. DIFFERENCES IN RECOMMENDATIONS FOR OCCUPATIONAL AND POPULATION DOSES ARE DISCUSSED IN THESE TERMS.

AVAILABILITY - K. Z. MORGAN, ORNL, OAK RIDGE, TENNESSEE

\*MAXIMUM PERMISSIBLE DOSE (MPD) + DOSE + ICRP (INT. COMM. ON RADIOLOGICAL PROTECTION) + NCRP (NATIONAL COMMITTEE RADIATION PROTECTION) + PERSONNEL EXPOSURE, RADIATION + POPULATION EXPOSURE + RADIATION SAFETY AND CONTROL

15-13982

ANNUAL REPORT JULY 1, 1958 - JUNE 30, 1959 - ATOMIC BOMB CASUALTY COMMISSION

ATOMIC BOMB CASUALTY COMMISSION, JAPAN

499C-58-59 +. 102 PAGES, TABLES, 1959

PRESENTS A GENERAL REVIEW OF THE ACTIVITIES OF THE ATOMIC BOMB CASUALTY COMMISSION FOR JULY 1, 1958 TO JUNE 30, 1959.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, 22151, \$4.00 COPY, \$0.75 MICROFICHE

\*NUCLEAR DETONATION + \*POPULATION EXPOSURE + \*RADIATION DAMAGE + \*RADIATION EFFECT + JAPAN + RADIATION INJURY, TREATMENT OF

15-13983

SEMIANNUAL PROGRESS REPORT FOR THE PERIOD ENDING JUNE 30, 1966

UNIVERSITY OF CALIFORNIA, LOS ANGELES

UCLA-12-595 +. 89 PAGES, JUNE 30, 1966

PRESENTS A BRIEF REVIEW OF THE AEC-SPONSORED RESEARCH PROGRAMS AT THE UCLA SCHOOL OF MEDICINE. GENERAL AREAS OF STUDY INCLUDE BIOCHEMISTRY, RADIOBIOLOGY, PHARMACOLOGY AND TOXICOLOGY, NUCLEAR MEDICINE, BIOPHYSICS, AND ENVIRONMENTAL RADIATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$4.00 COPY, \$0.75 MICROFICHE

\*ECOLOGICAL CONSIDERATION + BIOLOGICAL CONCENTRATION, ANIMAL + BIOLOGICAL CONCENTRATION, VEGETATION + CESIUM + COUNTER, WHOLE BODY + FALLOUT + NEVADA TEST SITE + NUCLEAR DETONATION + PLOWSHARE PROGRAM + RADIATION EFFECT + STRONTIUM

15-13996

THOMPSON RC + PALMER RF

EFFECT OF AGE AND DIET ON EXCRETION OF STRONTIUM AND CALCIUM BY RATS

PACIFIC NORTHWEST LABORATORY

RNL-SA-825 + CONF-660920 -4 +. 20 PAGES, AUGUST 18, 1966, FROM 1ST INTERNATIONAL CONGRESS OF THE INTERNATIONAL RADIATION PROTECTION ASSOCIATION, ROME, ITALY

MATURE (8-MONTH OLD) AND GROWING (26-DAY OLD) RATS, MAINTAINED ON DIETS VARYING IN CALCIUM CONTENT FROM 0.03-2.0 PERCENT WERE GIVEN A SINGLE INJECTION OF SR-90 AND CA-45. EXCRETION OF THESE RADIONUCLIDES, IN URINE AND FECES, WAS MEASURED OVER A PERIOD OF SIXTY DAYS. THE PATTERNS OF EXCRETION ARE DISCUSSED IN RELATION TO THE PROBABLE MECHANISMS RESPONSIBLE FOR THE BEHAVIOR NOTED. THERE WAS A DECREASE IN RATIO OF URINARY TO FECAL EXCRETION OF BOTH SR-90 AND CA-45 AS A FUNCTION OF TIME FOLLOWING INJECTION. THIS CHANGE WAS MORE EVIDENT FOR STRONTIUM THAN FOR CALCIUM, WAS MORE EVIDENT IN THE ADULT THAN IN THE GROWING RAT, AND WAS MOST MARKED ON A HIGH CALCIUM DIET. IT IS HYPOTHESIZED THAT STRONTIUM AND CALCIUM RELEASED FROM FIRM BINDING SITES IN BONE MAY EXIST IN THE BLOOD IN A DIFFERENT FORM THAN STRONTIUM AND CALCIUM IN EQUILIBRIUM WITH FREELY EXCHANGEABLE SITES ON BONE SURFACES.

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-13996 \*CONTINUED\*

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$1.00 COPY, \$0.50 MICRONEGATIVE

\*STRONTIUM + BIOLOGICAL CONCENTRATION, ANIMAL + CALCIUM + DIETARY HABIT + INGESTION

15-14041

GOLDSTEIN N + SCHLEIGER ER + TOCHILIN E  
PHOTON, NEUTRON AND CHARGED PARTICLE ABSORBED DOSE MEASUREMENTS WITH A PORTABLE MICROCALORIMETER  
U. S. NAVAL RADIOLOGICAL DEFENSE LABORATORY  
AD-630693 + USNRDL-TR-976 +. 22 PAGES, 1 TABLE, 12 REFERENCES, JANUARY 28, 1966

TWO COMPACT, PORTABLE MICROCALORIMETERS WERE BUILT AND USED TO MEASURE ABSORBED DOSE. A THERMAL SHIELD NEAR LIQUID NITROGEN TEMPERATURE PROVIDES THE NECESSARY ISOTHERMAL ENVIRONMENT FOR THE ABSORBER. TEMPERATURE INCREASE OF THE ABSORBER DURING IRRADIATION IS MEASURED WITH A THERMISTOR. TISSUE-EQUIVALENT PLASTIC AND BERYLLIUM ABSORBERS WERE CALIBRATED FOR ABSORBED ENERGY AS A FUNCTION OF TEMPERATURE CHANGE BY EXPOSURES TO STANDARD CO-60 AND CS-137 GAMMA-RAY SOURCES. THE BERYLLIUM ABSORBER DETECTED GAMMA-RAY DOSES AS LOW AS 0.17 RAD (17 ERGS/G), WITH A STANDARD ERROR OF 6 PERCENT. MICROCALORIMETRIC MEASUREMENTS OF ABSORBED DOSE FROM CONTINUOUS AND PULSED X-RAYS, REACTOR NEUTRONS, AND CHARGED PARTICLES WERE COMPARED TO MEASUREMENTS WITH OTHER DOSIMETER SYSTEMS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY

\*DOSE MEASUREMENT, EXTERNAL + \*INSTRUMENTATION CALIBRATION + INSTRUMENTATION, RADIATION MONITORING + MONITOR, RADIATION, GENERAL

15-14042

ALSO IN CATEGORY 9

KRAMER G + CLOSSER WH + MENGALI OJ  
STUDY OF SEMICONDUCTOR FAST-NEUTRON DOSIMETER FOR RANGE 0-50,000 RADS  
BATTELLE MEMORIAL INSTITUTE  
AD-631742 + NDL-TR-55 +. 102 PAGES, APRIL 1966

RESULTS OF A STUDY OF A SEMICONDUCTOR NEUTRON DOSIMETER FOR THE RANGE 0 TO 50,000 RADS ARE PRESENTED. THE DOSIMETER IS A WIDE-BASE, CONDUCTIVITY-MODULATED, SILICON P-N JUNCTION WHOSE FORWARD RESISTANCE INCREASES UPON EXPOSURE TO NEUTRONS BECAUSE OF A DECREASE IN EXCESS CARRIER LIFETIME. THE RELATIONSHIP BETWEEN BULK PROPERTIES OF SILICON, VARIOUS PROCESSING STEPS, BASE WIDTH, AND FORWARD-CURRENT LEVEL ON DOSIMETER PERFORMANCE WERE STUDIED. PRESENT DOSIMETER RESPONSE IS ACCURATE TO PLUS OR MINUS 25 PERCENT AT 50 RADS (TISSUE) AND IMPROVES RAPIDLY AT HIGHER DOSES TO PLUS OR MINUS 2 PERCENT AT 50,000 RADS (TISSUE).

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$4.00 COPY, \$0.75 MICRONEGATIVE

\*DOSE MEASUREMENT, EXTERNAL + \*FAST NEUTRON + \*MONITOR, RADIATION, ENVIRONMENTAL + NUCLEAR DETONATION

15-14055

ALSO IN CATEGORY 17

IONIZING RADIATION  
AMERICAN PUBLIC HEALTH ASSOCIATION, INC.  
82 PAGES, FIGURES, 7 TABLES, AMERICAN PUBLIC HEALTH ASSOCIATION, INC., 1966

INTENDED FOR GENERAL PUBLIC-HEALTH WORKERS (NOT FOR SPECIALISTS). PROVIDES AN INTRODUCTION TO AND BASIC INFORMATION ON IONIZING RADIATION, RADIATION IN MEDICINE, DENTISTRY, AND INDUSTRY, ALSO RADIATION IN THE ENVIRONMENT. DISCUSSES SUCH PRACTICAL TOPICS AS PROPER SHIELDING AND TECHNIQUES TO REDUCE DOSE IN MEDICAL X-RAYS.

AVAILABILITY - AMERICAN PUBLIC HEALTH ASSOCIATION, 1790 BROADWAY, N.Y. 10019

\*HEALTH PHYSICS TRAINING + \*RADIATION, PUBLIC EDUCATION/ACCEPTANCE + RADIATION PROTECTION, ORGANIZATION

15-14060

ALSO IN CATEGORY 9

ANDERSON ME  
AN ELEMENTARY GUIDE TO THE MEASUREMENT OF FAST NEUTRON FLUXES  
MOUND LABORATORY  
MLM-1326 +. 23 PAGES, 11 FIGURES, 3 TABLES, 11 REFERENCES, JUNE 1, 1965

THIS REPORT IS AN INTRODUCTION TO THE BASIC PHYSICS AND MATHEMATICS INVOLVED IN THE MEASUREMENT OF FAST-NEUTRON FLUXES. IT DESCRIBES METHODS FOR DETECTION OF NEUTRONS AND THE FACTORS WHICH MUST BE TAKEN INTO CONSIDERATION WHEN THE MEASUREMENTS ARE BEING MADE. A GLOSSARY OF SOME OF THE SIGNIFICANT TERMS IS INCLUDED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$2.00 COPY, \$0.50 MICROFICHE

\*FAST NEUTRON + \*MEASUREMENT, REACTIVITY + INSTRUMENTATION, RADIATION MONITORING

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-14065 ALSO IN CATEGORY 19  
RESEARCH AND DEVELOPMENT IN PROGRESS. BIOLOGY AND MEDICINE ISSUE NO. 4  
AEC, DIVISION OF BIOLOGY AND MEDICINE  
TID-4204 +. 527 PAGES, APRIL 1966

RESEARCH PROJECTS SUPPORTED BY THE DIVISION OF BIOLOGY AND MEDICINE, USAEC, ARE DESCRIBED.  
THE PROJECTS ARE DIVIDED INTO ELEVEN CATEGORIES DEALING WITH BIOLOGICAL EFFECTS OF RADIATION,  
ECOLOGICAL STUDIES, HEALTH PHYSICS RESEARCH, WEAPONS-EFFECTS STUDIES, CANCER RESEARCH, AND  
FOOD PRESERVATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$5.50 COPY

CHEMICAL TOXICITY + ECOLOGICAL CONSIDERATION + METEOROLOGY + RADIATION DAMAGE + RADIATION EFFECT +  
TEST, WEAPONS (HP ASPECTS)

15-14066  
KOZLOV VA  
DATA ON THE RADIOPROTECTIVE AND PHARMACOLOGICAL EFFECT OF BETA-MERCAPTOPROPYLAMINE  
AEC-TR-6603 +. 6 PAGES, 4 FIGURES, TRANSLATION OF RADIOBIOLOGIYA 5 (6), PAGES 177-182, (1965)

BETA-MERCAPTOPROPYLAMINE IS AN EFFECTIVE PROTECTIVE AGENT, WHICH SUBSTANTIALLY LIGHTENS THE  
CLINICAL COURSE OF ACUTE RADIATION SICKNESS AND INCREASES THE SURVIVAL RATE OF ANIMALS. THE  
PROTECTIVE EFFECT WAS OBSERVED ONLY FOR PARENTERAL ADMINISTRATION AND WAS MAINTAINED FOR 1.5  
HOURS AFTER ITS INTRODUCTION. THE MOST DISTINCT PROPHYLACTIC EFFECT WAS NOTED WHEN THE  
PREPARATION WAS ADMINISTERED IN THE MAXIMUM TOLERABLE DOSES. BETA-MERCAPTOPROPYLAMINE LOWERS  
THE LEVEL OF METABOLIC PROCESSES IN THE ORGANISM - (A) IT REDUCES THE OXYGEN CONSUMPTION BY  
THE ORGANISM, (B) IT INCREASES THE RESISTANCE OF THE ANIMALS TO OXYGEN STARVATION, (C) IN  
RATS, RABBITS, GUINEA PIGS, AND DOGS IT LOWERS THE BODY TEMPERATURE BY 1.5--5.5 DEGREES, (D)  
IT EXHIBITS AN ANTI-DIURETIC EFFECT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*RADIATION PROTECTION, CHEMICAL

15-14067  
YARMONENKO SP + OVAKINOV VG + OL SHEVSKAYA OP + LAVRENCHIK EI  
EFFECT OF RADIOPROTECTORS UNDER CONDITIONS OF FRACTIONATED IRRADIATION. THE PROTECTIVE EFFECT AT VARIOUS  
DOSES AND TIME INTERVALS BETWEEN IRRADIATIONS  
AEC-TR-6603 +. 12 PAGES, 6 TABLES, TRANSLATION OF RADIOBIOLOGIYA 5(6), PAGES 188-199, (1965)

WHEN AET IS ADMINISTERED TO MICE SUBJECTED TO A SINGLE TOTAL IRRADIATION OR TO A FRACTIONATED  
TREATMENT, INDEPENDENT OF THE RADIATION DOSE, A DEFINITE NUMBER OF BONE-MARROW CELLS IS  
PRESERVED, COMPRISING 2 TO 3 MILLION KARYOCYTES PER FEMUR BY THE THIRD DAY AFTER IRRADIATION.  
THE FRACTION OF PROTECTED CELLS IN THE TOTAL NUMBER OF PRESERVED BONE-MARROW ELEMENTS  
DECREASES WITH DECREASING DOSE. FOR A FRACTIONATED TREATMENT, THE PROTECTIVE EFFECT OF THE  
PROTECTORS INCREASES AS THE INTERVALS BETWEEN INDIVIDUAL IRRADIATIONS ARE LENGTHENED. THE  
COMBINED ADMINISTRATION OF THE MIXTURE OF PROTECTORS (SYSTAPHOS PLUS 5-MQT) WAS CHARACTERIZED  
BY A LARGER DOSE-REDUCTION FACTOR THAN IN THEIR SEPARATE ADMINISTRATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*RADIATION PROTECTION, CHEMICAL

15-14068  
WAYS TO ALLEVIATE THE SERIOUS SHORTAGE OF QUALIFIED OPERATORS OF MEDICAL X-RAY EQUIPMENT  
U.S. DEPT. OF HEALTH, EDUCATION, AND WELFARE  
PRESS PFL. HEW-M97 +. 2 PAGES, SEPTEMBER 4, 1966

A NATIONAL CONFERENCE ON X-RAY TECHNICIAN TRAINING WAS HELD SEPT. 7-9 AT THE UNIVERSITY OF  
MARYLAND, COLLEGE PARK, AS A DIRECT RESULT OF A RECOMMENDATION MADE BY THE NATIONAL ADVISORY  
COMMITTEE ON RADIATION THAT THE DIVISION OF RADIOLOGICAL HEALTH SEEK SOLUTIONS TO THE X-RAY  
TECHNICIAN MANPOWER PROBLEM.

AVAILABILITY - AEC, DIVISION OF PUBLIC INFORMATION, WASHINGTON, D.C. 20545

STAFFING, TRAINING, QUALIFICATION + X-RAY

15-14070  
RUGH, P  
RADIOBIOLOGY  
COLUMBIA UNIVERSITY

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-14070 \*CONTINUED\*  
NYO-2742-3 +. 42 PAGES, FIGURES, TABLES, REFERENCES, PAGES 216-257 FROM ANNUAL REPORT ON RESEARCH PROJECT, JANUARY 1, 1966

PROGRESS IS REPORTED ON STUDIES ON THE EFFECTS OF AET ON X-IRRADIATED ARBACIA EGGS, THE EFFECTS OF EXPOSURE OF MICE EMBRYOS OF VARIOUS GESTATION AGES TO 100 R X RADIATION ON CATARACT DEVELOPMENT, THE EFFECTS OF 100 R X RADIATION DELIVERED AT VARIOUS GESTATION AGES FROM FERTILIZATION 18 DAYS TO MOUSE EMBRYOS ON FERTILITY AND ANOMALY INDUCTION IN OFFSPRING OF BOTH SEXES, THE EFFECTS OF LOCALIZED DOSES OF 200 TO 400 R X RADIATION TO THE GRAVID UTERUS OF PREGNANT MONKEYS ON THE WEIGHT-SKELETAL MEASUREMENTS, BRAIN DEVELOPMENT, RETINAL DAMAGE, AND OTHER BIOLOGICAL AND PHYSIOLOGICAL PARAMETERS IN OFFSPRING.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$6.00 COPY, \$1.25 MICROFICHE

\*RADIATION EFFECT + ANL (ARGONNE NATIONAL LABORATORY) + RADIATION DAMAGE + X-RAY

15-14079 ALSO IN CATEGORY 17  
OVEREXPOSURE AT MEDICAL COLLEGE OF VIRGINIA, NOVEMBER 29TH  
MEDICAL COLLEGE OF VIRGINIA  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(3) PAGE 20 (JANUARY 16, 1967)

A FILM BADGE RECEIVED 4 REMS IN OCTOBER. QUESTIONING AND OBSERVANCE OF WORKING HABITS REVEAL NO EXPLANATION.

\*PERSONNEL EXPOSURE, RADIATION + FILM, GENERAL

15-14080 ALSO IN CATEGORY 17  
TRITIUM EXPOSURE AT NEW ENGLAND NUCLEAR CORPORATION  
NEW ENGLAND NUCLEAR CORPORATION  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(3) PAGES 20-21 (JANUARY 16, 1967)

A CHEMIST RECEIVED 0.46 REM TRITIUM DOSE AFTER THE BREAKING OF A GLASS REACTION VESSEL BY A STIRPING BAR, WHILE INCORPORATING 175 CURIES OF TRITIUM INTO A PLASTIC.

\*PERSONNEL EXPOSURE, RADIATION + FAILURE, OPERATOR ERROR + TRITIUM

15-14083 ALSO IN CATEGORIES 13 AND 17  
INHALATION EXPOSURE AT NFS DUE TO IMPROPER VENTILATION, NOVEMBER 28, 1966  
NUCLEAR FUEL SERVICES, INC.  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(3) PAGES 22-23 (JANUARY 16, 1967) DOCKET NO. 50-201

WHOLE-BODY COUNTS INDICATE THAT ONE MAN WILL RECEIVE A ONE-YEAR DOSE OF 360 MREMS(BONE), AND THE OTHER 280, DESPITE FOUR TWO-QUART NASAL IRRIGATIONS. THE WORKERS HAD OPENED BOTH AIRLOCK DOORS OF THE CONTAMINATED CRANE ROOM FOR MAINTENANCE, SO THAT WHEN A VENTILATION PRESSURE-CONTROLLER SET POINT WAS CHANGED NEARBY, AIR REVERSED FLOW TO MOVE FROM CRANE ROOM TO ANALYTICAL CLEAN ROOM. INVESTIGATION FOLLOWING A CAM ALARM FROM THE ANALYTICAL ROOM REVEALED THE SITUATION. AIR-SUPPLIED RESPIRATORY EQUIPMENT IS NOW REQUIRED, AS A FULL-FACE FILTER MASK WAS INEFFECTIVE. DIFFERENTIAL PRESSURE GAGES AND RECORDERS WILL GIVE PRESSURE ACROSS THE AIR LOCKS, AND ENTRY FORBIDDEN UNLESS THERE IS A 1/4-INCH PRESSURE.

\*PERSONNEL EXPOSURE, RADIATION + \*PERSONNEL PROTECTIVE DEVICE + \*VENTILATION SYSTEM + CONTAINMENT AIR LOCK + DOSE MEASUREMENT, INTERNAL + FAILURE, DESIGN ERROR + FAILURE, OPERATOR ERROR + INCIDENT, ACTUAL, HUMAN ERROR + NFS (NUCLEAR FUEL SERVICES)

15-14084 ALSO IN CATEGORIES 13 AND 17  
PERSONNEL EXPOSURE AT NUMEC OCTOBER 19/20, 1966  
NUCLEAR MATERIALS AND EQUIPMENT CORPORATION  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(3) PAGE 24 (JANUARY 16, 1967)

VALVE SETTINGS MADE IT POSSIBLE TO DRAW CONTAMINATED LIQUID INTO A STEAM CONDENSATE RECEIVER IN A WASTE EVAPORATOR. A TECHNICIAN WAS EXPOSED TO AIRBORNE PLUTONIUM NITRATE FOR 381.9 MPC HOURS DURING REPAIR OF A STEAM LEAK.

\*PERSONNEL EXPOSURE, RADIATION + FAILURE, OPERATOR ERROR + MAINTENANCE AND REPAIR + PLUTONIUM + WASTE HANDLING

15-1412P ALSO IN CATEGORY 17  
BRODSKY A + WALD N + CALDWELL R + SAYEG JA + WECHSLER J  
THE MEASUREMENT AND MANAGEMENT OF INSOLUBLE PLUTONIUM-AMERICIUM INHALATION IN MAN  
UNIVERSITY OF PITTSBURGH + PRESBYTERIAN-UNIVERSITY HOSPITAL + NUCLEAR MATERIALS AND EQUIPMENT CORP.  
26 PAGES, 6 FIGURES, 2 TABLES, 11 REFERENCES, PRESENTED AT THE FIRST INTERNATIONAL CONGRESS OF THE INTERNATIONAL RADIATION PROTECTION ASSOCIATION, ROME, ITALY, SEPTEMBER 5-10, 1966

ON JANUARY 17, 1966, A GLOVE-BOX EXPLOSION OCCURRED WHEN A TECHNICIAN IGNITED A PROPANE TORCH

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-14128 \*CONTINUED\*  
(WHICH HAD LEAKED AFTER A NEW CYLINDER WAS ATTACHED), CONTAMINATING 3 PERSONS WITH PU-239 AND AM-241. REPORT RECOUNTS STUDY OF ONE MAN USING A THIN NA-I CRYSTAL. DTPA HELPED REMOVE INHALED OXIDES. FIVE DAYS AFTER THE INCIDENT, THE COUNTER LOCATED CONTAMINATION TRANSFERRED TO A CLEAN UNDERSHIRT FROM THE TECHNICIANS HAIR.

AVAILABILITY - PROCEEDINGS OF THE FIRST CONGRESS OF THE INTERNATIONAL RADIATION PROTECTION ASSOCIATION, PERGAMON PRESS, OXFORD, 1967

\*COUNTER, WHOLE BODY + \*DOSE MEASUREMENT, INTERNAL + \*EXPLOSION + \*GLOVE BOX +  
\*INCIDENT, ACTUAL, EQUIPMENT + \*PLUTONIUM

15-14130 ALSO IN CATEGORY 17  
PARMENTIER N + BOULENGER R + PORTAL G  
DOSIMETRY PROBLEMS ENCOUNTERED DURING THE CRITICALITY ACCIDENT WHICH OCCURRED IN THE VENUS REACTOR AT MOL, ON DECEMBER 30TH, 1965  
CENTRE D'ETUDES NUCLEAIRES FONTENAY-AUX-ROSES, FRANCE + CENTRE D'ETUDE DE L'ENERGIE NUCLEAIRE, MOL  
49 PAGES, 26 FIGURES, 6 REFERENCES, PRESENTED AT THE FIRST INTERNATIONAL CONGRESS OF THE INTERNATIONAL RADIATION PROTECTION ASSOCIATION, ROME, ITALY, SEPTEMBER 5-10, 1966

THE INDIVIDUAL WAS SQUATTING ABOVE THE REACTOR TANK WITH ONE FOOT ON THE EDGE OF THE CORE, RAISING THE CONTROL ROD. HIS GAMMA DOSIMETER (CHEST) READ 550 R. ONE FOOT WAS ESTIMATED TO HAVE RECEIVED 470 RADS (NEUTRONS) AND THE OTHER 49. IRRADIATION OF PLASTIC DUMMIES EQUIPPED WITH DOSIMETER REVEALED THE INHOMOGENEITY OF THE VARIOUS KINDS OF DOSE.

AVAILABILITY - PROCEEDINGS OF THE FIRST CONGRESS OF THE INTERNATIONAL RADIATION PROTECTION ASSOCIATION, PERGAMON PRESS, OXFORD, 1967

\*ACCIDENT, CRITICALITY + \*INCIDENT, ACTUAL, HUMAN ERROR + BELGIUM + CRITICAL ASSEMBLY FACILITY +  
DOSE CALCULATION, EXTERNAL + DOSE MEASUREMENT, EXTERNAL + PERSONNEL EXPOSURE, RADIATION

15-14131  
MUSIALOWICZ T + WYSOPOLSKI J + FILIPIAK B  
THE DETERMINATION OF A MIXTURE OF THERMAL-NEUTRON AND GAMMA-RAY EXPOSURES BY FILM BADGES  
INSTITUTE OF NUCLEAR RESEARCH, WARSAW  
CLOR/IBJ-42/D +. 20 PAGES, 1965

THE REPORT DESCRIBES THE FILM-BADGE-MEASUREMENT METHOD OF COMBINED THERMAL NEUTRONS AND GAMMA-RAYS USING 0.5-MM CD CONVERTER AND 0.6-MM SN FILTER. THE RELATION BETWEEN THE FILM-DENSITY-EQUIVALENT VALUES FOR GAMMA AND THERMAL NEUTRON DOSES HAS BEEN DETERMINED.

AVAILABILITY - MICROCARD EDITIONS, INC./ ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669

\*DOSIMETRY, PHOTOGRAPHIC + GAMMA + MONITOR, RADIATION, PERSONNEL + POLAND + THERMAL NEUTRON

15-14132  
RUKOWIECKI D  
RADIATION DOSE SENSITIVE POCKET ALARM MONITOR  
CENTRALNE LABORATORIUM OCHRONY RADIOLOGICZNEJ, WARSAW  
CLOR-43/D +. 8 PAGES, 1965

THE DOSE-SENSITIVE POCKET-ALARM MONITOR FOR USE BY MEMBERS OF EMERGENCY CREWS IS PRESENTED. THE INSTRUMENT, CONTAINING AN IONIZATION CHAMBER, AN ELECTROMETER TUBE AND, A SIGNAL GENERATOR, IS SUPPLIED FROM BATTERY. THE INSTRUMENT GIVES AN AUDIBLE ALARM WHEN A DOSE OF 300 MR IS ACCUMULATED.

AVAILABILITY - MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669

\*MONITOR, RADIATION, PERSONNEL + DOSE MEASUREMENT, EXTERNAL + POLAND

15-14134  
TESCH K  
DOSE RATE AND MAXIMUM PERMISSIBLE FLUX OF HIGH ENERGY ELECTRONS AND GAMMA-RAYS  
DEUTSCHES ELEKTRONEN-SYNCHROTRON, HAMBURG  
ORNL-TR-1250 + DESY-ST-1 +. 11 PAGES, 1965

THE DOSE RATE PRODUCED BY 5.2-GEV ELECTRONS AND BY 6.3-GEV BREMSSTRAHLUNG IN TISSUE-EQUIVALENT MATERIAL IS MEASURED. FROM THIS MEASUREMENT AND KNOWN LOW-ENERGY DATA, THE PARTICLE-FLUX DENSITIES CORRESPONDING TO A DOSE RATE OF 2.5 MREM/H ARE DEDUCED FOR ELECTRONS, GAMMA-RAYS, AND BREMSSTRAHLUNG WITH ENERGIES UP TO 10 GEV.

AVAILABILITY - FOR SALE BY THE SPECIAL LIBRARIES ASSOCIATION TRANSLATION CENTER, JOHN CRERAR LIBRARY, 35 WEST 33RD STREET, CHICAGO, ILLINOIS 60616, \$1.60 COPY, \$0.80 MICROFICHE

\*DOSE + \*DOSE MEASUREMENT, EXTERNAL + GAMMA + GROSS BETA

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-14135  
JONFS AP  
AN AREA GAMMA MONITOR WITH AUTOMATIC RANGE CHANGING  
ATOMIC ENERGY OF CANADA LIMITED  
AFCL-2533 +. 14 PAGES, 4 FIGURES, DECEMBER 1965

AN AREA GAMMA MONITOR IS DESCRIBED WHICH IS INTENDED FOR THE MEASUREMENT OF EXPOSURE RATES IN THE RANGE 0.2 MILLI-ROENTGENS/HR TO 10 ROENTGENS/HR. THE OUTPUT IS DISPLAYED ON TWO QUASI-LOGARITHMIC RANGES AND AUTOMATIC RANGE CHANGING IS PROVIDED TO SWITCH THE MONITOR TO THE LESS SENSITIVE SCALE WHENEVER A SELECTED EXPOSURE RATE IS EXCEEDED. THE MONITOR HAS A RAPID RESPONSE. THE DETECTOR UNIT, CONTAINING TWO GEIGER TUBES, MAY BE SEPARATED FROM THE MAIN UNIT BY AT LEAST 300 FEET OF CABLE. A DETAILED CIRCUIT DESCRIPTION AND A SETTING-UP PROCEDURE ARE CONTAINED IN THE APPENDICES.

AVAILABILITY - ATOMIC ENERGY OF CANADA LTD., CHALK RIVER, ONTARIO, CANADA, \$0.50 COPY

\*MONITOR, RADIATION, GENERAL + CANADA + GAMMA

15-14137  
MICHAEL JA + LAMONDS HA + STORY EJ  
FISSION PRODUCT BETA-GAMMA COINCIDENCE COUNTING STUDIES  
EDGERTON GERMESHAUSEN AND GRIER, INC.  
EGG-1183-2103 +. 42 PAGES, REFERENCES, AUGUST 1966

A GENERALIZED TREATMENT OF COINCIDENCE COUNTING OF RADIOACTIVITY INCLUDED WITHIN THE AIR SPACE BETWEEN TWO OPPOSING CYLINDRICAL DETECTORS IS GIVEN. OPTIMIZED GEOMETRIES ARE CONSIDERED. EXPECTED COUNTING RATES, SIGNAL-TO-NOISE RATIOS, AND SHIELDING REQUIREMENTS ARE DETERMINED FOR AN ASSUMED SOURCE OF MIXED FISSION PRODUCT ACTIVITY AS A FUNCTION OF TIME AFTER FISSION. APPLICATION TO THE AERIAL RADIOLOGICAL MEASURING SYSTEM IS DISCUSSED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$2.00 COPY, \$0.50 MICROFICHE

\*COUNTER + GAMMA + GROSS BETA + MONITOR, RADIATION, AIR + SURVEY, RADIATION, AERIAL

15-14138  
WEISZ S7 + RICHARDSON P + COBAS A + JARNAGIN RC  
TRIPLET SAMPLED RADIATION DAMAGE  
PUERTO RICO NUCLEAR CENTER, SAN JUAN + UNIVERSITY OF NORTH CAROLINA  
CONF-660612-4 +. 34 PAGES, FROM SYMPOSIUM ON ORGANIC SCINTILLATORS, ARGONNE, ILLINOIS

THE EMISSION PRODUCED BY MUTUAL ANNIHILATION OF A PAIR OF TRIPLET EXCITONS IN A SINGLE CRYSTALLINE ANTHRACENE WAS OBSERVED TO BE AN INDICATOR OF LOW LEVEL GAMMA-RAY DOSE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$2.00 COPY, \$0.50 MICROFICHE

\*DOSIMETRY, THERMOLUMINESCENCE + DOSE + GAMMA

15-14151 ALSO IN CATEGORIES 17 AND 18  
N S SAVANNAH PROPOSED CHANGE 10 - ORGANIZATION CHART POSITION OF HEALTH PHYSICIST  
FIRST ATOMIC SHIP TRANSPORT, INC.  
3 PAGES, 1 FIGURE, DECEMBER 8, 1966, DOCKET NO. 50-238

REQUEST CHANGE TO ALLOW STAFF HEALTH PHYSICIST TO REPORT DIRECTLY TO CHIEF ENGINEER FOR ROUTINE (BOILER CHEMISTRY) WORK, BUT DIRECTLY TO MASTER FOR RADIOLOGICAL SAFETY MATTERS, PARTICULARLY FOR UNUSUAL CONDITIONS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + ADMINISTRATIVE CONTROLS AND PRACTICES + N S SAVANNAH + RADIATION SAFETY AND CONTROL + REACTOR, PRESSURIZED WATER

15-14155  
THE ASSESSMENT OF THE POSSIBLE RADIATION RISKS TO THE POPULATION FROM ENVIRONMENTAL CONTAMINATION  
MEDICAL RESEARCH COUNCIL, LONDON, ENGLAND  
NP-16119 +. 16 PAGES, 1966

POSSIBLE HAZARDS TO THE POPULATION OF THE UNITED KINGDOM FROM ENVIRONMENTAL CONTAMINATION FROM NUCLEAR WEAPON TESTING OR OTHER SOURCES ARE REVIEWED IN TERMS OF THE POSSIBLE INCIDENCE OF CERTAIN TYPES OF HARMFUL EFFECT, FOR EXAMPLE, LEUKEMIA. AN ESTIMATE OF THE TOTAL DOSES THAT WILL ARISE FROM FALLOUT FROM ALL WEAPONS THAT WERE TESTED UP TO THE END OF 1965 ARE ESTIMATED, ALONG WITH RISKS THAT MAY BE ASSOCIATED WITH THESE DOSES. THE APPLICABILITY OF REMEDIAL MEASURES AGAINST FALLOUT IS ALSO DISCUSSED. DATA ON THE IRRADIATION OF BONE MARROW

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-14155 \*CONTINUED\*

DUE TO THE INCORPORATION OF SR-90 INTO BONE ARE APPENDED.

AVAILABILITY - BRITISH INFORMATION SERVICE, 845 THIRD AVENUE, NEW YORK, N. Y. 10022, \$0.30 COPY

\*HAZARDS ANALYSIS + \*POPULATION EXPOSURE + BIOLOGICAL CONCENTRATION, MILK + CARBON +  
DOSE CALCULATION, EXTERNAL + DOSE CALCULATION, INTERNAL + FALLOUT +  
ICRP (INT. COMM. ON RADIOLOGICAL PROTECTION) + IODINE + RADIATION EFFECT + STRONTIUM + UNITED KINGDOM

15-14156

HUTCHIN ME + VAUGHAN BE

TRANSPORT OF CALCIUM AND STRONTIUM IN THE PRIMARY ROOT OF ZEA MAYS

U. S. NAVAL RADIOLOGICAL DEFENSE LABORATORY

AD-639836 + USNRDL-TR-1039 +. 14 PAGES, 3 TABLES, 2 FIGURES, 29 REFERENCES, FEBRUARY 28, 1966

ROOT SEGMENTS, 55 MM LONG, WERE EXPOSED TO NUTRIENT CONTAINING SR-85 AND CA-45 TRACERS. FROM 0.25 TO 5.0 MM CA, CALCIUM TRANSPORT WAS COMPARATIVELY UNAFFECTED BY CONCENTRATION, BUT FROM 0.05 TO 0.25 MM IT FELL OFF SHARPLY. THE MAXIMUM TRANSPORT OF STRONTIUM FROM NUTRIENT CONTAINING 0.05 MM CA WAS TWICE THAT FROM 2.5 MM CA, AND ALSO TWICE THE MAXIMUM CALCIUM TRANSPORTED. THUS, UNDER THE CONDITION SIMULATING CALCIUM DEPLETION, I.E., 0.05 MM CA, GREATER PROPORTIONS OF STRONTIUM WERE TRANSPORTED. IN SIMULTANEOUS DETERMINATIONS, THE RATIO OF SR TO CA MOVED WAS EQUAL TO THE RATIO OF THEIR CONCENTRATIONS IN NUTRIENT SOLUTION. DINITROPHENOL INHIBITED CA AND SR MOVEMENT SIMILARLY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$1.00 COPY, \$0.50 MICRONEGATIVE

\*AGRICULTURAL CONSIDERATION + \*BIOLOGICAL CONCENTRATION, VEGETATION + CALCIUM + ECOLOGICAL CONSIDERATION + STRONTIUM

15-14157

VAUGHAN BE + EVANS EC + HUTCHIN ME

POLAR TRANSPORT CHARACTERISTICS OF RADIOSTRONTIUM IN ISOLATED CORN ROOT SEGMENTS

U. S. NAVAL RADIOLOGICAL DEFENSE LABORATORY

AD-639699 + USNRDL-TR-1047 +. 17 PAGES, JULY 11, 1966

POLAR TRANSPORT IN ISOLATED SEGMENTS OF ZEA MAYS ROOT WAS VERIFIED BY USING PAIRED SIMULTANEOUS TRACERS FOR CA AND SR. A MODEL IS PRESENTED FOR DETERMINING MOLAR TRANSPORT RATES IN THE ROOT SEGMENTS BY AN IMPROVED COMPARTMENTAL GLASSWARE SYSTEM. SR-85 TRANSPORT EXACTLY PARALLELS VARIATION IN CA-45 TRANSPORT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$1.00 COPY, \$0.50 MICRONEGATIVE

\*AGRICULTURAL CONSIDERATION + \*BIOLOGICAL CONCENTRATION, VEGETATION + \*STRONTIUM + CALCIUM + ECOLOGICAL CONSIDERATION

15-14175

TUKEY HP

THE LOSS OF ORGANIC AND INORGANIC MATERIALS FROM ABOVE-GROUND PLANT PARTS, WITH ESPECIAL REFERENCE TO DECONTAMINATION OF PARTS UTILIZED FOR FOOD. PROGRESS REPORT  
CORNELL UNIVERSITY

NYO-2599-29 +. 19 PAGES, 1966

LEACHING IS DEFINED AS THE LOSS OF ORGANIC AND INORGANIC METABOLITES FROM VEGETATION BY THE LEACHING ACTION OF AQUEOUS SOLUTIONS INCLUDING RAIN, DEW, AND MIST. RESULTS ARE SUMMARIZED FROM STUDIES OF FACTORS THAT INFLUENCE LEACHING OF PLANTS IN WHICH RADIOISOTOPES WERE USED AS TRACERS. A MECHANISM FOR THE LEACHING OF CATIONS WAS DEVELOPED THAT IS COMPATIBLE WITH CURRENT THEORIES OF ION TRANSLOCATION. THE RECYCLING OF LEACHED NUTRIENTS IN THE SAME PLANT OR OTHER PLANTS WAS DEMONSTRATED. THE FINDINGS WERE APPLIED IN STUDIES OF THE DECONTAMINATION OF FOOD PLANTS OF RADIOACTIVE FALLOUT, WITH EMPHASIS ON THE REMOVAL OF SR-90. A SERIES OF STUDIES WERE MADE TO EVALUATE THE EXTENT OF LEACHING AND RECYCLING OF LEACHED METABOLITES IN PLANTS IN TROPICAL ENVIRONMENTS IN CONJUNCTION WITH OTHER FEASIBILITY STUDIES RELATED TO THE PROPOSED CONSTRUCTION OF A CANAL IN CENTRAL AMERICA WITH ATOMIC DEVICES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$1.00 COPY, \$0.50 MICROFICHE

\*AGRICULTURAL CONSIDERATION + \*BIOLOGICAL CONCENTRATION, VEGETATION + DECONTAMINATION + ECOLOGICAL CONSIDERATION + FALLOUT + STRONTIUM

15-14177

GUZAK SV

ROCKY FLATS METHODS OF TREATING ACUTE PLUTONIUM CASES

DOW CHEMICAL COMPANY

RFP-453 + CONF-798-2 +. 8 PAGES, FROM ANNUAL AFC AND CONTRACTOR HEALTH PROTECTION MEETING, LOS ANGELES, CALIFORNIA, OCTOBER 1964

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-14177 \*CONTINUED\*

THE TREATMENT OF PLUTONIUM CONTAMINATION ON THE SKIN AND IN THE RESPIRATORY AND GASTRO-INTESTINAL TRACTS IN MAN IS DISCUSSED. TREATMENT USED IN THE EVENT OF A MAJOR ACCIDENT IN WHICH ALL THREE MODES OF ENTRY ARE INVOLVED IS ALSO DESCRIBED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$1.00 COPY, \$0.50 MICROFICHE

\*PLUTONIUM + ACCIDENT, RADIOISOTOPE + BIOLOGICAL CONCENTRATION, MAN + CONTAMINATION + DECONTAMINATION + PERSONNEL EXPOSURE, RADIATION + RADIATION INJURY, TREATMENT OF + ROCKY FLATS

15-14247

CHASSANY JP + PAILLARD R + MEFFRE P  
RADIOPROTECTION AND THE ARGON 41 FORMED IN THE REACTORS G1 AND G2/G3.  
COMMISSARIAT A L'ENERGIE ATOMIQUE, CHUSCLAN  
CEA-R-2764 +. 19 PAGES, APRIL 1965

THE ACTIVATION OF ARGON-40 PRESENT IN THE AIR OR IN TRACE FORM IN CO<sub>2</sub> IS PARTICULARLY IMPORTANT. IN G1, THE COOLING IS EFFECTED BY ATMOSPHERIC AIR WHICH PASSES THROUGH THE REACTOR AND IS EXPELLED THROUGH A CHIMNEY. THE ACTIVITY DUE TO ARGON-41 OF THE EXPELLED AIR IS ABOUT 0.0001 C/CUBIC METER. FOR THE REACTORS G2 AND G3, THE COOLING IS EFFECTED USING CO<sub>2</sub> IN A CLOSED CIRCUIT AT A PRESSURE OF 15 KG/CM SQUARED. ALTHOUGH THE ARGON CONTENT OF INDUSTRIAL CO<sub>2</sub> IS PRACTICALLY CONSTANT, IT CAN BE INFLUENCED BY THAT OF THE RESIDUAL AIR LEFT IN THE CIRCUITS DURING THE STARTUP. THE ACTIVITY DUE TO ARGON-41 OF THE HEAT-CARRYING FLUID IS ABOUT 0.001 C/CUBIC METER.

AVAILABILITY - MICROCARD EDITIONS INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669

\*ARGON + \*FRANCE + ACTIVATION PRODUCT + EFFLUENT + MONITOR, RADIATION, GAS + MONITOR, RADIATION, STACK + WASTE DISPOSAL, GAS

15-14248

PHYSICAL ASPECTS OF IRRADIATION RECOMMENDATIONS OF THE INTERNATIONAL COMMISSION ON RADIOLOGICAL UNITS AND MEASUREMENTS  
NATIONAL BUREAU OF STANDARDS, U. S. DEPT. OF COMMERCE  
NRS-HANDBOOK 85 +. 106 PAGES, FIGURES, TABLES, REFERENCES, MARCH 31, 1964

THE INTERNATIONAL COMMISSION ON RADIOLOGICAL UNITS AND MEASUREMENTS (ICRU), SINCE ITS INCEPTION IN 1925, HAS HAD AS ITS PRINCIPAL OBJECTIVE THE DEVELOPMENT OF INTERNATIONALLY ACCEPTABLE RECOMMENDATIONS REGARDING (1) QUANTITIES AND UNITS OF RADIATION AND RADIOACTIVITY, (2) PROCEDURES SUITABLE FOR THE MEASUREMENT AND APPLICATION OF THESE QUANTITIES IN CLINICAL RADIOLOGY AND RADIOBIOLOGY, (3) PHYSICAL DATA NEEDED IN THE APPLICATION OF THESE PROCEDURES, THE USE OF WHICH TENDS TO ASSURE UNIFORMITY IN REPORTING.

AVAILABILITY - SUPERINTENDENT OF DOCUMENTS, GOVERNMENT PRINTING OFFICE, WASHINGTON, D. C. 20402, \$0.70 COPY

\*RADIATION UNIT + DOSE CALCULATION, EXTERNAL + DOSE CALCULATION, INTERNAL + DOSE MEASUREMENT, EXTERNAL + DOSIMETRY, GENERAL + INSTRUMENTATION CALIBRATION + X-RAY

15-14270

SRAPIONOV AS  
RADIOACTIVITY AND DOSIMETRIC CONTROL  
JPRS-27625 + TT-64-51836 +. 68 PAGES, DECEMBER 1, 1964, TRANSLATION OF P. 108-74 AND 207-8 FROM  
RADIOAKTIVNOST I DOZIMETRICHES-KII KONTROL, A PUBLICATION OF THE PUBLISHING HOUSE OF THE UZBEK ACADEMY OF SCIENCES, TASHKENT, USSR

THIS IS A TRANSLATION OF SEVERAL EXCERPTS OF A RUSSIAN-LANGUAGE BOOK DEALING WITH RADIOACTIVITY AND DOSIMETRIC CONTROL. THE THREE EXCERPTS ARE ENTITLED- (1) ORGANIZATION OF WORK WITH RADIOACTIVE SUBSTANCES AND DOSIMETRIC CONTROL, (2) DOSIMETRIC INSTRUMENTS, AND (3) PROTECTION AGAINST SUBSTANCES AND IONIZING RADIATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, 22151, 3.00 COPY, 0.65 MICROFICHE

\*RADIATION SAFETY AND CONTROL + DOSIMETRY, GENERAL + MONITOR, RADIATION, PERSONNEL + PERSONNEL EXPOSURE, RADIATION + PERSONNEL PROTECTIVE DEVICE + RADIATION PROTECTION, ORGANIZATION

15-14283

ALSO IN CATEGORY 16

HUFF FA + STOUT GF  
RADIOACTIVE RAINOUT RELATIONS IN CONVECTIVE RAINSTORMS  
UNIVERSITY OF ILLINOIS  
COC-1100-6 +. 131 PAGES, 52 FIGURES, 16 TABLES, 3 REFERENCES, MARCH 1965

THIS REPORT PRESENTS THE RESULTS OF SEVEN CASE STUDIES OF CONVECTIVE STORMS IN 1963. DETAILED DATA ON THE TIME AND SPACE DISTRIBUTION OF RADIOACTIVE RAINOUT FROM THESE STORMS WERE PROVIDED BY THE RAINWATER-SAMPLING NETWORK OF AUTOMATIC TIME SAMPLERS AND TOTAL STORM SAMPLERS SHOWN (IN FIGURE 1) AND DESCRIBED IN THE SECOND PROGRESS REPORT (HUFF, 1964). THIS



CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-14283 \*CONTINUED\*

NETWORK WAS INSTALLED TO OBTAIN ACCURATE DATA ON MESOSCALE DISTRIBUTIONS OF RAINOUT ON UNIT AREAS OF 400 TO 6000 SQUARE MILES. THE PURPOSE OF THIS REPORT IS TO COMBINE THE INFORMATION FROM THE RAINWATER SAMPLERS, RAIN GAGES, AND RADAR WITH SYNOPTIC WEATHER DATA IN SEARCH OF GREATER KNOWLEDGE OF THE RADIOACTIVE RAINOUT PROCESSES AND THE RELATIONSHIP OF THE RAINOUT TO VARIOUS STORM CHARACTERISTICS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, \$4.00 COPY

CESIUM + RAINOUT + SAMPLING + STRONTIUM + SURFACE WATER, GENERAL

15-14300 ALSO IN CATEGORY 14

FEATLEY JC  
ECOLOGICAL OF THE NEVADA TEST SITE. IV, EFFECTS OF THE SEDAN DETONATION ON DESERT SHRUB VEGETATION IN NORTHEASTERN YUCCA FLAT, 1962-65  
UNIVERSITY OF CALIFORNIA, SCHOOL OF MEDICINE LABORATORY OF NUCLEAR MEDICINE AND RADIATION BIOLOGY  
UCLA 12-571 +. 55 PAGES, 6 FIGURES, 11 TABLES, 15 REFERENCES, SEPTEMBER 1965

VEGETATION AND ENVIRONMENTAL PHENOMENA WERE OBSERVED AND MEASURED THROUGH THE SEASONS OF THREE YEARS, ON THREE SITES IN NORTHEASTERN YUCCA FLAT WITHIN TWO MILES OF THE SEDAN UNDERGROUND THERMONUCLEAR DETONATION IN JULY 1962. CUMULATIVE GAMMA RADIATION DOSES RECORDED WERE IN THE RANGE 4000-13,000 R.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151

\*ECOLOGICAL CONSIDERATION + BIOLOGICAL CONCENTRATION, VEGETATION + FALLOUT + NEVADA TEST SITE + NUCLEAR DETONATION + NUCLEAR EXPLOSION DERRIS + RADIATION DAMAGE + RADIATION EFFECT

15-14317

DATA FROM RADIATION PROTECTION PROGRAMS. VOLUME 2 NO. 4  
CANADA DEPT. OF NATIONAL HEALTH AND WELFARE, OTTAWA  
NP-14052 +. 62 PAGES, APRIL 1964, IN ENGLISH AND FRENCH

DATA ARE SUMMARIZED ON THE RADIOACTIVITY IN SAMPLES OF AIR, PRECIPITATION, MILK, AND SOIL COLLECTED AT VARIOUS LOCATIONS IN CANADA DURING MARCH 1964. RESULTS ARE COMPARED WITH DATA COLLECTED DURING 1963. RESULTS ARE ALSO INCLUDED FROM REACTOR-ENVIRONMENT MONITORING, PERSONNEL MONITORING, ISOTOPE-SAFETY ASSESSMENTS, AND FIELD INVESTIGATIONS OF RADIATION SAFETY.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

\*AIR + \*BIOLOGICAL CONCENTRATION, MILK + \*RAINOUT + CANADA + MONITOR, RADIATION, ENVIRONMENTAL + MONITOR, RADIATION, PERSONNEL + PERSONNEL EXPOSURE, RADIATION + RADIATION SAFETY AND CONTROL + RADIOCHEMICAL ANALYSIS + SURVEY, RADIATION, ENVIRONMENTAL

15-14315

REARD SJ + SMITH PW  
WASTE MANAGEMENT PROGRAM CHEMICAL PROCESSING DEPARTMENT REVIEW OF COSTS AND INCENTIVES  
HANFORD ATOMIC PRODUCTS OPERATION  
PL-SFP-496 +. 10 PAGES, MAY 25, 1965

THE CURRENT WASTE-MANAGEMENT PROGRAM WILL RESULT IN ALL WASTES GENERATED THROUGH 1972 BEING SOLIDIFIED BY 1982 AND WILL REDUCE THE RISK OF UNCONTROLLED RELEASE OF GROSS QUANTITIES OF FISSION PRODUCTS TO THE GROUND AND TO THE ATMOSPHERE. THE COST OF THE PROGRAM IS \$102,000,000. THE PROGRAM WILL PERMIT RECOVERY OF MULTIMEGACURIE QUANTITIES OF ISOTOPES SUCH AS STRONTIUM-90, CESIUM-137, PROMETHIUM-147, AND CERIUM-144, WHICH ARE OF GREAT VALUE FOR SPACE AND TERRESTRIAL APPLICATIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY

\*WASTE DISPOSAL, ECONOMICS + \*WASTE MANAGEMENT + AMERICIUM + ANTIMONY + CERIUM + CESIUM + ISOTOPIIC FRACTIONATION + NEPTUNIUM + PALLADIUM + PLUTONIUM + PROMETHIUM + RHODIUM + SAMARIUM + STRONTIUM + TECHNETIUM + WASTE STORAGE + WASTE TREATMENT, GENERAL + ZIRCONIUM

15-14316

RITTER R + DORFEL C  
QUANTITY OF FOOD REQUIRED FOR THE DETERMINATION OF SR-90 AND CS-137 AND ITS INCINERATION  
1 PAGE, ATOMPRACTICE 11(7) PAGE 397 (JULY 1965)

SR-90 AND CS-137 IN FOODS ARE DETERMINED THROUGH ENRICHMENT BY INCINERATION AND SUBSEQUENT RADIOCHEMICAL SEPARATION. MEASURING PREPARATIONS OF 6 DPM ARE NEEDED FOR THE DETERMINATION OF RADIOACTIVITY IN CRUDE FOOD, I.E., FOOD IN ITS NATIVE STATE, WHILE FOR PREPARED PRODUCTS PREPARATIONS WITH 12 DPM ARE REQUIRED.

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-14316 \*CONTINUED\*  
\*ANALYTICAL TECHNIQUE, FOOD + \*BIOLOGICAL CONCENTRATION, FOOD + CESIUM + INCINERATION +  
RADIOCHEMICAL ANALYSIS + STRONTIUM

15-14319  
HOLLISTEP H + VINCENT AP + CABLE JW  
PREDICTION OF EARLY RADIATION LETHALITY USING AN EFFECTIVE DOSE  
U. S. ATOMIC ENERGY COMMISSION, DIVISION OF BIOLOGY AND MEDICINE  
TAB-R-4 + CONF-813-1 +. 38 PAGES, SEPTEMBER 1964, PRESENTED AT THE 10TH ANNUAL AND 1ST INTERNATIONAL  
MEETING OF THE WESTERN SECTION OF THE OPERATIONS RESEARCH SOCIETY OF AMERICA, AT HONOLULU, HAWAII, ON  
SEPTEMBER 14-18, 1964.

THE PREDICTION OF THE INCIDENCE OF EARLY DEATH IN A MAMMALIAN SPECIES AFTER EXPOSURE TO  
IONIZING RADIATION TO THE WHOLE BODY FROM AN EXTERNAL SOURCE WAS PURSUED FOR BOTH APPLIED AND  
INVESTIGATIVE PURPOSES. THIS PAPER, EMPHASIZING THE DEPENDENCE OF THE LETHAL RESPONSE ON THE  
TIME CHARACTERISTICS OF THE EXPOSURE DOSE, CONSIDERS JOINTLY (1) SOME IMPLICATIONS OF A  
LONG-STANDING HYPOTHESIS OF H.A. BLAIR ON RECOVERY FROM RADIATION INJURY, AND (2) THE  
INTERPRETATION OF EXPERIMENTS TO ESTIMATE QUANTAL-RESPONSE RADIATION-TOLERANCE DISTRIBUTIONS.  
THE USUAL METHOD FOR MAKING PRACTICAL PREDICTIONS OF EARLY LETHALITY BASED UPON EQUIVALENT  
RESIDUAL DOSE OR BIOLOGICAL DAMAGE DOSE DEPENDS UPON A TACIT ASSUMPTION OF CONSTANT VARIANCE  
FOR THE UNDERLYING TOLERANCE DISTRIBUTIONS. THERE IS EVIDENCE SUGGESTING THAT SUCH AN  
ASSUMPTION IS AT BEST FRAGILE. FUTURE EXPERIMENTS ARE NEEDED AND SHOULD BE DESIGNED TO LEAD  
TO CONCLUSIONS ABOUT THE VALIDITY OF (1) THE BLAIR HYPOTHESIS, INCLUDING THE PROPER VALUES  
FOR THE ARBITRARY CONSTANTS, FOR A WIDER RANGE OF EXPOSURE CHARACTERISTICS AND END POINTS,  
AND (2) THE ASSUMPTION OF CONSTANT VARIANCE FOR THE ASSOCIATED TOLERANCE DISTRIBUTIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY

\*DOSE + \*RADIATION DAMAGE + \*RADIATION EFFECT + RADIATION INJURY, TREATMENT OF +  
RADIATION SAFETY AND CONTROL

15-14320  
BECKER K  
PHOSPHATE GLASS DOSIMETER FOR ROUTINE PERSONNEL DOSE SURVEILLANCE IN NUCLEAR INSTALLATIONS  
NP-TR-1192 +. 19 PAGES, TRANSLATED BY D. S. WHITSTON FROM NUKLEONIK 5(4) PAGES 154-159 (1963)

MEASUREMENT OF RADIATION-INDUCED FLUORESCENCE IN RECENTLY DEVELOPED SILVER PHOSPHATE DOSIMETER  
GLASSES PROVED MORE SATISFACTORY THAN THE PHOTOGRAPHIC FILM METHOD FOR ROUTINE PERSONNEL DOSE  
SURVEILLANCE. SENSITIVITY, PRE-DOSE, ACCURACY, TIME AND TEMPERATURE CURVES, EFFECT OF ENERGY  
AND ORIENTATION ON VARIOUS GLASS-METAL FILTER COMBINATIONS, NEUTRON SENSITIVITY, AND VARIOUS  
INTERFERENCE EFFECTS ARE DISCUSSED. A SUITABLE CONTAINMENT FOR THE GLASS IS DESCRIBED,  
PERMITTING OF RECORDING BETWEEN 0.05 AND SEVERAL THOUSAND R AS WELL AS ABOUT 0.04 TO SEVERAL  
MEV QUANTUM RADIATION, FAIRLY INDEPENDENTLY OF ENERGY AND ORIENTATION. SPECIAL APPLICATIONS  
AND POSSIBLE IMPROVEMENTS ARE DISCUSSED.

AVAILABILITY - JOHN CRERAR LIBRARY, 35 WEST 33RD STREET, CHICAGO, ILLINOIS 60616 \$1.10 COPY, \$0.80  
MICRONEGATIVE

\*DOSIMETRY, RADIOPHOTOLUMINESCENCE + \*MONITOR, RADIATION, PERSONNEL + DOSE MEASUREMENT, EXTERNAL +  
THERMAL CONSIDERATION

15-14327  
LANZOLA E + PETROZZI E + SPINA AM  
GAMMA SPECTROMETRY OF THE AIR AND PLANTS  
UNIVERSITA, ROME  
SC-T-65-735 +. 10 PAGES, MINERVA NUCL., 8, PAGES 269-273 (SEPT.-OCT. 1964) IN ITALIAN

GAMMA SPECTROMETRY WAS USED TO INVESTIGATE WHETHER - THE VARIOUS FISSION PRODUCTS FALL AT  
DIFFERENT SPEEDS - ABSORPTION THROUGH THE LEAVES IS CONSIDERABLE IN SOME SPECIES OF PLANTS  
AND NOT IN OTHERS - THE SAME SPECIES OF PLANT, GROWN IN DIFFERENT SOILS, ABSORBS RADIOACTIVE  
ELEMENTS IN DIFFERENT AMOUNTS - AND THE ACTIVITY CONCENTRATED IN NATURAL MANURES IS  
APPRECIABLE.

AVAILABILITY - JOHN CRERAR LIBRARY, 35 WEST 33RD STREET, CHICAGO, ILLINOIS 60616, \$1.10 COPY, \$0.80  
MICRONEGATIVE

\*BIOLOGICAL CONCENTRATION, VEGETATION + AIR + ANALYTICAL TECHNIQUE, AIR +  
ANALYTICAL TECHNIQUE, VEGETATION + DEPOSITION + ECOLOGICAL CONSIDERATION + GROSS GAMMA +  
INSTRUMENTATION, NUCLEAR + RADIOCHEMICAL ANALYSIS + SOIL, PROPERTY

15-14421  
VOSS MD  
SURVEY OF ENVIRONMENTAL RADIOACTIVITY  
AMES LABORATORY  
IS-1320 +. 38 PAGES, DECEMBER 1965

THIS ENVIRONMENTAL MONITORING PROGRAM OF THE AMES LABORATORY OF THE USAEC IS THE

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-14421 \*CONTINUED\*

PRE-OPERATIONAL PROGRAM FOR THE AMES LABORATORY RESEARCH REACTOR (ALRR). THE PRE-OPERATIONAL ENVIRONMENTAL PROGRAM CONSISTS OF GROSS ALPHA AND BETA DETERMINATIONS OF AIR, SOIL, VEGETATION, RIVER WATER, BOTTOM SEDIMENT, PRECIPITATION, AND WELL WATER SAMPLES. THIS REPORT INCLUDES DATA FOR THE PERIOD JANUARY 1, 1965, TO DECEMBER 31, 1965. THE ALRR REACHED FULL POWER AS OF 7-12-65. IN THE ENSUING TIME PERIOD COVERED BY THIS REPORT, FULL-POWER RUNS HAVE BECOME ROUTINE BUT ARE RELATIVELY SHORT. SERVICE IRRADIATIONS HAVE BEEN MADE FOR THE LABORATORY. THE DATA INDICATE THAT THE ALRR HAS NOT BEEN A CONTRIBUTOR TO ENVIRONMENTAL RADIOACTIVITY IN THE AMES AREA. THE CONCLUSION IS REACHED THAT RADIOACTIVITY LEVELS RECORDED REPRESENT BACKGROUND CONDITIONS FROM ATMOSPHERIC FALLOUT AND NATURALLY OCCURRING RADIOACTIVITY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$2.00 COPY, \$0.50 MICRONEGATIVE

\*SUPPORT, RADIATION, ENVIRONMENTAL + AIR + BIOLOGICAL CONCENTRATION, VEGETATION + GROSS ALPHA + GROSS BETA + SOIL, NUCLIDE OCCURRENCE + SURFACE WATER, NUCLIDE OCCURRENCE + WATER, DRINKING

15-14422

KIRCHNER RA + GRIFF V<sup>0</sup> + HARTZELL WM  
ROCKY FLATS CONTINUOUS AIR MONITOR  
THE DOW CHEMICAL COMPANY  
RFP-115 +. 7 PAGES, NOVEMBER 2, 1966

A RELIABLE AND INEXPENSIVE (LESS THAN \$400) CONTINUOUS AIR MONITOR WAS DEVELOPED. THE AIR MONITOR, AN ALPHA SCINTILLATION DEVICE, CONTINUOUSLY MONITORS AIR SAMPLES COLLECTED ON 47-MM FILTER PAPER. A READOUT IS PROVIDED BY A TRANSISTORIZED RATE-METER AND AN ADJUSTABLE METER RELAY. THE METER RELAY ACTUATES AN ALARM WHEN A PRESET AMOUNT OF ACTIVITY IS COLLECTED ON THE FILTER PAPER. AN OUTLET PLUG IS PROVIDED FOR A RECORDER IF ONE IS DESIRED. BASED ON A RADIOACTIVITY CONCENTRATION GUIDE (RCG) OF 9 DPM/CUBIC METER THE CONTINUOUS AIR MONITOR IS CAPABLE OF IDENTIFYING AS LITTLE AS 1 RCG-DAY AND ALARMING AT THIS AMOUNT. AT ROCKY FLATS, THE INSTRUMENT IS USUALLY SET TO ALARM AT APPROXIMATELY 3 RCG-DAYS ABOVE NATURAL BACKGROUND RADIATION. NUMEROUS INSTRUMENTS ARE LOCATED THROUGHOUT PLUTONIUM-HANDLING AREAS AND EMPLOY A WARBLING ALARM AS AN INDICATION THAT RESPIRATORY PROTECTION IS REQUIRED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*MONITOR, RADIATION, AIR + \*ROCKY FLATS + INSTRUMENTATION, AIR SAMPLING + MONITOR, RADIATION, SAMPLING + RADIATION SAFETY AND CONTROL

15-14425

ALSO IN CATEGORY 17

RUSSELL JA + JONES RJ  
OPERATIONAL SAFETY AND RADIATION PROTECTION FOR THE OAK RIDGE ISOCHRONOUS CYCLOTRON  
OAK RIDGE NATIONAL LABORATORY  
ORNL-TM-364 +. 16 PAGES, 2 FIGURES, NOVEMBER 1966

TWO INDEPENDENT SYSTEMS FOR PROVIDING OPERATIONAL SAFETY AND RADIATION PROTECTION FOR PERSONNEL AT THE OAK RIDGE ISOCHRONOUS CYCLOTRON ARE DESCRIBED IN DETAIL. A RADIATION ALARM SYSTEM MONITORS ALL HAZARDOUS AREAS. THE CYCLOTRON AND ALL BEAM-USE AREAS ARE OPERATED COMPLETELY BY REMOTE CONTROL - A COMPLEX SYSTEM OF INTERLOCKS AND OPERATION CONTROLS PREVENT ACCESS TO ANY HAZARDOUS AREA WHILE THE CYCLOTRON IS IN OPERATION. THIS SYSTEM IS DESIGNED SO THAT AT LEAST THREE INTERLOCKS MUST FAIL AND BOTH THE PERSON ENTERING THE ROOM AND THE OPERATOR MUST MAKE MISJUDGMENTS BEFORE A RADIATION EXPOSURE CAN OCCUR. IN FOUR YEARS OF CYCLOTRON OPERATION, THE SYSTEMS HAVE PROVED FULLY RELIABLE AND OPERATIONALLY VERY SATISFACTORY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*RADIATION SAFETY AND CONTROL + ORNL (OAK RIDGE NATIONAL LABORATORY)

15-14427

ALSO IN CATEGORY 14

CAIRE B + SUTRA-FOURCADE Y  
STUDY OF THE PERMEABILITY OF CERTAIN MATERIALS TO TRITIUM  
COMMISSARIAT A L'ENERGIE ATOMIQUE, CENTRE DE PRODUCTION DE PLUTONIUM DE MARCOULE  
CEA-R-3018 +. 20 PAGES, AUGUST 1966, IN FRENCH

THE AIM OF THIS WORK IS TO CLASSIFY CERTAIN MATERIALS INTENDED FOR USE AS A PROTECTION AGAINST GASEOUS TRITIUM AND TRITIATED WATER. THE FIRST PART DEALS WITH ACTIVE TESTS AND GIVES AN ACCOUNT OF PHENOMENA ENCOUNTERED WITH VERY SMALL QUANTITIES OF ELEMENT. THE SECOND PART OF THIS REPORT CONCERNS A SERIES OF TESTS MADE WITH HELIUM AND INACTIVE WATER. GASEOUS TRITIUM WAS USED FOR THE FIRST PART OF THE WORK WITHOUT A CARRIER, AND IT WAS NOT POSSIBLE TO HANDLE IT IN WEIGHABLE AMOUNTS. AT A CONCENTRATION OF ONE MCI/CUBIC METER, ONE HAS THEREFORE 10<sup>-7</sup> CM<sup>3</sup>/CUBIC METER OF TRITIUM. UNDER THE SAME CONDITIONS, AT NORMAL PRESSURE, A CUBIC METER OF HYDROGEN WEIGHS 900 GM. THE AMOUNTS HANDLED DURING THE ACTIVE TESTS ARE 10 TO THE 10TH TIMES LESS THAN THOSE WHICH WOULD HAVE BEEN USED IN THE CASE OF HYDROGEN AT NORMAL PRESSURE.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-14427 \*CONTINUED\*  
\*TRITIUM + PERSONNEL PROTECTIVE DEVICE

15-14496  
ROESCH WC  
RADIATION DOSIMETRY FOR RADIATION PROTECTION  
PACIFIC NORTHWEST LABORATORY  
BNWL-SA-816 + CONF-660815-1 +. 18 PAGES, AUGUST 9, 1966, PRESENTED AT CONFERENCE ON PRINCIPLES OF RADIATION PROTECTION, OAK RIDGE, TENNESSEE

THIS PAPER IS CONCERNED WITH MEASUREMENTS OF X AND GAMMA RAYS, NEUTRONS, ELECTRONS, BETA RAYS, PROTONS, ALPHA PARTICLES, ETC., FOR RADIATION PROTECTION. IT TREATS THE BASIC CONCEPTS OF THIS TYPE OF MEASUREMENT, HOW THESE ARE TRANSLATED INTO PRACTICAL WORKING TECHNIQUES, AND THEN, SOME OF THE IDEAS BEING STUDIED FOR CHANGES IN THE SYSTEM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*DOSIMETRY, GENERAL + DOSE + RADIATION SAFETY AND CONTROL

15-14498  
LIBOVICZ BA + BEHLS HF  
EXPERIMENTAL PROTOTYPE PACKAGE VENTILATION KIT, FIRST STRUCTURAL AND HUMAN FACTORS TEST. INTERIM REPORT NO. 29, MARCH 29-APRIL 12, 1965  
GENERAL AMERICAN TRANSPORTATION CORPORATION  
AD-633233 + GARD-1278-4.1 +. 71 PAGES, MAY 1965

A STRUCTURAL TEST AND HUMAN-LIMIT EVALUATION OF THE SHELTER PACKAGE VENTILATION KIT (PVK) SHOWED THAT THE VENTILATOR CAN BE READILY OPERATED FOR PERIODS OF AT LEAST THREE HOURS WITH 7-1/2 MINUTES REST EACH HALF-HOUR. THE PVK CAN BE OPERATED AT PEDAL SPEEDS FROM 45 TO 63 RPM, AND THE PREFERRED SPEED WAS 55 RPM. THE OPTIMUM POWER INPUT WAS FOUND TO BE 0.10 HORSEPOWER PER OPERATOR, AND THE MAXIMUM TESTED WAS 0.15. MOST TESTS WERE PERFORMED AT COMFORTABLE CONDITIONS, 6, TO 72 F EFFECTIVE TEMPERATURE (ET). THE MAXIMUM ET IMPOSED WAS 83 F. FURTHER TESTS ARE REQUIRED TO ESTABLISH WORK/REST CYCLES WHEN OPERATING THE PVK AT ELEVATED ET.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*CIVIL DEFENSE + FALLOUT + RADIATION SAFETY AND CONTROL

15-14499  
LIBOVICZ BA + NEVERIL PR + BEHLS HF  
PREPRODUCTION PROTOTYPE PACKAGE VENTILATION KIT, SECOND STRUCTURAL AND HUMAN FACTORS TEST. FINAL REPORT  
GENERAL AMERICAN TRANSPORTATION CORPORATION  
AD-632963 + GARD-1278-4.2 +. 95 PAGES, AUGUST 1965

A PORTABLE VENTILATION SYSTEM, DESIGNED FOR FALLOUT SHELTERS, WAS MANUALLY OPERATED CONTINUOUSLY FOR TWO WEEKS. THE PACKAGE VENTILATION KIT (PVK) EVALUATED INCLUDED A FAN ASSEMBLY PLUS TWO DRIVE MODULES. A PREVIOUS TEST HAD DISCLOSED SOME MECHANICAL WEAKNESSES THAT WERE SUBSEQUENTLY CHANGED. THE MODIFIED PVK FUNCTIONED WITHOUT ANY FAILURES - THEREFORE, SPECIFICATION MIL-V-40645, PACKAGE VENTILATION KIT, 20-INCH FAN, MODULAR DRIVE (CIVIL DEFENSE), WAS ISSUED AUGUST 16, 1965. MINOR IMPROVEMENTS TO THIS SPECIFICATION ARE RECOMMENDED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*CIVIL DEFENSE + FALLOUT + RADIATION SAFETY AND CONTROL

15-14505 ALSO IN CATEGORY 14  
JOHNSON WS  
PLUTONIUM CONTAMINATION OF LARGE LAND AREAS  
FREELINE INSTRUMENT CORPORATION, SANTA FE, NEW MEXICO  
5 PAGES, 5 FIGURES, 1966, PRESENTED AT THE FIRST INTERNATIONAL CONGRESS OF THE INTERNATIONAL RADIATION PROTECTION ASSOCIATION, ROME, ITALY, SEPTEMBER 5-10, 1966

THE CONTAMINATION OF LARGE LAND AREAS WITH SIGNIFICANT QUANTITIES OF PLUTONIUM HAS BEEN ESSENTIALLY A SITUATION UNIQUE TO THE NONNUCLEAR DETONATION OF NUCLEAR WEAPONS. HOWEVER, WITH THE INCREASED USE OF PU-239 FOR NON-WEAPONS APPLICATIONS AND THE AVAILABILITY OF PU-239 IN QUANTITY, HEALTH PHYSICISTS NEED INFORMATION ON THE MAGNITUDE OF THE CONTAMINATION ASSOCIATED WITH PLUTONIUM ACCIDENTS. THE RESULTS OF THE MOST EXTENSIVE FIELD EXPERIMENTS TO DATE, OPERATION POLLER COASTER SPONSORED BY THE UNITED STATES AND THE UNITED KINGDOM, PROVIDE AN INSIGHT INTO THE RADIOLOGICAL PROBLEMS OF SUCH ACCIDENTS. AS IS THE CASE IN ANY TRUE ACCIDENT INVOLVING RADIOACTIVE MATERIAL, IT IS NECESSARY TO FUNCTION AND EVALUATE UNDER CONDITIONS ENTIRELY DIFFERENT FROM ROUTINE PLUTONIUM OPERATIONS. SPECIAL EQUIPMENT WAS FIELD TESTED TO ENHANCE PLUTONIUM DETECTION BY LOW ENERGY ELECTROMAGNETIC RADIATIONS IN ADDITION TO MORE CONVENTION ALPHA MONITORING.

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-14505 \*CONTINUED\*

AVAILABILITY - PROCEEDINGS OF THE FIRST CONGRESS OF THE INTERNATIONAL RADIATION PROTECTION ASSOCIATION, PERGAMON PRESS, OXFORD, 1967

\*INSTRUMENTATION, RADIATION MONITORING + \*PLUTONIUM + ACCIDENT, GENERAL + DEPOSITION + FALLOUT + RADIATION SAFETY AND CONTROL

15-14506 ALSO IN CATEGORY 14

TERPILL JG + BALES RE + HICKEY JL

REMOVING RADIOACTIVITY FROM MILK

U. S. DEPARTMENT PUBLIC HEALTH SERVICE

22 PAGES, 8 FIGURES, 4 TABLES, 19 REFERENCES, 1966, PRESENTED AT THE FIRST INTERNATIONAL CONGRESS OF THE INTERNATIONAL RADIATION PROTECTION ASSOCIATION, SEPTEMBER 5-10, 1966, ROME, ITALY

THE RESEARCH, DEVELOPMENT, AND LARGE-SCALE TESTING OF METHODS FOR CONCURRENTLY REMOVING ANIONS AND CATIONS FROM MILK DURING PROCESSING WILL BE DESCRIBED, INCLUDING PRESENTATION OF DATA FROM BOTH LABORATORY AND LARGE-SCALE EXPERIMENTS. COST DATA RELATED TO SOME LARGE-SCALE EXPERIENCES WILL BE GIVEN WHERE IT WOULD BE USEFUL FOR COMPARATIVE PURPOSES.

AVAILABILITY - PROCEEDINGS OF THE FIRST CONGRESS OF THE INTERNATIONAL RADIATION PROTECTION ASSOCIATION, PERGAMON PRESS, OXFORD, 1967

\*ANALYTICAL TECHNIQUE, MILK + \*BIOLOGICAL CONCENTRATION, MILK + ECONOMICS + FALLOUT + IODINE + STRONTIUM

15-14507 ALSO IN CATEGORY 14

SCHULTZ NR

INHALATION GAGES OF ENRICHED INSOLUBLE URANIUM OXIDES

OAK RIDGE GASEOUS DIFFUSION PLANT

28 PAGES, 11 FIGURES, 1 TABLE, 10 REFERENCES, 1966, PRESENTED AT THE FIRST INTERNATIONAL CONGRESS OF THE INTERNATIONAL RADIATION PROTECTION ASSOCIATION, SEPTEMBER 5-10, 1966, ROME, ITALY

THE RETENTION AND EXCRETION OF URANIUM OXIDES AND FLUORIDES BY ABOUT 80 EMPLOYEES ROUTINELY ASSIGNED TO CALCINING AND FLUORINATING URANIUM-BEARING MATERIALS ENRICHED IN THE U235 ISOTOPE HAVE BEEN STUDIED FOR MORE THAN A YEAR. PULMONARY FUNCTION TESTS OF THE EMPLOYEES REVEALED NORMAL RESPIRATORY FUNCTIONS. MEDICAL DATA, INCLUDING CHEST X-RAYS, URINALYSES FOR ALBUMIN, AND MICROSCOPIC EXAMINATION OF URINE FOR PATHOLOGICAL CELLS AND ORGANISMS, ARE NEGATIVE IN ALL CASES. THERE IS NO EVIDENCE OF INJURY FROM THESE TRANSIENT INTERNAL URANIUM DEPOSITIONS.

AVAILABILITY - PROCEEDINGS OF THE FIRST CONGRESS OF THE INTERNATIONAL RADIATION PROTECTION ASSOCIATION, PERGAMON PRESS, OXFORD, 1967

\*BIOLOGICAL CONCENTRATION, MAN + \*INHALATION + \*URANIUM + BIOMEDICAL + DOSE + PERSONNEL EXPOSURE, RADIATION + RADIATION SAFETY AND CONTROL

15-14531

PAYNTER DA

A FIELD DETECTOR STATION FOR THE DASA FALLOUT AND TRANSIT DOSE RATE MEASUREMENT SYSTEM.

EDITION GERMESHAUSEN AND GRIER, INC.

AD-636206 + NDL-TR-71 (SUPPL) + DASA-1628 (SUPPL) +. 33 PAGES, AUGUST 1966

THIS REPORT DESCRIBES A SOLID-STATE VERSION OF THE DETECTOR-STATION ELECTRONICS USED IN THE DASA FALLOUT AND TRANSIT DOSE RATE MEASUREMENT SYSTEM. THE PERFORMANCE OF THE SOLID-STATE VERSION EQUALS OR EXCEEDS THAT OF THE EXPERIMENTAL VACUUM-TUBE MODEL IT REPLACES, AND IT REFLECTS BOTH COST AND ELECTRICAL ECONOMIES. A BY-PRODUCT OF THE DESIGN IS THE AVAILABILITY OF A FREQUENCY MODULATED AC OUTPUT SIGNAL THAT CAN BE READILY TRANSMITTED, RECORDED, AND DIGITIZED WITHOUT INTERMEDIATE SIGNAL PROCESSORS, AS WOULD BE REQUIRED WITH DC DATA SIGNALS. ECONOMIES ARE OUTLINED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*FALLOUT + \*INSTRUMENTATION, RADIATION MONITORING + DOSE

15-14532 ALSO IN CATEGORY 14

WALKER SM

RADIOLOGICAL RECOVERY REQUIREMENTS, STRUCTURES, AND OPERATIONS RESEARCH. VOLUME III. DECONTAMINATION

ANALYSIS OF SELECTED SITES AND FACILITIES IN SAN JOSE, CALIFORNIA, FINAL REPORT

RESEARCH TRIANGLE INST.

AD-635823 + USNRDL-TRC-16 (VOL. 3) +. 240 PAGES, 134 FIGURES, 97 TABLES, REFERENCES, JUNE 6, 1966

THIS IS VOLUME III OF FOUR VOLUMES THAT REPORT THE RESEARCH COMPLETED UNDER THE GENERAL TERMS OF THE OFFICE OF CIVIL DEFENSE SUBTASK NO. 32333, RADIOLOGICAL RECOVERY REQUIREMENTS, STRUCTURES, AND OPERATIONS RESEARCH. THIS VOLUME CONTAINS THE SUPPORTING DATA RELATED TO DECONTAMINATION ANALYSES OF 16 SITES AND FACILITIES FROM SAN JOSE, CALIFORNIA.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-14532 \*CONTINUED\*  
\*CIVIL DEFENSE + \*DECONTAMINATION + FALLOUT + RADIATION SAFETY AND CONTROL

15-14533 ALSO IN CATEGORY 14

RYAN JT + JOHNSON T  
RADIOLOGICAL RECOVERY REQUIREMENTS, STRUCTURES, AND OPERATIONS RESEARCH, VOLUME II. DEVELOPMENT OF ANALYTICAL, COMPUTER, AND SYSTEMS MODELS IN SUPPORT OF DECONTAMINATION ANALYSIS. FINAL REPORT RESEARCH TRIANGLE INSTITUTE  
AD-635822 + USNRL-TRC-16 (VOL. 2) +. 243 PAGES, 15 FIGURES, 1 TABLE, REFERENCES, JUNE 6, 1966

THIS IS VOLUME II OF FOUR VOLUMES THAT REPORT THE RESEARCH COMPLETED IN FULFILLMENT OF OFFICE OF CIVIL DEFENSE WORK UNIT NO. 3233B, RADIOLOGICAL RECOVERY REQUIREMENTS, STRUCTURES, AND OPERATIONS RESEARCH. THIS VOLUME DESCRIBES SIX SUPPORTING STUDIES ALL PREVIOUSLY REPORTED TO THE OFFICE OF CIVIL DEFENSE IN RESEARCH MEMORANDA. VOLUME I DESCRIBES THE GENERAL ASPECTS OF THE INVESTIGATIONS AND PRESENTS THE CONCLUSIONS AND RECOMMENDATIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*ANALYTICAL MODEL + \*CIVIL DEFENSE + \*DECONTAMINATION + DOSE + FALLOUT + GAMMA EMITTER + RADIATION SAFETY AND CONTROL

15-14534 ALSO IN CATEGORY 14

RYAN JT + JOHNSON T + WALKER SM  
RADIOLOGICAL RECOVERY REQUIREMENTS, STRUCTURES, AND OPERATIONS RESEARCH. VOLUME I. GENERAL CONSIDERATIONS. FINAL REPORT RESEARCH TRIANGLE INSTITUTE  
AD-635821 + USNRDL-TPC-16 (VOL. 1) +. 94 PAGES, 16 FIGURES, 3 TABLES, JUNE 6, 1966

THIS STUDY EXAMINES THE APPLICATION OF DECONTAMINATION STRATEGIES TO EXTENSIVE URBAN AREAS. URBAN AREAS OF VARIOUS SIZES (FROM A FEW ACRES TO AN INTERCONNECTED SYSTEM INVOLVING HUNDREDS OF ACRES) WERE EXAMINED WITH REGARD TO DECONTAMINATING VITAL SECTIONS AND THEIR CONNECTING LINKS. THE TASK OF CREATING DECONTAMINATED ISLANDS OR MARSHALLING AREAS IS DETERMINED TO BE FEASIBLE. THE NATURE AND SCOPE OF COMMAND AND CONTROL-SYSTEM ELEMENTS REQUIRED FOR EFFECTIVE DECONTAMINATION IN PRACTICAL SITUATIONS IS DETERMINED TOGETHER WITH THE PREATTACK AND POSTATTACK DATA REQUIRED BY SUCH A SYSTEM. SEVERAL MODELS WERE DEVELOPED AND ARE DISCUSSED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*CIVIL DEFENSE + \*DECONTAMINATION + FALLOUT + GAMMA EMITTER + NUCLEAR EXPLOSION DEBRIS + RADIATION SAFETY AND CONTROL

15-14535 ALSO IN CATEGORY 14

FILLMORE JW + MOULTHROP HA  
SEALING OF PLASTIC FILM BY ELECTRONIC WELDING FOR ALPHA CONTAMINATION CONTROL. ISOCHEM INC.  
ISO-SA-23 + CONF-661001-11 +. 27 PAGES, FOR PRESENTATION AT 14TH CONFERENCE ON REMOTE SYSTEMS TECHNOLOGY, PITTSBURGH PA., JUNE 22, 1966

THE ISOCHEM PLUTONIUM MANUFACTURING FACILITY AT HANFORD, WASHINGTON, USES THE PLASTIC-BAG TECHNIQUE AND ELECTRONIC WELDING OR SEALING OF THE BAG AS AN AID IN ROUTINE ALPHA-CONTAMINATION CONTROL. THE BAG AND ELECTRONIC WELDING TECHNIQUES ASSIST IN THE MAINTENANCE OF HIGH-INTEGRITY CONTAINMENT OF ALPHA-CONTAMINATED MATERIALS AND EQUIPMENT. THE REQUIRED ELECTRONIC EQUIPMENT IS PORTABLE, RELIABLE, COMMERCIALY AVAILABLE, AND CONSISTS OF A HIGH-RADIOFREQUENCY GENERATOR AND A SEALING BAR CONSISTING OF TWO PLATES THAT CONDUCT THE RF FIELD AND FORM THE WELD SEAM AS THE HEATED PLASTIC FILMS FLOW TOGETHER.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*ALPHA EMITTER + \*RADIATION SAFETY AND CONTROL + INSTRUMENTATION, GENERAL + PLUTONIUM

15-14587

QUESTION F5. PROVIDE DATA ON EMISSION RATE AND DOSE FROM SINGLE LEAKING FUEL ROD TENNESSEE VALLEY AUTHORITY  
2 PAGES, PAGES F5.1 TO F5.2 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966, DOCKET NO. 50-259/260

RELEASE RATE OF 1 MILLICURIE/SEC PER ROD AFTER 30 MIN OF OFF-GAS HOLDUP IS (CONSERVATIVELY) BASED ON DRESDEN-1 EXPERIENCE, WHICH GIVES 0.2 - 1.5 MILLICURIES/SEC FOR EACH ASSEMBLY HAVING A FAILED ELEMENT. GE CALCULATIONS FOR MANY SITES AROUND THE WORLD FOR THE STACK HEIGHTS OF BROWNS FERRY GIVE A 1-CURIE/SEC RELEASE RATE TO GIVE A MAXIMUM OFF-SITE DOSE OF 500 MR/YEAR.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + DRESDEN 1 + OPERATING EXPERIENCE + REACTOR OFFGAS + SOURCE, CONTINUOUS + STACK + WASTE DISPOSAL, GAS

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-14635 ALSO IN CATEGORIES 17 AND 18

MFHANN RC

REVIEW OF N S SAVANNAH POST MCA

FIRST ATOMIC SHIP TRANSPORT, INC., NEW YORK, NEW YORK

3 PAGES, 1 TABLE, ATOMIC ENERGY CLEARING HOUSE 13(6) PAGES 17-19 (FEBRUARY 6, 1967) DOCKET NO. 50-238

REVIEWS NS SAVANNAH RADIATION AND CONTAINMENT MONITORING SYSTEM FEATURES. REVIEW OF OTHER FACILITIES SHOWS NO PROVISION FOR STACK MONITORING OF HIGH-LEVEL IODINE RELEASE. SPECIFICATIONS FOR SUCH AN IODINE MONITOR WERE RETURNED BY ALL 22 MANUFACTURERS CONTACTED. THREE WERE INTERESTED IN ITS DEVELOPMENT. AS A RESULT, FAST CONCLUDES PRESENT INSTRUMENTATION IS ADEQUATE, AND DEVELOPMENT OF AN IODINE MONITOR WOULD NOT ADD SIGNIFICANTLY TO PUBLIC SAFETY.

\*FISSION PRODUCT, IODINE + \*MONITOR, RADIATION, STACK + \*SAFETY REVIEW (OPERATIONS, EXPERIMENTS) + N S SAVANNAH + REACTOR, MARITIME + REACTOR, PRESSURIZED WATER

15-14661 ALSO IN CATEGORY 17

LARSON OW + AHLQUIST AJ + HENDERSON RW

RADIATION MEASUREMENTS OF THE EFFLUENT FROM THE NRX A-4 REACTOR

LOS ALAMOS SCIENTIFIC LABORATORY

LA-3583-MS +. 125 PAGES, 14 TABLES, 73 FIGURES, AUGUST 1966

MOSTLY DATA FROM 3 TESTS RUN IN MARCH 1966 (NEARLY 33-MWD OPERATION) WHERE AIR SAMPLES, FALLOUT PAPER, GAMMA DOSE AND DOSE RATE DETECTORS WERE DISPERSED UP TO 25 MILES DOWNWIND.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*EFFLUENT + \*SURVEY, RADIATION, ENVIRONMENTAL + LASL (LOS ALAMOS SCIENTIFIC LABORATORY) + NUCLEAR ROCKET

15-14698 ALSO IN CATEGORY 14

BASS RC

ADDITIONAL HUGONIOT DATA FOR GEOLOGIC MATERIALS

SANDIA CORPORATION, ALBUQUERQUE, NEW MEXICO

SC-RR-66-548 +. 29 PAGES, OCTOBER 1966

HUGONIOT EQUATION-OF-STATE DATA HAVE BEEN OBTAINED FOR SEVERAL ADDITIONAL GEOLOGIC MATERIALS. INCLUDED ARE ANDESITE, VOLCANIC BRECCIA, GRANITE, LIMESTONE, OIL SHALE, TUFF, AND ALLUVIUM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*GEOLOGICAL CONSIDERATION, GENERAL + \*PLOWSHARE PROGRAM + EARTHQUAKE, GENERAL

15-14699 ALSO IN CATEGORY 14

VIDEON FF

PROJECT PALANQUIN - STUDIES OF THE APPARENT CRATER. FINAL REPORT

ARMY ENGINEER NUCLEAR CRATERING GROUP, LIVERMORE, CALIFORNIA

PNE-904 +. 34 PAGES, APRIL 1966

DETONATION OF THE PALANQUIN DEVICE PRODUCED AN APPARENT CRATER 72.6 METERS IN DIAMETER AND 24 DEEP. THE PRODUCTION OF AN APPARENT CRATER WAS PROBABLY THE RESULT OF SCOUR BY THE ESCAPING GAS, WHICH VENTED PREMATURELY. THE ASYMMETRY OF THE CRATER AND THE SURROUNDING DISTURBANCE OF THE GROUND SURFACE INDICATE THE INFLUENCE OF GEOLOGY IN PRODUCING THE CRATER. THE LIP OF THE PALANQUIN CRATER RESULTED PRIMARILY FROM AN UPWARD DISPLACEMENT OF THE ORIGINAL GROUND SURFACE. THE DISTANCE TO THE EDGE OF THIS UPLIFTED ZONE IS ABOUT TWICE THE DEPTH OF BURST.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*GEOLOGICAL CONSIDERATION, GENERAL + \*PLOWSHARE PROGRAM

15-14702

ROOTH AH

SAFETY OF RADIOISOTOPES IN INDUSTRY

DEPARTMENT OF NATIONAL HEALTH AND WELFARE, OTTAWA, ONTARIO

NP-16352 + CNF-65-05-15-16 +. 12 PAGES, DATA FROM RADIATION PROTECTION PROGRAMS. VOLUME 3, NUMBER 5, PAGES 7-14, MAY 1965, PRESENTED AT THE CANADIAN NUCLEAR ASSOCIATION CONFERENCE IN QUEBEC CITY, P.Q., MAY 10-12, 1965

ALTHOUGH POTENTIALLY THE APPLICATION OF RADIOISOTOPES IN INDUSTRY INVOLVES A RISK OF ACCIDENTS, JUST AS WITH ANY OTHER POISON, IN PRACTICE IT HAS BEEN FOUND THAT SUCH ACCIDENTS ARE EXTREMELY RARE. THE REASONS FOR THIS ARE (1) THE HIGH DEGREE OF PUBLIC INTEREST IN RADIATION AND AWARENESS OF THE HAZARD, (2) THE SAFETY FEATURES INCORPORATED BY MANUFACTURERS

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-14702 \*CONTINUED\*

IN THE DESIGN OF RADIOISOTOPE DEVICES, (3) THE COMPREHENSIVE AND EFFECTIVE REGULATORY CONTROLS ESTABLISHED BY GOVERNMENT AGENCIES, AND (4) THE BACKUP SERVICES PROVIDED BY HEALTH DEPARTMENTS. IT IS SUGGESTED THAT THE SAFETY RECORD OF RADIOISOTOPE USES IN INDUSTRY CAN BE HELD UP AS A SHOWPIECE IN THE GENERAL FIELD OF INDUSTRIAL SAFETY.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

\*SAFETY PRINCIPLES AND PHILOSOPHY + RADIATION SAFETY AND CONTROL + RADIOISOTOPE + TRANSPORTATION AND HANDLING

15-14704

PETROW HG

A STUDY OF THE DISTRIBUTION OF RA-226, RA-228, PB-210 AND TH-228 IN BONE AND SOFT TISSUE OF RADIUM DIAL PAINTERS

NEW YORK UNIVERSITY

NYO-3086-5 +. 157 PAGES, APRIL 1966

A COMPREHENSIVE INVESTIGATION WAS MADE OF RA-226, RA-228, TH-228, AND PB-210 CONCENTRATIONS IN BONE, AND RA-226 AND PB-210 CONCENTRATIONS IN SOFT TISSUE OBTAINED FROM TWO DECEASED RADIUM-DIAL PAINTERS. BOTH PAINTERS HAD CARRIED THEIR RADIUM BURDENS FOR NEARLY 50 YEARS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*BIOLOGICAL CONCENTRATION, MAN + \*BIOCHEMICAL + DOSE CALCULATION, INTERNAL + LEAD + RADIUM + THORIUM

15-14706

AWSCHALOM M

THE USE OF THE MULTISPHERE NEUTRON DETECTOR FOR DOSIMETRY OF MIXED RADIATION FIELDS

PRINCETON-PENNSYLVANIA ACCELERATOR, PRINCETON, NEW JERSEY

PPAD-596-E + CONF-660807-6 +. 47 PAGES, AUGUST 5, 1966, PRESENTED AT THE SYMPOSIUM ON NEUTRON MONITORING FOR RADIOLOGICAL PROTECTION, VIENNA, AUGUST 29-SEPTEMBER 2, 1966

THE MULTISPHERE METHOD IS USED IN CONJUNCTION WITH A COMPUTER TO ESTIMATE THE NEUTRON FIELD PARAMETERS. SOME OF THE MANY LIMITATIONS AND UNCERTAINTIES OF THIS METHOD ARE DISCUSSED. ALTHOUGH THE METHOD OF SPECTRUM UNFOLDING IS DISCUSSED AND THE RESULTS OF UNFOLDING MONOCHROMATIC AND SOME CONTINUOUS SPECTRA ARE PRESENTED, THE ENERGY SPECTRUM IS USED ONLY TO CALCULATE TOTAL DOSE AND TOTAL DOSE EQUIVALENT, USING DATA PUBLISHED BY VARIOUS AUTHORS. FINALLY, A WORD ABOUT THE RELATIVE MERITS OF IRON AND LEAD AS SHIELDING MATERIALS FOR HIGH-ENERGY-NEUTRON SHIELDING AND COLLIMATION IS GIVEN IN THE LIGHT OF NEUTRON SPECTRA OBTAINED BY BOMBARDING AL, FE, PB, AND DEPLETED U-238 WITH GEV NEUTRONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*DOSIMETRY, GENERAL + \*INSTRUMENTATION, RADIATION MONITORING + DOSE + NEUTRON + SHIELDING

15-14726

ALSO IN CATEGORIES 17 AND 18

LAGRIJA JD

OVEREXPOSURE AT NAVAL SHIPYARD DURING DEMINERALIZER RESIN TRANSFER

LONG ISLAND NUCLEAR SERVICE CORPORATION

1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(7) PAGE 21 (FEBRUARY 13, 1967)

A LONG ISLAND NUCLEAR SERVICE CORPORATION EMPLOYEE RECEIVED AT LEAST 3-6 REMS (AS SHOWN BY A NUCLEAR CHICAGO FILM BADGE) BETWEEN NOVEMBER 27 AND DECEMBER 4 INCLUSIVE. DURING THE PERIOD 18-22, THE SHIPYARD SYSTEM SHOWED AN EXPOSURE OF 1.69 REMS. THESE EXPOSURES WERE RECEIVED BY THE CONTRACTORS SUPERVISOR DURING RESIN TRANSFERS AT PORTSMOUTH NAVAL YARD.

\*COOLANT PURIFICATION SYSTEM + \*INCIDENT, ACTUAL, HUMAN ERROR + \*PERSONNEL EXPOSURE, RADIATION + FAILURE, ADMINISTRATIVE CONTROL + FAILURE, MAINTENANCE ERROR + RESIN

15-14807

WRIGHT, CN + BUTLER HL

NEUTRON FILM MONITORING TECHNIQUES

SAVANNAH RIVER LABORATORY

DPMS-66-4 +. 5 PAGES, 2 FIGURES, APRIL 4, 1966

SPECIAL FEATURES OF NEUTRON-FILM-MONITORING TECHNIQUES AT THE SAVANNAH RIVER PLANT ARE BRIEFLY DISCUSSED. METHODS TO COMBAT TRACK ERASURE AND TRACK FADING ARE EMPHASIZED.

\*DOSIMETRY, PHOTOGRAPHIC + \*NEUTRON + \*PERSONNEL EXPOSURE, RADIATION + MONITOR, RADIATION, PERSONNEL + SAVANNAH RIVER PLANT



CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-1487P ALSO IN CATEGORIES 9 AND 17  
STATUS OF N S SAVANNAH OPERATIONS REVIEW  
FAST ANOMIC SHIP TRANSPORT INC.  
4 PAGES, DECEMBER 8, 1966, DOCKET NO. 50-238

(1) AT-SEA CHARCOAL-FILTER TESTING. THE MAST TEST DEVICE IS NOT RUGGED ENOUGH FOR USE AT SEA. FREON 112, I-127, AND HARVARD COLORIMETRIC TESTS ARE BEING EVALUATED FOR TESTS PRIOR TO PORT ENTRY. (2) RETESTS OF FILTERS WILL BE MADE FOR GASKET OR FILTER LEAKAGE. OILY RESIDUE FOUND ON ABSOLUTE FILTERS WAS NEITHER DOP NOR ROD-DRIVE OIL. (3) PROVISIONS FOR OPERATION WITH IMMOVABLE CONTROL RODS WERE MADE IN PROPOSED CHANGE 8. (4) SPECIFICATIONS WERE PREPARED FOR A RADIOLOGICAL INSTRUMENT TO PROVIDE POST-MCA RADIOLOGICAL INFORMATION TO THE MASTER. NO OTHER FACILITY IS KNOWN TO HAVE SUCH A SYSTEM. (5) REACTOR SAFETY SYSTEM REVIEW IS 25 PERCENT COMPLETE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY REVIEW (OPERATIONS, EXPERIMENTS) + CHARCOAL + FILTER + FILTER, DAMAGED + MONITOR, RADIATION, EMERGENCY + N S SAVANNAH + OPERATING EXPERIENCE + REACTOR SAFETY SYSTEM + REACTOR, MARITIME + REACTOR, PRESSURIZED WATER + SHUTDOWN MARGIN + TEST, FILTER

15-14948 ALSO IN CATEGORY 14  
SCHPEIBER B  
ECOLOGY OF ACANTHARIA IN RELATION TO SP CIRCULATION IN THE SEA. PROGRESS REPORT, DECEMBER 1, 1965 - AUGUST 31, 1966  
PARMA UNIVERSITY, ITALY  
IAFA-2677-12 +. 32 PAGES, AUGUST 1966

TAXONOMIC STUDIES WERE MADE ON COLLECTIONS FROM THE GULF STREAM AND THE SARGASSO SEA. FORTY SPECIES OF ACANTHARIA (PROTOZOA RADIOLORIA) WERE DETERMINED. THE RADIOACTIVITY OF SR-90 OF PLANKTON IN RELATION TO THE PRESENCE OR ABSENCE OF ACANTHARIA WAS STUDIED. RADIOCHEMICAL ANALYSES FOR SR-90 WERE MADE ON PLANKTON SAMPLES FROM THE LIGURIAN AND ADRIATIC SEAS. ACANTHARIA ARE PRESENT IN THE LIGURIAN SEA BUT ABSENT IN THE ADRIATIC. THIS APPEARS TO BE RELATED TO A DIFFERENCE IN ACCUMULATION CAPACITY OF SR-90. COASTAL MARINE SEDIMENTS WERE ANALYZED FOR BETA ACTIVITY. METHODS OF COLLECTING AND IDENTIFYING FORAMINIFERA IN ADRIATIC SEDIMENTS ARE DESCRIBED. MICROPALAEONTOLOGICAL STUDIES ARE BEING MADE. RESEARCH IN PROGRESS CONSISTS OF CULTURE TECHNIQUES FOR CYSTS OF ACANTHARIA AND RADIOCHEMICAL ANALYSES OF COASTAL SEDIMENTS FOR SR-90, CE-144, AND EU-155.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION NATIONAL BUREAU OF STANDARDS, U. S. DEPT. OF COMMERCE, SPRINGFIELD, VA., 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*ECOLOGICAL CONSIDERATION + \*SURFACE WATER, NUCLIDE OCCURRENCE + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + FALLOUT + OCEAN AND SEA + STRONTIUM + SURFACE WATER, SEDIMENT

15-14949 ALSO IN CATEGORY 14  
SCHULZE-RETTMER R  
TREATMENT AND DISPOSAL OF RADIOACTIVE WASTE WATER. A REVIEW.  
KERNFORSCHUNGSANLAGE, JUELICH  
JUL-359-DE +. 53 PAGES, MARCH 1966, IN GERMAN

REVIEWS THE TREATMENT AND DISPOSAL OF RADIOACTIVE WASTE WATER AT A LARGE NUMBER OF REACTOR CENTERS AND OTHER NUCLEAR INSTALLATIONS. PROCEDURES USED IN THE GERMAN REPUBLIC (BERLIN, GARCHING, GEESTHACHT, GUNDREMMINGEN, HOECHST, JUELICH, KAHL, AND KARLSRUHE), CANADA (CHALK RIVER), DENMARK (RISO), FRANCE (FONTENAY-AUX-ROSES, GRENOBLE, MARCOULE, AND SACLAY), GREAT BRITAIN (ALDERMASTON, HARWELL, WINDSCALE), ITALY (ISPRA), NETHERLANDS (PETTEN), AUSTRIA (SFIERSDORF), SWEDEN (STUDSVIK), SWITZERLAND (WURENLINGEN), AND THE UNITED STATES (ARGONNE, BROOKHAVEN DRESDEN, HANFORD, KNOLLS ATOMIC IN NEW YORK, OAK RIDGE, PENNSYLVANIA, AND SHIPPINGPORT) ARE REPORTED.

AVAILABILITY - MICROCARD EDITION INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54609

\*WASTE DISPOSAL, GENERAL + \*WASTE TREATMENT, LIQUID + CANADA + DENMARK + FRANCE + GERMANY + ITALY + NETHERLANDS + UNITED KINGDOM + UNITED STATES + WASTE MANAGEMENT

15-14950 ALSO IN CATEGORY 14  
ANNUAL REPORT FOR THE YEAR 1965  
NATIONAL RADIATION LAB., CHRISTCHURCH, NEW ZEALAND  
NP-16745 + NPL-AR-16 +. 41 PAGES, 1965

THE NATIONAL RADIATION LABORATORY OF NEW ZEALAND PROVIDES ASSISTANCE IN RADIOLOGICAL PHYSICS TO MEDICAL USERS OF X RADIATION, RA, AND SEALED AND UNSEALED RADIOISOTOPE SOURCES, AND PROVIDES RADIATION PROTECTION SERVICES FOR THE POPULATION. ACTIVITIES DURING 1965 INCLUDED THE ROUTINE MONITORING OF RADIOLOGY MEDICAL PERSONNEL AND FACILITIES, MEASUREMENTS OF THE DOSE RECEIVED BY PATIENTS DURING DIAGNOSTIC RADIOGRAPHY, AND MEASUREMENTS OF THE DOSE IN DENTAL SURGERIES. STUDIES ON ENVIRONMENTAL RADIOACTIVITY DUE TO FALLOUT OR TO NATURALLY OCCURRING PB-210, RA-226, OR RN-222, OR TO PO-210 IN TOBACCO ARE REPORTED. DATA ARE INCLUDED

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-14950 \*CONTINUED\*

ON THE CONTENT OF SR-90 IN MILK, RAIN WATER, AND SOIL, AND THE CONTENT OF CS-137 IN MILK AND WHEAT FLOUR SAMPLED DURING 1965.

AVAILABILITY - MICROCARD EDITIONS INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669

\*BIOMEDICAL + \*FALLOUT + \*NEW ZEALAND + \*SURVEY, RADIATION, ENVIRONMENTAL + BIOLOGICAL CONCENTRATION, FOOD + BIOLOGICAL CONCENTRATION, MILK + BIOLOGICAL CONCENTRATION, VEGETATION + CESIUM + DOSE MEASUREMENT, EXTERNAL + LEAD + PERSONNEL EXPOSURE, RADIATION + POLONIUM + RADIUM + RAINOUT + SODIUM + SOIL, NUCLIDE OCCURRENCE + SOURCE, RADIATION + X-RAY

15-14051

GOLUTVINA MM + YARTSEV EI + KAZAKOVA TA  
CS-137 CONTENT IN HUMAN BONE  
INSTITUT ATOMNOI ENERGII, GOSUDARSTVENNYI KOMITET PO ISPOL ZOVANIYU ATOMNOI ENERGII SSSR, MOSCOW  
NP-16265 +. 10 PAGES, 1965, IN RUSSIAN

A NEW METHOD FOR DETERMINING CESIUM-137 IN HUMAN BONES UTILIZING ASH WEIGHTS OF 60-80 G PER ANALYSIS IS PRESENTED. THE METHOD WAS APPLIED TO BONE FROM 99 MOSCOW RESIDENTS WHO DIED IN 1961, 1963, AND 1964. MOST OF THE MATERIAL WAS OF FEMORAL ORIGIN. WHILE THE CESIUM-137 CONCENTRATION IN ADULT BONE DURING 1963-1964 WAS OF THE ORDER OF 0.12 PC/G ASH, IN CHILDREN THE CORRESPONDING CONCENTRATION WAS HIGHER BY A FACTOR OF 2-4. THE RATIO OF SR-90 TO CS-137 IN ADULT BONES WAS WITHIN THE LIMITS OF 3-4.

AVAILABILITY - MICROCARD EDITIONS INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669

\*BIOLOGICAL CONCENTRATION, MAN + \*CESIUM + ANALYTICAL TECHNIQUE, SOLID + STRONTIUM + UNION OF SOVIET SOCIALIST REPUBLICS

15-14953

ALSO IN CATEGORY 14

ENVIRONMENTAL RADIOACTIVITY IN NEW ZEALAND. QUARTERLY REPORT, JAN. - MARCH, 1966  
NATIONAL RADIATION LAB., CHRISTCHURCH, NEW ZEALAND  
NP-16270 + NRL-F-20 +. 24 PAGES, FIGURES, MARCH 1966

IN SEPTEMBER 1957 THE DEPT. OF HEALTH WAS CHARGED, UNDER A CABINET DIRECTIVE, WITH THE RESPONSIBILITY FOR MONITORING ENVIRONMENTAL RADIOACTIVE CONTAMINATION IN NEW ZEALAND AND THE PACIFIC AREAS WITH WHICH IT IS ASSOCIATED. LATER, THE NETWORK OF COLLECTING STATIONS WAS ESTABLISHED TO PROVIDE THE NECESSARY SAMPLES OF AIR, WATER, SOIL AND MILK. THE COLLECTIONS AND MEASUREMENTS ARE BEING MADE ROUTINELY, AND THE RESULTS ARE PUBLISHED IN THE PRESENT SERIES OF QUARTERLY REPORTS, I.E., FALLOUT IN NEW ZEALAND, DXRL-F1 TO F9 AND NFL-F10 ONWARDS.

AVAILABILITY - MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669

\*FALLOUT + \*NEW ZEALAND + \*SURVEY, RADIATION, ENVIRONMENTAL + AIR + BIOLOGICAL CONCENTRATION, MAN + BIOLOGICAL CONCENTRATION, MILK + CESIUM + GROSS BETA + RAINOUT + SAMPLING + SOIL, NUCLIDE OCCURRENCE + STRONTIUM + SURFACE WATER, NUCLIDE OCCURRENCE + TOPOGRAPHY

15-14954

ALSO IN CATEGORY 14

KRIEGER HL + VELTEN RJ + BURMANN FJ  
RADIOISOTOPE ANALYSIS OF ENVIRONMENTAL SAMPLES. A LABORATORY MANUAL OF METHODOLOGY  
PUBLIC HEALTH SERVICE, WASHINGTON  
NP-16235 + R-59-6 +. 74 PAGES, DECEMBER 1959. REVISED FEBRUARY 1966

LABORATORY PROCEDURES FOR SEPARATING A PARTICULAR NUCLIDE FROM THE REMAINDER OF THE RADIOISOTOPES IN AN ENVIRONMENTAL SAMPLE ARE PRESENTED. FOR EACH PROCEDURE, THE METHOD CAPABILITIES REPRESENT THE STATISTICAL EVALUATION OF THE ANALYSIS, AND THE ACTUAL PROCEDURE TIME DOES NOT INCLUDE SUCH PROCESSES AS LONG EVAPORATION, DIGESTION, AND EQUIPMENT PREPARATION. DECONTAMINATION FACTORS WERE DETERMINED FOR THOSE FISSION PRODUCTS MOST LIKELY TO BE PRESENT AND ARE BASED ON THEIR SEPARATION FROM ABOUT 100,000 DPM OF THE INTERFERING NUCLIDES. INSTRUMENTATION, METHODOLOGY, AND REAGENT PREPARATION ARE DISCUSSED FOR DETERMINATIONS OF TRITIUM, SR-89, SR-90, I-131, CS-137, RA-226, RN, CA, AND STABLE SR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*ANALYTICAL TECHNIQUE, GENERAL + \*SURVEY, RADIATION, ENVIRONMENTAL + ANALYTICAL TECHNIQUE, MILK + ANALYTICAL TECHNIQUE, SOLID + ANALYTICAL TECHNIQUE, VEGETATION + ANALYTICAL TECHNIQUE, WATER + CALCIUM + CESIUM + COUNTER + INSTRUMENTATION, GENERAL + INSTRUMENTATION, NUCLEAR + INSTRUMENTATION, RADIATION MONITORING + IODINE + RADIUM + RADON + SAMPLING + STRONTIUM

15-14955

DATA FROM RADIATION PROTECTION PROGRAMS. VOL. 4, NUMBER 5  
DEPARTMENT OF NATIONAL HEALTH AND WELFARE, OTTAWA, CANADA  
NP-16192 +. 31 PAGES, MAY 1966

RESULTS ARE REPORTED FROM FALLOUT AND REACTOR-ENVIRONS MONITORING IN CANADA, APRIL 1966. DATA ARE INCLUDED ON TOTAL BETA ACTIVITY IN ATMOSPHERE AND PRECIPITATION SAMPLES COLLECTED THROUGHOUT THE COUNTRY. CS-137 AND SR-90 CONTENT IN MILK, THE SR-90 AND CA CONTENT OF WHEAT

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-14955 \*CONTINUED\*  
SAMPLES, AND RADIOACTIVITY OF THE ENVIRONS OF CANADIAN REACTORS.

AVAILABILITY - MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669

\*CANADA + \*FALLOUT + AIR + BIOLOGICAL CONCENTRATION, FOOD + BIOLOGICAL CONCENTRATION, MILK + CESIUM + GROSS RETA + RAINOUT + STRONTIUM + SURVEY, RADIATION, ENVIRONMENTAL

15-14956 ALSO IN CATEGORY 14  
HONSTEAD JF + BRADY DN  
THE UPTAKE AND RETENTION OF P-32 AND ZN-65 FROM THE CONSUMPTION OF COLUMBIA RIVER FISH  
BATTELLE-NORTHWEST, RICHLAND  
RNWL-SA-45 +. 19 PAGES, JUNE 7, 1965

THE UPTAKE AND WHOLE-BODY RETENTION OF P-32 AND ZN-65 WERE STUDIED IN SUBJECTS WHOSE DIET CONTAINED MEASURED QUANTITIES OF COLUMBIA RIVER FISH. THE P-32 AND ZN-65 CONTENT OF DUPLICATE FISH SAMPLES WAS MEASURED. AN INSTRUMENT DEVELOPED FOR MEASURING P-32 IN VIVO GAVE GOOD AGREEMENT WITH WHOLE-BODY-COUNTING DATA. PRELIMINARY RESULTS INDICATED THAT ALL SUBJECTS ABSORBED MORE THAN 95% OF THE P-32 AVAILABLE IN THE FISH, WHILE ZN-65 ABSORPTION RANGED FROM 31 TO 50% OF THAT AVAILABLE. THE EFFECTIVE HALF-LIFE OF ZN-65 WAS 150 DAYS. THERE APPEARED TO BE GREATER VARIATION IN THE METABOLIC PARAMETERS OF FRACTIONAL ABSORPTION AND EFFECTIVE HALF-LIFE IN THE CASE OF ZN-65 THAN WAS APPARENT FOR P-32.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPT. OF COMMERCE, SPRINGFIELD, VA., 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + \*ECOLOGICAL CONSIDERATION +  
\*SURFACE WATER, NUCLIDE OCCURRENCE + BATTELLE NORTHWEST + BIOLOGICAL CONCENTRATION, MAN + COUNTER, WHOLE BODY + INSTRUMENTATION, RADIATION MONITORING + PHOSPHORUS + ZINC

15-14957  
RADIOACTIVITY SURVEY DATA IN JAPAN. NO. 8  
NATIONAL INST. OF RADIOLOGICAL SCIENCES, CHIBA, JAPAN  
NP-16290 +. 20 PAGES, AUGUST 1965

CESIUM-137 AND SR-90 WERE DETERMINED IN THE TOTAL DIET, DIETARY CONSTITUENTS (RICE, WHEAT, VEGETABLES, AND POWDERED MILK), RAIN WATER, AND SOURCE WATERS FROM VARIOUS LOCATIONS IN JAPAN. FLUCTUATIONS IN DIETARY CONTENT OF SR-90 ARE CORRELATED WITH THE STATUS OF WEAPONS TESTING BETWEEN 1957 AND 1964.

AVAILABILITY - MICROCARD EDITIONS, INC., SHIPPING AND ACCOUNTING DEPT., WEST SALEM, WISCONSIN 54669

\*JAPAN + \*SURVEY, RADIATION, ENVIRONMENTAL + BIOLOGICAL CONCENTRATION, FOOD + BIOLOGICAL CONCENTRATION, MILK + CESIUM + FALLOUT + RAINOUT + STRONTIUM + SURFACE WATER, NUCLIDE OCCURRENCE

15-14958  
JORDAN JM  
LABORATORY SIMULATION OF WAVES GENERATED BY UNDERWATER NUCLEAR EXPLOSIONS  
NAVAL CIVIL ENGINEERING LAB., PORT HUENEME  
AD-636408 + R-424 +. 51 PAGES, REFERENCES, JUNE 1966

THE KINEMATICS OF SURFACE GRAVITY WAVES PRODUCED IN WATER 2.5-FT DEEP IN A BASIN 90 FT SQUARE BY A SUDDEN, LOCALIZED DISTURBANCE WAS STUDIED THROUGH MEASUREMENTS OF HEIGHT AND PERIOD. THE WAVES WERE GENERATED BY THE QUICK WITHDRAWAL OR IMMERSION, OR COMBINATIONS OF THESE ACTIONS, OF A 14-FT-DIAMETER HALF-PARABOLOID PLUNGER LOCATED NEAR THE MID-POINT OF ONE WALL OF THE BASIN. SMALLER PLUNGERS OF DIVERSE SHAPES WERE ALSO USED. MEASUREMENTS WERE MADE BOTH IN THE CONSTANT-DEPTH PORTION OF THE BASIN AND OVER A BEACH WITH A UNIFORM SLOPE OF 1 TO 13.6 WHICH WAS DIRECTLY OPPOSITE THE PLUNGER.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPT. OF COMMERCE, SPRINGFIELD, VA., 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*CIVIL DEFENSE + NUCLEAR DETONATION + SURFACE WATER, PROPERTY

15-14959  
MAREI AN + KNIZHNIKOV VA + YARTSEV EI  
INVESTIGATION OF THE USE OF EXTRACTED TEETH AS A METHOD FOR MASS CONTROL OF SR-90 CONTENT IN MEN  
INSTITUT ATOMNOI ENERGII, GOSUDARSTVENNYI KOMITET PO ISPOL ZOVANIYU ATOMNOI ENERGII SSSR, MOSCOW  
NP-16257 +. 15 PAGES, 1965

A NEW METHOD FOR SR-90 DETERMINATION WAS DEVELOPED BY USING TEETH EXTRACTED IN LARGE NUMBERS AT STOMATOLOGICAL INSTITUTIONS. ALTHOUGH THE TEETH DIFFER FROM BONES GENETICALLY AND STRUCTURALLY, EXTENSIVE TESTS SHOWED THAT THE ACCUMULATION OF SR-90 IN HUMAN TEETH FOLLOWS THE SAME REGULARITIES AS ENCOUNTERED IN COMPACT, MINERAL-CONTAINING BONES OF THE SKELETON. THE RATIO BETWEEN SR-90 IN TEETH AND BONES SHOWS A STABLE RATIO DURING UPTAKE THAT DOES NOT DEPEND ON AGE NOR GEOGRAPHIC REGION.

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-14959 \*CONTINUED\*  
AVAILABILITY - MICROCAP EDITIONS, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669  
\*BIOLOGICAL CONCENTRATION, MAN + \*BIOMEDICAL + \*STRONTIUM

15-14960  
GARRETT CW  
ON THE ANGLE AND ENERGY DISTRIBUTION OF PHOTONS PRODUCED BY A REAL AND TWO SIMULATED FALLOUT FIELDS  
ARMED FORCES RADIOBIOLOGY RESEARCH INST., BETHESDA  
AD-640888 + AFRR-SP-66-1 +. 37 PAGES, 12 FIGURES, 5 REFERENCES, JULY 1966

A QUALITATIVE DISCUSSION IS GIVEN OUTLINING THE NEED TO STUDY RADIATION FIELDS OF MILITARY INTEREST, NOTING THE PARAMETERS INVOLVED IN DEFINING SUCH FIELDS, AND DESCRIBING SOME METHODS BY WHICH THESE PARAMETERS MAY BE EVALUATED. A DISCUSSION OF CHARACTERISTICS OF THE RADIATION FIELDS FOR EACH OF THE FOLLOWING FIVE GEOMETRIES ASSOCIATED WITH FALLOUT IS PRESENTED - (1) IN AIR 3 FT ABOVE A FALLOUT FIELD, (2) AT THE MIDPOINT OF A FOXHOLE IN A FALLOUT FIELD, (3) IN AIR 3 FT ABOVE THE GROUND AND 200 FT FROM A CO-60 SOURCE, (5) AT THE CENTRAL POINT OF A CONCEPTUAL, COMPACT, ADVANCED FALLOUT SIMULATOR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*FALLOUT + \*MILITARY CONSIDERATION + \*RADIATION MODEL + DOSE + PERSONNEL EXPOSURE, RADIATION + RADIATION DAMAGE + RADIATION EFFECT

15-14962  
MANUAL OF STANDARD PROCEDURES.  
HEALTH AND SAFETY LAB., NEW YORK OPERATIONS OFFICE  
NYO-4700(REV)(SUPPL. 3) +. 57 PAGES, FIGURES, TABLES, SEPTEMBER 1966

ADDITIONS AND CORRECTIONS MADE TO THE HEALTH AND SAFETY LABORATORY MANUAL OF STANDARD PROCEDURES INCLUDE - CHEMICAL PROCEDURES, FALLOUT METHODS, SPECIFICATIONS, SEMICONDUCTOR DETECTORS, ALPHA AND BETA EMITTERS, AEROSOL PROPERTIES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*AEROSOL PROPERTIES + \*ANALYTICAL TECHNIQUE, GENERAL + \*PROCEDURES AND MANUALS + ANTIMONY + COUNTER + FALLOUT + FILTER, PAPER + LEAD

15-14963  
DE RAERE GC + DE PROOST MJ + VAN ELSSEN TK  
HIGH-LEVEL GAMMA DOSIMETRY USING POTASSIUM BICHROMATE  
CENTRE D'ETUDE DE L'ENERGIE NUCLEAIRE, BRUSSELS  
BLG-407 + CONF-661005-2 +. 9 PAGES, 4 FIGURES, 2 REFERENCES, FROM SYMPOSIUM ON SOLID-STATE AND CHEMICAL RADIATION DOSIMETRY, VIENNA, AUSTRIA, OCT. 1966

A CHEMICAL DOSIMETER USING K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub> IN A DILUTE H<sub>2</sub>SO<sub>4</sub> IS DESCRIBED. THE DECREASE IN OPTICAL DENSITY CAUSED BY THE REDUCTION OF DICHROMATE IS MEASURED SPECTROPHOTOMETRICALLY AT A WAVELENGTH OF 350 OR 440 NM, DEPENDING ON THE INITIAL K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub> CONCENTRATION. THE G VALUES ARE INDEPENDENT OF DOSE RATE, BUT THEY DEPEND ON THE H CONCENTRATION. THE POTASSIUM DICHROMATE DOSIMETER USABLE FOR ABSORBED DOSES BETWEEN 100,000 AND 3,000,000 RADS PERMITS THE DETERMINATION OF GAMMA FLUXES UP TO 50,000,000 RADS/HR.

AVAILABILITY - MICROCAP EDITIONS, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669

\*DOSIMETRY, GENERAL + \*INSTRUMENTATION, RADIATION MONITORING + DOSE + GAMMA

15-14965 ALSO IN CATEGORY 14  
ANNUAL REPORT, 1964-1965.  
AGRICULTURAL RESEARCH COUNCIL, WANTAGE  
ARCRL-14 +. 90 PAGES, SEPTEMBER 1965

DATA ARE PRESENTED ON THE RADIOACTIVITY DUE TO FALLOUT IN THE HUMAN DIET IN GREAT BRITAIN IN 1964 AND 1965. EMPHASIS IS PLACED ON THE CONTENT OF CS-137 AND SR-90 IN REPRESENTATIVE FOODS AND TOTAL DIET. RESULTS ARE INCLUDED FROM STUDIES ON THE BEHAVIOR OF IONS IN SOIL AND THE PHYSIOLOGY OF THEIR ABSORPTION AND DISTRIBUTION IN PLANTS, WITH EMPHASIS ON THE MOVEMENT OF CS-137 AND SR-90 IN SOIL AND THE EFFECT OF THEIR UPTAKE BY PLANTS ON THEIR CONTENT IN MILK.

AVAILABILITY - BRITISH INFORMATION SERVICE, 845 THIRD AVE., NEW YORK 10022

\*BIOLOGICAL CONCENTRATION, FOOD + \*BIOLOGICAL CONCENTRATION, MILK + \*FALLOUT + \*SURVEY, RADIATION, ENVIRONMENTAL + BIOLOGICAL CONCENTRATION, MAN + BIOLOGICAL CONCENTRATION, VEGETATION + CESIUM + ECOLOGICAL CONSIDERATION + SOIL, NUCLIDE OCCURRENCE + SOIL, PROPERTY + SOIL, RADIONUCLIDE MOVEMENT THROUGH + STRONTIUM + TRACER, RADIOACTIVE + UNITED KINGDOM

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-14966 ALSO IN CATEGORY 14

SCHPEITER B  
ECOLOGY OF ACANTHARIA IN RELATION TO SR CIRCULATION IN THE SEA  
ISTITUTO DI ZOOLOGIA E ANATOMIA COMPARATA, PARMA UNIVERSITY, ITALY  
TID-22193 +. 14 PAGES, JULY 1965

PROGRESS IS REPORTED IN AN ECOLOGICAL STUDY OF PLANKTON IN THE MEDITERRANEAN SEA AND ATLANTIC OCEAN. EMPHASIS WAS PLACED ON THE RADIOACTIVITY OF ACANTHARIA IN RELATION TO THEIR CAPACITY TO REMOVE SR-90 FROM SEA WATER. DATA ARE INCLUDED ON THE SR-90 CONTENT IN SAMPLES OF PLANKTON, SEA WATER, BONES OF CUTTLE FISH, MUSSEL SHELL, MARINE COASTAL SEDIMENTS, AND FALLOUT RADIOACTIVITY IN RAIN WATER DURING THE FIRST HALF OF 1965.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., 22151 \$3.00 COPY, \$0.65 MICROFICHE

\*BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + \*ECOLOGICAL CONSIDERATION + \*OCEAN AND SEA + FALLOUT + RAINOUT + STRONTIUM + SURFACE WATER, NUCLIDE OCCURRENCE + SURFACE WATER, SEDIMENT

15-14967

AYRES, PU  
ENVIRONMENTAL EFFECTS OF NUCLEAR WEAPONS.  
HUDSON INST., INC., HARMON-ON-HUDSON, N. Y.  
HI-518-PR(VOL. 1) +. 192 PAGES, TABLES, REFERENCES, DECEMBER 1, 1965

DISCUSSION IS PRESENTED ON THE FOLLOWING - PRIMARY RADIOLOGICAL EFFECTS (INCLUDING RADIATION DAMAGE MECHANISMS, FALLOUT, PLANTS, INSECTS, VERTEBRATES), PRIMARY THERMAL EFFECTS (INCLUDING IGNITION AND FIRE SPREAD AND CONFLAGRATIONS AND FIRESTORMS), ATMOSPHERIC EFFECTS, AND SECONDARY DAMAGE MECHANISMS (INCLUDING EPIDEMICS OF HUMANS, PEST OUTBREAKS, ECOSYSTEMS, FROSTING AND FLOODING, AND BALANCE OF NATURE).

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*CIVIL DEFENSE + \*ECOLOGICAL CONSIDERATION + \*THERMAL CONSIDERATION + FALLOUT + NUCLEAR DETONATION + RADIATION DAMAGE + RADIATION EFFECT

15-14968 ALSO IN CATEGORY 14

AYRES PU  
ENVIRONMENTAL EFFECTS OF NUCLEAR WEAPONS  
HUDSON INST., INC., HARMON-ON-HUDSON, N. Y.  
HI-518-PR(VOL. 2) +. 95 PAGES, REFERENCES, DECEMBER 1, 1965

INTERACTIONS OF RADIOLOGICAL, THERMAL, METEOROLOGICAL, AND SECONDARY EFFECTS FROM NUCLEAR WEAPONS WITH POST-ATTACK PROBLEMS ARE DISCUSSED, PARTICULARLY IN CONNECTION WITH AGRICULTURE. THE POTENTIAL CONFLICTS BETWEEN SHORT-TERM AND LONG-TERM OBJECTIVES ARE STRESSED. A NUMBER OF SPECIFIC COUNTERMEASURES ARE LISTED AND DISCUSSED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*CIVIL DEFENSE + \*DECONTAMINATION + \*ECOLOGICAL CONSIDERATION + FALLOUT + METEOROLOGY + NUCLEAR DETONATION + RADIATION DAMAGE + RADIATION EFFECT + THERMAL CONSIDERATION

15-14969

RAUMGARTNER WV + BRACKENBUSH LW + UNRUH CM  
A NEW NEUTRON AND HIGH ENERGY PARTICLE DOSIMETER FOR MEDICAL DOSIMETRY APPLICATIONS.  
BATTELLE-NORTHWEST, RICHLAND  
BNWL-SA-619 + CONF-661005-1 +. 15 PAGES, 5 REFERENCES, FROM SYMPOSIUM ON SOLID-STATE AND CHEMICAL RADIATION DOSIMETRY, VIENNA, AUSTRALIA, JULY 20, 1966

PRINCIPLES, DESIGN, AND PERFORMANCE OF SOLID-STATE TRACK DOSIMETERS ARE DISCUSSED. FOR NEUTRON DETECTION, A STRIP OF PLASTIC IS USED WITH A FISSIONABLE FOIL ATTACHED TO IT. NEUTRONS INDUCE FISSION IN THE FOIL, AND THE FISSION TRACKS IN THE PLASTIC CAN BE DETECTED BY USING ETCHANTS WHICH PREFERENTIALLY ATTACK THE DAMAGED AREAS. FOR PROTON DETECTION, PROTON-FISSIONABLE FOILS CAN BE USED. ALPHA PARTICLES AND HIGHER NUCLEI LEAVE THEIR OWN TRACKS DIRECTLY IN APPROPRIATE PLASTIC DETECTORS. HOWEVER, LARGE FLUXES AND DOSES OF PARTICLES OR PHOTONS, WHICH DO NOT PROVIDE A MINIMUM CRITICAL RATE OF ENERGY LOSS IN TRAVERSING A MATERIAL, DO NOT LEAVE TRACKS. COBALT-60 GAMMA RADIATION DOSES TO 100,000 R HAVE NOT PRODUCED OBSERVABLE DAMAGE. FLAT, CYLINDRICAL, AND SPHERICAL DETECTOR DESIGNS ARE DESCRIBED. METHODS OF DETERMINING DOSE FROM EXPOSED DEVICES ARE GIVEN.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*DOSIMETRY, GENERAL + \*INSTRUMENTATION, RADIATION MONITORING + ALPHA EMITTER + COBALT + DOSE + NEUTRON + SOLID STATE DEVICE

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-14970 ALSO IN CATEGORY 14  
KRUMHOLTZ LA  
A RADIOECOLOGICAL STUDY OF THE BIOTA OF DOE RUN, MEADE COUNTY, KENTUCKY. FINAL REPORT  
LOUISVILLE UNIVERSITY  
TID-22815 +. 92 PAGES, 1965

RESULTS ARE REPORTED FROM A STUDY MADE BETWEEN MAY 1959 AND OCTOBER 1964 ON THE GENERAL ECOLOGY OF DOE RUN, MEADE COUNTY, KENTUCKY. THE DATA DEMONSTRATE THE OVERALL ACCUMULATION OF RADIOACTIVITY FROM FALLOUT BY VARIOUS COMPONENTS OF THE ECOLOGICAL SYSTEM. A MARKED INCREASE IN THE AMOUNT OF RADIONUCLIDES ACCUMULATED BY ALL ORGANISMS WAS OBSERVED FOLLOWING INITIATION OF THE RUSSIAN NUCLEAR TESTS IN SEPTEMBER 1961. MEASUREMENTS WERE MADE OF GROSS BETA RADIOACTIVITY, CS-137, AND SP-90 IN SAMPLES OF ANIMALS, PLANTS, AND WATER.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*ECOLOGICAL CONSIDERATION + \*FALLOUT + \*SURVEY, RADIATION, ENVIRONMENTAL + BIOLOGICAL CONCENTRATION, ANIMAL + BIOLOGICAL CONCENTRATION, VEGETATION + CESIUM + GROSS BETA + STRONTIUM + SURFACE WATER, NUCLIDE OCCURRENCE

15-14971  
MARINE RADIOBIOLOGY. ANNUAL REPORT FOR 1963  
COMITATO NAZIONALE PER L'ENERGIA NUCLEARE  
RT/BIO(65)1 + EUR - 2239.E +. 20 PAGES, REFERENCES, 1965

DEVELOPMENTS ARE REPORTED FOR STUDIES ON THE FOLLOWING - DISTRIBUTION OF INORGANIC AND ORGANIC SUBSTANCES IN THE ECOSYSTEM AND ITS COMPONENTS, ANALYSIS OF INORGANIC AND ORGANIC SUBSTANCES IN EXPERIMENTAL ORGANISMS AND THEIR MEDIUM, DISTRIBUTION OF PHYTOPLANKTON IN THE ECOSYSTEM AND EXPERIMENTS WITH RADIOISOTOPES ON PREDOMINANT PHYTOPLANKTON SPECIES, DISTRIBUTION OF ZOOPLANKTON AND ITS POSITION IN THE FOOD-CHAIN AND EXPERIMENTS WITH RADIOISOTOPES ON PREDOMINANT ZOOPLANKTON SPECIES, DISTRIBUTION OF HETEROTROPH MICROORGANISMS AND THEIR FUNCTION IN THE MARINE ECOSYSTEM, AND EXPERIMENTS WITH RADIOISOTOPES ON HETEROTROPH MICROORGANISMS. SPECIAL DEVICES USED ARE DESCRIBED.

AVAILABILITY - MICROCARD EDITIONS, INC. ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669.

\*ECOLOGICAL CONSIDERATION + \*OCEAN AND SEA + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS

15-14972  
LAUGHLIN JS  
BIOLOGICAL AND CLINICAL DOSIMETRY. ANNUAL PROGRESS REPORT, JULY 1, 1965 - JUNE 30, 1966  
SLOAN-KETTERING INST. FOR CANCER RESEARCH, NEW YORK  
NYO-3510-2 +. 32 PAGES, JULY 7, 1966

A MICROCALORIMETER WAS USED TO VERIFY AND DEFINE THE EXTENT OF THE ENERGY DEPENDENCE OF LITHIUM FLUORIDE DOSIMETERS FOR HIGH ENERGY RADIATION. FURTHER COMPARISON OF CALORIMETRIC AND IONOMETRIC DETERMINATIONS OF ABSORBED DOSE WERE UNDERTAKEN USING AN EXTRAPOLATION CHAMBER, AND SOME INHERENT PROBLEMS IN THIS COMPARISON WERE INVESTIGATED. EXTENSIVE MEASUREMENTS OF THE RADIATION FIELD AROUND VARIOUS ISOTOPE SOURCES USED IN IMPLANT THERAPY WERE PERFORMED, AND THE DIFFERENCES BETWEEN THEORETICAL AND ACTUAL DOSE DISTRIBUTIONS IN AN IMPLANT WERE INVESTIGATED BY USE OF A COMPUTER. A TOTAL INTENSITY CALORIMETER PROVIDING ABSOLUTE DOSE MEASUREMENTS FOR THE FIELD EMISSION ELECTRON GENERATOR WAS CONSTRUCTED AND PRELIMINARY DATA OBTAINED. A DEVICE BASED ON THE COMBINATION OF A PLASTIC SCINTILLATOR AND A PAIR OF SILICON DIODES IS BEING DEVELOPED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*BIOMEDICAL + \*DOSIMETRY, GENERAL + \*INSTRUMENTATION, RADIATION MONITORING + COMPUTER PROGRAM + DOSE + DOSE MEASUREMENT, EXTERNAL + DOSE MEASUREMENT, INTERNAL + DOSIMETRY, THERMOLUMINESCENCE + SOLID STATE DEVICE

15-14973  
AUXIER JA  
MULTILABORATORY INTERCOMPARISONS OF NEUTRON DOSIMETRY SYSTEMS  
OAK RIDGE NATIONAL LABORATORY  
ORNL-P-2377 + SM-76/12 + CONF-660807-3 +. 12 PAGES, 3 FIGURES, 2 TABLES, 6 REFERENCES, FROM SYMPOSIUM ON NEUTRON MONITORING FOR RADIOLOGICAL PROTECTION, VIENNA, AUSTRIA, 1965

A MULTILABORATORY INTERCOMPARISON OF NEUTRON DOSIMETRY SYSTEMS USED AT 7 LABORATORIES AND PRODUCTION PLANTS WAS MADE AFTER TWO EXPOSURES DURING WHICH THE HEALTH PHYSICS RESEARCH REACTOR (HPRR) WAS USED IN A BURST MADE TO SIMULATE ACCIDENTAL NUCLEAR EXCURSIONS. DURING THE FIRST EXPOSURE, A LIVE BURRO WAS POSITIONED ALONG THE ARC TO SERVE AS A PHANTOM, COMPLETE WITH A HETEROGENEOUS AND CIRCULATING SOURCE OF BLOOD Na. ON THE SECOND RUN, CYLINDRICAL CONTAINERS OF SALINE SOLUTION WERE USED FOR THIS PURPOSE. RESULTS OF DOSIMETRY MEASUREMENTS WERE TABULATED AND COMPARED, AND THE RELATIVE REPRODUCIBILITY OF RESULTS WAS TESTED BY A SECOND TEST SERIES APPROXIMATELY 6 MO LATER. THE PERFORMANCE OF THE VARIOUS DOSIMETER

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-14973 \*CONTINUED\*  
SYSTEMS USED FOR NEUTRON AND GAMMA DOSIMETRY ARE DISCUSSED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*DOSIMETRY, GENERAL + \*NEUTRON + GAMMA + PHANTOM, HUMAN BODY + RADIATION SAFETY AND CONTROL

15-14974 ALSO IN CATEGORY 14  
STUDIES OF OCEANOGRAPHIC FACTORS AFFECTING THE USE OF NUCLEAR POWER SOURCES IN OR ADJACENT TO THE SEA.  
PROGRESS REPORT, OCTOBER 1, 1965 - JUNE 30, 1966  
JOHNS HOPKINS UNIVERSITY  
NYO-3109-19 +. 9 PAGES, JUNE 1966

PRESENT OCEANOGRAPHIC KNOWLEDGE WAS USED TO DEVELOP EQUATIONS FOR USE IN THE EVALUATION OF A SERIES OF OFFSHORE SITES ALONG THE CONTINENTAL SLOPE OF THE ATLANTIC OCEAN OFF THE U.S. AS POSSIBLE LOCATIONS FOR SNAP-TYPE POWER SOURCES ON THE OCEAN BOTTOM. EMPHASIS WAS PLACED ON STUDIES ON THE EFFECTS OF HEATED WATER DISCHARGED INTO THE ESTUARINE OR COASTAL ENVIRONMENT ON PHYSICAL PROCESSES OF MOVEMENT AND DISPERSION OF RADIOACTIVE MATERIALS AND ALSO ON EXCESS HEAT. THE STUDIES LED TO THE CONCLUSION THAT A PROMISING METHOD FOR PROVIDING INITIAL MECHANICAL DILUTION OF HEATED EFFLUENT WOULD BE THE DISCHARGE OF THE EFFLUENT AS A JET HAVING EXCESS MOMENTUM AS COMPARED TO THE RECEIVING WATERS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*OCEAN AND SEA + \*SNAP, GENERAL (SYSTEMS FOR NUCLEAR AUX. POWER) + SURFACE WATER, PROPERTY + THERMAL CONSIDERATION

15-14975  
HEYSEL RM + BRILL AB + DENMAN FD  
UTILIZATION OF A LOW LEVEL WHOLE BODY COUNTING FACILITY IN THE MEASUREMENT OF ELECTROLYTE COMPOSITION AND METABOLISM IN MAN. PROGRESS REPORT 1966  
VANDEBILT UNIVERSITY, TENNESSEE  
OPO-2401-R +. 70 PAGES, OCTOBER 28, 1966

THE DESIGN AND CALIBRATION OF A WHOLE-BODY SCANNER AND APPLICATIONS OF COMPUTER METHODS IN ANALYSIS OF GAMMA SPECTRA DATA ARE DESCRIBED. APPLICATIONS OF THE WHOLE-BODY COUNTER REPORTED INCLUDE MEASUREMENTS OF THE WHOLE-BODY RETENTION OF CS-132 IN MAN FOLLOWING INGESTION OF APPROXIMATELY 2 MICROCURIES, THE SIMULTANEOUS MEASUREMENTS OF BODY WATER (USING TRITIATED WATER), EXTRACELLULAR SPACE (USING PR-82), BODY SODIUM (USING NA-24 OR NA-22), AND BODY POTASSIUM (USING K-42) IN PATIENTS BY COMPUTER ANALYSIS OF THE GAMMA SPECTRA OBTAINED FROM THE WHOLE-BODY, PLASMA, AND EXCRETION PRODUCTS, PLUS THE DETERMINATION OF BLOOD VOLUME AND EXTRACELLULAR FLUID VOLUMES IN THE STEADY STATE, NON-STEADY STATE, AND IN SHOCKED DOGS USING S-35, I-131-TAGGED-SERUM ALBUMIN AND CR-51 AS TRACERS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*BIOMEDICAL + \*COUNTER, WHOLE BODY + CESIUM + COMPUTER PROGRAM + GAMMA + INSTRUMENTATION, RADIATION MONITORING + TRACER, RADIOACTIVE

15-14976 ALSO IN CATEGORY 14  
MADSHUS K  
THE CORRELATION BETWEEN THE PRECIPITATION AND THE CONCENTRATION OF CS-137 IN COWS MILK IN NORWAY  
NORSK HYDROS INST. FOR CANCER RESEARCH, OSLO  
NYO-3364-22 +. 8 PAGES, FIGURES, 1966

THE RELATIONSHIP OF PRECIPITATION AND THE CONTENT OF CS-137 IN MILK IN NORWAY WAS DETERMINED DURING THE SPRING MONTHS OF 1966. DATA ARE COMPARED WITH RESULTS OF MEASUREMENTS MADE DURING 1965.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*BIOLOGICAL CONCENTRATION, MILK + \*CESIUM + FALLOUT + NORWAY + RAINOUT

15-14977  
KAMAEV AV + KUZNETSOV FM + VLADYKOV GM + DUBOVSKII BG  
MAINTENANCE OF REACTORS SAFETY WHEN WORKING WITH FISSIONABLE MATERIALS  
POWER ENGINEERING PHYSICS INSTITUTE, OBNINSK, USSR  
JPRS-36824 + TT-66-33254 +. 14 PAGES, 1965

FACTORS NECESSARY FOR MAINTAINING REACTOR SAFETY WHEN WORKING WITH URANIUM OF UNKNOWN CONCENTRATION AND LARGE AMOUNTS OF URANIUM SOLUTIONS ARE DISCUSSED. THE LIMITING DIMENSIONS OF VESSELS CONTAINING URANIUM SHOULD BE LESS THAN THE MINIMUM CRITICAL VALUES OF THESE DIMENSIONS. THE VOLUME OF URANIUM SOLUTION MUST NOT EXCEED THE RESPECTIVE MINIMUM CRITICAL VOLUMES FOR METALLIC URANIUM OR SOLUTION OF URANIUM. BORON AND CADMIUM ARE EMPLOYED AS

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-14977 \*CONTINUED\*

NEUTRON ABSORBERS WHEN STOPPING AND PROCESSING LARGE QUANTITIES OF FISSIONABLE MATERIALS. STUDIES ARE BEING MADE ON THE EFFECTIVENESS OF NEUTRON ABSORBERS IN AQUEOUS SOLUTIONS OF URANYL NITRATE WITH 90% ENRICHMENT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*CRITICALITY SAFETY + \*UNION OF SOVIET SOCIALIST REPUBLICS + \*URANIUM + RADIATION SAFETY AND CONTROL + REACTOR SAFETY SYSTEM + SAFETY PRINCIPLES AND PHILOSOPHY

15-14994

CLOSSER WH + SWARTZ JM + THURSTON MO  
SILICON DIODE FAST NEUTRON DOSIMETER. PHASE III. REVERSE-RECOVERY LIFETIME AS A FUNCTION OF TEMPERATURE  
PHYLATRON CORP., COLUMBUS  
AD-642582 + NDL-TR-83-3 +. 33 PAGES, FIGURES, TABLES, 6 REFERENCES, NOVEMBER 1966

P-I-N WIDE-BASE DIODES WERE MADE FROM N- AND P-TYPE, FLOAT-ZONE SILICON. THE DIODES WERE IRRADIATED WITH FAST NEUTRONS AND ANNEALED AT 58, 100, 150, AND 200 C FOR 175 HR AT EACH STEP. REVERSE-RECOVERY LIFETIME AS A FUNCTION OF TEMPERATURE WAS TAKEN BEFORE AND AFTER IRRADIATION AND AFTER EACH ANNEAL. THE TEMPERATURE DEPENDENCE OF THE LIFETIME INDICATED VERY SHALLOW LEVELS NOT IN AGREEMENT WITH THE EXISTING LITERATURE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*DOSIMETRY, GENERAL + \*NEUTRON + FAST NEUTRON + INSTRUMENTATION, RADIATION MONITORING

15-14995

HAMMOND SE + HILL JF  
ROCKY FLATS RESPIRATOR-FITTING PROGRAM  
DOW CHEMICAL COMPANY  
RFP-P10 +. 4 PAGES, 8 FIGURES, NOVEMBER 28, 1966

REVIEWS THE EXPERIENCE OF FITTING, IN THE FIELD, OVER 2000 WORKERS WITH SEVERAL DIFFERENT TYPES OF HALF-MASK RESPIRATORS. PROCEDURES, NUMBERS RECEIVING A SATISFACTORY FIT, AND AREAS OF POSSIBLE RESPIRATOR IMPROVEMENT ARE DISCUSSED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*INHALATION + \*PERSONNEL PROTECTIVE DEVICE + PERSONNEL EXPOSURE, RADIATION + RADIATION SAFETY AND CONTROL

15-14996

SANDALLS FJ  
THE DETERMINATION OF PROTACTINIUM-231 IN URINE  
ATOMIC ENERGY RESEARCH ESTABLISHMENT, HARWELL  
AERF-R-4911 +. 13 PAGES, 3 FIGURES, 4 TABLES, 15 REFERENCES, DECEMBER 1965

A SENSITIVE METHOD FOR DETERMINING PA-231 IN URINE IS DESCRIBED. THE URINE IS WET-ASHED WITH NITRIC ACID AND DISSOLVED IN AN AQUEOUS MIXTURE OF HF AND HCl. AFTER SATURATING THE SOLUTION WITH ALUMINUM CHLORIDE, THE PROTACTINIUM IS EXTRACTED INTO DI-ISOBUTYL KETONE. A SOLUTION OF HYDROCHLORIC AND HYDROFLUORIC ACID IS THEN USED TO EXTRACT THE PROTACTINIUM FROM THE KETONE. THE HF-HCl SOLUTION IS EVAPORATED TO DRYNESS, THE RESIDUE TAKEN UP IN HCl, AND THE PA ELECTRODEPOSITED ONTO PLATINUM FROM A SOLUTION OF NH<sub>4</sub>Cl. AN OVERALL RECOVERY OF 82 PLUS-OR-MINUS 5% IS OBTAINED, AND DECONTAMINATION FROM OTHER ALPHA EMITTERS IS HIGH.

AVAILABILITY - HER MAJESTY'S STATIONERY OFFICE, LONDON

\*ANALYTICAL TECHNIQUE, URINE + \*PROTACTINIUM + BIOLOGICAL CONCENTRATION, MAN

15-14997

WILTSHIRE LL + OWEN WL  
THREE TESTS OF FIREHOSING TECHNIQUE AND EQUIPMENT FOR THE REMOVAL OF FALLOUT FROM ASPHALT STREETS AND ROOFING MATERIALS  
NAVAL RADIOLOGICAL DEFENSE LAB., SAN FRANCISCO  
AD-640491 + USNRDL-TR-1048 +. 70 PAGES, TABLES, JANUARY 17, 1966

THIS REPORT DESCRIBES THREE FIREHOSING EXPERIMENTS. FROM THEM IT WAS CONCLUDED THAT - (1) EFFECTIVENESS OF RECLAMATION BY FIREHOSING IMPROVES AS SURFACE ROUGHNESS DECREASES AND PARTICLE SIZE INCREASES. (2) REMOVAL EFFECTIVENESS IMPROVES WITH EFFORT, BUT THE RESIDUAL MASS IS NOT SIGNIFICANTLY REDUCED AFTER THE SECOND PASS. (3) THE FLARE NOZZLE IS CONSISTENTLY MORE EFFECTIVE THAN THE PIPE NOZZLE IN CLEANING ROOF SURFACES. THIS IS NOT THE CASE FOR PAVED SURFACES. (4) RESULTS FROM FULL-SCALE TESTS SHOW THAT THE REMOVAL EFFECTIVENESS CAN NEVER EQUAL THAT ACHIEVED UNDER THE LESS REALISTIC OPERATING CONDITIONS REPRESENTED BY SMALLER ENGINEERING-SCALE TESTS. (5) Rn2 EXPOSURE-REDUCTION FACTORS ARE NOT SIGNIFICANTLY AFFECTED BY SURFACE ROUGHNESS, PARTICLE SIZE, OR MASS LOADING.



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ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-14997 \*CONTINUED\*

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*CIVIL DEFENSE + \*DECONTAMINATION + FALLOUT

15-14998

SPLICHAL WF  
PLUTONIUM WOUND MONITOR  
SAVANNAH RIVER LABORATORY

DP-1759 +. 14 PAGES, 8 FIGURES, SEPTEMBER 1966

A PORTABLE LIGHT-WEIGHT MONITOR WAS DEVELOPED TO MEASURE PLUTONIUM IN WOUNDS. TWO SCINTILLATION DETECTORS WERE DESIGNED. ONE DETECTS 17-KEV X RAYS FROM PLUTONIUM, WITH A MINIMUM DETECTION LEVEL OF 0.3 NANOCURIE OF PU-239 UNDER 1/4-IN. OF TISSUE. THE OTHER DETECTOR IS SENSITIVE TO ALPHA PARTICLES AND IS USED TO LOCATE PLUTONIUM ON THE SKIN, IN OR NEAR THE WOUND. PLUG-IN CIRCUIT CARDS FACILITATE REPAIR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*INSTRUMENTATION, RADIATION MONITORING + \*MONITOR, RADIATION, PERSONNEL + PLUTONIUM + RADIATION SAFETY AND CONTROL

15-14999

SWARTZ JM + CHASE BH + THURSTON OM  
SILICON DIODE FAST NEUTRON DOSIMETER. PHASE 1 - EVALUATION OF RESPONSE VERSUS STARTING MATERIAL  
PHYLATRON CORPORATION  
AD-641843 + NDL-TR-83-1 +. 45 PAGES, OCTOBER 1966

THIS REPORT PRESENTS THE RESULTS OBTAINED FROM AN INVESTIGATION OF THE EFFECTS OF N- OR P-TYPE DOPING, RESISTIVITY, AND METHOD OF CRYSTAL FABRICATION (PULLED OR FLOAT-ZONE) ON THE RESPONSE OF SILICON-DIODE FAST-NEUTRON DOSIMETERS. THE HIGH-LEVEL LIFETIME, THE REVERSE-RECOVERY LIFETIME, AND THE CURRENT-VOLTAGE CHARACTERISTIC WERE MEASURED FOR DIODES MADE FROM EACH TYPE OF STARTING MATERIALS, AND THESE PARAMETERS WERE THEN FOLLOWED AS THE DIODES WERE EXPOSED TO VARIOUS NEUTRON FLUENCES. PRELIMINARY RESULTS OF ISOCRONAL ANNEALING EXPERIMENTS AND THE EFFECTS OF MAINTAINING THE DIODES AT LOW TEMPERATURES DURING IRRADIATION ARE ALSO PRESENTED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*DOSIMETRY, GENERAL + \*NEUTRON + DOSE + INSTRUMENTATION, RADIATION MONITORING

15-15000

PRETRE C + TOCHILIN E + GOLDSTEIN N  
A STANDARDIZED METHOD FOR MAKING NEUTRON FLUENCE MEASUREMENTS BY FISSION FRAGMENT TRACKS IN PLASTICS  
U. S. NAVAL RADIOLOGICAL DEFENSE LABORATORY  
USNRDL-TR-1089 + AD-643540 +. 22 PAGES, 9 FIGURES, 3 TABLES, 20 REFERENCES, OCTOBER 19, 1966

A NEUTRON DETECTOR IS DESCRIBED WHICH CONSISTS OF A FISSION FOIL (TH-232, U-235, U-238, NP-237 OR PU-239) IN CONTACT WITH A PLASTIC TRACK-DETECTOR. THESE DETECTORS WERE EXPOSED TO REACTOR NEUTRONS AND TO MONENERGETIC NEUTRONS WITH ENERGIES BETWEEN 1.0 AND 18 MEV. FISSION-FRAGMENT TRACKS REGISTERED IN THE PLASTIC WERE SELECTIVELY ETCHED BY A HYDROXIDE AND COUNTED IN AN OPTICAL MICROSCOPE. FOR THICK FOILS OF FISSIONABLE METALS THE SENSITIVITY OF THE SYSTEM WAS IN GOOD AGREEMENT WITH THEORETICAL CALCULATIONS. THIS SENSITIVITY IS INDEPENDENT OF THE FISSIONABLE ELEMENT USED, INDEPENDENT OF THE NEUTRON ENERGY, FAIRLY INDEPENDENT OF THE MATERIAL CHOSEN FOR TRACK REGISTRATION (PLASTICS, GLASS, MICA) AND OF ETCHING CONDITIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY \$0.65 MICRONEGATIVE

\*DOSIMETRY, GENERAL + \*INSTRUMENTATION, RADIATION MONITORING + \*NEUTRON + DOSE + SOLID STATE DEVICE

15-15001

FRENCH PL  
A COMPARATIVE STUDY OF RADIOACTIVE SOURCE ARRANGEMENTS FOR SIMULATING FALLOUT GAMMA RADIATION FIELDS  
RADIATION RESEARCH ASSOCIATES, INC., FORT WORTH, TEXAS  
RRA-T45 + AD-612,032 +. 96 PAGES, 24 TABLES, 14 FIGURES, 11 REFERENCES, JUNE 15, 1964

MONTE CARLO TECHNIQUES WERE USED IN A STUDY OF THREE BASICALLY DIFFERENT APPROACHES TO SIMULATING THE GAMMA RADIATION ENVIRONMENT NEAR THE AIR/GROUND INTERFACE DUE TO FALLOUT UNIFORMLY DISTRIBUTED ON THE GROUND SURFACE. THE ENERGY AND ANGULAR DISTRIBUTION OF THE PHOTON FLUX AT A RECEIVER 3 FT ABOVE THE GROUND DUE TO A CO-60 POINT-ISOTROPIC SOURCE ALSO 3 FT ABOVE THE GROUND AND AT SEPARATION DISTANCES OF 100 TO 800 FT WAS COMPUTED, AND THE RESULTS WERE FOUND TO BEAR LITTLE RESEMBLANCE TO THOSE FROM A UNIFORM FALLOUT FIELD.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-15001 \*CONTINUED\*

\*FALLOUT + \*MILITARY CONSIDERATION + \*RADIATION MODEL + CERIUM + CESIUM + COBALT + DOSE + DOSE MEASUREMENT, EXTERNAL + GAMMA + MONTE CARLO + SOURCE, RADIATION

15-15004 ALSO IN CATEGORY 14

SANDERS FW

DECONTAMINATION OF TEST CELL C AT THE NUCLEAR ROCKET DEVELOPMENT STATION AFTER A REACTOR ACCIDENT  
LOS ALAMOS SCIENTIFIC LABORATORY  
LA-3633-MS +. 58 PAGES, 29 FIGURES, 1 TABLE, DECEMBER 1966

TEST CELL C, A FACILITY OF THE LOS ALAMOS SCIENTIFIC LABORATORY AT THE NUCLEAR ROCKET DEVELOPMENT STATION, WAS CONTAMINATED BY FUEL FRAGMENTS DURING TESTING OF THE PHOEBUS IA REACTOR, A PROTOTYPE NUCLEAR ROCKET REACTOR. ABOUT 10,000,000 CURIES OF RADIOACTIVE MATERIALS, AT 1 HR POST-TEST, WAS SPREAD OVER ABOUT 5 ACRES. DECONTAMINATION OF THE TEST CELL REQUIRED 60 DAYS. THE COST OF THE CLEANUP WAS ABOUT \$100,000, AND ALL PARTICIPANTS COMBINED RECEIVED A TOTAL DOSE OF 180 REMS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*DECONTAMINATION + \*INCIDENT, ACTUAL, RECOVERY FROM + \*LASL (LOS ALAMOS SCIENTIFIC LABORATORY) + \*REACTOR TEST FACILITY + \*REACTOR, RESEARCH + DOSE MEASUREMENT, EXTERNAL + PERSONNEL EXPOSURE, RADIATION

15-15005 ALSO IN CATEGORIES 14 AND 17

STATEMENT TO JOINT COMMITTEE ON ATOMIC ENERGY ON AEC BIOLOGY AND MEDICINE PROGRAM  
JOINT COMMITTEE ON ATOMIC ENERGY

1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(10), PAGE 35 (MARCH 6, 1967)

INCLUDED IN REPORT ARE BRIEF SUMMARIES OF (1) UTAH CHILDREN EXPOSED TO I-131 FROM WEAPONS TESTS, (2) MEDICAL STUDIES ON RONGELAP ACCIDENTAL EXPOSURES, 1954, (3) URANIUM-MILL TAILING CONTAMINATION, (4) EXPOSURES OF URANIUM MINE AND MILL WORKERS, (5) ACCIDENTAL EXPOSURES TO PLUTONIUM. A PLUTONIUM REGISTRY WILL BE STARTED TO CHECK PEOPLE WHO HAVE INGESTED PLUTONIUM.

\*INCIDENT, ACTUAL, GENERAL + \*RADIATION INJURY, TREATMENT OF + FALLOUT + FISSION PRODUCT, IODINE + MILLING + MINING + PERSONNEL EXPOSURE, RADIATION + PLUTONIUM

15-15039 ALSO IN CATEGORIES 9 AND 17

HAZARDS CONTROL QUARTERLY REPORT NO. 21, APRIL - JUNE, 1965

ERNEST O. LAWRENCE RADIATION LABORATORY, UNIVERSITY OF CALIFORNIA, LIVERMORE, CALIFORNIA

UCRL-14351 +. 37 PAGES, 29 FIGURES, APRIL - JUNE, 1965

(PAGES 1-9). - A PORTABLE BATTERY-OPERATED BETA AIR MONITOR WILL DETECT 1 MPC OF I-131 IN 10 MIN, OPERATES FOR 9 HR ON A RECHARGING. (PAGES 10-15). - A SMALL 60-W LOW-COST TRANSISTORIZED ALPHA AIR MONITOR WAS BUILT. (PAGES 35-36). - A CYCLONE SEPARATOR WORKED WELL FOR CONDENSING FOAM USED IN GLOVE-BOX FIRES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*FIRE + \*MONITOR, RADIATION, AIR + \*MONITOR, RADIATION, EMERGENCY + ALPHA EMITTER + FISSION PRODUCT, IODINE + GLOVE BOX

15-15079 ALSO IN CATEGORIES 17 AND 18

RADIOGRAPHY EXPOSURE AT EASTERN TESTING AND INSPECTION INC., DEC. 31, 1966

EASTERN TESTING AND INSPECTION, INC.

1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(11), PAGE 33, (MARCH 13, 1967)

ON FEB. 7, EASTERN TESTING AND INSPECTION REPORTED THAT A FORMER EMPLOYEE HAD CHECKED INTO A HOSPITAL WITH RADIATION BURNS ON THE LEFT HAND. CALCULATIONS INDICATED 600 R TO THE FINGERS AND 2 R TO THE BODY, AS THE EMPLOYEE CHANGED THE POSITION OF THE UNSHIELDED SOURCE WITH HIS HANDS. HE DID NOT CHECK THE SOURCE-POSITION LIGHTS, DID NOT USE A SURVEY METER, AND LEFT HIS FILM BADGE ON HIS COAT.

\*FAILURE, OPERATOR ERROR + \*INCIDENT, ACTUAL, HUMAN ERROR + \*PERSONNEL EXPOSURE, RADIATION + \*RADIOGRAPHY

15-15080 ALSO IN CATEGORIES 17 AND 18

RADIOGRAPHY EXPOSURE AT ERIE FORGE AND STEEL CORP., JAN. 10, 1967

ERIE FORGE AND STEEL CORP.

2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(11), PAGES 33-34, (MARCH 13, 1967)

ON FEB. 7, ERIE FORGE AND STEEL REPORTED AN EXPOSURE OF 4472 R (HARD GAMMA) AS A RADIOGRAPHER ATTEMPTED TO PLUG THE STORAGE SAFE AT THE END OF THE WORK. HE FOUND THE SOURCE 5 IN. FROM THE OPENING AND THEN LEFT. AFTER SEVERAL TRIALS, THE SOURCE WAS FULLY RUN IN. SILT AND DIRT CAUSED THE TROUBLE. THE TECHNICIAN USED A SURVEY METER (APPARENTLY INEFFECTIVE BECAUSE OF GEOMETRY). SOURCE-POSITION INDICATING LIGHTS WERE INEFFECTIVE BECAUSE OF CONTROL-BOX

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-15080 \*CONTINUED\*  
MODIFICATIONS. BLOOD TESTS SHOWED NO IRREGULARITIES.

\*FAILURE, MAINTENANCE ERROR + \*INCIDENT, ACTUAL, EQUIPMENT + \*INSTRUMENTATION, POSITION +  
MAINTENANCE AND REPAIR + PERSONNEL EXPOSURE, RADIATION + RADIOGRAPHY

15-15081 ALSO IN CATEGORIES 17 AND 18  
JOHNS HOPKINS UNIVERSITY TRITIUM RELEASE, FEB. 20, 1967  
JOHN HOPKINS UNIVERSITY, BALTIMORE  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(11), PAGE 34, (MARCH 13, 1967)

JOHNS HOPKINS REPORTS FEB. 21, THAT 10 CURES OF TRITIUM (IN URANIUM HYDRIDE) WERE RELEASED AS  
A GLASS TUBE BROKE AND THE UH BURNED SPONTANEOUSLY. TWO PERSONS WERE EXPOSED TO 3 MPC AIR,  
URINE SPECIMENS PEAKED AT 0.1 MPC. VENTILATION SYSTEM SPREAD AIR CONTAMINATION THROUGHOUT  
BUILDING. INCIDENT OCCURRED AT 6 PM.

\*INCIDENT, ACTUAL, GENERAL + \*PERSONNEL EXPOSURE, RADIATION + \*TRITIUM + INHALATION + VENTILATION SYSTEM

15-15083 ALSO IN CATEGORIES 17 AND 18  
TRITIUM EXPOSURE AT US RADIUM CORP., DEC. 13, 1966  
U.S. RADIUM CORPORATION  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(11), PAGES 35-36, (MARCH 13, 1967)

U.S. RADIUM CORP. REPORTS JAN. 24 THAT AN R AND D SCIENTIST BREATHED AIR CONTAINING TRITIUM  
FROM A LEAKY GLASS TUBE FILL FACILITY. LATE REPORTING IS DUE TO ORIGINAL USE OF SUBMERSIBLE  
TRITIUM MPC (WHICH INDICATED NO OVEREXPOSURE). IF THE SOLUBLE MPC VALUE IS USED, ASSUMING  
OXIDATION HAD TAKEN PLACE, AN OVEREXPOSURE OCCURRED. IN ADDITION, AN ION CHAMBER INDICATED  
100 TIMES HIGHER THAN AN IMPINGER SAMPLE.

\*FAILURE, EQUIPMENT + \*INCIDENT, ACTUAL, EQUIPMENT + \*PERSONNEL EXPOSURE, RADIATION + INHALATION +  
MAXIMUM PERMISSIBLE CONCENTRATION (MPC) + TRITIUM

15-15084 ALSO IN CATEGORIES 17 AND 18  
TRITIUM EXPOSURE AT U.S. RADIUM CORP. JAN. 11, 1967  
U.S. RADIUM CORPORATION  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(11), PAGE 36, (MARCH 13, 1967)

U.S. RADIUM CORP., JAN. 25, REPORTS THAT A DIAL PAINTER WAS EXPOSED TO 1.46 MPC, DUE TO (1) AN  
ACCUMULATION OF FRESHLY PAINTED DIALS NEXT TO THE MACHINE, (2) RESIDUAL CONTAMINATION OF  
SAMPLING-TRAIN COMPONENTS (OPY GAS METER). THE MACHINE IS COMPLETELY ENCLOSED AND KEPT AT  
MINUS 3 INCHES (WATER) PRESSURE, ALTHOUGH THE AIR FLOW IS RARELY PERCEPTIBLE.

\*GLOVE BOX + \*PERSONNEL EXPOSURE, RADIATION + FAILURE, ADMINISTRATIVE CONTROL + FAILURE, DESIGN ERROR +  
INCIDENT, ACTUAL, GENERAL + TRITIUM + VENTILATION SYSTEM

15-15085 ALSO IN CATEGORIES 17 AND 18  
U.S. RADIUM CORPORATION TRITIUM LEAK AND STACK-DISCHARGE  
U.S. RADIUM CORPORATION  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(11), PAGES 36-37, (MARCH 13, 1967)

U.S. RADIUM CORP. REPORTS JAN. 31 TWO INCIDENTS. (1) JAN. 10. DURING FILLING OF GAS TUBES,  
SOLUBLE TRITIUM WAS MONITORED AT STACK AS 30.65 X MPC AND 763.3 X MPC. THIS IS BELIEVED DUE  
TO FLUSHING GAS TRAPPED IN PUMP OIL. (2) JAN. 20. DURING A REPAIR OF A GAS-FILLING TUBE, 76  
COPIES WAS LOST, GIVING STACK DISCHARGE AS EITHER 9.05 X MPC (USING SUBMERSIBLE MPC) OR 1810  
X MPC (USING SOLUBLE MPC). STACK WAS NOT BEING MONITORED THAT DAY.

\*INCIDENT, ACTUAL, EQUIPMENT + EFFLUENT + MONITOR, RADIATION, STACK + STACK + TRITIUM

15-15104 ALSO IN CATEGORY 14  
CUPKA S + PETRASOVA M + CARACH J  
SR-90 AND CS-137 CONTENTS OF AGRICULTURAL PRODUCTS FROM WEST SLOVAKIA IN 1963-64  
3 PAGES, ATOMNAYA ENERGIYA 21(3), PAGE 197, (1966), ABSTRACT FROM JOURNAL OF NUCLEAR ENERGY 21(2), PAGES  
220-222, (FEBRUARY 1967)

THE SR-90 AND CS-137 LEVELS IN AGRICULTURAL PRODUCTS FROM WEST SLOVAKIA ARE REPORTED FOR THE  
PERIOD 1963-64. THE HIGHEST LEVELS OF BOTH OCCUR IN GRAIN PRODUCTS, RELATIVELY LOW ONES  
OCCUR IN BEANS, AND VERY LOW ONES IN PPOPSH. THE VARIATION IN THE CS/SR RATIO IS DUE TO  
DIFFERENCES IN UPTAKE BY THE PLANTS, ESPECIALLY AS AFFECTED BY THE LEVEL OF FALLOUT.

\*CZECHOSLOVAKIA + \*FALLOUT + \*STRONTIUM + AGRICULTURAL CONSIDERATION + CESIUM

15-15180

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-15180 \*CONTINUED\*

ESTOURNEL P + HENRY P + BEAU P + ERGAS A  
RAPID EVALUATION OF THE NEUTRON DOSE FOLLOWING A CRITICALITY ACCIDENT BY MEASUREMENT OF NA-24 ACTIVITY  
COMMISSARIAT A L ENERGIE ATOMIQUE, CHUSCLAN + CENTRE DE PRODUCTION DE PLUTONIUM DE MARCOULE + CENTRE D  
ETUDES NUCLEAIRES  
CEA-R-3083 +. 32 PAGES, 5 FIGURES, 5 TABLES, 10 REFERENCES, OCTOBER 1966, IN FRENCH

BY EXTERNAL MEASUREMENT OF THE GAMMA ACTIVITY OF NA-24 INDUCED IN THE HUMAN ORGANS BY A  
NEUTRON FLUX DURING A CRITICALITY ACCIDENT, IT IS POSSIBLE TO EVALUATE THE DOSE RECEIVED.  
DETECTORS DESIGNED FOR EVERYDAY USE IN HEALTH PHYSICS CAN BE APPLIED TO THESE MEASUREMENTS,  
AND THIS IS DESCRIBED IN THE FIRST PART OF THE WORK. THE RESPONSE OF A CERTAIN NUMBER OF  
INDUCED-ACTIVITY DETECTORS IS PRESENTED. THE RESULTS SHOW THAT THE METHOD IS SUFFICIENTLY  
SENSITIVE FOR PRESENT PURPOSES.

AVAILABILITY - MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669

\*ACCIDENT ANALYSIS + \*ACCIDENT, CRITICALITY + \*SODIUM + ACCIDENT, GENERAL +  
ACCIDENT, MAXIMUM CREDIBLE (MCA) + SPECTROMETRY, GAMMA

15-15185

LUTZ M + ROUVROY H  
DEVICE FOR CONTAMINATING LABORATORY ANIMALS BY INHALATION OF RADIOACTIVE AEROSOLS  
CENTRE D ETUDES NUCLEAIRES, SACLAY, FRANCE  
CEA-R-3086 +. 28 PAGES, 10 FIGURES, TABLES, OCTOBER 1966, IN FRENCH

THE CONTAMINATION ENCLOSURE IS MADE UP OF A SPHERE TO WHICH ARE ATTACHED AN AEROSOL GENERATOR,  
CONTAINERS ADAPTED TO THE ANIMALS TO BE USED, AND THE ATMOSPHERIC SAMPLING SYSTEM. THE  
SPHERE IS PLACED IN A PROTECTIVE GLOVE-BOX, THE LATTER BEING ITSELF PROTECTED BY AN  
INTRODUCTION CHAMBER FITTED WITH LOCKING ACCESS LIDS. A DETAILED DESCRIPTION IS GIVEN OF THE  
WORKING PRINCIPLE. AS AN EXAMPLE, SOME RESULTS ARE GIVEN CONCERNING THE CONTAMINATION OF  
RATS BY A PLUTONIUM OXIDE AEROSOL (MEAN DIAMETER 0.50 MICRON, STANDARD DEVIATION, 1.4),  
EXAMINATION AND EVOLUTION OF THE ATMOSPHERIC ACTIVITY AS A FUNCTION OF TIME, EVALUATION OF  
THE RETENTION BY THE LUNGS BY MEANS OF HISTOLOGICAL AND AUTORADIOGRAPHIC EXAMINATIONS.

AVAILABILITY - MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM WISCONSIN 54669

\*AEROSOL PRODUCTION + \*PARTICLE SIZE + \*PLUTONIUM OXIDE + AEROSOL + FISSION PRODUCT TRANSPORT + GLOVE BOX +  
HAZARD, RELATIVE + SAFETY PRINCIPLES AND PHILOSOPHY

15-15223

ALSO IN CATEGORY 14

FOUQUIER L + BOVARD P + GRAUBY A  
EXPERIMENTAL CONTAMINATION OF MARGARITANA MARGARITIFERA (L) (A FRESH WATER BIVALVE) BY CS-137  
CENTRE D ETUDES NUCLEAIRES, CADARACHE, FRANCE  
CEA-R-3054 +. 46 PAGES, TABLES, FIGURES, REFERENCES, 1966, IN FRENCH

THE HYDROBIOLOGICAL RESEARCH CARRIED OUT IN THE RADIO-ECOLOGY SECTION LED THE AUTHORS TO STUDY  
SOME MARGARITANA SAMPLING STATIONS SITUATED DOWN-STREAM FROM THE MONTS D AREE NUCLEAR POWER  
STATION. THEY DESCRIBE THE PRESERVATION AND CONTAMINATION METHODS USED FOR FIXING THE CS-137  
CONCENTRATION FACTORS IN THE CASE OF MARGARITANA MARGARITIFERA (L). THE RESULTS OF  
EXPERIMENTS CARRIED OUT OVER A PERIOD OF 100 DAYS SHOW THAT THE SPECIFIC ACTIVITY OF THE  
VARIOUS ORGANS IS STABILIZED AFTER 30 TO 35 DAYS. THE AUTHORS NOTICED A RELATIVELY LOW  
ADSORPTION ON THE SHELL THROUGH THE INTERMEDIARY OF MICRO-ORGANISMS, AND A STRONG AND RAPID  
ADSORPTION IN THE SOFT PARTS. THE CONCENTRATION FACTORS HAVE VALUES, AT EQUILIBRIUM, OF  
AROUND 9 FOR THE SHELL, 300 FOR ALL THE ORGANS, AND 38 FOR THE WHOLE ANIMAL.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM,  
WISCONSIN 54669

\*BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + \*ECOLOGICAL CONSIDERATION + CESIUM + FRANCE

15-15224

MORROW PF + GIBB FR + DAVIES H + MITOLA J + WOOD D + WRAIGHT N + CAMPBELL HS  
THE RETENTION AND FATE OF INHALED PLUTONIUM IN DOGS  
DEPARTMENT OF RADIATION BIOLOGY AND BIOPHYSICS, UNIVERSITY OF ROCHESTER, ROCHESTER, NEW YORK  
20 PAGES, 11 FIGURES, 4 TABLES, 92 REFERENCES, HEALTH PHYSICS, 13(2), PAGES 113-133, (FEBRUARY 1967)

AN INHALATION STUDY OF PLUTONIUM DIOXIDE IN 22 DOGS FOLLOWING SINGLE EXPOSURES IS DESCRIBED.  
THE STUDY EMPHASIZED THE CLEARANCE OF PUO2 DUST FROM THE LUNGS AND ITS FATE. THE PULMONARY  
CLEARANCE PROCESS, COMPUTED BY SEVERAL METHODS, INCLUDING IN VIVO COUNTING, CAN BE DESCRIBED  
AS A BI-PHASIC EXPONENTIAL WITH MEAN BIOLOGICAL HALF-TIMES OF ABOUT 1 AND 400 DAYS,  
RESPECTIVELY. THE REPORT ALSO DESCRIBES THE ELIMINATION KINETICS OF PLUTONIUM AND DISCUSSES  
SOME PROBLEMS IN INTERPRETING EXCRETION DATA.

\*BIOLOGICAL CONCENTRATION, ANIMAL + \*PLUTONIUM + INHALATION

15-15225

TAYLOR DM  
THE EFFECTS OF DESFERRIOXAMINE ON THE RETENTION OF ACTINIDE ELEMENTS IN THE RAT

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-15225 \*CONTINUED\*  
DEPARTMENT OF BIOPHYSICS, INSTITUTE OF CANCER RESEARCH (SURREY BRANCH), ENGLAND  
6 PAGES, 8 TABLES, 13 REFERENCES, HEALTH PHYSICS, 13(2), PAGES 135-140, (FEBRUARY 1967)

THE EFFECTIVENESS OF DESFERRIOXAMINE (DFOA) AND DTPA IN REDUCING THE RETENTION OF PU-239, AM-241, CM-244, AC-227 AND TH-228 WAS COMPARED IN RATS. DFOA IS ONLY SLIGHTLY LESS EFFECTIVE THAN DTPA IN REDUCING THE RETENTION OF PU-239, PROVIDED THAT TREATMENT IS COMMENCED WITHIN A FEW HOURS OF EXPOSURE. IF THE START OF THE TREATMENT IS DELAYED UNTIL 7 DAYS AFTER EXPOSURE TO PU-239, DFOA IS INEFFECTIVE. UNLIKE DTPA, DFOA DOES NOT REDUCE THE RETENTION OF AM-241, CM-244, OR AC-227 AND PRODUCES ONLY A SLIGHT REDUCTION IN THE RETENTION OF TH-228.

\*BIOLOGICAL CONCENTRATION, ANIMAL + \*RADIATION PROTECTION, CHEMICAL + ACTINIUM + AMERICIUM + CURIUM + PLUTONIUM + THORIUM + TRANSURANIUM ELEMENT

15-15226  
HASHIZUME T + MARIYAMA T + SHIRAGAI A + TANAKA E + IZAWA M + KAWAMURA S + NAGAOKA S  
ESTIMATION OF THE AIR DOSE FROM THE ATOMIC BOMBS IN HIROSHIMA AND NAGASAKI  
NATIONAL INSTITUTE OF RADIOLOGICAL SCIENCES, JAPAN  
13 PAGES, 14 FIGURES, 2 TABLES, 22 REFERENCES, HEALTH PHYSICS, 13(2), PAGES 149-161, (FEBRUARY 1967)

THE AIR DOSE OUTSIDE OF BUILDINGS DUE TO PRIMARY AND SCATTERED RADIATION RELEASED BY ATOMIC BOMBS IN HIROSHIMA AND NAGASAKI WAS ESTIMATED AS A FUNCTION OF DISTANCE FROM THE HYPOCENTER. NEUTRON DOSE WAS ESTIMATED FROM CO-60 ACTIVITY IN IRON IMBEDDED IN CONCRETE, AND GAMMA DOSE FROM THERMOLUMINESCENCE IN BRICKS AND TILES. THE PRECISION (COEFFICIENT OF VARIATION) OF ESTIMATION WAS LESS THAN 0.11 FOR GAMMA RAYS AND LESS THAN 0.15 FOR NEUTRONS. THE RESULTS, AS COMPARED WITH YORKS VALUES, SHOW ONLY A MINOR DIFFERENCE FOR GAMMA AND AGREE WITH THAT FOR NEUTRONS IN NAGASAKI, BUT A LARGE DIFFERENCE OF APPROXIMATELY 50 PER CENT FOR NEUTRONS AND 70-70 PER CENT FOR GAMMA RAYS AT DISTANCES FROM 500 TO 1500 M FROM THE HYPOCENTER FOR HIROSHIMA. THEREFORE THE TOTAL AIR DOSE WAS ALMOST EQUAL TO YORKS VALUE IN NAGASAKI, BUT LESS THAN HALF IN HIROSHIMA.

\*DOSE CALCULATION, EXTERNAL + \*NUCLEAR DETONATION + \*POPULATION EXPOSURE + GAMMA + JAPAN + NEUTRON

15-15220  
MAHMOUD KA + MAHFOUZ MM + ATIYAH IR + EL-NAGGAR AM + MOLOKHIA MM  
GENETICALLY SIGNIFICANT DOSE FROM DIAGNOSTIC RADIOLOGY IN CAIRO AND ALEXANDRIA  
U.A.R. ATOMIC ENERGY ESTABLISHMENT, ABOU ZABAAL, CAIRO, U.A.R.  
4 PAGES, 5 TABLES, 11 REFERENCES, HEALTH PHYSICS, 13(2), PAGES 163-166, (FEBRUARY 1967)

THE PRESENT STUDY EXPLAINS THE TECHNIQUES USED FOR COMPUTING THE GENETICALLY SIGNIFICANT DOSE FOR ALEXANDRIA AND THE WEST AND SOUTH-WEST DISTRICTS OF CAIRO FROM MEDICAL DIAGNOSTIC RADIOLOGY DURING THE PERIOD 1955-1961. THESE WERE CONSIDERED TO BE REPRESENTED BY THE SURVEYS PERFORMED ON ALEXANDRIA AND CAIRO UNIVERSITY HOSPITALS. DATA ON ANNUAL FREQUENCY OF X-RAY EXAMINATIONS AS WELL AS DOSE RATES TO THE GONADS DURING VARIOUS TYPES OF X-RAY EXPOSURES ARE ALSO PROVIDED. IT WAS CONCLUDED THAT THE TOTAL ANNUAL GENETICALLY SIGNIFICANT DOSE FOR ALEXANDRIA IS ABOUT ONE-QUARTER OF THAT DOSE FOR THE WEST AND SOUTH-WEST DISTRICTS OF CAIRO.

\*DOSE CALCULATION, EXTERNAL + \*POPULATION EXPOSURE + EGYPT + RADIOGRAPHY + X-RAY

15-15230  
LANGMEAD WA + ADAMS N  
INVESTIGATIONS OF THE ACCURACY ATTAINED IN ROUTINE FILM BADGE DOSIMETRY  
RADIOLOGICAL PROTECTION DIVISION, UKAEA, HARWELL, DIDCOT, BERKS  
17 PAGES, 13 FIGURES, 6 TABLES, 14 REFERENCES, HEALTH PHYSICS, 13(2), PAGES 167-180, (FEBRUARY 1967)

TWO EXPERIMENTS WERE PERFORMED TO PROVIDE DATA ON THE ACCURACY ATTAINED IN THE ROUTINE ASSESSMENT OF RADIATION DOSES TO PERSONNEL BY MEANS OF FILM BADGES. IN THE FIRST EXPERIMENT, PERFORMED AT THE END OF 1961, MEASUREMENTS WERE MADE BY MEANS OF A PRESSED TIN-PLATE BADGE OF RELATIVELY SIMPLE DESIGN WHICH WAS IN GENERAL USE AT THAT TIME FOR RADIATION MONITORING THE STAFF OF THE UKAEA. IN THE SECOND EXPERIMENT, THE MORE RECENTLY INTRODUCED AERE/RPS MULTI-FILTER PLASTICS FILM HOLDER WAS USED IN THE MEASUREMENTS. THE RESULTS OF THE DOSE ASSESSMENTS OBTAINED IN THE TWO EXPERIMENTS WERE COMPARED. IT IS SHOWN THAT THE AERE/RPS MULTI-FILTER FILM HOLDER ENABLES IMPROVED ACCURACY TO BE ATTAINED. THE MOST SIGNIFICANT IMPROVEMENTS ARISE FROM THE ELIMINATION OF THE OVERESTIMATES OF DOSE OBTAINED FOR SOME X-AND GAMMA-RAY MIXTURES WITH THE EARLIER DOSEMETER AS A CONSEQUENCE OF ITS INABILITY TO IDENTIFY A SOFT-RADIATION COMPONENT AS X-RAYS OR BETA-RAYS.

\*DOSIMETRY, PHOTOGRAPHIC + BETA EMITTER + DOSE MEASUREMENT, EXTERNAL + GAMMA + UNITED KINGDOM + X-RAY

15-15232  
WEAVER CL + STIGALL GE  
PUBLIC HEALTH EVALUATION OF NUCLEAR POWER PLANTS  
U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE, PUBLIC HEALTH SERVICE, WASHINGTON, D. C.  
8 PAGES, 3 TABLES, 5 REFERENCES, HEALTH PHYSICS, 13(2), PAGES 189-196, (FEBRUARY 1967), PRESENTED AT THE HEALTH PHYSICS SOCIETY MEETING, LOS ANGELES, CALIFORNIA, JUNE 14-17, 1965

THE POTENTIAL EFFECT ON THE PUBLIC HEALTH AND THE ENVIRONMENT FROM THE PROPOSED OPERATION OF

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-15232 \*CONTINUED\*

MAJOR NUCLEAR REACTOR FACILITIES IS NOW BEING EVALUATED BY THE NUCLEAR FACILITIES ENVIRONMENTAL ANALYSIS SECTION OF THE DIVISION OF RADIOLOGICAL HEALTH OF THE PUBLIC HEALTH SERVICE ON A ROUTINE BASIS. IN THE PAST YEAR SEVERAL REACTORS IN THE 1200-1600 MW THERMAL POWER LEVEL WERE EVALUATED BEFORE THE START OF CONSTRUCTION. USING SEVERAL POWER REACTORS AS TYPICAL EXAMPLES, THE ROLE OF THE PUBLIC HEALTH SERVICE IN PROVIDING ASSISTANCE TO STATE HEALTH AGENCIES ON POTENTIAL ENVIRONMENTAL PROBLEMS IS DISCUSSED.

\*HAZARDS ANALYSIS + POPULATION EXPOSURE + REACTOR, POWER

15-15234 ALSO IN CATEGORY 14

GARNER RJ

MATHEMATICAL ANALYSIS OF THE TRANSFER OF FISSION PRODUCTS TO COWS MILK  
RADIOLOGICAL PROTECTION DIVISION, AUTHORITY HEALTH AND SAFETY BRANCH, UKAEA, HARWELL, BERKSHIRE  
7 PAGES, 2 FIGURES, 2 TABLES, 16 REFERENCES, HEALTH PHYSICS, 13(2), PAGES 205-212, (FEBRUARY 1967)

A MODEL IS DEVELOPED WHICH ALLOWS MATHEMATICAL TREATMENT OF THE ELIMINATION OF INGESTED FISSION PRODUCTS IN MILK. EQUATIONS ARE DERIVED FROM THE AVAILABLE EXPERIMENTAL DATA WHICH ARE USED TO PREDICT THE BEHAVIOUR OF A NUMBER OF PARENT-DAUGHTER MIXTURES.

\*BIOLOGICAL CONCENTRATION, ANIMAL + \*BIOLOGICAL CONCENTRATION, MILK + INGESTION + MATHEMATICAL STUDY

15-15235 ALSO IN CATEGORY 14

BLACK DE + DICKEY BR

MATHEMATICAL AND EXPERIMENTAL ANALYSIS OF HEAT DISSIPATION FROM CYLINDRICAL SOURCES BURIED IN SOIL  
IDAHO NUCLEAR CORPORATION, IDAHO FALLS  
IN-1032 +. 140 PAGES, 34 FIGURES, REFERENCES, DECEMBER 1966

MATHEMATICAL MODELS ARE PROPOSED FOR PREDICTING THE STEADY-STATE AND TRANSIENT TEMPERATURE DISTRIBUTIONS IN SMALL- AND LARGE-DIAMETER, CYLINDRICAL, NUCLEAR HEAT SOURCES AND THE SURROUNDING SOIL. COMPUTER PROGRAMS ARE USED TO SOLVE THE TWO-DIMENSIONAL, TIME-DEPENDENT HEAT-TRANSFER EQUATIONS RESULTING FROM THE MODELS. THE THERMAL CONDUCTIVITY, SPECIFIC HEAT, AND MOISTURE CONTENT WERE EXPERIMENTALLY DETERMINED FOR SOILS AT AN EXPERIMENTAL TEST SITE. THESE PROPERTIES WERE REQUIRED FOR CALCULATING THE TEMPERATURES IN AND SURROUNDING A BURIED ELECTRICAL HEATER. AGREEMENT BETWEEN CALCULATED AND MEASURED TEMPERATURES WAS GOOD, GENERALLY WITHIN A FEW DEGREES. THE QUANTITATIVE EFFECTS OF SOIL AND HEAT SOURCE THERMAL CONDUCTIVITY, TIME-DEPENDENT HEAT GENERATION RATE, HEAT SOURCE DIMENSIONS, AND BURIAL DEPTH ON THE CALCULATED TEMPERATURE DISTRIBUTIONS IN AND SURROUNDING BURIED HEAT SOURCES ARE ILLUSTRATED BY NUMERICAL EXAMPLES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*MATHEMATICAL STUDY + \*SOIL, NUCLIDE OCCURRENCE + \*TEMPERATURE TRANSIENT + HEAT TRANSFER + SOIL, PROPERTY + TEMPERATURE GRADIENT + WASTE DISPOSAL, TERRESTRIAL

15-15236

SETTER LR + ANDREW R + COLEMAN R + FRIEND A + STORY A + MARKARIAN C  
ROUTINE SURVEILLANCE OF RADIOACTIVE AROUND NUCLEAR FACILITIES

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE, WASHINGTON, D.C.

PHS PUBL. NO. 999-RH-23 +. 28 PAGES, 1 FIGURE, 3 TABLES, 7 REFERENCES, DECEMBER 1966

THIS REPORT IS A CONCISE, COMPREHENSIVE, AND PRACTICAL GUIDE FOR PLANNING, OPERATING, AND EVALUATING THE EFFECTIVENESS OF A PROGRAM FOR ROUTINE SURVEILLANCE OF RADIOACTIVITY AROUND NUCLEAR FACILITIES. INCLUDED ARE REFERENCES TO REGULATIONS AND GUIDES FOR EVALUATING RELEASES FROM SUCH FACILITIES, COMMENTARY ON THE NATURE AND TYPES OF WASTES TO BE ANTICIPATED, THEIR FATE WHEN RELEASED TO THE ENVIRONMENT, AND RECOMMENDED PROCEDURES FOR SAMPLING THE AIR, WATER, MILK, FOOD, BIOTA, SOIL, AND PEOPLE FOR RESULTING CONTAMINATION.

AVAILABILITY - U. S. GOVERNMENT PRINTING OFFICE, WASHINGTON, D. C. 20402, \$0.25 COPY

\*RADIATION SAFETY AND CONTROL + \*SAMPLING + \*SURVEY, RADIATION, ENVIRONMENTAL + MONITOR, RADIATION, GENERAL + WASTE MANAGEMENT + WASTE SOURCE AND TYPE

15-15237

AARKROG A + LIPPERT J

ENVIRONMENTAL RADIOACTIVITY IN DENMARK IN 1965

DANISH ATOMIC ENERGY COMMISSION RESEARCH ESTABLISHMENT, RISO

RISO-130 +. 99 PAGES, FIGURES, TABLES, 27 REFERENCES, (JUNE 1966)

THE PRESENT REPORT DEALS WITH THE MEASUREMENT OF FALL-OUT RADIOACTIVITY IN DENMARK IN 1965. FROM ALL OVER THE COUNTRY, SR-90 WAS DETERMINED IN SAMPLES OF PRECIPITATION, SOIL, GROUND WATER, SEA WATER, GRASS, DRIED MILK, FRESH MILK, GRAIN, BREAD, POTATOES, VEGETABLES, FRUIT, TOTAL DIET, DRINKING WATER, AND HUMAN BONE. FURTHERMORE SR-90 WAS DETERMINED IN LOCAL SAMPLES OF AIR, RAIN WATER, GRASS, SEA PLANTS, ANIMAL BONE, FISH, MEAT, AND HUMAN MILK. CS-137 WAS DETERMINED IN MILK, GRAIN PRODUCTS, POTATOES, VEGETABLES, FRUIT, TOTAL DIET, PORK, BEEF, AND HUMAN MILK SAMPLES, AND CS-137 WAS MEASURED BY WHOLE-BODY COUNTING IN PERSONS FROM A CONTROL GROUP AT RISO. ESTIMATES OF THE MEAN CONTENT OF RADIOSTRONTIUM AND RADIOCAESIUM IN

CATEGORY 15  
 ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-15237 \*CONTINUED\*

THE HUMAN DIET IN DENMARK IN 1965 ARE GIVEN. FINALLY THE REPORT INCLUDES, AS PREVIOUSLY, REGULAR SURVEYS OF ENVIRONMENTAL SAMPLES FROM THE RISØ AREA.

AVAILABILITY - MICROCARD EDITIONS, INC, ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WIS. 54669

\*DENMARK + \*SURVEY, RADIATION, ENVIRONMENTAL + BIOLOGICAL CONCENTRATION, MAN + BIOLOGICAL CONCENTRATION, MILK + CESIUM + FALLOUT + GAMMA + GROUND WATER, NUCLIDE OCCURRENCE + MANGANESE + PRECIPITATION + SOIL, NUCLIDE OCCURRENCE + STRONTIUM + SURFACE WATER, NUCLIDE OCCURRENCE

15-15238

BAUMGARTNER HW + BRACKENBUSH LW  
 NEUTRON DOSIMETRY USING THE FISSION FRAGMENT DAMAGE PRINCIPLE  
 BATTLEF-NORTHWEST, RICHLAND  
 BNWL-332 +. 15 PAGES, 4 FIGURES, DECEMBER 1966

FISSION-FRAGMENT NEUTRON DOSIMETERS PERMITTED DOSE EVALUATION IN SEVERAL NEUTRON ENERGY GROUPS IN MIXED GAMMA AND NEUTRON RADIATION FIELDS. THIS NEW DOSIMETER PRINCIPLE USED WITH A SINGLE NP-237 OXIDE FOIL WILL PROVIDE SUBSTANTIALLY IMPROVED NEUTRON DOSIMETRY IN MIXED RADIATION FIELDS, COMPARED WITH COMMONLY USED NTA EMULSION DOSIMETERS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*DOSIMETRY, GENERAL + \*NEUTRON + DOSE MEASUREMENT, EXTERNAL

15-15239

ALSO IN CATEGORY 14

GARNIER A  
 POSSIBILITY OF USING RADIOACTIVITY CONTROL MEASUREMENTS FOR DETERMINING CONTAMINATION PATHS IN NUTRITIONAL VECTORS  
 CENTRE D ETUDES NUCLEAIRES, FONTENAY-AUX-ROSES, FRANCE  
 CEA-R-3076 + EUR-3001.F +. 49 PAGES, 17 FIGURES, 9 TABLES, NOVEMBER 1966, IN FRENCH

THE OBJECT OF THE REPORT IS TO STUDY THE POSSIBILITY OF USING RESULTS OF RADIOACTIVITY CONTROLS FOR DETERMINING THE PATHS FOLLOWED BY CONTAMINATION IN NUTRITIONAL VECTORS. THESE ARE NECESSARY FOR CALCULATING PROTECTION NORMS. RADIOACTIVE CONTAMINATION OF A NUTRITIONAL VECTOR IS EXPRESSED IN TERMS OF PARAMETERS WHICH SUGGEST THAT A CERTAIN NUMBER OF CRITERIA MAY BE USED FOR CHOOSING THE RESULTS WHICH ARE TO BE EXPLOITED. AN ACTUAL EXAMPLE OF A VERTICAL STUDY BASED ON RESULTS OF MEASUREMENTS MADE PURELY FOR CONTROL PURPOSES SHOWS THE DIFFICULTIES WHICH MAY BE ENCOUNTERED. A LIST OF THE RESULTS OBTAINED BY THE CONTROL NETWORKS SET UP IN THE COMMUNITY COUNTRIES, EITHER FOR THE ATMOSPHERE, FOR MILK, OR FOR OTHER FOODSTUFFS, SHOWS THAT THESE NETWORKS ARE NOT AT THE PRESENT ORGANIZED IN SUCH A WAY AS TO MAKE SUCH A STUDY POSSIBLE. IT APPEARS DESIRABLE THAT A LARGE PART OF THE WORK CARRIED OUT BY THE CONTROL SERVICES BE ORIENTED IN SUCH A WAY AS TO YIELD THE COMPLEMENTARY INFORMATION REQUIRED FOR EXPERIMENTAL STUDIES OF RADIOACTIVE TRANSFERS.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

\*ECOLOGICAL CONSIDERATION + \*TRACER, RADIOACTIVE + BIOLOGICAL CONCENTRATION, AGRICULTURAL PRODUCE + BIOLOGICAL CONCENTRATION, ANIMAL + BIOLOGICAL CONCENTRATION, ANIMAL FEED + BIOLOGICAL CONCENTRATION, FOOD + BIOLOGICAL CONCENTRATION, MAN + BIOLOGICAL CONCENTRATION, MILK + BIOLOGICAL CONCENTRATION, VEGETATION + CESIUM + RAINOUT + STRONTIUM

15-15261

EFFECT OF THE SAVANNAH RIVER PLANT ON ENVIRONMENTAL RADIOACTIVITY. SEMI-ANNUAL REPORT, JULY-DECEMBER 1965. DU PONT DE NEMOURS AND COMPANY, SAVANNAH RIVER PLANT, AIKEN, SOUTH CAROLINA  
 DPST-66-30-1 +. 16 PAGES, FIGURES, TABLES

THE RESULTS OF AN ENVIRONMENTAL MONITORING PROGRAM FOR THE ATMOSPHERE, VEGETATION AND FOOD, AND WATER FOR THE PERIOD JULY 1 THROUGH DEC. 31, 1965 ARE REPORTED. THE QUANTITY OF RADIOACTIVE WASTE RELEASED BY THE SAVANNAH RIVER PLANT TO ITS ENVIRONS WAS, FOR THE MOST PART, TOO SMALL TO BE DISTINGUISHED FROM NATURAL BACKGROUND RADIATION OR WAS OBSCURED BY WORLDWIDE FALLOUT FROM NUCLEAR WEAPONS TESTING DURING PAST YEARS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*SAVANNAH RIVER PLANT + \*SURVEY, RADIATION, ENVIRONMENTAL + AIR + BIOLOGICAL CONCENTRATION, FOOD + BIOLOGICAL CONCENTRATION, VEGETATION + SURFACE WATER, NUCLIDE OCCURRENCE + WASTE DISPOSAL, GENERAL + WATER, DRINKING

15-15262

MIETTINEN JK  
 CONCENTRATION OF CS-137 AND FE-55 THROUGH FOOD CHAINS IN ARCTIC AND SUBARCTIC REGIONS  
 DEPARTMENT OF RADIOCHEMISTRY, HELSINKI UNIVERSITY, FINLAND  
 CONF-660405-14 +. 11 PAGES, 6 REFERENCES, FROM SYMPOSIUM ON RADIOECOLOGICAL CONCENTRATION PROCESSES, STOCKHOLM 1966

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-15262 \*CONTINUED\*

LICHEN GROWS IN LARGE QUANTITIES IN ARCTIC REGIONS AND EXHIBITS EXTREMELY SLOW GROWTH HABITS AND AN ENORMOUS CAPACITY TO ABSORB NUTRIENTS FROM THE AIR AND RAIN WATER. DURING THE LONG WINTER SEASON, CARIBOU AND REINDEER LIVE ALMOST ENTIRELY ON LICHENS, AND THE ESKIMOS EAT LARGE QUANTITIES OF MEAT FROM THESE ANIMALS. FALLOUT NUCLIDES ABSORBED BY LICHENS ARE TRANSPORTED BY THE FOOD CHAIN TO MAN. THE MOVEMENT OF CS-137 AND SR-90 WITHIN LICHENS ARE DESCRIBED, AND THE TRANSPORT OF CS-137 AND FE-55 THROUGH THE FOOD CHAIN TO MAN IS DISCUSSED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*ECOLOGICAL CONSIDERATION + BIOLOGICAL CONCENTRATION, ANIMAL FEED + BIOLOGICAL CONCENTRATION, FOOD + BIOLOGICAL CONCENTRATION, MAN + BIOLOGICAL CONCENTRATION, VEGETATION + CESIUM + DIETARY HABIT + IRON + STRONTIUM

15-15263

HANSON WC

RADIOECOLOGICAL CONCENTRATION PROCESSES CHARACTERIZING ARCTIC ECOSYSTEMS  
BATTELL-NORTHWEST LABORATORIES, RICHLAND, WASHINGTON  
RNWL-SA-661 CONF-660405-13 +. 22 PAGES, FIGURES, TABLES, 48 REFERENCES, APRIL 25, 1965, FROM SYMPOSIUM ON RADIOECOLOGICAL CONCENTRATION PROCESSES, STOCKHOLM

THE LICHEN-REINDEER-(CARIBOU)-MAN FOOD CHAIN CONSTITUTES THE MOST IMPORTANT CONCENTRATION PROCESS FOR FALLOUT RADIONUCLIDES IN ARCTIC REGIONS. THE HIGHER LEVELS OF MOST RADIONUCLIDES, ESPECIALLY SR-90 AND CS-137, WITHIN THIS SYSTEM RESULT FROM (1) THE TENDENCY FOR LICHENS TO ABSORB AND RETAIN FALLOUT MATERIAL, (2) THE UTILIZATION OF LICHENS FOR FOOD, BY REINDEER AND CARIBOU ESPECIALLY IN WINTER, AND (3) THE DEPENDENCE UPON REINDEER AND CARIBOU FOR FOOD BY CERTAIN NORTHERN POPULATIONS. ALTHOUGH THERE ARE DIFFERENCES IN RADIONUCLIDE CONCENTRATIONS IN PLANTS AND ANIMALS FROM VARIOUS LOCATIONS WITHIN THE ARCTIC REGION, THE SAME GENERAL ECOLOGICAL PROCESSES EFFICIENTLY TRANSFER SIGNIFICANT AMOUNTS OF RADIONUCLIDES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*ECOLOGICAL CONSIDERATION + BIOLOGICAL CONCENTRATION, ANIMAL + BIOLOGICAL CONCENTRATION, FOOD + BIOLOGICAL CONCENTRATION, MAN + BIOLOGICAL CONCENTRATION, VEGETATION + CESIUM + FALLOUT + STRONTIUM

15-15264

MIETTINEN JK + HASANEN E

RESULTS OF PROJECT LAPLAND AT THE BEGINNING OF 1966  
DEPARTMENT OF RADIOCHEMISTRY, HELSINKI UNIVERSITY, FINLAND  
CONF-660405-15 +. 8 PAGES, FIGURES, TABLES, 1965

DATA ARE PRESENTED ON THE CONTENT OF CS-137 AND K IN THE BODY OF FINNISH LAPPS OBTAINED BY WHOLE-BODY COUNTING IN MARCH AND APRIL, 1966. DATA ARE INCLUDED ON THE CONTENT OF FE-55 IN THE TISSUES AND ORGANS OF REINDEER.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*BIOLOGICAL CONCENTRATION, MAN + CESIUM + COUNTER, WHOLE BODY + ECOLOGICAL CONSIDERATION + FINLAND + IRON + POTASSIUM

15-15265

ALSO IN CATEGORY 18

SURVEY OF ENVIRONMENTAL RADIOACTIVITY IN THE VICINITY OF INDIAN POINT STATION, FEBRUARY 1, 1966 THROUGH JULY 31, 1966  
U. S. ATOMIC ENERGY COMMISSION  
22 PAGES, FIGURES, TABLES, AUGUST 20, 1966, DOCKET NO. 50-3

AFTER 8 YEARS, THE PATTERN OF 30 SAMPLING POINTS WITHIN A 10-MILE RADIUS WAS CHANGED TO 11 POINTS WITHIN A 2-MILE RADIUS DOWNWIND/DOWNRIVER. DATA GIVEN ON ROUTINE MONITORING. NO. 14 BOILER HAD TUBE LEAKAGE (AIR EJECTOR OFFGAS SHOWED AR-41, N-13, KR-88, AND BA/LA-140 BUT NO IODINE). CHARCOAL MONITORS IN THE STACK SHOWED RADON DAUGHTERS, BUT NO IODINE. AIRBORNE ACTIVITY WAS UP IN JUNE AND JULY FROM WEAPONS TESTING. RIVER MUD AND ALGAE SHOWED COBALT AND MN-54, MOSTLY FROM WEAPONS TESTING.

AVAILABILITY - UNITED STATES ATOMIC ENERGY COMMISSION PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SURVEY, RADIATION, ENVIRONMENTAL + FAILURE, PIPE + FALLOUT + HEAT EXCHANGER + INDIAN POINT 1 + REACTOR OFFGAS + REACTOR, PRESSURIZED WATER

15-15267

OSBORNE RV + COWPER G

THE DETECTION OF TRITIUM IN AIR WITH IONIZATION CHAMBERS  
ATOMIC ENERGY OF CANADA LIMITED, CHALK RIVER, ONTARIO  
AECL-2604 +. 22 PAGES, 16 FIGURES, 5 REFERENCES, OCTOBER 1966



CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-15267 \*CONTINUED\*

MONITORS FOR DETECTING TRITIUM IN AIR IN THE PRESENCE OF GAMMA RADIATION HAVE BEEN MADE BY MOUNTING, COAXIALLY, A SEALED IONIZATION CHAMBER INSIDE AN IONIZATION CHAMBER WHICH CAN SAMPLE THE SURROUNDING AIR. THE EFFECTIVE VOLUME OF THE OUTER CHAMBER IS EQUAL TO THAT OF THE SEALED CHAMBER, AND ONLY THE DIFFERENCE IN CURRENT FROM THE PAIR OF CHAMBERS IS MEASURED. IN THIS WAY AS MUCH AS 98% OF THE GAMMA CONTRIBUTION TO THE IONIZATION CURRENT IN THE OUTER CHAMBER CAN IN PRACTICE BE CANCELLED OUT. SAMPLING RATES ARE HIGH ENOUGH FOR THE RESPONSE TIMES OF THE MONITORS TO BE LESS THAN ONE MINUTE.

AVAILABILITY - ATOMIC ENERGY OF CANADA LTD., CHALK RIVER, ONTARIO \$1.00 COPY

\*MONITOR, RADIATION, AIR + \*TRITIUM + INSTRUMENTATION, NUCLEAR + MONITOR, RADIATION, PERSONNEL

15-15269

THOMPSON RC + SWEZEA EG  
PACIFIC NORTHWEST LABORATORY ANNUAL REPORT FOR 1965 IN THE BIOLOGICAL SCIENCES  
RATTELLF-NORTHWEST, RICHLAND  
BNWL-280 +. 150 PAGES, FIGURES, TABLES, JANUARY 1966

PROGRESS IS REPORTED FOR THE RESEARCH PROGRAMS IN BIOLOGICAL SCIENCES AT THE PACIFIC NORTHWEST LABORATORY FOR 1965. AREAS OF STUDY INCLUDED RADIATION EFFECTS, TOXICITY OF RADIOELEMENTS, INHALATION, AND ENVIRONMENTAL RADIATION STUDIES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*ECOLOGICAL CONSIDERATION + \*INHALATION + \*RADIATION EFFECT + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + CESIUM + DOSIMETRY, THERMO LUMINESCENCE + IODINE + IRON + NEPTUNIUM + PLUTONIUM + PROMETHIUM + RADIATION PROTECTION, CHEMICAL + RUTHENIUM + SELENIUM + SOIL, RADIONUCLIDE MOVEMENT THROUGH + STRONTIUM + ZINC

15-15271

DATA FROM RADIATION PROTECTION PROGRAMS. VOLUME 3, NUMBER 11  
DEPARTMENT OF NATIONAL HEALTH AND WELFARE, OTTAWA, CANADA  
NP-15253 +. 34 PAGES, NOVEMBER 1965

RESULTS OF STABLE CALCIUM AND SR-90 DETERMINATIONS IN 1964 CANADIAN WHEAT SAMPLES ARE TABULATED. THE 1964 VALUES OF 77PC/KG WHEAT AND 233 PC/G CA REPRESENT A SIGNIFICANT DECREASE FROM THE 1963 VALUES. VARIATIONS OF SR-90 LEVELS ACCORDING TO GEOGRAPHICAL AREAS ARE EVIDENT. RESULTS OF FALLOUT MONITORING CARRIED OUT ON AIR, PRECIPITATION, AND MILK SAMPLES COLLECTED DURING OCTOBER 1965 ARE REPORTED. TOTAL BETA ACTIVITY IN AIR-FILTER SAMPLES CONTINUED TO SHOW NEGLIGIBLE LEVELS. DATA ON ENVIRONS MONITORING ARE REPORTED FOR THE CHALK RIVER REACTORS, THE NUCLEAR POWER DEMONSTRATION (NPD) REACTOR, THE DOUGLAS POINT (CANDU) REACTOR, THE WHITESHELL NUCLEAR RESEARCH ESTABLISHMENT (WNRE), AND THE MANITOBA (WR-1) REACTOR.

AVAILABILITY - MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669

\*CANADA + \*SURVEY, RADIATION, ENVIRONMENTAL + AIR + BIOLOGICAL CONCENTRATION, FOOD + BIOLOGICAL CONCENTRATION, MILK + CALCIUM + CESIUM + GROSS BETA + PRECIPITATION + STRONTIUM + SURFACE WATER, NUCLIDE OCCURRENCE

15-15272

ISHIHARA, T  
CENTRALIZED FIELD RADIOLOGICAL MONITORING SYSTEM AT NUCLEAR INSTALLATION  
JAPAN ATOMIC ENERGY RESEARCH INST., TOKYO  
JAERI-1000 +. 46 PAGES, JUNE 1965

THE EVALUATION OF REACTOR HAZARDS SHOWS THAT, IN THE CASE OF MAJOR ACCIDENTS, ADEQUATE PROCEDURES MUST BE TAKEN WITHIN A FEW HOURS OF THE ACCIDENT TO MINIMIZE THE RADIATION EXPOSURES. INCLUDED ARE THE REQUIREMENTS OF SUCH FIELD MONITORING, THEORETICAL ANALYSIS OF THE MONITORING SYSTEM USED WHEN THE RADIOACTIVE SUBSTANCES ARE RELEASED INTO THE ATMOSPHERE, DETAILED DESIGN OF THE SYSTEM, AND THE DEVELOPMENT OF THE CENTRALIZED FIELD-MONITORING SYSTEM AND EQUIPMENT.

AVAILABILITY - MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669

\*SURVEY, RADIATION, EMERGENCY + MONITOR, RADIATION, EMERGENCY + POPULATION EXPOSURE + RADIATION PROTECTION, ORGANIZATION + RADIATION SAFETY AND CONTROL

15-15273

ALSO IN CATEGORY 14  
COMAR CL + LENGEMANN FW + WASSERMAN RH + THOMPSON JC  
FISSION PRODUCT METABOLISM AND RESPONSE IN LABORATORY AND DOMESTIC ANIMALS AND PLANNING STUDY FOR EVALUATION OF RADIOACTIVE CONTAMINATION OF THE FOOD CHAIN. PROGRESS REPORT, JANUARY 1, 1964-DECEMBER 31, 1965  
NEW YORK STATE VETERINARY COLLEGE, ITHACA  
TID-22626 +. 155 PAGES, DECEMBER 1965

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-15273 \*CONTINUED\*

PROGRESS IS REPORTED IN THE EVALUATION OF THE LEVELS OF CERTAIN FISSION PRODUCTS IN THE FOOD CHAIN, INVESTIGATION OF FACTORS GOVERNING THE MOVEMENT OF CERTAIN FISSION PRODUCTS IN THE CHAIN, STUDY OF FUNDAMENTAL PHYSIOLOGICAL PROCESSES THAT DETERMINE THE LEVELS OF FISSION PRODUCTS THAT WILL OCCUR IN THE HUMAN POPULATION, ESTIMATION OF RADIATION DOSAGE TO TISSUES FROM INGESTED RADIONUCLIDES AND FROM EXTERNAL RADIATION, STUDY OF THE TRANSPORT OF MATERIALS ACROSS BIOLOGICAL MEMBRANES, AND CERTAIN ASPECTS OF GENETICS AND ITS RELATION TO THE FUNCTIONING OF THE ORGANISM. EMPHASIS WAS PLACED ON THE ALKALINE-EARTHS, PARTICULARLY CALCIUM AND STRONTIUM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*ECOLOGICAL CONSIDERATION + BIOLOGICAL CONCENTRATION, FOOD + BIOLOGICAL CONCENTRATION, MAN + BIOLOGICAL CONCENTRATION, MILK + CESIUM + DIETARY HABIT + DOSE CALCULATION, EXTERNAL + DOSE CALCULATION, INTERNAL + IODINE + STRONTIUM

15-15274

CESIUM-137 BODY BURDEN AND ITS VARIATION IN 22 NORWEGIAN SCHOOL BOYS  
NORSK RADIUMHOSPITAL, OSLO  
NYO-3364-3 +. 16 PAGES, 1964

THE CONTENT OF CS-137 AND K WERE DETERMINED BY WHOLE-BODY COUNTING IN 22 OSLO SCHOOL BOYS, AGED 16, 17, OR 18, IN MARCH 1963, OCTOBER 1963, MARCH 1964, AND OCTOBER 1964. THE CONTENT OF CS-137 IN ALL SUBJECTS INCREASED FROM MARCH TO OCTOBER 1963, BUT ONLY A SLIGHT INCREASE WAS OBSERVED IN 11 SUBJECTS FROM OCTOBER 1963 TO MARCH 1964. FROM MARCH 1964 TO OCTOBER 1964, 15 SHOWED AN INCREASE, AND 7 SHOWED A DECREASE. DATA ON THE HEIGHT AND WEIGHT OF THE SUBJECTS ARE INCLUDED. THE RELATION OF CS-137 CONTENT TO THE GLOBAL DISTRIBUTION OF FALLOUT FROM NUCLEAR WEAPON TESTS IS DISCUSSED BRIEFLY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*BIOLOGICAL CONCENTRATION, MAN + \*CESIUM + \*NORWAY + FALLOUT + POTASSIUM

15-15275

THE MEASUREMENT OF ENVIRONMENTAL RADIATION. ANNUAL REPORT  
NEW YORK UNIVERSITY  
TID-22205 +. 49 PAGES, REFERENCES, JULY 1, 1965

THE DESIGN AND CALIBRATION OF SPHERICAL IONIZATION CHAMBERS THAT UTILIZE HIGHLY ELECTRONEGATIVE FILLINGS AND LOW FIELD STRENGTHS ARE REPORTED. RESULTS ARE INCLUDED FROM MEASUREMENTS OF COSMIC RADIATION AT SEA LEVEL MADE ON LONG ISLAND SOUND. A NEW VALUE WAS OBTAINED FOR THE COSMIC-RAY BAROMETRIC-CORRECTION COEFFICIENT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*INSTRUMENTATION, RADIATION MONITORING + \*SURVEY, RADIATION, ENVIRONMENTAL + MONITOR, RADIATION, BACKGROUND

15-15280

ERICKSON GL  
PROCUREMENT SPECIFICATION FOR A LOGARITHMIC RADIATION MONITOR  
GENERAL ELECTRIC COMPANY, RICHLAND, WASHINGTON, HANFORD ATOMIC PRODUCTS OPERATION  
TID-21291 +. HWS-5991 +. 36 PAGES, MARCH 5, 1964

THE SPECIFICATION DESCRIBES THE DESIGN REQUIREMENTS FOR A LOGARITHMIC RADIATION MONITOR THAT CONSISTS OF AN INTEGRALLY PACKAGED SIX-DECADE LOGARITHMIC PICOAMMETER, INTERMEDIATE-LEVEL LIMIT DETECTOR, AND AN IONIZATION-CHAMBER POLARIZATION POWER SUPPLY. A DETAILED COMPLIANCE TEST AND GENERAL ACCEPTANCE TEST IS GIVEN.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*INSTRUMENTATION, RADIATION MONITORING + \*MONITOR, RADIATION, EMERGENCY + MONITOR, RADIATION, BACKGROUND

15-15281

ALSO IN CATEGORY 14

SCHREIBER R  
ECOLOGY OF ACANTHARIA IN RELATION TO SR CIRCULATION IN THE SEA  
UNIVERSITA. ISTITUTO DI ZOOLOGIA E ANATOMIA, PARMA, ITALY  
TID-21131 +. 10 PAGES, JUNE 1964

PROGRESS IS REPORTED IN RESEARCH ON THE ECOLOGY OF PLANKTON OF THE ATLANTIC OCEAN. EMPHASIS WAS PLACED ON STUDIES OF THE VARIOUS PHYSIOGRAPHIC ENVIRONMENTS PROVIDED BY THE CONTINENTAL SHELF, CONTINENTAL SLOPE, LABRADOR CURRENT, GULF STREAM, SARGASSO SEA, AND THE NORD EQUATORIAL CURRENT. RADIOCHEMICAL ANALYSES OF PLANKTON SAMPLES AND OF MARINE WATERS CONFIRMED THE PRESENCE OF SR-90, EU-155, AND SB-125 IN PLANKTON, AND ANALYSIS OF COASTAL SEDIMENTS FOR FALLOUT FISSION PRODUCTS SHOWED THAT THE FIRST 4 TO 6 CM RETAIN MOST OF THE

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-15281 \*CONTINUED\*  
SHORT-LIVED RADIOISOTOPES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65

\*ECOLOGICAL CONSIDERATION + \*OCEAN AND SEA + ANTIMONY + EUROPIUM + FALLOUT + RADIOCHEMICAL ANALYSIS + STRONTIUM + SURFACE WATER, NUCLIDE OCCURRENCE + SURVEY, RADIATION, ENVIRONMENTAL

15-15282

RAJU MR + LAMPO EJ + CURTIS SB + SPERINDE JM + RICHMAN C  
LITHIUM-DRIFTED SILICON DETECTOR USED AS A PULSE DOSIMETER  
UNIVERSITY OF CALIFORNIA, BERKELEY

UCPL-16024 + CONF-661020-15 +. 10 PAGES, 4 FIGURES, 8 REFERENCES, SEPTEMBER 27, 1966, FROM 13TH ANNUAL NUCLEAR SCIENCE SYMPOSIUM, BOSTON, MASS.

A LITHIUM-DRIFTED SILICON DETECTOR USED AS A PULSE RADIATION DOSIMETER IS DESCRIBED. IT IS USED TO MEASURE THE DEPTH-DOSE DISTRIBUTION OF PION BEAMS IN WATER. THE FRACTIONAL DOSE DUE TO ENERGY DEPOSITIONS ABOVE A PARTICULAR ENERGY IN THE DETECTOR CAN ALSO BE MEASURED. SUCH MEASUREMENTS YIELD INFORMATION ON THE DISTRIBUTION OF IONIZATION DENSITY. PRELIMINARY RESULTS OF THE PION-BEAM DOSIMETRY USING THIS PULSE DOSIMETER ARE GIVEN.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*DOSIMETRY, GENERAL

15-15283

SCOTT LM + WEST CM

AN EVALUATION OF U308 EXPOSURE WITH AN ESTIMATE OF SYSTEMIC BODY BURDEN  
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENN.

Y-K8-57 +. 6 PAGES, 4 FIGURES, 10 REFERENCES, HEALTH PHYSICS 13, PAGES 21-26, (1967)

THE COMPLETE PERSONNEL MONITORING DATA FOR AN EMPLOYEE EXPOSED TO U308 ENRICHED TO ABOUT 90% U-235 ARE EVALUATED. THREE-COMPONENT EXPONENTIAL MODELS ARE FITTED TO BOTH URINALYSIS AND IN VIVO MONITORING DATA. BIOLOGICAL HALF-LIFE ESTIMATES RANGE FROM 7 DAYS FOR THE FAST COMPONENT TO OVER 200 DAYS FOR THE LONG-TERM COMPONENT. A POWER FUNCTION HAVING A SLOPE OF -1.5 ALSO FIT THE DATA AFTER 10 DAYS. FECAL SAMPLING WAS INITIATED 8 DAYS AFTER SECESSION OF THE EXPOSURE. HOWEVER, THEY SHOWED INSIGNIFICANT LEVELS IN COMPARISON TO URINE AND WERE DISCONTINUED. TOTAL URINARY EXCRETION IS ABOUT 36,000 PC LOWER THAN ORIGINAL BURDEN AS ESTIMATED BY IN VIVO MONITORING. IT IS CONCLUDED THAT THIS DISCREPANCY CAN BE EXPLAINED EITHER BY ELIMINATION VIA THE FECES OR TRANSLOCATION TO THE BONE. AN ESTIMATE OF SYSTEMIC BODY BURDEN IS MADE FROM THESE DATA.

\*BIOLOGICAL CONCENTRATION, MAN + \*URANIUM

15-15285

LAGEQUIST CR + ALLEN IH + HOUMAN KL

PLUTONIUM EXCRETION FOLLOWING CONTAMINATED ACID BURNS AND PROMPT DTPA TREATMENTS  
ROCKY FLATS PLANT, DOW CHEMICAL COMPANY, GOLDEN, COLORADO

ORP-640 + CONF-651008-1 +. 12 PAGES, SEPTEMBER 8, 1965, FROM ANNUAL BIO-ASSAY MEETING, ALBUQUERQUE, N. MEXICO, HEALTH PHYSICS 13(1), PAGES 1-4 (JANUARY 1967)

DTPA (DIETHYLENTRIAMINEPENTAACETIC ACID) TREATMENTS REMOVED 99.5% OF THE PLUTONIUM FROM AN INDIVIDUAL WHO SUFFERED A CONTAMINATED NITRIC ACID BURN. THE TREATMENTS WERE GIVEN PROMPTLY AND CONTINUED FOR 27 DAYS. A TOTAL OF 210,000 D/M OF PLUTONIUM WAS ELIMINATED IN THE URINE IN THE FIRST 60 DAYS AFTER THE ACCIDENT. THIS CASE IS SIMILAR TO AN EXPOSURE WHICH OCCURRED AT ROCKY FLATS A YEAR PREVIOUSLY. IN BOTH CASES, A SUM OF TWO EXPONENTIALS EXPRESSES THE DAILY PLUTONIUM EXCRETION IN THE URINE OVER THE FIRST 60 DAYS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA, 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*BIOLOGICAL CONCENTRATION, MAN + \*PLUTONIUM + RADIATION PROTECTION, CHEMICAL

15-15287

SOTOBAYASHI T + KOYAMA S

STRONTIUM-90 FALLOUT FROM SURFACE AND UNDERGROUND NUCLEAR TESTS

DEPARTMENT OF CHEMISTRY, NIIGATA UNIVERSITY, NIIGATA, JAPAN

2 PAGES, 2 TABLES, REFERENCES, SCIENCE, 152(3775), PAGES 1059-1060, (MAY 20, 1966)

DEPOSITION OF STRONTIUM-90 PER UNIT AREA PER UNIT FISSION ENERGY FROM THE SURFACE BLAST OF THE FIRST CHINESE ATOMIC BOMB WAS SEVERAL TIMES HEAVIER THAN THAT FROM AN EARLIER ATMOSPHERIC TEST SERIES. THE VENTING OF A RUSSIAN LARGE-SCALE UNDERGROUND TEST ALSO SIGNIFICANTLY INCREASED DEPOSITION OF SR-90 AT NIIGATA, JAPAN.

\*FALLOUT + \*JAPAN + \*STRONTIUM + NUCLEAR DETONATION + NUCLEAR EXPLOSION DEBRIS

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-15288

BEASLEY TM + PALMER HE  
LEAD-210 AND POLONIUM-210 IN BIOLOGICAL SAMPLES FROM ALASKA  
PACIFIC NORTHWEST LABORATORY, BATTELLE MEMORIAL INSTITUTE, RICHLAND, WASHINGTON  
2 PAGES, 2 TABLES, 5 REFERENCES, SCIENCE, 152(3725), PAGES 1062-1063, (MAY 20, 1966)

THE NATURALLY OCCURRING CONCENTRATIONS OF PB-210 AND PO-210 IN CERTAIN BIOLOGICAL SAMPLES FROM ALASKA ARE UNUSUALLY HIGH. THE CONCENTRATION PROCESSES ARE SIMILAR TO THOSE OBSERVED FOR ARTIFICIALLY PRODUCED RADIOACTIVE FALLOUT. CONCENTRATIONS OF THESE NUCLIDES ARE GREATER IN ALASKAN NATIVES THAN IN OTHER RESIDENTS OF THE U.S.

\*BIOLOGICAL CONCENTRATION, GENERAL + BIOLOGICAL CONCENTRATION, ANIMAL +  
BIOLOGICAL CONCENTRATION, ANIMAL FEED + BIOLOGICAL CONCENTRATION, VEGETATION +  
DOSE CALCULATION, INTERNAL + ECOLOGICAL CONSIDERATION + LEAD + POLONIUM

15-15289

FHHALT DH + RAINBRIDGE AE  
A PEAK IN THE TRITIUM CONTENT OF ATMOSPHERIC HYDROGEN FOLLOWING THE ACCIDENT AT WINDSCALE  
NATIONAL CENTER FOR ATMOSPHERIC RESEARCH, BOULDER, COLORADO  
2 PAGES, 1 FIGURE, NATURE, 209(5026), PAGES 903-904, (FEBRUARY 26, 1966)

A PEAK IN THE TRITIUM CONTENT OF SURFACE AIR DURING OCTOBER 1957 WAS ATTRIBUTED TO THE WINDSCALE INCIDENT. THE TOTAL TRITIUM RELEASED CANNOT BE ESTIMATED, BUT SINCE THE CONCENTRATION RETURNED TO ITS FORMER VALUE WITHIN EIGHT DAYS IT COULD NOT HAVE CONTRIBUTED SIGNIFICANTLY TO THE GLOBAL INVENTORY.

\*INCIDENT, WINDSCALE + \*TRITIUM

15-15290

ALSO IN CATEGORY 14

WILSON DD + CLINE JF  
REMOVAL OF PLUTONIUM-239, TUNGSTEN-185 AND LEAD-210 FROM SOILS  
DEPARTMENT OF BIOLOGY, BATTELLE-NORTHWEST LABORATORY, RICHLAND, WASHINGTON  
2 PAGES, 2 TABLES, NATURE, 209(5026), PAGES 941-942, (FEBRUARY 26, 1966)

PRESENTS STUDIES ON THE DESORPTION OF PU, W, AND PB FROM SOILS. PLANT UPTAKES WERE HIGHEST FROM ACID SOILS FOR BOTH PU AND PB, BUT W UPTAKE WAS LOWER. RESULTS INDICATE THAT THE COMMONLY USED SOIL-EXTRACTING PROCEDURES DO NOT GIVE RELIABLE ESTIMATES OF THE QUANTITIES OF THESE RADIONUCLIDES THAT CAN BE REMOVED BY PLANTS.

\*MINERAL EXCHANGE + \*PLUTONIUM + \*TUNGSTEN + BIOLOGICAL CONCENTRATION, VEGETATION +  
ECOLOGICAL CONSIDERATION + LEAD + SOIL, PROPERTY

15-15291

BRYANT FJ + GIBBS WJ + MORONEY JP + STEVENS DJ + TITTERTON EW  
STRONTIUM-90 IN THE AUSTRALIAN ENVIRONMENT DURING 1963  
U.K. ATOMIC ENERGY RESEARCH ESTABLISHMENT + COMMONWEALTH BUREAU OF METEOROLOGY + COMMONWEALTH DEPARTMENT  
OF SUPPLY + COMMONWEALTH X-RAY AND RADIUM LABORATORY + AUSTRALIAN NATIONAL UNIVERSITY + ATOMIC WEAPONS  
TESTS SAFETY COMMITTEE  
5 PAGES, 2 TABLES, 2 FIGURES, 9 REFERENCES, AUST, J. SCI., 27(8), PAGES 222-226, (1965)

PRESENTS RESULTS OF SURVEYS OF SR-90 IN THE AUSTRALIAN ENVIRONMENT. ALSO PRESENTS DATA FOR ACTIVITY LEVELS IN PRECIPITATION, FOODSTUFFS, MILK, ANIMALS, AND MAN. BIOLOGICAL CONSEQUENCES OF THE ACTIVITY LEVELS WERE DEEMED BY THE AUSTRALIAN NATIONAL RADIATION ADVISORY COMMITTEE TO BE INSIGNIFICANT, COMPARED WITH THE HAZARDS OF EVERYDAY LIFE.

\*AUSTRALIA + \*STRONTIUM + \*SURVEY, RADIATION, ENVIRONMENTAL + BIOLOGICAL CONCENTRATION, ANIMAL +  
BIOLOGICAL CONCENTRATION, FOOD + BIOLOGICAL CONCENTRATION, MAN + BIOLOGICAL CONCENTRATION, MILK +  
DIETARY HABIT + FALLOUT + PRECIPITATION + RAINOUT

15-15293

PATTERSON HW  
ACCELERATOR RADIATION MONITORING AND SHIELDING  
LAWRENCE RADIATION LABORATORY, UNIVERSITY OF CALIFORNIA, BERKELEY, CALIFORNIA  
UCRL-16145 (REV) + CONF 651109-15 +. 18 PAGES, NOVEMBER 17, 1965

RADIATION MEASUREMENTS AND SHIELDING STUDIED WERE MADE ON THE 60-INCH CYCLOTRON, THE 184-INCH CYCLOTRON, THE ELECTRON SYNCHROTRON, THE ELECTRON LINEAR ACCELERATOR, THE BEVATRON, THE HEAVY-ION LINEAR ACCELERATOR, THE PROTON LINEAR ACCELERATOR, AND THE 88-INCH CYCLOTRON. THESE MEASUREMENTS WERE MADE WITH THE PURPOSE OF IDENTIFYING THE VARIOUS COMPONENTS OF THE RADIATION FIELD AND DETERMINING THEIR ENERGY DISTRIBUTION. FAST NEUTRONS (0.1 TO 10 MEV) DOMINATE THE BIOLOGICAL HAZARD OF THE RADIATION FIELD NEAR A WELL-SHIELDED PARTICLE ACCELERATOR BY CONTRIBUTING MORE THAN HALF THE TOTAL REM DOSE. GAMMA RAYS AND LOW-ENERGY NEUTRONS CONTRIBUTE 10 TO 20%, AND HIGH-ENERGY NEUTRONS MAKE UP THE BALANCE. TECHNIQUES OF MEASUREMENT, APPLICATION OF SPECIFIC DETECTORS TO CERTAIN PROBLEMS, AND EXAMPLES OF

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-15293 \*CONTINUED\*  
MONITORING PROBLEMS AND THEIR SOLUTIONS ARE GIVEN IN SOME DETAIL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*MONITOR, RADIATION, GENERAL + ACCELERATOR + DOSE CALCULATION, EXTERNAL + DOSE MEASUREMENT, EXTERNAL + LRL (LAWRENCE RADIATION LABORATORY) + SHIELDING

15-15294  
VANT RIFT R  
RADIOISOTOPE REMOVAL FROM MILK. FINAL REPORT, JUNE 1, 1964-NOVEMBER 30, 1964  
VIRGINIA UNIVERSITY, CHARLOTTESVILLE, VIRGINIA  
TID-21796 +. 14 PAGES

A METHOD WAS DEVELOPED FOR RAPIDLY AND ACCURATELY DETERMINING OF TRACES OF SR IN MATERIALS OF HIGH CA CONTENT. THE METHOD USES A COMBINATION OF COMMERCIAL RESINS, BUFFERS, AND CHELATING AGENTS FOR THE SEPARATION OF SR AND CA. GOOD RESULTS WERE OBTAINED IN SOLUTIONS OF CaCl<sub>2</sub>, SEA WATER, TAP WATER, BONE ASH, CLAM SHELLS, AND DOLOMITE. POSSIBLE APPLICATIONS OF THE METHOD IN THE REMOVAL OF SR-85 FROM MILK ARE DISCUSSED. STUDIES INDICATED THAT THE METHOD WILL BE USEFUL IN REDUCING MILD CONTAMINATION OF MILK BY FALLOUT, OR CAN BE USED FOR THE NEUTRALIZATION OF ACIDIFIED MILK IN CONJUNCTION WITH THE BELTSVILLE METHOD OF MILK DECONTAMINATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151 \$3.00 COPY, \$0.65 MICROFICHE

\*BIOLOGICAL CONCENTRATION, MILK + \*STRONTIUM + ANALYTICAL TECHNIQUE, GENERAL + CALCIUM + DECONTAMINATION

15-15296  
FRENCH PL + OLMEDO L  
GROUND ROUGHNESS CALCULATIONS FOR FALLOUT GAMMA RAYS. FINAL REPORT  
RADIATION RESEARCH ASSOCIATED, INC., FORT WORTH, TEXAS  
PRA-T61 AND SUMMARY + AD-637427 +. 76 PAGES, FIGURES, TABLES, REFERENCES, JUNE 30, 1966

FOUR MODELS WERE STUDIED FOR CALCULATING THE EFFECT OF GROUND ROUGHNESS ON THE GAMMA-RAY ENERGY AND ANGULAR DISTRIBUTION IN AIR ABOVE A FALLOUT FIELD. ONE MODEL, THE BURIED-SOURCE MODEL ASSUMED THAT A UNIFORM THIN LAYER OF SOIL COVERS THE FALLOUT, WITH THE THICKNESS OF THE LAYER CORRESPONDING TO THE DEGREE OF GROUND ROUGHNESS. ANOTHER, THE MIXED-SOURCE MODEL, ASSUMES THAT THE FALLOUT IS MIXED WITH A THIN LAYER OF SOIL. A THIRD, THE COLLIMATED-SOURCE MODEL, ASSUMES THAT THE FALLOUT IS DEPOSITED ON SMOOTH GROUND BUT THAT THE GAMMA-RAY EMISSION IS CONSTRAINED TO CERTAIN ANGULAR SECTORS. THE LAST MODEL, THE FURROWED-SURFACE MODEL, ASSUMES THAT THE FALLOUT IS DISTRIBUTED OVER A GROUND SURFACE WHICH HAS UNIFORM CONCENTRIC CIRCULAR FURROWS. RESULTS INDICATE THAT THE MAGNITUDE AND THE ANGULAR DISTRIBUTION OF THE UNCOLLIDED FLUX IS STRONGLY INFLUENCED BY GROUND ROUGHNESS. THE SINGLY SCATTERED FLUX IS MUCH LESS SENSITIVE TO GROUND ROUGHNESS THAN IS THE UNCOLLIDED FLUX.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*SURVEY, RADIATION, ENVIRONMENTAL + DOSE MEASUREMENT, EXTERNAL

15-15297  
RILKIEWICZ J + SZEPEK R  
SR-90 AND CS-137 CONTENT IN SOME FOODSTUFFS, POLAND, 1962  
CENTRALNE LABORATORIUM OCHRONY RADIOLOGICZNEJ, WARSAW  
CLOP-56 +. 26 PAGES, 1966

CS-137 AND SR-90 CONTENT IN MILK, COTTAGE-CHEESE, WHEAT-RYE BREAD, POTATOES, CABBAGE, BEEF, SEA FISH AND FRESH WATER FISH WERE DETERMINED, TABULATED, AND PLOTTED ON FIGURES. THE DANGER OF CS-137 AND SR-90 INTAKE WITH HUMAN DIET, WATER AND AIR WAS ALSO ESTIMATED. IT REPRESENTED IN 1962 1.36% AND 22%, RESPECTIVELY, OF MAXIMUM ACCEPTABLE VALUES FOR INTERNAL RADIATION EXPOSURE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*BIOLOGICAL CONCENTRATION, FOOD + \*CESIUM + \*POLAND + \*STRONTIUM + BIOLOGICAL CONCENTRATION, MILK + POPULATION EXPOSURE

15-15298  
KREBS JS + BRAUER RW  
ACCUMULATION OF LETHAL IRRADIATION DOSES BY FRACTIONATED EXPOSURE TO X-RAYS  
NAVAL RADIOLOGICAL DEFENSE LABORATORY, SAN FRANCISCO, CALIFORNIA  
USNPD-L-TR-784 +. 23 PAGES, 1 FIGURE, 3 TABLES, 17 REFERENCES, SEPT. 22, 1964

THE LD-50 OF MICE FOR EXPOSURE TO DAILY FRACTIONATED IRRADIATION WAS MEASURED FOR FRACTIONATION PERIODS OF 5 TO 60 DAYS. THE AMOUNT OF RECOVERY OCCURRING DURING THE

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-15298 \*CONTINUED\*

FRACTIONATION WAS FOUND TO DEPEND LARGELY ON THE NUMBER OF DOSE FRACTIONS, RATHER THAN ON THE SIZE OF FRACTIONS OR THE TOTAL TIME DURATION. THE AMOUNT OF RECOVERY DID NOT AGREE WITH THE MODEL INVOLVING EXPONENTIAL DECAY OF INJURY WITH TIME AFTER EXPOSURE. THE RESULTS SUGGEST THAT THE BIOLOGICAL BASIS FOR THE RECOVERY IS THE PROMPT REPAIR OF SUBLETHAL INJURY TO VITAL CELLS OF THE MOUSE DURING THE INTERVALS BETWEEN EXPOSURES TO RADIATION. THE EXISTENCE OF SIMILAR RECOVERY PATTERNS IN PREVIOUS STUDIES OF DOSE FRACTIONATION IS POINTED OUT. THE RELATIONSHIP OF THE PRESENT PATTERN OF RADIATION EXPOSURE TO OTHER PATTERNS FOR CHRONIC RADIATION EXPOSURE IS DISCUSSED BRIEFLY.

AVAILABILITY - DEFENSE DOCUMENTATION CENTER, CAMERON STATION, ALEXANDRIA, VIRGINIA

\*RADIATION EFFECT + \*X-PAY

15-15299

FRANK AL. + TAYLOR RA

GAMMA RADIATION CHARACTERISTICS - ANGULAR DISTRIBUTION OVER A DESERT TERRAIN FALLOUT FIELD  
NAVAL RADIOLOGICAL DEFENSE LAB., SAN FRANCISCO, CALIF.

USNRDL-TR-856 +. 92 PAGES, 41 FIGURES, 4 TABLES, 18 REFERENCES, JUNE 11, 1965

IN THE SUMMER OF 1962, A GAMMA-RADIATION SPECTROSCOPY EXPERIMENT, IN CONJUNCTION WITH PROJECT 2.141 OF THE DOMINIC II SUN BEAM TEST SERIES, WAS CARRIED OUT IN A FALLOUT FIELD AT THE NEVADA TEST SITE NEAR MERCURY, NEV. THE MAIN PROBLEM WAS TO MEASURE THE GAMMA-RAY SPECTRA AS A FUNCTION OF ANGLE OF INCIDENCE. THE MEASUREMENTS WERE MADE AT A HEIGHT OF 4 FT. DATA WERE TAKEN FOR SIX AZIMUTHAL AND TEN VERTICAL ANGLES OF THE DETECTOR AT 3 DAYS AND 9 DAYS AFTER SHOT TIME, RESPECTIVELY. A CALCULATION OF GROUND ROUGHNESS FOR THE DESERT TERRAIN WAS MADE BY THE ABSORBING OVERLAYER MODEL. AN OVERLAYER EQUIVALENT TO ABOUT 24 FT OF AIR WAS FOUND TO BEST ACCOUNT FOR THE GROUND ROUGHNESS.

AVAILABILITY - DEFENSE DOCUMENTATION CENTER, CAMERON STATION, ALEXANDRIA, VIRGINIA

\*SURVEY, RADIATION, ENVIRONMENTAL + DOSE MEASUREMENT, EXTERNAL

15-15300

MENKES CK + GOLDSTEIN N

COLOR FILMS FOR MEGARAD DOSIMETRY

NAVAL RADIOLOGICAL DEFENSE LAB., SAN FRANCISCO, CALIF.

USNRDL-TR-1097 +. 50 PAGES, 63 FIGURES, 7 REFERENCES, OCT. 13, 1966

DYED COLOR FILMS MANUFACTURED FOR THEATRICAL LIGHTING WERE TESTED FOR DOSIMETRIC RESPONSE BETWEEN 10 TO THE 5TH AND 10 TO THE 8TH P. OPTICAL DENSITY FOR 61 COLORED FILMS AS A FUNCTION OF WAVELENGTH WAS MEASURED BEFORE AND AFTER AN EXPOSURE OF 50 MILLION R. BASED ON THE SENSITIVITY AND STABILITY OF THE 61 EXPOSED FILMS, TWO WERE INVESTIGATED FOR CHANGE IN OPTICAL DENSITY AT AN OPTIMUM WAVELENGTH AS A FUNCTION OF EXPOSURE VALUE. THE EFFECT OF STORAGE TEMPERATURE WAS ALSO INVESTIGATED FOR ONE OF THE FILMS.

AVAILABILITY - DEFENSE DOCUMENTATION CENTER, CAMERON STATION, ALEXANDRIA, VA.

\*DOSIMETRY, PHOTOGRAPHIC + GAMMA

15-15301

JOHNSON AR

STRONTIUM INCORPORATION INTO DENTAL ENAMEL

UNIVERSITY OF MINNESOTA

2 PAGES, 1 TABLE, 15 REFERENCES, SCIENCE 153(3742), PAGES 1396-1397, (SEPT. 1966)

RATS WERE RAISED ON DIETS EITHER RICH OR POOR IN STRONTIUM. POWDER X-RAY DIFFRACTION PATTERNS SUGGEST THAT ISOMORPHOUS SUBSTITUTION OF STRONTIUM FOR CALCIUM OCCURS IN THE APATITE OF TOOTH ENAMEL, AND THAT STRONTIUM MAY FORM DIHYDRATED  $SR_6H_3(P_04)$ , A COMPOUND HITHERTO UNREPORTED IN BIOLOGIC SYSTEMS.

\*BIOLOGICAL CONCENTRATION, ANIMAL + \*STRONTIUM

15-15307

ALSO IN CATEGORY 18

FREDRICKSON RL

IODINE INHALATION AT ABBOTT LABORATORIES, DEC. 20-26, 1966

ABBOTT LABORATORY, NORTH CHICAGO

2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(13), PAGES 29-30, (MARCH 27, 1967)

ABBOTT LABS., NORTH CHICAGO, ILL, REPORTS (JANUARY 29, 1967) THAT AN EMPLOYEE'S THYROID MEASURED 116% OF MAX. PERMISSIBLE BODY BURDEN (I-131). AIR-CONCENTRATION MEASUREMENTS DO NOT ACCOUNT FOR THIS. ALSO, A SIMILAR OPERATOR DID NOT SHOW THYROID ACCUMULATION.

\*INCIDENT, ACTUAL, GENERAL + \*PERSONNEL EXPOSURE, RADIATION + FISSION PRODUCT, IODINE + INHALATION + MAXIMUM PERMISSIBLE BODY BURDEN

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-15308 ALSO IN CATEGORY 18  
FREDRICKSON RL  
IODINE INHALATION AT ABBOTT LABORATORIES. JAN 30 - FEB. 5, 1967  
ABBOTT LABORATORIES, NORTH CHICAGO, ILL.  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(13), PAGE 30, (MARCH 27, 1967)

ABBOTT LABS., NORTH CHICAGO, ILL., REPORTS (FEB. 27, 1967) THAT AN EMPLOYEE AVERAGED 102% MAX. PERMISSIBLE BODY BURDEN OF I-131 (PEAK 158%) OVER FIVE DAYS. AIR-SAMPLING DATA SHOWS AVERAGE FOR A WEEK WAS 54% OF MPC, EXCEPT THAT NO SAMPLE WAS TAKEN JAN. 27. EMPLOYEE TERMINATED IN FEBRUARY 1967.

\*INCIDENT, ACTUAL, GENERAL + \*PERSONNEL EXPOSURE, RADIATION + FISSION PRODUCT, IODINE + INHALATION + MAXIMUM PERMISSIBLE BODY BURDEN

15-15309 ALSO IN CATEGORY 18  
FORSCHER F  
INHALATION OVEREXPOSURES OF 8 EMPLOYEES AT NUMEC APOLLO, PA.  
NUCLEAR MATERIALS AND EQUIPMENT CORP., APOLLO, PA.  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(13), PAGE 31, (MARCH 27, 1967)

NUMEC REPORTS (FEB. 20, 1967) 8 AIRBORNE EXPOSURES ABOVE 40 MPC-HOURS TO ENRICHED URANIUM. (1) TWO BLENDERS (ONE TOOK 1500 MPC-HOURS) FOUND THAT CONTAMINATED GLOVES RELEASED AEROSOLS. (2) THREE MAJAC-MILL/FILTER CUTTERS BEAT DUST BAGS THROUGH OPEN HOOD-DOORS. (3) ONE FURNACE OPERATOR WAS INEXPERIENCED AND HAD JUST BEEN TRANSFERRED. (4) TWO INCINERATOR EXPOSURES WERE DUE TO NOT CONFINING ASHES DURING TRANSFER FROM INCINERATOR TO ASH BOX.

\*INCIDENT, ACTUAL, GENERAL + \*PERSONNEL EXPOSURE, RADIATION + FAILURE, ADMINISTRATIVE CONTROL + INHALATION

15-15310 ALSO IN CATEGORIES 17 AND 18  
FORSCHER F  
DETAILS OF NUMEC IRIIDIUM 192 RELEASE JAN. 14, 1967  
NUCLEAR MATERIALS AND EQUIPMENT CORP., APOLLO, PA.  
2 PAGES, ATOMIC ENRGY CLEARING HOUSE 13(13), PAGES 31-32, (MARCH 27, 1967)

NUMEC REPORTS (FEB. 13, 1967) THAT ABOUT NOON DURING DECAPSULATION OF 2000 CURIES OF IRIIDIUM-192, SIX PELLETS WERE CUT INTO WITH A HIGH-SPEED WHEEL. HOT-CELL AIRFLOW PATTERN WAS DISTURBED BY VARIOUS OPENINGS, INCREASED FILTER PRESSURE DROP, AND INTERACTION BETWEEN THE INTRACELL ALPHA-BOXES VENT SYSTEMS AND THE NORMAL HOT-CELL VENTILATION SYSTEMS. TWO OPERATORS RECEIVED ABOUT 1 REM AND WERE EXPOSED AT 125 MPC-HOURS. DOSIMETERS INDICATED ONLY 1/10 THE FILM-BADGE READINGS. CELL MODIFICATION WILL TAKE A MONTH.

\*HOT CELL + \*PERSONNEL EXPOSURE, RADIATION + \*VENTILATION SYSTEM + FAILURE, OPERATOR ERROR + INCIDENT, ACTUAL, HUMAN ERROR + MODIFICATION, SYSTEM OR EQUIPMENT

15-15312  
THOMPSON JC + COMAR CL  
ESTIMATION OF DIETARY STRONTIUM-90 BY URINARY ASSAY. APPLIED AND THEORETICAL ASPECTS  
CORNELL UNIVERSITY, ITHACA, NEW YORK  
8 PAGES, 2 FIGURES, 18 REFERENCES, HEALTH PHYSICS, 13(1), PAGES 5-13, (JANUARY 1967)

IN CONTROLLED STUDIES WITH A GROUP OF ADULTS AND 4-5 YEAR OLD CHILDREN, VALUES WERE DETERMINED FOR URINE/DIET (SP/CA OF URINE/SR/CA OF DIET) AND RELATIONSHIPS ESTABLISHED BETWEEN THE URINE/DIET AND THE URINARY CALCIUM EXCRETION. THE BASIS IS GIVEN FOR ESTIMATION OF LEVELS OF DIETARY 90-SR/CA FROM DETERMINATIONS OF URINARY 90-SR/CA. IN CHILDREN, THE DIETARY 90-SR/CA WAS ABOUT 0.5 THE VALUE OF URINARY 90-SR/CA. A THEORETICAL MODEL IS GIVEN TO WHICH THE DATA ARE SHOWN TO CONFORM.

\*BIOLOGICAL CONCENTRATION, MAN + CALCIUM + STRONTIUM

15-15314  
ORP H  
EXCRETION OF ORALLY ADMINISTERED ZINC-65 BY THE COTTON RAT IN THE LABORATORY AND FIELD  
DEPARTMENT OF BIOLOGY, ST. OLAF COLLEGE, NORTHFIELD, MINNESOTA  
6 PAGES, 3 FIGURES, 1 TABLE, 8 REFERENCES, HEALTH PHYSICS, 13(1), PAGES 15-20, (JANUARY 1967)

ZINC-65 UPTAKE AND EXCRETION BY NONSTARVED COTTON RATS DID NOT DIFFER FROM LEVELS PREVIOUSLY REPORTED BY RICHMOND ET AL. FOR THE WHITE RAT. SUBJECTS STARVED BEFORE INGESTION ASSIMILATED LESS ZINC BUT EXCRETED IT AT THE SAME RATE AS NONSTARVED SUBJECTS. UPTAKE LEVELS FROM SOLID FOOD AND WATER WERE SIMILAR. DURING LATE FALL, SUBJECTS IN A 2-ACRE ENCLOSURE EXCRETED ZINC FASTER THAN LABORATORY SUBJECTS, BUT NO DIFFERENCE BETWEEN CONDITIONS WAS FOUND DURING LATE WINTER AND SPRING. IT APPEARED DOUBTFUL THAT EXCRETION RATES WERE RELATED TO ACTIVITY LEVELS.

\*BIOLOGICAL CONCENTRATION, ANIMAL + INGESTION + ZINC

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-15315

FOSTER PF + HONSTEAD JF

ACCUMULATION OF ZINC-65 FROM PROLONGED CONSUMPTION OF COLUMBIA RIVER FISH

RATTELLF MEMORIAL INSTITUTE, PACIFIC NORTHWEST LABORATORY, RICHLAND, WASHINGTON

5 PAGES, 3 FIGURES, 8 REFERENCES, HEALTH PHYSICS, 13(1), PAGES 39-43, (JANUARY 1967)

FISH CAUGHT DOWNRIVER FROM THE HANFORD REACTORS WERE EATEN ONCE A WEEK FOR MORE THAN A YEAR IN ORDER TO PROVIDE REASONABLE ESTIMATES OF THE QUANTITY WHICH MIGHT BE CONSUMED BY PERSONS LIVING IN THE ENVIRONS AND THE ASSOCIATED INTAKE OF P-32 AND ZN-65. IN A 12-MONTH PERIOD THIS AMOUNTED TO ABOUT 25 LB OF FISH, 3000 NCI P-32 AND 800 NCI ZN-65. THE ACCUMULATION OF ZN-65 IN THE CONSUMER WAS MEASURED EACH WEEK IN A WHOLE-BODY COUNTER IN ORDER TO TRACE THE BUILDUP AND FOLLOW THE SEASONAL TREND. A MAXIMUM BODY BURDEN OF ABOUT 130 NCI ZN-65 WAS REACHED ON DAY 104 AND AGAIN ON DAY 310. AFTER THE INITIAL BUILDUP TOWARD EQUILIBRIUM, THE BODY BURDEN APPROXIMATED SEVEN TIMES THE WEEKLY INTAKE--MORE THAN ANTICIPATED FROM SOME PUBLISHED PARAMETERS. THE REDUCTION OF ZN-65 BODY BURDEN FOLLOWING THE LAST MEAL OF COLUMBIA RIVER FISH WAS OBSERVED FOR 511 DAYS, INDICATING AN EFFECTIVE HALF-LIFE OF 162 DAYS.

\*DIETARY HABIT + \*ZINC + BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + BIOLOGICAL CONCENTRATION, MAN + ECOLOGICAL CONSIDERATION + PHOSPHORUS + RIVER, COLUMBIA

15-15317

VENNART J

WHOLE-BODY COUNTERS IN ROUTINE MONITORING

RADIOLOGICAL PROTECTION SERVICE, BELMONT, SUTTON, SURREY

11 PAGES, 1 TABLE, 16 REFERENCES, HEALTH PHYSICS, 13(1), PAGES 61-72, (JANUARY 1967)

WORK WITH RADIOACTIVE MATERIALS SHOULD BE PROPERLY PLANNED AND CONTROLLED SO THAT THE RADIOACTIVITIES ENTERING THE BODIES OF WORKERS ARE VERY SMALL. THE PRINCIPAL USE OF WHOLE-BODY COUNTERS IN ROUTINE MONITORING FOR BODY RADIOACTIVITY, SHOULD BE TO DETECT THOSE OCCASIONAL ACCIDENTAL INTAKES OF RADIOACTIVE MATERIAL WHICH ARE GREATER THAN SIGNIFICANT LEVELS. A SIGNIFICANT ACTIVITY IS TAKEN TO BE ONE-TENTH THE QUARTERLY LIMIT RECOMMENDED BY ICRP. ABOUT 85% OF THE 111 RADIONUCLIDES CONSIDERED HAVE VALUES OF AN WHICH ARE GREATER THAN 0.1 GAMMA-PAY MICROCI, MANY GREATLY IN EXCESS OF THIS VALUE. IT IS CONCLUDED THAT THERE IS SCOPE FOR THE DEVELOPMENT OF A SIMPLE WHOLE-BODY COUNTER FOR ROUTINE USE AND THAT THERE ARE FEW RADIONUCLIDES FOR WHICH THE SETTING UP OF HIGH-SENSITIVITY WHOLE-BODY COUNTERS IS JUSTIFIED. THE USE OF HIGH-SENSITIVITY EQUIPMENT IS BEST LIMITED TO A FEW SPECIALIST CENTRES HAVING THE PERSONNEL AND FACILITIES REQUIRED TO MAKE BEST USE OF THE EQUIPMENT.

\*COUNTER, WHOLE BODY + MAXIMUM PERMISSIBLE BODY BURDEN

15-15352

DEFORTOLI M + GAGLIONE P + MALVICINI A

FALLOUT CONCENTRATIONS OF SOME RADIONUCLIDES FROM 1963 THROUGH 1964

ISPRA, ITALY

NUCLEAP INSTRUMENTS AND METHODS, 35, PAGES 177-179, (1965)

RADIONUCLIDE CONCENTRATIONS IN FALLOUT SAMPLES COLLECTED AT ISPRA DURING 1963-1964 AND MEASURED BY THE SITE SURVEY GROUP ARE REPORTED. DETAILS ARE GIVEN OF THE SPECTROMETRIC TECHNIQUE USED TO DETERMINE RADIONUCLIDES HAVING GAMMA RADIATION EMITTED IN CASCADE. SOME DIFFERENCES ARE OBSERVED BETWEEN THE FALLOUT RATES OF FISSION AND ACTIVATION PRODUCTS.

\*FALLOUT + \*ITALY + EURATOM + GAMMA

15-15354

KNOPF E + BUCHEIM W

BIBLIOGRAPHICAL SURVEY ON FACILITIES AND PROCESSES FOR RADIOACTIVE MILK DECONTAMINATION

VERSUCHS- U. FORSCHUNGSANST. F. MILCHWIRTSCH. LIEL, GERMANY

EUR 2507 D +. 66 PAGES, 8 FIGURES, (1965). IN GERMAN

THIS SURVEY WAS MADE TO COMPILE ALL DATA PUBLISHED IN THE RELEVANT LITERATURE UP TO MID-1964 FOR ASCERTAINING THE PROGRESS ACHIEVED IN PROCESSES FOR MILK DECONTAMINATION. THE MAIN POINT AT ISSUE CONCERNED THE PRACTICABILITY AND COSTS OF THE VARIOUS TECHNIQUES. CONSEQUENCES ARE DRAWN AS TO THE METHODS HOLDING OUT MOST PROMISE FROM THE TECHNICAL AND ECONOMIC STANDPOINTS. THE SURVEY SHOWS THAT THE FOLLOWING MAIN PRINCIPLES ARE APPLIED FOR MILK DECONTAMINATION - ION EXCHANGE, ELECTRODIALYSIS, DAIRY PROCESS.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

\*BIOLOGICAL CONCENTRATION, MILK + \*DECONTAMINATION + ION EXCHANGE

15-15357

ALLVEIN M + PAUGGER P + STAUDNER R

IDENTIFICATION OF ALPHA-EMITTING NUCLIDES IN FALL-OUT



CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-15357 \*CONTINUED\*  
KERNTECHNIK, 8(2), PAGE 06, (FEBRUARY 1966)

A LARGE INCREASE IN ALPHA ACTIVITY OCCURRED IN THE FALLOUT MEASURED IN MUNICH IN OCTOBER 1965. ANALYSIS OF THE RESIDUE SHOWED THAT ABOUT 75% OF THE INCREASED ACTIVITY WAS CAUSED BY PU-239 AND PU-240.

\*FALLOUT + \*GERMANY + ALPHA EMITTER + ANALYTICAL TECHNIQUE, SOLID + PLUTONIUM + RADIOCHEMICAL ANALYSIS

15-15367  
DEBORTOLI M + GAGLIONE P + MALVICINI A + VAN DER STRICHT F  
ENVIRONMENTAL RADIOACTIVITY ISpra 1964  
EUROPEAN ATOMIC ENERGY COMMUNITY, ISpra, ITALY  
EUR 2500 F +. 65 PAGES, 10 FIGURES, 1965

BRIEFLY DESCRIBES THE MEASUREMENTS OF ENVIRONMENTAL RADIOACTIVITY PERFORMED DURING 1964 BY THE ISpra SITE SURVEY GROUP. GIVES DATA ON THE CONCENTRATIONS OF SR-90, CS-137, AND OTHER RADIONUCLIDES IN FALLOUT, AIR, SOIL, WATERS, HERRAGE, ANIMAL BONES, AND FOOD.

AVAILABILITY -- MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

\*EUPATOM + \*SURVEY, RADIATION, ENVIRONMENTAL + AIR + BIOLOGICAL CONCENTRATION, ANIMAL + BIOLOGICAL CONCENTRATION, FOOD + BIOLOGICAL CONCENTRATION, VEGETATION + CESIUM + FALLOUT + ITALY + SOIL, NUCLIDE OCCURRENCE + STRONTIUM + WATER, GENERAL

15-15368  
BERNHARD M  
STUDIES ON THE RADIOACTIVE CONTAMINATION OF THE SEA (ANNUAL REPORT 1964)  
COMITATO NAZIONALE PER L'ENERGIA NUCLEARE, ITALY  
EUR-2543 E + RT/810(65)-18 +. 35 PAGES, 18 FIGURES, 1965

THE PROGRAM OF THIS CONTRACT REQUIRES STUDYING THE FACTORS THAT INFLUENCE THE UPTAKE, ACCUMULATION, AND LOSS OF RADIOISOTOPES BY MARINE ORGANISMS. THE PROGRAM IS DIVIDED INTO TWO PARTS - A SURVEY OF THE ELEMENTS AND FACTORS IN A SAMPLING AREA, AND EXPERIMENTS ON THE INFLUENCE OF ENVIRONMENTAL FACTORS ON THE UPTAKE, ACCUMULATION, AND LOSS OF RADIOISOTOPES BY MARINE ORGANISMS IN RELATION TO THE DATA OBTAINED IN THE SURVEY. THE TASK OF CARRYING OUT THIS PROGRAM IS DIVIDED AMONG 5 GROUPS - CHEMISTRY, BOTANY, MICROBIOLOGY, ZOOLOGY, AND SPECIAL DEVELOPMENTS. AN ACCOUNT OF THE RESULTS OBTAINED BY THESE GROUPS IN 1964 (SECOND ANNUAL REPORT) IS GIVEN.

AVAILABILITY - MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669

\*BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + \*OCEAN AND SEA + ECOLOGICAL CONSIDERATION + SURFACE WATER, NUCLIDE OCCURRENCE

15-15371  
LEIMDORFF M + ALSMILLER RG + BROUGHNER RT  
CALCULATIONS OF THE RADIATION HAZARD DUE TO EXPOSURE OF SUPERSONIC AIRCRAFT TO SOLAR FLARE PROTONS  
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE  
ORNL-TM-1594 + ORNL-P-2637 +. 24 PAGES, 2 FIGURES, TABLES, 1966, NUCLEAR SCIENCE AND ENGINEERING, 27, PAGES 151-157, (1967)

Monte Carlo transport calculations were made to estimate the dose that travelers in supersonic aircraft will receive from a typical spectrum of solar-flare protons. The dose, from both primary protons and secondary particles, as a function of depth in a tissue slab placed at various depths in the atmosphere, was obtained. The incident spectrum is broken into eight energy regions, and the dose from the incident protons in each of these regions is presented.

\*AEROSPACE SAFETY + \*DOSE CALCULATION, EXTERNAL + \*HAZARDS ANALYSIS + PERSONNEL EXPOSURE, RADIATION + POPULATION EXPOSURE

15-15490 ALSO IN CATEGORIES 5 AND 18  
QUESTION VII L - CONSEQUENCES OF COOLANT-HOLDUP-TANK RUPTURE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE L-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

ANALYZE THE CONSEQUENCES OF THE VOLUME-CONTROL-TANK RUPTURE. PROVIDE DATA ON THE FLOW RATES AND CLEANUP CONSTANTS USED TO DETERMINE THE FISSION-PRODUCT CONCENTRATION. HOW MANY CURIES OF NOBLE GASES AND IODINE ARE AVAILABLE FOR RELEASE BY THIS MECHANISM. WHAT SPECIFIC ASSUMPTIONS WERE MADE TO CAUSE THE THYROID DOSE TO BE INSIGNIFICANT WITH RESPECT TO THE WHOLE-BODY DOSE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + AIRBORNE RELEASE + COOLANT PURIFICATION SYSTEM + DOSE + FAILURE, PRESSURE VESSEL + FISSION PRODUCT, IODINE + REACTOR, PRESSURIZED WATER + ROBINSON 2 + STORAGE CONTAINER

CATEGORY 15  
ENVIRONMENTAL SURVEYS, MONITORING AND RADIATION EXPOSURE OF MAN

15-15491 ALSO IN CATEGORY 18  
QUESTION VII M AND N - DETAILS OF ANALYSIS OF GAS-DECAY-TANK RUPTURE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGE M-1 AND N-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS  
REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

IN THE GAS-DECAY-TANK-RUPTURE ACCIDENT, WHAT CONSTANTS WERE USED TO CALCULATE THE INVENTORY OF THIS VESSEL. WHAT IS THE ISOTOPIC BREAKDOWN OF THE CONTENTS. WHAT IS THE AVERAGE HOLDUP TIME IN THIS VESSEL. WHY IS THERE NO SIGNIFICANT THYROID DOSE. (N) WHAT FAILURES OR MALOPERATIONS WOULD BE REQUIRED TO OVER-PRESSURIZE A GAS-DECAY TANK FROM THE NITROGEN BOTTLES, THUS CAUSING A LEAK OR RUPTURE. WHAT ARE THE DESIGN AND OPERATING PRESSURES OF THESE TANKS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + AIRBORNE RELEASE + DOSE + FAILURE, PRESSURE VESSEL + FISSION PRODUCT, IODINE + REACTOR OFFGAS + REACTOR, PRESSURIZED WATER + ROBINSON 2 + STORAGE CONTAINER + WASTE DISPOSAL, GAS

15-15496 ALSO IN CATEGORIES 5 AND 18  
QUESTION VII S - OFF-SITE DOSE DUE TO PLUTONIUM DURING MCA  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
8 PAGES, 1 FIGURE, PAGES S-1 TO S-R OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

PROVIDE THE PLUTONIUM (PU-238 TO PU-241) ISOTOPIC CONCENTRATIONS WHICH EXIST IN THE CORE AT THE END OF CORE LIFE. DISCUSS THE CREDIBILITY THAT IF CORE MELTDOWN OCCURS, SUFFICIENT QUANTITIES COULD BECOME AIRBORNE TO CONTRIBUTE SIGNIFICANTLY TO THE OFF-SITE DOSE. EXPLAIN YOUR ASSUMPTIONS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, MAXIMUM CREDIBLE (MCA) + AIRBORNE RELEASE + DOSE + FUEL BURNUP + PLUTONIUM + REACTOR, PRESSURIZED WATER + ROBINSON 2

15-15908 ALSO IN CATEGORY 14  
PERKINS EJ + WILLIAMS BR  
THE BIOLOGY OF THE SOLWAY FIRTH IN RELATION TO THE MOVEMENT AND ACCUMULATION OF RADIOACTIVE MATERIALS.  
XI. GENERAL DISCUSSION  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, ANNON, SCOTLAND  
PG-REPORT-753 +. 7 PAGES 1966

RADIOACTIVE WASTE SOLUTIONS FROM THE WINDSCALE WORKS ENTER THE SOLWAY FIRTH OF THE IRISH SEA. RESULTS ARE SUMMARIZED FROM STUDIES CONDUCTED FROM 1961 THROUGH 1964 ON THE MOVEMENTS OF SILTS AND THE CONTENT OF RADIOACTIVITY IN VARIOUS LEVELS OF THE FOOD CHAIN, PARTICULARLY SHRIMP, SALMON, PLAICE, AND FLOUNDER. THE RADIOACTIVITY WAS DUE TO INSOLUBLE RU-106 AND SR-90. THE SOLUBLE EFFLUENT WAS RAPIDLY MIXED AND CARRIED SLOWLY OUT TO SEA. MEASUREMENTS OF THE CONTENT OF SR-90 AND RU-106 IN PLAICE AND FLOUNDER SHOWED THAT LITTLE OF THESE RADIONUCLIDES ARE PRESENT IN THE FLESH OF THE FISH WHERE THEY CAN BE TRANSFERRED TO MAN.

AVAILABILITY - BRITISH INFORMATION SERVICE, 845 THIRD AVE., N.Y. 10022, \$0.30 COPY

\*BIOLOGICAL CONCENTRATION, AQUATIC ORGANISMS + RUTHENIUM + STRONTIUM + SURFACE WATER, NUCLIDE OCCURRENCE + SURFACE WATER, SEDIMENT + UNITED KINGDOM + WASTE DISPOSAL, LIQUID

15-15956 ALSO IN CATEGORY 14  
RYAN JT  
RADIOLOGICAL RECOVERY REQUIREMENTS, STRUCTURES, AND OPERATIONS RESEARCH. VOLUME IV. DECONTAMINATION ANALYSIS OF SELECTED SITES AND FACILITIES IN DETROIT. FINAL REPORT  
RESEARCH TRIANGLE INSTITUTE  
AQ-635824 + USNRDL-TRC-16 (VOL. 4) +. 285 PAGES, 218 FIGURES, JUNE 6, 1966

THIS IS VOLUME IV OF FOUR VOLUMES THAT REPORT THE RESEARCH COMPLETED UNDER THE GENERAL TERMS OF THE OFFICE OF CIVIL DEFENSE SUBTASK NO. 32338; RADIOLOGICAL RECOVERY REQUIREMENTS, STRUCTURES, AND OPERATIONS RESEARCH. THIS VOLUME CONTAINS THE SUPPORTING DATA RELATED TO DECONTAMINATION ANALYSES OF 12 SITES AND FACILITIES FROM DETROIT, MICHIGAN.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*CIVIL DEFENSE + \*DECONTAMINATION + FALLOUT + RADIATION SAFETY AND CONTROL

CATEGORY 16  
METEOROLOGICAL CONSIDERATIONS

16-13684            ALSO IN CATEGORY 7  
GAZIEV YI + NAZAROV LE  
DISPERSION OF RADIOACTIVE AEROSOLS IN THE STRATOSPHERE  
JPRS-34860 + TT-66-31298 +. 5 PAGES, TRANSLATED FROM RADIOAKTIVNYYE IZOTOPY V ATMOSFERE I IKH  
ISPOLZOVANIYE V METEOROLOGII, MOSCOW, ATOMIZDAT, 1964

INVESTIGATIONS OF THE DISPERSION OF RADIOACTIVE AEROSOLS FROM NUCLEAR EXPLOSIONS IN THE STRATOSPHERE ARE NECESSARY FOR DETERMINING THE KINETICS OF THE FALLOUT OF THESE AEROSOLS ONTO THE EARTH'S SURFACE. DESPITE THE FACT THAT THE FORMULATION OF SUCH INVESTIGATIONS INVOLVES GREAT METHODOLOGICAL DIFFICULTIES, IN RECENT YEARS ATTEMPTS HAVE BEEN MADE TO STUDY THE SIZE OF RADIOACTIVE PARTICLES IN THE UPPER ATMOSPHERE. WE DETERMINED THE DISPERSION OF RADIOACTIVE AEROSOLS IN THE STRATOSPHERE IN THE CENTRAL EUROPEAN PART OF THE USSR. THIS PAPER DISCUSSES THE RESULTS. THE RADIOACTIVE AEROSOLS WERE INVESTIGATED WITH THE SE-3 STRATOSPHERIC ELECTRICAL PRECIPITATOR AND THE HIGH-ALTITUDE VFU-1 FILTERING APPARATUS WITH A FPA-15-2 FILTER. ALL THE PRINCIPAL COMPONENTS OF THE COLLECTORS WERE DUPLICATED TO ENSURE RELIABLE OPERATION. THE EFFICIENCY OF ELECTRICAL PRECIPITATION AT HEIGHTS OF 19-21 KM, ACCORDING TO THEORETICAL COMPUTATIONS, VARIED FROM 2-3 TO 50-70 PERCENT, WITH A DECREASE OF THE RADIUS OF THE PARTICLES FROM 1 TO 0.005 MICRON. THE EFFICIENCY OF TRAPPING WITH THE FILTER WAS GREATER THAN 95 PERCENT FOR ALL PARTICLES. THE COMPUTATIONS WERE MADE FOR A PARTICLE DENSITY 2 G/CC. THE AEROSOL COLLECTORS WERE CARRIED INTO THE STRATOSPHERE BY AUTOMATIC BALLOONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$1.00 COPY, \$0.50 MICRONEGATIVE

\*AEROSOL + \*AIRBORNE RELEASE + \*FALLOUT + \*NUCLEAR EXPLOSION DEBRIS + \*STRATOSPHERE + AIR CLEANING + EXPLOSION + NUCLEAR DETONATION + PARTICLE SIZE + RADIOACTIVITY, RELEASE

16-13943            ALSO IN CATEGORIES 4 AND 14  
GOLDMAN MI  
SAFETY ASPECTS OF GROUND TESTING FOR LARGE NUCLEAR ROCKETS  
NUS CORPORATION  
5 PAGES, 2 FIGURES, 1 TABLE, 11 REFERENCES, NUCLEAR APPLICATIONS 2(2), PAGES 94-98, (APRIL 1966)

NORMAL TESTING OF LARGE NUCLEAR-ROCKET ENGINES AT NRDS COULD IMPOSE SOME RESTRICTIONS ON THE FUEL PERFORMANCE THAT WOULD NOT OTHERWISE BE REQUIRED BY SPACE-FLIGHT OPERATION. THE BEST APPARENT SOLUTION WOULD REQUIRE A CAPABILITY FOR DECONTAMINATING EFFLUENT GASES PRIOR TO RELEASE TO THE ATMOSPHERE. TESTS WILL ALSO BE CONTROLLED BY WIND AND ATMOSPHERIC STABILITY CONDITIONS, AND THE REQUIREMENTS FOR MONITORING AND CONTROL OF OFF-SITE EXPOSURES WILL BE MUCH MORE STRINGENT THAN AT PRESENT. AN ANALYSIS OF MAXIMUM ACCIDENTS INDICATES THAT PROJECTIONS OF PRESENT CREDIBLE OCCURRENCES CANNOT BE TOLERATED IN LARGER ENGINE TESTS. THE APPARENT ALTERNATIVES TO A SIGNIFICANT REDUCTION IN CREDIBLE ACCIDENT CONSEQUENCES ARE THE ESTABLISHMENT OF A FACILITY UNDERGROUND, IN AN AREA EQUIVALENT TO THE PACIFIC WEAPONS PROVING GROUND, OR IN SPACE.

\*FISSION PRODUCT RELEASE, GENERAL + \*REACTOR, SPACE + HAZARDS ANALYSIS + IODINE + KIWI + METEORCLOGY + POPULATION EXPOSURE

16-13961            ALSO IN CATEGORY 17  
KELLY AG  
SMOKE PACKING HELPS DETERMINE OPTIMUM CHIMNEY HEIGHT  
IRISH ELECTRICITY SUPPLY BOARD  
2 PAGES, 2 FIGURES, POWER, PAGES 94-95, (JUNE 1966)

AT SOME POWER-PLANT LOCATIONS WITH PECULIAR TERRAIN FEATURES, NEITHER CALCULATIONS NOR WIND-TUNNEL TESTS MAY BE ADEQUATE TO REPRESENT VARIABLE FULL-SCALE CONDITIONS. A SIMPLE TECHNIQUE OF OBSERVING THE SMOKE BEHAVIOR FROM SHIPBOARD SIGNALLING ROCKETS OR VEREY PISTOLS, USING SURVEYORS TRANSITS FITTED WITH RIFLE SIGHTS, WAS USED TO LOCATE WORST WIND PATTERNS. IN MOST CONDITIONS, A PUFF COULD BE FOLLOWED ABOUT A MILE. THE METHOD IS ACCURATE, SIMPLE, AND CHEAP.

\*DISPERSION + \*SMOKE + \*STACK

16-14283            ALSO IN CATEGORY 15  
HUFF FA + STOUT GE  
RADIOACTIVE RAINOUT RELATIONS IN CONVECTIVE RAINSTORMS  
UNIVERSITY OF ILLINOIS  
COO-1199-6 +. 131 PAGES, 52 FIGURES, 16 TABLES, 3 REFERENCES, MARCH 1965

THIS REPORT PRESENTS THE RESULTS OF SEVEN CASE STUDIES OF CONVECTIVE STORMS IN 1963. DETAILED DATA ON THE TIME AND SPACE DISTRIBUTION OF RADIOACTIVE RAINOUT FROM THESE STORMS WERE PROVIDED BY THE RAINWATER-SAMPLING NETWORK OF AUTOMATIC TIME SAMPLERS AND TOTAL STORM SAMPLERS SHOWN (IN FIGURE 1) AND DESCRIBED IN THE SECOND PROGRESS REPORT (HUFF, 1964). THIS NETWORK WAS INSTALLED TO OBTAIN ACCURATE DATA ON MESOSCALE DISTRIBUTIONS OF RAINOUT ON UNIT AREAS OF 400 TO 6000 SQUARE MILES. THE PURPOSE OF THIS REPORT IS TO COMBINE THE INFORMATION FROM THE RAINWATER SAMPLERS, RAIN GAGES, AND RADAR WITH SYNOPTIC WEATHER DATA IN SEARCH OF GREATER KNOWLEDGE OF THE RADIOACTIVE RAINOUT PROCESSES AND THE RELATIONSHIP OF THE RAINOUT TO

CATEGORY 16  
METEOROLOGICAL CONSIDERATIONS

16-14283 \*CONTINUED\*  
VARICUS STORM CHARACTERISTICS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, \$4.00 COPY

CESIUM + RAINOUT + SAMPLING + STRONTIUM + SURFACE WATER, GENERAL

16-14296  
ROSENBERG GV, ET. AL.  
STRATOSPHERIC AEROSOL MEASURED FROM SPACE SHIP  
8 PAGES, 4 FIGURES, FIZ ATMOSPHERY OKEANA 1(4), PAGES 386-393, (APRIL 1965)

USING PHOTOPICTURES OF THE EARTH EDGE AND ITS TWILIGHT AUREOLE OBTAINED FROM THE SPACE SHIP (VOSTOK-6) THE VERTICAL STRUCTURE OF AEROSOL STRATOSPHERIC LAYERS IS EXAMINED. TWO AEROSOL LAYERS ARE FOUND AT THE HEIGHTS 11.5 PLUS-OR-MINUS 1 KM AND AT 19.5 PLUS-OR-MINUS 1 KM. AN ESTIMATION OF THE OPTICAL DEPTH AND THE EFFECTIVE RADIUS OF PARTICLES FOR THE UPPER LAYER IS PERFORMED. A COMPARISON OF OBTAINED RESULTS WITH BALLOON AND AIRPLANE AEROSOL CONCENTRATION MEASUREMENTS IS CARRIED OUT.

AEROSOL + ATMOSPHERIC POLLUTION + LAYER + PARTICLE SIZE + STRATOSPHERE

16-14314  
MATUSZEK JM + SANDERSON CC  
HIGH ALTITUDE BALLOON SAMPLING PROGRAM FOURTH QUALITY CONTROL. PROGRESS REPORT  
ISOTOPES, INCORPORATED  
NYO-3276-9 +. 20 PAGES, MARCH 31, 1965

MAINTAINING A COMPREHENSIVE AND UNBIASED INTERNAL QUALITY CONTROL PROGRAM HAS BEEN AN INTEGRAL PART OF THE HIGH ALTITUDE BALLOON SAMPLING PROGRAM SINCE ITS INCEPTION AT ISOTOPES, INC., IN JULY 1962. THIS REPORT DEALS WITH THE QUALITY-CONTROL DATA GENERATED BY ISOTOPES, INC. DURING THE PERIOD JULY 1964 TO DECEMBER 1964. INTERCALIBRATION DATA OBTAINED BETWEEN HASL AND ISOTOPES, INC. ARE PRESENTED ALONG WITH A BRIEF DISCUSSION OF LIMITS OF DETECTION AND COUNTING STATISTICS. A COMPLETE DISCUSSION OF THE LOWER LIMIT OF DETECTION FOR ISOTOPES COUNTING EQUIPMENT IS GIVEN IN SECTION VI.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY

FILTER, PAPER + SAMPLING, HIGH ALTITUDE

16-14336  
RADIOACTIVITY SURVEY DATA IN JAPAN - METEOROLOGICAL DATA. MONTHLY AND CUMULATIVE DEPOSITION OF STRONTIUM-90 AND CESIUM-137  
NATIONAL INSTITUTE OF RADIOLOGICAL SCIENCES, JAPAN  
NP-14797 +. 35 PAGES, 2 FIGURES, 2 TABLES, MAY 1964

SINCE 1954, RAIN WATER AND FALLING DUST HAVE BEEN COLLECTED MONTHLY IN A RECEIVER (COLLECTION AREA, 1 M-2) AT THE METEOROLOGICAL RESEARCH INSTITUTE, AND THE STRONTIUM-90 AND CESIUM-137 CONTENTS ARE RADIOCHEMICALLY DETERMINED. THE SAMPLES COLLECTED MONTHLY (RECEIVER COLLECTION AREA, 0.5 M-2) AT 6 STATIONS IN JAPAN WERE ALSO ANALYZED.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

CESIUM + DEPOSITION + JAPAN + RAINOUT + SAMPLING + STRONTIUM

16-14337  
EDVAPSON K + LOW K  
A STUDY OF NUCLEAR DEBRIS IN THE UPPER ATMOSPHERE  
FORSVARFTS FORSKINGSANSTALT, SWEDEN  
NP-15326 +. 18 PAGES, APRIL 1965

A METHOD TO DETERMINE THE TIME OF ORIGIN AND RELATIVE CONTRIBUTION OF THE DIFFERENT COMPONENTS IN DEBRIS FROM NUCLEAR EXPLOSIONS IS DESCRIBED. THE METHOD IS APPLIED TO A NUMBER OF SAMPLES TAKEN OVER SWEDEN IN AUTUMN 1962 - SPRING 1963.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT WEST SALEM, WISCONSIN 54669

ATMOSPHERIC CHEMISTRY + EQUATION, GENERAL + FALLOUT + NUCLEAR EXPLOSION DEBRIS + SAMPLING, HIGH ALTITUDE + SWEDEN

16-14340  
FORTAK H

CATEGORY 16  
METEOROLOGICAL CONSIDERATIONS

16-14340 \*CONTINUED\*  
INCLUSION OF THE SETTLING VELOCITY AND THE PARTIAL GROUND LEVEL ABSORPTION IN THE PROPAGATION CALCULATION,  
PARTICULARLY IN THE CASE OF A NON-FICKIAN DIFFUSION  
INSTITUTE OF THEORETICAL METEOROLOGY OF THE FREE UNIVERSITY OF BERLIN, GERMANY  
ORNL-TR-978 +. 60 PAGES; JANUARY 1964

IN THE BEGINNING, THE DERIVATION OF A GENERAL BALANCE EQUATION IS DISCUSSED FOR THE TURBULENT  
TRANSPORT OF ADMIXTURES IN THE ATMOSPHERE, WHICH IS VALID FOR THE CASE THAT THE ADMIXTURES  
TRANSPORTED BY THE ATMOSPHERE PERFORM SEPARATE MOTIONS RELATIVE TO THE MOTION OF THE  
TRANSPORTING MEDIUM UNDER THE INFLUENCE OF EXTERNAL FORCES. THE FORMULATION OF THE BOUNDARY  
CONDITIONS AFTER INTEGRATION OF SUCH A BALANCE EQUATION OVER A VOLUME FIXED IN SPACE CAN THEN  
BE CARRIED OUT VERY SIMPLY. ON THE BASIS OF THE GENERAL FORMULATIONS AND BY INTRODUCTION OF  
CONVENTIONAL ASSUMPTIONS, THE BOUNDARY VALUE PROBLEM IS FORMULATED FOR THE TURBULENT  
PROPAGATION OF HEAVY ADMIXTURES FOR A REGION WHICH IS BOUNDED BY THE EARTH'S SURFACE, ASSUMED  
TO BE PLANE, AND AN INVERSION LOCATED ABOVE THE EARTH'S SURFACE, ASSUMED TO BE PLANE, AND  
BLOCKING THE TURBULENT TRANSFER.

AVAILABILITY - JOHN CRERAR LIBRARY, 35 WEST 33RD ST., CHICAGO, ILLINOIS 60616, \$5.60 COPY, \$2.00  
MICRONEGATIVE

ATMOSPHERIC DIFFUSION + EQUATION, GENERAL + MATHEMATICAL STUDY + SOURCE, POINT + STACK

16-14350  
BATTEN FS  
THE EFFECTS OF NUCLEAR WAR ON THE WEATHER AND CLIMATE  
RAND CORPORATION, SANTA MONICA, CALIFORNIA  
RM-4989-TAB +. 63 PAGES, AUGUST 1966

THE POSSIBILITY THAT THE ENERGY, THE DEBRIS, OR THE RADIOACTIVITY OF NUCLEAR DETONATIONS IN  
LARGE NUMBER MAY AFFECT THE CLIMATE AND THE WEATHER IS EXPLORED. BECAUSE OF THE COMPLEXITY  
AND THE LACK OF THOROUGH UNDERSTANDING OF THE INTERDEPENDENT METEOROLOGICAL PROCESSES, IT IS  
IMPOSSIBLE TODAY TO PREDICT THE CONSEQUENCES OF ARTIFICIAL ATMOSPHERIC STIMULI. THIS PAPER  
EXPLORES WAYS THAT THE BY-PRODUCTS OF A NUCLEAR WAR MAY INTERFERE WITH THE DYNAMICAL,  
HYDROLOGICAL, AND RADIATIONAL PROCESSES IN THE ATMOSPHERE. THE DIFFICULT PROBLEMS OF  
ESTIMATING QUANTITATIVELY THE WEATHER AND CLIMATIC CHANGES ARE AVOIDED EXCEPT TO EMPHASIZE  
THE AMBIGUITIES OF SUCH ESTIMATES. THE STUDY INDICATES THAT THE INTERFERENCE WITH THE  
ATMOSPHERIC PROCESSES IN SOME CASES CAN BE SUFFICIENT TO PRODUCE CHANGES IN THEM - HOWEVER,  
IT STRESSES THAT THE NATURE, EXTENT, AND MAGNITUDE OF THE RESULTING ANOMALIES IN THE WEATHER  
AND THE CLIMATE ARE UNCERTAIN.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.75 MICRONEGATIVE

\*NUCLEAR EXPLOSION DEBRIS + METEOROLOGY + RADIATION EFFECT

16-14351  
PEUTER H  
ON THE INFLUENCE OF METEOROLOGICAL PARAMETERS ON THE LOCATION OF THE MAXIMUM IMMISSION CONCENTRATION AT  
GROUND LEVEL WITH A GIVEN EMISSION SOURCE  
UNIVERSITY OF VIENNA  
ORNL-TR-979 +. 18 PAGES, 6 FIGURES, TRANSLATED FROM GERMAN FROM BIOKLIMATOL, SERIES A 14(1) PAGES 55-68  
(1964)

IF GASEOUS POLLUTION FROM CHIMNEYS IS STUDIED ACCORDING TO THE STATISTICAL THEORY OF  
TURBULENCE, ONE IS FORCED TO CONSIDER THE INFLUENCE OF SOME METEOROLOGICAL PARAMETERS ON THE  
DIFFUSION PROCESS. WHILE THE MEAN HORIZONTAL WIND-VECTOR MAY ACCOUNT FOR THE TRACER OF THE  
SMOKE CLOUD, STABILITY PARAMETERS CONTROL THE HORIZONTAL AND VERTICAL VARIANCE OF  
DISPLACEMENT. THE INVESTIGATION IS BASED UPON EMPIRICAL RELATIONS BETWEEN VERTICAL SPREAD  
AND DISTANCE FROM THE SOURCE OBTAINED BY F. PASQUILL FOR DIFFERENT TYPES OF ATMOSPHERIC  
CONDITIONS MAINLY DETERMINED BY INSOLATION AND WINDSPEED. USING HOURLY METEOROLOGICAL  
OBSERVATIONS FROM AIRPORT VIENNA-SCHWECHAT THE (MAXIMUM) GROUND LEVEL CONCENTRATION OF  
POLLUTANT EMITTED FROM A 50-M-HIGH CHIMNEY WITH KNOWN OUTPUT OF GAS IS COMPUTED. THE RESULTS  
ARE SHOWN IN TABLES AND FIGURES.

AVAILABILITY - JOHN CRERAR LIBRARY, 35 WEST 33RD STREET, CHICAGO, ILLINOIS 60616, \$1.60 COPY, \$0.80  
MICRONEGATIVE

\*CONCENTRATION, GROUND LEVEL + ATMOSPHERIC POLLUTION + SOURCE, POINT + STACK + TURBULENCE, STATISTICS

16-14352  
DIPMEL J  
ON THE CALCULATION OF THE WASTE GAS CONCENTRATION AT GROUND LEVEL IN THE LEE OF ISOLATED INDUSTRIAL  
CHIMNEYS  
ZENTRALANSTALT FÜR METEOROLOGIE UND GEODYNAMIK, G  
ORNL-TP-980 +. 18 PAGES, 2 FIGURES, 13 REFERENCES, GEOPHISICA PURA E APPLICATA (MILAN) 55(III) PAGES  
203-215 (1963)

IT IS NOT DIFFICULT TO CALCULATE THE GAS CONCENTRATION AT GROUND LEVEL IN THE LEE OF A POINT  
SOURCE, IF THE TURBULENCE IS HOMOGENEOUS AND THE WINDSPEED IS ASSUMED TO BE CONSTANT WITH  
HEIGHT. WITH A SUITABLE CHOICE OF THE PARAMETERS, HOWEVER, THE DERIVED FORMULA CAN BE  
APPLIED TO REAL CONDITIONS, TOO. IN THE PRESENT PAPER, THE NECESSARY PARAMETERS ARE CHOSEN

CATEGORY 16  
METEOROLOGICAL CONSIDERATIONS

16-14352 \*CONTINUED\*

AS MEAN VALUES IN SUCH A MANNER, THAT BEST AGREEMENT WITH NATURE IS GUARANTEED. IT IS FOUND, THAT SUTTONS DIFFUSION FORMULA OVERESTIMATES THE MAXIMUM GAS CONCENTRATION ABOUT 10 PER CENT IN CASE OF STRONG WINDS AND STRONG INSOLATION, BUT MORE THAN 100 PER CENT IN CASE OF LIGHT TURBULENT WINDS AND EXTREME STABILITY. OUR THEORY IS IN GOOD ACCORDANCE WITH PASQUILL'S DIFFERENT CURVES FOR THE VERTICAL SPREAD OF SMOKE AS A FUNCTION OF DISTANCE, IF CASES OF EXTREME DIABATIC CONDITIONS ARE EXCLUDED.

AVAILABILITY - JOHN CRERAR LIBRARY, 35 WEST 33RD STREET, CHICAGO, ILLINOIS 60616, \$1.60 COPY, \$0.80 MICRONEGATIVE

\*CONCENTRATION, GROUND LEVEL + \*STACK + \*WASTE DISPOSAL, GAS + ATMOSPHERIC DIFFUSION + SOURCE, POINT + SUTTON DIFFUSION FORMULA + TURBULENCE, STATISTICS

16-14583 ALSO IN CATEGORY 14

QUESTION F.1 - BASIS FOR 1 CURIE/SEC OFF GAS LIMIT  
TENNESSEE VALLEY AUTHORITY

PAGE F.1.1 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966,  
DOCKET NO. 50-259/260

SPECIFIC CALCULATION FOR THIS SITE HAS NOT BEEN DONE, BUT SINCE THIS IS LARGELY A FUNCTION OF SITE SIZE AND STACK HEIGHT (RATHER THAN SITE METEOROLOGY), ESTIMATES WERE IN THE RANGE OF 0.5 - 1.0 CURIE/SEC. CALCULATIONS FOR THIS REACTOR WILL BE AVAILABLE BEFORE ISSUANCE OF THE OPERATING LICENSE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + REACTOR, BOILING WATER + SOURCE, CONTINUOUS + STACK

16-14909

BRYANT PM

EFFECT OF DILUTING STACK GASES ON DOWNWIND CONCENTRATION

UNITED KINGDOM ATOMIC ENERGY AUTHORITY

4 PAGES, 2 TABLES, 2 FIGURES, 9 REFERENCES, SECTION V, CONSEQUENCES OF ACTIVITY RELEASE, NUCLEAR SAFETY  
8(2) PAGES 161-164 (WINTER 1966-1967)

EXAMPLES ILLUSTRATE THE EFFECT ON DOWNWIND CONCENTRATION OF DILUTING STACK GASES BEFORE DISCHARGE. DILUTION ALTERS THE EFFLUX VELOCITY AND, IN THE CASE OF HOT PLUMES, THE BUOYANCY, WHICH BOTH CHANGE THE EFFECTIVE HEIGHT OF DISCHARGE. ESTIMATES OF RESULTANT DOWNWIND CONCENTRATIONS IN VARIOUS WEATHER CONDITIONS SHOW THAT A DECREASE IN EFFLUENT CONCENTRATION BY A FACTOR OF 3 OFTEN PRODUCES A REDUCTION OF LESS THAN A FACTOR OF 3 IN DOWNWIND CONCENTRATIONS.

\*CONCENTRATION, AREA + \*DILUTION + \*STACK + PLUME BEHAVIOR, GENERAL

16-14911

CRYOGENIC AIR SAMPLER FOR HIGH-ALTITUDE APPLICATION. FINAL TECHNICAL REPORT  
NATIONAL ENGINEERING SCIENCE COMPANY, PASADENA, CALIFORNIA

UCRL-13162 +. 132 PAGES, JUNE 17, 1965

THIS REPORT DESCRIBES THE DESIGN OF A HIGH ALTITUDE CRYOGENIC AIR SAMPLER, DESIGNATED CRYOPROBE II. BY CRYOGENIC PUMPING METHODS, THE CRYOPROBE II IS TO COLLECT A 5 TO 25 G ATMOSPHERIC SAMPLE IN THE ALTITUDE RANGE 85 TO 137 KM. IN THE CONDUCT OF THE PROGRAM, THE DESIGN OF THE CRYOPROBE II PAYLOAD WAS THOROUGHLY ANALYZED WITH RESPECT TO IMPACT LOADS, HEAT TRANSFER, STRESS ANALYSIS, ELECTRICAL REQUIREMENTS, SYSTEM STABILITY, AND BUOYANCY. ALL DESIGN REQUIREMENTS WERE FULFILLED. FABRICATION DRAWINGS AND SPECIFICATIONS WERE PREPARED. OUTSTANDING DESIGN QUESTIONS ARE DISCUSSED, AND A MANUFACTURING PLAN AND CURRENT COST ESTIMATE FOR BUILDING AND TESTING THE FIRST TWO SAMPLES ARE PRESENTED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*INSTRUMENTATION, METEOROLOGICAL + \*SAMPLING, HIGH ALTITUDE

16-15019

ALSO IN CATEGORY 4

COUCHMAN ML + DEAGAZIO AW + KIM YS

NURSE-1--A NUCLEAR ROCKET SAFETY EVALUATION CODE FOR THE CONTROL DATA 3600

NUCLEAR UTILITY SERVICES, INC., WASHINGTON

NUS-180 +. 282 PAGES, DECEMBER 1964

THE NURSE-1 CODE EVALUATES THE RADIATION HAZARDS RESULTING FROM THE RAPID RELEASE OF FISSION PRODUCTS FROM A NUCLEAR ROCKET ENGINE. THE PROGRAM DETERMINES SEVERAL DIFFERENT DOSES AT POSITIONS DOWN- AND CROSSWIND FROM THE POINT OF THE EXCURSION. THIS PROGRAM CONSIDERS ONLY A RELEASE OCCURRING IN THE LOWER ATMOSPHERE (ON OR NEAR THE GROUND). THE CODE HAS SEVERAL OPTIONS WHICH PERMIT SELECTION OF THE KINDS OF DOSES TO BE CALCULATED. THE MODELS AND PARAMETERS ARE BELIEVED TO REPRESENT THE BEST INFORMATION AVAILABLE AT THE TIME OF PREPARATION.

CATEGORY 16  
METEOROLOGICAL CONSIDERATIONS

16-15010 \*CONTINUED\*

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*AEROSPACE SAFETY + \*CODES AND STANDARDS + \*COMPUTER PROGRAM + \*NUCLEAR ROCKET +  
COMPUTER PROGRAM, METEOROLOGICAL + DOSE + FISSION PRODUCT RELEASE, GENERAL

16-15126 ALSO IN CATEGORIES 12 AND 18  
ACRS APPROVES PALISADES POINT CONSTRUCTION PERMIT  
U.S. ATOMIC ENERGY COMMISSION  
PRESS REL. K-18 +. 1 PAGE, JANUARY 24, 1967, DOCKET NO. 50-255

ACRS NOTES THAT EMERGENCY CORE-COOLING WILL BE DESIGNED TO PREVENT FUEL/CLAD DAMAGE AND LIMIT METAL-WATER REACTIONS TO 1% ON LOSS-OF-COOLANT ACCIDENTS. POSITIVE MODERATOR COEFFICIENT WILL BE EVALUATED AND MADE MORE NEGATIVE IF NECESSARY BY BURNABLE POISON. A METEOROLOGICAL PROGRAM WILL JUSTIFY USE OF MORE RAPID ATMOSPHERIC DIFFUSION THAN GIVEN IN TID-14844. HOWEVER, A CONTAINMENT IODINE-REMOVAL SYSTEM CAPABILITY IS PROVIDED.

AVAILABILITY - AEC, DIVISION OF PUBLIC INFORMATION, WASHINGTON, D. C. 20545

\*ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) + CONSTRUCTION PERMIT PROCESS +  
EMERGENCY COOLING CONSIDERATIONS + MODERATOR COEFFICIENT + PALISADES POINT + REACTOR, PRESSURIZED WATER +  
REVIEW + WIND STATISTICS

16-15332

REITER FR + GLASSER MF + MAHLMAN JD  
ROLE OF THE TROPOPAUSE IN STRATOSPHERIC-TROPOSPHERIC EXCHANGE PROCESSES. ATMOSPHERIC SCIENCE PAPER NO. 107  
COLORADO STATE UNIVERSITY, FORT COLLINS  
COO-1340-9 +. 82 PAGES, JANUARY 1967

IN A PREVIOUS STUDY, REITER AND MAHLMAN ESTIMATED THE AMOUNT OF STRATOSPHERIC AIR INTRUDING INTO THE STABLE LAYER OF THE JET-STREAM FRONT IN A CASE OF CYCLOGENESIS NOT ACCOMPANIED BY SURFACE RADIOACTIVE FALLOUT. IN THE PRESENT REPORT, THE SAME CASE IS EXAMINED ON A MORE GENERAL BASIS. OUTFLOW FROM, AS WELL AS INFLOW INTO, THE STRATOSPHERE IS ESTIMATED OVER THE ENTIRE THICKNESS OF THE TROPOPAUSE GAP.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

ATMOSPHERIC STABILITY + CONTAMINATION + STRATOSPHERE + TROPOSPHERE

16-15334

ARMSTRONG RH  
EARLY-TIME CLOUD RISE FROM CHEMICAL HIGH EXPLOSIVE DETONATIONS  
WEATHER-BUREAU, LAS VEGAS, NEVADA  
TID-22266 +. 29 PAGES, AUGUST 1965

A PHOTOGRAPHIC METHOD OF SCALING THE DIMENSIONS OF DUST CLOUDS PRODUCED BY EXPLOSIVES DETONATIONS IS DESCRIBED. RATES OF CLOUD RISE ARE COMPARED WITH METEOROLOGICAL PARAMETERS, AND THE RELATIVE INDEPENDENCE OF RISE RATE UPON ATMOSPHERIC STABILITY THROUGH THE SURFACE BOUNDARY LAYER IS DEMONSTRATED. AN EMPIRICAL MODEL RELATING CLOUD RISE RATES TO EXPLOSIVE YIELD IS DEVELOPED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

EXPLOSIVE, CONVENTIONAL + HEIGHT OF RISE + SAMPLING, HIGH ALTITUDE + STATISTICAL ANALYSIS

16-15335

FINAL REPORT FOR AN ATMOSPHERIC SAMPLING SYSTEM  
RYAN AERONAUTICAL COMPANY, LINDBERGH FIELD, SAN DIEGO, CALIFORNIA  
UCRL-13129 +. 148 PAGES, AUGUST 27, 1964

IN THE PROPOSED UNMANNED SAMPLING SYSTEM, THE PILOT IS REPLACED WITH A REMOTE HUMAN CONTROLLER. THE CONTROLLER REMOTELY GUIDES THE SAMPLING VEHICLE THROUGH THE CLOUD, ACCOMPLISHING THE DESIRED MANEUVERS UTILIZING THE TELEMETRY DATA RECEIVED FROM THE DRONE. THIS DATA EFFECTIVELY DESCRIBES THE SPEED, ALTITUDE, AND LOCATION AT ANY INSTANT WITHIN THE CLOUD, AND PERMITS CONTINUOUS PILOTING OF THE VEHICLE. THE FIRST PHASE IS THE CONSTRUCTION OF A PROTOTYPE SAMPLING VEHICLE TO DEMONSTRATE THE FEASIBILITY OF THE SAMPLING SYSTEM. THE SECOND PHASE INCLUDES THE DEVELOPMENT AND CONSTRUCTION OF THE FINAL OPERATIONAL VEHICLE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*NUCLEAR EXPLOSION DEBRIS + \*SAMPLING, HIGH ALTITUDE + INSTRUMENTATION, AIR SAMPLING

CATEGORY 16  
METEOROLOGICAL CONSIDERATIONS

16-15336  
NUCLEAR CLOUD SAMPLING SYSTEM. FINAL REPORT  
GENERAL DYNAMICS, POMONA, CALIFORNIA  
UCRL-13126 +. 326 PAGES, AUGUST 15, 1964

THE CONCEPTUAL DESIGN, WHICH RESULTED FROM THE CLOUD SAMPLING SYSTEM STUDY, CONSISTS OF AN AIRCRAFT-CARRIED VEHICLE WHICH IS LAUNCHED VERTICALLY FROM A PARACHUTE-STABILIZED CONTAINER THROUGH THE CLOUD TO BE SAMPLED. SEVERAL IMPORTANT ADVANTAGES OVER OTHER VEHICLE LAUNCH TECHNIQUES ARE OFFERED BY THIS METHOD, THE PRINCIPALS OF WHICH ARE - (1) VEHICLE IS DEPLOYED WHILE AIRCRAFT IS IN LEVEL FLIGHT AT CRUISE VELOCITY, (2) ROCKET MOTOR IGNITION DOES NOT OCCUR UNTIL AFTER THE LAUNCH AIRCRAFT IS AT A SAFE DISTANCE FROM THE LAUNCH POINT, AND (3) THE VERTICAL LAUNCH SIMPLIFIES THE TASK OF PREDICTING VEHICLE TRAJECTORY, THUS, SIMPLIFYING SAMPLING-VEHICLE RETRIEVAL. THE DEBRIS AND GAS SAMPLE IS COLLECTED DURING THE ASCENT PHASE OF THE VEHICLE TRAJECTORY BY USE OF A CONICAL SHOCK DIFFUSER, ENSURING AN ISOKINETIC SAMPLE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*INSTRUMENTATION, METEOROLOGICAL + \*NUCLEAR EXPLOSION DEBRIS + \*SAMPLING, HIGH ALTITUDE

16-15337  
RICHTER AP  
A METEOROLOGICAL STUDY OF CONTAINMENT VESSEL TEMPERATURES ON AN OPERATING REACTOR  
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION, AIR RESOURCES FIELD RESEARCH OFFICE, IDAHO FALLS, IDAHO  
IDA-12055 +. 15 PAGES, 8 FIGURES, 1 TABLE, 4 REFERENCES, SEPTEMBER 1966

THE CONTAINMENT VESSEL OF AN OPERATING REACTOR (EXPERIMENTAL BREEDER REACTOR II) AT THE NATIONAL REACTOR TESTING STATION WAS EQUIPPED WITH COPPER-CONSTANTAN THERMOCOUPLES TO OBTAIN TEMPERATURE DATA. THESE DATA WERE CORRELATED WITH AMBIENT AIR TEMPERATURES AND OTHER METEOROLOGICAL VARIABLES. THE MEAN (CONTAINMENT VESSEL SKIN - AMBIENT AIR) CURVE PLOTTED VERSUS AMBIENT AIR TEMPERATURE RANGE EXHIBITS A SLOPE OF -0.20. FILM STRIPPING PROVED TO BE MOST DIRECTLY RELATED TO ATMOSPHERIC STABILITY THOUGH NORMALLY OF SMALL MAGNITUDE. TEMPERATURE GRADIENTS ARE NORMALLY DIRECTED OUTWARD FROM THE CONTAINMENT VESSEL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*ATMOSPHERIC STABILITY + \*CONTAINMENT, PRESSURE VESSEL + METEOROLOGY + NRTS (NATIONAL REACTOR TEST STATION)

16-15338  
KAKUTA M + IJIMA T  
GRAPHIC AID TO OBTAIN CONCENTRATION OF MATERIALS RELEASED FROM NUCLEAR PLANT TO THE ENVIRONMENT (BASED ON THE ENGLISH METHOD)  
JAPAN ATOMIC ENERGY RESEARCH INSTITUTE, TOKYO  
JAERI-1101 +. 72 PAGES, IN JAPANESE, OCTOBER 1965

VARIOUS METHODS HAVE BEEN PRESENTED TO ESTIMATE THE CONCENTRATION OF MATERIALS RELEASED FROM THE POINT SOURCE TO THE ATMOSPHERE. OF THESE, THE SO-CALLED ENGLISH METHOD IS WIDELY USED IN HAZARD EVALUATION IN JAPAN. THIS METHOD IS BASED ON THE ASSUMPTION THAT BOTH THE LATERAL AND VERTICAL CONCENTRATION DISTRIBUTIONS DUE TO THE ATMOSPHERIC TURBULENCE ARE GAUSSIAN, AND ADOPTS THE DIFFUSION PARAMETERS PROPOSED BY F. PASQUILL. IN THIS REPORT, THE CONCENTRATION DISTRIBUTIONS ARE CALCULATED ON THE BASIS OF THE ENGLISH METHOD AND ARE SUMMARIZED IN GRAPHS FOR PRACTICAL USE. TO HELP IN THE ENVIRONMENTAL RADIATION MONITORING PRACTICE AND THE HAZARD EVALUATION PROCEDURE, SPECIAL ATTENTION IS PAID TO THE EXPRESSION OF FIGURES AND THE SELECTION OF PARAMETERS.

AVAILABILITY - MICROCARD EDITIONS, INCORPORATED (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

\*RADIOACTIVITY, RELEASE + \*SOURCE, POINT + AIRBORNE RELEASE + JAPAN + MATHEMATICAL STUDY

16-15339  
GENTZLER RF  
AN ATMOSPHERIC STATIC ELECTRICITY WARNING SYSTEM  
SANDIA CORPORATION, ALBUQUERQUE, NEW MEXICO  
SC-DC-65-1646 + CONF-650442-2 +. 11 PAGES, AUGUST 19, 1965, FROM 2ND SPACE CONGRESS, COCOA BEACH, FLORIDA

DESCRIBES AN ATMOSPHERIC STATIC ELECTRICITY WARNING SYSTEM THAT PROVIDES BASIC DATA ON POTENTIAL GRADIENT AT SELECTED STATIONS IN SANDIA CORPORATION'S ALBUQUERQUE TESTING AREA. THE MEASUREMENTS ARE TRANSMITTED OVER TELEPHONE WIRES TO A MASTER CONTROL STATION FOR RECORDING AND MONITORING. REPEATER STATIONS LOCATED IN CERTAIN TEST AREAS SEQUENTIALLY PRESENT THE BASIC DATA FROM THE MASTER CONTROL STATION AND GIVE A WARNING SIGNAL BOTH VISUAL AND AURAL WHEN CERTAIN PRESET LIMITS ARE EXCEEDED. DATA SAMPLES ARE PRESENTED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE



CATEGORY 16  
METEOROLOGICAL CONSIDERATIONS

16-15339 \*CONTINUED\*  
\*ATMOSPHERIC ELECTRICITY + \*INSTRUMENTATION, METEOROLOGICAL + \*METEOROLOGY

16-15340  
CHRISTENSEN J  
METEOROLOGICAL MEASUREMENTS AT RISØ, 1962-1964  
DANISH ATOMIC ENERGY COMMISSION, RISØ, RESEARCH ESTABLISHMENT  
RISØ-121 +. 75 PAGES, DECEMBER 1965

THIS REPORT CONTAINS STATISTICAL INFORMATION ON THE MEASUREMENTS OF WIND, TEMPERATURE, AND PRECIPITATION MADE FROM THE METEOROLOGICAL TOWER AT RISØ. MEANS, VARIATIONS, FREQUENCIES, AND PROFILES ARE PRESENTED IN TABLES AND/OR IN GRAPHIC FORM FOR THE AIR LAYER FROM THE GROUND TO 128 M. STATISTICAL DATA OF THE PARAMETERS INTRODUCED BY O.G. SUTTON ARE PRESENTED ONLY FOR A PART OF THE PERIOD. THE VARIATIONS AND FREQUENCIES OF STABILITY TYPES AND SMOKE TRAIL CLASSIFICATIONS ARE GIVEN AT THE END OF THE REPORT.

AVAILABILITY - MICROCAP EDITIONS, INCORPORATED (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

\*DENMARK + \*METEOROLOGY + \*STATISTICAL CORRELATION + PLUME BEHAVIOR, GENERAL + WIND PROFILE

16-15341  
DICKSON CR + RICHTER AP + MARKEE EH + YANSKEY GR + ZIMMERMAN JR  
METEOROLOGY FOR THE LOSS OF FLUID TEST REACTOR, PROGRESS REPORT DEC. 1964-DEC. 1965  
IDAHO OPERATIONS OFFICE, AEC, IDAHO FALLS  
IDC-12057 +. 80 PAGES, 46 FIGURES, 7 TABLES, NOVEMBER 1966

THIS PROGRESS REPORT CONSISTS OF THREE SECTIONS. (1) THE OPERATIONAL SECTION. (2) THE CLIMATOLOGICAL SECTION INCLUDES (A) COMPARISON OF WINDS AT TAN AND HOWE TO PREDICT EFFLUENT TRAJECTORIES FROM TAN TO HOWE, (B) CORRELATION OF WINDS AT LOFT-IET, (C) CLIMATOLOGICAL PREDICTIONS OF BEST START TIME FOR EACH SEASON FOR LOFT, (D) PERSISTENCE OF STABILITY CLASSES, WINDSPEED, AND WIND DIRECTION, (E) 700-MB AIR PARCEL TRAJECTORIES TO DIFFERENT UNITED STATES BORDER REGIONS, (F) RIVANE ANGLE VARIATION CHARACTERISTICS AS A FUNCTION OF SAMPLING TIME, AND (G) EFFLUENT TRAJECTORIES FROM LOFT PREDICTED FROM MOST-USUAL WINDS. AND (3) THE SPECIAL STUDIES SECTION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*LOFT (LOSS OF FLUID TEST) + \*SITE CLIMATOLOGY + \*METEOROLOGICAL SUPPORT + PLUME BEHAVIOR, GENERAL + PLUME, SMOKE, PHOTOGRAPHY + TURBULENCE, STATISTICS

16-15342  
(FCOLOGY) - MENACE IN THE SKIES  
6 PAGES, FIGURES, TIME 89(4), PAGES 48-52, (JANUARY 27, 1967)

AS THE CARBON DIOXIDE BUILDUP CONTINUES AND EVEN ACCELERATES, SCIENTISTS FEAR THAT AVERAGE TEMPERATURES MAY, IN THE COURSE OF DECADES, RISE ENOUGH TO MELT THE POLAR ICE CAPS. WITHIN HIS GRASP, MAN HAS THE MEANS TO PREVENT ANY SUCH APOCALYPTIC END. OVER THE SHORT RUN, FUELS CAN BE USED THAT PRODUCE FAR LESS POLLUTANT AS THEY BURN. CHIMNEYS CAN BE FILTERED SO THAT PARTICULATE SMOKE IS REDUCED. AUTOMOBILE ENGINES AND ANTI-EXHAUST DEVICES CAN BE MADE FAR MORE EFFICIENT. WHAT IS NEEDED IS RECOGNITION OF THE DANGER BY THE INDIVIDUAL CITIZEN AND HIS GOVERNMENT, THE ESTABLISHMENT OF SOUND STANDARDS, AND THE DRAFTING OF IMPARTIAL RULES TO GOVERN THE PRODUCERS OF POLLUTION. OVER THE LONG RUN, THE DEVELOPMENT OF SUCH RELATIVELY NONPOLLUTING POWER SOURCES AS NUCLEAR ENERGY AND ELECTRIC FUEL CELLS CAN HELP GUARANTEE MANKIND THE RIGHT TO BREATHE.

\*ATMOSPHERIC POLLUTION + \*SMOKE + WASTE DISPOSAL, ATMOSPHERIC

16-15398 ALSO IN CATEGORIES 12 AND 18  
QUESTION III E - PROTECTION AGAINST TORNADO-OR HURRICANE-DRIVEN MISSILES  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
3 PAGES, PAGE E-1 TO E-3 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.A. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

DISCUSS THE ABILITY OF ALL CLASS-I STRUCTURES AND SAFEGUARDS LOCATED EXTERNAL TO CLASS-I STRUCTURES TO WITHSTAND, WITHOUT LOSS OF FUNCTION, MISSILES GENERATED BY HURRICANES OR TORNADOES. WHAT SIZE AND VELOCITY CRITERIA ARE USED.

AVAILABILITY - USAFC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + DESTRUCTIVE WIND + ENGINEERED SAFETY SYSTEM + MISSILE GENERATION AND PROTECTION + REACTOR, PRESSURIZED WATER + ROBINSON 2

16-15503 ALSO IN CATEGORIES 12 AND 18

CATEGORY 16  
METEOROLOGICAL CONSIDERATIONS

16-15503 \*CONTINUED\*

QUESTION VIII A (7 AND 8) - CONTAINMENT DESIGN FOR TORNADO LOADING  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
3 PAGES, PAGES A (7)-1 TO A (8)-1 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY  
ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

IT IS INDICATED THAT THE STRUCTURE WILL BE ANALYZED FOR TORNADO LOADING. THE BASIS FOR THE  
SELECTED WIND SPEED, EQUIVALENT PRESSURE, AND 1.25 LOAD FACTOR IS REQUESTED. IN ADDITION, A  
DESIGN LOAD FACTOR EQUATION TO INDICATE HOW THIS LOADING WILL BE TREATED IN COMBINATION WITH  
DEAD AND LIVE LOADS IS REQUESTED. PSAR PAGE 2-29 SUGGESTS THAT THE DESIGN WIND AT THE SITE  
WILL BE THE ONCE-IN-FIFTY-YEARS WIND. THE BASIS FOR THIS SELECTION IS REQUESTED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT STRUCTURE +  
DESTRUCTIVE WIND + REACTOR, PRESSURIZED WATER + ROBINSON 2 + STRESS ANALYSIS + WIND STATISTICS

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-04916

REPORT ON THE FULL POWER OPERATION OF THE BWR  
ALLIS-CHAMBERS MANUFACTURING COMPANY

ACNP-64546 (ADDENDUM 3-10 AND 3-11) +. 50 PAGES, 32 FIGURES, 11 TABLES, SEPTEMBER 1964, DOCKET NO. 115-1

(SECT. 3.10.)- PLANT RESPONSE TO LOAD CHANGES. SYSTEMS CAN HANDLE LOAD RAMPS UP TO 0.75 MW(E)/MIN. SECT. (3.11.)- STABILITY MARGIN AFTER PRIMARY PIPING CHANGES. PIPING CHANGES MADE APRIL-JUNE 1964 SUCCESSFULLY ELIMINATED FEEDWATER-FLOW PULSING. NOISE ANALYSIS AT 25 AND 100 PERCENT POWER INDICATED NO CHANGE FROM PREVIOUS DATA.

\*OPERATIONS REPORT, ANALYSIS + \*TEST, PLANT RESPONSE + ELK RIVER + HYDRAULIC EFFECT + MEASUREMENT, NOISE + NOISE ANALYSIS + REACTOR STABILITY + REACTOR, BOILING WATER + TEST, SYSTEM OPERABILITY

17-07517

ARNETT LM

THE HEAVY WATER COMPONENTS TEST REACTOR SYSTEMS, FUEL FAILURE DETECTION, AND STANDBY CONDITION  
SAVANNAH RIVER LABORATORY

DP-1049 + CONF-650602-23 +. 20 PAGES, 1 REFERENCE, ANS MEETING, GATLINBURG, TENNESSEE, JUNE 21-24, 1965, CFSTI, \$3.00, \$0.65 MN.

FUEL WAS STORED AT ANOTHER FACILITY, THE PRIMARY SYSTEM FILLED WITH NITROGEN SO THE MAGNETITE COATING WILL REMAIN UNALTERED. ROTATING EQUIPMENT WAS LEFT AT AMBIENT. CONTAINMENT AIR IS RECIRCULATED, AND INCOMING AIR HEATED TO MAINTAIN A 50% HUMIDITY. ALTHOUGH CRACKED THERMAL INSULATION ALLOWS RAINWATER TO CONTACT THE STEEL CONTAINMENT SHELL, NO SERIOUS STRENGTH IMPAIRMENT IS EXPECTED FOR 3 - 5 YEARS.

\*CONTAINMENT INTEGRITY + \*REACTOR DECOMMISSIONING EXPERIENCE + HWCTR (HEAVY WATER COMPONENT TEST REACTOR) + REACTOR, AEC OWNED + REACTOR, HEAVY WATER + REACTOR, PRESSURE TUBE + REACTOR, PRESSURIZED WATER + SAVANNAH RIVER PLANT

17-07758

ALSO IN CATEGORY 9

ROSS CP

THE HEAVY WATER COMPONENTS TEST REACTOR SYSTEMS, FUEL FAILURE DETECTION, AND STANDBY CONDITION  
SAVANNAH RIVER PLANT, E. I. DUPONT DE NEMOURS AND COMPANY

DP-1049 +. 25 PAGES, 10 FIGURES, 7 REFERENCES, AMERICAN NUCLEAR SOCIETY CONFERENCE ON REACTOR OPERATING EXPERIENCE, JACKSON LAKE LODGE, WYOMING, JULY 28-29, 1965, ANS TRANSACTIONS, SUPPLEMENT TO VOLUME 8, PAGE 50

FOUR OF THE SIX ZIRCALOY ROD GUIDES FAILED AFTER 3 YEARS OF SERVICE, BY LONGITUDINAL SPLITS IN THE SHOCK-ABSORBER SECTION. FAILURE WAS DETECTED BY SHORTER ROD-DROP TIMES. IT MIGHT HAVE BEEN POSSIBLE TO DROP ROD ON A SPLIT, NOT ALL INTO CORE. TWICE A ROD FAILED TO DROP, DUE TO A CRACKED OVERRUNNING CAM CLUTCH. BORON INJECTION (BY SEPARATE HELIUM SUPPLY) WOULD NOT WORK IN CERTAIN PRESSURE AND FLOW SITUATIONS, SOLVED BY USING REACTOR COVER-GAS TO PRESSURIZE SYSTEM. GAS-RELIEF VALVES WERE CHANGED TO LIQUID-RELIEF VALVES, AS CODE CHANGED, TO PREVENT A VALVE FAILURE FROM RAPIDLY DEPRESSURIZING REACTOR. STEEL-DOME CONTAINMENT ON CONCRETE BELOW COULD NOT ACHIEVE LEAKAGE LESS THAN 2-3 PERCENT PER DAY AT 24 PSIG.

\*FAILURE, SCRAM MECHANISM + \*MODIFICATION, SYSTEM OR EQUIPMENT + \*OPERATING EXPERIENCE + \*SAFETY INJECTION + \*TEST, LEAK RATE + \*VALVE + CONTAINMENT, LOW PRESSURE + HWCTR (HEAVY WATER COMPONENT TEST REACTOR) + REACTOR, HEAVY WATER + REACTOR, PRESSURIZED WATER + REACTOR, TEST + STRESS

17-07901

ALSO IN CATEGORY 11

ROSS CP

THE HEAVY WATER COMPONENTS TEST REACTOR SYSTEMS, FUEL FAILURE DETECTION, AND STANDBY CONDITION  
SAVANNAH RIVER LABORATORY

DP-1049 +. 1 PAGE- TRANS. AMERICAN NUCLEAR SOCIETY 8 (SUPPL.)- 50 (1965)- CONF-650710, ANS CONFERENCE ON REACTOR OPERATING EXPERIENCE, GRAND TETON NATIONAL PARK, WYOMING, JULY 28-29, 1965, CFSTI \$3.00 CY, \$0.65 MN

PERFORMANCE OF HWCTR SAFETY SYSTEM. THIS PAPER DESCRIBES THE OPERATING EXPERIENCE WITH THE AUTOMATIC AND MANUALLY OPERATED SAFETY SYSTEMS OF THE HWCTR. CONTAINMENT. THE INITIAL LEAKAGE RATE WAS 0.6% OF THE BUILDING GAS CONTENT PER DAY AT 24 PSIG AND RESULTED IN ACCEPTABLE CALCULATED OFF-SITE DOSES. AFTER ALL BUILDING PENETRATIONS WERE MADE, HOWEVER, THE LEAKAGE RATE WAS 2 TO 3% PER DAY. TO REDUCE THE POSSIBLE OFF-SITE DOSES, HALOGEN ADSORBERS WERE INSTALLED TO REMOVE IODINE. A STEEL LINER IN THE CONCRETE PART OF THE BUILDING WOULD HAVE MINIMIZED THE LEAKAGE PROBLEM.

\*CONCRETE + \*HWCTR (HEAVY WATER COMPONENT TEST REACTOR) + \*OPERATING EXPERIENCE + \*TEST, LEAK RATE + ADSORPTION + CONTAINMENT, HIGH PRESSURE + HALOGEN + REACTOR, HEAVY WATER + REACTOR, PRESSURIZED WATER

17-11607

SLAVE ALMOST A BRUTAL MASTER

DIVISION OF OPERATIONAL SAFETY, USAEC, WASHINGTON, D.C.

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-11607 \*CONTINUED\*  
HEALTH AND SAFETY INFO. ISSUE NO. 231, 3 PAGES, 2 FIGURES, APRIL 1, 1966

INCIDENT - A TECHNICIAN HAD ENTERED A SHIELDED ALPHA PLUTONIUM BOX TO OIL A LATHE AND CLEAN WINDOWS. HIS FEET WERE EXTENDING OUTSIDE THE CELL OPENING. THE CONTROLS TO CLOSE THE DOOR WERE ACCIDENTALLY ACTUATED WHEN THE OPERATOR PUSHED AGAINST THE SLAVE ARMS, CAUSING THE MASTER ARMS TO STRIKE THE ACTUATOR BUTTON, EXPOSING BOTH ANKLES TO THE SHEARING ACTION OF THE DOOR. FAST ACTION BY THE MONITOR AND SUPERVISOR PREVENTED SERIOUS INJURY. CORRECTIVE STEPS TO PREVENT A RECURRENCE ARE LISTED.

AVAILABILITY - U. S. ATOMIC ENERGY COMMISSION, DIVISION OF PUBLIC INFORMATION, WASHINGTON, D.C., 20545

\*INCIDENT, ACTUAL, EQUIPMENT + \*INCIDENT, ACTUAL, NONREACTOR + HOT CELL

17-11795 ALSO IN CATEGORY 7  
FERMI FUEL ELEMENT FAILURE, OCTOBER 4, 1966  
POWER REACTOR DEVELOPMENT COMPANY  
1 PAGE, NUCLEONICS WEEK, 7(41), (OCTOBER 13, 1966)

AT 34 MW(TH) DURING A STARTUP, THE CONTROL RODS SEEMED TO BE WITHDRAWN FARTHER THAN NORMAL. TWO CORE-OUTLET TEMPERATURES WERE HIGHER THAN NORMAL. COVER-GAS ACTIVITY INCREASED, THE REACTOR-BUILDING RADIATION MONITORS GAVE AN ISOLATION SIGNAL, AND THE REACTOR WAS SCRAMMED. AS OF OCT. 10, 1966, 22 CENTS REACTIVITY HAD BEEN LOST, AND THE COVER-GAS XENON WAS ABOUT EQUAL TO THAT EXPECTED FROM A CORE SUBASSEMBLY. REACTIVITY BEGAN TO BE LOST AT ABOUT 15 MW(TH).

\*FAILURE, FUEL ELEMENT + FERMI + FUEL MELTDOWN + INCIDENT, ACTUAL, GENERAL + REACTOR, BREEDER + REACTOR, FAST + REACTOR, LIQUID METAL COOLED

17-12192 ALSO IN CATEGORY 18  
AMENDMENT 11. TEMPORARY FUEL STORAGE TO ALLOW-LINING REACTOR POOL WITH STAINLESS STEEL  
U.S. ARMY MATERIAL RESEARCH AGENCY  
2 PAGES, 2 FIGURES, MAY 23, 1966, DOCKET NO. 50-47

AMENDMENT 11 REQUESTS AUTHORITY TO STORE 49 USED FUEL ELEMENTS AROUND THE PERIPHERY OF AN UNUSED 6-FT-DIA TANK. VARIOUS PRESSURE GROUTING, EPOXIES, AND VINYL TAPE HAD CONTROLLED BIOLOGICAL SHIELD WATER LEAKAGE. WITH HIGHER POWER INTENDED, POSITIVE MEANS ARE DESIRABLE TO AVOID LOSS OF COOLANT, SO A STEEL LINER WILL BE INSTALLED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*POWER UPDATING + CLAD + FUEL STORAGE + REACTOR, ARMY + REACTOR, POOL TYPE + TEST, LEAK LOCATION

17-12195 ALSO IN CATEGORIES 9 AND 18  
TOMLINSON PL  
ANNUAL SUMMARY OF CHANGES, TESTS AND EXPERIMENTS PERFORMED ON THE AEROJET-GENERAL NUCLEONICS INDUSTRIAL REACTOR (AGNIR)  
AEROJET-GENERAL NUCLEONICS, SAN RAMON  
15 PAGES, AUGUST 13, 1966, DOCKET NO. 50-228, PDR

A FUEL-CLAD LEAK OCCURRED OCT. 15, 1965. MOST OF THE 79 SCRAMS CAME FROM RANGE-SWITCHING ERRORS WHILE USING THE PICOAMMETER. APPENDIX I. - DRIVE-MOTOR SPEEDS WERE REDUCED AS RODS WERE WORTH MORE THAN CALCULATED. AUTOMATIC RESET SWITCH NOW TURNS ON BF3 HV, THEN 40 SEC LATER RESTORES BF3 TO SCRAM CIRCUIT. THIS AVOIDS FALSE SCRAMS ON POWER REDUCTION. COOLING FLOW ROUTED TANGENTIALLY TO REACTOR CORE TOP REDUCES POOL DOSE RATE FROM 10 TO 1 MREM/HR. A FIXED LOW-BLEED CURRENT WAS PUT INTO CHANNEL 2 TO AVOID FALSE PERIOD SCRAMS AS THAT CHANNEL CAME ON SCALE.

\*OPERATING EXPERIENCE + \*OPERATIONS SUMMARY FOR AEC + CONTROL ROD DRIVE + INSTRUMENTATION, STARTUP RANGE + REACTOR, RESEARCH + SCRAM, SPURIOUS + TRIGA (TRAINING REACTOR, ISOTOPES, G.A.)

17-12207 ALSO IN CATEGORY 18  
INDIAN POINT INSPECTION OF CORE SHROUD ASSEMBLY, REACTOR AND PRESSURIZER CLAD  
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC., NEW YORK  
3 PAGES, FEBRUARY 28, 1966, DOCKET NO. 50-3, PDR

IN THE DECEMBER 1965 AND JANUARY 1966 REFUELING OUTAGE, THE FOLLOWING INSPECTIONS WERE PERFORMED. (1) REACTOR VESSEL INTERIOR CLAD 15 INCHES BELOW THE CLOSURE FLANGE WAS EXAMINED, AND TWO SQUARE FEET WERE EXAMINED BY THE DYE-PENETRANT TEST. NO DEFECTS WERE REVEALED. (2) A BORESCOPE EXAMINATION OF 1.25 SQ FT OF VESSEL CLAD BELOW THE LOWER GRID PLATE SHOWED NO DEFECTS. (3) CORE SHROUD WAS EXAMINED WITH BINOCULARS AND WITH UNDERWATER TV. NO DEFECTS FOUND. (4) THE INTERIOR OF THE PRESSURIZER WAS ENTERED AND GIVEN A FULL VISUAL AND PARTIAL DYE-PENETRANT EXAMINATION. NO DEFECTS FOUND.

\*CLAD + \*CONTAINMENT, PRESSURE VESSEL + \*CORE COMPONENTS, MISCELLANEOUS + \*EXAMINATION + \*PRESSURIZER + INDIAN POINT 1 + REACTOR, PRESSURIZED WATER + REMOTE MANIPULATING AND VIEWING

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-12245

BONUS NUCLEAR POWER PLANT DRL MONTHLY REPORT FOR MAY 1966  
COMBUSTION ENGINEERING INCORPORATED, WINDSOR, CONNECTICUT + PUERTO RICO WATER RESOURCES AUTHORITY, SAN  
JUAN, PUERTO RICO  
18 PAGES, 3 TABLES, MAY 1966, DOCKET NO. 115-4, PDR

OF INTEREST ARE - BONUS WAS SHUT DOWN ALL MONTH FOR INSPECTION AND REPAIR. A SUPERHEATER  
ELEMENT KNOWN TO LEAK FISSION PRODUCTS DID NOT EMIT WHEN TESTED WITH AN MAP-5 (AIR AND GAS  
ACTIVITY MONITOR). REACTOR-WATER LEAD CONCENT WAS BELOW SENSITIVITY (LESS THAN 0.015  
PPM). A DOCUMENT RECEIVED EXPRESSED CONCERN OVER EFFECT ON NI-CR REACTOR COMPONENTS.  
STUDIES OF VENTILATION EXHAUST DUCTS SHOWED 45 PERCENT OF STACK PARTICULATE ACTIVITY COMES  
FROM PREHEATER ROOM. INSPECTION OF REACTOR VESSEL INTERIOR CLAD SHOWED RUST SPOTS IN A  
6-IN.-WIDE BAND 20 IN. DOWN FROM VESSEL FLANGE. BORON-STEEL CONTROL RODS INSPECTED WITH A  
BOPESCOPE WERE OK, EXCEPT FOR NO. 1 POD (WARPED, CRACKED, AND WITH CORNER PIECES MISSING.)

\*OPERATIONS SUMMARY FOR AEC + AIRBORNE RELEASE + BONUS (BOILING NUCLEAR SUPERHEAT PROJECT) +  
CONTAINMENT, PRESSURE VESSEL + CONTROL ROD BURNUP + COOLANT CHEMISTRY + EXAMINATION +  
REACTOR, BOILING WATER + REACTOR, SUPERHEAT + VENTILATION SYSTEM

17-12308

ALSO IN CATEGORY 13

LEWIS WH

NUCLEAR FUEL SERVICES NON-COMPLIANCE CITATION FOLLOWING JULY 25-29 INSPECTION  
NUCLFAP FUEL SERVICES, INC., WEST VALLEY, NEW YORK  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 121471, PAGES 18-19, NOVEMBER 21, 1966, DOCKET 50-201

NFS WAS ADVISED OF NONCOMPLIANCE IN THAT INDIVIDUALS WORKING IN RESTRICTED AREAS WERE  
INADEQUATELY TRAINED, DOSE RATE AND AIRBORNE-ACTIVITY SURVEYS WERE NOT MADE, HAND DOSES WERE  
NOT MONITORED, SPECIAL WORK PERMITS WERE NOT ISSUED, AND OFF-GAS FILTERS WERE INADEQUATE OR  
UNTESTED.

\*FAILURE, ADMINISTRATIVE CONTROL + \*INSPECTION AND COMPLIANCE + NFS (NUCLEAR FUEL SERVICES) + TEST, FILTER

17-12341

INDUSTRY, AEC LEADERS CLASH OVER FAST BREEDER PROGRAM  
ATOMIC ENERGY COMMISSION  
3 PAGES, NUCLEONICS WEEK 7(45), PAGES 1-3, (NOVEMBER 9, 1966)

INDUSTRIAL REPRESENTATIVES INDICATED THAT THEY NEEDED SYSTEMS-ENGINEERING EXPERIENCE WITH  
SODIUM-COOLED REACTORS, WHICH THEY CANNOT GET FROM JUST ONE OPERATING REACTOR (EBR-2).  
SECOND, AN INTENSIVE PROGRAM ON SODIUM-REACTOR SAFETY DEVELOPMENT IS NEEDED. FINALLY, THE  
PROGRAM NEEDS TO BE ACCELERATED. AEC COMMISSIONER RAMEY INDICATED THAT SEVERAL 200- TO  
500-MW(E) DEMONSTRATION BREEDER PLANTS WOULD NEED TO BE BUILT, REQUIRING A MASSIVE  
DEVELOPMENT PROGRAM FOR WHICH PRESENT TECHNOLOGY IS NOT READY.

\*REACTOR, FAST + \*REVIEW + REACTOR, LIQUID METAL COOLED

17-12995

HOWARD CL  
DEVELOPMENT PROGRAM ON THE GARIGLIANO NUCLEAR REACTOR. QUARTERLY REPORT NO. 13  
GENERAL ELECTRIC COMPANY, SAN JOSE, CALIFORNIA  
GEAP-5080 + EURAEC-1596 +. 21 PAGES, JANUARY 3, 1966

TASKS INCLUDE (I) DATA LOGGING AND COMPUTER SYSTEM (ESSENTIALLY COMPLETE), (II) REACTOR-VESSEL  
IRRADIATION SPECIMENS (FIRST GROUP READY FOR SHIPMENT FOR EVALUATION), (III) INSTRUMENTED  
FUEL ASSEMBLIES (THREE WERE ADDED DURING THE NOVEMBER 1965 SHUTDOWN), AND (IV) SPECIAL TESTS  
- GAMMA SCANNING OF ONE CORE OCTANT WAS COMPLETED. CALCULATION OF CONTROL-POD PATTERNS TO  
ENSURE NOT EXCEEDING CORE THERMAL LIMITS AT LOW-FLOW/LOW-SUBCOOLING CONDITIONS IS BETTER AT  
RATED POWER.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$1.00 COPY, \$0.50 MICRONEGATIVE

\*OPERATIONS REPORT, ANALYSIS + COMPUTER PROGRAM + CONTAINMENT, PRESSURE VESSEL + CONTROL ROD PROGRAM +  
INSTRUMENTATION, IN CORE + ITALY + RADIATION EFFECT + REACTOR CONTROL + REACTOR, BOILING WATER

17-13059

ALSO IN CATEGORY 9

HOWARD CL

DEVELOPMENT PROGRAM ON THE GARIGLIANO NUCLEAR REACTOR.  
GENERAL ELECTRIC COMPANY  
GEAP-5144 + EURAEC-1635 +. 19 PAGES, APRIL 1, 1966

JANUARY - MARCH 1966. MAINTENANCE AND INSPECTION HAS KEPT PLANT SHUT DOWN. RESTART WILL BE  
IN MAY 1966. A RECALCULATION ESTABLISHED A ROD WITHDRAWAL SEQUENCE (MCHF RATIO OF 1.7) FOR  
LOW-FLOW/SUBCOOLING CONDITIONS.

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-13059 \*CONTINUED\*

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*OPERATIONS REPORT, ANALYSIS + CONTROL ROD PROGRAM + ITALY + POWER DISTRIBUTION + REACTOR, BOILING WATER

17-13234 ALSO IN CATEGORY 18  
INDIAN POINT CHANGE 26 - OPERATION WITH REDUCED PUMP CAPABILITY  
DIVISION OF REACTOR LICENSING, USAEC  
3 PAGES, NOVEMBER 19, 1966, DOCKET NO. 50-3

AEC APPROVES TECH. SPEC. CHANGE RELATED TO FINDING LOW CORE FLOW DUE TO INCORRECT TEMPERATURE MEASUREMENTS. HOWEVER, AEC SET PUMP LOWER FLOW LIMIT HIGHER THAN REQUESTED TO TAKE INTO ACCOUNT FURTHER DETERIORATION IN FLOW RATE OR IN MEASUREMENT DEVICES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + \*SAFETY EVALUATION + FLOW ORIFICE OR RESTRICTION + INDIAN POINT 1 + REACTOR, PRESSURIZED WATER

17-13315  
OPERATING EXPERIENCE AND INCIDENTS AT FERMI REACTOR  
DIVISION OF REACTOR LICENSING, USAEC  
54 PAGES, 4 TABLES, 46 REFERENCES, JULY 9, 1965, AEC-DRL SAFETY EVALUATION OF FERMI REACTOR PROPOSED OPERATION AT 200 MWTH

A SLIGHT REACTIVITY GAIN OCCURRED DUE TO LONGITUDINAL FUEL-PIN SHRINKAGE OR ZIRCONIUM HYDRIDE FORMATION. CLAD INDENTATIONS OCCUR AT SUPPORT AREAS. HIGH COVER-GAS PRESSURE PLUS CORRODED BELLWIS CAUSED SODIUM TO FREEZE AND ONE CONTROL ROD TO STICK. SAFETY RODS DROPPED 14 TIMES DUE TO INSUFFICIENT MAGNETISM. A TRANSISTOR FAILED IN AN ALARM MODULE. A RESISTOR FAILURE RENDERED ONE SOURCE-RANGE PERIOD SCRAM CHANNEL INEFFECTIVE FOR ONE DAY. CORE PRESSURE DROP WAS LOW, AND TESTS SHOWED THAT SAFETY RODS DID NOT FLOAT UNTIL 120 PERCENT DESIGN FLOW WAS REACHED. A FUEL ELEMENT WAS INSERTED INTO AN OCCUPIED STORAGE POSITION. PRIMARY-LOOP CHECK-VALVES HAVE CAUSED 3/8-IN. PIPE MOVEMENTS, AND NEW VALVES WERE DESIGNED. CARBON SHIELDING MATERIAL IN THE PRIMARY SHIELD PLUG EVOLVED GASES WHICH CONTAMINATED THE SODIUM AND MAY LEAD TO CARBURIZATION OF THE STAINLESS STEEL. A SINGLE STEAM-GENERATOR-TUBE LEAK, CAUSED BY VIBRATION, LED TO OTHER FAILURES DUE TO THINNING OF TUBE WALLS AS A RESULT OF SODIUM-WATER REACTIONS. THE FUEL-HANDLING-CASK CAR HAS HAD A LARGE NUMBER OF DIFFICULTIES THAT ARE CONTINUING, AND USE IS NOT AUTHORIZED FOR TRANSPORTING IRRADIATED FUEL UNTIL THOROUGH TESTING IS SATISFACTORY. WHILE THE DIESEL HAS OCCASIONALLY FAILED TO START ON TIME, ONLY SEVEN MOMENTARY POWER OUTAGES HAVE OCCURRED IN FIVE YEARS, WHEN ONE OF THE TWO FEEDERS WAS HIT BY LIGHTNING.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*FAILURE, FATIGUE + \*FUEL HANDLING MACHINE + \*MODIFICATION, SYSTEM OR EQUIPMENT + \*OPERATING EXPERIENCE + CONTROL ROD + COOLANT CHEMISTRY + EMERGENCY POWER, ELECTRIC + FAILURE, ADMINISTRATIVE CONTROL + FAILURE, INSTRUMENT + FAILURE, SCRAM MECHANISM + FERMI + METAL WATER REACTION + REACTIVITY EFFECT + REACTIVITY EFFECT, ANOMALOUS + REACTOR, BREEDER + REACTOR, BREEDER + REACTOR, FAST + REACTOR, LIQUID METAL COOLED + TEST, LEAK RATE + WELDS

17-13534  
GRISWOLD AS + OLSON WR  
POWER REACTOR DEVELOPMENT COMPANY, ENRICO FERMI ATOMIC POWER PLANT REPORT FOR JUNE 1966  
POWER REACTOR DEVELOPMENT CO., DETROIT  
PROC-EF-34 +. 11 PAGES, JUNE 1966, DOCKET NO. 50-16

OPERATION AT 1/3 POWER (67 MWTH) SHOWED THAT THE NUCLEAR INSTRUMENT READ NEARLY 10% HIGH, AND SODIUM FLOW WAS LOW. VARIOUS OPERATING AND NOISE TESTS WERE RUN. A 4.8-KV CABLE FAULT INTERRUPTED POWER, AND THE DIESEL STARTED. PARTS OF THE TRANSFER TANK FROZE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*OPERATIONS SUMMARY FOR AEC + ACCIDENT, LOSS OF POWER + FERMI + INSTRUMENTATION, ABNORMAL INDICATION + REACTOR, FAST + REACTOR, LIQUID METAL COOLED

17-13536  
ENRICO FERMI ATOMIC POWER PLANT REPORT FOR AUGUST 1966  
POWER REACTOR DEVELOPMENT COMPANY  
PROC-EF-36 +. 11 PAGES, AUGUST 1966, DOCKET NO. 50-16

DURING THE 100-MWTH RUN, NO. 1 STEAM-GENERATOR COVER-GAS HYDROGEN CONTENT BEGAN INCREASING. INSPECTION SHOWED NUMEROUS MICROBRAZE WELD DEFECTS (OVERLAYS APPLIED IN LAST REPAIR). BRAZE WAS REMOVED, AND WELDED WITH 2 1/4 CR - 1 MO ROD. THREE TUBE-SHEET WELD LEAKS WERE FOUND. CERTAIN POSITIONS OF THE FUEL HANDLING-MACHINE LATCH MECHANISM WERE INTERFERED WITH BY THE LIMIT SWITCH AND DID NOT STOP ON BOTTOM. STREAMING PRODUCED A 2-REM/HR FIELD AROUND THE PRIMARY SODIUM SAMPLING STATION.

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-13536 \*CONTINUED\*  
AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*OPERATIONS SUMMARY FOR AEC + FAILUPE, PIPE + FERMI + FUEL HANDLING MACHINE + HEAT EXCHANGER + REACTOR, FAST + REACTOR, LIQUID METAL COOLED + SHIELDING + WELDS

17-13835 ALSO IN CATEGORIES 12 AND 18  
STANFORD LE + WEBSTER CC  
OPERATING SAFETY LIMITS FOR THE OAK RIDGE NATIONAL LABORATORY BULK SHIELDING REACTOR (BSR)  
OAK RIDGE NATIONAL LABORATORY  
ORNL-TM-1667 +. 10 PAGES, OCTOBER 19, 1966

LISTS THE NEW OPERATING SAFETY LIMITS FOR THE 2-MW(TH), LIGHT-WATER-MODERATED-AND-COOLED, ENRICHED-U235, POOL-TYPE TESTING REACTOR. THE POWER LEVEL HAS BEEN UPGRATED FROM 1 TO 2 MW. LIMITS ARE GIVEN FOR THE REACTOR BUILDING CONTAINMENT, MODES OF OPERATION, CORE REACTIVITY, PRIMARY AND SECONDARY COOLING SYSTEM TEMPERATURE AND QUALITY, CONTROL AND SAFETY SYSTEM, EXPERIMENTS, AND RADIATION. NO EMERGENCY COOLING PROVISIONS FOR AFTER-HEAT REMOVAL ARE REQUIRED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$1.00 COPY, \$0.50 MICROFICHE.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + BSP (BULK SHIELDING REACTOR) + POWER UPGRATING + REACTOR, AEC OWNED + REACTOR, POOL TYPE

17-13838 ALSO IN CATEGORY 12  
PONMREHN HP + GARRICK BJ  
RELIABILITY OF ENGINEERED SAFEGUARDS IN NUCLEAR POWER REACTORS  
HOLMES AND NARVER  
1 PAGE, 2 REFERENCES, ANS TRANSACTIONS 9(2) PAGE 533 (WINTER 1966) PITTSBURGH, PENNSYLVANIA, OCTOBER 30-NOVEMBER 3, 1966, AMERICAN NUCLEAR SOCIETY

THIS PAPER DISCUSSES THE PROBLEM OF ESTABLISHING SYSTEM RELIABILITY AND GIVES EXAMPLES OF RELIABILITY ESTIMATES OF INSTALLED REACTOR SAFEGUARD SYSTEMS. THE BASIS IS A STUDY OF POWER REACTOR OPERATING EXPERIENCE CARRIED OUT UNDER THE SPONSORSHIP OF THE USAEC. ENGINEERED SAFEGUARD SYSTEMS ARE CONSIDERED IN FOUR BROAD FUNCTIONAL CLASSES - EMERGENCY CORE COOLING - EMERGENCY POWER - SECONDARY NUCLEAR SHUTDOWN - AND CONTAINMENT (INCLUDING CONTAINMENT COOLING AND FILTERS).

\*ENGINEERED SAFETY SYSTEM + \*OPERATING EXPERIENCE + \*RELIABILITY ANALYSIS + \*RELIABILITY, COMPONENT + \*RELIABILITY, SYSTEM + CONTAINMENT, GENERAL + EMERGENCY COOLING CONSIDERATIONS + EMERGENCY POWER, ELECTRIC + SHUTDOWN SYSTEM, SECONDARY

17-13886  
HOLZ PP  
REMOTE MAINTENANCE THROUGH PORTABLE SHIELDS  
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE  
8 PAGES, ANS TRANSACTIONS 9(2) PAGE 532 (1966 WINTER MEETING)

DESCRIBES THE DESIGN OF PORTABLE MAINTENANCE SHIELDS TO SPEED UP MINOR REACTOR REPAIRS. ON-THE-SPOT DESIGN OF THESE SHIELDS WAS STARTED 7 YEARS AGO AT THE HRT AND HAS SINCE BEEN DEVELOPED TO THE POINT THAT THE DESIGN OF THE MSRE FACILITY INCORPORATED SUCH SHIELDS.

\*REMOTE MANIPULATING AND VIEWING + \*SHIELDING + MAINTENANCE AND REPAIR

17-13887 ALSO IN CATEGORY 12  
BLUMBERG P  
MAINTENANCE OF RADIOACTIVE SYSTEMS AND COMPONENTS AT THE MSRE  
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE  
4 PAGES, 1966, ANS TRANSACTIONS 9(2) PAGE 530 (1966 WINTER MEETING)

MAINTENANCE OPERATIONS ARE PERFORMED AT MSRE WITH PORTABLE SHIELDS. LONG TOOLS ARE MANIPULATED THROUGH ACCESS HOLES PROVIDED IN THE SHIELD. THE SHIELDS ARE OF A STANDARD DESIGN WHICH ALLOWS INTERCHANGE OR REDESIGN OF TOOLS. SEVERAL FAILED PUMPS AND VALVES CONTAINING LIQUID FUEL HAVE BEEN REPLACED, WHILE THE RADIATION DOSE RATE TO THE OPERATOR HAS NOT EXCEEDED 1 MR/HR. ONE OF THE PRIMARY GOALS OF THE MSRE PROGRAM HAS BEEN DEMONSTRATED, I.E., THE MAINTAINABILITY OF CIRCULATING-FUEL REACTORS.

\*MAINTENANCE AND REPAIR + \*REMOTE MANIPULATING AND VIEWING + MSRE (MOLTEN SALT REACTOR EXPERIMENT) + OPERATING EXPERIENCE + RADIATION SAFETY AND CONTROL + REACTOR, AEC OWNED + REACTOR, CIRCULATING FUEL + REACTOR, MOLTEN SALT + SHIELDING

17-13889  
MOORE RL  
CLOSED-CIRCUIT TELEVISION VIEWING IN MAINTENANCE OF RADIOACTIVE SYSTEMS AT ORNL

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-13889 \*CONTINUED\*

OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE  
6 PAGES, 7 FIGURES, 1966, ANS TRANSACTIONS 9(2) PAGES 530-531 (1966 WINTER MEETING)

DISCUSSES THE DEVELOPMENT OF TELEVISION CAMERA SYSTEMS FOR VIEWING REMOTE MAINTENANCE OPERATIONS AT REACTORS. A TV CAMERA PRESENTLY USED AT MSRE WILL WITHSTAND EXPOSURE TO 10 TO THE 9TH R OF 1-MEV GAMMA. THE CAMERA HAS A NON-BROWNING LENS AND A SHOCK-RESISTANT, SOLID-STATE AMPLIFIER WITH ONLY ONE SMALL VACUUM TUBE. THE AUTHOR FEELS THAT CLOSED-CIRCUIT TELEVISION HAS ADVANCED TO THE POINT THAT THE RELIABILITY AND PERFORMANCE NOW MEETS THE REQUIREMENTS FOR REMOTE-MAINTENANCE VIEWING.

\*REMOTE MANIPULATING AND VIEWING + MAINTENANCE AND REPAIR + MSRE (MOLTEN SALT REACTOR EXPERIMENT) + REACTOR, AEC OWNED + REACTOR, MOLTEN SALT

17-13890 ALSO IN CATEGORY 12

LARSON PD

HOT MAINTENANCE PLANNING AND PREPARATION AT GENERAL ELECTRIC ESADA-VALLACITOS EXPERIMENTAL SUPERHEAT REACTOR

GENERAL ELECTRIC COMPANY, PLEASANTON

9 PAGES, 1966, ANS TRANSACTIONS 9(2) PAGE 529 (1966 WINTER MEETING) DOCKET NO. 50-183

THE PRODUCTIVITY OF CRAFTSMEN IN THE ATOMIC ENERGY FIELD IS ONLY HALF THAT OF INDUSTRIAL CRAFTSMEN BECAUSE OF PRECAUTIONS REQUIRED FOR RADIATION AND CONTAMINATION CONTROL. STEPS TAKEN BY GE TO IMPROVE PRODUCTIVITY INCLUDE (1) USE OF PROCEDURE MANUALS, (2) VOICE TAPES AND COLOR SLIDES EXPLAINING PROCEDURES, AND (3) LECTURES ON PLANT DESIGN. COMMON EVERYDAY ITEMS TO MAINTAIN PRODUCTIVITY (SUCH AS A GOOD COMMUNICATION SYSTEM) ARE DISCUSSED. THE LIST OF PLANNING AIDS FOR SUPERVISORS INCLUDE (1) MAPS INDICATING RADIATION LEVELS, (2) PREPARATION OF WORK PERMITS PRIOR TO JCB, (3) DAY TO DAY MAINTENANCE OF PERSONNEL-EXPOSURE RECORDS, AND (4) PHOTOGRAPHS OF INACCESSIBLE AREAS.

\*MAINTENANCE AND REPAIR + ADMINISTRATIVE CONTROLS AND PRACTICES + OPERATING EXPERIENCE + RADIATION SAFETY AND CONTROL + REACTOR, BOILING WATER + REACTOR, SUPERHEAT + VESR (VALLECITOS EXP. SUPERHEAT REACTOR-ESADA)

17-13891 ALSO IN CATEGORY 9

GEKLER WC

OPERATING EXPERIENCE OF NUCLEAR POWER PLANT SAFETY SYSTEMS

HOLMES AND NARVER, INC.

15 PAGES, 7 TABLES, 1 FIGURE, 1966, ANS TRANSACTIONS 9(2) PAGES 534-535 (1966 WINTER MEETING)

GIVES ANALYSIS OF SAFETY-SYSTEM DATA OBTAINED FROM FIVE POWER-GENERATING PLANTS. REAL AND SPURIOUS SCRAM RATES EXHIBITED ONLY A VERY WEAK DECREASING TREND WITH TIME. AFTER THE FIRST YEAR OF COMMERCIAL OPERATION, REAL AND SPURIOUS SCRAM-TRIP RATES ARE ABOUT EQUAL AND RELATIVELY CONSTANT AT 0.5 TRIPS PER MONTH OF OPERATION. MALFUNCTIONS THAT SUGGEST POTENTIAL BLOCKAGE OF A CORRECT SAFETY SYSTEM RESPONSE HAVE OCCURRED, PRIMARILY IN FLUX-LEVEL AND STARTUP-RATE CHANNELS, AND HAVE INCLUDED MALADJUSTED TRIP POINTS, STICKING OR DIRTY RELAYS AND SWITCHES, FAILURES OF ELECTRONIC PARTS, POOR SENSOR RESPONSE, AND DESIGN AND OPERATING ERRORS.

\*REACTOR SAFETY SYSTEM + \*RELIABILITY ANALYSIS + \*SCRAM, SPURIOUS + \*STATISTICAL ANALYSIS + INSTRUMENTATION, PROTECTIVE + OPERATING EXPERIENCE + REACTOR, POWER

17-13892

SEYFRIT KV + MCEEDWARDS JA

PIQUA NUCLEAR POWER FACILITY CORE UNLOADING AND INSPECTION

PIQUA NUCLEAR POWER FACILITY + ATOMICS INTERNATIONAL

12 PAGES, 18 FIGURES, ANS TRANSACTIONS 9(2) PAGES 531-532 (1966 WINTER MEETING) DOCKET NO. 115-2

CONTROL ROD JAMMING AND A HIGH CORE-PRESSURE-DROP INDICATED FUEL OR GRID-PLATE DISTORTION AND PRECIPITATED AN INVESTIGATION OF THE CORE. PREVIOUSLY REMOVED FUEL ELEMENTS HAD ALSO CONTAINED DEPOSITS OF CARBONACEOUS MATERIAL. THE TOOLS AND TECHNIQUES OF INSPECTION ARE DESCRIBED. THE INNER PROCESS TUBES WERE DEFORMED, CAUSING THE BINDING OF THE CONTROL RODS. THE CARBONACEOUS DEPOSIT OCCUPIED 3 PERCENT OF VOLUME OF THE CORE. DESIGN CHANGES WERE MADE TO REROUTE THE COOLANT FLOW AND THE INTRA-ELEMENT MODERATOR FLOW TO DOUBLE THE MODERATOR FLOW OUTSIDE THE ELEMENT. THIS SHOULD ELIMINATE THE CONDITIONS THAT LED TO THE ORIGINAL CORE FORMATION.

\*FAILURE, DESIGN ERROR + \*MAINTENANCE AND REPAIR + \*SURFACE FILM DEPOSIT + COOLANT CHEMISTRY + CORE COMPONENTS, MISCELLANEOUS + OPERATING EXPERIENCE + PIQUA + REACTOR, ORGANIC COOLED + REMOTE MANIPULATING AND VIEWING

17-13893

FANJOY CD

FUEL SCHEDULING EXPERIENCE AT NPD

THE HYDRO-ELECTRIC POWER COMMISSION OF ONTARIO

5 PAGES, 3 FIGURES, 3 REFERENCES, OCTOBER 1966, ANS TRANSACTIONS 9(2) PAGES 535-536, (1966 WINTER MEETING)

DISCUSSES ON-LINE FUEL-RELOCATION EXPERIENCE AT THE 20-MWE NPD CANDU-PROTOTYPE REACTOR. ONLY



CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-13893 \*CONTINUED\*

50 PERCENT OF THE AVAILABLE ENERGY FROM THE OPERATING-INVENTORY HALF OF THE FIRST CORE WAS RECOVERED BECAUSE OF OPTIMISTIC FUELING RULES, AND FUEL-HANDLING-MACHINERY DOWNTIME REQUIRED ADDITIONAL LOADING FOR EXCESS REACTIVITY. THE CALCULATED GOAL WAS 70 PERCENT, THE IDEAL WOULD BE 100 PERCENT.

\*FUEL BURNUP + \*REFUELING + CANADA + FUEL HANDLING + NPD-2 (NUCLEAR POWER DEMONSTRATION REACTOR - 2) + OPERATING EXPERIENCE + REACTOR, HEAVY WATER

17-13894

GRIMM EA

MODIFYING THE NEW PRODUCTION REACTOR FOR ELECTRICAL POWER GENERATION  
HANFORD ATOMIC PRODUCTS DEPARTMENT

9 PAGES, 5 FIGURES, OCTOBER 1966, ANS TRANSACTIONS 9(2) PAGE 536 (1966 WINTER MEETING)

SUBSTANTIAL ADDITIONS TO THE EXISTING PLANT WERE REQUIRED TO PROVIDE STEAM AT USABLE PRESSURES TO THE GENERATING PLANT, ALTHOUGH STEAM-GENERATION PROVISIONS HAD BEEN INCLUDED IN THE ORIGINAL DESIGN. AN ADDITIONAL SIXTH PRIMARY LOOP AND TWO ADDITIONAL CONDENSATE SURGE TANKS WERE ADDED, AND EIGHT 38-IN. STEAM LINES AND TWO 24-IN. CONDENSATE LINES WITH ASSOCIATED VALVES AND CONTROLS WERE INSTALLED. ONLY ONE UNSCHEDULED SHUTDOWN OCCURRED WHICH WAS UNAVOIDABLE. TESTS SHOWED TRANSIENTS LESS SEVERE THAN PREDICTED AND THAT THE REACTOR COULD STAY IN OPERATION UPON A T10P OF A SINGLE TURBINE. ON-THE-SPOT COVERAGE BY THREE TEST ENGINEERS AND RAPID DISSEMINATION OF TEST RESULTS ENABLED A SMOOTH TRANSITION TO POWER GENERATION.

\*MODIFICATION, SYSTEM OR EQUIPMENT + \*OPERATING EXPERIENCE + MAINTENANCE AND REPAIR + NPP (HANFORD NEW PRODUCTION REACTOR) + REACTOR, GRAPHITE MODERATED + REACTOR, POWER

17-13896

ALSO IN CATEGORY 6

GERKEN WW

TRANSIENT ANALYSIS

COMBUSTION ENGINEERING INC, PUERTO RICO WATER RESOURCES AUTHORITY

CFND-PRWR-270 +. 14 PAGES, 31 FIGURES, 5 TABLES, BONUS POWER STATION, BONUS PREOPERATIONAL ANALYSIS REPORT, PAGES VII-1-VII-14, JUNE 1966, ANS TRANSACTIONS 9(2) PAGES 536-537 (1966 WINTER MEETING)

DISCUSSES TESTS OF TRANSIENT CHARACTERISTICS OF THE BONUS REACTOR IN RESPONSE TO CHANGES IN STEAM, FEEDWATER AND RECIRCULATION FLOW, AND FEEDWATER TEMPERATURE. REACTIVITY COEFFICIENTS WERE DETERMINED. THE DYNAMIC PRESSURE COEFFICIENT WAS 0.28 PERCENT DELTA K/PSI PER SEC. THE EFFECT OF FEEDWATER-FLOW TRANSIENTS WAS 0.10 PERCENT DELTA K PER 10 TO THE 4TH POUNDS/HR. POWER WAS PROPORTIONAL TO THE RECIRCULATION FLOW RATE. CALCULATED TRANSIENTS SHOWED A LINEAR POWER RESPONSE DURING RAMP TRANSIENTS.

\*MEASUREMENT, REACTIVITY + BONUS (BOILING NUCLEAR SUPERHEAT PROJECT) + HYDRODYNAMIC ANALYSIS + REACTOR, BOILING WATER + REACTOR, SUPERHEAT + TEST, PLANT RESPONSE + THERMAL ANALYSIS

17-13897

SMALLEY WR

YANKEE FUEL RODS AFTER IRRADIATION TO 45,000 MWD/MTU

WESTINGHOUSE ELECTRIC CORPORATION, ATOMIC POWER DIVISION

2 PAGES, ANS TRANSACTIONS 9(2) PAGES 394-395 (1966 WINTER MEETING)

AFTER 3-1/2 YEARS, A BURNUP FUEL ASSEMBLY WAS REMOVED FROM THE YANKEE-ROWE REACTOR. THE ASSEMBLY CONTAINED SLIGHTLY ENRICHED UO<sub>2</sub> FUEL RODS CLAD WITH 348 STAINLESS STEEL WHICH HAD ACHIEVED A BURNUP OF 31,000 MWD/MTU. EXAMINATION SHOWED NO EVIDENCE OF CRACKS, DEFORMATION, CORROSION, OR OTHER SIMILAR DEFECTS. CRUD WAS FOUND ON THE RODS BETWEEN 4 AND 27 IN. FROM THE ROD TOPS. METALLOGRAPHY SHOWED NO GRAIN GROWTH FROM CENTER SUBASSEMBLY RODS. CORNER RODS EXHIBITED UNUSUALLY LARGE, ELONGATED GRAINS ALONG CRACK INTERFACES.

\*EXAMINATION + \*FUEL ELEMENT + FUEL INTEGRITY + REACTOR, PRESSURIZED WATER + SURFACE FILM DEPOSIT + YANKEE

17-13936

ALSO IN CATEGORY 18

LETTER TO DRL FROM MANHATTAN COLLEGE - REQUEST FOR CHANGE IN TECHNICAL SPECIFICATION  
MANHATTAN COLLEGE

24 PAGES, FIGURES, TABLES, OCTOBER 1966, DOCKET 50-199

PRESENTS SUBSTANTIATING EVIDENCE FOR ALTERING TECHNICAL SPECIFICATIONS, BECAUSE OF THE POSITIVE BULK-WATER TEMPERATURE COEFFICIENT, TO ALLOW AN EXCESS REACTIVITY OF 0.0035 AT 75 F WITH BOTH CONTROL RODS FULLY WITHDRAWN, AS OPPOSED TO 0.003 AT 60 F. THE COST OF EQUIPMENT TO PERFORM AN EXPERIMENT TO DETERMINE THE TEMPERATURE AT WHICH THE COEFFICIENT CHANGED FROM MINUS TO PLUS WAS PROHIBITIVE, SO CONCLUSIONS FROM A CORRELATIVE STUDY WITH THE IRL REACTOR ARE GIVEN. OPERATIONAL DATA FROM THE MZPR LOG BOOK IS NORMALIZED TO 70 F TO COMPARE WITH IRL, AND INDICATES A REACTIVITY PEAK OF 0.369% AT 110 F. THE MCA WAS REEVALUATED AND INDICATES A PEAK POWER OF 147 KW 3.6 MIN AFTER THE BEGINNING OF THE EXCURSION, AND ZERO AFTER 5.3 MIN. THE MAXIMUM CORE TEMPERATURE WOULD REACH 105 C. EXPERIMENTAL RESULTS OF THE TEMPERATURE-COEFFICIENT DETERMINATION FOR THE IRL ARE GIVEN. VARIATIONS FROM 59 TO 112 F WERE PLUS 30 TO MINUS 14 MICRO DELTA K PER DEGREE F. AT 94 F, THE COEFFICIENT WAS ZERO. THE MEASURED VOID COEFFICIENT FOR THE MZPR IS MINUS 5.83 MICRO DELTA K PER K.

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-13936 \*CONTINUED\*  
AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS +  
\*TEMPERATURE COEFFICIENT + ACCIDENT, MAXIMUM CREDIBLE (MCA) + MEASUREMENT, REACTIVITY +  
MEASUREMENT, TEMPERATURE + REACTOR, POOL TYPE

17-13944  
QUARTERLY PROGRESS REPORT FOR THE PERIOD ENDING APRIL 30, 1966. 40-MW(E) PROTOTYPE HIGH-TEMPERATURE  
GAS-COOLED REACTOR POSTCONSTRUCTION RESEARCH AND DEVELOPMENT PROGRAM  
GENERAL ATOMIC, DIV. OF GENERAL DYNAMICS  
GA-7232 +. 47 PAGES, 23 FIGURES, 10 TABLES, JULY 20, 1966

THE TECHNIQUES AND RESULTS OF THE LOADING AND LOW-POWER-MEASUREMENT PROGRAM ARE GIVEN. THE  
CRITICAL MASS WAS PREDICTED AS 188.6 KG U-235 AND MEASURED AS 187.6. OTHER MEASUREMENTS  
DISCUSSED ARE THE REACTIVITY WORTH OF VARIOUS SUBCRITICAL CONTROL-ROD CONFIGURATIONS AS  
MEASURED BY PULSED-NEUTRON TECHNIQUES, POWER DISTRIBUTION, REACTIVITY WORTH AND K EFFECTIVE,  
CONTROL-ROD WORTH, HELIUM-PRESSURE EFFECTS, AND TEMPERATURE EFFECTS. BRIEFLY DISCUSSES A  
FAILED-FUEL-ELEMENT LOCATOR, ALSO.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*REACTOR STARTUP TESTING + INSTRUMENTATION, DETECTION FAILED FUEL ELEMENT + PEACH BOTTOM 1 +  
PULSED NEUTRON TECHNIQUE + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED + TEST, PHYSICS

17-13951 ALSO IN CATEGORY 14  
COBALT STUCK IN KANSAS U RESEARCH REACTOR AROUSES GUBERNATORIAL ANTI-PATHY  
1 PAGE, THE ARKANSAS CITY DAILY TRAVELER, PAGE 1, NOVEMBER 22, 1966

A PIECE OF COBALT, STUCK IN THE KANSAS U REACTOR FOR 2 YEARS, WAS REMOVED BY AN OUTSIDE AGENCY  
AND SENT TO KENTUCKY FOR DISPOSAL. THIS, PLUS PUBLIC APPREHENSION OVER THE LYONS SALT MINE  
DISPOSAL PLAN CAUSED THE GOVERNOR-ELECT TO MAKE CRITICAL REMARKS AGAINST KANSAS BECOMING A  
NUCLEAR GARBAGE DUMP.

\*RADIATION, PUBLIC EDUCATION/ACCEPTANCE + INCIDENT, ACTUAL, GENERAL + REACTOR, POOL TYPE +  
WASTE DISPOSAL, SALT

17-13961 ALSO IN CATEGORY 16  
KELLY AC  
SMOKE TRACKING HELPS DETERMINE OPTIMUM CHIMNEY HEIGHT  
IRISH ELECTRICITY SUPPLY BOARD  
2 PAGES, 2 FIGURES, POWER, PAGES 94-95, (JUNE 1966)

AT SOME POWER-PLANT LOCATIONS WITH PECULIAR TERRAIN FEATURES, NEITHER CALCULATIONS NOR  
WIND-TUNNEL TESTS MAY BE ADEQUATE TO REPRESENT VARIABLE FULL-SCALE CONDITIONS. A SIMPLE  
TECHNIQUE OF OBSERVING THE SMOKE BEHAVIOR FROM SHIPBOARD SIGNALLING ROCKETS OR VEREY PISTOLS,  
USING SURVEYORS TRANSITS FITTED WITH RIFLE SIGHTS, WAS USED TO LOCATE WORST WIND PATTERNS.  
IN MOST CONDITIONS, A PUFF COULD BE FOLLOWED ABOUT A MILE. THE METHOD IS ACCURATE, SIMPLE,  
AND CHEAP.

\*DISPERSION + \*SMOKE + \*STACK

17-13962  
EXTON W  
DO YOUR UTILITY PLANT TRAINEES PUSH BROOMS  
WM EXTON, JR AND ASSOCIATES  
3 PAGES, POWER, PAGES 88-90, (JUNE 1966)

DECISIONS BY HIGH-LEVEL MANAGEMENT DEAL WITH CAPITAL INVESTMENT OR ANNUAL BUDGET ITEMS AND  
NEGLECT PERSONNEL OR FAIL TO APPRECIATE THEIR VALUE. PERSONNEL-SELECTION METHODS SHOULD BE  
IMPROVED. AN AGE OF 18 IS NOT AN ADEQUATE QUALIFICATION FOR A JOB. YOUNGSTERS HIRED ARE  
HUMBLER WHEN REQUIRED TO PUSH BROOMS OR PERFORM MENIAL TASKS. THIS INTRODUCTION TO A CAREER  
IN A POWER PLANT IS QUESTIONED BECAUSE YOUNGSTERS AREN'T INTERESTED IN THE JOB. THE BEST  
BROOM-PUSHER MAY NOT BECOME THE BEST FOREMAN OR OPERATOR. WELL-PLANNED TRAINING WOULD BE  
MORE EFFECTIVE IN DEVELOPING THE RECRUITS KNOWLEDGE, AND THIS IS TOO HIGH A PRICE TO PAY FOR  
GETTING FLOORS SWEEPED. INVESTMENT IN EMPLOYEE TRAINING YIELDS A HIGHER RATE OF RETURN THAN  
INVESTMENT IN PHYSICAL INSTALLATIONS.

\*STAFFING, TRAINING, QUALIFICATION + ECONOMICS

17-13966 ALSO IN CATEGORIES 12 AND 18  
OPERATING SAFETY LIMITS FOR THE HIGH FLUX ISOTOPE REACTOR (HFIR)  
OAK RIDGE NATIONAL LABORATORY  
ORNL-TM-1532(REV.) +. 13 PAGES, SEPTEMBER 16, 1966

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-13966 \*CONTINUED\*

LISTS THE OPERATING SAFETY LIMITS FOR THE 100-MW(TH), LIGHT-WATER-MODERATED, COOLED, BERYLLIUM-REFLECTED, ENRICHED U-235, FLUX-TRAP REACTOR. LIMITS ARE GIVEN FOR THE CONTAINMENT SYSTEM, CORE REACTIVITY, INSTRUMENTATION, EXPERIMENTS, PRIMARY COOLING SYSTEM, AND RADIATION MONITORING. ADMINISTRATIVE AND PROCEDURAL SAFEGUARDS ARE INCLUDED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$1.00 COPY, \$0.50 MICROFICHE

HFR (HIGH FLUX ISOTOPE REACTOR) + OPERATING LIMITS/TECHNICAL SPECIFICATIONS + REACTOR, AEC OWNED + REACTOR, RESEARCH + REACTOR, TEST

17-13975 ALSO IN CATEGORY 11

WIMUNC FA

HOW SERIOUS ARE VESSEL CLADDING FAILURES

ARGONNE NATIONAL LABORATORY

9 PAGES, 11 FIGURES, POWER REACTOR TECHNOLOGY 9(3), PAGES 101-109, (SUMMER 1966)

REVIEWS EXPERIENCE AT ELK RIVER (ADDITIONAL CRACKS FOUND AFTER OPERATION, BUT IN AREAS KNOWN TO BE MARTENSITIC), AT EBWP (CRACKS IN ABOVE-WATER PORTIONS OF STITCH-WELD CLAD WERE TRACED TO THERMAL STRESS WHEN THE COILS WERE COOLED AFTER A 1700 F ROLLING). MANY INTRA-MATERIAL CRACKS WERE FOUND BY GRINDING (EVEN AFTER DYE CHECKS SHOWED NO SURFACE DEFECTS), AND AT YANKEE (PRESSURIZER CRACKS, LIKE EBWP, DID NOT PENETRATE INTO BASE METAL EVEN AT SPOT-WELDS. VESSEL CLAD WAS WORN THROUGH BY LOOSE IRRADIATION CAPSULES. NO PROBLEM IS EXPECTED FROM CORROSION OR BRITTLENESS).

\*CONTAINMENT, PRESSURE VESSEL + \*FAILURE, CLADDING + \*FAILURE, PRESSURE VESSEL + \*OPERATING EXPERIENCE + EBWP (EXPERIMENTAL BOILING WATER REACTOR) + ELK RIVER + EXAMINATION + PRESSURIZER + REACTOR, BOILING WATER + REACTOR, PRESSURIZED WATER + YANKEE

17-13976

RIEPMAN GF + MILLER WJ

NUCLEAR PLANT PERFORMANCE--GOOD AND GETTING BETTER

METROPOLITAN EDISON CO + YANKEE ATOMIC ELEC. CO.

13 PAGES, 12 FIGURES, 5 TABLES, 30 REFERENCES, POWER REACTOR TECHNOLOGY 9(3), PAGES 110-122, (SUMMER 1966)

REVIEWS PERFORMANCE DATA AND AVAILABILITY FACTORS FOR SIX BIG PLANTS. MOSTLY DATA, BUT MENTIONS A FEW COMPONENT-FAILURE PROBLEMS.

\*OPERATING EXPERIENCE + BIG ROCK POINT + DRESDEN 1 + HUMBOLDT BAY + INDIAN POINT 1 + REACTOR, BOILING WATER + REACTOR, PRESSURIZED WATER + SHIPPINGPORT + YANKEE

17-13988

ALSO IN CATEGORY 9

BARTHOFF S + WEISMAN J + LAYMAN WH

CHEMICAL SHIM CONTROL OPERATING EXPERIENCE IN THE SAXTON REACTOR

WESTINGHOUSE ATOMIC POWER DIVISION, PITTSBURGH + SAXTON NUCLEAR EXPERIMENTAL CORP.

4 PAGES, JANUARY 1, 1964, PAPER DELIVERED AT THE AMERICAN NUCLEAR SOCIETY MEETING, NOVEMBER 30 - DECEMBER 1, 1964, SAN FRANCISCO

AFTER EXTENDED OPERATION WITH BORIC ACID CHEMICAL SHIM UNDER A WIDE VARIETY OF OPERATING CONDITIONS, THE PRELIMINARY RESULTS ARE VERIFIED ALONG WITH SUCCESS WITH BORIC ACID DISSOLVED IN THE MODERATOR COOLANT IN THE SAXTON REACTOR. THE FOLLOWING SPECIFIC CONCLUSIONS WERE REPORTED - (1) NO SIGNIFICANT AMOUNT OF BORON-CONTAINING MATERIAL WAS DEPOSITED ON CORE SURFACES, (2) CORE LIFETIME WAS NOT DECREASED BECAUSE OF CHEMICAL SHIM CONDITIONS, (3) ALKALI ADDITIONS TO ENABLE OPERATION AT HIGH PH WERE SATISFACTORY, AND (4) HOT-CHANNEL FACTORS DURING CHEMICAL-SHIM OPERATION AGREED WITH PREDICTIONS.

\*BORON + \*CHEMICAL SHIM + \*SAXTON + MAIN COOLING SYSTEM + OPERATING EXPERIENCE

17-13994 ALSO IN CATEGORY 18

BONUS CHANGE 2 - CONTROL ROD CONNECTION - PROCEDURE MODIFICATION

DIVISION OF REACTOR LICENSING

6 PAGES, NOVEMBER 23, 1966, DOCKET NO. 115-4

RECENT CRACKS IN THE RACK-AND-PINION TYPE CONTROL-ROD-DRIVE RACK WERE ATTRIBUTED TO DIFFERENTIAL EXPANSION BETWEEN THE 304 SS LOCK NUT AND THE 17-4PH RACK. MECHANICAL CHANGES TO THIS SYSTEM REQUIRE CERTAIN PROCEDURAL CHANGES FOR DISASSEMBLY. AEC APPROVES THESE CHANGES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + \*SAFETY EVALUATION + BONUS (BOILING NUCLEAR SUPERHEAT PROJECT) + CONTROL ROD DRIVE + REACTOR, BOILING WATER + REACTOR, SUPERHEAT

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-13998 ALSO IN CATEGORY 9  
CONTROL-ROD FUEL ELEMENTS CAUSE NUCLEATE BOILING AT STERLING FOREST REACTOR. OCTOBER 10, 1966  
UNION CARBIDE CORPORATION, TUXEDO, NEW YORK  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(2) PAGES 14-15 (JANUARY 9, 1967), DOCKET NO. 50-54

TEN HOURS AFTER ATTAINING FULL POWER, NUCLEATE BOILING INSTRUMENT INSTABILITY BEGAN. THE SENIOR OPERATOR DETERMINED THIS WAS DUE TO AN IRRADIATION SAMPLE, REMOVED IT, AND RESUMED OPERATION. ANALYSIS SHOWED THAT TWO CONTROL-ROD FUEL ELEMENTS (PLACED WITH CURVED SIDES ADJACENT) INTERFERED WITH EACH OTHERS COOLING FLOW THROUGH PORTS IN CURVED SIDE OF FUEL ELEMENTS. THE SAMPLE HAD NOT CAUSED TROUBLE IN THE SIX MONTHS PREVIOUS TO A FUEL CHANGE THAT INCREASED THE FUEL CONTENT FROM 86 TO 104 GRAMS OF U-235.

\*FLOW BLOCKAGE + \*IN PILE LOOP + \*INSTRUMENTATION, GENERAL + \*NUCLEATE BOILING + \*REFUELING +  
IN PILE EXPERIMENT + REACTOR, POOL TYPE

17-13999 ALSO IN CATEGORY 18  
AEC SUSPENDS SINCO TESTING, INC. RADIOGRAPHY LICENSE  
U. S. ATOMIC ENERGY COMMISSION  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(2) PAGES 17-18 (JANUARY 9, 1967)

SINCO IS REQUIRED TO CEASE OPERATION PENDING INVESTIGATION. CHANGES INCLUDE ALLOWING 4 PERSONS TO OPERATE A 25-CURIF IR-192 RADIOGRAPHIC DEVICE WITHOUT HAVING CHECKED THEIR QUALIFICATIONS. ONE PERSON LEFT THE SOURCE UNRETRACTED ON DECEMBER 12, 1966, AND SINCO FAILED TO PROCESS HIS FILM BADGE OR RESTRICT HIM FROM FURTHER RADIATION AFTER FINDING HIS POCKET METERS DISCHARGED.

\*INCIDENT, ACTUAL, HUMAN ERROR + \*RADIOGRAPHY + FAILURE, ADMINISTRATIVE CONTROL + FAILURE, OPERATOR ERROR +  
MONITOR, RADIATION, PERSONNEL + PERSONNEL EXPOSURE, RADIATION + REGULATION, AEC

17-14000  
BONUS-DPL MONTHLY REPORT FOR AUGUST, 1966. NO. 28  
PUERTO RICO WATER RESOURCES AUTHORITY  
WRA-B-66-3A +. 34 PAGES, 14 FIGURES, AUGUST 1966, DOCKET NO. 115-4

(1) SOME POISON SHIMS WERE SHIFTED FROM THE SUPERHEATER TO THE BOILER SECTION OF THE CORE, WHICH RESULTED IN A GAIN IN REACTIVITY OF 0.9 PERCENT AS WELL AS AN INCREASE IN ROD WORTH. THE INCREASED ROD WORTH GIVES A SHUTDOWN MARGIN GREATER BY ONE DOLLAR. THE TEMP DEFECT DECREASED BY 84 CENTS, ATTRIBUTED TO BOTH THE POISON SHIFT AND BUILDUP OF PU-239. (2) THE SUPERHEATER RODS STUCK OCCASIONALLY, DUE TO FRICTION IN THE CONTROL RODS WATER SEAL ASSEMBLIES. (3) AN ERRONEOUSLY COMBINED CONTACT PERMITTED THE SIMULTANEOUS WITHDRAWAL OF A BOILER AND SUPERHEATER ROD. (4) AN AIR-LEAK TEST REVEALED A CRACK (ATTRIBUTED TO FAULTY FABRICATION) IN A NEW SPOOL PIECE IN THE DRYER-PREHEATER BETWEEN A BOILING FUEL ELEMENT AND SUPERHEAT ELEMENT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*OPERATING EXPERIENCE + \*OPERATIONS REPORT, GENERAL + BONUS (BOILING NUCLEAR SUPERHEAT PROJECT) +  
FAILURE, DESIGN ERROR + FAILURE, INSTALLATION ERROR + FAILURE, SCRAM MECHANISM + REACTOR, BOILING WATER +  
REACTOR, SUPERHEAT + SHUTDOWN MARGIN

17-14001  
YANKEE NUCLEAR POWER STATION OPERATION REPORT NO. 70 FOR OCTOBER 1966  
YANKEE ATOMIC ELECTRIC COMPANY  
14 PAGES, 2 FIGURES, 1 TABLE, NOVEMBER 25, 1966, DOCKET NO. 50-29

(1) 24 NEW CONTROL RODS WERE INSTALLED WHICH HAVE THE POISON AND FOLLOWER SECTIONS WELDED TOGETHER, THUS ELIMINATING THE WEAR PROBLEM EXPERIENCED WITH THE OLD RODS, WHICH HAD A LATCH TYPE JOINT. (2) CRUD ACCUMULATIONS WERE NOTED ON THE UPPER PORTION OF STAINLESS-STEEL-CLAD FUEL ASSEMBLIES. DURING THE FIRST 3 FUEL CYCLES WITH MAIN-COOLANT PH UNADJUSTED, NO CRUD WAS NOTED. FOLLOWING CYCLE 4, WITH AMMONIATED HIGH-PH COOLANT, THE CRUD LEVEL WAS VERY HIGH, AND THE HIGHLY CRUDED REGIONS WERE LIGHT ORANGE IN COLOR. (3) A NEON LAMP WAS INSTALLED TO MONITOR THE INTEGRITY OF THE COIL CIRCUIT OF THE SCRAM AUXILIARY RELAY. (4) SAMPLES OF THE PRESSURIZER CLAD WERE TAKEN. (5) RADIATION LEVELS NEAR THE REACTOR HEAD (PRIOR TO ITS REMOVAL) REACHED 1.3 R/HR.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*OPERATING EXPERIENCE + \*OPERATIONS REPORT, GENERAL + CLAD + COOLANT CHEMISTRY +  
INSTRUMENTATION, SURVEILLANCE + REACTOR, POWER + REACTOR, PRESSURIZED WATER + STEEL, STAINLESS +  
SURFACE FILM DEPOSIT + YANKEE

17-14002  
ROSE R  
EXPERIENCE FROM THE EXPERIMENTAL OPERATION OF THE HALDEN HEAVY WATER BOILING REACTOR

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-14002 \*CONTINUED\*  
19 PAGES, 21 FIGURES, ENERGIE NUCLEAIRE 8(4) PAGES 219-237 (1966)

REPORTS ON THE STUDY OF THE DEGRADATION OF THE HEAVY WATER MODERATOR. THE CAUSE OF MODERATOR LEAKAGE, FUEL ELEMENT FAILURES, AND DYNAMIC CHARACTERISTICS ARE DISCUSSED.

\*OPERATING EXPERIENCE + FAILURE, FUEL ELEMENT + HBWR (HALDEN BOILING WATER REACTOR) + HEAVY WATER + NORWAY + POWER UPGRATING + REACTOR DYNAMICS + REACTOR, BOILING WATER + REACTOR, HEAVY WATER

17-14003 ALSO IN CATEGORY 18  
INDIAN POINT STATION SEMI-ANNUAL OPERATIONS REPORT NO. 8 FEBRUARY 1, 1966 - SEPTEMBER 30, 1966 - PURSUANT TO PROVISIONAL OPERATING LICENSE DPR-5  
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.  
33 PAGES, NOVEMBER 15, 1966, DOCKET NO. 50-3

SUBJECTS COVERED IN THIS PROGRESS REPORT INCLUDE UNUSUAL OPERATING CONDITIONS, SHUTDOWNS, SIGNIFICANT TESTS, PRINCIPAL MAINTENANCE AND DESIGN CHANGES, RADIOCHEMISTRY, AND HEALTH PHYSICS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*OPERATING EXPERIENCE + INDIAN POINT 1 + OPERATIONS SUMMARY FOR AEC + REACTOR, PRESSURIZED WATER

17-14004  
SECTION II - OPERATIONS  
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.  
4 PAGES, 1 FIGURE, INDIAN POINT STATION SEMI-ANNUAL OPERATIONS REPORT NO. 8 - FEBRUARY 1, 1966 - SEPTEMBER 30, 1966 - PURSUANT TO PROVISIONAL OPERATING LICENSE DPR-5, PAGES 8-11, NOVEMBER 15, 1966, DOCKET NO. 50-3

THE PRESSURIZER WATER LEVEL WAS LOWERED, AND THIS WAS FOLLOWED BY A DECREASE IN TEMPERATURE OF 3 F OF THE PRIMARY COOLANT OVER A PERIOD OF 6 MIN. THE CONTROL RODS WERE WITHDRAWN 2 ADDITIONAL INCHES TO COMPENSATE. THE WATER DISCHARGED INTO THE PRIMARY SYSTEM FROM THE PRESSURIZER CONTAINED A HIGHER CONCENTRATION OF BORIC ACID THAN THE PRIMARY COOLANT, THUS CAUSING A DECREASE IN REACTIVITY WITH A RESULTANT DECREASE IN PRIMARY COOLANT TEMPERATURE. THE CONCENTRATING MECHANISM IN THE PRESSURIZER WAS A SMALL LEAKAGE OF STEAM BY THE PRESSURIZER SAFETY VALVES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*OPERATING EXPERIENCE + \*OPERATIONS SUMMARY FOR AEC + \*REACTIVITY EFFECT, ANOMALOUS + CHEMICAL SHIM + INDIAN POINT 1 + PRESSURIZER + REACTOR, PRESSURIZED WATER

17-14005  
SECTION I - GENERAL DESCRIPTION OF OPERATIONS  
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.  
1 PAGE, INDIAN POINT STATION SEMI-ANNUAL OPERATIONS REPORT NO. 8 - FEBRUARY 1, 1966-SEPTEMBER 30, 1966 - PURSUANT TO PROVISIONAL OPERATING LICENSE DPR-5, PAGE 5, DOCKET NO. 50-3, NOVEMBER 15, 1966

A NUMBER OF ECONOMIZER TUBES OF THE NO. 11 OIL-FIRED SUPERHEATER WERE RUPTURED IN THE U BENDS BECAUSE OF INADEQUATE DRAINING OF THE ECONOMIZER, WITH RESULTANT ICE FORMATION DURING THE SHUTDOWN PERIOD.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*OPERATING EXPERIENCE + \*OPERATIONS SUMMARY FOR AEC + FAILURE, OPERATOR ERROR + FAILURE, TUBING + INDIAN POINT 1 + REACTOR, PRESSURIZED WATER

17-14006  
SECTION III - SIGNIFICANT TESTS  
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.  
2 PAGES, INDIAN POINT STATION SEMI-ANNUAL OPERATIONS REPORT NO. 8 - FEBRUARY 1, 1966-SEPTEMBER 30, 1966 - PURSUANT TO PROVISIONAL OPERATING LICENSE DPR-5, PAGES 12-13, DOCKET NO. 50-3, NOVEMBER 15, 1966

THE WORTH OF A GROUP OF CONTROL RODS AT POWER WAS FOUND TO BE 20 PERCENT HIGHER THAN THE WORTH AT ZERO POWER. HALF OF THIS CHANGE IS ATTRIBUTED TO HIGHER OPERATING TEMPERATURE. THE MOST LIKELY SOURCE OF THE REMAINDER IS THE CHANGE IN SPATIAL IMPORTANCE AT POWER.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*OPERATING EXPERIENCE + \*OPERATIONS SUMMARY FOR AEC + \*REACTIVITY EFFECT, ANOMALOUS + CONTROL ROD WORTH + INDIAN POINT 1 + REACTOR, PRESSURIZED WATER + TEMPERATURE REACTIVITY EFFECT

17-14007 ALSO IN CATEGORY 9  
APPENDIX III - DETAILS OF SHUTDOWNS OF THE FACILITY  
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-14007 \*CONTINUED\*  
2 PAGES, INDIAN POINT STATION SEMI-ANNUAL OPERATIONS REPORT NO. 8 - FEBRUARY 1, 1966-SEPTEMBER 30, 1966 -  
PURSUANT TO PROVISIONAL OPERATING LICENSE DPR-5, PAGES 32-33, NOVEMBER 15, 1966, DOCKET 50-3

THE REACTOR WAS SCRAMMED WHEN THE FLOW OF POWER FROM BUCHANAN TO MILLWOOD SUBSTATION WAS REDUCED TO ZERO BECAUSE THE FLOW OF POWER TO THE ORANGE AND ROCKLAND COMPANY NEARLY EQUALLED THE OUTPUT OF THE INDIAN POINT GENERATOR. A ZERO POWER FLOW ACROSS THE MILLWOOD FEEDERS IS USED AS AN INDICATION OF A LOSS-OF-LOAD INCIDENT TO GIVE A REACTOR SCRAM.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*OPERATING EXPERIENCE + \*OPERATIONS SUMMARY FOR AEC + ACCIDENT, LOAD REJECTION + INDIAN POINT 1 + INSTRUMENTATION, ABNORMAL INDICATION + REACTOR SAFETY SYSTEM + REACTOR, PRESSURIZED WATER + SCRAM, REAL

17-14008  
APRIL-SEPTEMBER OPERATING REPORT CVTR  
CAROLINAS VIRGINIA NUCLEAR POWER ASSOCIATES, INC.  
CVNA-265 +. 57 PAGES, 8 FIGURES, 4 TABLES, 1966, DOCKET NO. 50-144

(1) THE FIRST CORE REFUELING WAS MADE. THE MAY STARTUP WAS DELAYED UNTIL THE PRESSURIZER RELIEF VALVES SEATS WERE REMACHINED TO GIVE SATISFACTORY RESEATING. (2) REACTIVITY MEASUREMENTS MADE AT VARIOUS MODERATOR LEVELS GAVE AN INTEGRAL WORTH OF 2.21 PERCENT FOR GROUP-IV CONTROL ROD, AS OPPOSED TO 2.02 PERCENT OBTAINED BY INTEGRATING THE DIFFERENTIAL-ROD-WORTH CURVE. (3) HIGH-POWER-DENSITY FUEL ASSEMBLIES WERE PLACED IN INLET LEGS OF 4 PRESSURE TUBES. WITH THERMOCOUPLES IN THE U-BEND, THE POWER SHARING BETWEEN THE ELEMENTS IN THE TUBES WAS DETERMINED. OVER HALF THE TOTAL U-TUBE POWER WAS PRODUCED BY THE HIGH-POWER-DENSITY ELEMENT, RATHER THAN THE PREDICTED 42 PERCENT, SO THE POWER LEVEL WAS LIMITED TO MAINTAIN A 25.1 MW/FT MAXIMUM. (4) AN INTEGRAL-LEAK-RATE TEST OF THE VAPOR CONTAINER AT 13 PSIG GAVE A LEAK RATE OF 0.093 PERCENT PER DAY, WHICH EXTRAPOLATES TO 0.2 PERCENT PER DAY AT 21 PSIG.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*OPERATING EXPERIENCE + \*OPERATIONS SUMMARY FOR AEC + CONTAINMENT, PRESSURE VESSEL + CVTR (CAROLINAS VIRGINIA TUBE REACTOR) + FAILURE, EQUIPMENT + MEASUREMENT, REACTIVITY + MODERATOR + POWER DISTRIBUTION + PRESSURE RELIEF + REACTOR, HEAVY WATER + REACTOR, PRESSURE TUBE + TEST, LEAK RATE + VALVE

17-14009 ALSO IN CATEGORY 18  
CVTR SIX MONTHS OPERATING REPORT - APRIL 1-SEPTEMBER 30, 1966  
CAROLINAS VIRGINIA NUCLEAR POWER ASSOCIATES, INC.  
CVNA-265 +. 57 PAGES, 8 FIGURES, 4 TABLES, 1966, DOCKET NO. 50-144

SUBJECTS COVERED IN THIS PROGRESS REPORT INCLUDE UNUSUAL OCCURRENCES, RESULTS OF SIGNIFICANT TESTS, PRINCIPAL MAINTENANCE AND DESIGN CHANGES, RESULTS OF SIGNIFICANT TESTS, AND HEALTH PHYSICS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*OPERATING EXPERIENCE + \*OPERATIONS SUMMARY FOR AEC + CVTR (CAROLINAS VIRGINIA TUBE REACTOR) + REACTOR, HEAVY WATER + REACTOR, PRESSURE TUBE

17-14043 ALSO IN CATEGORIES 12 AND 9  
COLLINS GR  
A.G.R. STEAM DRUM EXPERIMENT  
ATOMIC ENERGY ESTABLISHMENT, WINFRITH, ENGLAND  
AFEW-M-631 +. 38 PAGES, 1966

STEADY-STATE AND TRANSIENT MEASUREMENTS MADE ON A FORCED RECIRCULATION BOILER STEAM DRUM ARE DESCRIBED, AND CONCLUSIONS ARE DRAWN CONCERNING THE STEADY-STATE WATER SUBCOOLING AND THE DYNAMIC BEHAVIOUR OF THE WATER AND STEAM PHASES DURING TRANSIENTS. ATTEMPTS AT PARAMETER IDENTIFICATION USING A LINEARIZED MODEL SET UP ON AN ANALOG COMPUTER ARE DESCRIBED, AND IT IS CONCLUDED THAT AN ASYMMETRIC MODEL IS REQUIRED TO ADEQUATELY DESCRIBE BOTH INCREASING AND DECREASING PRESSURE EFFECTS. FURTHER DYNAMIC EXPERIMENTS ARE SUGGESTED, USING MORE REFINED MEASUREMENT TECHNIQUES.

AVAILABILITY - BRITISH INFORMATION SERVICE, 845 THIRD AVENUE, NEW YORK, NEW YORK 10022, \$1.10 COPY

\*ANALYTICAL MODEL + AGR (ADVANCED GASCOOLED REACTOR, WINDSCALE, UK) + STEAM GENERATOR

17-14051  
POPPLER RT + CHALDER GR  
THE EXAMINATION OF DEFECTED NPD FUEL BUNDLE 0992  
ATOMIC ENERGY OF CANADA LIMITED  
EXP-NPD-205 + AECL - 2609 +. 15 PAGES, 9 FIGURES, 3 TABLES, 6 REFERENCES, AUGUST 1966

THE ONLY DAMAGED FUEL ELEMENT OF 368 REMOVED WAS DAMAGED BY THE FUEL-HANDLING MACHINE, BUT IT HAD OPERATED FOR 28 MONTHS WITHOUT TROUBLE. A LARGE CHIP WAS GOUGED OUT OF THE END OF ONE

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-14051 \*CONTINUED\*  
FUEL ROD, ALLOWING O<sub>2</sub> TO ENTER THE CLADDING. WHILE HYDRIDING WAS OBSERVED, THERE WAS NO INCREASE IN THE SIZE OF THE DEFECT.

AVAILABILITY - ATOMIC ENERGY OF CANADA LIMITED, CHALK RIVER, ONTARIO, \$0.50 COPY

\*FAILURE, FUEL ELEMENT + \*FUEL HANDLING MACHINE + CANADA + FAILURE, CLADDING +  
NPD-2 (NUCLEAR POWER DEMONSTRATION REACTOR - 2) + REACTOR, PRESSURIZED WATER

17-14052  
CARLANDER R  
EXAMINATION OF EBWR CORE-1A FUEL  
ARGONNE NATIONAL LABORATORY  
ANL-6832 +. 15 PAGES, 10 FIGURES, 6 TABLES, 3 REFERENCES, JUNE 1966

AN EBWR U-ZR-NB ALLOY FUEL ELEMENT WAS EXAMINED AFTER A MAXIMUM BURNUP OF 0.61 A/O. ALTHOUGH THE MAXIMUM VOLUME INCREASE WAS 7.6% PER A/O BURNUP AT THE POINT OF MAXIMUM BURNUP, INCREASES AS HIGH AS 13.3% PER A/O BURNUP WERE FOUND IN REGIONS OF LOWER BURNUP. THESE LARGER RATES OF VOLUME INCREASE WERE DUE TO A COMBINATION OF BURNUP AND HIGH CENTERLINE FUEL TEMPERATURE. LARGE SCALE BUILDUPS, PARTICULARLY IN REGIONS FREE OF NUCLEATE BOILING, CONTRIBUTED TO THE HIGHER CENTERLINE FUEL TEMPERATURES BY ACTING AS A THERMAL INSULATION BARRIER BETWEEN THE CLADDING AND THE WATER COOLANT. THE TEMPERATURES (CALCULATED TO BE ABOVE 932 F) ANNEALED OUT THE RESIDUAL STRESSES THAT EXISTED IN THE FUEL ELEMENTS BEFORE THE 100-MW OPERATION. THE RESULTS INDICATED THAT FOR SATISFACTORY PERFORMANCE AT HIGH POWER LEVELS, THE CENTERLINE FUEL TEMPERATURE OF FUEL ELEMENTS OF THE EBWR TYPE SHOULD BE MAINTAINED BELOW THROUGH THE ADEQUATE CONTROL OF SCALE ACCUMULATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$1.00 COPY, \$0.50 MICROFICHE

\*FUEL BURNUP + \*FUEL ELEMENT + \*OPERATING EXPERIENCE + \*SURFACE FILM DEPOSIT +  
EBWR (EXPERIMENTAL BOILING WATER REACTOR) + EXAMINATION + REACTOR, AEC OWNED + REACTOR, BOILING WATER

17-14054  
SMITH JA + FISHER JR + LACY PS  
PATHFINDER ATOMIC POWER PLANT. FLOODING COEFFICIENT, CORE PRESSURIZATION, AND TEMPERATURE COEFFICIENT TESTS  
ALLIS-CHALMERS MFG., CO.  
ACNP-65600 +. 30 PAGES, FIGURES, TABLES, REFERENCES, NOVEMBER 30, 1965, DOCKET NO. 50-13J

TEST 312 AND 316 - COLD FLOODING WITH SOME RODS OUT WAS PREDICTED AS MINUS 0.02% REACTIVITY AND MEASURED AS 0.07%. CHANGE IN SHUTDOWN MARGIN WAS PLUS 0.02%. HOT FLOODING IS NOT SIGNIFICANTLY DIFFERENT FROM COLD-FLOODING EFFECTS. TEST 315 - THE PRESSURE DEFECT WAS CALCULATED AS PLUS 0.03%, AND A CORRECTION OF PLUS 0.05% IS NECESSARY FOR THE ELONGATION OF THE REACTOR VESSEL WHICH MOVES CONTROL RODS WITH RESPECT TO CORE. MEASURED DEFECT WAS PLUS 0.00%. TEST 316 - THE TEMPERATURE DEFECT WAS CALCULATED AS 2.1% REACTIVITY (1.6 MODERATOR AND 0.5 FUEL), BUT MEASURED AS 1.79. DISCREPANCY THOUGHT TO BE CAUSED BY COEFFICIENT BEING MEASURED IN THE LOWER, WATER-STARVED PORTION OF THE CORE, AS SHOWN BY THE FLATTENING OF TEMPERATURE-VS-COEFFICIENT CURVE. A CURVE FOR A SINGLE-REGION REACTOR WOULD SHOW AN INCREASINGLY NEGATIVE CURVE. CONTROL-ROD WORTH INCREASES A FACTOR OF 0.31 GOING FROM COLD TO HOT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$2.00 COPY, \$0.50 MICROFICHE

\*OPERATIONS REPORT, ANALYSIS + \*REACTOR STARTUP TESTING + COMPARISON, THEORY AND EXPERIENCE +  
FLOODING COEFFICIENT + PATHFINDER + PRESSURE, EXTERNAL + REACTIVITY EFFECT, ANOMALOUS +  
REACTOR, SUPERHEAT + TEMPERATURE COEFFICIENT

17-14055 ALSO IN CATEGORY 15  
IONIZING RADIATION  
AMERICAN PUBLIC HEALTH ASSOCIATION, INC.  
82 PAGES, FIGURES, 7 TABLES, AMERICAN PUBLIC HEALTH ASSOCIATION, INC., 1966

INTENDED FOR GENERAL PUBLIC-HEALTH WORKERS (NOT FOR SPECIALISTS). PROVIDES AN INTRODUCTION TO AND BASIC INFORMATION ON IONIZING RADIATION, RADIATION IN MEDICINE, DENTISTRY, AND INDUSTRY, ALSO RADIATION IN THE ENVIRONMENT. DISCUSSES SUCH PRACTICAL TOPICS AS PROPER SHIELDING AND TECHNIQUES TO REDUCE DOSE IN MEDICAL X-RAYS.

AVAILABILITY - AMERICAN PUBLIC HEALTH ASSOCIATION, 1790 BROADWAY, N.Y. 10019

\*HEALTH PHYSICS TRAINING + \*RADIATION, PUBLIC EDUCATION/ACCEPTANCE + RADIATION PROTECTION, ORGANIZATION

17-14058 ALSO IN CATEGORIES 4 AND 6  
JOHNSON PP  
SNAPTRAN 10A/2 KINETICS TESTING AND DESTRUCT REACTOR EXPERIMENTS.  
ATOMICS INTERNATIONAL, CANOGA PARK  
NAA-SR-11906 +. 113 PAGES, 35 FIGURES, 24 TABLES, 14 REFERENCES, JULY 15, 1966

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-14058 \*CONTINUED\*

PROVIDES BRIEF DESCRIPTION OF REACTORS, MODIFICATIONS TO CONTROL ROD DRIVES AND IN-CORE INSTRUMENTS FOR TEST, PROGRAM, AND PRELIMINARY RESULTS FOR SNAPTRAN-1 (CONTINUAL STEPWISE REACTIVITY INSERTIONS TO  $\pm 4.15$  WITHOUT DESTRUCTION) AND -2 (SINGLE-STEP  $\pm 5.06$  INSERTION WITH DESTRUCTION).

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$4.00 COPY, \$0.75 MICROFICHE

\*ACCIDENT, REACTIVITY + \*TEST, PLANT RESPONSE + REACTOR, SPACE + SNAP 10A (SYSTEMS FOR NUCLEAR AUXILIARY POWER)

17-14063

REACTOR DEVELOPMENT PROGRAM PROGRESS REPORT, OCTOBER 1966  
ARGONNE NATIONAL LABORATORY  
ANL-7267 +. 92 PAGES, 20 FIGURES, TABLES, NOVEMBER 22, 1966

EXPERIMENTAL RESULTS ARE GIVEN VERIFYING THAT THIN-WALLED 304 STAINLESS STEEL BECOMES BRITTLE WHEN SOAKED IN SODIUM AT HIGH TEMPERATURES. AS EVIDENCED BY SNAPPING AND BY HIGHER ELECTRICAL RESISTIVITY. (2) MEASURED HALF-LIVES OF SPONTANEOUS FISSION AND ALPHA DECAY FOR CURTIUM 242 AND 244 ARE GIVEN. FOR ALPHA DECAY, 242 IS 0.4452 YR, 244 IS 18.11 YR. FOR SPONTANEOUS FISSION OF 242, IT IS 6.09 YR, AND FOR 244, 1.33 YR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA. \$3.00 COPY, \$0.65 MICROFICHE

\*EMPITTELEMENT + \*STEEL, STAINLESS + CURTIUM + SODIUM

17-14071

ALSO IN CATEGORY 5

RUONI ER + HARY LR + LEWISAND VG + VALLISH EJ  
PRE-STARTUP HYDRAULIC TESTS AT THE AIR FORCE NUCLEAR ENGINEERING TEST FACILITY  
AIR FORCE FLIGHT DYNAMICS LABORATORY, WRIGHT-PATTERSON AIR FORCE BASE  
AD-626861 + AFFDL-TR-65-131 +. 50 PAGES, OCTOBER 1965

TECHNIQUES USED TO MEASURE WATER FLOW AND CORE PRESSURE DROP ACROSS EACH COOLANT CHANNELS OF PLATE-TYPE FUEL ELEMENTS IN THE CORE ARE DESCRIBED. TESTS WERE CONDUCTED TO VERIFY CALCULATIONS AND BECAUSE OF SKEPTICISM AS TO ADEQUATE COOLANT IN THE CONTROL PLATES AND EXCESSIVE PRESSURE DIFFERENTIAL BETWEEN ELEMENT SIDE PLATES AND CENTER PLATES. MEASURED VELOCITY THROUGH THE COOLANT CHANNELS WERE 9.5 TO 10.5 FT/SEC - LESS THAN THE 11.75 FT/SEC CALCULATED. LOWER FLOW IN THE CORNER ELEMENTS WAS ATTRIBUTED TO OBSTRUCTION BY THE UPPER GRID LOCKING MECHANISM. FLOW BETWEEN SIDE PLATES AND THE BE REFLECTOR WAS 50% HIGHER THAN CALCULATED, WHICH ALLEVIATED PREVIOUS CONCERN ABOUT ADEQUATE HEAT TRANSFER. THE MOST IMPORTANT RESULT WAS THAT FLOW THROUGH THE CONTROL RODS EXCEEDED THE DESIGN VALUES BY 7 TO 27%. THE CONCERN HERE WAS INADEQUATE HEAT TRANSFER BECAUSE THE RODS TERMINATE IN A BALL-LOCK ARRANGEMENT WHICH RESTRICTS FLOW. THE MAXIMUM PRESSURE DIFFERENCE ACROSS THE SIDE PLATES WAS 0.47 PSIA, WHICH ALLEVIATED CONCERN FOR POSSIBLE BUCKLING OF THE PLATES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$2.00 COPY, \$0.50 MICROFICHE

\*HYDRAULIC ANALYSIS + \*TEST, PREOPERATIONAL + COMPARISON, THEORY AND EXPERIENCE + CONTROL ROD + CORE, PLATE TYPE + FUEL ELEMENT + PRESSURE DROP + REACTOR, ARMY + REACTOR, TEST

17-14072

ALSO IN CATEGORIES 12 AND 9

GARPICK BJ. + GEKLER WC + POMREHN HP  
AN ANALYSIS OF NUCLEAR POWER PLANT OPERATING AND SAFETY EXPERIENCE  
HOLMES AND HARVER, INC.  
HN-185(VOL. I) +. 110 PAGES, FIGURES, TABLES, REFERENCES, DECEMBER 15, 1966

EXAMINATION OF THE OPERATING RECORDS (TO MARCH 1966) AT 5 PLANTS SHOWED THAT RECORDS HAVE INADEQUATE INFORMATION FOR STATISTICAL SUMMARIES. SCRAM CAUSES AND MAJOR FAULTS IN ENGINEERED SAFEGUARDS WERE TABULATED. MEAN TIME BETWEEN FAILURES WERE COMPUTED FROM SCRAM DATA (FALSE AND REAL) AND FROM TESTS ON ENGINEERED SAFEGUARDS. VOL. I CONTAINS CONCLUSIONS AND 5 APPENDICES ON RELIABILITY MATHEMATICS. VOLUME II CONTAINS (FOR EACH REACTOR) A HISTORICAL DESCRIPTION, MANAGEMENT AND MAINTENANCE, AND THE SUMMARY DATA.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$4.00 COPY.

\*ENGINEERED SAFETY SYSTEM + \*OPERATING EXPERIENCE + \*REACTOR SAFETY SYSTEM + \*RELIABILITY ANALYSIS + DRESDEN 1 + HUMBOLDT BAY + INDIAN POINT 1 + MAINTENANCE AND REPAIR + REACTOR, BOILING WATER + REACTOR, PRESSURIZED WATER + SHIPPINGPORT + YANKEE

17-14075

ALSO IN CATEGORIES 7 AND 18

N S SAVANNAH WISHES AMENDMENT TO MINIMIZE FILTER PLUGGING BY DOP  
FIRST ATOMIC SHIP TRANSPORT, INC.  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(3) PAGES 13-14 (JANUARY 16, 1967) DOCKET NO. 50-238



CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-14075 \*CONTINUED\*

TECH. SPEC. CHANGE WOULD ALLOW PORT ENTRY IF CONTAINMENT FILTERS TESTED OK WITHIN A WEEK. ON SHORT RUNS, PRESENT REQUIREMENT MAKES DAILY TESTING NECESSARY. THE ONLY REASON FOR PAST FILTER CHANGES HAS BEEN EXCESSIVE PRESSURE DROP DUE TO THE OILY RESIDUE LEFT AFTER DOP TESTING.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + FILTER TEST REQUIREMENT + FILTER, DAMAGED + N S SAVANNAH + PRESSURE DROP + REACTOR, PRESSURIZED WATER + TEST, DOP FILTER

17-14077 ALSO IN CATEGORY 1P  
U OF ILLINOIS TRIGA FISSION GAS RELEASE  
UNIVERSITY OF ILLINOIS

3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(3) PAGES 15-17 (JANUARY 16, 1967) DOCKET NO. 50-151

FISSION GAS WAS RELEASED FROM A DEFECTIVE SEAL BETWEEN THERMOCOUPLE AND FUEL ELEMENT, AND OBSERVED AS A DOUBLING OF GENERAL RADIATION ABOVE THE TANK TOP (3M/HR, CAUSED BY A 500-MR/HR PEAKING TWO INCHES FROM THE TUBE CONTAINING THERMOCOUPLE LEADS), AND A 20-MIN HALF-LIFE ACTIVITY (RB88) OBSERVED FROM THE AIR-PARTICULATE MONITOR. SEAL WAS PROBABLY BROKEN IN HANDLING, AS ELEMENT HAD BEEN UNUSED FOR A YEAR. THE STACK MONITOR DID NOT SHOW ANY INCREASE, ALTHOUGH THE AIR MONITOR HAD INCREASED TO 7000 CPM.

\*INCIDENT, ACTUAL, EQUIPMENT + FAILURE, FUEL ELEMENT + FISSION GAS RELEASE + INSTRUMENTATION, TEMPERATURE + MONITOR, RADIATION, STACK + REACTOR, PULSED + REACTOR, RESEARCH + TRIGA (TRAINING REACTOR, ISOTOPES, G.A.)

17-14078 ALSO IN CATEGORIES 7 AND 18

N S SAVANNAH CORRESPONDENCE  
FIRST ATOMIC SHIP TRANSPORT, INC.

2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(3) PAGES 19-20 (JANUARY 16, 1967) DOCKET NO. 50-238

(1) OPERATION NEAR BILBAO, SPAIN, IN A TWO-OUT-OF-TWO COINCIDENCE MODE WAS CONTRARY TO TECH. SPECS. (2) WHILE THE HEALTH PHYSICIST SHOULD REPORT TO THE MASTER FOR UNUSUAL RADIATION CONDITIONS AS IN TECH. SPEC., HIS ROUTINE WORK IS FOR ENGINE DEPARTMENT AND IS SHOWN ACCORDINGLY ON THE ORGANIZATION CHART. (3) CHARCOAL FILTERS HAVE BEEN HEAVILY COVERED WITH OXIDIZED LUBE OIL, BUT THAT DID NOT REDUCE CAPABILITY FOR RETAINING ELEMENTAL IODINE. TESTING IS NOW DONE ONCE PER VOYAGE, RATHER THAN ONCE A YEAR.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + ADMINISTRATIVE CONTROLS AND PRACTICES + CHARCOAL + FILTER + INSTRUMENTATION, COINCIDENT + N S SAVANNAH + REACTOR, PRESSURIZED WATER + TEST, FILTER

17-14079 ALSO IN CATEGORY 15  
OVEREXPOSURE AT MEDICAL COLLEGE OF VIRGINIA, NOVEMBER 29TH  
MEDICAL COLLEGE OF VIRGINIA

1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(3) PAGE 20 (JANUARY 16, 1967)

A FILM BADGE RECEIVED 4 REMS IN OCTOBER. QUESTIONING AND OBSERVANCE OF WORKING HABITS REVEAL NO EXPLANATION.

\*PERSONNEL EXPOSURE, RADIATION + FILM, GENERAL

17-14080 ALSO IN CATEGORY 15  
TRITIUM EXPOSURE AT NEW ENGLAND NUCLEAR CORPORATION  
NEW ENGLAND NUCLEAR CORPORATION

2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(3) PAGES 20-21 (JANUARY 16, 1967)

A CHEMIST RECEIVED 0.46 REM TRITIUM DOSE AFTER THE BREAKING OF A GLASS REACTION VESSEL BY A STIRRING BAR, WHILE INCORPORATING 175 CURIES OF TRITIUM INTO A PLASTIC.

\*PERSONNEL EXPOSURE, RADIATION + FAILURE, OPERATOR ERROR + TRITIUM

17-14081 ALSO IN CATEGORIES 13 AND 18  
NFS UTILITY OUTAGE DUE TO TRUCK WRECK  
NUCLEAR FUEL SERVICES, INC.

2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(3) PAGES 21-22 (JANUARY 16, 1967) DOCKET NO. 50-201

ON AUGUST 29, 1966, AIR-BRAKE HOSE RUPTURE ON A NITRIC ACID TANK TRUCK ALLOWED THE TRUCK TO ROLL DOWNHILL THROUGH THE FIRE PUMP HOUSE INTO THE UTILITY BUILDING. AIR, WATER, AND STEAM SERVICE WAS INTERRUPTED FOR 10 HOURS.

\*INCIDENT, ACTUAL, EQUIPMENT + ACCIDENT, LOSS OF POWER + NFS (NUCLEAR FUEL SERVICES)

17-14082 ALSO IN CATEGORIES 13 AND 18  
CONTAMINATION OF ACID RECOVERY EQUIPMENT AT NFS, AUGUST 30, 1966

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-14082 \*CONTINUED\*

NUCLEAR FUEL SERVICES, INC.

2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(3) PAGES 21-22 (JANUARY 16, 1967) DOCKET NO. 50-201

THE LOW-LEVEL-WASTE EVAPORATOR 7C-2 BURPED 75 GALLONS OF CONDENSATE INTO THE ACID CATCH TANK. FURTHER CONCENTRATION LED TO RADIATION LEVELS ABOVE 70 R/HR IN THE UNSHIELDED ACID-STORAGE-TANK AREA. A WEEK LATER, THE ACID WAS RETURNED TO SHIELDED CELLS. DECONTAMINATION OF EQUIPMENT WAS DIFFICULT BECAUSE SUCH PROVISION WAS NOT DESIGNED IN. SYSTEM MODIFICATIONS ARE LISTED.

\*INCIDENT, ACTUAL, EQUIPMENT + DECONTAMINATION + EVAPORATION + FAILURE, DESIGN ERROR + NFS (NUCLEAR FUEL SERVICES) + RADIOCHEMICAL PROCESSING + WASTE TREATMENT, GENERAL

17-14083 ALSO IN CATEGORIES 13 AND 15

INHALATION EXPOSURE AT NFS DUE TO IMPROPER VENTILATION, NOVEMBER 28, 1966

NUCLEAR FUEL SERVICES, INC.

2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(3) PAGES 22-23 (JANUARY 16, 1967) DOCKET NO. 50-201

WHOLE-BODY COUNTS INDICATE THAT ONE MAN WILL RECEIVE A ONE-YEAR DOSE OF 360 MREMS(BCNE), AND THE OTHER 280, DESPITE FOUR TWO-QUART NASAL IRRIGATIONS. THE WORKERS HAD OPENED BOTH AIRLOCK DOORS OF THE CONTAMINATED CRANE ROOM FOR MAINTENANCE, SO THAT WHEN A VENTILATION PRESSURE-CONTROLLER SET POINT WAS CHANGED NEARBY, AIR REVERSED FLOW TO MOVE FROM CRANE ROOM TO ANALYTICAL CLEAN ROOM. INVESTIGATION FOLLOWING A CAM ALARM FROM THE ANALYTICAL ROOM REVEALED THE SITUATION. AIR-SUPPLIED RESPIRATORY EQUIPMENT IS NOW REQUIRED, AS A FULL-FACE FILTER MASK WAS INEFFECTIVE. DIFFERENTIAL PRESSURE GAGES AND RECORDERS WILL GIVE PRESSURE ACROSS THE AIR LOCKS, AND ENTRY FORBIDDEN UNLESS THERE IS A 1/4-INCH PRESSURE.

\*PERSONNEL EXPOSURE, RADIATION + \*PERSONNEL PROTECTIVE DEVICE + \*VENTILATION SYSTEM + CONTAINMENT AIR LOCK + DOSE MEASUREMENT, INTERNAL + FAILURE, DESIGN ERROR + FAILURE, OPERATOR ERROR + INCIDENT, ACTUAL, HUMAN ERROR + NFS (NUCLEAR FUEL SERVICES)

17-14084 ALSO IN CATEGORIES 13 AND 15

PERSONNEL EXPOSURE AT NUMEC OCTOBER 19/20, 1966

NUCLEAR MATERIALS AND EQUIPMENT CORPORATION

1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(3) PAGE 24 (JANUARY 16, 1967)

VALVE SETTINGS MADE IT POSSIBLE TO DRAW CONTAMINATED LIQUID INTO A STEAM CONDENSATE RECEIVER IN A WASTE EVAPORATOR. A TECHNICIAN WAS EXPOSED TO AIRBORNE PLUTONIUM NITRATE FOR 381.9 MPC HOURS DURING REPAIR OF A STEAM LEAK.

\*PERSONNEL EXPOSURE, RADIATION + FAILURE, OPERATOR ERROR + MAINTENANCE AND REPAIR + PLUTONIUM + WASTE HANDLING

17-14085 ALSO IN CATEGORIES 13 AND 18

GLOVE BOX EXPLOSION AT NUMEC, NOVEMBER 30, 1966

NUCLEAR MATERIALS AND EQUIPMENT CORPORATION

4 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(3) PAGES 24-27 (JANUARY 16, 1967)

A CREW WAS THERMALLY DECOMPOSING A FILTRATE SOLUTION (WASTE PRODUCT OF PLUTONIUM PEROXIDE PRECIPITATION) WHICH CONTAINS H<sub>2</sub>O<sub>2</sub> AND PLUTONIUM PEROXIDE - DECOMPOSITION OF THE H<sub>2</sub>O<sub>2</sub> BROKE THE GLASS VESSEL, PROJECTILES BROKE THE GLOVE BOX. THE OPERATOR RAN 4 TIMES THE QUANTITY DIRECTED, THE VENT WAS INADEQUATE, AND IMPURITIES COULD HAVE BEGUN CATALYTIC DECOMPOSITION. MEASUREMENTS OF UP TO 2,000,000 CPM WERE MADE, RESULTING FROM THE 0.1 GRAM PLUTONIUM LOST.

\*EXPLOSION + \*GLOVE BOX + \*PLUTONIUM + CHEMICAL REACTION + FAILURE, OPERATOR ERROR

17-14127 ALSO IN CATEGORY 14

WALLIS LR

RADIOLOGICAL ASPECTS OF THE DEACTIVATION OF HANFORD PRODUCTION REACTORS

GENERAL ELECTRIC COMPANY, ATOMIC POWER EQUIPMENT DEPARTMENT + USAEC, HEALTH AND SAFETY DIVISION

59 PAGES, 22 FIGURES, PRESENTED AT THE FIRST INTERNATIONAL CONGRESS OF THE INTERNATIONAL RADIATION PROTECTION ASSOCIATION, ROME, ITALY, SEPTEMBER 5-10, 1966

DEACTIVATION OF DR IN DECEMBER 1964 WAS BEGUN BY A SPECIALLY FORMED UNIT, WHICH THEN ISSUED A DEACTIVATION MANUAL FOR H AND F REACTORS. FILLING THE COOLANT RETENTION PONDS TO COVER THE CONTAMINATED SLUDGE WAS TOO EXPENSIVE, SO THE CONCRETE WAS SPRAYED WITH ASPHALT. LIKEWISE, THE FUEL-STORAGE BASINS ARE KEPT WATER-FILLED TO SHIELD IRRADIATED EQUIPMENT. A TOTAL OF 37 MAN-ROENTGENS WAS RECEIVED FOR ALL THREE REACTORS, DUE TO CONSIDERABLE THOUGHT AND PLANNING.

AVAILABILITY - PROCEEDINGS OF THE FIRST CONGRESS OF THE INTERNATIONAL RADIATION PROTECTION ASSOCIATION, PERGAMON PRESS, OXFORD, 1967

\*PROCEDURES AND MANUALS + \*REACTOR DECOMMISSIONING EXPERIENCE + DECONTAMINATION + HANFORD PRODUCTION REACTOR + WASTE DISPOSAL, GENERAL

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-1412P ALSO IN CATEGORY 15  
BRODSKY A + WALD N + CALDWELL R + SAYEG JA + WECHSLER R  
THE MEASUREMENT AND MANAGEMENT OF INSOLUBLE PLUTONIUM-AMERICIUM INHALATION IN MAN  
UNIVERSITY OF PITTSBURGH + PRESBYTERIAN-UNIVERSITY HOSPITAL + NUCLEAR MATERIALS AND EQUIPMENT CORP.  
26 PAGES, 6 FIGURES, 2 TABLES, 11 REFERENCES, PRESENTED AT THE FIRST INTERNATIONAL CONGRESS OF THE  
INTERNATIONAL RADIATION PROTECTION ASSOCIATION, ROME, ITALY, SEPTEMBER 5-10, 1966

ON JANUARY 17, 1966, A GLOVE-BOX EXPLOSION OCCURRED WHEN A TECHNICIAN IGNITED A PROPANE TORCH  
(WHICH HAD LEAKED AFTER A NEW CYLINDER WAS ATTACHED), CONTAMINATING 3 PERSONS WITH PU-239 AND  
AM-241. REPORT RECOUNTS STUDY OF ONE MAN USING A THIN NA-1 CRYSTAL. DTPA HELPED REMOVE  
INHALED OXIDES. FIVE DAYS AFTER THE INCIDENT, THE COUNTER LOCATED CONTAMINATION TRANSFERRED  
TO A CLEAN UNDERSHIRT FROM THE TECHNICIANS HAIR.

AVAILABILITY - PROCEEDINGS OF THE FIRST CONGRESS OF THE INTERNATIONAL RADIATION PROTECTION ASSOCIATION,  
PERGAMON PRESS, OXFORD, 1967

\*COUNTER, WHOLE BODY + \*DOSE MEASUREMENT, INTERNAL + \*EXPLOSION + \*GLOVE BOX +  
\*INCIDENT, ACTUAL, EQUIPMENT + \*PLUTONIUM

17-14129 ALSO IN CATEGORY 13  
PENELLE G  
DESCRIPTION AND ANALYSIS OF THE CRITICALITY ACCIDENT WHICH AFFECTED THE VENUS REACTOR AT MOL, ON DECEMBER  
30TH, 1965.  
CENTRE D'ETUDE DE L'ENERGIE NUCLEAIRE, MOL  
13 PAGES, 4 FIGURES, PRESENTED AT THE FIRST INTERNATIONAL CONGRESS OF THE INTERNATIONAL RADIATION  
PROTECTION ASSOCIATION, ROME, ITALY, SEPTEMBER 5-10, 1966

THE INCIDENT WAS CAUSED BY THE TECHNICIAN, WHO MANUALLY WITHDREW A CONTROL ROD, APPLYING IN A  
MISTAKEN WAY AN OPERATING ORDER WHICH DID NOT COMPLY WITH THE OPERATING PROCEDURES.  
MODEPATOR DRAINING WAS AUTOMATICALLY BEGUN ON THE HIGH RADIATION ALARM, BUT SHUTDOWN RESULTED  
FROM THE OPERATOR DROPPING THE ROD. PAPER TRACES THE CAUSE AND COURSE OF THE INCIDENT,  
ENERGY RELEASE, AND CONCLUSIONS.

AVAILABILITY - PROCEEDINGS OF THE FIRST CONGRESS OF THE INTERNATIONAL RADIATION PROTECTION ASSOCIATION,  
PERGAMON PRESS, OXFORD, 1967

\*ACCIDENT, CRITICALITY + \*FAILURE, OPERATOR ERROR + \*INCIDENT, ACTUAL, HUMAN ERROR + BELGIUM +  
CRITICAL ASSEMBLY FACILITY + FAILURE, ADMINISTRATIVE CONTROL + PERSONNEL EXPOSURE, RADIATION

17-14130 ALSO IN CATEGORY 15  
PARMENTIER N + BOULENGER R + PORTAL G  
DOSIMETRY PROBLEMS ENCOUNTERED DURING THE CRITICALITY ACCIDENT WHICH OCCURRED IN THE VENUS REACTOR AT MOL,  
ON DECEMBER 30TH, 1965  
CENTRE D'ETUDE NUCLEAIRE FONTENAY-AUX-ROSES, FRANCE + CENTRE D'ETUDE DE L'ENERGIE NUCLEAIRE, MOL  
49 PAGES, 26 FIGURES, 6 REFERENCES, PRESENTED AT THE FIRST INTERNATIONAL CONGRESS OF THE INTERNATIONAL  
RADIATION PROTECTION ASSOCIATION, ROME, ITALY, SEPTEMBER 5-10, 1966

THE INDIVIDUAL WAS SQUATTING ABOVE THE REACTOR TANK WITH ONE FOOT ON THE EDGE OF THE CORE,  
RAISING THE CONTROL ROD. HIS GAMMA DOSIMETER (CHEST) READ 550 R. ONE FOOT WAS ESTIMATED TO  
HAVE RECEIVED 470 RADS (NEUTRONS) AND THE OTHER 49. IRRADIATION OF PLASTIC DUMMIES EQUIPED  
WITH DOSIMETER REVEALED THE INHOMOGENEITY OF THE VARIOUS KINDS OF DOSE.

AVAILABILITY - PROCEEDINGS OF THE FIRST CONGRESS OF THE INTERNATIONAL RADIATION PROTECTION ASSOCIATION,  
PERGAMON PRESS, OXFORD, 1967

\*ACCIDENT, CRITICALITY + \*INCIDENT, ACTUAL, HUMAN ERROR + BELGIUM + CRITICAL ASSEMBLY FACILITY +  
DOSE CALCULATION, EXTERNAL + DOSE MEASUREMENT, EXTERNAL + PERSONNEL EXPOSURE, RADIATION

17-14144 ALSO IN CATEGORIES 7 AND 18  
NS SAVANNAH PROPOSED CHANGE 11 - MONITORING CONTAINMENT INSTEAD OF GAS WASTE HEADER DURING CHARCOAL  
FILTER TESTS  
FIRST ATOMIC SHIP TRANSPORT, INC.  
3 PAGES, DECEMBER 12, 1966, DOCKET NO. 50-238

TEMPORARILY, RADIOIDINE TESTING OF CONTAINMENT CHARCOAL FILTERS HAS BEEN INCREASED TO ONCE  
PER VOYAGE (INSTEAD OF DURING A QUARTERLY OUTAGE) BECAUSE OF LUBE OIL DEPOSITS ON FILTERS.  
THE TEST REQUIRES THAT THE GAS WASTE MONITORS BE USED FOR THE CONTAINMENT ATMOSPHERE, WHICH  
IN TURN REQUIRES A REACTOR SHUTDOWN. REQUEST EXCEPTION FROM GAS-WASTE MONITORING DURING  
CONTAINMENT-FILTER TESTING.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + CHARCOAL + CONTAINMENT, HIGH PRESSURE + FILTER +  
MONITOR, RADIATION, GAS + NS SAVANNAH + REACTOR, PRESSURIZED WATER + TEST, DOP FILTER + TEST, FILTER

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-14150            ALSO IN CATEGORY 18  
YANKEE PROPOSED CHANGE 78 - CHANGE IN BORATION OF IDLE COOLANT LOOP  
YANKEE ATOMIC ELECTRIC COMPANY  
2 PAGES, DECEMBER 30, 1966, DOCKET NO. 50-29

LOOP 4 HAS BEEN ISOLATED (BECAUSE OF A STEAM GENERATOR TUBE LEAK) UNTIL A MARCH SHUTDOWN. PRESENT REQUIREMENTS TO MAINTAIN SHUTDOWN BORON CONCENTRATION (2400 PPM) WITH THE 3-GPM LEAKAGE WOULD REQUIRE 7 BARRELS OF BORIC ACID PER DAY. REQUEST KEEP CONCENTRATION SAME AS OTHER COOLANT (1300 PPM PRESENTLY).

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + ACCIDENT, COLD COOLANT + CHEMICAL SHIM + FAILURE, TUBING + HEAT EXCHANGER + REACTOR, PRESSURIZED WATER + YANKEE

17-14151            ALSO IN CATEGORIES 15 AND 18  
N S SAVANNAH PROPOSED CHANGE 10 - ORGANIZATION CHART POSITION OF HEALTH PHYSICIST  
FIRST ATOMIC SHIP TRANSPORT, INC.  
3 PAGES, 1 FIGURE, DECEMBER 8, 1966, DOCKET NO. 50-238

REQUEST CHANGE TO ALLOW STAFF HEALTH PHYSICIST TO REPORT DIRECTLY TO CHIEF ENGINEER FOR ROUTINE (BOILER CHEMISTRY) WORK, BUT DIRECTLY TO MASTER FOR RADIOLOGICAL SAFETY MATTERS, PARTICULARLY FOR UNUSUAL CONDITIONS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + ADMINISTRATIVE CONTROLS AND PRACTICES + N S SAVANNAH + RADIATION SAFETY AND CONTROL + REACTOR, PRESSURIZED WATER

17-14152            ALSO IN CATEGORY 18  
N S SAVANNAH PROPOSED TECH CHANGE 9 - EMERGENCY EVACUATION DRILL  
FIRST ATOMIC SHIP TRANSPORT, INC.  
2 PAGES, DECEMBER 9, 1966, DOCKET NO. 50-238

PRESENT TECH. SPECS. WERE WRITTEN WITH THE ALLOWABLE 750 VISITORS IN MIND. NOW THAT ONLY 150 ARE ALLOWED ON BOARD AT ONE TIME, AND GUIDES ARE PROVIDED, EMERGENCY EVACUATION DRILLS ARE NEEDED ONLY PRIOR TO EACH VOYAGE AND MONTHLY THEREAFTER.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + N S SAVANNAH + POPULATION DISTRIBUTION + REACTOR, PRESSURIZED WATER

17-14272  
CRITICALITY ACCIDENT WHILE CHANGING CONTROL RODS IN A CRITICAL EXPERIMENT, JANUARY 1, 1966  
CENTRE D'ETUDE DE L'ENERGIE NUCLEAIRE, MOL  
1 PAGE, NUCLEONICS WEEK, PAGE 8, JANUARY 13, 1966

A REACTOR TECHNICIAN AT BELGIUMS MOL CENTER, SUFFERED AN 800-REM EXPOSURE OVER THE NEW YEAR WEEKEND WHEN CHANGING ABSORBER RODS IN VENUS, A CRITICAL EXPERIMENT FOR THE VULCAIN SPECTRAL-SHIFT REACTOR. THE ACCIDENT WAS THE RESULT OF THE VICTIMS NOT HAVING STRICTLY FOLLOWED WRITTEN ORDERS FOR THE OPERATION. PHYSICIANS REPORT THAT A WALL PROTECTED THE LOWER PART OF HIS BODY FROM RADIATION, LEAVING HIM WITH A SUPPLY OF HEALTHY BLOOD CELLS. WHILE A BONE MARROW GRAFT AT FIRST SEEMED IMPERATIVE, A DECISION HAS BEEN WITHHELD PENDING FURTHER DEVELOPMENTS, SINCE THE HEALTHY BLOOD CELLS THEMSELVES MIGHT ATTACK ANY GRAFTS.

\*ACCIDENT, CRITICALITY + \*FAILURE, OPERATOR ERROR + \*INCIDENT, ACTUAL, HUMAN ERROR + BELGIUM + CRITICAL ASSEMBLY FACILITY + REACTOR, SPECTRAL SHIFT

17-14295            ALSO IN CATEGORY 13  
SIX YEARS OPERATING EXPERIENCE (1957-63) AT THE PRODUCTION CONTROL LABORATORIES OF THE PLUTONIUM EXTRACTION PLANT AT MARCOULE.  
COMMISSARIAT A L'ENERGIE ATOMIQUE, CHUSCLAN  
CEA-R-2700 + ORNL-TR-582 +. 76 PAGES, OCTOBER 1964

A SUMMARY IS GIVEN OF THE CONDITIONS PREVAILING, AFTER SIX YEARS OF OPERATION, IN THE LABORATORIES OF THE PLUTONIUM EXTRACTION PLANT. THE ORIGINS AND OBJECTIVES ARE BRIEFLY REVIEWED, THE TECHNOLOGY AND STAFF RECRUITMENT POLICY ARE EXAMINED, AND PROGRESS MADE IS SHOWN. THE METHODS AS WELL AS THE SCOPE OF APPLICATION AND LIMITS IMPOSED AT THE PRESENT STATE ARE CONSIDERED. PAST ACHIEVEMENTS AND FUTURE POSSIBILITIES ARE EXAMINED. AN ATTEMPT WAS MADE TO BRING OUT THE OUTLOOK FOR THE MORE DISTANT FUTURE AND TO INVESTIGATE THE CONDITIONS REQUIRED FOR THE SUCCESSFUL CARRYING OUT OF THE PROGRAM.

AVAILABILITY - MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-14205 \*CONTINUED\*  
\*FUEL REPROCESSING + \*OPERATING EXPERIENCE + \*PLUTONIUM + FRANCE

17-14305  
CERCHIONE JD + MCGINNIS FD + RICE RE + DOE CB  
REACTOR DEACTIVATION, EBR-1 AND BORAX-V  
ARGONNE NATIONAL LABORATORY  
2 PAGES, 2 FIGURES, 4 REFERENCES, ANS TRANSACTIONS 8(1) PAGES 114-115 (MAY 1965)

THE DEACTIVATION PROCEDURE IS ROUTINE EXCEPT FOR RADIOACTIVE FUEL AND REACTOR COMPONENTS. EBR1 FUEL WAS REPROCESSED OR BURIED, AND REACTOR VESSEL FILLED WITH ARGON. EBR1 CAN BE REACTIVATED WITH A NEW FUEL CORE. BORAX V BOILER FUEL WAS REMOVED TO STORAGE - THE SUPERHEATER FUEL, RODS, ETC., LEFT IN THE REACTOR VESSEL, AND WATER DRAINED. ADDITIONAL SHIELDING BLOCKS REDUCED RADIATION LEVELS TO LESS THAN 1 R/HR. BORAX V COULD EASILY BE REACTIVATED.

\*FUEL STORAGE + BORAX, ALL (BOILING REACTOR EXPERIMENTS, NRTS) + DECONTAMINATION + EBR 1 AND 2 (EXPERIMENTAL BREEDER REACTORS) + REACTOR DECOMMISSIONING EXPERIENCE + REACTOR, AEC OWNED

17-14306  
COX JA  
PROBLEMS OF MOTHBALLING THE OPNL GRAPHITE REACTOR  
OAK RIDGE NATIONAL LABORATORY  
2 PAGES, 1 TABLE, ANS TRANSACTIONS 8(1) PAGES 115-116 (MAY 1965)

OPENINGS IN THE SHIELD WERE SEALED, AND FUEL SLUGS LEFT IN REACTOR WITH A SLIGHT EXHAUST AIR FLOW TO HOLD A NEGATIVE PRESSURE. HEATING THE INLEAKING AIR KEEPS THE FUEL CLAD TO 50 C TO PREVENT CONDENSATION AND CORROSION. THE ANNUAL COST IS \$3000, AND FUEL REPROCESSING WOULD NOT PAY. SPARE CONTROL RODS WERE INSERTED AND THE NORMAL CONTROL RODS WELDED IN PLACE. DEMOLITION COSTS WOULD BE EXCESSIVE - FILLING INTERNAL VOIDS WITH GROUT IS ESTIMATED AT \$70,000, AND DECONTAMINATION OF EXHAUST DUCT AND FILTER HOUSE AT \$30,000.

\*DECONTAMINATION + \*ECONOMICS + \*REACTOR DECOMMISSIONING EXPERIENCE + REACTOR, AEC OWNED + REACTOR, GAS COOLED

17-14307  
NELSON SL  
OPERATIONAL PROCEDURES IN DEACTIVATION OF THE HANFORD PRODUCTION REACTORS  
GENERAL ELECTRIC COMPANY, HANFORD ATOMIC PRODUCTS  
2 PAGES, ANS TRANSACTIONS 8(1) PAGES 116-117 (MAY 1965)

100 DR WAS MOTHBALLLED, WHILE EQUIPMENT IN TWO OTHERS WAS ABANDONED OR SALVAGED. FUEL WAS DISCHARGED, COOLANT REMOVED, AND REACTOR DRIED OUT. DR GRAPHITE TEMPERATURES REACHED EQUILIBRIUM AT AMBIENT AFTER SIX DAYS, MINIMIZING POSSIBILITY OF A STORED-ENERGY RELEASE. THE REACTORS WILL LIKELY REMAIN EXCLUSION AREAS FOR 100 YEARS OR LONGER.

\*REACTOR DECOMMISSIONING EXPERIENCE + \*WIGNER ENERGY RELEASE + REACTOR, AEC OWNED + REACTOR, PRODUCTION

17-14308  
FRANKLIN JP  
REMOVAL OF THE PM-2A NUCLEAR POWER PLANT FROM CAMP CENTURY  
U. S. ARMY  
2 PAGES, 3 REFERENCES, ANS TRANSACTIONS 8(1) PAGES 117-118 (MAY 1965)

CAMP CENTURY SNOW CONDITIONS WERE DETERIORATING BADLY, SO THE CAMP WAS PLACED IN SEASONAL OPERATION IN 1963 AND PM2A REMOVED IN 1964. EVEN THOUGH THE FUEL WAS DISCHARGED, THE REACTOR SKID WAS UNEXPECTEDLY RADIOACTIVE AND NEEDED EXPEDITED SHIELDING. THE ENTIRE AREA WAS DECONTAMINATED TO DANISH SPECIFICATIONS. THE CARBON-STEEL REACTOR VESSEL WAS APPROACHING NDT OPERATING COMPLICATIONS AND WILL BE USED FOR TESTS. THE POWER-GENERATION EQUIPMENT WAS STOPPED.

\*CONTAINMENT, PRESSURE VESSEL + \*DECONTAMINATION + \*REACTOR DECOMMISSIONING EXPERIENCE + DENMARK + NDT DATA (NIL DUCTILITY TRANSITION) + REACTOR, ARMY

17-14330 ALSO IN CATEGORIES 11 AND 7  
SWANKS JH  
IN-PLACE IODINE FILTER TESTS AT THE HIGH FLUX ISOTOPE REACTOR  
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE  
ORNL-TM-1677 +. 17 PAGES, 6 TABLES, 5 FIGURES, 4 REFERENCES, DECEMBER 1966

EFFICIENCY TESTS ON 1/2-IN. ACTIVATED-CHARCOAL FILTERS USED IN THE AIR DECONTAMINATION SYSTEM WERE UNSATISFACTORY. IODINE REMOVAL EFFICIENCY WAS 99.65 PERCENT. NEW FILTERS WERE INSTALLED WHICH ARE 1-1/8 IN. THICK, WITH IMPREGNATED ACTIVATED-CHARCOAL FILLER CONTAINED BY PERFORATED STAINLESS-STEEL. THE FIRST TESTS ON THE NEW FILTERS WERE VERY UNSATISFACTORY. THE FILTERS WERE DISASSEMBLED AND IT WAS FOUND THAT THE CHARCOAL HAD SETTLED, SO THAT LARGE

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-14330 \*CONTINUED\*

AIR GAPS HAD FORMED AT THE TOP OF THE FILTERS. AFTER THE FILTERS WERE FILLED, EFFICIENCY WAS 99.994 PERCENT FOR ELEMENTAL IODINE AND 99.97 PERCENT FOR METHYL IODIDE. THE AIR RESIDENCE TIME IN THE CHARCOAL IS 0.28 SEC. METHOD OF TESTING IS DESCRIBED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*CHARCOAL + \*FAILURE, DESIGN ERROR + \*FILTER + \*TEST, FILTER + FISSION PRODUCT, IODINE + HFIR (HIGH FLUX ISOTOPF REACTOR) + IODINE + ORGANIC IODIDE + REACTOR, FLUX TRAP

17-14334 ALSO IN CATEGORY 4

HALFEN FJ  
LSGP FAST SHUTDOWN PROCEDURE  
ATOMICS INTERNATIONAL  
NAA-SR-MFMO-11041 +. 45 PAGES, FEBRUARY 12, 1965

SEVERAL ADDITIONAL SHUTDOWN PROCEDURES WERE ANALYZED FOR POSSIBLE USE ON THE 200-MWE SGR. THESE SCHEMES ARE - (1) SEQUENCED ROD DROP, (2) ROD RUNDOWN AND PUMP SHUTDOWN DELAY, (3) SCRAM AND PUMP SHUTDOWN LEAD, (4) ROD DROP AND RUNDOWN OF RODS. ALL THESE SCHEMES ASSUME THAT THE PUMPS ARE SHUTDOWN SOME TIME PRIOR TO, DURING, OR SHORTLY AFTER CONTRCL-ROD INSERTION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$2.00 COPY

\*REACTOR, LIQUID METAL COOLED + CONTROL ROD + CONTROL SYSTEM + PUMP + REACTOR, GRAPHITE MODERATED

17-14375 ALSO IN CATEGORY 9

NISLE PG + PEEREBOOM RA + ALLER DJ + ANDERSON KJ  
COMPUTER CODE FOR THE CALCULATION OF FUEL AND POISON CROSS SECTIONS FROM REACTIVITY MEASUREMENTS  
IDAHO NUCLEAR CORPORATION  
IN-1017 +. 11 PAGES, 1 FIGURE, 3 REFERENCES, AUGUST 1966

TRANSIENT REACTIVITY MEASUREMENTS ON IRRADIATED FUEL SAMPLES PROVIDE A MEANS OF MEASURING FUEL CONTENT AND GROSS FISSION PRODUCT CROSS SECTIONS BY A NONDESTRUCTIVE METHOD. HENCE AN ITERATIVE PROCEDURE MUST BE USED. THIS PROGRAM SOLVES FOR FUEL AND POISON CONTENT BY MEANS OF A DOUBLE ITERATION FOR FUEL CROSS SECTION AND FOR POISON CROSS SECTION BY THE USE OF REACTIVITY MEASUREMENTS MADE IN TWO LOCATIONS HAVING DIFFERENT RELATIVE WORTHS FOR NEUTRON ABSORPTION (PRIMARILY THERMAL) AND PRODUCTION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$1.00 COPY, \$0.50 MICRONEGATIVE

\*ANALYTICAL MODEL + \*FUEL BURNUP + FISSION PRODUCT RETENTION + FUEL ELEMENT

17-14377

KELLY MJ  
AN ANALYTICAL APPROACH TO WATERLOGGING FAILURE  
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE  
ORNL-3867 +. 25 PAGES, 7 FIGURES, 3 TABLES, DECEMBER 1966

THE PROBLEM OF WATERLOGGING FAILURE OF FUEL ELEMENTS IS DISCUSSED. THE PROBLEMS UNIQUE TO POWDER PACKED ELEMENTS ARE TREATED INDIVIDUALLY ON AN ANALYTICAL BASIS. EXPERIMENTAL RESULTS ARE CORRELATED WITH THEORY AND PRESENTED IN A MANNER TO ENABLE THE FUEL ELEMENT DESIGNER TO MAKE HIS OWN JUDGEMENT VALUES CONCERNING THE RISKS INVOLVED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$2.00 COPY, \$0.65 MICRONEGATIVE

\*DESIGN STUDY + \*FAILURE, FUEL ELEMENT + \*FUEL ELEMENT + \*FUEL INTEGRITY + REACTOR, BOILING WATER + REACTOR, PRESSURIZED WATER

17-14419 ALSO IN CATEGORIES 1 AND 18  
REPORT TO THE ATOMIC ENERGY COMMISSION BY THE REGULATORY REVIEW PANEL  
UNITED STATES ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.  
74 PAGES, JULY 14, 1965

PANEL REVIEWED TWO AREAS, POLICY-PROCEDURE (FOR FASTER HANDLING) AND DECISION-MAKING PROCESS (FOR IMPROVEMENTS WITHOUT NEW LEGISLATION). NINE GENERAL CONCLUSIONS AND MANY RECOMMENDATIONS ARE GIVEN. DRL STAFF MUST BE INCREASED WITHOUT LOWERING QUALITY. ACRS SHOULD NOT BE OVERLOADED WITH ROUTINE QUESTIONS. OPEN HEARINGS ARE INDESPENSIBLE IN GAINING PUBLIC CONFIDENCE. CRITERIA AND STANDARDS ARE NEEDED. CLARIFICATION OF OVERLAPPING FUNCTIONS OF REGULATORY BODIES IS NEEDED. A PRELIMINARY APPROVAL OF A SITE FOR A CERTAIN REACTOR CAPACITY SHOULD BE MADE TO ALLOW BETTER UTILITY PLANNING.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-14419 \*CONTINUED\*  
\*REGULATION, AEC + ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) +  
ADMINISTRATIVE CONTROLS AND PRACTICES + CODES AND STANDARDS + SAFETY REVIEW (OPERATIONS, EXPERIMENTS)

17-14425 ALSO IN CATEGORY 15  
RUSSELL JA + JONES RJ  
OPERATIONAL SAFETY AND RADIATION PROTECTION FOR THE OAK RIDGE ISOCYCHROUS CYCLOTRON  
OAK RIDGE NATIONAL LABORATORY  
ORNL-TM-364 +. 16 PAGES, 2 FIGURES, NOVEMBER 1966

TWO INDEPENDENT SYSTEMS FOR PROVIDING OPERATIONAL SAFETY AND RADIATION PROTECTION FOR PERSONNEL AT THE OAK RIDGE ISOCYCHROUS CYCLOTRON ARE DESCRIBED IN DETAIL. A RADIATION ALARM SYSTEM MONITORS ALL HAZARDOUS AREAS. THE CYCLOTRON AND ALL BEAM-USE AREAS ARE OPERATED COMPLETELY BY REMOTE CONTROL - A COMPLEX SYSTEM OF INTERLOCKS AND OPERATION CONTROLS PREVENT ACCESS TO ANY HAZARDOUS AREA WHILE THE CYCLOTRON IS IN OPERATION. THIS SYSTEM IS DESIGNED SO THAT AT LEAST THREE INTERLOCKS MUST FAIL AND BOTH THE PERSON ENTERING THE ROOM AND THE OPERATOR MUST MAKE MISJUDGMENTS BEFORE A RADIATION EXPOSURE CAN OCCUR. IN FOUR YEARS OF CYCLOTRON OPERATION, THE SYSTEMS HAVE PROVED FULLY RELIABLE AND OPERATIONALLY VERY SATISFACTORY.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*RADIATION SAFETY AND CONTROL + ORNL (OAK RIDGE NATIONAL LABORATORY)

17-14525 ALSO IN CATEGORIES 11 AND 18  
MEHANN RO  
TECHNICAL SPECIFICATION CHANGE NO. 12  
FIRST ATOMIC SHIP TRANSPORT INC.  
2 PAGES, DECEMBER 28, 1966, DOCKET NO. 50-238

CURRENT CRITERIA REQUIRING A DOP TEST PRIOR TO EACH PORT ENTRY MAY REQUIRE A DAILY TEST DURING A SERIES OF SHORT COASTAL RUNS. REVISION TO ALLOW PORT ENTRY WITHIN ONE WEEK OF A SATISFACTORY TEST WOULD NOT BE HAZARDOUS. IN THE PAST, THE ONLY REASON FOR CHANGING THE PARTICLE FILTERS WAS HIGH PRESSURE DROP FROM THE OILY DOP RESIDUE.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + \*TEST, DOP FILTER + CONTAINMENT FILTERING SYSTEM + N S SAVANNAH + REACTOR, MARITIME + REACTOR, PRESSURIZED WATER + VENTILATION SYSTEM

17-14526 ALSO IN CATEGORY 18  
PROPOSED CHANGE 5 TO GE-NTR--NEW TECHNICAL SPECIFICATIONS  
GENERAL ELECTRIC COMPANY, SAN JOSE  
42 PAGES, FIGURES, TABLES, DECEMBER 1966, DOCKET NO. 50-73

SINCE THE PREVIOUS TECHNICAL SPECIFICATION WAS AUTHORIZED FOR 6 MONTHS ONLY, THIS NEW ONE WAS RE-ISSUED (WITH MINOR CHANGES TO REFLECT TRANSFER OF NTR RESPONSIBILITY TO IRRADIATION PROCESSING OPERATION) TO SIMPLIFY RECORD-KEEPING. NTR IS A 30-KW SPECIAL DESIGN, WITH A CENTRAL GRAPHITE FLUX TRAP AND GRAPHITE REFLECTOR, INTENDED FOR FUEL-ELEMENT REACTIVITY TESTS. NTR FUEL IN ALUMINUM-CLAD DISKS.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + GE-NTR (GE NUCLEAR TEST REACTOR) + REACTOR, FLUX TRAP + REACTOR, RESEARCH

17-14529 ALSO IN CATEGORY 3  
PUBLIC SAFETY INFORMATION BULLETIN NO. 1  
ATOMIC ENERGY COMMISSION, US.  
9 PAGES, PUBLIC SAFETY INFORMATION BULLETIN NO. 1, OCTOBER 1966

DISCUSSES ACCIDENTS INVOLVING SHIPMENTS OF RADIOACTIVE MATERIAL, SPECIFICALLY FIRES. MAKES RECOMMENDATIONS TO FIRE DEPARTMENTS.

AVAILABILITY - AEC, DIVISION OF PUBLIC INFORMATION, WASHINGTON, D. C. 20545

\*RADIATION, PUBLIC EDUCATION/ACCEPTANCE + ACCIDENT, TRANSPORTATION + FIRE + SHIPPING CONTAINER

17-14550 ALSO IN CATEGORY 11  
TVA HIGH HORSEPOWER PUMP FAILURES ANALYZED FOR MISSILE GENERATION  
TENNESSEE VALLEY AUTHORITY  
PAGE B-4.7 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966,  
DOCKET NO. 50-259/260

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-14550 \*CONTINUED\*

ONLY ONE SUCH INSTANCE WAS DISCOVERED. A PARADISE STEAM PLANT FEEDWATER-PUMP FAILURE FRACTURED THE BALANCING DEVICE AND OVERSTRESSED THE SHAFT-SEAL HOUSING. THE BOLTS FAILED IN TENSION, AND SOME BOLT HEADS TRAVELED INTO THE IMMEDIATE AREA WITH NO DAMAGE TO OTHER EQUIPMENT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*FAILURE, COMPONENT + \*INCIDENT, ACTUAL, EQUIPMENT + \*MISSILE GENERATION AND PROTECTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + INCIDENT COMPILATION + PUMP + REACTOR, BOILING WATER

17-14551

ALSO IN CATEGORY 18

QUESTION B.5 - OPERATOR TRAINING PROGRAM, INCLUDING ACTUAL REACTOR OPERATION  
TENNESSEE VALLEY AUTHORITY

9 PAGES, PAGES B.5.1 TO B.5.8 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966, DOCKET NO. 50-259/260

THE MAJORITY OF LICENSED REACTOR OPERATIONS PERSONNEL WILL BE FROM THOSE PREVIOUSLY CERTIFIED FOR THE EGCR. TRAINING PROGRAMS OUTLINES. ACTUAL BWR EXPERIENCE WILL BE AT EVERS, IF THAT REACTOR IS STILL OPERATING. OTHERWISE THEY MUST BE TRAINED DURING STARTUP. SUPERVISORY PERSONNEL WILL TRAIN AT OYSTER CREEK OR DRESDEN 2.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + OPERATING EXPERIENCE + REACTOR, BOILING WATER + STAFFING, TRAINING, QUALIFICATION

17-14585

ALSO IN CATEGORY 14

QUESTION F.3 - ESTIMATE AND JUSTIFY TRITIUM DISCHARGE IN LIQUID  
TENNESSEE VALLEY AUTHORITY

4 PAGES, PAGES F.3.1 TO F.3.4 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966, DOCKET NO. 50-259/260

STUDIES INDICATE TRITIUM IN THE LIQUID EFFLUENT IS A MILLIONTH OF THE OFF-SITE MPC (BASED ON ONLY ACTIVATION OF DEUTERIUM). NO SPECIAL MONITORING INSTRUMENTS ARE NECESSARY. EXPERIENCE SHOWS THAT LESS THAN 1% OF THE TRITIUM IN A ZIRCALOY-CLAD FUEL ROD LEAKS OUT BECAUSE OF HYDRIDE FORMATION, WHILE STAINLESS-CLAD FUEL ALLOWS IT TO LEAK.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + MONITOR, RADIATION, LIQUID + OPERATING EXPERIENCE + REACTOR, BOILING WATER + TRITIUM + WASTE DISPOSAL, LIQUID

17-14588

ALSO IN CATEGORIES 14 AND 18

QUESTION F6. SENSITIVITY OF WASTE MONITORING  
TENNESSEE VALLEY AUTHORITY

PAGE F6.1 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966, DOCKET NO. 50-259/260

(1) EXPERIENCE SHOWS THAT OFF-GAS AND STACK-MONITOR CALIBRATION VARIES BECAUSE OF CHANGING ISOTOPIC RATIOS, DEPENDING ON THE NATURE OF THE FUEL LEAKS. MONITOR CALIBRATION IS BASED ON GAMMA ANALYSIS OF GRAB SAMPLES (WHICH ARE TAKEN ROUTINELY OR ON INCREASED READINGS). (2) GRAB SAMPLES THEN ALLOW A CALIBRATION OF GROSS GAMMA VS MICROCURIES/SEC.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + INSTRUMENTATION CALIBRATION + MONITOR, RADIATION, STACK + OPERATING EXPERIENCE + REACTOR OFFGAS

17-14625

ALSO IN CATEGORIES 1 AND 18

MANUAL OF LECTURE NOTES REACTOR SAFETY COURSE NO. 4, JUNE 6 TO JULY 1, 1966  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, HARWELL, ENGLAND  
500 PAGES +. FIGURES, TABLES, REFERENCES, 1966

PROVIDES MAIN DATA FOR LECTURE NOTES AND DISCUSSIONS. SECTIONS INCLUDE - I. INTRODUCTION (UNITED KINGDOM HEALTH AND SAFETY ORGANIZATION). II. FISSION PRODUCT RELEASE (DEPOSITION WITHIN A SYSTEM, FILTRATION). III. PRESSURE-CIRCUIT ENGINEERING (REACTOR VESSEL AND CONTAINMENT). IV. CONTROL AND INSTRUMENTATION (EXPERIENCE, RELIABILITY). V. GAS-COOLED REACTORS. VI. WATER-COOLED REACTORS. VII. FAST REACTORS. VIII. GENERAL (SAFETY REPORTS, RESEARCH REACTORS, ACCIDENT REPORTING, TRAINING). IX. SITING AND EMERGENCY PROCEDURES.

AVAILABILITY - UNITED KINGDOM ATOMIC ENERGY AUTHORITY, AUTHORITY HEALTH AND SAFETY BRANCH AT THE POST-GRADUATE EDUCATION CENTRE, A.E.R.E., HARWELL, BERKS., \$75.00 COPY

\*STAFFING, TRAINING, QUALIFICATION + CONCRETE, PRESTRESSED + CONTAINMENT, GENERAL + FISSION PRODUCT RELEASE, GENERAL + INSTRUMENTATION, GENERAL + MAIN COOLING SYSTEM + REACTOR, GAS COOLED +



CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-14625 \*CONTINUED\*  
SAFETY ANALYSIS REPORT, GENERAL + SITING, REACTOR + UNITED KINGDOM

17-14634 ALSO IN CATEGORIES 11 AND 18  
OPERATING EXPERIENCE WITH U.S. FIELD ASSEMBLED PRESSURE VESSELS  
NORTHERN STATES POWER COMPANY  
6 PAGES, 3 TABLES, ATOMIC ENERGY CLEARING HOUSE 13(6) PAGES 5-10 (FEBRUARY 6, 1967)

BRIEF HISTORY OF 200 CHICAGO BRIDGE AND IRON FIELD-ASSEMBLED (NONNUCLEAR) VESSELS. NINE HAVE CONDITIONS SIMILAR TO THE MONTICELLO VESSEL. ALL WERE PERFORMING SATISFACTORILY. LETTER SUMMARIZES CONDITIONS (SERVICE, DESIGN PRESSURE AND TEMPERATURE, ETC.).

\*CONTAINMENT, PRESSURE VESSEL + \*DESIGN STUDY + \*OPERATING EXPERIENCE + MONTICELLO + REACTOR, BOILING WATER

17-14635 ALSO IN CATEGORIES 15 AND 18  
MEHANN RO  
REVIEW OF N S SAVANNAH POST MCA  
FIRST ATOMIC SHIP TRANSPORT, INC., NEW YORK, NEW YORK  
3 PAGES, 1 TABLE, ATOMIC ENERGY CLEARING HOUSE 13(6) PAGES 17-19 (FEBRUARY 6, 1967) DOCKET NO. 53-238

REVIEWS NS SAVANNAH RADIATION AND CONTAINMENT MONITORING SYSTEM FEATURES. REVIEW OF OTHER FACILITIES SHOWS NO PROVISION FOR STACK MONITORING OF HIGH-LEVEL IODINE RELEASE. SPECIFICATIONS FOR SUCH AN IODINE MONITOR WERE RETURNED BY ALL 22 MANUFACTURERS CONTACTED. THREE WERE INTERESTED IN ITS DEVELOPMENT. AS A RESULT, FAST CONCLUDES PRESENT INSTRUMENTATION IS ADEQUATE, AND DEVELOPMENT OF AN IODINE MONITOR WOULD NOT ADD SIGNIFICANTLY TO PUBLIC SAFETY.

\*FISSION PRODUCT, IODINE + \*MONITOR, RADIATION, STACK + \*SAFETY REVIEW (OPERATIONS, EXPERIMENTS) + N S SAVANNAH + REACTOR, MARITIME + REACTOR, PRESSURIZED WATER

17-14637 ALSO IN CATEGORY 18  
WOLTER EE  
IODINE RELEASE DURING ELK RIVER SYSTEM HEATUP  
RURAL COOPERATIVE POWER ASSOCIATION  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(6) PAGES 20-21 (FEBRUARY 6, 1967) DOCKET NO. 115-1

ON SYSTEM HEATUP JANUARY 8, 1967, THE PRIMARY SYSTEM WAS VENTED BY HOSE FROM THE EMERGENCY CONDENSER TO THE OVERHEAD STORAGE TANK BELOW THE WATER LEVEL. THE VENTING OPERATION WAS TERMINATED AT 9-30 AM AFTER 3 HOURS, WHEN THE HOSE WAS DISCOVERED TO BE FREE IN THE TANK, RELEASING PRIMARY COOLANT TO THE CONTAINMENT VESSEL. I-131 RELEASE WAS 36 MICROCURIES AT ABOUT THE YEARLY AVERAGE RELEASE RATE.

\*FAILURE, OPERATOR ERROR + \*INCIDENT, ACTUAL, HUMAN ERROR + ELK RIVER + FISSION PRODUCT, IODINE + PROCEDURES AND MANUALS + REACTOR, BOILING WATER + SOURCE, CONTINUOUS

17-14630 ALSO IN CATEGORIES 1 AND 18  
NEFTNEY RJ  
THE TRA SAFEGUARD COMMITTEE  
IDAHO NUCLEAR CORPORATION  
IN-1022 +. 9 PAGES, SEPTEMBER 1966

THIS DOCUMENT CONSTITUTES THE WORKING CHARTER OF THE TRA SAFEGUARD COMMITTEE. IT DESCRIBES THE DUTIES AND FUNCTIONS OF THE TRA SAFEGUARD COMMITTEE - DOCUMENTS CERTAIN EXISTING PROCEDURES REGARDING REACTOR AND EXPERIMENTAL SAFETY AT THE MTR, ETR, AND ATR - INDICATES THOSE ACTIVITIES WHICH REQUIRE TRA SAFEGUARD COMMITTEE APPROVAL, DESCRIBES THE PROCEDURES FOR OBTAINING SUCH APPROVAL AND RELATES THE ACTIVITIES OF THE TRA SAFEGUARD COMMITTEE TO THE FUNCTIONS AND RESPONSIBILITIES OF IDAHO NUCLEAR CORPORATION LINE-SUPERVISION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*CODES AND STANDARDS + \*SAFETY PRINCIPLES AND PHILOSOPHY + \*SAFETY REVIEW (OPERATIONS, EXPERIMENTS) + ATR (ADVANCED TEST REACTOR - NRTS) + ETR (ENGINEERING TEST REACTOR) + MTR (MATERIAL TESTING REACTOR) + REACTOR, AEC OWNED + REACTOR, TEST

17-14640 ALSO IN CATEGORIES 12 AND 9  
PEARING WEAR PROBLEMS ON HFIR CONTROL PLATES  
DIVISION OF OPERATIONAL SAFETY, USAEC  
BUL. ROE-66-4 +. OPERATING EXPERIENCES, REACTOR SAFETY 66-4, 4 PAGES, 1 FIGURE, DECEMBER 22, 1966

FAILURE OF THE CONTROL-ROD-GUIDANCE STELLITE-BEARING ASSEMBLIES AS A RESULT OF EXCESSIVE WEAR WAS CAUSED BY FRETTING CORROSION AND EXCESSIVE VIBRATION. THE FAILURE WAS DISCOVERED DURING THE SHUTDOWN FOLLOWING THE FIRST 100-MWTH CYCLE WHEN TEN 3/16-IN.-DIAM BALLS WERE FOUND IN THE PRIMARY-SYSTEM STRAINER. ALTHOUGH THE PLATES WERE IN THE REACTOR ALMOST TWICE AS LONG AS THEIR DESIGN LIFE, AS A RESULT OF USE DURING HYDRAULIC AND LOW-POWER TESTING, MODIFICATIONS

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-14640 \*CONTINUED\*

WERE MADE ANYWAY. RETAINERS WERE PROVIDED FOR BOTH THE BALLS AND RACE TO PREVENT THE BEARINGS FROM COMING APART, AND THE METHOD OF ATTACHING THE BEARINGS TO THE PLATES WAS MODIFIED TO IMPROVE REPLACEMENT. TIME-OF-FLIGHT TESTS JUST BEFORE THE DISCOVERY SHOWED THAT EXCESSIVE WEAR DID NOT AFFECT THE SCRAM RESPONSE.

AVAILABILITY - AEC, DIVISION OF PUBLIC INFORMATION, WASHINGTON, D. C. 20545

\*FAILURE, COMPONENT + \*FAILURE, SCRAM MECHANISM + CORROSION + HFIR (HIGH FLUX ISOTOPE REACTOR) + REACTOR, AEC OWNED + REACTOR, FLUX TRAP + VIBRATION

17-14641 ALSO IN CATEGORIES 1 AND 9

GEKLER WC + POMREHN HP  
AN ANALYSIS OF NUCLEAR POWER PLANT OPERATING AND SAFETY EXPERIENCE. VOL. I  
HOLMES AND NARVER, INC.  
HN-185 +. 110 PAGES, 22 TABLES, 7 FIGURES, 6 REFERENCES, DECEMBER 15, 1966

OPERATING AND SAFETY EXPERIENCE, AT FIVE MAJOR NUCLEAR POWER PLANTS, REPRESENTING 20 REACTOR-YEARS OF OPERATION WAS STUDIED. RESULTS AND CONCLUSIONS ARE GIVEN WHICH ENUNCIATE THE RELIABILITY OF SAFETY SYSTEM AND ENGINEERED SAFEGUARDS. TECHNIQUES OF OBTAINING RELIABILITY ESTIMATES ARE BRIEFLY DESCRIBED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*OPERATING EXPERIENCE + \*RELIABILITY ANALYSIS + CONTAINMENT INTEGRITY + CONTROL ROD DRIVE + CONTROL ROD SCRAM MECHANISM + DRESDEN 1 + EMERGENCY COOLING CONSIDERATIONS + EMERGENCY POWER, ELECTRIC + EMERGENCY SYSTEM + ENGINEERED SAFETY SYSTEM + HUMBOLDT BAY + INDIAN POINT 1 + MAINTENANCE AND REPAIR + PLANT PROTECTIVE SYSTEM + REACTOR SAFETY SYSTEM + REACTOR, BOILING WATER + REACTOR, POWER + REACTOR, PRESSURIZED WATER + SAFETY REVIEW (OPERATIONS, EXPERIMENTS) + SAFETY STUDY + SCRAM, REAL + SCRAM, SPURIOUS + SHIPPINGPORT + SHUTDOWN SYSTEM, SECONDARY + YANKEE

17-14642

GEKLER WC + POMREHN HP  
COMPOSITE EXPERIENCE WITH PROTECTIVE SYSTEMS  
HOLMES AND NARVER, INC.

HN-185 +. 40 PAGES, 15 TABLES, 1 FIGURE, AN ANALYSIS OF NUCLEAR POWER PLANT OPERATING AND SAFETY EXPERIENCE. VOL. 1, PAGES 12-52, DECEMBER 15, 1966

OPERATING AND SAFETY EXPERIENCE AT FIVE MAJOR NUCLEAR POWER PLANTS, (REPRESENTING 20 REACTOR-YEARS OF OPERATION) INDICATES THAT A SUBSTANTIAL REDUCTION IN POWER SHUTDOWNS OCCURS AFTER 12 TO 18 MONTHS OF COMMERCIAL OPERATION BECAUSE OF CONTINUED DEBUGGING AND INCREASED OPERATOR FAMILIARITY WITH THE PLANT AND SYSTEM OPERATING CHARACTERISTICS. THREE MAJOR ITEMS WERE NOTED AS CAUSING CONTROL-ROD-DRIVE FAILURES - (1) FOREIGN OBJECTS OR MATERIAL IN THE MECHANISM OR ROD CHANNEL, (2) MATERIAL DEFICIENCIES, AND (3) MECHANICAL CONNECTOR FAILURES OR INTERFERENCES. ONE FAILURE RESULTED FROM IMPROPER HEAT TREATMENT GIVEN TO THE 17-4PH STEEL COMPONENTS, WHICH SENSITIZED THE MATERIAL TO CHLORIDE STRESS CORROSION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*OPERATING EXPERIENCE + \*RELIABILITY ANALYSIS + \*SAFETY STUDY + CONTROL ROD DRIVE + CONTROL ROD SCRAM MECHANISM + CORROSION + FAILURE, FABRICATION ERROR + FAILURE, SCRAM MECHANISM + REACTOR, POWER + SCRAM, REAL + SCRAM, SPURIOUS + STEEL, STAINLESS

17-14643 ALSO IN CATEGORIES 1 AND 12

GEKLER WC + POMREHN HP  
RELIABILITY TECHNIQUES  
HOLMES AND NARVER, INC.

HN-185 +. 16 PAGES, 2 TABLES, AN ANALYSIS OF NUCLEAR POWER PLANT OPERATING AND SAFETY EXPERIENCE. VOL. 1, PAGES 52-67, DECEMBER 15, 1966

OPERATING AND SAFETY EXPERIENCE, AT FIVE MAJOR NUCLEAR POWER PLANTS, REPRESENTING 20 REACTOR-YEARS OF OPERATION WAS ANALYZED. THE TECHNIQUES AND PROCEDURES USED IN COLLECTING AND TREATING THE DATA ARE GIVEN. NO NEW IDEAS OR MATHEMATICS WERE DEVELOPED. THE LEVEL OF THE ANALYSIS FOR PREDICTING RELIABILITY OF SYSTEMS EXTENDED DOWN TO THE COMPONENTS AND NOT TO THE PARTS OF THE COMPONENTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*OPERATING EXPERIENCE + \*RELIABILITY ANALYSIS + MATHEMATICAL STUDY + PROCEDURES AND MANUALS + REACTOR, POWER

17-14644

GEKLER WC + POMREHN HP  
PRACTICES AND PROCEDURES  
HOLMES AND NARVER, INC.

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-14644 \*CONTINUED\*

HN-185 +. 6 PAGES, 1 TABLE, AN ANALYSIS OF NUCLEAR POWER PLANT OPERATING AND SAFETY EXPERIENCE. VOL. 1, PAGES 7-12, DECEMBER 15, 1966

RESULTS OF AN ANALYSIS OF OPERATING EXPERIENCE, AT 5 NUCLEAR POWER PLANTS, REPRESENTING 20 REACTOR-YEARS OF OPERATION SHOW THE MANAGERS ARE SATISFIED WITH THE USE OF MAINTENANCE PERSONNEL FROM CONVENTIONAL PLANTS. RESULTS INDICATE THAT DATA-RECORDING OF MALFUNCTIONS OR FAILURES SHOULD UTILIZE WORK ORDERS OR MAINTENANCE REQUESTS AND UPON COMPLETION BE FILED AS A PERMANENT RECORD. WEAKNESSES IN RECORDING SIGNIFICANT OPERATING AND SAFETY EXPERIENCE ARE (1) LACK OF ORGANIZATION OF DATA, (2) LACK OF CRITERIA FOR ESTABLISHING TEST FREQUENCIES, (3) INADEQUATE CRITERIA FOR REPORTING TEST RESULTS IN TERMS OF SUCCESS AND FAILURE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*DATA PROCESSING + \*OPERATING EXPERIENCE + \*RELIABILITY ANALYSIS + \*SAFETY STUDY + CODES AND STANDARDS + OPERATIONS REPORT, GENERAL + PROCEDURES AND MANUALS + REACTOR, POWER

17-14645 ALSO IN CATEGORY 18

DATES LR  
DESIGN, CONSTRUCTION DETAILS, AND PREOPERATIONAL TESTING OF AN ARGONNE FAST CRITICAL FACILITY  
ARGONNE NATIONAL LABORATORY  
ANI-7195 +. 66 PAGES, 47 FIGURES, 3 REFERENCES, APRIL 1966

DESCRIBES THE COMPONENT DETAILS AND METHODS, ETC., OF ZPR-6, A SPLIT-TABLE ASSEMBLY FOR DRY-MODERATOR EXPERIMENTS. CERTAIN TESTS AND DATA WERE INCLUDED TO ILLUSTRATE STRUCTURAL STABILITY. ACCURACIES OF FITS AND ALIGNMENT OF MATING PARTS, TABLE-SURFACE FLATNESS, PRECISE LEVELING, ETC., ARE GIVEN TO INDICATE THE RELIABILITY OF THE DATA TAKEN DURING REACTOR EXPERIMENTS. THE BASIC MACHINE WAS DESIGNED AND BUILT TO TOLERANCES THAT ARE CONSISTENT WITH LARGE MACHINE-TOOL FABRICATION. FURTHER DIMENSIONAL REFINEMENT WOULD RESULT IN MUCH HIGHER COST WITH VERY LITTLE, IF ANY, GAIN IN RELIABILITY. THE ERECTION OF THE FACILITY IS DISCUSSED STEPWISE TO PROVIDE A CLEAR DESCRIPTION OF EACH PART AND HOW IT FITS THE OVERALL ASSEMBLY. SAFETY AND FAIL-SAFE FEATURES ARE EXPLAINED IN DETAIL. MUCH OF THE DESIGN CRITERIA WAS DICTATED BY EXPERIENCE GAINED FROM THE OPERATION OF ZPR-3. MATRIX DEFLECTION BEHAVIOR AND MAGNITUDE WERE PREDICTABLE THROUGH STUDIES MADE ON THE ZPR-3 MATRIX LOADINGS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*REACTOR DESCRIPTION + ANL (ARGONNE NATIONAL LABORATORY) + CRITICAL ASSEMBLY FACILITY + OPERATING EXPERIENCE + ZPR 6 (ANL ZERO POWER REACTOR)

17-14648 ALSO IN CATEGORIES 11 AND 18

NARROW WE  
CVTR VAPOR CONTAINER LEAK RATE TEST, SEPTEMBER 1966  
CAROLINAS VIRGINIA NUCLEAR POWER ASSOCIATES, INC.  
CVNA-266 +. 35 PAGES, NOVEMBER 18, 1966

THE 1966 LEAK-RATE TEST WAS PERFORMED AT 13 PSIG FOR 3 DAYS, BY THE REFERENCE METHOD, AND CHECKED BY TEMPERATURE AND ABSOLUTE-PRESSURE MEASUREMENTS. AT THE END OF THE TEST, A METERED AMOUNT OF AIR WAS ADDED TO MAKE THE ORIGINAL PRESSURE. THE LEAK RATE AT DESIGN PRESSURE (21 PSIG) IS CALCULATED TO BE 0.184 PERCENT/DAY, LESS THAN HALF OF TECH.-SPEC. LIMIT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*CONTAINMENT, HIGH PRESSURE + \*TEST, LEAK RATE + CONTAINMENT REFERENCE MEASURING SYSTEM + CVTR (CAROLINAS VIRGINIA TUBE REACTOR) + OPERATING LIMITS/TECHNICAL SPECIFICATIONS + REACTOR, HEAVY WATER + REACTOR, PRESSURE TUBE + REACTOR, PRESSURIZED WATER

17-14653 ALSO IN CATEGORY 18

QUESTION VI-1. LIMITS ON REACTIVITY AND FLUX ANOMALIES  
ALLIS-CHALMERS COMPANY  
ACNP-67501 +. 2 PAGES, DISCUSSION OF OPERATING CONSIDERATIONS QUESTIONED BY THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS AS A RESULT OF THEIR REVIEW OF THE LA CROSSE BOILING WATER REACTOR, SUBMITTED IN RESPONSE TO DIVISION OF REACTOR LICENSING LETTER (DATED DECEMBER 19, 1966) PAGES 1-2, JANUARY 1967, DOCKET NO. 115-5

REACTIVITY - THE REACTOR WILL BE SHUT DOWN IF THE ANOMALY WITHOUT REFUELING IS GREATER THAN 0.6 PERCENT DELTA RHO. FOLLOWING A CORE CHANGE, AN ANOMALY GREATER THAN 2 PERCENT DELTA PHO WILL REQUIRE SHUTDOWN. \*\*\*\* FLUX - POWER DISTRIBUTIONS WILL BE OBSERVED AND THE ROD PATTERN ADJUSTED IF HEAT-FLUX LIMITS MAY BE EXCEEDED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

CONTROL ROD PROGRAM + LACROSSE + POWER DISTRIBUTION + REACTIVITY EFFECT, ANOMALOUS + REACTOR, BOILING WATER + SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-14654 ALSO IN CATEGORY 18  
QUESTION VI-2. OPERATOR ACTION UPON PRIMARY SYSTEM LEAKS  
ALLIS-CHALMERS COMPANY  
ACNP-67501 +. 2 PAGES, DISCUSSION OF OPERATING CONSIDERATIONS QUESTIONED BY THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS AS A RESULT OF THEIR REVIEW OF THE LA CROSSE BOILING WATER REACTOR, SUBMITTED IN RESPONSE TO DIVISION OF REACTOR LICENSING LETTER (DATED DECEMBER 19, 1966) PAGES 2-3, JANUARY 1967, DOCKET NO. 115-5

LFAKS WILL BE INDICATED BY CONTAINMENT AIR ACTIVITY AND SYSTEM-LEVEL/PRESSURE/TEMPERATURE MONITORS. ALL LEAKS WILL BE INVESTIGATED AND 10 CFR 20 CRITERIA USED TO DETERMINE IF A SHUTDOWN IS NECESSARY.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

ADMINISTRATIVE CONTROLS AND PRACTICES + LACROSSE + MAIN COOLING SYSTEM + REACTOR, BOILING WATER + SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS

17-14655 ALSO IN CATEGORY 18  
QUESTION VI-3. TORNADO ALERT WARNINGS  
ALLIS-CHALMERS COMPANY  
ACNP-67501 +. 1 PAGE, DISCUSSION OF OPERATING CONSIDERATIONS QUESTIONED BY THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS AS A RESULT OF THEIR REVIEW OF THE LA CROSSE BOILING WATER REACTOR, SUBMITTED IN RESPONSE TO DIVISION OF REACTOR LICENSING LETTER (DATED DECEMBER 19, 1966) PAGE 3, JANUARY 1967, DOCKET NO. 115-5

WHENEVER LACBWR IS WITHIN THE WARNING AREA OF A US WEATHER BUREAU TORNADO ALERT, THE SHIFT SUPERVISOR SHALL KEEP INFORMED. IF A TORNADO STRIKE IS IMMINENT NEAR LACBWR, HE SHALL REDUCE POWER TO NEAR STATION LOAD, OR SHUT DOWN PLANT IF SAFETY REQUIRES IT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

DESTRUCTIVE WIND + LACROSSE + REACTOR, BOILING WATER + SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS

17-14656 ALSO IN CATEGORY 18  
QUESTION VI-4. STACK INSPECTION PROGRAM  
ALLIS-CHALMERS COMPANY  
ACNP-67501 +. 1 PAGE, DISCUSSION OF OPERATING CONSIDERATIONS QUESTIONED BY THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS AS A RESULT OF THEIR REVIEW OF THE LA CROSSE BOILING WATER REACTOR, SUBMITTED IN RESPONSE TO DIVISION OF REACTOR LICENSING LETTER (DATED DECEMBER 19, 1966) PAGE 3, JANUARY 1967, DOCKET NO. 115-5

SCHEDULED INSPECTION OF LACBWR STACK AND CONVENTIONAL PLANT STACK WILL BE EVERY 5 YEARS. AN UNSCHEDULED INSPECTION WILL BE MADE, IF RECOMMENDED BY LACBWR SAFETY COMMITTEE, AFTER SEISMIC ACTIVITY OR SEVERE METEOROLOGICAL DISTURBANCES (TORNADOES, HURRICANES).

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

DESTRUCTIVE WIND + EXAMINATION + LACROSSE + REACTOR, BOILING WATER + SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + STACK

17-14658 ALSO IN CATEGORY 5  
SAXTON PLUTONIUM PROGRAM. SEMI-ANNUAL PROGRESS REPORT FOR THE PERIOD ENDING JUNE 30, 1966  
WESTINGHOUSE ELECTRIC CORPORATION, ATOMIC POWER DIVISION  
EURAFEC-1661 + WCAP-3385-8 +. 43 PAGES, 6 TABLES, 13 FIGURES, 7 REFERENCES, JULY 1966 DOCKET NO. 50-146

REACTOR HAS OPERATED AT 21 OR 23.5 MWTH FOR MOST OF THE PERIOD, REACHING HALF (AVERAGE 6,170 MWD/MTM, PEAK PELLETT BURNUP OF 12,400 MWD/MTU) DESIGN BURNUP FOR THE PUO2-UO2 FUEL. CLOSE AGREEMENT BETWEEN MEASURED AND CALCULATED REACTIVITIES WAS DEMONSTRATED EXCEPT FOR A LOW WORTH OF ROD 5. THE LEOPARD V-BUBBLE-PQQ CORE-DEPLETION CALCULATION IS IN GOOD AGREEMENT WITH OBSERVATION, WHILE THE EARLIER TURBO CALCULATION OVERPREDICTS CORE LIFETIME. THE POWER PEAKING HAS NOT DIMINISHED AS EXPECTED, THOUGH ITS LOCATION HAS CHANGED. THE POWER COEFFICIENT IS MORE NEGATIVE THAN CALCULATED, APPARENTLY BECAUSE OF A SMALLER PELLETT DIAMETER AND PUO2 ENRICHMENT CHANGE FROM 6 TO 6.6 PERCENT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*FUEL BURNUP + \*OPERATIONS REPORT, ANALYSIS + \*PLUTONIUM DIOXIDE + \*URANIUM DIOXIDE + COMPARISON, THEORY AND EXPERIENCE + INSTRUMENTATION, IN CORE + POWER DISTRIBUTION + REACTIVITY EFFECT, ANOMALOUS + REACTOR, PRESSURIZED WATER + SAXTON

17-14661 ALSO IN CATEGORY 15  
LARSON OW + AHLQUIST AJ + HENDERSON RW  
RADIATION MEASUREMENTS OF THE EFFLUENT FROM THE NRX A-4 REACTOR

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-14661 \*CONTINUED\*  
LOS ALAMOS SCIENTIFIC LABORATORY  
LA-3583-MS +. 125 PAGES, 14 TABLES, 73 FIGURES, AUGUST 1966

MOSTLY DATA FROM 3 TESTS RUN IN MARCH 1966 (NEARLY 33-MWD OPERATION) WHERE AIR SAMPLES,  
FALLOUT PAPER, GAMMA DOSE AND DOSE RATE DETECTORS WERE DISPERSED UP TO 25 MILES DOWNWIND.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*EFFLUENT + \*SURVEY, RADIATION, ENVIRONMENTAL + LASL (LOS ALAMOS SCIENTIFIC LABORATORY) + NUCLEAR ROCKET

17-14663 ALSO IN CATEGORY 6  
ADAMS RM + GLASSNER A  
REACTOR DEVELOPMENT PROGRAM PROGRESS REPORT, NOVEMBER 1966  
ARGONNE NATIONAL LABORATORY  
ANL-7279 +. 98 PAGES, 26 FIGURES, 20 TABLES, DECEMBER 21, 1966

TRANSFER-FUNCTION MEASUREMENTS WITH THE PLUTONIUM-LOADED EBWR AT 42 MW(TH) AND BORIC ACID IN  
MODERATOR (5 GRAMS/GAL) SHOW THAT THE REACTOR WOULD BE STABLE UP TO 90 MW(TH).

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*OPERATING EXPERIENCE + \*REACTOR STABILITY + EBWR (EXPERIMENTAL BOILING WATER REACTOR) +  
REACTOR, AEC OWNED + REACTOR, BOILING WATER + TEST, PLANT RESPONSE + TRANSFER FUNCTION

17-14666 ALSO IN CATEGORIES 7 AND 11  
MILLER CE + SHIELDS RP  
USED CHARCOAL FILTERS FROM N S SAVANNAH IGNITE AT LOWER TEMPERATURES  
OAK RIDGE NATIONAL LABORATORY  
ORNL-TM-1742 +. 2 PAGES, ORNL NUCLEAR SAFETY RESEARCH AND DEVELOPMENT PROGRAM BIMONTHLY REPORT FOR  
NOVEMBER-DECEMBER 1966, PAGES 70-71, JANUARY 13, 1967, DOCKET NO. 50-238

ORNL TESTS ON AGED (USED) CHARCOALS FROM THE CONTAINMENT FILTERS OF THE NS SAVANNAH SHOWED THE  
CHARCOALS IGNITE AT 150-200 C LOWER THAN SIMILAR NON-AGED ONES. IODINE-IMPREGNATED CHARCOALS  
GENERALLY HAVE A HIGHER IGNITION TEMPERATURE THAN NON-IMPREGNATED CHARCOALS.

AVAILABILITY - WM. B. COTTRELL, OAK RIDGE NATIONAL LABORATORY, P. O. BOX Y, OAK RIDGE, TENNESSEE

\*CHARCOAL + \*FILTER + \*IGNITION + \*OPERATING EXPERIENCE + FIRE + HIGH TEMPERATURE + N S SAVANNAH +  
REACTOR, MARITIME + REACTOR, PRESSURIZED WATER

17-14660  
GANOWSKI FJ  
LINING FOR THE HOUSING OF A NUCLEAR REACTOR VESSEL  
KELLER AND KNAPPICH GMDH  
GERMAN PAT. 1,210,496 + ORNL-TR-1452 +. 4 PAGES, 4 FIGURES, FEBRUARY 10, 1966

THE INVENTION CONCERNS A CLADDING OF LOW-CARBON STEEL THAT CAN BE APPLIED BY  
ELECTRICAL-RESISTANCE WELDING TO THE NORMAL HIGH-STRENGTH STEEL OF PRESSURE VESSEL. THIS IS  
AS OPPOSED TO APPLYING BY BUILT-UP OR AN ARC-TYPE WELDING PROCESS.

AVAILABILITY - JOHN CREPAR LIBRARY, 35 WEST 33RD STREET, CHICAGO, ILLINOIS 60616

\*CLAD + \*CONTAINMENT, PRESSURE VESSEL + \*WELDING

17-14676 ALSO IN CATEGORY 5  
NUCLEATE BOILING SHOWN TO HAVE SEVERAL REGIMES - LITERATURE SURVEY  
LOS ALAMOS SCIENTIFIC LABORATORY  
LA-3625-MS +. 1 PAGE, QUARTERLY STATUS REPORT ON ADVANCED REACTOR TECHNOLOGY (ART) FOR PERIOD ENDING  
OCTOBER 31, 1966, PAGE 13, NOVEMBER 1966

A FOUR-MONTH SURVEY OF THE LITERATURE ON BOILING HEAT TRANSFER AND TWO-PHASE FLOW WAS  
COMPLETED. THE MORE RECENT PUBLICATIONS REVEALED THAT RESEARCHERS HAVE TURNED TO A STUDY OF  
THE BASIC MECHANISM OF BOILING. THESE STUDIES HAVE SHOWN THAT THE CONVENTIONAL CONCEPT OF  
NUCLEATE BOILING UPON WHICH ALL PRIOR CORRELATIONS WERE BASED IS NOT CORRECT. THREE AND  
POSSIBLY FOUR REGIMES OF NUCLEATE BOILING HAVE BEEN DEMONSTRATED, WITH ONLY THE LOW-HEAT-FLUX  
RANGE CORRESPONDING TO THE IDEAS HELD PREVIOUSLY ABOUT NUCLEATE BOILING. THE NEW VIEWS AND  
THEIR CONSEQUENCES HAVE BEEN EXPLORED - A SUMMARY OF THE LITERATURE AND SPECIFIC  
RECOMMENDATIONS FOR FUTURE WORK HAVE BEEN PREPARED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*HEAT TRANSFER, BOILING + \*NUCLEATE BOILING + HEAT TRANSFER EXPERIMENT + REACTOR, LIQUID METAL COOLED +  
SODIUM

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-14677

MOLTEN PLUTONIUM FUEL FAILURES AT OMEGA WEST REACTOR  
LOS ALAMOS SCIENTIFIC LABORATORY  
LA-3625-MS +. 2 PAGES, QUARTERLY STATUS REPORT ON ADVANCED REACTOR TECHNOLOGY (ART) FOR PERIOD ENDING  
OCTOBER 31, 1966, PAGES 23-24, NOVEMBER 1966

(IN-PILE EXPERIMENT OWREX-8).- THIS CAPSULE, CONTAINING THE USUAL 24 G OF PU, RELEASED FISSION GAS (AT 2-1/4 PERCENT BURNUP) AFTER 9 MONTHS OPERATION. THE TANTALUM WALL IS ABOUT 50 PERCENT THINNER AT THE FUEL-GAS INTERFACE. (IN PILE EXPERIMENT OWREX-9).- THIS 32-G PU CAPSULE HAS THERMOCOUPLES TO MEASURE FUEL-COLUMN HEIGHT. AFTER AN INITIAL SHARP DECREASE, THE EQUILIBRIUM-FISSION-GAS-BUBBLE CONTROL WAS 3-4 PERCENT. AFTER 4 MONTHS, THE SWEEP-GAS LINE WAS PLUGGED WITH SODIUM, INJECTED BY A SUDDEN RELEASE OF GASEOUS FISSION PRODUCTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*FAILURE, FUEL ELEMENT + \*FISSION GAS RELEASE + \*IN PILE LOOP + MOLTEN FUEL + PLUTONIUM + REACTOR, AEC OWNED + REACTOR, RESEARCH

17-14690

ELK RIVER REACTOR FORTY-NINTH MONTHLY OPERATING REPORT  
RURAL COOPERATIVE POWER ASSOCIATION  
COO-651-38 +. 22 PAGES, NOVEMBER 1966, DOCKET NO. 115-1

CORE-II PREDICTIONS (GIVING A LIFETIME OF 17,040 MWD) UNDERESTIMATE THE PRESENT REGULATING-ROD POSITION BY 5 INCHES. EXTRAPOLATION OF THE OBSERVED ROD CURVE GIVES A 13,920-MWD CORE. FUEL-HANDLING-TOOL DIFFICULTIES WERE BECAUSE THE 26-VOLT LATCH MOTOR HAD A 12-VOLT BATTERY. OPERATION OF THE REACTOR OFF-GAS SYSTEM LED TO INCREASED CONTAINMENT AIR ACTIVITY DUE TO LEAKS. THE SYSTEM DID REDUCE DITCH. COOLANT IODINE LEVELS HAVE COME TO AN EQUILIBRIUM 25 TIMES HIGHER THAN FOR CORE I. STEAM-GENERATOR SECONDARY BLOWDOWN IS THE SOURCE (DUE TO LEAKY TUBES) OF RADIOIODINE FOUND IN THE TURBINE-AIR-EJECTOR ACTIVITY RELEASE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*OPERATIONS REPORT, GENERAL + ELK RIVER + FUEL BURNUP + FUEL HANDLING MACHINE + HEAT EXCHANGER + REACTIVITY EFFECT, ANOMALOUS + REACTOR OFFGAS + REACTOR, BOILING WATER

17-14725

ALSO IN CATEGORY 18  
1966 YEARLY OPERATIONS REPORT TO AEC  
UNIVERSITY OF VIRGINIA

3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(7) PAGES 18-20 (FEBRUARY 13, 1967) DOCKET NO. 50-62

(1) A GRADUATE STUDENTS INDIUM IRRADIATION CALCULATIONS WERE NOT CHECKED. THE SAMPLE BEING WITHDRAWN CAUSED HIGH RADIATION INDICATIONS, BUT ONLY A 20-MR DOSE. (2) THE OUTLET HEADER FUNNEL LIFTING MECHANISM UNDER THE CORE WAS CHANGED. AIR FLOTATION NOW LIFTS THE FUNNEL INTO PLACE, AIR IS VENTED, AND FLOW FORCES HOLD IT IN PLACE. LOSS OF FLOW ALLOWS IT TO DROP FOR CONVECTION COOLING. (3) THE WASTE DISCHARGE VALVE FROM THE POND WAS FOUND OPEN DURING A COMPLIANCE INSPECTION. A SAMPLING PROGRAM IS NOW SET UP TO SAMPLE BEFORE DUMPING INTO THE POND, USING TESTS FOR I-131 TO ENSURE THAT I-129 IS NOT PRESENT. A HIGHER MPC CAN BE USED.

EMERGENCY COOLING CONSIDERATIONS + FAILURE, ADMINISTRATIVE CONTROL + FISSION PRODUCT, IODINE + INCIDENT, ACTUAL, HUMAN ERROR + MAXIMUM PERMISSIBLE CONCENTRATION (MPC) + OPERATIONS SUMMARY FOR AEC + REACTOR, POOL TYPE + SAMPLING + WASTE DISPOSAL, LIQUID

17-14726

ALSO IN CATEGORIES 15 AND 18  
LAGRUA JD  
OVEREXPOSURE AT NAVAL SHIPYARD DURING DEMINERALIZER RESIN TRANSFER  
LONG ISLAND NUCLEAR SERVICE CORPORATION  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(7) PAGE 21 (FEBRUARY 13, 1967)

A LONG ISLAND NUCLEAR SERVICE CORPORATION EMPLOYEE RECEIVED AT LEAST 3-6 REMS (AS SHOWN BY A NUCLEAR CHICAGO FILM BADGE) BETWEEN NOVEMBER 27 AND DECEMBER 4 INCLUSIVE. DURING THE PERIOD 1A-22, THE SHIPYARD SYSTEM SHOWED AN EXPOSURE OF 1.69 REMS. THESE EXPOSURES WERE RECEIVED BY THE CONTRACTORS SUPERVISOR DURING RESIN TRANSFERS AT PORTSMOUTH NAVAL YARD.

\*COOLANT PURIFICATION SYSTEM + \*INCIDENT, ACTUAL, HUMAN ERROR + \*PERSONNEL EXPOSURE, RADIATION + FAILURE, ADMINISTRATIVE CONTROL + FAILURE, MAINTENANCE ERROR + RESIN

17-14727

ALSO IN CATEGORIES 13 AND 18  
NUCLEAR FUEL SERVICES CITED FOR NONCOMPLIANCES  
NUCLEAR FUEL SERVICES, INC.

3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(7) PAGES 22-24 (FEBRUARY 13, 1967) DOCKET NO. 50-201

VARIOUS VIOLATIONS ARE NOTED, MOSTLY WASTE DISCHARGE WITHOUT PROPER MONITORING, FOLLOWING AN

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-14727 \*CONTINUED\*

OCTOBER COMPLIANCE INSPECTION. ABSENCE OF SAFETY COMMITTEE REVIEWS OR OPERATING PROBLEM INVESTIGATIONS, AND USE OF PARTS FROM STANDBY EQUIPMENT RATHER THAN SPARE PARTS INDICATES, AMONG OTHER ITEMS, THAT NUMEROUS FILTER FAILURES DUE TO HIGH DELTA P SHOW THAT THE STACK MONITOR IS AS SENSITIVE AS THE DOP TEST. FAILURE OF THE TOP LAYER OF HIGH-EFFICIENCY GLASS WOOL OCCURRED.

\*INSPECTION AND COMPLIANCE + \*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + FAILURE, ADMINISTRATIVE CONTROL + FILTER OPERATION + FILTER, DAMAGED + FUEL REPROCESSING + MONITOR, RADIATION, STACK + NFS (NUCLEAR FUEL SERVICES) + TEST, DOP FILTER

17-14728 ALSO IN CATEGORIES 13 AND 18

LEWIS WH

POTENTIAL INHALATION INCIDENT AT NFS, OCTOBER 1966  
NUCLEAR FUEL SERVICE

2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(7) PAGES 24-25 (FEBRUARY 13, 1967) DOCKET NO. 50-201

TWO SUBCONTRACTOR EMPLOYEES SANDBLASTED A VAULT WITHOUT THE RESPIRATORY EQUIPMENT ORDERED BY A NFS FOREMAN. (THE VAULT HAD PREVIOUSLY BEEN DECONTAMINATED TO A MAXIMUM SURFACE READING OF 73 MR/HRI). TWO WEEKS LATER, SODIUM IODIDE COUNTS (GAMMA RAYS ABOVE 100 KEV) WERE ONLY 1 PERCENT ABOVE CONTROLS. ALL SUBCONTRACT WORK NOW MUST HAVE A SPECIAL WORK PERMIT.

\*FAILURE, ADMINISTRATIVE CONTROL + \*INCIDENT, ACTUAL, HUMAN ERROR + FUEL REPROCESSING + INHALATION + NFS (NUCLEAR FUEL SERVICES)

17-14735 ALSO IN CATEGORY 9

CROIX O + PAOLI O + LECOMTE J + DOLLE L + LEGALLIC Y

USE OF CADMIUM IN SOLUTION IN THE EL 4 REACTOR MODERATOR - IRREVERSIBLE FIXING OF CADMIUM ON THE METALLIC SURFACES

ATOMIC ENERGY OF CANADA LIMITED, CHALK RIVER, ONTARIO

AECL-2490 +. 26 PAGES, 7 FIGURES, 4 TABLES, OCTOBER, 1956

MEASUREMENTS WERE MADE BY TWO DIFFERENT METHODS OF THE RESIDUAL AMOUNTS OF CADMIUM (AND INDIUM DAUGHTER) LIABLE TO BE FIXED IRREVERSIBLY ON THE SURFACES (ALUMINUM, STAINLESS STEEL, OR ZIRCALOY) IN CONTACT WITH THE HEAVY WATER (AT 70 C WITH 13 PPM CADMIUM). A MARKED INFLUENCE OF THE PH WAS NOTICED. THE MECHANISM OF THE IRREVERSIBLE FIXING IS COMPATIBLE WITH THE HYPOTHESIS OF AN ION-EXCHANGE IN THE SURFACE OXIDE LAYER. IN A SUFFICIENTLY WIDE RANGE OF PH, THE CADMIUM THUS FIXED CAUSES VERY LITTLE RESIDUAL POISONING. THE STABILITY OF THE CADMIUM SULPHATE SOLUTIONS IS HOWEVER RATHER LOW IN THE CONDITIONS OF POISONING.

AVAILABILITY - ATOMIC ENERGY OF CANADA, LTD., CHALK RIVER, ONTARIO, CANADA, \$1.00 COPY

\*POISON, SOLUBLE + FRANCE + REACTIVITY EFFECT, ANOMALOUS + REACTOR, HEAVY WATER + REACTOR, PRESSURE TUBE

17-14764 ALSO IN CATEGORIES 5 AND 18

DETAILS ON 500 GPM HOT SPOT DNB ANALYSIS

WESTERN NEW YORK NUCLEAR RESEARCH CENTER, INC.

1 PAGE, JANUARY 18, 1967, DOCKET NO. 50-57

METHOD OF ANALYSIS WAS AS GIVEN ON PG 133 OF HAZARDS ANALYSIS (REV.2) AND INCLUDES A FACTOR FOR FLOW BEING 10 PERCENT LESS THAN MEASURED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + DNB (DEPARTURE FROM NUCLEATE BOILING) + FLOW ORIFICE OR RESTRICTION + HOT SPOT + REACTOR, POOL TYPE + REACTOR, PULSED

17-14765 ALSO IN CATEGORIES 5 AND 18

WESTERN NEW YORK PROPOSED CHANGE - 1 MW OPERATION AT 500 GPM TO OBSERVE N-16 CONDITIONS

WESTERN NEW YORK NUCLEAR RESEARCH CENTER, INC.

1 PAGE, JANUARY 16, 1967, DOCKET NO. 50-57

AT 500 GPM, WITH A BULK-COOLANT INLET TEMPERATURE OF 80 F, HEAT FLUXES EQUIVALENT TO 1.14-MW OPERATION CORRESPOND TO THE ONSET OF NUCLEATE BOILING AND ARE A FACTOR OF 16 BELOW THE BURNOUT HEAT FLUX. WNYRC WISHES A SPECIFIC TECH.-SPEC. CHANGE TO AUTHORIZE THIS EXPERIMENT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + DNB (DEPARTURE FROM NUCLEATE BOILING) + FLOW ORIFICE OR RESTRICTION + HOT SPOT + REACTOR, POOL TYPE + REACTOR, PULSED

17-14766 ALSO IN CATEGORY 7

BMI-S-346 FLUORESCENT LEAK DETECTOR AVAILABLE COMMERCIALY

U. S. ATOMIC ENERGY COMMISSION, DIVISION OF OPERATIONAL SAFETY

RUL. NO. 250 +. 1 PAGE, JANUARY 10, 1967

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-14766 \*CONTINUED\*

THE LEAK DETECTOR (AS DESCRIBED IN HEALTH AND SAFETY BULLETIN 219) IS NOW STOCKED IN 12-OUNCE AEROSOL CANS, WITH VENDORS LISTED IN AEC FIELD OFFICES. THE TRACER WAS DEVELOPED FOR NONQUANTITATIVE AIR-LEAK TESTING AND IS ALSO USEFUL FOR SPECIAL MARKING.

AVAILABILITY - AEC, DIVISION OF PUBLIC INFORMATION, WASHINGTON, D. C.

\*TEST, FILTER + TEST, LEAK LOCATION

17-14787 ALSO IN CATEGORIES 8 AND 14

DOUGLAS RE  
EFFECTS OF WATER LEAKAGE INTO TANKS CONTAINING SODIUM  
ATOMIC INTERNATIONAL, CANOGA PARK  
NAA-SR-MEMO-12239 +. 14 PAGES, NOVEMBER 10, 1966

ONE METHOD FOR DISPOSING OF THE HALLAM PRIMARY SODIUM IS TO BURY THE STORAGE TANKS WITHOUT PRIOR REACTION OF THE SODIUM. A TEST WAS PERFORMED TO DETERMINE THE EFFECTS OF GROUND WATER LEAKAGE INTO THE TANKS THROUGH PINHOLES OR CRACKS. A HALF QUART CAN WAS SUBMERGED AND VARIOUS SIZED HOLES DRILLED. RESULTS INDICATE THAT THE SODIUM-WATER REACTION WOULD TAKE PLACE AT A SELF-REGULATING RATE, AND NO EXCESSIVE INTERNAL PRESSURE INCREASE OR EXPLOSIVE CONDITION WOULD BE CREATED IN THE TANKS UNDER CONDITIONS SIMILAR TO THOSE IMPOSED FOR THE TEST.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*METAL WATER REACTION + \*REACTOR DECOMMISSIONING EXPERIENCE + \*SODIUM + \*WASTE DISPOSAL, TERRESTRIAL + EXPLOSION + HALLAM + REACTOR, GRAPHITE MODERATED + REACTOR, LIQUID METAL COOLED

17-14788 ALSO IN CATEGORIES 5 AND 6  
GARIGLIANO NUCLEAR POWER PLANT. OPERATION REPORT FOR THE 2ND QUARTER OF 1966  
ENTE NAZIONALE PER L ENERGIA ELETTRICA, ROME  
TID-23383 +. 15 PAGES, JUNE 30, 1966

REACTOR RETURNED TO POWER IN MAY, LIMITED BY STEAM-REGULATING-VALVE MALFUNCTION. HIGHER-POWER-DENSITY/HIGH-VOID TESTS SHOWED SATISFACTORY REACTOR STABILITY. CORE PRESSURE DROP INCREASED FROM 1.88 PSI MAY 23 TO 2.36 ON JUNE 27. HIGH SUBCOOLING TESTS WERE IMPOSSIBLE BECAUSE BYPASSING FEEDWATER HEATERS CAUSED PIPING VIBRATION. ONE-LOOP OPERATION LED TO DRUM WATER LEVEL AND NEUTRON FLUX OSCILLATIONS, WORSENER BY COLDER FEEDWATER. THE POSSIBILITY WAS DEMONSTRATED OF OPERATING REACTOR FULL POWER WITH ONLY NATURAL CIRCULATION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*HEAT TRANSFER, NATURAL CONVECTION + \*OPERATIONS REPORT, GENERAL + ITALY + PRESSURE DROP + REACTOR STABILITY + REACTOR, BOILING WATER + SURFACE FILM DEPOSIT + TEST, PLANT RESPONSE

17-14789 ALSO IN CATEGORY 9  
GARIGLIANO NUCLEAR POWER PLANT OPERATION REPORT FOR THE 1ST QUARTER OF 1966.  
ENTE NAZIONALE PER L ENERGIA ELETTRICA, ROME  
TID-23321 +. 7 PAGES, MARCH 31, 1966

REACTOR WAS SHUT DOWN THIS PERIOD TO REPAIR THE CRACKED DRAIN LINE ON THE REACTOR VESSEL AND TO RECOVER THE PIECES OF THE BROKEN POISON-SPARGER RING.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*OPERATIONS REPORT, GENERAL + FAILURE, PIPE + ITALY + MAINTENANCE AND REPAIR + REACTOR, BOILING WATER + SHUTDOWN SYSTEM, SECONDARY

17-14790 ALSO IN CATEGORIES 9 AND 5  
GARIGLIANO NUCLEAR POWER PLANT OPERATION REPORT FOR THE 4TH QUARTER OF 1965  
ENTE NAZIONALE PER L ENERGIA ELETTRICA, ROME  
TID-23320 +. 16 PAGES, DECEMBER 31, 1965

REACTOR WAS SHUT DOWN ALL THIS PERIOD FOR ZIRCALOY CHANNEL REPLACEMENT OF 108 SS CHANNELS. THE 20TH-STAGE DISK, FIVE BLADES, AND SHROUD BANDS WERE FOUND FAILED BECAUSE OF COMPLEX VIBRATION. EROSION WAS HARDLY APPRECIABLE. ALL FUEL ELEMENTS WERE CLEANED OF CRUD (70% COPPER OXIDE). ONE REACTOR DRAIN PIPE LEAKED AT A SS CONNECTION BETWEEN THE PIPE AND THE INCONEL VESSEL-NOZZLE. THE POISON SPARGER WAS FOUND BROKEN INTO PIECES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*OPERATIONS REPORT, GENERAL + FAILURE, EQUIPMENT + FAILURE, FATIGUE + FAILURE, PIPE + HEAT SINK + ITALY + REACTOR, BOILING WATER + REFUELING + SHUTDOWN SYSTEM, SECONDARY + SURFACE FILM DEPOSIT



CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-14791 ALSO IN CATEGORIES 6 AND 9  
HOWARD CL  
DEVELOPMENT PROGRAM ON THE GARIGLIANO NUCLEAR REACTOR. QUARTERLY REPORT NO. 15.  
GENERAL ELECTRIC COMPANY, SAN JOSE, ATOMIC POWER EQUIPMENT DEPT.  
GEAP-5190 + EURAEC-1717 +. 35 PAGES, JULY 1, 1966

DURING PLANT STABILITY TESTS, THE ON-LINE COMPUTER AIDED GREATLY BY COMPILING OPERATING LIMITS (HEAT FLUX AND MCHF RATIO), CALIBRATION OF IN-CORE INSTRUMENTS, ETC. OFF-LINE USAGE IN DATA REDUCTION SAVED MANY DAYS BETWEEN TESTS, ALTHOUGH EACH SUCH USAGE PROHIBITS ITS ON-LINE MONITORING. FEEDWATER-HEATER BYPASSING FOR TESTS CAUSED DAMAGE FROM VIBRATION. HIGH-VOID TESTS GAVE HALF SCRAMS FROM THE FLOAT-ACTUATED REACTOR-WATER-LEVEL SWITCHES. ONE RECIRCULATION-LOOP OPERATION GAVE UNBALANCED POWER/VOID DISTRIBUTIONS, AND FLOW OSCILLATIONS. A STUCK ROD ALSO GAVE FLUX OSCILLATIONS LOCALLY (PLUS-OR-MINUS 10% AT 0.33 CPS) DUE TO HYDRODYNAMIC DISTURBANCES. THE REACTOR IS MORE STABLE THAN PREDICTED WITH CORE AVERAGE VOIDS AT 50%.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*OPERATIONS REPORT, ANALYSIS + DATA PROCESSING + FAILURE, PIPE + FAILURE, SCRAM MECHANISM + HYDRODYNAMIC ANALYSIS + INSTRUMENTATION, ABNORMAL INDICATION + INSTRUMENTATION, IN CORE + ITALY + POWER DISTRIBUTION + REACTOR STABILITY + REACTOR, BOILING WATER + TEST, PLANT RESPONSE

17-14794  
NELSON, NR  
SAXTON PLUTONIUM PROJECT. QUARTERLY PROGRESS LETTER FOR THE PERIOD ENDING SEPT. 30, 1966.  
WESTINGHOUSE ELECTRIC CORP., ATOMIC POWER DIVISION  
FURAF-1713 +. 15 PAGES, OCTOBER 1966

(PAGE 3) - AN APPARENT DECREASE OF TEMPERATURE COEFFICIENT WITH DECREASING PH WAS RESOLVED AS A NEW SOLUBLE-BORON REACTIVITY COEFFICIENT WAS USED. (PAGE 6) - DIFFERENTIAL WORTH OF ROD 2, AS MEASURED BY THE ON-LINE REACTIVITY COMPUTER DURING A BORON DILUTION EXPERIMENT, DECREASED A FRACTION OF 0.20 FROM THE BEGINNING OF CORE LIFE, DUE TO LOCAL FUEL DEPLETION AND POWER REDISTRIBUTION. (PAGE 12) - BORON VS ENERGY OUTPUT APPEARS TO FOLLOW PREDICTIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*OPERATIONS REPORT, ANALYSIS + CONTROL ROD CALIBRATION + FUEL BURNUP + INSTRUMENTATION, OPERATING REACTIVITY + MODERATOR COEFFICIENT + POISON, SOLUBLE + REACTIVITY EFFECT, ANOMALOUS + REACTOR, PRESSURIZED WATER + SAXTON

17-14795 ALSO IN CATEGORY 9  
SANDSTROM S  
OPERATING EXPERIENCE AT THE AGESTA NUCLEAR POWER STATION.  
AKTIEBOLAGET ATOMENERGI, STOCKHOLM, SWEDEN  
AF-246 +. 115 PAGES, FIGURES, TABLES, SEPTEMBER 1966

EXPERIENCES GIVEN TO END OF 1965, FOLLOWING REPORT OF INITIAL OPERATION. THE PLANT IS OVERLY COMPLICATED BECAUSE DIFFERENT COMPANIES DESIGNED AND PURCHASED DIFFERENT COMPONENTS AND BECAUSE DIFFERENT OFFICES WORKED ON THE SAME COMPONENT BUT WITH DIFFERENT STANDARDS. OPERATING EXPERIENCE AND DIFFICULTIES WITH COMPONENTS (VALVES, INSTRUMENTS, ETC.) ARE DISCUSSED. REACTOR CORE AND SYSTEM TESTS ARE SUMMARIZED. AFTER TWO YEARS, NUCLEAR WARMUPS ARE ROUTINE. COMPLICATIONS WERE THE LARGE FLAT-TOPPED VESSEL HEAD AND MAINTAINING POWER CONSTANT AS CHAMBER CURRENT VS POWER CHANGED. DURING CRITICAL TESTS WITH VARYING MODERATOR HEIGHTS, A SCRAM RESULTED IN THE CRUSHING OF 11 EMERGENCY CONTROL-ROD SHOCK-ABSORBERS, WHICH WERE APPARENTLY NOT PROPERLY WATER-FILLED.

AVAILABILITY - MICROCARD EDITIONS, INC., ACCOUNTING AND SHIPPING DEPT., WEST SALEM, WISCONSIN 54669

\*OPERATING EXPERIENCE + \*OPERATIONS REPORT, ANALYSIS + AGESTA (SWEDISH 65 MWTN REACTOR) + CONTAINMENT, PRESSURE VESSEL + FAILURE, EQUIPMENT + FAILURE, SCRAM MECHANISM + HEAT EXCHANGER + INSTRUMENTATION, GENERAL + REACTOR, HEAVY WATER + REACTOR, PRESSURIZED WATER + VALVE

17-14801 ALSO IN CATEGORIES 1 AND 12  
ROMANKO J  
INVESTIGATION OF EXPLOSIONS IN IRRADIATED LIQUID-NITROGEN DEWARS  
GENERAL DYNAMICS  
N-66-13092 + NASA-CR-68435 + FZK-210 +. 122 PAGES, FIGURES, TABLES, REFERENCES, DEC. 15, 1965

LIQUID NITROGEN WITH VARIOUS IMPURITIES WAS IRRADIATED UNDER CONTROLLED CONDITIONS (OPEN AND CLOSED) TO GIVE INFORMATION ON CONDITIONS THAT CAUSE EXPLOSIONS. THE X-RAY IRRADIATIONS WERE CARRIED TO COMPLETION. THE REACTOR IRRADIATIONS PROGRAM WAS TERMINATED BEFORE THE COMPLETION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-14801 \*CONTINUED\*  
\*EXPLOSION + \*NITROGEN + \*TEST, DESTRUCTIVE + IN PILE LOOP + IRRADIATION TESTING

17-14803 ALSO IN CATEGORIES 9 AND 5  
SMELTZER P  
EVALUATION OF CORE THERMAL AND HYDRAULIC DATA OBTAINED DURING THE OPERATION OF PWR CORE-1 WITH THE FOURTH SEED. JANUARY 1963-FEBRUARY 1964  
BETTIS ATOMIC POWER LAB.  
WAPD-PWR-TE-151 +. 105 PAGES, FIGURES, DECEMBER 1964

IN-CORE THERMOCOUPLE CALIBRATION SHIFTED SEVERAL DEGREES WITHIN ONE YEAR. HALF THE 9 IN-CORE FLOW TRANSMITTERS WERE NOT WITHIN PLUS-OR-MINUS 1.25%. FLOW DISTRIBUTION WAS ADEQUATE. THE POWER SPLIT BETWEEN THE SEED AND BLANKET IS IN REASONABLE AGREEMENT OVER THE CYCLE WITH TNT CALCULATIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*OPERATIONS REPORT, ANALYSIS + FLOW DISTRIBUTION + FUEL BURNUP + INSTRUMENTATION, IN CORE + POWER DISTRIBUTION + REACTOR, PRESSURIZED WATER + REFUELING + SHIPPINGPORT

17-14808 ALSO IN CATEGORIES 13 AND 18  
DRL ADVISES IMPROVEMENTS TO NPS ADMINISTRATIVE CONTROL  
DIVISION OF REACTOR LICENSING  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(8), PAGES 6-7 (FEBRUARY 20, 1967)

DRL HAS BECOME INCREASINGLY CONCERNED ABOUT SPREAD OF LOW-LEVEL CONTAMINATION, LACK OF INTERNAL COMMUNICATION, AND VARYING DEGREE OF EFFECTIVENESS OF CORRECTIVE ACTIONS. NEW DEFICIENCIES ARE FOUND AT EACH INSPECTION, SIMILAR TO PAST ONES. DRL REQUESTS MODIFICATIONS TO MANAGEMENT SYSTEM AND FACILITY SUFFICIENT TO DEMONSTRATE IN 60 DAYS THAT ABNORMAL SITUATIONS CAN BE PREVENTED OR CONTROLLED. DRL WILL SEND PROPOSED TECHNICAL-SPECIFICATION REVISIONS FOR RADIOACTIVE-EFFLUENT CONTROL, SINCE THIS HAS BEEN HANDLED DIFFERENTLY FROM THE FINAL SAFETY-ANALYSIS REPORT.

\*ADMINISTRATIVE CONTROLS AND PRACTICES + \*WASTE DISPOSAL, GENERAL + EFFLUENT + FUEL REPROCESSING + INSPECTION AND COMPLIANCE + MONITOR, RADIATION, STACK + NPS (NUCLEAR FUEL SERVICES) + OPERATING LIMITS/TECHNICAL SPECIFICATIONS

17-14843 ALSO IN CATEGORY 6  
GARIGLIANO NUCLEAR POWER STATION RESEARCH PROGRAM. QUARTERLY REPORT NO. 9.  
ENTE NAZIONALE PER L ENERGIA ELETTRICA, ROME  
EURAE-1697 + EUR-2884 +. 23 PAGES, JULY 1, 1966

OF SAFETY INTEREST ARE - THE BREAKDOWN OF INSULATION IN THREE FAN MEASURING DEVICES AND TRANSFER FUNCTION MEASUREMENTS BY SINUSOIDAL INPUT AND NOISE ANALYSIS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*ITALY + \*REACTOR, BOILING WATER + INSTRUMENTATION, ABNORMAL INDICATION + NOISE ANALYSIS + TRANSFER FUNCTION

17-14846 ALSO IN CATEGORY 18  
TEXAS A AND M CHANGE 5 - POOL COOLING SYSTEM  
DIVISION OF REACTOR LICENSING, AEC  
4 PAGES, JANUARY 1966, DOCKET NO. 50-128

ORGANIZATION-CHART JOB TITLES REVISED. 100-KW OPERATION WITH THE REDUCED POOL VOLUME INCREASES POOL TEMPERATURE 1-2 F, AND EVAPORATION INCREASE OVERLOADS BUILDING AIR CONDITIONING. PIPING PENETRATIONS INSTALLED IN ORIGINAL CONSTRUCTION WILL BE USED. THE PRIMARY SYSTEM COMPONENTS WILL BE IN A LOCKED CONCRETE BUILDING.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + \*SAFETY EVALUATION + MAIN COOLING SYSTEM + REACTOR, POOL TYPE + VENTILATION SYSTEM

17-14849 ALSO IN CATEGORIES 11 AND 18  
ELK RIVER CHANGE 9A - EXTENDED DATE FOR CONTAINMENT LEAK RATE TEST  
DIVISION OF REACTOR LICENSING, AEC  
2 PAGES, JANUARY 1967, DOCKET NO. 115-1

DRL AUTHORIZES TEST BE POSTPONED NOT LATER THAN MAY 15, 1967, SINCE THE REFERENCE-SYSTEM REVISIONS ARE INCOMPLETE.

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-14849 \*CONTINUED\*  
AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*CONTAINMENT REFERENCE MEASURING SYSTEM + \*MODIFICATION, SYSTEM OR EQUIPMENT +  
\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + \*TEST, LEAK RATE + ELK RIVER + REACTOR, BOILING WATER

17-14850 ALSO IN CATEGORY 18  
CHANGE 1 TO MISSOURI UNIVERSITY FLUX TRAP REACTOR - LESS NEGATIVE TEMPERATURE COEFFICIENT.  
DIVISION OF REACTOR LICENSING, AEC  
3 PAGES, JANUARY 25, 1967, DOCKET NO. 50-186

DURING INITIAL PHYSICS TESTS, THE COLUMBIA MO. REACTOR WAS FOUND TO HAVE A CORE TEMPERATURE COEFFICIENT OF  $-3.4 \times 10$  TO THE MINUS 5TH DELTA K/F, INSTEAD OF THE VALUE (MINUS 7TH) USED IN ANALYSIS. REEVALUATION BASED ON A COEFFICIENT OF MINUS 3 DOES NOT CHANGE STARTING ACCIDENT, BUT CORE DAMAGE MAY BEGIN WITH A STEP INCREASE OF 0.004 DELTA K. THEREFORE LIMITING WORTH OF AN INDIVIDUAL EXPERIMENT (AND SUM OF ALL EXPERIMENTS) IS TO BE REDUCED FROM 0.007 TO 0.004 DELTA K, AND AVERAGE CORE COEFFICIENT MUST BE MORE NEGATIVE THAN MINUS  $3 \times 10$  TO THE MINUS 5TH DELTA K/F.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + REACTOR, FLUX TRAP

17-14853  
TECHNICAL PROGRESS REPORT. PRESSURIZED WATER REACTOR (PWR) PROJECT. JULY 23-OCTOBER 21, 1966  
WESTINGHOUSE ELECTRIC CORP., BETTIS ATOMIC POWER LABORATORY  
WAPD-MRP-118 +. 115 PAGES, FIGURES, TABLES, OCTOBER 1966

THIS REPORT IS ONE OF A SERIES OF SUCH REPORTS ON THE SUBJECTS ENUMERATED BELOW. SECTIONS INCLUDE - I PWR ENGINEERING (A) REACTOR PLANT SUPPORT, (B) REACTOR MECHANICAL DESIGN, (C) REACTOR THERMAL DESIGN, (D) REACTOR PHYSICS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*OPERATIONS REPORT, ANALYSIS + \*RESEARCH AND DEVELOPMENT PROGRAM + FUEL ELEMENT + OPERATING EXPERIENCE + REACTOR PHYSICS + REACTOR, PRESSURIZED WATER + SHIPPINGPORT + THERMAL ANALYSIS

17-14854  
SELECTED OPERATIONS EXPERIENCE  
WESTINGHOUSE ELECTRIC CORP., BETTIS ATOMIC POWER LABORATORY  
WAPD-MRP-118 +. 115 PAGES, FIGURES, TABLES, OCTOBER 1966

(PAGE 1) BOILER 1B WAS ISOLATED WHEN TUBE LEAKAGE REACHED 30-50 GPH, AND LEAKAGE REACHED 100 GPM DURING THE LOOP SHUTDOWN. ONE CENTRAL TUBE AT THE MID POINT OF THE U BEND LEAKS. (PAGE 2-41) A COMPLETE REVIEW OF VARIOUS REACTOR ACCIDENTS AND EFFECTIVENESS OF PROTECTION SYSTEMS WAS MADE FOR CORE 2 FOR 5-10,000 EFPH CONDITIONS. (PAGE 43) A RADIOLOGICAL CONTROL REPORT OF PWP-2 REFUELING WAS DRAFTED. COMPARTMENT RADIATIONS LEVELS WERE SURVEYED IN PREPARATION FOR AN INTERNAL INSPECTION OF THE PRESSURIZER. (PAGE 45, 66-68) TESTS ON FLOW VARIATION RELATED TO PH VARIATIONS WAS INTERRUPTED BY 1B ISOLATION EFFECTS. (PAGE 55-57) CORE-1 VESSEL HEAD COMPONENTS WERE EXAMINED. (PAGE 64) TENSILE TESTS ON A HAFNIUM CONTROL ROD (7 TIMES 10 TO THE 21ST NVT ABOVE 1 MEV) INDICATED AN UNEXPECTED SHARP LOSS OF DUCTILITY, GREATER AT HIGH TEMPERATURES (600 F). (PAGE 89-102) VARIOUS IRRADIATION TESTS ON LOW DENSITY ZR02-CAO-UO2 FOR PWR2 SEED 2 REPORTED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*OPERATIONS REPORT, ANALYSIS + CONTROL ROD BURNUP + COOLANT QUALITY + FAILURE, TUBING + FLOW ORIFICE OR RESTRICTION + FUEL ELEMENT + HEAT EXCHANGER + IRRADIATION TESTING + PRESSURIZER + REACTOR, PRESSURIZED WATER + SHIPPINGPORT + SURVEY, RADIATION, GENERAL

17-14856  
HALLAM NUCLEAR POWER FACILITY MONTHLY OPERATING REPORT NO. 31, FEBRUARY 1965  
CONSUMERS PUBLIC POWER DISTRICT, HALLAM  
TID-21893 +. 79 PAGES, FEBRUARY 1965, DOCKET NO. 115-3

THIS REPORT IS ONE OF A SERIES. SINCE THE REACTOR IS BEING DISMANTLED, THE PERTINENT INFORMATION CONCERNS MAINTENANCE, CORE-ELEMENT TRANSFERS, RADIATION SAFETY AND CONTROL. SHORT SUMMARIES OF EACH DAYS WORK ARE GIVEN.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*OPERATIONS REPORT, GENERAL + \*REACTOR DECOMMISSIONING EXPERIENCE + HALLAM + REACTOR, GRAPHITE MODERATED + REACTOR, LIQUID METAL COOLED

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-14857

HALLAM DIESEL CONTROLS PREVENT A START DURING TEST  
CONSUMERS PUBLIC POWER DISTRICT, HALLAM  
TID-21893 +. 1 PAGE FROM HALLAM NUCLEAR POWER FACILITY MONTHLY OPERATING REPORT NO. 31, FEBRUARY 1965,  
DOCKET NO. 115-3

A TEST OF THE DIESEL GENERATOR REVEALED THAT IT WOULD NOT START AUTOMATICALLY UPON POWER FAILURE AND THAT ITS BREAKER WOULD NOT CLOSE IN AFTER THE GENERATOR WAS STARTED MANUALLY. THE INTERLOCK CONTACTS ON BREAKER 52B-1 WERE BINDING ENOUGH TO PREVENT THE MAIN CONTACTS FROM OPENING FULLY. CONSEQUENTLY, THE DIESEL BREAKER WOULD NOT CLOSE TO PICK UP THE LOAD.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*OPERATIONS REPORT, GENERAL + FAILURE, COMPONENT + GENERATOR, DIESEL + HALLAM + INSTRUMENTATION, INTERLOCK + REACTOR, GRAPHITE MODERATED + REACTOR, LIQUID METAL COOLED

17-14858

HALLAM NUCLEAR POWER FACILITY MONTHLY OPERATING REPORT NO. 32, MARCH 1965  
CONSUMERS PUBLIC POWER DISTRICT, HALLAM, NEBR.  
TID-21861 +. 77 PAGES, MARCH 1965, DOCKET NO. 115-3

THIS REPORT IS ONE OF A SERIES. SINCE THE REACTOR IS BEING DISMANTLED, THE PERTINENT INFORMATION CONCERNS MAINTENANCE, CORE-ELEMENT TRANSFERS, RADIATION SAFETY AND CONTROL. SHORT SUMMARIES OF EACH DAYS WORK ARE GIVEN.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*OPERATIONS REPORT, GENERAL + \*REACTOR DECOMMISSIONING EXPERIENCE + HALLAM + REACTOR, GRAPHITE MODERATED + REACTOR, LIQUID METAL COOLED

17-14859

HALLAM NUCLEAR POWER FACILITY MONTHLY OPERATING REPORT NO. 35, JUNE 1965  
CONSUMERS PUBLIC POWER DISTRICT, HALLAM  
TID-22135 +. 52 PAGES, JUNE 1965, DOCKET NO. 115-3

THIS REPORT IS ONE OF A SERIES. SINCE THE REACTOR IS BEING DISMANTLED, THE PERTINENT INFORMATION CONCERNS MAINTENANCE, CORE-ELEMENT TRANSFERS, RADIATION SAFETY AND CONTROL. SHORT SUMMARIES OF EACH DAYS WORK ARE GIVEN.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*OPERATIONS REPORT, GENERAL + \*REACTOR DECOMMISSIONING EXPERIENCE + HALLAM + REACTOR, GRAPHITE MODERATED + REACTOR, LIQUID METAL COOLED

17-14860

ALSO IN CATEGORY 1

PARKER WB  
DEVELOPMENT OF A RECOVERY BOILER OPERATOR TRAINING PROGRAM  
THE HARTFORD STEAM BOILER INSPECTION AND INSURANCE COMPANY  
3 PAGES, PAGES 231-233, JULY 7, 1965, PRESENTED AT THE 20TH ENGINEERING CONFERENCE OF THE TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY HELD IN MINNEAPOLIS, MINN., SEPTEMBER 12-16, 1965

WHEN THE FREQUENCY OF EXPLOSIONS IN BLACK-LIQUOR-RECOVERY BOILERS CONTINUED TO INCREASE, A GROUP MET IN 1962 TO TAKE INDUSTRY-WIDE ACTION. A QUESTIONNAIRE REVEALED THAT EXPLOSIONS WERE CAUSED BY INCORRECT OPERATING PROCEDURES AND MAINTENANCE. A SUBCOMMITTEE PRODUCED A TRAINING-MANUAL OUTLINE AND TRAINING PROGRAM IN 1965, SO THAT LOCAL PLANT SUPERVISION COULD REVISE THE MANUAL TO SUIT LOCAL PLANT DETAILS. REFRESHER COURSES ARE ADVISED ON PLANT SHUTDOWN UNDER EMERGENCY CONDITIONS. TRAINING-MANUAL OUTLINE INCLUDED AND DISCUSSED.

AVAILABILITY - TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY, 360 LEXINGTON AVENUE, NEW YORK, NEW YORK 10017

\*PROCEDURES AND MANUALS + \*STAFFING, TRAINING, QUALIFICATION + EXPLOSION + HEAT EXCHANGER + INCIDENT, ACTUAL, NONNUCLEAR

17-14878

ALSO IN CATEGORIES 9 AND 15

STATUS OF N S SAVANNAH OPERATIONS REVIEW  
FAST ANOMIC SHIP TRANSPORT INC.  
4 PAGES, DECEMBER 8, 1966, DOCKET NO. 50-238

(1) AT-SEA CHARCOAL-FILTER TESTING. THE MAST TEST DEVICE IS NOT RUGGED ENOUGH FOR USE AT SEA. FREON 112, I-127, AND HARVARD COLORIMETRIC TESTS ARE BEING EVALUATED FOR TESTS PRIOR TO PORT

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-14878 \*CONTINUED\*

ENTRY. (2) RETESTS OF FILTERS WILL BE MADE FOR GASKET OR FILTER LEAKAGE. OILY RESIDUE FOUND ON ABSOLUTE FILTERS WAS NEITHER DOP NOR ROD-DRIVE OIL. (3) PROVISIONS FOR OPERATION WITH IMMOVABLE CONTROL RODS WERE MADE IN PROPOSED CHANGE 8. (4) SPECIFICATIONS WERE PREPARED FOR A RADIOLOGICAL INSTRUMENT TO PROVIDE POST-MCA RADIOLOGICAL INFORMATION TO THE MASTER. NO OTHER FACILITY IS KNOWN TO HAVE SUCH A SYSTEM. (5) REACTOR SAFETY SYSTEM REVIEW IS 25 PERCENT COMPLETE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY REVIEW (OPERATIONS, EXPERIMENTS) + CHARCOAL + FILTER + FILTER, DAMAGED + MONITOR, RADIATION, EMERGENCY + N S SAVANNAH + OPERATING EXPERIENCE + REACTOR SAFETY SYSTEM + REACTOR, MARITIME + REACTOR, PRESSURIZED WATER + SHUTDOWN MARGIN + TEST, FILTER

17-14890

FIFTH SEMI-ANNUAL BIG ROCK POINT SUMMARY OF OPERATIONS - MAY 1 TO OCTOBER 31, 1966

CONSUMERS POWER COMPANY

16 PAGES, 1 TABLE, DECEMBER 20, 1966, DOCKET NO. 50-155

THIS REPORT IS ONE OF A SERIES OF SUCH REPORTS ON THE SUBJECTS ENUMERATED - (1) SUMMARIES OF OPERATIONS AND SHUTDOWNS, (2) RELEASES AND SHIPMENTS OF RADIOACTIVE MATERIAL, (3) RADIOACTIVITY LEVELS IN FLUID SYSTEMS, (4) MAINTENANCE, (5) CHANGES AND EXPERIMENTS, (6) PERIODIC TECH.-SPEC. TESTS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*OPERATIONS SUMMARY FOR AEC + BIG ROCK POINT + EFFLUENT + FISSION PRODUCT RETENTION + MAINTENANCE AND REPAIR + OPERATING LIMITS/TECHNICAL SPECIFICATIONS + REACTOR, BOILING WATER + TEST, SYSTEM OPERABILITY + WASTE DISPOSAL, GENERAL

17-14891

ALSO IN CATEGORY 9

FAILED FUEL IN BIG ROCK POINT

CONSUMERS POWER COMPANY

7 PAGES, 1 TABLE, REPORT OF OPERATION OF BIG ROCK POINT NUCLEAR PLANT, MAY 1, 1966-OCTOBER 31, 1966, PAGES 1-7, DECEMBER 20, 1966, DOCKET NO. 50-155

ON SEVERAL OCCASIONS THE POWER LEVEL WAS REDUCED FURTHER (EVENTUALLY TO 35 MWE) TO MAINTAIN OFF-GAS DISCHARGE BELOW 0.05 CURIE/SEC. FLUX TILTING INDICATED THE CENTRAL CORE REGION, AND DRY SHIPPING LOCATED THE 11 FAILED ELEMENTS. A LEAKING BUNDLE GAVE 100 TIMES THE XE-133 AS A GOOD BUNDLE. FOUR DEVELOPMENTAL (11-MIL INCOLOY CLAD, SWAGE-PACKED POWDER) AND 3 OTHER ELEMENTS (ZIRCALOY-2 CLAD, VIBRATORILY PACKED POWDER) FAILED GROSSLY DUE TO LONGITUDINAL SPLITS IN THE CLADDING OR TO CIRCUMFERENTIAL CRACKS AT PELLET INTERFACES. IN THE OTHER ZIRCALOY-2-CLAD ELEMENTS, THERE WERE ONLY VERY LOW LEAKAGE SIGNALS, BUT THE WELD AREA ON THE END PLUGS IS SMALLER THAN USUAL. THE PRIMARY ACTIVITY WAS FROM THE 4 INCOLOY-800-CLAD ELEMENTS (FAILED AT HALF DESIGN LIFE OF 15,000 MWD/T BECAUSE OF INTERGRANULAR STRESS CORROSION). ABOUT 4 KG OF URANIUM DIOXIDE ESCAPED THE CLAD.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*FAILURE, CLADDING + \*FAILURE, FUEL ELEMENT + \*FUEL, POWDER TYPE + \*INCONEL + \*OPERATIONS SUMMARY FOR AEC + BIG ROCK POINT + CORROSION + INSTRUMENTATION, DETECTION FAILED FUEL ELEMENT + REACTOR, BOILING WATER + STRESS

17-14892

ALSO IN CATEGORY 9

CONTROL ROD PROBLEMS

CONSUMERS POWER COMPANY

2 PAGES, REPORT OF OPERATION OF BIG ROCK POINT NUCLEAR PLANT, MAY 1, 1966-OCTOBER 31, 1966, PAGE 1 AND 6, DECEMBER 20, 1966, DOCKET NO. 50-155

A CRACKED 3-IN. STAINLESS-STEEL TEE (WHERE ROD-DRIVE BYPASS WATER MIXES WITH CLEANUP-RETURN WATER) FAILED FROM THERMAL STRESS FATIGUE (DUE TO A DELTA T OF 400 F) EVEN THOUGH THERE IS A MIXING SLEEVE. PIPING WAS LATER MODIFIED. DRIVES D-2 AND B-5 COULD NOT BE WITHDRAWN AFTER THE REFUELING STARTUP. B-5 WAS JAMMED BY A BOLT FROM A GRID-BAR ASSEMBLY. FIVE CRACKED BOLTS WERE REPLACED ON THE ASSEMBLY. APPARENTLY INADEQUATE HEAT TREATMENT (UNDOCUMENTED BOLT HISTORY) AND COLD-WORKING AFTER INSTALLATION OR OVER-TORQUING MAY HAVE OCCURRED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*FAILURE, COMPONENT + \*FAILURE, SCRAM MECHANISM + \*OPERATIONS SUMMARY FOR AEC + BIG ROCK POINT + CONTROL ROD DRIVE + CORE COMPONENTS, MISCELLANEOUS + REACTOR, BOILING WATER

17-14893

ALSO IN CATEGORY 9

BYPASS VALVE PROBLEMS ON LOSS OF LOAD INCIDENT

CONSUMERS POWER COMPANY

7 PAGES, 1 TABLE, REPORT OF OPERATION OF BIG ROCK POINT NUCLEAR PLANT, MAY 1, 1966-OCTOBER 31, 1966, PAGES 1-7, DECEMBER 20, 1966, DOCKET NO. 50-155

ON AUGUST 8, THE 138-KV BREAKER OPENED DURING A STORM. A NONOPTIMUM SETTING OPENED THE

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-14893 \*CONTINUED\*

TURBINE BYPASS VALVE TOO SLOWLY TO PREVENT A HIGH-PRESSURE SCRAM. THE TURBINE HELD THE STATION LOAD FOR 4 MIN (A SNEAK-CIRCUIT TEST SIGNAL THROUGH THE INDICATING LIGHTS HELD THE BREAKER OPEN), BUT THE TURBINE WAS MANUALLY TRIPPED WHEN PRESSURE DECREASED TO 960 PSIG. ON THE RESULTING LOSS OF STATION POWER, THE BYPASS VALVE OPENED BEFORE THE DC-OPERATED ISOLATION VALVE CLOSED. THE PRESSURE BLEW THE TURBINE RUPTURE DIAPHRAGM. THE PILOT VALVES FOR THE BYPASS VALVES DID NOT HAVE THE PROPER MAGNETIC BIAS, AND THE VALVE WAS TEMPORARILY GIVEN A DC-CLOSING SIGNAL ON LOSS OF POWER.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*ACCIDENT, LOAD REJECTION + \*ACCIDENT, LOSS OF POWER + \*FAILURE, DESIGN ERROR +  
\*INCIDENT, ACTUAL, EQUIPMENT + \*INSTRUMENTATION, ABNORMAL INDICATION + \*OPERATIONS SUMMARY FOR AEC +  
ACCIDENT, STEAM LINE RUPTURE + BIG ROCK POINT + OPERATING EXPERIENCE + REACTOR, BOILING WATER

17-1489P ALSO IN CATEGORY 5

EVESR FUEL FAILURE DUE TO STEAM FLOW REDUCTION  
GENERAL ELECTRIC COMPANY, SAN JOSE

2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(9) PAGES 6-7 (FEBRUARY 27, 1967) DOCKET NO. 50-183

DURING STRAIN-CYCLE TESTING OF A MARK-III FUEL ELEMENT, COOLANT FLOW WAS ACCIDENTALLY REDUCED MOMENTARILY WHILE INVESTIGATING A MALFUNCTIONING FLOW CONTROL VALVE. A FUEL-CLADDING FAILURE RESULTED. OPERATION WAS RESUMED AFTER INVESTIGATION, AND THE SUPERHEAT TEST PROGRAM TERMINATED ON FEBRUARY 1, 1967.

\*FAILURE, FUEL ELEMENT + \*FAILURE, OPERATOR ERROR + \*FLOW BLOCKAGE + \*INCIDENT, ACTUAL, HUMAN ERROR +  
REACTOR, BOILING WATER + REACTOR, SUPERHEAT + VESR (VALLECITOS EXP. SUPERHEAT REACTOR-ESADA)

17-14899 ALSO IN CATEGORY 18

PETRY WM  
UNIVERSITY OF AKRON DISMANTLING THEIR AGN-201  
UNIVERSITY OF AKRON

1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(9) PAGE 7 (FEBRUARY 27, 1967) DOCKET NO. 50-64

U. OF AKRON OHIO WISHES AUTHORITY TO TRANSFER ITS REACTOR TO GEORGIA INSTITUTE OF TECHNOLOGY.

\*REACTOR DECOMMISSIONING EXPERIENCE + AGN (TRAINING REACTOR, AEROJET-GEN, NUCLEONICS) + REACTOR, TRAINING

17-14947 ALSO IN CATEGORY 9

VANDERVELDE VD  
AN INSTRUMENT FOR LOCATING FAILED FUEL ELEMENTS IN THE HWCTR  
SAVANNAH RIVER LABORATORY

DP-1049 +. 11 PAGES, FIGURES, TABLES, PAGES 21-31 OF THE HEAVY WATER COMPONENTS TEST REACTOR- SAFETY SYSTEMS, FUEL FAILURE DETECTION, AND STANDBY CONDITION, MAY 1966

FOUR SYSTEMS WERE INITIALLY USED (0.05-0.3 MEV GAMMA MONITOR, GROSS DELAYED-NEUTRON MONITOR, SCANNING NEUTRON MONITOR, AND THE LOW-ENERGY GAMMA PROVED MOST RELIABLE FOR DETECTING FAILURES BUT NOT FOR LOCATING THEM. THEN A THIN-CRYSTAL GAMMA MONITOR WAS INSTALLED NEAR THE EFFLUENT OF THE MULTIPORT FUEL-COOLANT SAMPLING VALVE, AND IN ONE CASE INDICATED A FUEL FAILURE LONG BEFORE THE OTHER FOUR. MULTIPORT VALVE PROBLEMS LIMITED SYSTEM USE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*INSTRUMENTATION, DETECTION FAILED FUEL ELEMENT + \*OPERATING EXPERIENCE + FAILURE, FUEL ELEMENT +  
HWCTR (HEAVY WATER COMPONENT TEST REACTOR) + REACTOR, HEAVY WATER + REACTOR, PRESSURE TUBE + REACTOR, TEST

17-15005 ALSO IN CATEGORIES 14 AND 15

STATEMENT TO JOINT COMMITTEE ON ATOMIC ENERGY ON AEC BIOLOGY AND MEDICINE PROGRAM  
JOINT COMMITTEE ON ATOMIC ENERGY

1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(10), PAGE 35 (MARCH 6, 1967)

INCLUDED IN REPORT ARE BRIEF SUMMARIES OF (1) UTAH CHILDREN EXPOSED TO I-131 FROM WEAPONS TESTS, (2) MEDICAL STUDIES ON RONGELAP ACCIDENTAL EXPOSURES, 1954, (3) URANIUM-MILL TAILING CONTAMINATION, (4) EXPOSURES OF URANIUM MINE AND MILL WORKERS, (5) ACCIDENTAL EXPOSURES TO PLUTONIUM. A PLUTONIUM REGISTRY WILL BE STARTED TO CHECK PEOPLE WHO HAVE INGESTED PLUTONIUM.

\*INCIDENT, ACTUAL, GENERAL + \*RADIATION INJURY, TREATMENT OF + FALLOUT + FISSION PRODUCT, IODINE +  
MILLING + MINING + PERSONNEL EXPOSURE, RADIATION + PLUTONIUM

17-15007 ALSO IN CATEGORIES 13 AND 18

NUCLEAR FUEL SERVICES PLANT SHUTDOWN, FEBRUARY 17  
NUCLEAR FUEL SERVICES, INC., WHEATON

1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(10), PAGE 26 (MARCH 6, 1967) DOCKET NO. 50-101

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-15007 \*CONTINUED\*

NFS WILL SHUT DOWN FOR 30 DAYS FOR MAINTENANCE AND EXAMINE OPERATIONS FROM VIEW POINT OF AEC FEBRUARY 7 LETTER. A LETTER 14 FEBRUARY RELATED AN ACCIDENTAL TRANSFER OF LOW-LEVEL WASTE SOLUTIONS TO THE WASTE INTERCEPTOR.

\*ADMINISTRATIVE CONTROLS AND PRACTICES + \*INCIDENT, ACTUAL, HUMAN ERROR + FUEL REPROCESSING + NFS (NUCLEAR FUEL SERVICES) + WASTE HANDLING

17-15008 ALSO IN CATEGORIES 13 AND 18  
NUCLEAR FUEL SERVICES TO REORGANIZE PLANT OPERATIONS, FEBRUARY 11, 1967  
NUCLEAR FUEL SERVICES, INC., WHEATON  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(10), PAGES 26 (MARCH 6, 1967) DOCKET NO. 50-201

NFS REPLY TO AEC LETTER OF FEBRUARY 7 MENTIONS A FORTHCOMING REORGANIZATION AND APPOINTS DR. RUSSEL WISCHOW AS ASSISTANT GENERAL MANAGER FOR THE WEST VALLEY PLANT. HE WILL COORDINATE AEC MATTERS AND HAVE EXTENSIVE ADDITIONAL DUTIES.

\*ADMINISTRATIVE CONTROLS AND PRACTICES + \*RADIATION SAFETY AND CONTROL + \*STAFFING, TRAINING, QUALIFICATION + NFS (NUCLEAR FUEL SERVICES) + RADIOCHEMICAL PROCESSING

17-15009 ALSO IN CATEGORIES 6 AND 18  
POWER INCREASE DURING LOAD REJECTION TESTS AT PATHFINDER, FEBRUARY 20, 1967  
NORTHERN STATES POWER, MINNEAPOLIS  
1 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(10), PAGES 25 (MARCH 6, 1967) DOCKET NO. 50-130

LOAD-REJECTION TESTS AT 20, 50, AND 70% POWER WERE WITHOUT INCIDENT, BUT AT 90% A HIGH-FLUX SCRAM OCCURRED. AT 85%, THE POWER INCREASED TO ABOUT 110% IN ABOUT 0.6 SEC AND LEVELED OFF. THE INCREASE WAS CAUSED BY TURBINE OVERSPEED, WITH THE INCREASED FREQUENCY INCREASING THE RECIRCULATION FLOW TO ADD \$0.25 BUT FASTER THAN THE \$0.12/SEC TECHNICAL-SPECIFICATION LIMIT. A LOAD-DUMP ANTICIPATOR CLOSES THROTTLE VALVES TO HOLD TURBINE AT STATION LOAD.

\*ACCIDENT, REACTIVITY + \*FLOW, RECIRCULATION + \*INCIDENT, ACTUAL, GENERAL + \*REACTOR STARTUP EXPERIENCE, INITIAL + ACCIDENT, LOAD REJECTION + PATHFINDER + REACTOR, SUPERHEAT + TEST, SYSTEM OPERABILITY

17-15010 ALSO IN CATEGORIES 14 AND 18  
MIT REACTOR HEAT EXCHANGER LEAK, FEBRUARY 21-23, 1967  
MASSACHUSETTS INSTITUTE OF TECHNOLOGY  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(10), PAGE 24 (MARCH 6, 1967) DOCKET NO. 50-20

15 GAL OF D2O (TRITIUM CONCENTRATION 1.3 MILLICURIES/CC) REACHED THE 20,000-GAL H2O SECONDARY SYSTEM. SOME CONTAMINATED SECONDARY WATER WAS RELEASED. THE HEAT EXCHANGER WILL BE FIXED. PERMISSION ASKED TO DISCHARGE SECONDARY WATER AT 5 GPM INTO SANITARY SEWER AND CHARLES RIVER.

\*FAILURE, PIPE + \*INCIDENT, ACTUAL, EQUIPMENT + EFFLUENT + REACTOR, HEAVY WATER + REACTOR, RESEARCH + TRITIUM + WASTE DISPOSAL, RIVER

17-15011 ALSO IN CATEGORIES 9 AND 18  
STUCK CONTROL ROD AT GETR, FEBRUARY 1967  
GENERAL ELECTRIC, SAN JOSE  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(10), PAGES 23-24 (MARCH 6, 1967) DOCKET NO. 50-20

A SHORT BOLT FROM A FUEL TOOL FELL INTO A CONTROL-ROD GUIDE DURING RELOADING AND WAS DISCOVERED ON STARTUP CHECKS WHEN ROD 5 STUCK AT 22 IN. WITHDRAWN. ONLY SELF-LOCKING NUTS WILL BE USED FROM NOW ON.

\*FAILURE, SCRAM MECHANISM + \*INCIDENT, ACTUAL, EQUIPMENT + FUEL HANDLING MACHINE + GETR (GENERAL ELECTRIC TEST REACTOR) + REACTOR, TEST

17-15035  
TABOR WH + HURT SS  
OAK RIDGE RESEARCH REACTOR QUARTERLY REPORT, JANUARY-MARCH 1966  
OAK RIDGE NATIONAL LABORATORY, TENNESSEE  
ORNL-TM-1678 +. 35 PAGES, 3 FIGURES, 13 TABLES, OCTOBER 24, 1966

PRESENTS MEASUREMENTS OF BERYLLIUM REFLECTOR PIECES TO DETERMINE BOWING AND ELONGATION AS A RESULT OF FAST-NEUTRON DAMAGE. A MANAGEMENT PROGRAM, STARTED IN 1963 TO ENSURE UNIFORM DAMAGE TO BOTH SIDES OF THE BERYLLIUM, HAS BEEN EFFECTIVE IN MINIMIZING BOWING, WHICH COULD REDUCE COOLANT FLOW AND THUS INCREASE BERYLLIUM DAMAGE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*FAST NEUTRON + \*OPERATING EXPERIENCE + \*RADIATION DAMAGE + ADMINISTRATIVE CONTROLS AND PRACTICES + BERYLLIUM + ORR (OAK RIDGE RESEARCH REACTOR) + REACTOR, AEC OWNED + REACTOR, RESEARCH + REACTOR, TEST +

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE17-15035 \*CONTINUED\*  
REFLECTOR17-15038  
VACUUM-DRYBOX IMPLSION  
DIVISION OF OPERATIONAL SAFETY, U.S. ATOMIC ENERGY COMMISSION, WASHINGTON, D. C. 20545  
1 PAGE, SERIOUS ACCIDENTS, ISSUE NO. 276, (FEBRUARY 3, 1967)

A SIMILAR WINDOW SHOWED A SMALL CRACK WHERE FLEXING OF THE O-RING SEAL ALLOWED THE GLASS TO TOUCH A HIGH SPOT IN THE PANEL CAUSED BY WELDING DISTORTION. RECOMMENDATIONS - MACHINE FLAT THE O-RING SUPPORT CHANNEL, INSPECT, REPLACE WINDOW GASKETS REGULARLY, PROVIDE AN IMPLSION SHIELD.

AVAILABILITY - ATOMIC ENERGY COMMISSION, DIVISION OF PUBLIC INFORMATION, WASHINGTON, D. C. 20545

\*EXPLOSION + \*FAILURE, FATIGUE + \*GLOVE BOX + ADMINISTRATIVE CONTROLS AND PRACTICES + SHIELDING + WELDING

17-15039 ALSO IN CATEGORIES 9 AND 15  
HAZARDS CONTROL QUARTERLY REPORT NO. 21, APRIL - JUNE, 1965  
ERNEST O. LAWRENCE RADIATION LABORATORY, UNIVERSITY OF CALIFORNIA, LIVERMORE, CALIFORNIA  
UCRL-14351 +. 37 PAGES, 29 FIGURES, APRIL - JUNE, 1965

(PAGES 1-9). - A PORTABLE BATTERY-OPERATED BETA AIR MONITOR WILL DETECT 1 MPC OF I-131 IN 10 MIN, OPERATES FOR 9 HP ON A RECHARGING. (PAGES 13-15). - A SMALL 60-W LOW-COST TRANSISTORIZED ALPHA AIR MONITOR WAS BUILT. (PAGES 35-36). - A CYCLONE SEPARATOR WORKED WELL FOR CONDENSING FOAM USED IN GLOVE-BOX FIRES.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*FIRE + \*MONITOR, RADIATION, AIR + \*MONITOR, RADIATION, EMERGENCY + ALPHA EMITTER + FISSION PRODUCT, IODINE + GLOVE BOX

17-15048  
RURAL COOPERATIVE POWER ASSOCIATIONS ELK RIVER REACTOR. FIFTIETH MONTHLY OPERATING REPORT  
RURAL COOPERATIVE POWER ASSOCIATION  
COO-651-39 +. 22 PAGES, 4 FIGURES, DECEMBER 1966, DOCKET NO. 115-1

(1) ON DEC. 28, A SCRAM CAME FROM A SHORT ON THE FAIL-FREE POWER BUS WHEN PLUGGING IN A POORLY DESIGNED STACK-MONITOR ELECTRICAL PLUG. COOLANT IODINE INCREASED TWENTYFOLD AFTER THE SCRAM. (2) MAINTAINING FULL HEAT POWER WITH THE HIGH-PRESSURE FEEDWATER HEATER BYPASSED SHOWED THERMAL EFFICIENCY DOWN 2%, CONTROL ROD IN 2.4 IN. (0.2% REACTIVITY), AND ION CHAMBER CURRENTS DOWN 8% (LESS NEUTRON ATTENUATIONS). CORE NOW PREDICTED AT 13,490 MWD, BUT DERATING WILL ADD 1000 MWD PER 1.9 MW(TH) DROP IN POWER.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*OPERATIONS REPORT, GENERAL + ELK RIVER + FISSION PRODUCT, IODINE + FUEL BURNUP + INSTRUMENTATION, ABNORMAL INDICATION + OPERATING EXPERIENCE + REACTOR, BOILING WATER + SCRAM, SPURIOUS

17-15049 ALSO IN CATEGORY 9  
RURAL COOPERATIVE POWER ASSOCIATIONS ELK RIVER REACTOR. FIFTY-FIRST MONTHLY OPERATING REPORT  
RURAL COOPERATIVE POWER ASSOCIATION  
COO-651-40 +. 28 PAGES, 4 FIGURES, JANUARY 1967, DOCKET NO. 115-1

(PAGE 1) HYDROTESTING SHOWED 41 NEW DEFECTIVE TUBES IN THE EVAPORATOR. ALMOST 80% OF THE 5 OUTER ROWS WERE DEFECTIVE. ALL WERE PLUGGED. THE NO. 2 EVAPORATOR FAILURES ARE FOLLOWING THE PATTERN OF THE NO. 1 FAILURES 5 YEARS AGO. (PAGE 9) STARTUP-CHANNEL COUNT-RATE-DECAY PLOTS INDICATED THAT COOLING PRIMARY WATER FROM 480 F TO 80 F DROPS THE COUNTING RATE TO HALF. (PAGE 18) WATER IN THE REACTOR CAVITY DRAIN IS APPARENTLY DUE TO CONDENSATION WHEN THE REACTOR IS COOLED AFTER A SCRAM.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*OPERATIONS REPORT, GENERAL + ELK RIVER + FAILURE, PIPE + HEAT EXCHANGER + INSTRUMENTATION, ABNORMAL INDICATION + INSTRUMENTATION, LIQUID LEVEL DETECTION + INSTRUMENTATION, STARTUP RANGE + REACTOR, BOILING WATER

17-15050 ALSO IN CATEGORY 14  
RURAL COOPERATIVE POWER ASSOCIATIONS ELK RIVER REACTOR. FIFTY-FIRST MONTHLY OPERATING REPORT. AIRBORNE ACTIVITY AT ELK RIVER JAN. 8, 1967  
RURAL COOPERATIVE POWER ASSOCIATION  
COO-651-40 +. 28 PAGES, 4 FIGURES, JANUARY 1967, DOCKET NO. 115-1

THE PRIMARY SYSTEM WAS VENTED TO THE OVERHEAD STORAGE TANK BY A HOSE DURING WARMUP FOR HYDRO



CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-15050 \*CONTINUED\*

TEST. THE HOSE CAME OUT, SPILLING CONTAMINATED WATER. IODINE, COBALT, AND CESIUM WERE IDENTIFIED IN THE AIR AT LESS THAN THE MPC. ONE PERSON RECEIVED 1/100 THE I-131 BODY BURDEN.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*FAILURE, OPERATOR ERROR + \*INCIDENT, ACTUAL, HUMAN ERROR + AIRBORNE RELEASE + ELK RIVER + FAILURE, ADMINISTRATIVE CONTROL + PROCEDURES AND MANUALS + REACTOR, BOILING WATER

17-15053

HOBSON DO + HAYNES VO + CROUSE RS  
CHARACTERIZATION OF ARMY PM-1 TYPE REACTOR FUEL ELEMENT  
OAK RIDGE NATIONAL LABORATORY  
ORNL-TM-1676 +. 44 PAGES, 25 FIGURES, 5 TABLES, DECEMBER 1966

THIS REPORT PRESENTS THE RESULTS OF THE CHARACTERIZATION AND EVALUATION OF A NUMBER OF PM-1 TYPE, STAINLESS-STEEL--UO2 FUEL ELEMENTS TO BETTER DEFINE THE AS-MANUFACTURED PHYSICAL CHARACTERISTICS OF THE ELEMENTS AND TO PROVIDE DATA FOR COMPARISON WITH ELEMENTS IN THE POSTIRRADIATED CONDITION. THE FUEL TUBES WERE JUDGED TO BE OF CONSISTENT HIGH QUALITY, WITH THE FUEL PARTICLES WELL DISPERSED IN THE MATRIX. ALTHOUGH SEVERELY FRAGMENTED, THE PARTICLES WERE STRINGERED VERY LITTLE. CORE DENSITY WAS UNIFORMLY AROUND 96% OF THEORETICAL. DESPITE A LARGE AMOUNT OF PARTICULATE CONTAMINATION BETWEEN THE CLADDING LAYERS, GRAIN GROWTH HAD OCCURRED ACROSS NEARLY ALL OF THE INTERFACES. THE CLADDING GRAIN SIZE RANGED FROM ASTM-2 TO ASTM-5.

AVAILABILITY - D. O. HOBSON, V. O. HAYNES, R. S. CROUSE, OAK RIDGE NATIONAL LAB., OAK RIDGE, TENNESSEE

\*EXAMINATION + \*FUEL ELEMENT + PM 1 (PORTABLE MEDIUM NUCLEAR POWER PLANT) + REACTOR, ARMY + REACTOR, PRESSURIZED WATER

17-15076

ALSO IN CATEGORIES 11 AND 18  
PATHFINDER CONTAINMENT INTEGRITY BROKEN, FEBRUARY 8, 1967  
NORTHERN STATES POWER COMPANY  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(11), PAGE 28, (MARCH 13, 1967) DOCKET NO. 50-130

ON FEB. 27, PATHFINDER REPORTED THAT BOTH PERSONNEL AIRLOCK DOORS WERE OPENED FOR 2 MINUTES TO REMOVE EQUIPMENT. WHILE REACTOR WAS SHUT DOWN, THE SYSTEM WAS ABOVE THE 250 PSIG AS SPECIFIED IN TS AS REQUIRING CONTAINMENT INTEGRITY.

\*CONTAINMENT AIR LOCK + \*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + CONTAINMENT INTEGRITY + FAILURE, ADMINISTRATIVE CONTROL + PATHFINDER + REACTOR, BOILING WATER + REACTOR, SUPERHEAT

17-15077

ALSO IN CATEGORIES 14 AND 18  
NUCLEAR FUEL SERVICES ADVISED (FEBRUARY 24) OF EFFLUENT DISCHARGE TECHNICAL SPECIFICATIONS CHANGES NUCLEAR FUEL SERVICES, INC.  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(11), PAGES 28-29 (MARCH 13, 1967) DOCKET NO. 50-201

AEC DIVISION OF REACTOR LICENSING SUGGESTS TECHNICAL-SPECIFICATIONS CHANGES FOR NUCLEAR FUEL SERVICES CONSIDERATION. (A) GASEOUS EFFLUENTS (4), INCLUDES SPECIFYING METEOROLOGICAL PARAMETERS FOR DISCHARGES, QUANTITY, MONITORING AND PARTICULATES LIMITS FOR STACK DISCHARGE. (B) LIQUID EFFLUENTS (5) INCLUDING CONCENTRATION LIMITS, COLLECTION OF POTENTIALLY CONTAMINATED MATERIAL IN AN INTERCEPTOR TANK. (C) ADMINISTRATIVE REQUIREMENTS (4), INCLUDING RESPONSIBILITY FOR SAFETY REVIEW, PLANT PERSONNEL KNOWLEDGE OF EMERGENCY PROCEDURES, RECORDS OF INTERNAL INVESTIGATIONS, AND PERIODIC AUDITS.

\*EFFLUENT + \*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + ADMINISTRATIVE CONTROLS AND PRACTICES + NFS (NUCLEAR FUEL SERVICES) + RADIOCHEMICAL PROCESSING + WASTE DISPOSAL, GAS + WASTE DISPOSAL, LIQUID

17-15070

ALSO IN CATEGORIES 15 AND 18  
RADIOGRAPHY EXPOSURE AT EASTERN TESTING AND INSPECTION INC., DEC. 31, 1966  
EASTERN TESTING AND INSPECTION, INC.  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(11), PAGE 33, (MARCH 13, 1967)

ON FEB. 7, EASTERN TESTING AND INSPECTION REPORTED THAT A FORMER EMPLOYEE HAD CHECKED INTO A HOSPITAL WITH RADIATION BURNS ON THE LEFT HAND. CALCULATIONS INDICATED 600 R TO THE FINGERS AND 2 R TO THE BODY, AS THE EMPLOYEE CHANGED THE POSITION OF THE UNSHIELDED SOURCE WITH HIS HANDS. HE DID NOT CHECK THE SOURCE-POSITION LIGHTS, DID NOT USE A SURVEY METER, AND LEFT HIS FILM BADGE ON HIS COAT.

\*FAILURE, OPERATOR ERROR + \*INCIDENT, ACTUAL, HUMAN ERROR + \*PERSONNEL EXPOSURE, RADIATION + \*RADIOGRAPHY

17-15080

ALSO IN CATEGORIES 15 AND 18  
RADIOGRAPHY EXPOSURE AT ERIE FORGE AND STEEL CORP., JAN. 10, 1967  
ERIE FORGE AND STEEL CORP.  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(11), PAGES 33-34, (MARCH 13, 1967)

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-15080 \*CONTINUED\*

ON FEB. 7, ERIE FORGE AND STEEL REPORTED AN EXPOSURE OF 4472 R (HARD GAMMA) AS A RADIOGRAPHER ATTEMPTED TO PLUG THE STORAGE SAFE AT THE END OF THE WORK. HE FOUND THE SOURCE 5 IN. FROM THE OPENING AND THEN LEFT. AFTER SEVERAL TRIALS, THE SOURCE WAS FULLY RUN IN. SILT AND DIRT CAUSED THE TROUBLE. THE TECHNICIAN USED A SURVEY METER (APPARENTLY INEFFECTIVE BECAUSE OF GEOMETRY). SOURCE-POSITION INDICATING LIGHTS WERE INEFFECTIVE BECAUSE OF CONTROL-BOX MODIFICATIONS. BLOOD TESTS SHOWED NO IRREGULARITIES.

\*FAILURE, MAINTENANCE ERROR + \*INCIDENT, ACTUAL, EQUIPMENT + \*INSTRUMENTATION, POSITION + MAINTENANCE AND REPAIR + PERSONNEL EXPOSURE, RADIATION + RADIOGRAPHY

17-15081 ALSO IN CATEGORIES 15 AND 18  
JOHNS HOPKINS UNIVERSITY TRITIUM RELEASE, FEB. 20, 1967  
JOHN HOPKINS UNIVERSITY, BALTIMORE  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(11), PAGE 34, (MARCH 13, 1967)

JOHNS HOPKINS REPORTS FEB. 21, THAT 10 CURES OF TRITIUM (IN URANIUM HYDRIDE) WERE RELEASED AS A GLASS TUBE BROKE AND THE UH BURNED SPONTANEOUSLY. TWO PERSONS WERE EXPOSED TO 3 MPC AIR, URINE SPECIMENS PEAKED AT 0.1 MPC. VENTILATION SYSTEM SPREAD AIR CONTAMINATION THROUGHOUT BUILDING. INCIDENT OCCURRED AT 6 PM.

\*INCIDENT, ACTUAL, GENERAL + \*PERSONNEL EXPOSURE, RADIATION + \*TRITIUM + INHALATION + VENTILATION SYSTEM

17-15082 ALSO IN CATEGORIES 13 AND 18  
NUCLEAR FUEL SERVICES SIX DAY SHUTDOWN FEB. 14, 1967  
NUCLEAR FUEL SERVICES, WEST VALLEY, NEW YORK  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(11), PAGE 35 (MARCH 13, 1967) DOCKET NO. 50-201

NUCLEAR FUEL SERVICES REPORTS FEB. 15 THAT A PIPE LEAK IN THE ACID-RECOVERY SYSTEM DURING WASTE SYSTEM TRANSFER RELEASED NEUTRALIZED EVAPORATION BOTTOMS, WHICH WERE CAUGHT BY INTERCEPTOR GATE (0.001 CURIE/LITER). LAGOON ITSELF SHOWED NO INCREASE IN ACTIVITY. NO OTHER RELEASES OR EXPOSURES OCCURRED.

\*FAILURE, PIPE + \*INCIDENT, ACTUAL, EQUIPMENT + EVAPORATION + NFS (NUCLEAR FUEL SERVICES) + RADIOCHEMICAL PROCESSING + WASTE DISPOSAL, LIQUID + WASTE HANDLING

17-15083 ALSO IN CATEGORIES 15 AND 18  
TRITIUM EXPOSURE AT U.S. RADIUM CORP., DEC. 13, 1966  
U.S. RADIUM CORPORATION  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(11), PAGES 35-36, (MARCH 13, 1967)

U.S. RADIUM CORP. REPORTS JAN. 24 THAT AN R AND D SCIENTIST BREATHED AIR CONTAINING TRITIUM FROM A LEAKY GLASS TUBE FILL FACILITY. LATE REPORTING IS DUE TO ORIGINAL USE OF SUBMERSIBLE TRITIUM MPC (WHICH INDICATED NO OVEREXPOSURE). IF THE SOLUBLE MPC VALUE IS USED, ASSUMING OXIDATION HAD TAKEN PLACE, AN OVEREXPOSURE OCCURRED. IN ADDITION, AN ION CHAMBER INDICATED 100 TIMES HIGHER THAN AN IMPINGER SAMPLE.

\*FAILURE, EQUIPMENT + \*INCIDENT, ACTUAL, EQUIPMENT + \*PERSONNEL EXPOSURE, RADIATION + INHALATION + MAXIMUM PERMISSIBLE CONCENTRATION (MPC) + TRITIUM

17-15084 ALSO IN CATEGORIES 15 AND 18  
TRITIUM EXPOSURE AT U.S. RADIUM CORP. JAN. 11, 1967  
U.S. RADIUM CORPORATION  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(11), PAGE 36, (MARCH 13, 1967)

U.S. RADIUM CORP., JAN. 25, REPORTS THAT A DIAL PAINTER WAS EXPOSED TO 1.46 MPC, DUE TO (1) AN ACCUMULATION OF FRESHLY PAINTED DIALS NEXT TO THE MACHINE, (2) RESIDUAL CONTAMINATION OF SAMPLING-TRAIN COMPONENTS (DRY GAS METER). THE MACHINE IS COMPLETELY ENCLOSED AND KEPT AT MINUS 3 INCHES (WATER) PRESSURE, ALTHOUGH THE AIR FLOW IS BARELY PERCEPTIBLE.

\*GLOVE BOX + \*PERSONNEL EXPOSURE, RADIATION + FAILURE, ADMINISTRATIVE CONTROL + FAILURE, DESIGN ERROR + INCIDENT, ACTUAL, GENERAL + TRITIUM + VENTILATION SYSTEM

17-15085 ALSO IN CATEGORIES 15 AND 18  
U.S. RADIUM CORPORATION TRITIUM LEAK AND STACK-DISCHARGE  
U.S. RADIUM CORPORATION  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(11), PAGES 36-37, (MARCH 13, 1967)

U.S. RADIUM CORP. REPORTS JAN. 31 TWO INCIDENTS. (1) JAN. 10. DURING FILLING OF GAS TUBES, SOLUBLE TRITIUM WAS MONITORED AT STACK AS 30.65 X MPC AND 763.3 X MPC. THIS IS BELIEVED DUE TO FLUSHING GAS TRAPPED IN PUMP OIL. (2) JAN. 20. DURING A REPAIR OF A GAS-FILLING TUBE, 76 CURIES WAS LOST, GIVING STACK DISCHARGE AS EITHER 9.05 X MPC (USING SUBMERSIBLE MPC) OR 1810 X MPC (USING SOLUBLE MPC). STACK WAS NOT BEING MONITORED THAT DAY.

\*INCIDENT, ACTUAL, EQUIPMENT + EFFLUENT + MONITOR, RADIATION, STACK + STACK + TRITIUM

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-15110 ALSO IN CATEGORY 11

MCDONALD J + WATSON PD  
INVESTIGATION OF THE EFFECTS OF FABRICATION ON THE PROPERTIES OF ERG PRESSURE VESSEL MATERIALS  
SOUTHWEST RESEARCH INSTITUTION, SAN ANTONIO  
SWRI-1229-4-17 +. 70 PAGES, TABLES, MARCH 14, 1966

INVESTIGATIONS WERE MADE TO DETERMINE THE EFFECTS OF FABRICATION HISTORY ON THE NIL-DUCTILITY TRANSITION TEMPERATURES AND THE LOW-CYCLE FATIGUE STRENGTHS OF THE ELK RIVER REACTOR PRESSURE VESSEL STEELS. THE PROBABLE SHELL-FORMING PROCEDURES FOR THE PRESSURE VESSEL WERE SIMULATED FOR A302 GRADE B BY COLD-STRAINING AND WARM-STRAINING (600 F) THE MATERIAL AN AMOUNT EQUIVALENT TO FORMING 3-IN-THICK MATERIAL TO A 7-FT DIAMETER. ON THE BASIS OF THE INFORMATION GENERATED IN THIS PROGRAM, IT WAS CONCLUDED THAT THE ORIGINAL NDTY ON THE ERG PRESSURE VESSEL STEEL WAS CONSERVATIVELY PLUS 50 F OR LESS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*COMPARISON, THEORY AND EXPERIENCE + \*CONTAINMENT, PRESSURE VESSEL + \*NDT DATA (NIL DUCTILITY TRANSITION) + \*TEST, PRESSURE VESSEL + ELK RIVER + NOZZLE + STEEL

17-15140

NELSON CR  
PERFECT SAFETY RECORD IS GOAL IN CONSTRUCTION OF NINE MILE POINT NUCLEAR PLANT  
STONE AND WEBSTER ENGINEERING CORP.  
3 PAGES, POWER ENGINEERING 71(3), PAGES 35-37 (MARCH 1967)

MANAGEMENT, SUPERVISION, UNIONS, AND WORKERS ALL MUST HELP IF SAFETY PROGRAM IS TO BE EFFECTIVE. MANY WORKERS DO NOT BELIEVE EXPENSIVE STAGING WILL BE REBUILT TO REMOVE HAZARD TO AN INDUSTRIAL WORKER, AND THEY MUST BE SHOWN BY (1) WEEKLY TOOLBOX SESSIONS, (2) AN ACTIVE SAFETY PATROL, (3) VISITS TO SITE BY INSURANCE-COMPANY SAFETY ENGINEERS. ILLUSTRATION - WHEN A WORKER WAS CHIDED BY THE SAFETYMAN FOR NOT WEARING A SAFETY BELT, HE REMARKED THAT (QUOTE) AS LONG AS SAFETYMAN WAS CONCERNED ABOUT HIS LIFE, HE WOULD BE TOO (UNQUOTE).

\*ADMINISTRATIVE CONTROLS AND PRACTICES + \*SAFETY PRINCIPLES AND PHILOSOPHY + OYSTER CREEK + REACTOR, PRESSURIZED WATER

17-15173

KOCH DW + KOVACH PJ  
MATERIALS EXAMINATION OF A MODEL SODIUM HEATED STEAM GENERATOR. FINAL REPORT  
BABCOCK AND WILCOX COMPANY, ALLIANCE, OHIO  
BAW-1280-37 +. 75 PAGES, JUNE 30, 1966

THE PURPOSE OF THIS TEST PROGRAM IS TO ASSESS THE COMPATIBILITY OF CROLOY 2-1/4 AND TP316 SS IN A LIQUID SODIUM SYSTEM, PARTICULARLY WITH REFERENCE TO THE DESIGN PARAMETERS OF A FULL-SIZE SODIUM-HEATED STEAM GENERATOR. THIS FINAL REPORT DESCRIBES THE DESIGN, FABRICATION, OPERATION, AND MATERIALS EXAMINATIONS FOR THE MODEL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*CHROMIUM + \*CORROSION + \*METAL, LIQUID + \*SODIUM + \*STEEL, STAINLESS + ALLOY + ANALYTICAL TECHNIQUE, SOLID + COPPER + NICKEL + SILICON

17-15202

BERGEN CR  
ELK RIVER REACTOR OPERATIONS ANALYSIS PROGRAM FINAL REPORT. TASK 615. CORROSION SAMPLES AND TESTS  
EVAPORATOR WATER BOXES  
ALLIS-CHALMERS MANUFACTURING COMPANY  
ACNP-66542 +. 34 PAGES, FIGURES, TABLES, JUNE 1966

TYPE 304 STAINLESS STEEL COUPONS AND U-BEND TEST SAMPLES WERE EXPOSED TO THE WET STEAM-WATER ENVIRONMENT WITHIN THE EVAPORATOR WATER BOXES OF THE ELK RIVER REACTOR. THIS REPORT DESCRIBES THE RESULTS OF EVALUATION OF THE TEST PROBES AFTER 22 MONTHS OF EXPOSURE. SMALL CORROSION RATES OF AS-ROLLED AND ANNEALED SPECIMENS WERE FOUND, AND SOME INTERGRANULAR ATTACK OF THE SENSITIZED COUPONS SHOWED UP. ALL U-BEND SAMPLES SHOWED STRESS-CORROSION CRACKING.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*CORROSION + \*RADIATION EFFECT + \*STEAM + \*STEEL, STAINLESS + OPERATING EXPERIENCE

17-15214

QUARTERLY PROGRESS REPORT NUMBER 9 FOR THE PERIOD ENDING JULY 31, 1966. 40-MW(E) PROTOTYPE HIGH-TEMPERATURE GAS-COOLED REACTOR POSTCONSTRUCTION RESEARCH AND DEVELOPMENT PROGRAM

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-15214 \*CONTINUED\*  
GENERAL ATOMIC, SAN DIEGO  
GA-7426 +. 40 PAGES, 17 FIGURES, 6 TABLES, OCTOBER 15, 1966

MEASURED CONTROL-ROD WORTHS AGREED WITH THE CALCULATED VALUES TO WITHIN 4%. COMPARISONS ARE MADE OF EXPERIMENTAL-TO-CALCULATED RESULTS FOR EXCESS REACTIVITY, SHUTDOWN MARGIN, POWER DISTRIBUTION, FLUX TILT, AND TEMPERATURE COEFFICIENT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*MEASUREMENT, REACTIVITY + \*REACTOR, GAS COOLED + \*RESEARCH AND DEVELOPMENT PROGRAM + \*REACTOR STARTUP TESTING

17-15215  
TARGET. A PROGRAM FOR A 1000-MW(E) HIGH-TEMPERATURE GAS-COOLED REACTOR. QUARTERLY PROGRESS REPORT FOR THE PERIOD ENDING FEBRUARY 28, 1965  
GENERAL ATOMIC DIVISION, GENERAL DYNAMICS, JOHN JAY HOPKINS LABORATORY, SAN DIEGO, CALIFORNIA  
GA-6113 +. 123 PAGES, TABLES, FIGURES, MARCH 31, 1965

EXPERIMENTAL DATA INDICATES THAT THE MAJOR EFFECT OF LARGE FAST NEUTRON DOSES ON GRAPHITE AT HTGR TEMPERATURE LEVELS IS TO CAUSE THE GRAPHITE TO CONTRACT. AT TEMPERATURES ABOVE 800 C, THE EXTENT OF CONTRACTION IS STRONGLY DEPENDENT ON THE IRRADIATION TEMPERATURE AND THE FAST-NEUTRON EXPOSURE LEVEL. A PROGRAM IS BEING CONSIDERED TO ROTATE THE FUEL ELEMENTS 180 DEGREES PERIODICALLY TO EXTEND THE OPERATING TIME BEFORE ACCUMULATING THE MAXIMUM ALLOWED BOWING.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*FUEL ELEMENT + \*GRAPHITE + \*RADIATION DAMAGE + \*RESEARCH AND DEVELOPMENT PROGRAM + FAST NEUTRON + FUEL ELEMENT BOWING + REACTOR, GAS COOLED + TARGET (THRMAL ADV RCTR GASCOOLED EXPLOITING TH)

17-15216 ALSO IN CATEGORY 9  
LARGE CLOSED-CYCLE WATER REACTOR RESEARCH AND DEVELOPMENT PROGRAM. PROGRESS REPORT, JANUARY 1 - MARCH 31, 1966  
WESTINGHOUSE ELECTRIC CORPORATION, ATOMIC POWER DIVISION, PITTSBURGH  
WCAP-3269-17 +. 42 PAGES, 11 FIGURES, 4 TABLES

LONG, SECTIONED, IONIZATION CHAMBERS WERE INSTALLED IN THE CVTR, APPROXIMATELY EQUAL IN LENGTH TO THE CORE HEIGHT. THE SECTIONS OF THE CHAMBERS WERE CONNECTED IN PARALLEL AND GIVE THE AVERAGE OR TOTAL AXIAL FLUX NEEDED TO REDUCE DETECTOR ERRORS DUE TO CONTROL-ROD MOVEMENTS. IN ADDITION, READOUTS CAN BE OBTAINED FOR THE BOTTOM AND TOP HALF OF THE CORE OR FROM INDIVIDUAL SECTIONS FOR INDICATIONS OF FLUX TILT. A WESTINGHOUSE FUEL PIN FAILED WHILE IN THE ETR. A LONGITUDINAL SPLIT ABOUT HALF AN INCH LONG HAD DEVELOPED IN THE 0.065-IN.-THICK ZIRCONIUM CLADDING. 8 OTHER SIMILAR PINS DID NOT FAIL. CENTER MELTING HAD OCCURRED AS A RESULT OF THE FUEL HAVING A (QUOTE) LINEAR POWER RATING 75% IN EXCESS OF THE DESIGN VALUE, ATTRIBUTED TO LARGE FLUX INHOMOGENEITIES. ALSO THE OVERPOWER CONDITION WAS AGGRAVATED BY A 22% HIGHER FLUX THAN WAS THOUGHT TO EXIST (UNQUOTE).

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*RESEARCH AND DEVELOPMENT PROGRAM + CENTERLINE MELTING + CHAMBER, ION + CVTR (CAROLINAS VIRGINIA TUBE REACTOR) + ETR (ENGINEERING TEST REACTOR) + FAILURE, CLADDING + FLUX DISTRIBUTION + FLUX TILT + INSTRUMENTATION, POWER RANGE + NEUTRON + REACTOR, AEC OWNED + REACTOR, HEAVY WATER + REACTOR, PRESSURE TUBE + REACTOR, TEST

17-15217 ALSO IN CATEGORY 11  
COOGLER AL + DEILY GJ + HALE RJ  
EVOLUTION OF THE HIGH LEVEL CAVES AT THE SAVANNAH RIVER LABORATORY  
SAVANNAH RIVER LABORATORY, SAVANNAH  
CONF-651101-26 +. 39 PAGES, FOR PRESENTATION AT 13TH CONFERENCE ON REMOTE SYSTEMS TECHNOLOGY, WASHINGTON, D. C., AUGUST 5, 1965

SAVANNAH RIVER LABORATORY HAS OPERATED A HIGH-LEVEL SHIELDED FACILITY SINCE 1954. THIS FACILITY HAS BEEN EXPANDED TWICE. THE FIRST EXPANSION WAS COMPLETED IN 1959, AND THE SECOND IN EARLY 1965. TAKEN IN ORDER, THESE THREE CONSTRUCTION PHASES ILLUSTRATE AN EVOLUTION IN DESIGN OF A SHIELDED FACILITY FOR GENERAL PURPOSE USE. ADOPTION OF THE MODULE-SIZED EQUIPMENT PACK PROVIDED SEVERAL OPERATING ADVANTAGES WHICH ALLOWED SOME SIMPLIFICATION IN CELL DESIGN. THESE ADVANTAGES ARE - (1) ACCESS TO THE CELL IS REQUIRED ONLY THROUGH THE ROOF. (2) SERVICES CAN BE LOCATED FOR REMOTE CONNECTION. (3) CELL EXHAUST CAN BE INTEGRATED WITH EQUIPMENT FOR IMPROVED CONTAMINATION CONTROL. (4) FRAMES CAN BE READILY CONVERTED TO SEALED ENCLOSURES FOR HIGH ALPHA WORK. (5) INSTALLATION AND REMOVAL OF EQUIPMENT CAN BE MORE READILY ACCOMPLISHED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*HOT CELL + \*OPERATING EXPERIENCE + AIR CLEANING + ALPHA FACILITIES + CONTAINMENT EQUIPMENT HATCH + CONTAINMENT INSPECTION AND MAINTENANCE + VENTILATION SYSTEM

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-15250 ALSO IN CATEGORY 7  
RTGGS CO + HASSELL LD  
RADIOACTIVE IODINE RELEASE FROM PM-3A CONTAINMENT VESSELS  
MARTIN CO., BALTIMORE, MD.  
MND-M3A-3108 (PT. B) +. 29 PAGES, REFERENCES, JANUARY 28, 1964

A CONSERVATIVE ANALYSIS OF THE IODINE RELEASE FROM THE PM-3A NUCLEAR POWER PLANT, BASED ON THE METHOD OF TID 14844 MODIFIED FOR LEAK RATES TO 5%/DAY AND DIFFERENT METEOROLOGICAL CONDITIONS, ESTABLISHED THAT THE 72-HR INTEGRATED DOSE TO THE THYROID WOULD NOT EXCEED 243 RADS IN THE WORST CASE. IT IS CONCLUDED THAT UNDUE HAZARD TO PERSONNEL DOES NOT EXIST IN THE EVENT OF A MAXIMUM CREDIBLE ACCIDENT

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*ACCIDENT, MAXIMUM CREDIBLE (MCA) + \*DOSE CALCULATION, INTERNAL + \*FISSION PRODUCT, IODINE + \*METEOROLGGY + \*PERSONNEL EXPOSURE, RADIATION + \*PM 3A (PORTABLE MEDIUM NUCLEAR POWER PLANT) + \*TEST, LEAK RATE + \*FISSION PRODUCT RELEASE, GENERAL + REACTOR, ARMY + REACTOR, PRESSURIZED WATER

17-15251 ALSO IN CATEGORY 7  
DEMMITT TF  
AUTOMATING REACTOR COOLANT QUALITY ANALYSES  
GENERAL ELECTRIC COMPANY, HANFORD ATOMIC PRODUCTS OPERATION, RICHLAND, WASHINGTON  
HW-5A-3099 + CONF-179-21 +. 6 PAGES, 5 FIGURES, APRIL 10, 1964, FROM AMERICAN CHEMICAL SOCIETY  
RADIOISOTOPIC EXCHANGE ON SCILS, MINERALS, AND RESINS, PHILADELPHIA, APRIL 1964

THE PRACTICE OF PERFORMING ROUTINE COOLANT-QUALITY-CONTROL ANALYSES MANUALLY, USING GRAB SAMPLES, IS RAPIDLY BECOMING OBSOLETE IN MODERN REACTOR SYSTEMS. THIS IS A DESIRABLE SITUATION SINCE THE RESULTS OF AUTOMATING THE SAMPLING AND ANALYSIS FUNCTIONS ARE THE GENERATION OF MORE DATA, WITH A HIGHER ACCURACY THAN IS GENERALLY ATTAINABLE MANUALLY, AND IN A FORM THAT IS MORE USEFUL FOR CONTROL PURPOSES. IN THIS PAPER, THE ANALYTICAL PROCEDURES AND THE INSTRUMENTS ARE THOSE THAT HAVE BEEN SELECTED FOR THE 100-N REACTOR APPLICATION. HOWEVER, IT MUST BE EMPHASIZED THAT THEY ARE NOT NECESSARILY OPTIMUM. IN NEARLY EVERY CASE MORE THAN ONE PROCEDURE AND ONE TYPE OF INSTRUMENT ARE AVAILABLE TO PERFORM A GIVEN CHEMICAL ANALYSIS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*ANALYTICAL TECHNIQUE, WATER + \*COOLANT QUALITY + \*HANFORD SITE + \*REACTOR, PRESSURIZED WATER + REACTOR COOLANT

17-15252 ALSO IN CATEGORY 7  
FARMER FR  
DISCUSSION ON - CONSIDERATIONS ON NUCLEAR PRODUCT RELEASE SUPPRESSION FACTORS FOR ENGINEERED SAFEGUARDS FOR NUCLEAR POWER PLANTS BY T. TAGAMI  
SAFEGUARDS DIVISION, U.K.A.E.A. HEALTH AND SAFETY BRANCH, RISLEY, WARRINGTON, LANCS., ENGLAND  
1 PAGE, NUCLEAR ENGINEERING AND DESIGN, 4, PAGE 490, (SEPTEMBER 1966)

IT IS ARGUED THAT THROUGH ENGINEERING SAFEGUARDS A REDUCTION IN IODINE RELEASE MAY BE ACHIEVED BY FOUR TO SIX ORDERS OF MAGNITUDE. IF THE SAFETY OF THE PUBLIC IS TO BE ENSURED BY SUCH MEANS, THEN A CORRESPONDINGLY HIGH DEGREE OF PLANT RELIABILITY MUST BE DEMONSTRATED. IN PRACTICE, SUCH HIGH ORDERS OF RELIABILITY ARE EXTREMELY DIFFICULT TO ACHIEVE. CONCLUSIONS - (1) WE KNOW MORE ABOUT IODINE AND ITS BEHAVIOR THAN WE DO ABOUT PLANT PERFORMANCE. (2) IF PROTECTION OF MANY ORDERS OF MAGNITUDE IS TO BE ESTABLISHED BY ENGINEERED SAFEGUARDS, THEN THEIR PERFORMANCE NEEDS TO BE ESTABLISHED TO A CORRESPONDINGLY HIGH DEGREE OF RELIABILITY. (3) IT IS SURELY BETTER TO SPEND EFFORT ON PREVENTING CORE MELTING THAN ON SUBSEQUENT REARGUARD DEFENSIVE MEASURES.

\*FILTER EFFICIENCY + \*FISSION PRODUCT RETENTION + \*FISSION PRODUCT, IODINE + \*SAFETY EVALUATION + ENGINEERED SAFETY SYSTEM

17-15258  
AARAKKEN R  
SURVEY OF ACTIVITIES, 1965  
INSTITUTT FOR ATOMENERGI, KJELLER, NORWAY  
KR-109 +. 112 PAGES, 48 FIGURES, 54 REFERENCES, FEBRUARY 1966

THIS IS ONE OF A SERIES OF PROGRESS REPORTS ON THE FOLLOWING SUBJECTS - REACTOR-DEVELOPMENT STUDIES, NEUTRON PHYSICS, CHEMISTRY, METALLURGY, ISOTOPE PRODUCTION, SAFETY, AND HEALTH PHYSICS.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM, WISCONSIN 54669

\*RESEARCH AND DEVELOPMENT PROGRAM + CHEMICAL REACTION + ISOTOPIIC FRACTIONATION + NORWAY + RADIATION SAFETY AND CONTROL + REACTOR, MARITIME + REACTOR, POWER + SAFETY PRINCIPLES AND PHILOSOPHY +

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-15258 \*CONTINUED\*  
TEST, PHYSICS

17-15305 ALSO IN CATEGORIES 14 AND 18  
THOMPSON TJ  
DRL EXEMPTS MIT FROM 10CFR20 TO ALLOW TRITIUM DISCHARGE  
MASS. INSTITUTE OF TECHNOLOGY, CAMBRIDGE, MASS.  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(13), PAGE 25, (MARCH 27, 1967)

AEC EXEMPTS MIT REACTOR FROM 10 CFR 20.203(D) TO ALLOW DISCHARGE OF 20,000 GAL OF SECONDARY COOLANT CONTAMINATED WITH 12 CURIES OF TRITIUM. THE LIQUID WILL BE DISCHARGED TO SANITARY SEWER (AND CHARLES RIVER) SUCH THAT IT WILL BE REDUCED TO LESS THAN THE MPC.

\*EFFLUENT + \*TRITIUM + \*WASTE DISPOSAL, RIVER + REACTOR, HEAVY WATER + REACTOR, RESEARCH

17-15306 ALSO IN CATEGORIES 6 AND 18  
FMMONS AH  
UNIVERSITY OF MISSOURI REACTOR MEASURED VOID COEFFICIENT LOW  
UNIVERSITY OF MISSOURI, COLUMBIA, MO.  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(13), PAGE 26, (MARCH 27, 1967)

UNIVERSITY OF MISSOURI AT COLUMBIA REQUESTS (MARCH 6) CHANGE IN TECHNICAL-SPECIFICATION VOID COEFFICIENT FROM MORE NEGATIVE THAN MINUS  $2 \times 10$  TO THE MINUS 3RD DELTA K PER % VOID TO MINUS 1.2 (THE MEASURED VALUE). EARLIER TRANSIENT ANALYSIS USED MINUS 1.11. COMPLETE VOIDING WILL GIVE ONLY 0.0058 DELTA K.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + MEASUREMENT, REACTIVITY + REACTOR, FLUX TRAP + REACTOR, RESEARCH + VOID COEFFICIENT

17-15310 ALSO IN CATEGORIES 15 AND 18  
FORSCHER F  
DETAILS OF NUMEC IRIIDIUM 192 RELEASE JAN. 14, 1967  
NUCLEAR MATERIALS AND EQUIPMENT CORP., APOLLO, PA.  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(13), PAGES 31-32, (MARCH 27, 1967)

NUMEC REPORTS (FEB. 13, 1967) THAT ABOUT NOON DURING DECAPSULATION OF 2000 CURIES OF IRIIDIUM-192, SIX PELLETS WERE CUT INTO WITH A HIGH-SPEED WHEEL. HOT-CELL AIRFLOW PATTERN WAS DISTURBED BY VARIOUS OPENINGS, INCREASED FILTER PRESSURE DROP, AND INTERACTION BETWEEN THE INTRACELL ALPHA-BOXES VENT SYSTEMS AND THE NORMAL HOT-CELL VENTILATION SYSTEMS. TWO OPERATORS RECEIVED ABOUT 1 REM AND WERE EXPOSED AT 125 MPC-HOURS. DOSIMETERS INDICATED ONLY 1/10 THE FILM-BADGE READINGS. CELL MODIFICATION WILL TAKE A MONTH.

\*HOT CELL + \*PERSONNEL EXPOSURE, RADIATION + \*VENTILATION SYSTEM + FAILURE, OPERATOR ERROR + INCIDENT, ACTUAL, HUMAN ERROR + MODIFICATION, SYSTEM OR EQUIPMENT

17-15311 ALSO IN CATEGORIES 14 AND 18  
BURTSVAVAGE EM  
US RADIUM CORP. LISTS 87 TRITIUM RELEASES JULY - DECEMBER 1966  
U.S. RADIUM CORP., BLOOMSBURG, PA.  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(13), PAGES 32-33, (MARCH 27, 1967)

U.S. RADIUM REPORTS (FEB. 17, 1967) 51 RELEASES OF TRITIUM (TO UNRESTRICTED AREAS) IN EXCESS OF MPC, AND 36 RELEASES OF TRITIUM (TO UNRESTRICTED AREAS) OF 10 TIMES THE LICENSED LIMITS. ALL WERE STACK DISCHARGES OF HTO FROM FOUR FACILITIES, CAUSED BY VARIOUS LEAKS.

\*AIRBORNE RELEASE + \*STACK + \*TRITIUM + EFFLUENT

17-15319 ALSO IN CATEGORY 12  
ROWLANDS RP  
PHYSIOLOGICALLY SAFE WORKING CONDITIONS FOR MEN WEARING PRESSURIZED SUITS  
UKAEA, RADIOLOGICAL PROTECTION DIVISION, AUTHORITY HEALTH AND SAFETY BRANCH, HARWELL, BERKSHIRE  
AHSR(RP)R-70 +. 79 PAGES, FIGURES, TABLES, JUNE, 1966

EXPERIMENTS WERE CONDUCTED TO DETERMINE THE PHYSIOLOGICAL RESPONSES OF MAN IN A PRESSURIZED SUIT - APPLICABLE TO CONTAMINATED ENVIRONMENTS. CONTROL CHARTS WERE DEVELOPED FOR MAINTENANCE OF APPROPRIATE AIR SUPPLY AND THERMAL CONDITIONS. TESTS WERE RUN WITH VARIABLE CARBON DIOXIDE CONTENT AND TEMPERATURE.

AVAILABILITY - UNITED KINGDOM ATOMIC ENERGY AUTHORITY, 11 CHARLES II STREET, LONDON, S. W. 1

\*CONTAMINATION + \*PERSONNEL PROTECTIVE DEVICE + HIGH TEMPERATURE + RADIATION SAFETY AND CONTROL

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-15347  
MCCORD PV + CORBETT RL  
QUARTERLY REPORT, JULY, AUGUST, AND SEPTEMBER OF 1966. HIGH FLUX ISOTOPE REACTOR  
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE  
ORNL-TM-1752 +. 23 PAGES, 11 TABLES, JANUARY 17, 1967

TWO SCRAMS OCCURRED BECAUSE OF INSUFFICIENT COOLING DURING TRANSIENT POWER OPERATION. ANOTHER SCRAM WAS CAUSED BY A VERY FAST REGULATING-ROD WITHDRAWAL, WHICH WAS AUTOMATICALLY INITIATED TO OVERCOME A SHIM-PLATE INSERT. ONE LEAKING TUBE IN THE HEAT EXCHANGER WAS PLUGGED. EXCESSIVE VIBRATION OF THE SECONDARY COOLANT PUMPS WAS CORRECTED BY REINFORCING INADEQUATE FOUNDATIONS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*OPERATING EXPERIENCE + \*OPERATIONS REPORT, GENERAL + FAILURE, DESIGN ERROR + FAILURE, PIPE + HEAT EXCHANGER + HEIR (HIGH FLUX ISOTOPE REACTOR) + MAIN COOLING SYSTEM + PUMP + REACTOR, AEC OWNED + REACTOR, FLUX TRAP + SCRAM, REAL + VIBRATION

17-15348  
GUYMON RH + HAUBENREICH PN + ENGEL JR  
MSRE DESIGN AND OPERATIONS REPORT. PART XI. TEST PROGRAM  
OAK RIDGE NATIONAL LABORATORY, OAK RIDGE, TENNESSEE  
ORNL-TM-911 +. NOVEMBER 1966

LISTS THE OBJECTIVES AND PROCEDURES FOR PREOPERATIONAL AND STARTUP TESTING.

AVAILABILITY -- CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*REACTOR STARTUP TESTING + \*TEST, PREOPERATIONAL + MSRE (MOLTEN SALT REACTOR EXPERIMENT) + PROCEDURES AND MANUALS + REACTOR, AEC OWNED + REACTOR, MOLTEN SALT

17-15366  
LA CROSSE BOILING WATER REACTOR - OPERATING MANUAL  
ALLIS-CHALMER, ATOMIC ENERGY DIVISION, BETHESDA, MARYLAND  
ACNP-65591 +. TEN VOLUMES, 50 TO 300 PAGES, OCTOBER, 1966, DOCKET NO. 115-5

TEN VOLUMES, EACH RANGING FROM 50-300 PAGES, FOR A 50-MW(E) FORCED-CIRCULATION BWR. 1- INTEGRATED PLANT OPERATION. 2- REACTOR PROCESS SYSTEMS. 3- TURBINE GENERATOR SYSTEMS. 4- INSTRUMENTS AND CONTROLS, ELECTRICAL DISTRIBUTION. 5- SERVICE SYSTEM. 6- REFUELING. 7- WASTE-TREATMENT FACILITY. 8- WATER CHEMISTRY. 9- NUCLEAR MATERIAL ACCOUNTABILITY. 10- HEALTH PHYSICS PROCEDURES.

\*PROCEDURES AND MANUALS + LACROSSE + REACTOR, BOILING WATER

17-15432  
QUESTION V F - STEAM-GENERATOR BLOWDOWN  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE F-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

DESCRIBE THE STEAM-GENERATOR BLOWDOWN SYSTEM, INCLUDING CONTROL AND RADIOACTIVITY-MONITORING SYSTEMS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + COOLANT CHEMISTRY + HEAT EXCHANGER + REACTOR, PRESSURIZED WATER + ROBINSON 2

17-15527 ALSO IN CATEGORY 11  
QUESTION VIII E (2) - CONTAINMENT SURVEILLANCE PROGRAM  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
7 PAGES, PAGES E (2)(A)-1 TO E (2)(C)-1 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

WE BELIEVE THAT AN IN-SERVICE TENDON-SURVEILLANCE CAPABILITY IS ESSENTIAL. DESCRIBE THE SURVEILLANCE PROGRAM WHICH YOU PROPOSE. (B) WE BELIEVE THAT A CORROSION-CONTROL PROGRAM SHOULD BE PART OF THE SURVEILLANCE PROGRAM. DESCRIBE THE DESIGN CONSIDERATIONS AND PROGRAM PLANNED TO PROVIDE CORROSION PROTECTION OF (1) TENDONS, (2) REINFORCING STEEL, (3) LINER PLATES, AND (4) PILING, FROM THE EFFECTS OF STRAY CURRENTS AND THE ENVIRONMENT. INCLUDE SURVEILLANCE CONSIDERATIONS TO MEASURE THE EFFECTIVENESS OF THE CORROSION-CONTROL SYSTEM. (C) DESCRIBE ANY INSTRUMENTATION WHICH WILL BE PERMANENTLY INSTALLED IN THE STRUCTURE FOR LONG-TERM SURVEILLANCE.

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-15527 \*CONTINUED\*

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT DESIGN + CONTAINMENT INSTRUMENTATION + REACTOR, PRESSURIZED WATER + ROBINSON 2 + SYSTEM OPERABILITY IN ACCIDENT CONDITIONS

17-15677

GAS-COOLED FAST BREEDER REACTOR. ANNUAL PROGRESS REPORT FOR THE PERIOD ENDING JULY 31, 1965.

GENERAL DYNAMICS CORP., SAN DIEGO, CALIF.

GA-6667 +. 164 PAGES, FIGURES, TABLES, REFERENCES, OCTOBER 1, 1965

THIS PROGRESS REPORT DISCUSSES THE RESEARCH AND DEVELOPMENT PROGRAM. TOPICS INCLUDE SELECTION, TESTING, AND DEVELOPMENT OF THE FUEL ELEMENT AND MATERIALS, RELATIVE DISPLACEMENT OF FUEL PIN AND CLADDING DUE TO HEATING, AND AN EVALUATION OF FACILITIES FOR USE IN THE GCFR PROGRAM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*RESEARCH AND DEVELOPMENT PROGRAM + CLAD + COOLANT CHEMISTRY + CRITICAL ASSEMBLY FACILITY + FUEL ELEMENT + MATERIAL + REACTOR, FAST + REACTOR, GAS COOLED + THERMAL MECHANICAL EFFECT

17-15678

REED GA + HOWARD JE

OPERATING EXPERIENCE OF YANKEE - UPDATED

YANKEE ATOMIC ELECTRIC COMPANY, BOSTON, MASS.

CONF-650,970-3 +. 31 PAGES, 3 FIGURES, 3 TABLES, PRESENTED AT THE IEEE POWER GENERATION COMMITTEE OF THE IEEE POWER GROUP FOR PRESENTATION AT THE IEEE-ASME NATL. POWER CONFERENCE, ALBANY, NEW YORK, SEPTEMBER 19-23, 1965.

THE POWER LEVEL WAS STRETCHED FROM 125 TO 185 MW(1) AS A RESULT OF THE FLUX-FLATTENING TECHNIQUES. LESSONS ON STAFFING AND MAINTENANCE PROCEDURES ARE DISCUSSED. VESSEL INTERNAL COMPONENTS AND REFUELING EQUIPMENT SHOULD BE RUGGED AND SIMPLE. THE USE OF LIQUID POISON (BORON) WAS EXTENDED TO CONTINUOUS POWER OPERATION. BY ADJUSTING THE PH AT THE END OF CORE CYCLES BY USE OF 10 PPM OF AMMONIUM HYDROXIDE, FULL-POWER OPERATION WAS EXTENDED 1 MONTH PER CYCLE. COTTON CELLULOSE FILTERS ARE USED IN THE PRIMARY COOLANT TO INCREASE CLARITY AND PREVENT CRUD AND RESIN RELEASE. LARGE POWER PLANTS WILL REQUIRE SIX DIFFERENT HANDLING AND SHIPPING CASKS. MOST OF THE AIRBORNE RELEASE HAS BEEN ARGON BECAUSE THE PRIMARY MAKEUP IS NOT DEOXYGENATED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*OPERATING EXPERIENCE + AIRBORNE RELEASE + ARGON + BORON + CHEMICAL SHIM + COOLANT CHEMISTRY + COOLANT PURIFICATION SYSTEM + CORE COMPONENTS, MISCELLANEOUS + DESIGN CRITERIA + FILTER, FIBER + FLUX DISTRIBUTION + FUEL HANDLING MACHINE + MAIN COOLING SYSTEM + NEUTRON + NOBLE GAS + OPERATIONS REPORT, GENERAL + POISON, SOLUBLE + POWER UPGRATING + RADIOACTIVITY, RELEASE + REACTIVITY EFFECT, ANOMALOUS + REACTOR COOLANT + REACTOR, POWER + REACTOR, PRESSURIZED WATER + REFUELING + TRANSPORTATION AND HANDLING + YANKEE

17-15679

SEMIANNUAL PROGRESS REPORT NO. 8, JANUARY 1 - JUNE 30, 1966. PIQUA NUCLEAR POWER FACILITY, REACTOR

OPERATIONS ANALYSIS PROGRAM

ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.

NAA-SR-12,148 +. 219 PAGES, 47 FIGURES, 31 TABLES, 20 REFERENCES, DECEMBER 31, 1966

BECAUSE OF ROD SCRAM FAILURES AND BINDING OF FUEL ELEMENTS, ALL ELEMENTS WERE REMOVED AND THE CORE INSPECTED. A DEPOSIT OF CARBONACEOUS MATERIAL ON THE PROCESS TUBES WAS FOUND. MODIFICATIONS ARE PLANNED TO INCREASE THE FLOW IN THE MODERATOR REGIONS, WHICH SHOULD REDUCE THE FORMATION OF THE COKE. OUTLINES THE INVESTIGATION PROGRAM FOR MODIFICATIONS TO THE CONTROL-ROD DRIVES TO REDUCE THE FAILURES CAUSED BY ELECTRICAL SHORTING. THE DEPOSITION OF FILMS ON FUEL ELEMENTS IN ORGANIC-COOLED REACTORS IS DISCUSSED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*OPERATING EXPERIENCE + \*OPERATIONS REPORT, GENERAL + FAILURE, DESIGN ERROR + FAILURE, SCRAM MECHANISM + PIQUA + REACTOR, ORGANIC COOLED + REACTOR, POWER + SURFACE FILM DEPOSIT

17-15680

DEBEAR WS + FUKUSHIMA TY + HANSEN AI + PERRET JD + ROECKER JH + SHEPARD RC + TONDI D

SCRAMS AND SHUTDOWNS

ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.

NAA-SR-11995 +. 8 PAGES, PAGES 7-14 OF THE PIQUA NUCLEAR POWER FACILITY REACTOR OPERATIONS ANALYSIS PROGRAM SEMI-ANNUAL PROGRESS REPORT NO. 7, JULY 1, 1965-JANUARY 13, 1966, DOCKET NO. 115-2

ONE SCRAM RESULTED WHEN A BUS FUSE IN THE SCRAM CIRCUIT BURNED OUT. THE 5-AMP FUSE WAS



CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-15680 \*CONTINUED\*

REPLACED WITH A 30-AMP FUSE BECAUSE THE BUS CIRCUIT WAS PROTECTED BY A CIRCUIT BREAKER. A SECOND SCRAM WAS ATTRIBUTED TO A FAILED SWITCH, AS A RESULT OF EXCESSIVE HEATING, WHICH GAVE A LOW DEGASIFIER-LEVEL SIGNAL. A PNEUMATIC COOLING SYSTEM FOR THE SWITCH WAS INSTALLED. A THIRD SHUTDOWN WAS REQUIRED AS A RESULT OF AN INCREASING FUEL-ELEMENT COOLANT-OUTLET TEMPERATURE AND A SUPERHEATER TUBE LEAK. THE FOURTH SHUTDOWN WAS REQUIRED TO PLUG 10 DEFECTIVE TUBES IN A CONDENSER OF THE DECAY-HEAT-REMOVAL SYSTEM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*OPERATING EXPERIENCE + \*OPERATIONS REPORT, GENERAL + FAILURE, COMPONENT + FAILURE, EQUIPMENT + FAILURE, INSTRUMENT + FAILURE, PIPE + FAILURE, SCRAM MECHANISM + HEAT EXCHANGER + PIQUA + REACTOR, ORGANIC COOLED + REACTOR, POWER + SCRAM, REAL

17-15681

DFBEAR WS + FUKUSHIMA TY + HANSEN AI + PERRET JD + ROECKER JH + SHEPARD RC + TONDI D  
CONTROL ROD DRIVE FAILURES

ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.

NAA-SR-11995 +. 2 PAGES, PAGES 11-12 OF THE PIQUA NUCLEAR POWER FACILITY REACTOR OPERATIONS-ANALYSIS PROGRAM SEMIANNUAL PROGRESS REPORT NO. 7, JULY 1, 1965-JANUARY 13, 1966, DOCKET NO. 115-2

DURING A SHUTDOWN, CHECKS OF ALL CONTROL-ROD RESISTANCE VALVES DISCLOSED FAILURES ON 1 OF 13 CONTROL RODS. FOLLOWING CORRECTIONS, ADDITIONAL PROBLEMS WITH CONTROL RODS WERE - 3 CONNECTOR FAILURES, 6 COIL SHORTS, 2 POWER LOSSES TO COILS, AND 1 POSITION-INDICATOR FAILURE. ONE SHUTDOWN WAS EXTENDED BECAUSE OF A STUCK CONTROL ROD.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*FAILURE, SCRAM MECHANISM + \*OPERATING EXPERIENCE + \*OPERATIONS REPORT, GENERAL + CONTROL ROD DRIVE + FAILURE, COMPONENT + PIQUA + REACTOR, ORGANIC COOLED + REACTOR, POWER

17-15682

DFREAP WS + FUKUSHIMA TY + HANSEN AI + PERRET JD + ROECKER JH + SHEPARD RC + TONDI D  
FUEL ELEMENT FILM REMOVAL MONITORING

ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.

NAA-SR-11995 +. 1 PAGE, PAGE 84 OF THE PIQUA NUCLEAR POWER FACILITY REACTOR OPERATIONS ANALYSIS PROGRAM SEMIANNUAL PROGRESS REPORT NO. 7, JULY 1, 1965-JANUARY 13, 1966, DOCKET NO. 115-2

AS A RESULT OF DETERMINING THE MG-27 ACTIVITY IN THE COOLANT, IT APPEARS THAT THIS ACTIVITY COULD BE USED AS AN INDICATION OF THE REMOVAL OF FILM DEPOSITS ON FUEL ELEMENTS. THE MG-26 IMPURITY IN THE COOLANT IS PRESUMED TO BE RAPIDLY ADSORBED ONTO THE WALLS OF THE PRIMARY SYSTEM SINCE THE MG-27 ACTIVITY IN THE COOLANT RAPIDLY DECREASES AFTER STARTUP. THE REMAINING MG-27 ACTIVITY IS THEREFORE ATTRIBUTED TO RECOIL FROM A1-27.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*MAGNESIUM + \*OPERATING EXPERIENCE + \*OPERATIONS REPORT, GENERAL + \*RADIONUCLIDE, INDUCED + ACTIVITY BUILDUP + FUEL ELEMENT + MONITOR, RADIATION, GENERAL + PIQUA + REACTOR, ORGANIC COOLED + REACTOR, POWER + SURFACE FILM DEPOSIT

17-15683

DFREAP WS + FUKUSHIMA TY + HANSEN AI + PERRET JD + ROECKER JH + SHEPARD RC + TONDI D  
REACTIVITY ANOMALIES

ATOMICS INTERNATIONAL, CANOGA PARK, CALIF.

NAA-SR-11995 +. 19 PAGES, PAGES 15-33 OF THE PIQUA NUCLEAR POWER FACILITY REACTOR OPERATIONS ANALYSIS PROGRAM SEMIANNUAL PROGRESS REPORT NO. 7, JULY 1, 1965-JANUARY 13, 1966, DOCKET NO. 115-2

THE SLOWLY INCREASING DEVIATION OF THE MEASURED AND CALCULATED REACTIVITY FINALLY REACHED 1 DOLLAR IN JAN. 1966. ONE CAUSE WAS A SHIFT IN THE CONTROL-ROD WORTH AS A RESULT OF 3 ADDITIONAL FUEL ELEMENTS AND SHADOWING DUE TO FULL INSERTION OF ONE ROD WITH A FAILED MAGNET. A SECOND CAUSE WAS THE POWER COEFFICIENT, WHICH HAD BECOME INCREASINGLY NEGATIVE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*OPERATING EXPERIENCE + \*OPERATIONS REPORT, GENERAL + CONTROL ROD WORTH + FAILURE, SCRAM MECHANISM + PIQUA + POWER COEFFICIENT + REACTIVITY EFFECT, ANOMALOUS + REACTOR, ORGANIC COOLED + REACTOR, POWER

17-15914

COLE TF

THE OAK RIDGE HIGH FLUX ISOTOPE REACTOR, DESIGN AND INITIAL OPERATION  
OAK RIDGE NATIONAL LABORATORY

ORNL-P-7491 + CONF-66025-1 +. 32 PAGES, 9 FIGURES, 1 TABLE, 13 REFERENCES, 1966, FROM SEMINAR ON INTENSE NEUTRON SOURCES, SANTA FE, NEW MEXICO

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-15914 \*CONTINUED\*

PRESENTS A SUMMARY DESCRIPTION, FOLLOWED BY INFORMATION ON THE STARTUP PROGRAM, DEVELOPMENT, CONSTRUCTION AND OPERATING COSTS, PLANS FOR UTILIZATION OF THE EXPERIMENTAL FACILITIES, AND A FEW COMMENTS REGARDING THE POSSIBILITY OF ACHIEVING A HIGHER NEUTRON FLUX WITH A REACTOR OF THIS GENERAL TYPE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*REACTOR DESCRIPTION + \*TRANSURANIUM PROGRAM + ECONOMICS + ELEMENTS AND ISOTOPES + HFIR (HIGH FLUX ISOTOPE REACTOR) + REACTOR STARTUP EXPERIENCE; INITIAL + REACTOR STARTUP TESTING + REACTOR, AEC OWNED + REACTOR, FLUX TRAP

17-15915

MCGOVERN JJ

REPORT OF POTENTIALLY HAZARDOUS CONDITION WHICH EXISTED IN THE UNION CARBIDE NUCLEAR FACILITY

UNION CARBIDE CORP., TUXEDO, NEW YORK

2 PAGES, DECEMBER 19, 1966, DOCKET NO. 50-54

THE BEAM-TUBE PLUGS OF THE UNION CARBIDE RESEARCH REACTOR, 5 MW(T), AT STERLING FOREST, N.Y., WERE INSPECTED. EVIDENCE OF PRESSURE BUILDUP IN THE SEALED PLUGS WAS FOUND. THE FACES OF TWO PLUGS WERE BOWED OUTWARD 1.5 IN., AND THREE PLUGS WERE DISTORTED TO A LESSER DEGREE. ONE 8-IN. PLUG HAD CRACKED AND RUPTURED WELDS AS WELL AS A DISTORTED FACE. ANOTHER PLUG HAD A CRACKED WELD AROUND 1/3 OF THE CIRCUMFERENCE OF THE FACE PLATE. HOLES WERE DRILLED IN THE FACE PLATES OF ALL PLUGS TO PREVENT FUTURE PRESSURE BUILDUP, AND WIRE LANYARDS WERE PLACED IN FRONT OF THE PLUGS TO PREVENT THEIR MOVING CLOSER TO THE FACE OF THE CORE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*BEAM HOLE + \*FAILURE, PIPE + \*SHIELDING + PRESSURE, INTERNAL + REACTOR, RESEARCH

17-15917

STODDARD JA

FERTF PROGRAM PROGRESS AND PLANS. QUARTERLY REPORT NO. 4, OCTOBER-DECEMBER 1964

HANFORD ATOMIC PRODUCTS OPERATION, RICHLAND, WASHINGTON

HW-84614 +. 6 PAGES, DECEMBER 1964

PROGRESS REPORT. DISCUSSES IN-PIL-LOOP RADIOACTIVITY AND FISSION-PRODUCT RELEASE RATES OF DEFECTIVE AND HIGH-RISK FUEL ELEMENTS OPERATING AT POWER REACTOR CONDITIONS. RESULTS ARE GIVEN FOR ELEMENTS WITH SLITS IN THE CLADDING OF 1.5, 3.25, AND 6.5 IN.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*IN PILE LOOP + EXAMINATION + FAILURE, CLADDING + FAILURE, FUEL ELEMENT + FUEL ELEMENT + IRRADIATION TESTING + PRTR (PLUTONIUM RECYCLE TEST REACTOR) + REACTOR TEST FACILITY + REACTOR, AEC OWNED + REACTOR, HEAVY WATER

17-15918

ALSO IN CATEGORIES 3 AND 13

SPONTANEOUS IGNITION OF URANIUM FOILS

DIVISION OF OPERATIONAL SAFETY, USAEC

2 PAGES, 1 FIGURE, SERIOUS ACCIDENTS BULLETIN NO. 278 (MARCH 17, 1967)

A CONTAINER WAS OPENED TO REMOVE 32 UNALLOYED 93% ENRICHED URANIUM FOILS FOR TRANSFER TO A DIFFERENT CONTAINER. LESS THAN A MINUTE AFTER THE FOILS WERE REMOVED, AND WHILE 25 FOILS WERE STILL HANDHELD, THE ENVELOPES BROKE OUT IN FLAMES. THE FIRE WAS EXTINGUISHED WITHOUT DAMAGE TO THE FACILITY, AND THE WORKERS DID NOT RECEIVE INTERNAL DEPOSITION EXCEEDING PERMISSIBLE LEVELS. THERE IS EVIDENCE THAT STORAGE OF URANIUM IN LOW-OXYGEN-CONTENT ATMOSPHERES, PARTICULARLY IN THE PRESENCE OF SMALL AMOUNTS OF WATER VAPOR, CAN LEAD TO SELF-IGNITION ON EXPOSURE TO AIR.

AVAILABILITY - AEC DIVISION OF PUBLIC INFORMATION, WASHINGTON, D. C. 20545

\*ACCIDENT, GENERAL + FIRE + FUEL STORAGE + IGNITION + URANIUM

17-15919

ALSO IN CATEGORY 18

ARDENNES NUCLEAR POWER PLANT QUARTERLY REPORT NO. 12, APRIL 1-JUNE 30, 1965. SUMMARY. I. DESIGN STUDIES.

II. PREFABRICATED COMPONENTS. III. ON-SITE WORK

SOCIETE D'ENERGIE NUCLEAIRE FRANCO-BELGE DES ARDENNES, CHOOZLEZ-GIVET, FRANCE

TID-22329 +. 60 PAGES, AUGUST 1965

THIS REPORT IS ONE OF A SERIES OF SUCH REPORTS ON THE FOLLOWING SUBJECTS - DESIGN STUDIES, COMPONENTS FABRICATED OFF-SITE, AND ON-SITE WORK.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*OPERATIONS REPORT, GENERAL + EURATOM + FRANCE + ON SITE WORK + REACTOR, PRESSURIZED WATER

CATEGORY 17  
OPERATIONAL SAFETY AND EXPERIENCE

17-15932  
FIRE AND EXPLOSION AT KERR-MCGEE PLANT IN CUSHING, OKLAHOMA, JUNE 23, 1965  
KERR-MCGEE OIL INDUSTRIES, INC.  
4 PAGES, ATOMIC ENERGY CLEARING HOUSE 12(4), PAGES 19-22, (JANUARY 24, 1966)

A DEBATE ENSUED BETWEEN K-M AND AEC ON WHETHER AN OVER EXPOSURE TO THORIUM AIR-CONTAMINATION OCCURRED. KM CONTENDS THAT URINALYSIS SHOWED NEGATIVE RESULTS, WERE KNOWN TO BE INCONCLUSIVE AND WERE MADE ONLY AT REQUEST OF AEC COMPLIANCE, AND THAT ALL KM SURVEYS SHOWED NO REPORTABLE INCIDENT OCCURRED. KM POINTS OUT THAT THEY KNOW OF NO COMMERCIAL WHOLE-BODY COUNTING AGENCY, THAT SUCH COUNTERS ARE USED IN WEAPONS PROGRAM AND NOT AVAILABLE, AND THAT SIMILARLY THEY ARE INCONCLUSIVE.

\*EXPLOSION + \*INCIDENT, ACTUAL, EQUIPMENT + \*THORIUM + REGULATION, AEC

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-09286 ALSO IN CATEGORIES 1 AND 12  
PROCEDURES FOR DISMANTLING RICE UNIVERSITY REACTOR  
RICE UNIVERSITY  
11 PAGES, JULY 11, 1965, DOCKET NUMBER 50-114, PDR

PROCEDURES FOR DISMANTLING RICE UNIV. REACTOR ARE GIVEN FOR FUEL-ELEMENT REMOVAL, PERSONNEL PROTECTION, DISPOSAL OF COMPONENTS, DISPOSAL OF SHIELDING WATER, RECORDS, AND CLEANING THE WATER TANK.

\*LICENSING STATUS OF NUCLEAR PROJECTS + \*PROCEDURES AND MANUALS + \*REACTOR, TRAINING + FUEL HANDLING + PERSONNEL PROTECTIVE DEVICE + TRANSPORTATION AND HANDLING

18-10528 ALSO IN CATEGORY 11  
PROPOSED CHANGE 75 - CONTAINMENT LEAKAGE RATE RETEST SPECIFICATIONS  
YANKEE ATOMIC ELECTRIC COMPANY  
5 PAGES, OCTOBER 20, 1966, DOCKET NO. 50-29

PRESENT TECH. SPECS. HAVE NO PROVISION FOR CONTAINMENT INTEGRITY OR TESTING, SO THIS CHANGE BRINGS YANKEE TO PRESENT DRC STANDARDS. FIVE PAGES OF SPECIFICATIONS DESCRIBE THE KINDS OF TESTS (INTEGRATED LEAK RATE, INDIVIDUAL PENETRATION, ISOLATION VALVE TESTS, FREQUENCY, AND REPORTING. ALSO SET CRITERIA FOR CONTINUOUS-LEAKAGE MONITORING SYSTEM.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*CONTAINMENT, GENERAL + \*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + CONTAINMENT INTEGRITY + CONTAINMENT, CONTINUOUS MONITORING SYSTEM + REACTOR, PRESSURIZED WATER + TEST, LEAK RATE + YANKEE

18-12189  
FURTHER INFORMATION ON PULSTAR TEST  
WESTERN NEW YORK NUCLEAR RESEARCH CENTER, INC, NEW YORK  
3 PAGES, 1 FIGURES, SEPTEMBER 13, 1966, DOCKET NO. 50-57, PDR

FURTHER INFORMATION GIVEN ON TESTS - (1) NATURAL-CIRCULATION POWER LIMIT. DNB WILL NOT OCCUR IN TEST ELEMENT UNTIL CORE POWER IS 2.5 MW. CORE LIMITED TO 2 MW AND CLAD TEMPERATURE IS MONITORED. DISCUSSION OF CLAD TEMPERATURE. (2) COBALT-STRIP DETAILS GIVEN.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + CIRCULATION, NATURAL (LOOPS AND REACTORS) + DNB (DEPARTURE FROM NUCLEATE BOILING) + REACTOR, PULSED + TEST, PHYSICS

18-12192 ALSO IN CATEGORY 17  
AMENDMENT 11. TEMPORARY FUEL STORAGE TO ALLOW-LINING REACTOR POOL WITH STAINLESS STEEL  
U.S. ARMY MATERIAL RESEARCH AGENCY  
3 PAGES, 2 FIGURES, MAY 23, 1966, DOCKET NO. 50-47

AMENDMENT 11 REQUESTS AUTHORITY TO STORE 49 USED FUEL ELEMENTS AROUND THE PERIPHERY OF AN UNUSED 6-FT-DIA TANK. VARIOUS PRESSURE GROUTING, EPOXIES, AND VINYL TAPE HAD CONTROLLED RADIOLICAL SHIELD WATER LEAKAGE. WITH HIGHER POWER INTENDED, POSITIVE MEANS ARE DESIRABLE TO AVOID LOSS OF COOLANT, SO A STEEL LINER WILL BE INSTALLED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*POWER UPDATING + CLAD + FUEL STORAGE + REACTOR, ARMY + REACTOR, POOL TYPE + TEST, LEAK LOCATION

18-12195 ALSO IN CATEGORIES 9 AND 17  
TOMLINSON RL  
ANNUAL SUMMARY OF CHANGES, TESTS AND EXPERIMENTS PERFORMED ON THE AEROJET-GENERAL NUCLEONICS INDUSTRIAL REACTOR (AGNIR)  
AEROJET-GENERAL NUCLEONICS, SAN RAMON  
15 PAGES, AUGUST 13, 1966, DOCKET NO. 50-228, PDR

A FUEL-CLAD LEAK OCCURRED OCT. 15, 1965. MOST OF THE 79 SCRAMS CAME FROM RANGE-SWITCHING ERRORS WHILE USING THE PICOAMMETER. APPENDIX I. - DRIVE-MOTOR SPEEDS WERE REDUCED AS RODS WERE WORTH MORE THAN CALCULATED. AUTOMATIC RESET SWITCH NOW TURNS ON BF3 HV, THEN 40 SEC LATER RESTORES BF3 TO SCRAM CIRCUIT. THIS AVOIDS FALSE SCRAMS ON POWER REDUCTION. COOLING FLOW ROUTED TANGENTIALLY TO REACTOR CORE TOP REDUCES POOL DOSE RATE FROM 10 TO 1 MREM/HR. A FIXED LOW-BLEED CURRENT WAS PUT INTO CHANNEL 2 TO AVOID FALSE PERIOD SCRAMS AS THAT CHANNEL CAMF ON SCALE

\*OPERATING EXPERIENCE + \*OPERATIONS SUMMARY FOR AEC + CONTROL ROD DRIVE + INSTRUMENTATION, STARTUP RANGE + REACTOR, RESEARCH + SCRAM, SPURIOUS + TRIGA (TRAINING REACTOR, ISOTOPES, G.A.)

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-12207 ALSO IN CATEGORY 17  
INDIAN POINT INSPECTION OF CORE SHROUD ASSEMBLY, REACTOR AND PRESSURIZER CLAD  
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC., NEW YORK  
3 PAGES, FEBRUARY 28, 1966, DOCKET NO. 50-3, PDR

IN THE DECEMBER 1965 AND JANUARY 1966 REFUELING OUTAGE, THE FOLLOWING INSPECTIONS WERE PERFORMED. (1) REACTOR VESSEL INTERIOR CLAD 15 INCHES BELOW THE CLOSURE FLANGE WAS EXAMINED, AND TWO SQUARE FEET WERE EXAMINED BY THE DYE-PENETRANT TEST. NO DEFECTS WERE REVEALED. (2) A BORESCOPE EXAMINATION OF 1.25 SQ FT OF VESSEL CLAD BELOW THE LOWER GRID PLATE SHOWED NO DEFECTS. (3) CORE SHROUD WAS EXAMINED WITH BINOCULARS AND WITH UNDERWATER TV. NO DEFECTS FOUND. (4) THE INTERIOR OF THE PRESSURIZER WAS ENTERED AND GIVEN A FULL VISUAL AND PARTIAL DYE-PENETRANT EXAMINATION. NO DEFECTS FOUND.

\*CLAD + \*CONTAINMENT, PRESSURE VESSEL + \*CORE COMPONENTS, MISCELLANEOUS + \*EXAMINATION + \*PRESSURIZER + INDIAN POINT 1 + REACTOR, PRESSURIZED WATER + REMOTE MANIPULATING AND VIEWING

18-13234 ALSO IN CATEGORY 17  
INDIAN POINT CHANGE 26 - OPERATION WITH REDUCED PUMP CAPABILITY  
DIVISION OF REACTOR LICENSING, USAEC  
3 PAGES, NOVEMBER 19, 1966, DOCKET NO. 50-3

AEC APPROVES TECH. SPEC. CHANGE RELATED TO FINDING LOW CORE FLOW DUE TO INCORRECT TEMPERATURE MEASUREMENTS. HOWEVER, AEC SET PUMP LOWER FLOW LIMIT HIGHER THAN REQUESTED TO TAKE INTO ACCOUNT FURTHER DETERIORATION IN FLOW RATE OR IN MEASUREMENT DEVICES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + \*SAFETY EVALUATION + FLOW ORIFICE OR RESTRICTION + INDIAN POINT 1 + REACTOR, PRESSURIZED WATER

18-13314  
AEC-DRL SAFETY EVALUATION OF FERMI REACTOR PROPOSED OPERATION AT 200 MWTH  
DIVISION OF REACTOR LICENSING, USAEC  
54 PAGES, 4 TABLES, 46 REFERENCES, JULY 9, 1965, DOCKET NO. 50-16

THIS UPDATES DRL REVIEW OF OPERATION LESS THAN 1 MW BY REVIEWING OPERATING EXPERIENCE, SYSTEM TESTS, ETC. AREAS MORE COMPLETELY ANALYZED WERE - STEAM-GENERATOR-TUBE-LEAKAGE EXPERIENCE, FUEL AND REPAIR BUILDING, AND CONTAINMENT AND MISSILE PROTECTION. LEAKAGE OF STEAM-GENERATOR TUBES AND SEQUENTIAL FAILURE OF OTHER TUBES HAS OCCURRED AND BEEN INVESTIGATED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*SAFETY ANALYSIS REPORT, REVIEW OF + FAILURE, EQUIPMENT + FAILURE, INSTRUMENT + FERMI + LICENSING STATUS OF NUCLEAR PROJECTS + OPERATING EXPERIENCE + REACTOR, BREEDER + REACTOR, FAST + REACTOR, LIQUID METAL COOLED

18-13525 ALSO IN CATEGORIES 2 AND 13  
DESIGN AND ANALYSIS. MIDWEST FUEL RECOVERY PLANT. GENERAL ELECTRIC COMPANY, FUEL RECOVERY OPERATION,  
NUCLEAR ENERGY DIVISION  
GENERAL ELECTRIC COMPANY  
300 PAGES, 31 FIGURES, 12 TABLES, NOVEMBER 1966, DOCKET NO. 50-268

REPORT SUPPORTS GENERAL ELECTRIC COMPANY APPLICATION FOR A CONSTRUCTION PERMIT AND AEC LICENSE FOR THE MIDWEST FUEL RECOVERY PLANT (MFPP). PLANT UTILIZES THE GENERAL ELECTRIC AQUAFUOR PROCESS FOR THE SEPARATION AND PURIFICATION OF URANIUM AND PLUTONIUM PRODUCT MATERIALS FROM SPENT UO<sub>2</sub> REACTOR FUEL ELEMENTS CLAD WITH STAINLESS STEEL OR ZIRCONIUM ALLOYS. AQUAFUOR USES THE FOLLOWING UNIT OPERATIONS - MECHANICAL DISASSEMBLY, CHEMICAL LEACHING, SOLVENT EXTRACTION, ION EXCHANGE, AND FLUID-BED FLUORINATION. REPORT COVERS ALL PHASES OF HAZARDS INVOLVING NUCLEAR CRITICALITY, RADIOACTIVE CONTAMINATION, CHEMICAL, AND MECHANICAL OPERATIONS THAT ARE REQUIRED FOR OPERATION OF THE RADIOCHEMICAL PROCESSING PLANT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*RADIOCHEMICAL PLANT SAFETY + \*RADIOCHEMICAL PROCESSING + \*SAFETY ANALYSIS REPORT, GENERAL + \*WASTE DISPOSAL, GENERAL + CONTAINMENT, FUEL REPROCESSING + CRITICALITY SAFETY + MFPP (MIDWEST FUEL RECOVERY PLANT) + PLUTONIUM + URANIUM DIOXIDE + WASTE DISPOSAL, ATMOSPHERIC

18-13537  
FERMI AMENDMENT 4 - STORAGE OF SEALED PLUTONIUM FUEL SPECIMEN  
DIVISION OF REACTOR LICENSING  
8 PAGES, DECEMBER 2, 1966, DOCKET NO. 50-16

FERMI ALLOWED TO STORE 500 SEALED PLUTONIUM FUEL ELEMENT TEST SPECIMENS.

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-13537 \*CONTINUED\*  
AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*SAFETY ANALYSIS + FERMI + OPERATING LIMITS/TECHNICAL SPECIFICATIONS + PLUTONIUM + REACTOR, BREEDER + REACTOR, FAST + REACTOR, LIQUID METAL COOLED

18-13665 ALSO IN CATEGORY 7  
RESEARCH AND DEVELOPMENT PROGRAMS  
PUBLIC SERVICE COMPANY OF COLORADO, DENVER, COLORADO  
100 PAGES, 27 FIGURES, 12 TABLES, FORT ST. VRAIN NUCLEAR GENERATING STATION PRELIMINARY SAFETY ANALYSIS REPORT, VOL. II, APPENDIX A, SEPTEMBER 1966, DOCKET NO. 50-267

DESCRIBES THE CURRENT PROGRAMS RELATED TO PLANT SAFETY AND DESIGN. COATED FUEL PARTICLES HAVE BEEN IRRADIATED TO MORE THAN 50% OF THE DESIGN PEAK BURNUP OF 20 PERCENT, AND THE COATINGS HAVE MAINTAINED COMPLETE INTEGRITY. CESIUM-PLATEOUT STUDIES SHOW LEVELS RANGE FROM 0.5 TO 90 MONOLAYERS. STRONTIUM-PLATEOUT STUDIES SHOW A HIGHER LEVEL OF PLATEOUT. OTHER PROGRAMS INCLUDE FISSION-PRODUCT RELEASE, CONTROL-ROD DRIVES, STEAM-GRAPHITE REACTION, CARBON TRANSPORT TO METALS, FUEL-TRANSFER MACHINE, STEAM-GENERATOR-TUBE VIBRATION, AND METAL-COOLANT COMPATIBILITY.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

CESIUM + COATED PARTICLE + COMBUSTION + DEPOSITION + FISSION PRODUCT RETENTION + FT. ST. VRAIN + FUEL HANDLING MACHINE + GRAPHITE + HEAT EXCHANGER + REACTOR COOLANT + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED + REACTOR, POWER + RESEARCH AND DEVELOPMENT PROGRAM + STRONTIUM + TEST, COMPONENT + TEST, CONTROL ROD DRIVE + VIBRATION

18-13666 ALSO IN CATEGORIES 6 AND 5  
INHERENT SAFETY CHARACTERISTICS  
PUBLIC SERVICE COMPANY OF COLORADO, DENVER, COLORADO  
4 PAGES, SEPTEMBER 1966, DOCKET NO. 50-267, FORT ST. VRAIN NUCLEAR GENERATING STATION PRELIMINARY SAFETY ANALYSIS REPORT, VOL. I, SECTION 1 - INTRODUCTION AND SUMMARY, PAGES 1.3-3 TO 1.3-6

SUMMARIZES THE INHERENT SAFETY CHARACTERISTICS AND DESCRIBES THE REASON FOR EACH. (1) THE LARGE HEAT CAPACITY OF THE CORE AND LOW CAPACITY OF THE HE COOLANT PREVENTS A SUDDEN DROP IN FUEL OR MODERATOR TEMPERATURE, THUS THERE IS NOTHING EQUIVALENT TO A COLD-WATER REACTIVITY INSERTION ACCIDENT. (2) THE HIGH-TEMPERATURE MECHANICAL INTEGRITY OF THE CORE IS ASSURED, SINCE THE GRAPHITE STRUCTURAL MATERIAL GAINS STRENGTH AS THE TEMPERATURE INCREASES. (3) THE CORE SIZE FOR XENON INSTABILITIES. (4) THE PYROLYTIC-CARBON-COATED FUEL DOES NOT MELT NOR DOES IT SUBLIME BELOW 5500 F, SO NO SUDDEN INCREASE IN ACTIVITY RELEASE IS EXPECTED DUE TO HIGH-TEMPERATURE EXCURSIONS. (5) NO ACCUMULATION OF WIGNER (STORED) ENERGY, SINCE THE OPERATING TEMPERATURE IS HIGH ENOUGH TO CONTINUOUSLY ANNEAL THE GRAPHITE. (6) THE CORE AND PRIMARY SYSTEM ARE CONTAINED IN CONCRETE REACTOR VESSEL, WHICH HAS MANY PRESTRESSED TENDONS. THERE IS NO MECHANISM BY WHICH FAILURE OF ONE TENDON COULD PROPAGATE TO OTHER TENDONS. THUS A SUDDEN LOSS OF PRIMARY COOLANT IS PREVENTED WHICH COULD RESULT IN OVERHEATING OF THE CORE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

ACCIDENT, COLD COOLANT + ACCIDENT, LOSS OF COOLANT + COATED PARTICLE + CONCRETE, PRESTRESSED + CONTAINMENT, PRESSURE VESSEL + FT. ST. VRAIN + GRAPHITE + PYROLYTIC + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED + REACTOR, POWER + SAFETY ANALYSIS REPORT, PRELIMINARY + STRUCTURAL INTEGRITY + WIGNER ENERGY RELEASE + XENON OSCILLATION

18-13667 ALSO IN CATEGORY 1  
COMPARISON OF PLANT DESIGN WITH AEC CRITERIA  
PUBLIC SERVICE COMPANY OF COLORADO, DENVER, COLORADO  
49 PAGES, FORT ST. VRAIN NUCLEAR GENERATING STATION PRELIMINARY SAFETY ANALYSIS REPORT, VOL. II, APPENDIX B, SEPTEMBER 1966, DOCKET 50-267

COMPARES THE PLANT DESIGN WITH EACH OF THE 27 AEC CRITERIA FOR NUCLEAR POWER PLANT CONSTRUCTION PERMITS. CRITERIA ARE GIVEN FOR THE FACILITY, THE REACTOR, ENGINEERED SAFEGUARDS, AND RADIOACTIVITY CONTROL.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*AEC CONSTRUCTION PERMIT CRITERIA + \*DESIGN CRITERIA + ENGINEERED SAFETY SYSTEM + FT. ST. VRAIN + RADIOACTIVITY, RELEASE + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED + REACTOR, POWER

18-13668  
SAFETY ANALYSIS  
PUBLIC SERVICE COMPANY OF COLORADO, DENVER, COLORADO  
62 PAGES, 24 FIGURES, 9 TABLES, 21 REFERENCES, FORT ST. VRAIN NUCLEAR GENERATING STATION PRELIMINARY SAFETY ANALYSIS REPORT, VOL. II, SECTION XIV, SEPTEMBER 1966, DOCKET 50-267

THE PLANT IS DESIGNED FOR SEISMIC LOADS CORRESPONDING TO ZONE 1 AND ALSO TO SAFE SHUT-DOWN DURING AND AFTER AN EARTHQUAKE MOTION OF 0.08 G HORIZONTAL GROUND ACCELERATION AND A VERTICAL ACCELERATION OF 0.05 G. QUICK CHANGES IN CORE TEMPERATURE ARE IMPOSSIBLE BECAUSE OF THE LARGE HEAT CAPACITY OF THE CORE MATERIALS AND SMALL HEAT CAPACITY OF THE HELIUM COOLANT. 22

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-13668 \*CONTINUED\*  
POSSIBLE FAILURES, MALFUNCTIONS, OR OPERATOR ERRORS AFFECTING PLANT SYSTEMS ARE ANALYZED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*ACCIDENT ANALYSIS + DESIGN STUDY + FT. ST. VRAIN + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED + REACTOR, POWER + SAFETY STUDY + SEISMOLOGY

18-13669 ALSO IN CATEGORY 5  
ORIFICE SYSTEM  
PUBLIC SERVICE COMPANY OF COLORADO, DENVER, COLORADO  
2 PAGES, FORT ST. VRAIN NUCLEAR GENERATING STATION PRELIMINARY SAFETY ANALYSIS REPORT, VOL. 1, SECTION III, PAGES 3.9-1 TO 3.9-2, SEPTEMBER 1966, DOCKET NO. 50-267

TO PROVIDE A UNIFORM EXIT COOLANT TEMPERATURE FROM ALL REGIONS OF THE CORE, A VARIABLE-ORIFICE COOLANT FLOW-CONTROL ASSEMBLY IS LOCATED AT THE INLET OF 37 REFUELING REGIONS. THE ORIFICE IS A CYLINDRICAL SHUTTER WHICH ROTATES CONCENTRICALLY ABOUT A FIXED ORIFICE CYLINDER.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*FLOW DISTRIBUTION + \*FLOW ORIFICE OR RESTRICTION + CONTROL, GENERAL + FT. ST. VRAIN + HIGH TEMPERATURE + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED + REACTOR, POWER

18-13670  
HELIUM PURIFICATION SYSTEM  
PUBLIC SERVICE COMPANY OF COLORADO, DENVER, COLORADO  
14 PAGES, 2 TABLES, FORT ST. VRAIN NUCLEAR GENERATING STATION PRELIMINARY SAFETY ANALYSIS REPORT, VOL. II, SECTION IX, PAGES 9.4-1 TO 9.4-12, SEPTEMBER 1966, DOCKET NO. 50-267

DESCRIBES THE SYSTEM THAT PROVIDES HELIUM FOR PURGING SEALS OF THE HELIUM CIRCULATORS, CONTROL ROD DRIVES, INSTRUMENTS, AND PRESTRESSED CONCRETE VESSEL PENETRATIONS. THE SYSTEM CONSISTS OF A HIGH-TEMPERATURE FILTER/ADSORBER, FOLLOWED BY A COOLER, A DRYER, A LIQUID-NITROGEN COLD TRAP, AND A PURIFIED-HELIUM FILTER. THE SYSTEM IS LOCATED INSIDE THE PRESTRESSED CONCRETE REACTOR VESSEL.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*COOLANT PURIFICATION SYSTEM + \*HELIUM + FT. ST. VRAIN + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED + REACTOR, POWER

18-13671  
REACTOR COOLANT SYSTEM  
PUBLIC SERVICE COMPANY OF COLORADO, DENVER, COLORADO  
27 PAGES, 9 FIGURES, 5 TABLES, FORT ST. VRAIN NUCLEAR GENERATING STATION PRELIMINARY SAFETY ANALYSIS REPORT, VOL. I, SECTION IV, SEPTEMBER 1966, DOCKET NO. 50-267

DESCRIBES SYSTEM IN WHICH 4 HELIUM CIRCULATORS ARE USED. EACH UNIT CONSISTS OF A SINGLE-STAGE AXIAL-FLOW COMPRESSOR, A SINGLE-STAGE STEAM-TURBINE MAIN DRIVE, AND A SINGLE-STAGE WATER-TURBINE AUXILIARY DRIVE. THE STEAM-TURBINE DRIVES OPERATE ON COLD REHEAT STEAM FROM THE EXHAUST OF THE HIGH-PRESSURE ELEMENT OF THE MAIN TURBINE. OPERATION OF THE WATER TURBINE WOULD OCCUR FOLLOWING PRIMARY-COOLANT DEPRESSURIZATION AND LOSS OF STEAM SUPPLY. OVERSPEED DEVICES ARE PROVIDED FOR THE CIRCULATORS. WATER-LUBRICATED BEARINGS ARE USED. A DOUBLE-LABYRINTH SEAL WITH HELIUM BUFFER GAS ENSURES ZERO LEAKAGE OF CONTAMINATED HELIUM INTO THE WATER OR STEAM SYSTEMS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*MAIN COOLING SYSTEM + COOLING, SHUTDOWN + FT. ST. VRAIN + PUMP + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED + REACTOR, POWER

18-13672 ALSO IN CATEGORY 11  
PRESTRESSED CONCRETE REACTOR VESSEL  
PUBLIC SERVICE COMPANY OF COLORADO, DENVER, COLORADO  
51 PAGES, 18 FIGURES, 4 TABLES, 32 REFERENCES, FORT ST. VRAIN NUCLEAR GENERATING STATION PRELIMINARY SAFETY ANALYSIS REPORT, VOL. I, SECTION V, SEPTEMBER 1966, DOCKET NO. 50-267

DISCUSSES PERFORMANCE OBJECTIVES OF THE PCRV AND DESIGN BASIS, PROPERTIES OF THE CONCRETE, EVALUATION OF THE LINER, PENETRATIONS AND CLOSURES, THERMAL BARRIER AND LINER COOLING, MISSILE PROTECTION, TESTS AND INSPECTION, AND REACTION TO LOAD CONDITIONS. THE DESIGN LIFE IS 30 YEARS. PEAK WORKING PRESSURE IS 704 PSIG. MAXIMUM TEMPERATURE OF INTERNAL SURFACE WILL BE 760 DEGREES F. CORROSION OF THE REINFORCEMENT IS NOT EXPECTED SINCE ALL IS COVERED BY THE CONCRETE, WHICH IS HELD TOGETHER BY A HYDRATED CONCRETE WHICH WILL PASSIVATE THE STEEL. EXPERIMENTS HAVE SHOWN THE RADIATION DAMAGE SHOULD NOT BE DISCERNIBLE FROM THE INTEGRATED NEUTRON DOSE OF 2 TIMES 10 TO THE 18 (GREATER THAN 1 MEV) AND 10 TO THE 10 RADS GAMMA.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-13672 \*CONTINUED\*

\*CONCRETE, PRESTRESSED + \*CONTAINMENT, PRESSURE VESSEL + CORROSION + FT. ST. VRAIN + RADIATION DAMAGE + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED + REACTOR, POWER

18-13673 ALSO IN CATEGORY 9

PRIMARY COOLANT INSTRUMENTS

PUBLIC SERVICE COMPANY OF COLORADO, DENVER, COLORADO

2 PAGES, FORT ST. VRAIN NUCLEAR GENERATING STATION PRELIMINARY SAFETY ANALYSIS REPORT, VOL. II, SECTION VII, PAGES, 7.3-5 TO 7.3-6, SEPTEMBER 1966, DOCKET NO. 50-267

ACOUSTIC THERMOMETERS MAY BE USED TO MEASURE PRIMARY-CORE OUTLET TEMPERATURES BECAUSE OF THE HIGH-TEMPERATURE ENVIRONMENT (1400 TO 1500 F). SINCE THE VELOCITY OF SOUND IS PROPORTIONAL TO GAS TEMPERATURE AND IS INDEPENDENT OF THE GAS PRESSURE, ACCURACY SHOULD BE REALIZED. THE INSTRUMENT SHOULD ALSO PROVIDE LONG-LIFE CAPABILITY.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*INSTRUMENTATION, TEMPERATURE + FT. ST. VRAIN + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED + REACTOR, POWER

18-13674

FORT ST. VRAIN NUCLEAR GENERATING STATION. PRELIMINARY SAFETY ANALYSIS REPORT. VOL. I AND II

PUBLIC SERVICE COMPANY OF COLORADO, DENVER, COLORADO

400 PAGES, VOL. I, 400 PAGES, VOL. II, SEPTEMBER 1966, DOCKET NO. 50-267

DESCRIBES THE 330 MW(E) HIGH-TEMPERATURE HELIUM-COOLED LOAD-FOLLOWING REACTOR PLANT. GRAPHITE IS USED FOR MODERATOR, FUEL CLADDING, CORE STRUCTURE, AND REFLECTOR. THE FUEL IS A U-235 THORIUM MIXTURE (TH-UC2). THE REACTOR, COOLANT SYSTEM, HELIUM PURIFICATION SYSTEM, AND PART OF THE SECONDARY COOLANT SYSTEM ARE ENCLOSED BY A PRESTRESSED CONCRETE VESSEL. THE MCA REQUIRES A SERIES OF FAILURES - (1) RUPTURE OF A HELIUM PURIFICATION LINE, (2) OPENING OF A FAIL-CLOSE ISOLATION VALVE, AND (3) FAILURE OF OPERATOR ACTION ALLOWING LEAKAGE TO CONTINUE AT 3.4 LB/SEC TO THE REACTOR BUILDING. NO FUEL RELEASE. THE MAXIMUM INTEGRATED DOSE AT THE EXCLUSION AREA BOUNDARY FOR THE TERM OF THE ACCIDENT IS 2 REMS WHOLE-BODY GAMMA, 0.04 REM TO THE THYROID, AND 0.007 REM TO THE BONE. GROUND CONTAMINATION FOR THE WORST ATMOSPHERIC CONDITIONS, INCLUDING A RAINSTORM, WOULD BE 50 MICROCURIES/SQ. METER.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + COATED PARTICLE + CONCRETE, PRESTRESSED + CONTAINMENT, PRESSURE VESSEL + FT. ST. VRAIN + REACTOR DESCRIPTION + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED + REACTOR, POWER

18-13675 ALSO IN CATEGORY 12

DESIGN SAFETY FEATURES, INCLUDING ENGINEERED SAFEGUARDS

PUBLIC SERVICE COMPANY OF COLORADO, DENVER, COLORADO

3 PAGES, VOL. I, 2 FIGURES, 1 TABLE, 5 REFERENCES, FORT ST. VRAIN NUCLEAR GENERATING STATION PRELIMINARY SAFETY ANALYSIS REPORT, PAGES 1.3-6 TO 1.3-8, VOL. I AND SECTION VI, SEPTEMBER 1966, DOCKET NO. 50-267

THE PRINCIPAL SAFETY FEATURES ARE DISCUSSED. (1) THE FOUR COOLANT CIRCULATORS CAN BE DRIVEN BY EITHER STEAM OR AUXILIARY WATER TURBINES, THUS DECAY HEAT REMOVAL IS ASSURED. (2) A SECONDARY SHUTDOWN SYSTEM USES BORON CARBIDE IN GRANULAR FORM, WHICH IS ALLOWED TO FALL INTO CHANNELS IN THE CORE. (3) PRIMARY COOLANT MOISTURE-DETECTION SYSTEM AUTOMATICALLY SCRAMS REACTOR AND DUMPS WATER AND STEAM FROM THE LEAKING STEAM GENERATOR. (4) SECONDARY CONTAINMENT OF ALL PRESTRESSED CONCRETE REACTOR VESSEL PENETRATIONS. (5) AIR-GRAPHITE REACTION PROTECTION FOLLOWING A PRESTRESSED CONCRETE REACTOR VESSEL LEAK WOULD BE PREVENTED BY CONTINUOUS PURGE OF PURIFIED HELIUM, BACKED UP BY NITROGEN SYSTEM. THE COOLANT IS COLLECTED, FILTERED, AND RELEASED UP THE STACK.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*ENGINEERED SAFETY SYSTEM + ACCIDENT, LOSS OF COOLANT + AIR + COMBUSTION + CONCRETE, PRESTRESSED + CONTAINMENT LEAKAGE CONTROL + CONTAINMENT, PRESSURE VESSEL + EMERGENCY COOLING CONSIDERATIONS + FT. ST. VRAIN + GRAPHITE + INSTRUMENTATION, COOLANT QUALITY + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED + SAFETY ANALYSIS REPORT, PRELIMINARY + SHUTDOWN SYSTEM, SECONDARY

18-13835 ALSO IN CATEGORIES 12 AND 17

STANFORD LE + WEBSTER CC

OPERATING SAFETY LIMITS FOR THE OAK RIDGE NATIONAL LABORATORY BULK SHIELDING REACTOR (BSR)

OAK RIDGE NATIONAL LABORATORY

ORNL-TM-1667 +. 10 PAGES, OCTOBER 19, 1966

LISTS THE NEW OPERATING SAFETY LIMITS FOR THE 2-MW(TH), LIGHT-WATER-MODERATED-AND-COOLED, ENRICHED-U235, POOL-TYPE TESTING REACTOR. THE POWER LEVEL HAS BEEN UPDATED FROM 1 TO 2 MW. LIMITS ARE GIVEN FOR THE REACTOR BUILDING CONTAINMENT, MODES OF OPERATION, CORE REACTIVITY, PRIMARY AND SECONDARY COOLING SYSTEM TEMPERATURE AND QUALITY, CONTROL AND SAFETY SYSTEM, EXPERIMENTS, AND RADIATION. NO EMERGENCY COOLING PROVISIONS FOR AFTER-HEAT REMOVAL ARE REQUIRED.



CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-13935 \*CONTINUED\*  
AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$1.00 COPY, \$0.50 MICROFICHE.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + BSP (BULK SHIELDING REACTOR) + POWER UPGRATING + REACTOR, AEC OWNED + REACTOR, POOL TYPE

18-13933  
MANHATTAN COLLEGE REACTOR OPERATING LICENSE, TECHNICAL SPECIFICATIONS CHANGE NO. 5  
MANHATTAN COLLEGE  
1 PAGES, DECEMBER 20, 1966, DOCKET NO. 50-199

AUTHORIZES USE OF A PARTIAL FUEL ELEMENT IN THE CORE WHILE PERFORMING REACTIVITY MEASUREMENTS AT 60 F.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + MEASUREMENT, REACTIVITY + REACTOR, POOL TYPE + REACTOR, TRAINING

18-13936 ALSO IN CATEGORY 17  
LETTER TO DRL FROM MANHATTAN COLLEGE - REQUEST FOR CHANGE IN TECHNICAL SPECIFICATION  
MANHATTAN COLLEGE  
24 PAGES, FIGURES, TABLES, OCTOBER 1966, DOCKET 50-199

PRESENTS SUBSTANTIATING EVIDENCE FOR ALTERING TECHNICAL SPECIFICATIONS, BECAUSE OF THE POSITIVE BULK-WATER TEMPERATURE COEFFICIENT, TO ALLOW AN EXCESS REACTIVITY OF 0.0035 AT 75 F WITH BOTH CONTROL RODS FULLY WITHDRAWN, AS OPPOSED TO 0.003 AT 60 F. THE COST OF EQUIPMENT TO PERFORM AN EXPERIMENT TO DETERMINE THE TEMPERATURE AT WHICH THE COEFFICIENT CHANGED FROM MINUS TO PLUS WAS PROHIBITIVE, SO CONCLUSIONS FROM A CORRELATIVE STUDY WITH THE IRL REACTOR ARE GIVEN. OPERATIONAL DATA FROM THE MZPR LOG BOOK IS NORMALIZED TO 70 F TO COMPARE WITH IRL, AND INDICATES A REACTIVITY PEAK OF 0.369% AT 110 F. THE MCA WAS REEVALUATED AND INDICATES A PEAK POWER OF 147 KW 3.6 MIN AFTER THE BEGINNING OF THE EXCURSION, AND ZERO AFTER 5.3 MIN. THE MAXIMUM CORE TEMPERATURE WOULD REACH 105 C. EXPERIMENTAL RESULTS OF THE TEMPERATURE-COEFFICIENT DETERMINATION FOR THE IRL ARE GIVEN. VARIATIONS FROM 59 TO 112 F WERE PLUS 30 TO MINUS 14 MICRO DELTA K PER DEGREE F. AT 94 F, THE COEFFICIENT WAS ZERO. THE MEASURED VOID COEFFICIENT FOR THE MZPR IS MINUS 5.83 MICRO DELTA K PER K.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + \*TEMPERATURE COEFFICIENT + ACCIDENT, MAXIMUM CREDIBLE (MCA) + MEASUREMENT, REACTIVITY + MEASUREMENT, TEMPERATURE + REACTOR, POOL TYPE

18-13952  
U OF MISSOURI (ROLLA) AMENDMENT 4 - POWER UPGRATING, AND TECHNICAL SPECIFICATIONS  
DIVISION OF REACTOR LICENSING  
13 PAGES, DECEMBER 1966, DOCKET NO. 50-123

DRL AUTHORIZED POWER-LEVEL INCREASE FROM 10 KW TO 200, OPERATORS OTHER THAN SRO TO MANIPULATE CONTROLS WITH (AVAILABLE) EXCESS REACTIVITY UP TO 1.5%, TEMPORARY LOADING OF 3.5% EXCESS REACTIVITY FOR ROD CALIBRATION, AND FIRST SET OF TECHNICAL SPECIFICATIONS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + \*SAFETY EVALUATION + POWER UPGRATING + REACTOR, POOL TYPE

18-13954 ALSO IN CATEGORY 5  
BIG ROCK POINT CHANGE 10 INFORMATION  
CONSUMERS POWER COMPANY  
2 PAGES, SEPTEMBER 1966, DOCKET NO. 50-155

GIVES DETAILS OF CONTROL-ROD-EJECTION RESULTS. FUEL ENTHALPY VS REACTIVITY INSERTED (420 CAL/GRAM AT 3% REACTIVITY), RESULTANT VESSEL DAMAGE (1.1% STRAIN AT 590 CAL/GRAM), EXTENT OF FUEL DAMAGE (AT 490 CAL/GRAM, 1450 LB WOULD START MELTING, 650 WOULD BE FULLY MOLTEN, AND 30 WOULD BE RUPTURED PROMPTLY). DESPITE TREAT RESULTS, POWER REACTOR FUEL IS ESSENTIALLY ISOTHERMAL DURING TRANSIENT. WHILE COLD-CONDITION ACCIDENT GIVES GREATER ENTHALPY, ITS SEVERITY IS LESS BECAUSE OF THE LARGER HEAT SINK.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*ACCIDENT, CONTROL ROD EJECTION + BIG ROCK POINT + REACTOR, BOILING WATER

18-13955 ALSO IN CATEGORY 5  
BIG ROCK POINT CHANGE 10 INFORMATION - VARIABLE FUEL ELEMENT TIME CONSTANT

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-13955 \*CONTINUED\*  
CONSUMERS POWER COMPANY  
3 PAGES, SEPTEMBER 1966, DOCKET NO. 50-155

(1) A VARIABLE TIME CONSTANT WAS USED IN REACTIVITY EXCURSION ANALYSIS (AT FUEL ENTHALPY OF 150 CAL/GRAM, TIME CONSTANT WAS 1 SEC AT 250 CAL/GRAM, 0.1 SEC AT 600 CAL/GRAM, 0.0135 SEC).  
(2) ANL PELLETS TESTS INDICATE THAT POWDER FUEL HAS 0.050 TIME CONSTANT VS PELLETS FUEL 0.260. THIS PELLETS FUEL DECREASED HEAT TRANSFER RATE (AND HENCE PRESSURE RISE) AND WOULD DECREASE PROBABLE CONSEQUENCE OF ACCIDENT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*ACCIDENT, CONTROL ROD WITHDRAWAL + \*FUEL ELEMENT + BIG ROCK POINT + REACTOR, BOILING WATER\*

18-13956  
DRESDEN CHANGE 10 - BI ANNUAL CONTROL ROD DRIVE DISASSEMBLY  
DIVISION OF REACTOR LICENSING  
2 PAGES, NOVEMBER 23, 1966, DOCKET NO. 50-10

AEC APPROVES CHANGE BETWEEN DETAILED INSPECTIONS OF TWO DRIVES FROM EVERY 16 MONTHS TO EVERY 24 MONTHS, BECAUSE OF LONGER REFUELING CYCLE.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + CONTROL ROD DRIVE + DRESDEN 1 + EXAMINATION + REACTOR, BOILING WATER

18-13957  
DRL SAFETY EVALUATION FOR DOW CHEMICAL COMPANY, TRIGA  
DIVISION OF REACTOR LICENSING  
9 PAGES, NOVEMBER 28, 1966, DOCKET NO. 50-264

THE TRIGA-MARK I (ALUMINUM CLAD) IS TO OPERATE AT 100 KW WITHOUT PULSING. BASED ON PREVIOUS OPERATING EXPERIENCE AND NO SPECIAL SITE PROBLEM, DRL APPROVES CONSTRUCTION.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*SAFETY EVALUATION + CONSTRUCTION PERMIT PROCESS + REACTOR, RESEARCH + SAFETY ANALYSIS REPORT, PRELIMINARY + TRIGA (TRAINING REACTOR, ISOTOPES, G.A.)

18-13964 ALSO IN CATEGORY 9  
OPERATION OF KUKLA (APFA III) AT GENERAL ATOMIC WITH ACCELERATOR-PULSING  
DIVISION OF REACTOR LICENSING  
26 PAGES, NOVEMBER 28, 1966, DOCKET NO. 50-253

ACCELERATOR-PULSED FAST-ASSEMBLY III AT GENERAL ATOMICS IS THE LRL KUKLA, TO BE OPERATED AT 1 KW OR TO BE ACCELERATOR-PULSED WHEN THE REACTOR IS MADE 0.86 SUPERCRITICAL. AEC REVIEW FOUND A FEW INSTANCES WHERE A SINGLE FAILURE WOULD INTERFERE WITH SAFETY-SYSTEM ACTION. TECHNICAL SPECIFICATIONS INCLUDED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + ACCELERATOR + SAFETY EVALUATION

18-13966 ALSO IN CATEGORIES 12 AND 17  
OPERATING SAFETY LIMITS FOR THE HIGH FLUX ISOTOPE REACTOR (HFIR)  
OAK RIDGE NATIONAL LABORATORY  
ORNL-TM-1532(REV.) +. 13 PAGES, SEPTEMBER 16, 1966

LISTS THE OPERATING SAFETY LIMITS FOR THE 100-MW(TH), LIGHT-WATER-MODERATED, COOLED, BERYLLIUM-REFLECTED, ENRICHED U-235, FLUX-TRAP REACTOR. LIMITS ARE GIVEN FOR THE CONTAINMENT SYSTEM, CORE REACTIVITY, INSTRUMENTATION, EXPERIMENTS, PRIMARY COOLING SYSTEM, AND RADIATION MONITORING. ADMINISTRATIVE AND PROCEDURAL SAFEGUARDS ARE INCLUDED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$1.00 COPY, \$0.50 MICROFICHE

HFIR (HIGH FLUX ISOTOPE REACTOR) + OPERATING LIMITS/TECHNICAL SPECIFICATIONS + REACTOR, AEC OWNED + REACTOR, RESEARCH + REACTOR, TEST

18-13967  
LETTER TO DRL FROM MANHATTAN COLLEGE  
MANHATTAN COLLEGE  
8 PAGES, 2 FIGURES, NOVEMBER 16, 1966, DOCKET NO. 50-199

GIVES RESPONSE TO AEC REQUEST FOR INFORMATION ON 3 ITEMS - (1) THE BASIS USED FOR PREDICTING THE TEMPERATURE AT WHICH THE MODERATOR TEMPERATURE COEFFICIENT OF REACTIVITY BECOMES NEGATIVE

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-13967 \*CONTINUED\*

IS A GRAPHICAL ESTIMATE, HOWEVER DETAILED MEASUREMENTS ARE TO BE PERFORMED. (2) THE INTEGRATED DOSE TO AN OPERATOR, FROM AN EXCURSION RELEASING 13.2 MW-SEC THROUGH 150 CM OF WATER IS CALCULATED AS 18.5 R. (3) THE EFFECT OF COLD WATER IN THE POOL REACHING THE CORE BY NATURAL CONVECTION SHOULD BE NIL SINCE THE GRID PLATE IS A SOLID ALUMINUM BLOCK AND FREE CIRCULATION IS IMPOSSIBLE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*MODERATOR + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + \*TEMPERATURE COEFFICIENT + ACCIDENT, COLD COOLANT + DOSE CALCULATION, EXTERNAL + EXCURSION, LARGE + REACTOR, POOL TYPE

18-13968 ALSO IN CATEGORY 12  
QUAD CITIES 1 AND 2. AMENDMENT 4 - EMERGENCY CORE COOLING  
COMMONWEALTH EDISON COMPANY  
55 PAGES, TABLES, NOVEMBER 1966, DOCKET NO. 50-254, 50-265

DESCRIBES CHANGES MADE AFTER THE DRESDEN-3 REVIEW BY AEC, AND ADOPTS BY REFERENCE DRESDEN-3 AMENDMENT 5 (CORE-SPRAY-PERFORMANCE EVALUATION). THIS DOCUMENT EMPHASIZES THE LOW-PRESSURE COOLANT-INJECTION AND CONTAINMENT-COOLING SYSTEMS. TWO PUMPS (IN EACH LOOP) TAKE SUCTION FROM THE SUPPRESSION POOL AND PASS WATER THROUGH A HEAT EXCHANGE TO EITHER A PRIMARY RECIRCULATION LINE OR TO A DRYWELL SPRAY SYSTEM. 3 OF 4 PUMPS ARE ENOUGH TO MEET COOLING REQUIREMENTS. (SECTION VIII) DIFFERENCES FROM DRESDEN 3 ARE - (1) ISOLATION CONDENSERS REPLACED BY REACTOR-CORE-ISOLATION COOLING (RCIC) SYSTEMS, (2) LPCI/CC SYSTEM ALSO PERFORMS SHUTDOWN COOLING FUNCTION, (3) QUAD CITIES HAS ONLY ONE PUMP AND ONE VALVE INSTEAD OF TWO EACH AT DRESDEN 3.

AVAILABILITY - USAEC DOCUMENT (PUBLIC) ROOM, WASHINGTON, D.C.

\*CONSTRUCTION PERMIT PROCESS + \*EMERGENCY COOLING CONSIDERATIONS + CONTAINMENT SPRAY + CORE REFLOODING SYSTEM + CORE SPRAY + QUAD CITIES 1 AND 2 + REACTOR, BOILING WATER + SHUTDOWN COOLING SYSTEM

18-13969  
QUESTION IX-A. CORROSION PROTECTION OF THE SUPPRESSION POOL  
COMMONWEALTH EDISON COMPANY  
3 PAGES, NOVEMBER 1966, DOCKET NO. 50-254, 50-265, PAGES 55-57 FROM QUAD-CITIES STATION, UNITS 1 AND 2 - AMENDMENT 4

THE WET SURFACES WILL BE COATED WITH A RESIN-BASE MATERIAL, AND THE WATER WILL BE UNINHIBITED. VARIOUS PORTIONS OF THE UNPAINTED CARBON-STEEL PIPING ARE OVERTHICK TO ALLOW FOR CORROSION. THE WATER ITSELF CAN BE DEMINERALIZED AS NEEDED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + CONTAINMENT, PPESSURE SUPPRESSION + CORROSION + QUAD CITIES 1 AND 2 + REACTOR, BOILING WATER

18-13970 ALSO IN CATEGORY 11  
QUESTION IX-B. CONTAINMENT PROTECTION AGAINST STACK FALLING  
COMMONWEALTH EDISON COMPANY  
2 PAGES, NOVEMBER 1966, DOCKET NO. 50-254, 50-265, PAGES 58-59 FROM QUAD-CITIES STATION UNITS 1 AND 2. AMENDMENT 4

WIND VELOCITIES 300-500 MPH COULD OVERTURN THE STACK. THE SHIELD PLUG ABOVE THE VESSEL WOULD WITHSTAND A 1,800,000 FT-LB IMPACT, EQUIVALENT TO 3-4 FT SECTIONS OF THE STACK DROPPING THE FULL 310-FT HEIGHT, WHICH IS NOT LIKELY BECAUSE OF THE DISTANCE FROM THE STACK.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + MISSILE GENERATION AND PROTECTION + QUAD CITIES 1 AND 2 + REACTOR, BOILING WATER + STACK

18-13971 ALSO IN CATEGORY 11  
QUESTION IX-C. CONTAINMENT PROTECTION AGAINST TURBINE ROTOR FRAGMENTS  
COMMONWEALTH EDISON COMPANY  
3 PAGES, 1 TABLE, NOVEMBER 1966, DOCKET NO. 50-254, 50-265, PAGES 60-62, FROM QUAD-CITIES STATION, UNITS 1 AND 2 - AMENDMENT 4

A MORE DETAILED ANALYSIS SHOWS THAT 80-100% OF THE ROTATIONAL ENERGY OF A MISSILE IS LOST IN THE TURBINE CASING, AS WELL AS 60% OF THE TRANSLATIONAL ENERGY. AN ADDED MISSILE CONSIDERED IS 1/4 THE LP TURBINE SHAFT. NO MISSILE WOULD PENETRATE MORE THAN 12 INCHES INTO THE SHIELD PLUG.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + HEAT SINK + MISSILE GENERATION AND PROTECTION + QUAD CITIES 1 AND 2 + REACTOR, BOILING WATER

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-13977

QUESTION IX-D. COMPARISON OF PRIMARY PIPING, VALVES AND PUMPS WITH CONVENTIONAL STEAM PLANTS  
COMMONWEALTH EDISON COMPANY  
4 PAGES, NOVEMBER 1966, DOCKET NO. 50-254, 50-265, PAGES 63-66 FROM QUAD CITIES STATION, UNITS 1 AND 2  
AMENDMENT 4

SUMMARIZED FABRICATION AND TEST REQUIREMENTS FOR BOTH CONVENTIONAL AND NUCLEAR PLANTS, AND  
NOTES INCREASED TESTS AS APPLICABLE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + PIPING + PUMP + QUAD CITIES 1 AND 2 + QUALITY CONTROL +  
REACTOR, BOILING WATER + VALVE

18-13973

ALSO IN CATEGORY 11

QUESTION IX-E. CRITERIA FOR LEAK DETECTION OF PRIMARY SYSTEM INSIDE DRYWELL  
COMMONWEALTH EDISON COMPANY  
3 PAGES, NOVEMBER 1966, DOCKET NO. 50-254, 50-265, PAGES 67-69 FROM QUAD-CITIES STATION, UNITS 1 AND 2,  
AMENDMENT 4

WHEN THE HEAD IS REPLACED, A HYDRO-TEST IS MADE. DRYWELL PRESSURE, TEMPERATURE, AND HUMIDITY  
ARE MONITORED BY A SAMPLING SYSTEM. VARIOUS COMPONENTS WILL HAVE MONITORS, E.G., THE VESSEL  
DOUBLE O-RING HAS A LEAK-DETECTION SYSTEM, AS WELL AS STEM LEAKOFFS FROM VALVES.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + QUAD CITIES 1 AND 2 + REACTOR, BOILING WATER +  
TEST, LEAK LOCATION

18-13979

FERMI CHANGE 11 - DISCONNECT POWER TO MAIN PUMPS DURING FUEL REMOVAL  
DIVISION OF REACTOR LICENSING  
4 PAGES, NOVEMBER 21, 1966, DOCKET NO. 50-16

AEC APPROVES DISCONNECTION OF MAIN-PUMP ELECTRICAL LEADS WHILE CORE HOLD-DOWN MECHANISM IS  
RAISED TO EXAMINE DAMAGED FUEL ELEMENTS. CORE COOLING MAINTAINED BY PONY MOTORS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + \*SAFETY EVALUATION + FERMI + PUMP + REACTOR, FAST +  
REACTOR, LIQUID METAL COOLED

18-13986

ALSO IN CATEGORIES 5 AND 6

ADDENDUM B TO PROPOSED CHANGE 22 - ADDITIONAL INFORMATION ON REACTIVITY ACCIDENTS AND ON REACTOR VESSEL  
INSPECTION PROGRAM  
PACIFIC GAS AND ELECTRIC COMPANY  
24 PAGES, 6 FIGURES, OCTOBER 31, 1966, DOCKET NO. 50-133

IN RESPONSE TO A DRL REQUEST, HUMBOLDT BAY SENDS (1) COMPLETE REEVALUATION OF POTENTIAL  
REACTIVITY ACCIDENTS (THOROUGHLY DESCRIBED). REVIEW OF DATA INDICATES THAT A PEAK FUEL  
ENTHALPY OF 170 CALORIES/GRAM (FUEL TEMPERATURE 3900 F) IS THE NOMINAL THRESHOLD FOR  
FUEL-CLADDING DAMAGE, AND THUS 425 CALORIES/GRAM IS THE SUDDEN FUEL-ROD-RUPTURE THRESHOLD  
(CO<sub>2</sub> VAPORIZATION EJECTS HOT FUEL FROM CLAD). STARTUP ACCIDENT HAS SAME CONSEQUENCES AS FHSR  
(170 CAL/GRAM). CONTROL-ROD-DROP ACCIDENT WOULD REQUIRE ABOUT 2 PERCENT REACTIVITY TO EXCEED  
360 CAL/GRAM, BUT SOME OUT-OF-SEQUENCE ROD WITHDRAWAL WOULD GIVE THIS. A TECHNICAL  
SPECIFICATION CHANGE IS PROPOSED TO CURE THIS WITH ADMINISTRATIVE CONTROL. ROD-EJECTION  
ACCIDENT SHOWS THAT SEVERAL RODS COULD CAUSE EXCURSION GREATER THAN 425 CALORIES/GRAM. IN  
THE 1967 REFUELING, ROD-DRIVE-THIMBLE SUPPORTS WILL BE ADDED TO INSURE AGAINST  
CIRCUMFERENTIAL THIMBLE RUPTURE CAUSING AN ACCIDENT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + ACCIDENT ANALYSIS + ACCIDENT, CONTROL ROD EJECTION +  
ACCIDENT, CONTROL ROD WITHDRAWAL + ADMINISTRATIVE CONTROLS AND PRACTICES + ENGINEERED SAFETY SYSTEM +  
HUMBOLDT BAY + REACTOR, BOILING WATER

18-13987

ALSO IN CATEGORY 11

ADDENDUM B TO PROPOSED CHANGE 22 - ADDITIONAL INFORMATION ON REACTIVITY ACCIDENTS AND ON REACTOR VESSEL  
INSPECTION PROGRAM  
PACIFIC GAS AND ELECTRIC COMPANY  
24 PAGES, 6 FIGURES, OCTOBER 31, 1966, DOCKET NO. 50-133

IN RESPONSE TO DRL REQUEST, HUMBOLDT BAY SENDS A DESCRIPTION OF ROUTINE REACTOR VESSEL  
INSPECTIONS DURING REFUELING OUTAGES. DETAILED BORESCOPE INSPECTION WILL BE EVERY 5 YEARS.

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-13987 \*CONTINUED\*

1966 WILL COMPLETE INSPECTION BEGUN IN 1964. OTHERWISE, VISUAL INSPECTION IS MADE ON ALL ACCESSIBLE VESSEL SURFACES, NOZZLES, GASKETS, AND SPRAY RINGS. SPRAY NOZZLES ARE CHECKED TO ENSURE THAT THEY ARE OPEN. INSULATION REMOVED FROM STEAM LINE TO CHECK AGAINST CHLORIDE LEACHING FROM INSULATION. ALSO, A LOWER-HEAD INSULATION PANEL WAS REMOVED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + CONTAINMENT, PRESSURE VESSEL + EXAMINATION + HUMBOLDT BAY + REACTOR, BOILING WATER

18-13989

PROPOSED CHANGE, GEORGIA TECH RESEARCH REACTOR, TEMPERATURE COEFFICIENT LIMIT  
GEORGIA INSTITUTE OF TECHNOLOGY

1 PAGE, AUGUST 15, 1966, DOCKET NO. 50-160

REQUESTS THE LIMIT ON THE NEGATIVE MODERATOR TEMPERATURE COEFFICIENT BE REDUCED FROM 3 TO 1 TIMES 10 TO THE MINUS 2%/DEG C. PER DEGREE CENTIGRADE. DURING STARTUP AND LOW-POWER TESTS, THE VALVE, MEASURED AS 1.8 AT 50 F, INCREASED SMOOTHLY TO 3.9 AT 130 F. DURING NORMAL OPERATION THE TEMPERATURE IS BETWEEN 85 AND 100 F, WHERE THE COEFFICIENT IS APPROXIMATELY AS ESTIMATED IN SAFEGUARDS REPORT. THEY FEEL THAT THE GTRR CAN BE SAFELY OPERATED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + \*TEMPERATURE COEFFICIENT + REACTOR, RESEARCH

18-13990

BROWNS FERRY PRELIMINARY SAFEGUARDS REPORT. APPENDIX H - COMPARATIVE EVALUATION WITH AEC DESIGN CRITERIA  
TENNESSEE VALLEY AUTHORITY

71 PAGES, NOVEMBER 10, 1966, DOCKET NO. 50-259, 50-260

THIS EVALUATION OF THE 27 CRITERIA PUBLISHED NOVEMBER 22, 1965, CONSISTS OF EXTRACTING SHORT DISCUSSIONS FROM THE APPROPRIATE SAFEGUARDS REPORT SECTION, WITH REFERENCES TO VARIOUS SECTIONS OF THE SAFEGUARDS REPORT. NO NEW MATERIAL WAS INTRODUCED. THEY CONCLUDE THAT THE PLANT SATISFIES ALL AEC CRITERIA.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*AEC CONSTRUCTION PERMIT CRITERIA + \*SAFETY ANALYSIS REPORT, PRELIMINARY + BROWNS FERRY + REACTOR, BOILING WATER

18-13991

PROPOSED CHANGE 4, MANHATTAN COLLEGE, TEMPORARY FUEL STORAGE  
MANHATTAN COLLEGE

3 PAGES, JULY 29, 1966, DOCKET NO. 50-199

REQUESTS THAT AUTHORIZATION TO STORE IRRADIATED FUEL ELEMENTS IN THE ORIGINAL SHIPPING CONTAINERS DURING PERIODS OF PREVENTIVE MAINTENANCE LONGER THAN THE 5 DAYS BE ALLOWED. ALSO REQUESTS EXEMPTION FROM 10 CFR 70, WHICH REQUIRES A CRITICALITY ALARM IN FUEL-STORAGE AREAS DURING THE STORAGE PERIOD.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*FUEL STORAGE + \*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + CRITICALITY SAFETY + MONITORING SYSTEM, RADIATION

18-13992

CHANGE 4, MANHATTAN COLLEGE, TEMPORARY FUEL STORAGE  
DIVISION OF REACTOR LICENSING

4 PAGES, SEPTEMBER 12, 1966, DOCKET NO. 50-199

AUTHORIZES MANHATTAN COLLEGE TO STORE ALL THE IRRADIATED FUEL ELEMENTS IN THE ORIGINAL SHIPPING CONTAINERS DURING PERIODS OF PREVENTIVE MAINTENANCE (WHICH REMOVES THE LIMIT OF 5 DAYS OF STORAGE). ALSO EXEMPTION IS GIVEN FROM 10 CFR 70.24, WHICH REQUIRES A CRITICALITY ALARM IN FUEL-STORAGE AREAS DURING THIS STORAGE OF FUEL ELEMENTS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*FUEL STORAGE + \*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + \*SAFETY EVALUATION + CRITICALITY SAFETY + MONITORING SYSTEM, RADIATION

18-13993

AMENDMENT 0 - STERLING FOREST SAFEGUARDS COMMITTEE MEETS SEMI-ANNUALLY  
DIVISION OF REACTOR LICENSING

5 PAGES, NOVEMBER 29, 1966, DOCKET NO. 50-54

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-13993 \*CONTINUED\*  
AEC APPROVES MEETING EVERY 6 INSTEAD OF 3 MONTHS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + \*SAFETY EVALUATION + REACTOR, POOL TYPE +  
SAFETY REVIEW (OPERATIONS, EXPERIMENTS)

18-13994 ALSO IN CATEGORY 17  
BONUS CHANGE 2 - CONTROL ROD CONNECTION - PROCEDURE MODIFICATION  
DIVISION OF REACTOR LICENSING  
6 PAGES, NOVEMBER 23, 1966, DOCKET NO. 115-4

RECENT CRACKS IN THE RACK-AND-PINION TYPE CONTROL-ROD-DRIVE RACK WERE ATTRIBUTED TO  
DIFFERENTIAL EXPANSION BETWEEN THE 304 SS LOCK NUT AND THE 17-4PH RACK. MECHANICAL CHANGES  
TO THIS SYSTEM REQUIRE CERTAIN PROCEDURAL CHANGES FOR DISASSEMBLY. AEC APPROVES THESE  
CHANGES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + \*SAFETY EVALUATION +  
BONUS (BOILING NUCLEAR SUPERHEAT PROJECT) + CONTROL ROD DRIVE + REACTOR, BOILING WATER +  
REACTOR, SUPERHEAT

18-13995  
TRIGA F CHANGE 7 - OPERATIONS WITH A FUEL ELEMENT IN THE CENTRAL FUEL POSITION  
DIVISION OF REACTOR LICENSING, UNITED STATES ATOMIC ENERGY COMMISSION  
3 PAGES, NOVEMBER 25, 1966, DOCKET NO. 50-163

AEC APPROVES OPERATION (INCLUDING \$4.60 PULSES) WITH A STANDARD ON SPECIAL (HASTELLOY OR  
INCOLOY CLAD) TRIGA ELEMENT IN THE CENTRAL FUEL POSITION. SPECIAL ELEMENTS WILL BE LIMITED  
TO 10 MWHR, AND 920 C OR 1000-PSI CLAD PRESSURE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + \*SAFETY EVALUATION + CLAD + REACTOR, FAST BURST + REFUELING +  
TRIGA (TRAINING REACTOR, ISOTOPES, G.A.)

18-13997 ALSO IN CATEGORY 5  
MEHANN RD  
DRL ASKS FOR REVIEW OF N S SAVANNAH EMERGENCY COOLING IN LIGHT OF NEW CRITERIA AND ANALYSES  
DIVISION OF REACTOR LICENSING, USAEC  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(2) PAGE 13 (JANUARY 9, 1967), DOCKET NO. 50-238

DRL ASKS FOR UP-DATED EMERGENCY CORE COOLING ANALYSIS FOR CONSEQUENCES FOLLOWING VARIOUS SIZES  
OF PIPE RUPTURE, TO DETERMINE PERFORMANCE REQUIREMENTS OF VARIOUS SYSTEMS.

\*EMERGENCY COOLING CONSIDERATIONS + \*REGULATION, AEC + N S SAVANNAH + REACTOR, MARITIME +  
REACTOR, PRESSURIZED WATER

18-13999 ALSO IN CATEGORY 17  
AEC SUSPENDS SINCO TESTING, INC. RADIOGRAPHY LICENSE  
U. S. ATOMIC ENERGY COMMISSION  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(2) PAGES 17-18 (JANUARY 9, 1967)

SINCO IS REQUIRED TO CEASE OPERATION PENDING INVESTIGATION. CHANGES INCLUDE ALLOWING 4  
PERSONS TO OPERATE A 25-CURIE IR-192 RADIOGRAPHIC DEVICE WITHOUT HAVING CHECKED THEIR  
QUALIFICATIONS. ONE PERSON LEFT THE SOURCE UNRETRACTED ON DECEMBER 12, 1966, AND SINCO  
FAILED TO PROCESS HIS FILM BADGE OR RESTRICT HIM FROM FURTHER RADIATION AFTER FINDING HIS  
POCKET METERS DISCHARGED.

\*INCIDENT, ACTUAL, HUMAN ERROR + \*RADIOGRAPHY + FAILURE, ADMINISTRATIVE CONTROL + FAILURE, OPERATOR ERROR +  
MONITOR, RADIATION, PERSONNEL + PERSONNEL EXPOSURE, RADIATION + REGULATION, AEC

18-14003 ALSO IN CATEGORY 17  
INDIAN POINT STATION SEMI-ANNUAL OPERATIONS REPORT NO. 8 FEBRUARY 1, 1966 - SEPTEMBER 30, 1966 - PURSUANT  
TO PROVISIONAL OPERATING LICENSE DPR-5  
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.  
33 PAGES, NOVEMBER 15, 1966, DOCKET NO. 50-3

SUBJECTS COVERED IN THIS PROGRESS REPORT INCLUDE UNUSUAL OPERATING CONDITIONS, SHUTDOWNS,  
SIGNIFICANT TESTS, PRINCIPAL MAINTENANCE AND DESIGN CHANGES, RADIOCHEMISTRY, AND HEALTH  
PHYSICS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-14003 \*CONTINUED\*

\*OPERATING EXPERIENCE + INDIAN POINT 1 + OPERATIONS SUMMARY FOR AEC + REACTOR, PRESSURIZED WATER

18-14009 ALSO IN CATEGORY 17

CVTR SIX MONTHS OPERATING REPORT - APRIL 1-SEPTEMBER 30, 1966

CAROLINAS VIRGINIA NUCLEAR POWER ASSOCIATES, INC.

CVNA-265 +. 57 PAGES, 8 FIGURES, 4 TABLES, 1966, DOCKET NO. 50-144

SUBJECTS COVERED IN THIS PROGRESS REPORT INCLUDE UNUSUAL OCCURRENCES, RESULTS OF SIGNIFICANT TESTS, PRINCIPAL MAINTENANCE AND DESIGN CHANGES, RESULTS OF SIGNIFICANT TESTS, AND HEALTH PHYSICS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*OPERATING EXPERIENCE + \*OPERATIONS SUMMARY FOR AEC + CVTR (CAROLINAS VIRGINIA TUBE REACTOR) + REACTOR, HEAVY WATER + REACTOR, PRESSURE TUBE

18-14074 ALSO IN CATEGORIES 1 AND 14

T. J. THOMPSON (MIT) PROTESTS NEW AEC APPROACH IN HAVING DIVISION OF COMPLIANCE REVIEW DETAILED EFFLUENT RELEASE RECORDS

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(3) PAGES 11-13 (JANUARY 16, 1967), DOCKET NO. 50-20

PROTEST MADE ON GROUNDS OF TIME SPENT BY AEC AND REACTOR OPERATOR, CHANGE IN RELATIONS WITH OPERATOR (NEW PROCESS SURE TO HAVE AEC MAKE TECHNICAL JUDGMENTS WHICH ARE A FUNCTION OF REACTOR MANAGEMENT, WOULD ALSO CAUSE AEC TO ASSUME CERTAIN LEGAL LIABILITIES). SUGGESTS THIS MOVE AS A RESULT OF INTERJURISDICTIONAL DISPUTE WITH ORGANIZATIONS, SUCH AS PUBLIC HEALTH SERVICE.

\*INSPECTION AND COMPLIANCE + \*REGULATION, AEC + EFFLUENT + WASTE DISPOSAL, GENERAL

18-14075 ALSO IN CATEGORIES 7 AND 17

N S SAVANNAH WISHES AMENDMENT TO MINIMIZE FILTER PLUGGING BY DOP

FIRST ATOMIC SHIP TRANSPORT, INC.

2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(3) PAGES 13-14 (JANUARY 16, 1967) DOCKET NO. 50-238

TECH. SPEC. CHANGE WOULD ALLOW PORT ENTRY IF CONTAINMENT FILTERS TESTED OK WITHIN A WEEK. ON SHORT RUNS, PRESENT REQUIREMENT MAKES DAILY TESTING NECESSARY. THE ONLY REASON FOR PAST FILTER CHANGES HAS BEEN EXCESSIVE PRESSURE DROP DUE TO THE OILY RESIDUE LEFT AFTER DOP TESTING.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + FILTER TEST REQUIREMENT + FILTER, DAMAGED + N S SAVANNAH + PRESSURE DROP + REACTOR, PRESSURIZED WATER + TEST, DOP FILTER

18-14076 ALSO IN CATEGORIES 7 AND 13

NFS AMENDMENT TO DELETE STACK MONITORING FOR ALPHA ACTIVITY

NUCLEAR FUEL SERVICES, INC.

1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(3) PAGE 14 (JANUARY 16, 1967) DOCKET NO. 50-201

PRESENT STACK MONITOR IS NOT SENSITIVE TO PLUTONIUM OR URANIUM PRODUCT, WHICH HAS BEEN ANALYZED FOR FISSION PRODUCTS. SINCE VENTILATION AIR WILL BE FILTERED, DELETION OF STACK-MONITORING PROVISION FOR PRODUCT-LOADOUT OPERATIONS IS JUSTIFIED.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + ALPHA EMITTER + MONITOR, RADIATION, STACK + NFS (NUCLEAR FUEL SERVICES)

18-14077 ALSO IN CATEGORY 17

U OF ILLINOIS TRIGA FISSION GAS RELEASE

UNIVERSITY OF ILLINOIS

3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(3) PAGES 15-17 (JANUARY 16, 1967) DOCKET NO. 50-151

FISSION GAS WAS RELEASED FROM A DEFECTIVE SEAL BETWEEN THERMOCOUPLE AND FUEL ELEMENT, AND OBSERVED AS A DOUBLING OF GENERAL RADIATION ABOVE THE TANK TOP (3M/HR, CAUSED BY A 500-MR/HR READING TWO INCHES FROM THE TUBE CONTAINING THERMOCOUPLE LEADS), AND A 20-MIN HALF-LIFE ACTIVITY (RB88) OBSERVED FROM THE AIR-PARTICULATE MONITOR. SEAL WAS PROBABLY BROKEN IN HANDLING, AS ELEMENT HAD BEEN UNUSED FOR A YEAR. THE STACK MONITOR DID NOT SHOW ANY INCREASE, ALTHOUGH THE AIR MONITOR HAD INCREASED TO 7000 CPM.

\*INCIDENT, ACTUAL, EQUIPMENT + FAILURE, FUEL ELEMENT + FISSION GAS RELEASE + INSTRUMENTATION, TEMPERATURE + MONITOR, RADIATION, STACK + REACTOR, PULSED + REACTOR, RESEARCH + TRIGA (TRAINING REACTOR, ISOTOPES, G.A.)

18-14078 ALSO IN CATEGORIES 7 AND 17

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-14078 \*CONTINUED\*

N S SAVANNAH CORRESPONDENCE  
FIRST ATOMIC SHIP TRANSPORT, INC.  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(3) PAGES 19-20 (JANUARY 16, 1967) DOCKET NO. 50-238

(1) OPERATION NEAR BILBAO, SPAIN, IN A TWO-OUT-OF-TWO COINCIDENCE MODE WAS CONTRARY TO TECH. SPECS. (2) WHILE THE HEALTH PHYSICIST SHOULD REPORT TO THE MASTER FOR UNUSUAL RADIATION CONDITIONS AS IN TECH. SPEC., HIS ROUTINE WORK IS FOR ENGINE DEPARTMENT AND IS SHOWN ACCORDINGLY ON THE ORGANIZATION CHART. (3) CHARCOAL FILTERS HAVE BEEN HEAVILY COVERED WITH OXIDIZED LUBE OIL, BUT THAT DID NOT REDUCE CAPABILITY FOR RETAINING ELEMENTAL IODINE. TESTING IS NOW DONE ONCE PER VOYAGE, RATHER THAN ONCE A YEAR.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + ADMINISTRATIVE CONTROLS AND PRACTICES + CHARCOAL + FILTER + INSTRUMENTATION, COINCIDENT + N S SAVANNAH + REACTOR, PRESSURIZED WATER + TEST, FILTER

18-14081 ALSO IN CATEGORIES 17 AND 13

NFS UTILITY OUTAGE DUE TO TRUCK WRECK  
NUCLEAR FUEL SERVICES, INC.  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(3) PAGES 21-22 (JANUARY 16, 1967) DOCKET NO. 50-201

ON AUGUST 29, 1966, AIR-BRAKE HOSE RUPTURE ON A NITRIC ACID TANK TRUCK ALLOWED THE TRUCK TO ROLL DOWNHILL THROUGH THE FIRE PUMP HOUSE INTO THE UTILITY BUILDING. AIR, WATER, AND STEAM SERVICE WAS INTERRUPTED FOR 10 HOURS.

\*INCIDENT, ACTUAL, EQUIPMENT + ACCIDENT, LOSS OF POWER + NFS (NUCLEAR FUEL SERVICES)

18-14082 ALSO IN CATEGORIES 13 AND 17

CONTAMINATION OF ACID RECOVERY EQUIPMENT AT NFS, AUGUST 30, 1966  
NUCLEAR FUEL SERVICES, INC.  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(3) PAGES 21-22 (JANUARY 16, 1967) DOCKET NO. 50-201

THE LOW-LEVEL-WASTE EVAPORATOR 7C-2 BURPED 75 GALLONS OF CONDENSATE INTO THE ACID CATCH TANK. FURTHER CONCENTRATION LED TO RADIATION LEVELS ABOVE 70 R/HR IN THE UNSHIELDED ACID-STORAGE-TANK AREA. A WEEK LATER, THE ACID WAS RETURNED TO SHIELDED CELLS. DECONTAMINATION OF EQUIPMENT WAS DIFFICULT BECAUSE SUCH PROVISION WAS NOT DESIGNED IN. SYSTEM MODIFICATIONS ARE LISTED.

\*INCIDENT, ACTUAL, EQUIPMENT + DECONTAMINATION + EVAPORATION + FAILURE, DESIGN ERROR + NFS (NUCLEAR FUEL SERVICES) + RADIOCHEMICAL PROCESSING + WASTE TREATMENT, GENERAL

18-14085 ALSO IN CATEGORIES 13 AND 17

GLOVE BOX EXPLOSION AT NUMEC, NOVEMBER 30, 1966  
NUCLEAR MATERIALS AND EQUIPMENT CORPORATION  
4 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(3) PAGES 24-27 (JANUARY 16, 1967)

A CREW WAS THERMALLY DECOMPOSING A FILTRATE SOLUTION (WASTE PRODUCT OF PLUTONIUM PEROXIDE PRECIPITATION) WHICH CONTAINS H<sub>2</sub>O<sub>2</sub> AND PLUTONIUM PEROXIDE - DECOMPOSITION OF THE H<sub>2</sub>O<sub>2</sub> BROKE THE GLASS VESSEL, PROJECTILES BROKE THE GLOVE BOX. THE OPERATOR RAN 4 TIMES THE QUANTITY DIRECTED, THE VENT WAS INADEQUATE, AND IMPURITIES COULD HAVE BEGUN CATALYTIC DECOMPOSITION. MEASUREMENTS OF UP TO 2,000,000 CPM WERE MADE, RESULTING FROM THE 0.1 GRAM PLUTONIUM LOST.

\*EXPLOSION + \*GLOVE BOX + \*PLUTONIUM + CHEMICAL REACTION + FAILURE, OPERATOR ERROR

18-14144 ALSO IN CATEGORIES 7 AND 17

NS SAVANNAH PROPOSED CHANGE 11 - MONITORING CONTAINMENT INSTEAD OF GAS WASTE HEADER DURING CHARCOAL FILTER, TESTS  
FIRST ATOMIC SHIP TRANSPORT, INC.  
3 PAGES, DECEMBER 12, 1966, DOCKET NO. 50-238

TEMPORARILY, RADIOIODINE TESTING OF CONTAINMENT CHARCOAL FILTERS HAS BEEN INCREASED TO ONCE PER VOYAGE (INSTEAD OF DURING A QUARTERLY OUTAGE) BECAUSE OF LUBE OIL DEPOSITS ON FILTERS. THE TEST REQUIRES THAT THE GAS WASTE MONITORS BE USED FOR THE CONTAINMENT ATMOSPHERE, WHICH IN TURN REQUIRES A REACTOR SHUTDOWN. REQUEST EXCEPTION FROM GAS-WASTE MONITORING DURING CONTAINMENT-FILTER TESTING.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + CHARCOAL + CONTAINMENT, HIGH PRESSURE + FILTER + MONITOR, RADIATION, GAS + N S SAVANNAH + REACTOR, PRESSURIZED WATER + TEST, DOP FILTER + TEST, FILTER

18-14145

AEC RECEIVES TWO REPORTS FROM ITS ADVISORY COMMITTEE ON REACTOR SAFEGUARDS. ACRS REPORT ON LA CROSSE BWR (NOVEMBER 17, 1966)  
ATOMIC ENERGY COMMISSION  
PRESS REL. J-268 +. 5 PAGES, 32 REFERENCES, NOVEMBER 29, 1966, DOCKET NO. 115-5



CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-14145 \*CONTINUED\*

AFRS BELIEVES THAT CURRENT MODIFICATIONS SHOULD BE CLOSELY FOLLOWED, THAT AUTOMATIC LOAD FOLLOWING BE ALLOWED ONLY AFTER DRL REVIEW OF MANUAL LOAD FOLLOW EXPERIENCE. FOUR ITEMS SHOULD BE RESOLVED WITH DPL BEFORE POWER OPERATION (LIMITS ON REACTIVITY AND FLUX ANOMALIES, PRIMARY SYSTEM LEAK DETECTION, TORNADO PROVISIONS, STACK INSPECTION). DESIGN, FABRICATION, AND OPERATION RECORDS SHOULD BE MAINTAINED. A PROGRAM FOR INSPECTION OF PRIMARY-SYSTEM COMPONENTS IS NEEDED.

AVAILABILITY - AEC DIVISION OF PUBLIC INFORMATION, WASHINGTON D.C. 20545

\*ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) + ADMINISTRATIVE CONTROLS AND PRACTICES + INSPECTION AND COMPLIANCE + LACROSSE + MAIN COOLING SYSTEM + MODIFICATION, SYSTEM OR EQUIPMENT + REACTIVITY EFFECT, ANOMALOUS + REACTOR, BOILING WATER + STACK

18-14146 ALSO IN CATEGORIES 5 AND 6  
PULSTAR CHANGE TO ALLOW OTHER COPE CONFIGURATION, FUEL INSPECTIONS  
WESTERN NEW YORK NUCLEAR RESEARCH CENTER, INC.  
4 PAGES, DECEMBER 16, 1966, DOCKET NO. 50-57

CHANGES REQUESTED FOR NONSTANDARD CORE CONFIGURATIONS, WITH EXPERIMENTS IN THE CORE. GIVES HOT-SPOT-FACTOR FORMULA AND TESTS FOR NEW CORES TO OBTAIN PULSE-ENERGY LIMITS. SIX INSTRUMENTED FUEL PINS LOCATED IN REFLECTOR FLUX PEAK SAW 1.2 TIMES THE ENERGY/CM OF THE CORE FOR THE INITIAL TESTS, BUT SUCH USAGE WOULD DISTURB HOT-SPOT ANALYSIS, SO THE FOUR PINS HAVING HIGHEST ENERGY DENSITIES WILL BE INSPECTED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + EXAMINATION + FUEL ELEMENT + HOT SPOT + PERFORMANCE LIMIT + REACTOR, POOL TYPE + REACTOR, PULSED + REFUELING

18-14147 ALSO IN CATEGORY 13  
DPL REACTOR CHANGE 7 - SUBCRITICALITY STUDIES  
DIVISION OF REACTOR LICENSING, UNITED STATES ATOMIC ENERGY COMMISSION  
3 PAGES, JANUARY 6, 1967, DOCKET NO. 50-17

DPL PERMISSION GIVEN TO MEASURE SUBCRITICALITY IN VARIOUS ARRAYS OF MTR TYPE ELEMENTS (3 X 3, 4 X 4, 5 X 5, AND 6 X 6), WITH EACH ROW SEPARATED BY 1/8-INCH BORAL PLATES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + \*SAFETY EVALUATION + CRITICALITY EXPERIMENT + FUEL STORAGE + REACTOR, POOL TYPE + TESTING

18-14148  
CVTR REQUESTS EXEMPTION FROM 10 CFR 20 HIGH RADIATION AREA CONTROLS  
CARLINAS VIRGINIA NUCLEAR POWER ASSOCIATES, INC.  
2 PAGES, DECEMBER 21, 1966, DOCKET NO. 50-144

CVTR BELIEVES THAT EXEMPTIONS FROM THE 10 CFR 20.203 (C) (2) REQUIREMENT (THAT EACH HIGH-RADIATION AREA HAVE DEVICES WHICH REDUCE RADIATION LEVEL OR WARN UPON ENTRY) ARE JUSTIFIED BY ADMINISTRATIVE CONTROL, CHAIN BARRIERS, AND WARNING SIGNS. MOST ARE WITHIN LIMITED-ACCESS BUILDINGS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*RADIATION SAFETY AND CONTROL + \*REGULATION, AEC + CVTR (CARLINAS VIRGINIA TUBE REACTOR) + REACTOR, HEAVY WATER + REACTOR, PRESSURIZED WATER

18-14149  
YANKEE CHANGE 78 - BORATION OF IDLE COOLANT LOOP  
DIVISION OF REACTOR LICENSING, UNITED STATES ATOMIC ENERGY COMMISSION  
3 PAGES, JANUARY 6, 1967, DOCKET NO. 50-29

DPL ALLOWS CHANGE SO AN IDLE LOOP, WHOSE VALVE AND PUMP CONTROLS ARE LOCKED, MAY BE KEPT AT SAME BORON CONCENTRATION AS MAIN SYSTEM, RATHER THAN AT SHUTDOWN CONCENTRATIONS. THIS WILL FOREGO 7 BARRELS OF BORIC ACID A DAY LOST DUE TO STEAM-GENERATOR LEAKAGE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + \*SAFETY EVALUATION + ACCIDENT, COLD COOLANT + CHEMICAL SHIM + REACTOR, PRESSURIZED WATER + YANKEE

18-14150 ALSO IN CATEGORY 17  
YANKEE PROPOSED CHANGE 78 - CHANGE IN BORATION OF IDLE COOLANT LOOP  
YANKEE ATOMIC ELECTRIC COMPANY

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-14150 \*CONTINUED\*  
2 PAGES, DECEMBER 30, 1966, DOCKET NO. 50-29

LOOP 4 HAS BEEN ISOLATED (BECAUSE OF A STEAM GENERATOR TUBE LEAK) UNTIL A MARCH SHUTDOWN. PRESENT REQUIREMENTS TO MAINTAIN SHUTDOWN BORON CONCENTRATION (2400 PPM) WITH THE 3-GPM LEAKAGE WOULD REQUIRE 7 BARRELS OF BORIC ACID PER DAY. REQUEST KEEP CONCENTRATION SAME AS OTHER COOLANT (1300 PPM PRESENTLY).

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + ACCIDENT, COLD COOLANT + CHEMICAL SHIM + FAILURE, TUBING + HEAT EXCHANGER + REACTOR, PRESSURIZED WATER + YANKEE

18-14151 ALSO IN CATEGORIES 15 AND 17  
N S SAVANNAH PROPOSED CHANGE 10 - ORGANIZATION CHART POSITION OF HEALTH PHYSICIST  
FIRST ATOMIC SHIP TRANSPORT, INC.  
3 PAGES, 1 FIGURE, DECEMBER 8, 1966, DOCKET NO. 50-238

REQUEST CHANGE TO ALLOW STAFF HEALTH PHYSICIST TO REPORT DIRECTLY TO CHIEF ENGINEER FOR ROUTINE (BOILER CHEMISTRY) WORK, BUT DIRECTLY TO MASTER FOR RADIOLOGICAL SAFETY MATTERS, PARTICULARLY FOR UNUSUAL CONDITIONS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D.C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + ADMINISTRATIVE CONTROLS AND PRACTICES + N S SAVANNAH + RADIATION SAFETY AND CONTROL + REACTOR, PRESSURIZED WATER

18-14152 ALSO IN CATEGORY 17  
N S SAVANNAH PROPOSED TECH CHANGE 9 - EMERGENCY EVACUATION DRILL  
FIRST ATOMIC SHIP TRANSPORT, INC.  
2 PAGES, DECEMBER 9, 1966, DOCKET NO. 50-238

PRESENT TECH. SPECS. WERE WRITTEN WITH THE ALLOWABLE 750 VISITORS IN MIND. NOW THAT ONLY 150 ARE ALLOWED ON BOARD AT ONE TIME, AND GUIDES ARE PROVIDED, EMERGENCY EVACUATION DRILLS ARE NEEDED ONLY PRIOR TO EACH VOYAGE AND MONTHLY THEREAFTER.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + N S SAVANNAH + POPULATION DISTRIBUTION + REACTOR, PRESSURIZED WATER

18-14153  
ADDITIONAL INFORMATION NEEDED BY DRL FOR BRIGHAM YOUNG L-77  
BRIGHAM YOUNG UNIVERSITY  
3 PAGES, DECEMBER 23, 1966, DOCKET NO. 50-262

21 SPECIFIC QUESTIONS ASKED ABOUT PROPOSED ATOMICS INTERNATIONAL L-77 WATER BOILER.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + REACTOR, HOMOGENEOUS + REACTOR, RESEARCH

18-14160 ALSO IN CATEGORY 2  
REQUEST EXEMPTION TO ALLOW PILE DRIVING AT POINT BEACH  
WISCONSIN MICHIGAN POWER COMPANY  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(4) PAGES 2-3 (JANUARY 23, 1967) DOCKET NO. 50-266

WISCONSIN MICHIGAN POWER COMPANY SUPPORTS ITS REQUEST TO BEGIN FOUNDATION CONSTRUCTION PRIOR TO RECEIVING A CONSTRUCTION PERMIT BY NOTING NEED FOR POWER IN APRIL 1970, NEED FOR THREE MONTHS EXTRA FOR PILE DRIVING AS SHOWN BY ANALYSIS OF SUBSOIL.

\*CONSTRUCTION PERMIT PROCESS + FOUNDATION ENGINEERING + POINT BEACH + REACTOR, PRESSURIZED WATER

18-14173  
CONSTRUCTION PERMIT CPRR-94 FOR DOW CHEMICAL COMPANY  
THE DOW CHEMICAL COMPANY  
3 PAGES, DECEMBER 1966, DOCKET NO. 50-264

CONSTRUCTION PERMIT WAS ISSUED. FACILITY COMPLETION DUE BETWEEN JAN. 1 AND NOV. 1, 1970.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*CONSTRUCTION PERMIT PROCESS + REACTOR, RESEARCH + TRISA (TRAINING REACTOR, ISOTOPES, G.A.)

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-14180 ALSO IN CATEGORIES 1 AND 6

RURTON SF + HOSLER AG  
SMALL NUCLEAR POWER PLANTS. VOLUME ONE. DESIGN, CONSTRUCTION, AND OPERATING EXPERIENCE  
CHICAGO OPERATIONS OFFICE, AEC  
COO-284 (VOL.1) +. 274 PAGES, 4 FIGURES, 17 TABLES, OCTOBER 1966

COMPARES AT REACTOR, MODULAR, OXIDE FUEL, GRAPHITE IN BLANKET, WITH W, GE, CE, AND AC DESIGNS  
AS PUBLISHED IN COO-279. SHOWS COUPLED CORES (W CONCEPT) EFFECTIVE IN SUPPRESSING POSITIVE  
VOID EFFECT. IMPROVED CROSS SECTION DATA, TECHNIQUES FOR SPACE/ENERGY DEPENDENT FLUXES  
NEEDED FOR POWER SPLIT EFFECT. AI VOID EFFECT BEST OF GROUP, FUEL CYCLE COST INTERMEDIATE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF  
STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*ECONOMICS + COUPLED CORES + REACTOR, BREEDER + REACTOR, FAST + SAFETY REVIEW (OPERATIONS, EXPERIMENTS)

18-14186

DERING W + SERGEJTSCHIK E  
STEAM GENERATOR  
1 PAGE, 1 TABLE, ATOMWIRTSCHAFT 11(5), PAGE 244, (MAY 1966)

THE STEAM GENERATOR OF THE AVR REACTOR IS LOCATED INSIDE THE REACTOR VESSEL AND THE BIOLOGICAL  
SHIELD AND IS NOT ACCESSIBLE AFTER STARTUP. THIS PLACES A HIGH REQUIREMENT ON THE OPERATING  
SAFETY, AS TUBE DAMAGE SHOULD NOT ALLOW WATER TO REACH THE REACTOR CORE. THE STEAM GENERATOR  
WAS THEREFORE DIVIDED INTO FOUR SEPARATE SHELL SYSTEMS AND DESIGNED AS A FORCE-THROUGH  
BOILER. THE HEAT EXCHANGER TUBES HAVE THE SHAPE OF AN INVOLUTE. THE ENTIRE HEAT EXCHANGER  
BUNDLE IS CYLINDER-SHAPED. DURING PREPARATION AND BEFORE INSTALLATION, THE STEAM GENERATOR  
WAS RIGOROUSLY TESTED.

\*HEAT EXCHANGER + GERMANY + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED + REACTOR, PEBBLE BED +  
SYSTEM DESCRIPTION

18-14187

SCHOLZ U + VOLZ W + WEGNER FW  
COOLANT BLOWERS  
1 PAGE, 1 TABLE, ATOMWIRTSCHAFT 11(5), PAGE 256, (MAY 1966)

IN THE MAIN COOLANT LOOP, HELIUM IS CIRCULATED BY TWO BLOWERS IN PARALLEL. THE BLOWERS ARE  
HORIZONTALLY FLANGED ONTO THE UNDER PART OF THE REACTOR VESSEL. IN EXTENSION FROM  
CONVENTIONAL PRACTICE, THERE WAS CHOSEN A MODEL WITH OIL-LUBRICATED FRICTION BEARINGS FOR THE  
REGULATION OF THE FLYING RADIAL WHEELS. EACH BLOWER IS DRIVEN WITH A 220-KW, SQUIRREL-CAGE,  
INDUCTION-MOTOR. THE SEALING OF THE BLOWERS IS OF GREAT IMPORTANCE TO MAINTAIN THE GAS  
PURITY REQUIREMENTS IN THE PRIMARY LOOP.

\*PUMP + GERMANY + REACTOR, GAS COOLED + REACTOR, GRAPHITE MODERATED + REACTOR, PEBBLE BED +  
SYSTEM DESCRIPTION

18-14194 ALSO IN CATEGORIES 12 AND 13

FISSION PRODUCT CONVERSION AND ENCAPSULATION PLANT (FPCE) USAEC HANFORD WORKS, BENTON COUNTY, WASHINGTON  
ISOHEM INC.  
39 PAGES, DECEMBER 7, 1966, DOCKET NO. 50-258

ISOHEM, INC., IS SEEKING A PROVISIONAL CONSTRUCTION PERMIT FOR BUILDING AND SUBSEQUENTLY  
OPERATING A FISSION PRODUCT CONVERSION AND ENCAPSULATION PLANT (FPCE PLANT) AT HANFORD. THIS  
DOCUMENT CONTAINS DETAILS OF THE NOTICE OF HEARING ON THE APPLICATION AND REHASHES THE  
INFORMATION SUBMITTED IN PREVIOUS DOCUMENTS. A LETTER FROM THE CHAIRMAN OF THE ADVISORY  
COMMITTEE ON REACTOR SAFEGUARDS AND THE AEC DIVISION OF MATERIALS LICENSING SAFETY ANALYSIS  
SUPPORT THE APPLICATION BY CONCLUDING THAT THE PLANT CAN BE OPERATED WITHOUT UNDUE RISK TO  
THE HEALTH AND SAFETY OF THE PUBLIC.

AVAILABILITY - USAEC, PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*APPLICATION FOR AEC LICENSE + \*CERIUM + \*PROMETHIUM + \*RADIOCHEMICAL PROCESSING + \*STRONTIUM +  
FISSION PRODUCT, SEPARATION FROM WASTE + FPCE PLANT + HANFORD SITE + HAZARDS ANALYSIS +  
RADIOCHEMICAL PLANT SAFETY + SAFETY ANALYSIS REPORT, GENERAL

18-14380

SHAPIRO JL + HEINDL CJ  
DESIGN STUDY OF A FISSION-ELECTRIC CELL REACTOR  
CALIFORNIA INSTITUTE OF TECHNOLOGY  
6 PAGES, 6 FIGURES, 11 REFERENCES, NUCLEAR ENGINEERING AND DESIGN 4(4) PAGES 345-351 (NOVEMBER 1966)

THE REACTOR UNIT-CELL IS A COOLANT HOLE SURROUNDED BY A CATHODE CONTAINING A FISSIONABLE  
LAYER, SURROUNDED BY A VACUUM, THEN THE ANODE-MODERATOR. STUDY RESULT IS A SERIES OF CURVES

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-14380 \*CONTINUED\*  
OF VCLTAGE VS GAP SPACING FOR VARIOUS CELL RADII. THE OPTIMUM EFFICIENCY WOULD BE 3.5 PERCENT AT 650 KV.

\*DESIGN STUDY + \*DIRECT ENERGY CONVERSION DEVICES

18-14386 ALSO IN CATEGORIES 7 AND 2  
CAROLINA POWER AND LIGHT COMPANY, H.B. ROBINSON UNIT NO. 2 PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT  
CAROLINA POWER AND LIGHT COMPANY  
163 PAGES, FIGURES, TABLES, JULY 1966, DOCKET NO. 50-261

THE DESIGN OF ROBINSON UNIT 2 WILL BE BASED ON PROVED CONCEPTS WHICH HAVE BEEN DEVELOPED AND APPLIED TO THE DESIGN OF PRESSURIZED-WATER REACTOR SYSTEMS. THE USE OF A WATER SPRAY TO COOL AND DECONTAMINATE THE CONTAINMENT ATMOSPHERE FOLLOWING A MAJOR LOSS OF COOLANT IS DESCRIBED IN THIS REPORT. TO EMPLOY THE SPRAY AS A MEANS OF DECONTAMINATING AS WELL AS COOLING THE CONTAINMENT ATMOSPHERE IN THIS PLANT, A CHEMICAL WILL BE USED TO ENHANCE THE SOLUBILITY OF FISSION PRODUCT IODINE IN THE SPRAY DROPLETS. THE DESIGNER WILL UNDERTAKE CERTAIN DEVELOPMENT TASKS TO AUGMENT PRESENTLY AVAILABLE DATA ON THE CHARACTERISTICS OF SUCH A SYSTEM.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*REACTOR, PRESSURIZED WATER + \*SPRAY, GENERAL + AIR CLEANING + FISSION PRODUCT, IODINE + SAFETY ANALYSIS REPORT, PRELIMINARY

18-14419 ALSO IN CATEGORIES 1 AND 17  
REPORT TO THE ATOMIC ENERGY COMMISSION BY THE REGULATORY REVIEW PANEL  
UNITED STATES ATOMIC ENERGY COMMISSION, WASHINGTON, D. C.  
74 PAGES, JULY 14, 1965

PANEL REVIEWED TWO AREAS, POLICY-PROCEDURE (FOR FASTER HANDLING) AND DECISION-MAKING PROCESS (FOR IMPROVEMENTS WITHOUT NEW LEGISLATION). NINE GENERAL CONCLUSIONS AND MANY RECOMMENDATIONS ARE GIVEN. DRL STAFF MUST BE INCREASED WITHOUT LOWERING QUALITY. ACRS SHOULD NOT BE OVERLOADED WITH ROUTINE QUESTIONS. OPEN HEARINGS ARE INDISPENSIBLE IN GAINING PUBLIC CONFIDENCE. CRITERIA AND STANDARDS ARE NEEDED. CLARIFICATION OF OVERLAPPING FUNCTIONS OF REGULATORY BODIES IS NEEDED. A PRELIMINARY APPROVAL OF A SITE FOR A CERTAIN REACTOR CAPACITY SHOULD BE MADE TO ALLOW BETTER UTILITY PLANNING.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*REGULATION, AEC + ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) + ADMINISTRATIVE CONTROLS AND PRACTICES + CODES AND STANDARDS + SAFETY REVIEW (OPERATIONS, EXPERIMENTS)

18-14420  
RUSCH GK + KARAM RA  
ANALYSIS FOR LARGE FAST CRITICAL ASSEMBLIES (ZPR-6 AND ZPR-9)  
ARGONNE NATIONAL LABORATORY  
ANL-6271(ADD.) +. 21 PAGES, 8 FIGURES, 3 TABLES, 5 REFERENCES, JULY 1966

REVISES ANALYSIS FOR 2600 LITER 2400 KG U235 (INSTEAD OF 1500 LITER 950 KG CORES) WITH METAL, OXIDE AND CARBIDE FUEL. SMALLER CORES GIVE LARGER EXCURSIONS BECAUSE OF HIGH DIFFERENTIAL SEPARATION WORTHS. EXPANSION AND DOPPLER COEFFICIENTS DISCUSSED. LOADING CRITICALITY DUE TO PERSONNEL REFLECTIONS (FATMAN EFFECT) ESTIMATED, AND BORAL NEUTRON SHIELDS AND PERSONNEL GATES DESCRIBED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*SAFETY ANALYSIS REPORT, GENERAL + ACCIDENT, CRITICALITY + ADMINISTRATIVE CONTROLS AND PRACTICES + CRITICAL ASSEMBLY FACILITY + REACTOR, FAST + ZPR 6 (ANL ZERO POWER REACTOR) + ZPR 9 (ANL ZERO POWER REACTOR)

18-14446 ALSO IN CATEGORIES 12 AND 13  
APPLICATION FOR LICENSES FPCE PLANT AMENDMENT NO. 2  
ISOCHEM INC.  
360 PAGES, OCTOBER 17, 1966, DOCKET NO. 50-258

REPORT GIVES GENERAL AND DETAILED TECHNICAL INFORMATION NEEDED FOR LICENSING OF A RADIOCHEMICAL PLANT. SEE ORIGINAL APPLICATION.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*APPLICATION FOR AEC LICENSE + \*CERIUM + \*CESIUM + \*FPCE PLANT + FISSION PRODUCT, SEPARATION FROM WASTE + HAZARDS ANALYSIS + ISOCHEM, INC. + PROMETHIUM + RADIOCHEMICAL PLANT SAFETY + RADIOCHEMICAL PROCESSING + SAFETY ANALYSIS REPORT, GENERAL + STRONTIUM

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-14525 ALSO IN CATEGORIES 11 AND 17  
MEHANN RO  
TECHNICAL SPECIFICATION CHANGE NO. 12  
FIRST ATOMIC SHIP TRANSPORT INC.  
2 PAGES, DECEMBER 28, 1966, DOCKET NO. 50-238

CURRENT CRITERIA REQUIRING A DOP TEST PRIOR TO EACH PCRT ENTRY MAY REQUIRE A DAILY TEST DURING A SERIES OF SHORT COASTAL RUNS. REVISION TO ALLOW PCRT ENTRY WITHIN ONE WEEK OF A SATISFACTORY TEST WOULD NOT BE HAZARDOUS. IN THE PAST, THE ONLY REASON FOR CHANGING THE PARTICLE FILTERS WAS HIGH PRESSURE DROP FROM THE OILY DOP RESIDUE.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + \*TEST, DOP FILTER + CONTAINMENT FILTERING SYSTEM + N S SAVANNAH + REACTOR, MARITIME + REACTOR, PRESSURIZED WATER + VENTILATION SYSTEM

18-14526 ALSO IN CATEGORY 17  
PROPOSED CHANGE 5 TO GE-NTR--NEW TECHNICAL SPECIFICATIONS  
GENERAL ELECTRIC COMPANY, SAN JOSE  
42 PAGES, FIGURES, TABLES, DECEMBER 1966, DOCKET NO. 50-73

SINCE THE PREVIOUS TECHNICAL SPECIFICATION WAS AUTHORIZED FOR 6 MONTHS ONLY, THIS NEW ONE WAS RE-ISSUED (WITH MINOR CHANGES TO REFLECT TRANSFER OF NTR RESPONSIBILITY TO IRRADIATION PROCESSING OPERATION) TO SIMPLIFY RECORD-KEEPING. NTR IS A 30-KW SPECIAL DESIGN, WITH A CENTRAL GRAPHITE FLUX TRAP AND GRAPHITE REFLECTOR, INTENDED FOR FUEL-ELEMENT REACTIVITY TESTS. NTR FUEL IN ALUMINUM-CLAD DISKS.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + GE-NTR (GE NUCLEAR TEST REACTOR) + REACTOR, FLUX TRAP + REACTOR, RESEARCH

18-14527 ALSO IN CATEGORY 5  
PROPOSED TECHNICAL SPECIFICATION CHANGE AT WESTERN NEW YORK REACTOR, LOW FLOW OPERATION  
WESTERN NEW YORK RESEARCH CENTER  
1 PAGE, JAN. 16, 1967, DOCKET NO. 50-57

REQUESTS 1-MW OPERATION AT 500 GPM TO OBTAIN N-16 HOLDUP INFORMATION. CALCULATION SHOWS INCIPIENT BOILING AT HOT SPOT AT 1.14 MW, WITH A BULK INLET TEMP. OF 80 F. ONE-MW HEAT FLUX AT 500 GPM IS COMPUTED AS ONE-SIXTH THE BURNOUT HEAT FLUX.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*BURNOUT HEAT FLUX + \*FLOW BLOCKAGE + NITROGEN + OPERATING LIMITS/TECHNICAL SPECIFICATIONS + REACTOR, POOL TYPE + REACTOR, PULSED

18-14528 ALSO IN CATEGORY 6  
MILLER DL  
CORE PHYSICS CHARACTERISTICS OF THE FIRST LOADING OF THE SAN ONOFRE NUCLEAR GENERATING STATION.  
WESTINGHOUSE ELECTRIC CORP., ATOMIC POWER DIV.  
WCAP-3269-55 +. 139 PAGES, 79 FIGURES, 6 TABLES, 35 REFERENCES, OCTOBER 1966, DOCKET NO. 50-206

DESIGN DATA, METHODS OF ANALYSIS, AND THEIR EXPERIMENTAL JUSTIFICATION ARE GIVEN FOR REACTIVITY, POWER DISTRIBUTIONS, CONTROL BY CHEMICAL SHIM AND RODS, AND FOR ALL REACTIVITY COEFFICIENTS. DOES NOT REPORT TESTS AT SAN ONOFRE. INCLUDES EFFECT OF CONTROL-GROUP INSERTION ON HOT-CHANNEL FACTOR, POWER DISTRIBUTION WITH STUCK ROD AND WITH ONE ROD EJECTED, EFFECTS OF POSITIVE MODERATOR COEFFICIENT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY \$0.65 MICROFICHE

\*REACTOR PHYSICS + ACCIDENT, CONTROL ROD EJECTION + CHEMICAL SHIM + COMPARISON, THEORY AND EXPERIENCE + HOT CHANNEL + MODERATOR COEFFICIENT + POWER DISTRIBUTION + REACTOR, PRESSURIZED WATER + SAN ONOFRE

18-14537  
BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS  
TENNESSEE VALLEY AUTHORITY  
200 PAGES, FIGURE, TABLES, REFERENCES, NOVEMBER 10, 1966, DOCKET NO. 50-259-260

ON OCT. 20, 1966, AEC DRL ASKED QUESTIONS DIVIDED AS FOLLOWS - SITE (3), GENERAL (8), SECONDARY CONTAINMENT BUILDING (9), REACTOR VESSEL AND INTERVALS (5), INSTRUMENTATION AND REACTOR PROTECTION SYSTEM (9), RADIOACTIVE WASTE SYSTEM (8), SAFETY EVALUATION (9), PLANT AND SYSTEM PERFORMANCE (9), AND STATION STABILITY (3). THIS AMENDMENT PROVIDES THE ANSWERS OR DIRECTS ATTENTION TO APPROPRIATE CHANGES IN THE PRELIMINARY SAFETY ANALYSIS.

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-14537 \*CONTINUED\*  
AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + CONTAINMENT, GENERAL + CONTAINMENT, PRESSURE VESSEL + PLANT PROTECTIVE SYSTEM + REACTOR STABILITY + REACTOR, BOILING WATER + SITING, REACTOR + WASTE STORAGE

18-14538 ALSO IN CATEGORY 2  
QUESTION A1 - JUSTIFY CHOSEN LOW POPULATION DISTANCE BASED ON 1970/80 PROJECTED POPULATION DISTANCE  
TENNESSEE VALLEY AUTHORITY  
2 PAGES, PAGES A.1.1 TO A.1.2 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS,  
NOVEMBER 10, 1966, DOCKET NO. 50-259/60

REVISED TABLE II-6 INCLUDES 1970 AND 1980 POPULATION DISTRIBUTIONS FOR THE AREA AND LARGE CITIES. WITHIN A 10-MILE RADIUS, THE POPULATION WILL INCREASE FROM 83 TO 104 PERSONS PER SQUAPE MILE IN 1980, AND NO CHANGE THEREAFTER. THEREFORE, 10 MILES WAS CHOSEN.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + POPULATION DISTRIBUTION + REACTOR, BOILING WATER

18-14539 ALSO IN CATEGORY 14  
QUESTION A2. DILUTION BETWEEN REACTOR AND PUBLIC WATER INTAKE. AMOUNT OF LIQUID WASTE STORED ON SITE  
TENNESSEE VALLEY AUTHORITY  
PAGE A.2.1 OF BROWNS FERRY CONSTRUCTION PERMIT AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966,  
DOCKET NO. 50-259/60

ANSWER WILL BE PROVIDED LATER

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + DILUTION + REACTOR, BOILING WATER + WASTE DISPOSAL, RIVER + WASTE STORAGE + WATER, DRINKING

18-14540  
QUESTION A3. AVAILABILITY OF SHUTDOWN COOLING WATER IF WHEELER DAM FAILS  
TENNESSEE VALLEY AUTHORITY  
PAGE A.3.1 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966,  
DOCKET NO. 50-259/60

SHOULD WHEELER DAM FAIL, THERE WOULD STILL BE 8 FEET OF WATER ABOVE BROWNS FERRY CONDENSER INTAKE. IF NO INFLOW IS ASSUMED, THE RESULTANT POOL OF WATER (100 TIMES 10 TO THE 6TH) WOULD BE HEATED 5 F PER WEEK.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + EMERGENCY COOLING CONSIDERATIONS + REACTOR, BOILING WATER + RIVER, GENERAL + RIVER, TENNESSEE

18-14541 ALSO IN CATEGORY 14  
QUESTION A4 - COMMUNITY DRINKING WATER STORAGE CAPACITY IN CASE OF RIVER CONTAMINATION  
TENNESSEE VALLEY AUTHORITY  
3 PAGES, PAGES A.4.1 TO A.4.3 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS,  
NOVEMBER 10, 1966, DOCKET NO. 50-259/60

THERE ARE ONLY FOUR SURFACE-WATER SUPPLIES WITHIN 50 MILES, THREE AT TVA DAMS OR STEAM PLANTS. THE SHEFFIELD, ALA., SUPPLY WOULD LAST 2 DAYS WITHOUT RATIONING.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + BROWNS FERRY + CONTAMINATION + REACTOR, BOILING WATER + SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + WATER, DRINKING

18-14542 ALSO IN CATEGORIES 9 AND 12  
QUESTION B1A - CRITERIA FOR DETERMINING WHICH FACILITIES CANNOT BE SHARED  
TENNESSEE VALLEY AUTHORITY  
2 PAGES, PAGES B.1.1 TO B.1.2 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS,  
NOVEMBER 10, 1966, DOCKET NO. 50-259/60

THE DESIGN INTENT IS TO SHARE FACILITIES ONLY WHEN IT WILL NOT COMPROMISE SAFETY OR INTERFERE WITH INDEPENDENT OPERATION. SOME SHARED EQUIPMENT IS COMMON SPARE COMPONENTS (SPARE FUEL POOL FILTER-DEMINEALIZER), OR IS CONNECTED ONLY IN CASE OF NECESSITY.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-14542 \*CONTINUED\*

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + DESIGN CRITERIA + EMERGENCY SYSTEM + INDEPENDENCE + REACTOR, BOILING WATER + REDUNDANCE

18-14543 ALSO IN CATEGORIES 9 AND 12

QUESTION B.1B - ADDITIONAL DESIGN CRITERIA TO PREVENT INTERACTION BETWEEN UNSHARED FACILITIES

TENNESSEE VALLEY AUTHORITY

PAGE B.1.3 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966, DOCKET NO. 50-295/260

EQUIPMENT CONTROLS WILL NOT BE INTERMIXED. CONTROL CONSOLES, EQUIPMENT AND VALVE-OPERATING PANELS WILL BE SEPARATED, AS WELL AS THE EQUIPMENT ITSELF.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + DESIGN CRITERIA + INDEPENDENCE + REACTOR, BOILING WATER

18-14544 ALSO IN CATEGORY 12

QUESTION B.1C - CRITERIA FOR THE SPECIFIC DESIGN OF EACH SHARED FEATURE

TENNESSEE VALLEY AUTHORITY

4 PAGES, PAGES B.1.3 TO B.1.6 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966, DOCKET NO. 50-259/260

DISCUSSION RESTRICTED TO 11 SAFETY-RELATED SYSTEMS, INCLUDING SPENT FUEL STORAGE, ELECTRIC POWER SYSTEM, CONTROL ROOM, WASTE DISPOSAL, REACTOR SECONDARY CONTAINMENT, STACK AND GAS TREATMENT SYSTEM, AND SERVICE WATER SYSTEM.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + DESIGN CRITERIA + EMERGENCY SYSTEM + INDEPENDENCE + REACTOR, BOILING WATER

18-14545

QUESTION B.1D - WHAT EFFECT WILL AN INCIDENT HAVE ON OPERABILITY OF THE OTHER UNIT

TENNESSEE VALLEY AUTHORITY

2 PAGES, PAGES B.1.6 TO B.1.7 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966, DOCKET NO. 50-259/260

ALL SAFETY-RELATED SYSTEMS AND EQUIPMENT ARE OPERATED FROM THE CENTRAL, SHIELDED, AND SEPARATELY-VENTILATED CONTROL ROOM. CONTROLLED VENTILATION WILL PREVENT CONTAMINATION SPREAD, AND EQUIPMENT IS ARRANGED SO WATER-LINE RUPTURE WOULD NOT AFFECT EQUIPMENT. THE QUESTION OF CONTINUED OPERATION OF THE UNAFFECTED UNIT WOULD HAVE TO BE SETTLED AT THE TIME OF THE INCIDENT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + INDEPENDENCE + REACTOR, BOILING WATER + SYSTEM OPERABILITY IN ACCIDENT CONDITIONS + VENTILATION SYSTEM

18-14546 ALSO IN CATEGORIES 11 AND 12

QUESTION B2 - HAVE ACRS COMMENTS ON DRESDEN 3 EMERGENCY COOLING BEEN CONSIDERED

TENNESSEE VALLEY AUTHORITY

5 PAGES, PAGES B.2.1 TO B.2.5 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966, DOCKET NO. 50-259/260

THE DESIGNER (GENERAL ELECTRIC) IS AWARE OF THESE COMMENTS. BROWNS FERRY IS IN MOST RESPECTS IDENTICAL TO DRESDEN 2 AND 3, AND GE STUDIES OF CORE COOLING, BLOWDOWN FORCES ON VESSEL AND CONTROL RODS, AND REACTOR VESSEL FABRICATION AND IN-SERVICE INSPECTION WILL BE MADE AVAILABLE TO THE AEC.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BLOWDOWN + BROWNS FERRY + CONTAINMENT, PRESSURE VESSEL + EMERGENCY COOLING CONSIDERATIONS + EXAMINATION + FABRICATION + REACTOR, BOILING WATER

18-14547 ALSO IN CATEGORY 1

QUESTION B3 - COMPARISON WITH 27 AEC CONSTRUCTION PERMIT CRITERIA

TENNESSEE VALLEY AUTHORITY

PAGE B.3.1 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966, DOCKET NO. 50-259/260.

APPENDIX H (COMPARATIVE EVALUATION OF CONSTRUCTION PERMIT CRITERIA) IS FORWARDED IN ANSWER.

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-14547 \*CONTINUED\*

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS +  
AEC CONSTRUCTION PERMIT CRITERIA + BROWNS FERRY + REACTOR, BOILING WATER

18-14548 ALSO IN CATEGORY 11

QUESTION B4 - PROTECTION OF CRUCIAL SAFETY COMPONENTS AGAINST MISSILE  
TENNESSEE VALLEY AUTHORITY8 PAGES, PAGES B.4.1 TO B.4.18 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS,  
NOVEMBER 10, 1967, DOCKET NO. 50-259/260

COMPONENTS DISCUSSED ARE - MAIN PUMP, FEEDWATER PUMP, EMERGENCY COOLING PUMP, TURBINE BLADE  
FAILURE, AND MAIN RECIRCULATION-PUMP FAILURES. THE DRY-WELL VESSEL IS INSIDE 4 TO 6 FEET OF  
REINFORCED CONCRETE, AND MANY COMPONENTS ARE INSIDE CONCRETE SHELLS OR SEPARATED BY CONCRETE  
FLOORS. A QUAD CITIES ANALYSIS (AMENDMENT 3, QUESTION 3) SHOWED MAXIMUM TURBINE-BLADE  
PENETRATION WOULD BE 67 INCHES OF DRY-WELL SHIELD. OTHER SURVEYS SHOWED NO DAMAGE FROM  
PUMP-MOTOR OR TURBINE FAILURES

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

18-14551 ALSO IN CATEGORY 17

QUESTION B.5 - OPERATOR TRAINING PROGRAM, INCLUDING ACTUAL REACTOR OPERATION  
TENNESSEE VALLEY AUTHORITY8 PAGES, PAGES B.5.1 TO B.5.8 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS,  
NOVEMBER 10, 1966, DOCKET NO. 50-259/260

THE MAJORITY OF LICENSED REACTOR OPERATIONS PERSONNEL WILL BE FROM THOSE PREVIOUSLY CERTIFIED  
FOR THE EGCR. TRAINING PROGRAMS OUTLINES. ACTUAL BWR EXPERIENCE WILL BE AT EVESR, IF THAT  
REACTOR IS STILL OPERATING. OTHERWISE THEY MUST BE TRAINED DURING STARTUP. SUPERVISORY  
PERSONNEL WILL TRAIN AT OYSTER CREEK OR DRESDEN 2.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY +  
OPERATING EXPERIENCE + REACTOR, BOILING WATER + STAFFING, TRAINING, QUALIFICATION

18-14552 ALSO IN CATEGORY 11

QUESTION B.6 - ANALYSES AND TIEDOWN FOR DRYWELL PIPING TO WITHSTAND EARTHQUAKES  
TENNESSEE VALLEY AUTHORITY2 PAGES, PAGES B.6.1 TO B.6.2 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS,  
NOVEMBER 10, 1966, DOCKET NO. 50-259/260

TWO MAJOR CONDITIONS WILL BE SATISFIED - NORMAL OPERATION (EXPANSION, LIVE AND DEAD LOADS,  
SEISMIC FORCES), PLUS PIPE RUPTURE (JET-FORCE LOADINGS).

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY +  
DESIGN CRITERIA + PIPING + REACTOR, BOILING WATER + SEISMOLOGY

18-14553 ALSO IN CATEGORY 11

QUESTION B.7.1 - INSPECTION PROCEDURES FOR CONSTRUCTION OF CONTAINMENT OR OTHER CRUCIAL STRUCTURES  
TENNESSEE VALLEY AUTHORITY6 PAGES, PAGES B.7.1 TO B.7.6 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS,  
NOVEMBER 10, 1966, DOCKET NO. 50-259/260

(1) PRIMARY CONTAINMENT - GE IS FURNISHING THESE VESSELS. LISTS FABRICATION PROCEDURES AND  
TESTS THAT GE MUST APPROVE. (2) SECONDARY CONTAINMENT - TVA WILL APPLY NORMAL QUALITY  
CONTROL (LISTED) FOR CONCRETE STRUCTURES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY +  
CONTAINMENT, PRESSURE VENTING + CONTAINMENT, PRESSURE VESSEL + EXAMINATION + FABRICATION +  
QUALITY CONTROL + REACTOR, BOILING WATER

18-14554

QUESTION B.8 - CONTROL ROOM SHIELDING AND VENTILATION  
TENNESSEE VALLEY AUTHORITYPAGE B.8.1 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966,  
DOCKET NO. 50-259/260

SHIELDING INPUT PARAMETERS NOTED IN TABLE F2 OF DAR. AVERAGE GAMMA ENERGY OF 1.5 MEV/DISUSED.  
THE FOUR CONTROL-ROOM AREAS ARE MAINTAINED AT A POSITIVE PRESSURE WITH FILTERED OUTSIDE AIR,



CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-14554 \*CONTINUED\*

WITH THE AIR LEAVING THE BATTERY ROOMS FOR THE OUTSIDE. AIR PAKS WILL BE SUPPLIED FOR 3 OPERATORS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + REACTOR, BOILING WATER + SHIELDING + VENTILATION SYSTEM

18-14555 ALSO IN CATEGORY 11

QUESTION C.1A - RELIABILITY OF VACUUM IN SECONDARY CONTAINMENT  
TENNESSEE VALLEY AUTHORITY

2 PAGES, PAGES C.1.1 TO C.1.2 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966, DOCKET NO. 50-259/260

LEAKAGE WILL BE LESS THAN 100%/DAY. EXFILTRATION WILL NOT OCCUR AT WINDS LESS THAN 35 MPH. CALCULATIONS SHOW THAT EXFILTRATION DOES NOT INCREASE MCA DOSE. IN-LEAKAGE AND VACUUM ARE CONTINUOUSLY MONITORED. INITIALLY, ALL AREAS OF THE BUILDING WILL BE CHECKED FOR MINIMUM PRESSURE DIFFERENCE OF 0.25 INCH OF WATER.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + CONTAINMENT LEAKAGE CONTROL + CONTAINMENT, PRESSURE VENTING + REACTOR, BOILING WATER

18-14556 ALSO IN CATEGORY 11

QUESTION C.1B - ISOLATION VALVE REDUNDANCY, ZONING CONCEPT OF SECONDARY CONTAINMENT  
TENNESSEE VALLEY AUTHORITY

2 PAGES, PAGES C.1.2 TO C.1.3 OF BROWNS FERRY CONSTRUCTION PERMIT, ANSWERS TO AEC QUESTIONS, AMENDMENT 3, NOVEMBER 10, 1966, DOCKET NO. 50-259/260

THE 3 ZONES AID IN LOCALIZING CONTAMINATION AND MINIMIZE LEAKAGE. IF ONLY ONE ZONE NEEDS TO BE ISOLATED, THE VACUUM WOULD BE GREATER BECAUSE THE EXHAUST IS FROM ONE ZONE ONLY TO THE GAS-TREATMENT SYSTEM. REDUNDANT ISOLATION VALVES HAVE BEEN INCLUDED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + CONTAINMENT PENETRATION, CLOSURE OF + CONTAINMENT, PRESSURE VENTING + REACTOR, BOILING WATER + REDUNDANCE

18-14557 ALSO IN CATEGORY 11

QUESTION C.1C - DESIGN BASIS FOR SECONDARY CONTAINMENT LEAKAGE RATE OF 100%/DAY  
TENNESSEE VALLEY AUTHORITY

PAGES C.1.3 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966, DOCKET NO. 50-259/260

STANDBY GAS-TREATMENT SYSTEM DESIGNED TO MAINTAIN 0.25 IN WATER VACUUM AT ANY POINT WHEN BUILDING IS ISOLATED. BUILDING IS DESIGNED (SPECIAL JOINTS AND PENETRATIONS) SO INLEAKAGE WILL NOT EXCEED 100%/DAY AT THIS VACUUM. AT 150%/DAY INLEAKAGE, OFF-SITE DOSES WOULD BE INCREASED ONLY 6%.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + CONTAINMENT LEAKAGE CONTROL + CONTAINMENT PENETRATION, CLOSURE OF + CONTAINMENT, PRESSURE VENTING + DESIGN CRITERIA + REACTOR, BOILING WATER

18-14558 ALSO IN CATEGORY 11

QUESTION C.1D - CONSEQUENCES OF FISSION PRODUCTS DIFFUSING THROUGH CONCRETE  
TENNESSEE VALLEY AUTHORITY

2 PAGES, PAGES C.1.3 TO C.1.4 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966, DOCKET NO. 50-259/260

AT LOW WIND SPEEDS, DIFFUSION AGAINST THE PRESSURE GRADIENT IS NEGLIGIBLE (REF. QUAD CITIES AMEND. 3, QUESTION 9B). WIND SPEEDS ABOVE 35 MPH MAY REVERSE THE PRESSURE DIFFERENCE LOCALLY, BUT DILUTION IS ENHANCED. THESE WINDS ARE USUALLY SHORT-TIME GUSTS. THE MILLSTONE POINT ANALYSIS SHOWED SITE-BOUNDARY DOSES FOR EXFILTRATION TO BE 1/10TH THE MCA DOSES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + AIRBORNE RELEASE + BROWNS FERRY + CONTAINMENT LEAKAGE CONTROL + CONTAINMENT, PRESSURE VENTING + DOSE + REACTOR, BOILING WATER

18-14559 ALSO IN CATEGORY 11

QUESTION C.2 - INTEGRITY OF SECONDARY CONTAINMENT AGAINST TORNADO

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-14559 \*CONTINUED\*  
TENNESSEE VALLEY AUTHORITY  
2 PAGES, PAGES C.2.1 TO C.2.2 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS,  
NOVEMBER 10, 1966, DOCKET NO. 50-259/260

YIELD STRESS OF BUILDING STEEL WILL BE AT 300-MPH WIND FORCE, HOWEVER METAL SIDING AND ROOF  
WILL BE DESIGNED FOR 100-MPH WIND. A TORNADO MAY EXPOSE REFUELING FLOOR, BUT LITERATURE  
SEARCHES CONTAIN NO DATA INDICATING THAT TORNADOES MAY SUCK LARGE AMOUNTS OF WATER FROM POOLS  
OR PONDS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

18-14561 ALSO IN CATEGORY 11  
QUESTION C.4A - CAPABILITY OF THREE-ZONE CONTAINMENT CROSS FLOW  
TENNESSEE VALLEY AUTHORITY  
PAGE C.4.1 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966,  
DOCKET NO. 50-259/260

IN CASE ONE ZONE IS ON STANDBY GAS TREATMENT AND OTHERS IN NORMAL VENTILATION, DOORS WILL BE  
KEPT CLOSED. COMMON WALLS AND FLOORS ARE AS LEAKTIGHT AS THE SECONDARY-CONTAINMENT WALL.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + BROWNS FERRY + CONTAINMENT LEAKAGE CONTROL +  
CONTAINMENT PENETRATION, CLOSURE OF + CONTAINMENT, PRESSURE VENTING + REACTOR, BOILING WATER +  
SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS

18-14562 ALSO IN CATEGORY 11  
QUESTION C.4B - WIND VELOCITY DESIGN CRITERIA FOR CONCRETE PORTIONS OF BUILDING  
TENNESSEE VALLEY AUTHORITY  
2 PAGES, 2 REFERENCES, PAGES C.4.1 AND C.4.2 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO  
AEC QUESTIONS, NOVEMBER 10, 1966, DOCKET NO. 50-259/260

CONCRETE STRUCTURE WILL BE DESIGNED TO WITHSTAND 100-MPH WINDS (0.25 PSI DELTA P) OR GREATER.  
BLOWOUT PANELS WILL PREVENT STRUCTURE COLLAPSE. QUAD CITIES AMENDMENT 3 SHOWS THAT  
TORNADO-PROPELLED MISSILES WILL NOT DAMAGE EQUIPMENT.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY +  
CONTAINMENT, PRESSURE VENTING + DESIGN CRITERIA + MISSILE GENERATION AND PROTECTION +  
REACTOR, BOILING WATER + WIND STATISTICS

18-14563 ALSO IN CATEGORY 11  
QUESTION C.5 - JUSTIFICATION OF DAMPING LEVEL FOR REINFORCED CONCRETE STRUCTURES.  
TENNESSEE VALLEY AUTHORITY  
5 PAGES, 1 FIGURE, PAGES C.5.1 TO C.5.5 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC  
QUESTIONS, NOVEMBER 10, 1966, DOCKET NO. 50-259/260

LETTER FROM JOHN A. BLUME ASSOCIATES REVIEWS VARIOUS STUDIES (ALL RECOMMENDING CRITICAL  
DAMPING ABOVE 5%) AND NOTES THAT DAMPING INCREASES WITH DEFLECTION. ASSERTS THAT THE ACTUAL  
DAMPING WOULD BE BETWEEN 5-8% WITH 95% PROBABILITY. CHOSEN 5% APPEARS CONSERVATIVE.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY +  
BUILDING + CONCRETE, PRESTRESSED + CONTAINMENT, PRESSURE VENTING + DESIGN CRITERIA +  
REACTOR, BOILING WATER + SEISMOLOGY

18-14564 ALSO IN CATEGORY 11  
QUESTION C.6 - LEAK TIGHTENERS OF METAL SIDING  
TENNESSEE VALLEY AUTHORITY  
2 PAGES, PAGES C.6.1 TO C.6.2 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS,  
NOVEMBER 10, 1966, DOCKET NO. 50-259/260

SPECIAL MASTIC-JOINT CAULKING WILL SEAL THE METAL PANELS. ALL 25,000 FT OF JOINTS COULD OPEN  
6 MILS (OR ABOUT 200 SQUARE INCHES OF 1/8-1/2 INCH CRACKS COULD DEVELOP) BEFORE THE BUILDING  
VACUUM WOULD DROP BELOW 0.25 INCH (WATER GAGE).

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY +  
CONTAINMENT LEAKAGE CONTROL + CONTAINMENT, PRESSURE VENTING + REACTOR, BOILING WATER

18-14565 ALSO IN CATEGORY 11

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-14565 \*CONTINUED\*  
QUESTION C.7 - STABILITY OF BUILDING CRANES DURING EARTHQUAKE  
TENNESSEE VALLEY AUTHORITY  
PAGE C.7.1 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966,  
DOCKET NO. 50-259/260

THE STEEL SUPPORTS WILL WITHSTAND EARTHQUAKES. THE VARIOUS CRANE AND BRIDGE WHEELS ARE DOUBLE  
FLANGED. VARIOUS SPRING-SET BRAKES LOCK THE CRANE IN PLACE.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY +  
REACTOR, BOILING WATER + REMOTE MANIPULATING AND VIEWING + SEISMOLOGY

18-14566 ALSO IN CATEGORY 11  
QUESTION C.8 - DESIGN OF STACK, AND CONSEQUENCES OF STACK FAILURE  
TENNESSEE VALLEY AUTHORITY  
PAGE C.8.1 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966,  
DOCKET NO. 50-259/260

THE REINFORCED-CONCRETE STACK WILL BE LOCATED AWAY SO THAT THE CRUCIAL SAFETY SYSTEMS WILL NOT  
BE DAMAGED BY STACK FAILURE. WIND-LOAD DESIGN WILL BE 100-MPH GUSTS, WITH A DAMPING FACTOR  
OF 5% FOR WIND AND EARTHQUAKE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY +  
REACTOR, BOILING WATER + SEISMOLOGY + STACK + STRESS ANALYSIS + WIND STATISTICS

18-14567  
QUESTION C.9 - CLASS I EQUIPMENT IN CLASS II AREAS  
TENNESSEE VALLEY AUTHORITY  
PAGE C.9.1 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966,  
DOCKET NO. 50-259/260

THE AREA MONITORS REPRESENT THE ONLY CLASS-I EQUIPMENT LOCATED IN CLASS-II AREAS. THERE ARE  
REDUNDANT MONITORS, MOUNTED SO AS TO BE INSENSITIVE TO EARTHQUAKE VIBRATIONS.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY +  
MONITOR, RADIATION, GENERAL + REACTOR, BOILING WATER + SEISMOLOGY

18-14568 ALSO IN CATEGORY 11  
QUESTION D.1 - BASES FOR REACTOR VESSEL CHANGES FROM DRESDEN 3 DESIGN  
TENNESSEE VALLEY AUTHORITY  
2 PAGES, PAGES D.1.1 TO D.1.2 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS,  
NOVEMBER 10, 1966, DOCKET NO. 50-259/260.

THE INSIDE HEIGHT IS 4 FT GREATER FOR LARGER STEAM DRYERS. OTHER VESSEL NOZZLES ARE LARGER  
BECAUSE OF THE HIGHER POWER AND FLOW RATES. OTHER NOZZLES ARE NOT THERE BECAUSE  
ISOLATION-CONDENSERS REPLACED BY RCIC SYSTEM. 59 RATHER THAN 86 FLUX-MONITOR PENETRATIONS  
ARE NEEDED.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY +  
CONTAINMENT PENETRATION + CONTAINMENT, PRESSURE VESSEL + REACTOR, BOILING WATER

18-14569 ALSO IN CATEGORIES 5 AND 11  
QUESTION D.2.1A - ANALYSIS OF BLOWDOWN EFFECTS ON REACTOR VESSEL INTERNALS  
TENNESSEE VALLEY AUTHORITY  
6 PAGES, PAGES D.2.1 TO D.2.6 OF BROWNS FERRY CONSTRUCTION PERMIT, ANSWERS TO AEC QUESTIONS, AMENDMENT 3,  
NOVEMBER 10, 1966, DOCKET NO. 50-259/260

ANALYSIS REPORTED TO SUPPLEMENT EARLIER ANALYSIS ON VESSEL ALONE. (1) RECIRCULATION LINE  
RUPTURE. PRESSURE CHANGE IS ONLY 35 PSI/SEC, BEING CHOKED BY TWO-PHASE FLOW AFTER THE  
INTERNAL PRESSURE SURGE OF 28 PSI (MAX). CORE DELTA P IS ONLY 18 PSI, WELL BELOW 42 PSI  
REQUIRED FOR FUEL-BUNDLE LIFTING. (2) STEAM LINE RUPTURE. INITIAL DEPRESSURIZATION IS 80  
PSI/SEC, REDUCING TO 25 PSI/SEC WHEN TWO-PHASE BLOWDOWN BEGINS (ASSUMING BREAK IS UPSTREAM OF  
THE FLOW LIMITER). CORE DELTA P WOULD BE 7 PSI BELOW FUEL LIFT VALUE OF 42 PSI. A 25-PSI  
PRESSURE DIFFERENCE WOULD NOT BIND THE CONTROL RODS. THE PEAK CALCULATED VALUE IS 18 PSI.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS +  
ACCIDENT, LOSS OF COOLANT + BLOWDOWN + BROWNS FERRY + CORE COMPONENTS, MISCELLANEOUS + DAMAGE +  
FLOW, TWO PHASE + REACTOR, BOILING WATER + STRUCTURAL INTEGRITY

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-14570 ALSO IN CATEGORIES 5 AND 11  
QUESTION D.2.18 - ANALYSIS OF REACTIVITY-TRANSIENT EFFECTS ON REACTOR VESSEL OR INTERNALS  
TENNESSEE VALLEY AUTHORITY  
5 PAGES, 2 FIGURES, 1 TABLE, PAGES D.2.7 TO D.2.11 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3,  
ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966, DOCKET NO. 50-259/260

GIVES DAMAGES THAT WOULD RESULT FROM VARIOUS PEAK FUEL-ELEMENT ENTHALPIES. 170 CAL/GRAM GIVES FUEL-CLAD DAMAGE. 200-280 CAUSES FUEL FRAGMENTATION OR MELTING, BUT ONLY A SMALL FRACTION OF THE BURST ENERGY IS IN THIS FUEL. 300-400 WOULD GENERATE 10-100 PSI AND CAUSE CORE-COMPONENT DAMAGE. FOR EXCURSIONS YIELDING ENTHALPIES ABOVE 425 CAL/GRAM, THE THERMAL-TO-MECHANICAL ENERGY CONVERSION IS ABOVE A FEW PERCENT, SO PRIMARY-SYSTEM INTEGRITY WOULD BE THREATENED IF THE FUEL CONTAINED SUFFICIENT ENERGY.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + ACCIDENT, REACTIVITY + BROWNS FERRY + CORE COMPONENTS, MISCELLANEOUS + DAMAGE + REACTOR, BOILING WATER

18-14571 ALSO IN CATEGORY 11  
QUESTION D.3 - EVALUATION OF CORE PIPING ABILITY TO WITHSTAND DISPLACEMENT  
TENNESSEE VALLEY AUTHORITY  
7 PAGES, 4 FIGURES, 1 TABLE, PAGES D.3.1 TO D.3.7 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3,  
ANSWERS TO AEC QUESTIONS, DOCKET NO. 50-259/260, NOVEMBER 10, 1966

FORCES DUE TO SYSTEM RUPTURE ARE 1 MILLION LB, WHILE VESSEL RESTRAINTS ARE DESIGNED TO HANDLE 7 MILLION. SKETCHES SHOW A 2-1/4-FT-THICK CONCRETE SACRIFICIAL SHIELD AROUND VESSEL. PIPING PENETRATIONS ARE 1 FT LARGER RADIUS THAN PIPING TO ALLOW VESSEL MOVEMENT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + CONTAINMENT, PRESSURE VESSEL + FAILURE, PIPE + REACTOR, BOILING WATER + SHIELDING + STRUCTURAL INTEGRITY + SUPPORT STRUCTURE

18-14572 ALSO IN CATEGORY 5  
QUESTION D.4 - PRIMARY SYSTEM WATER/STEAM INVENTORY, AND VOLUME NEEDED FOR REFILL  
TENNESSEE VALLEY AUTHORITY  
PAGE D.4.1 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966,  
DOCKET NO. 50-259/260

AT POWER, THERE ARE 579,000 LB OF WATER AND 21,600 LB OF STEAM IN THE VESSEL AND RECIRCULATING LINES. THE JET-PUMP SHROUDS NEED 4900 CUBIC FEET TO REFILL TO TOP OF JET-PUMP THROAT--WHICH IS 2/3 CORE LEVEL. TEST DATA SHOWS REFLOODING TO 1/3 HEIGHT WILL ADEQUATELY COOL IT.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + CORE REFLOODING SYSTEM + REACTOR, BOILING WATER

18-14573 ALSO IN CATEGORY 9  
QUESTION D.5 - SECONDARY SHUTDOWN SYSTEM DETAILS  
TENNESSEE VALLEY AUTHORITY  
PAGES D.5.1 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966,  
DOCKET NO. 50-259/260

(1) ACCUMULATORS ON EACH POSITIVE-DISPLACEMENT PUMP WILL PROTECT VESSEL-SPARGER RING FROM PULSATION. (2) FOREIGN MATERIAL WILL NOT CLOG SPARGER NOZZLES BECAUSE PUMP FILTERS AND SUCTION LINE ARE RAISED ABOVE TANK BOTTOM. (3) SPARGER RING AIDS IN QUICKER POISON DISTRIBUTION AND WILL BE RETAINED THOUGH EARLIER ANALYSIS SHOWED THAT THIS WAS UNNECESSARY.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + POISON, SOLUBLE + REACTOR, BOILING WATER + SHUTDOWN SYSTEM, SECONDARY

18-14574 ALSO IN CATEGORY 9  
QUESTION E.1 - DETAILS OF ANTICIPATORY SCRAM  
TENNESSEE VALLEY AUTHORITY  
PAGE E.1.1 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1967,  
DOCKET NO. 50-259/260

A LOSS-OF-LOAD SCRAM WILL COMPARE ELECTRICAL POWER (WATTMETER; ETC.) WITH TURBINE POWER (STEAM-PRESSURE DEVICE) TO SCRAM WHEN TURBINE LOAD IS GREATER THAN 50% AND ELECTRICAL LOAD IS LESS THAN 25%. THE USUAL REDUNDANCE, INDEPENDENCE, AND RELIABILITY CRITERIA WILL APPLY.

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-14574 \*CONTINUED\*

AVAILABILITY - PUBLIC DOCUMENT ROOM, USAEC, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + ACCIDENT, LOAD REJECTION + BROWNS FERRY + INSTRUMENTATION, POWER RANGE + INSTRUMENTATION, PROCESS + REACTOR SAFETY SYSTEM + REACTOR, BOILING WATER

18-14576 ALSO IN CATEGORIES 9 AND 5

QUESTION E.3 - NEW SYSTEM WITH INCREASED SENSITIVITY TO CONTROL ROD INDUCED LOCAL FLUX PEAKING  
TENNESSEE VALLEY AUTHORITY

PAGE E.3.1 OF BROWNS FERRY CONSTRUCTION PERMIT, ANSWERS TO AEC QUESTIONS, AMENDMENT 3, NOVEMBER 10, 1966,  
DOCKET NO. 50-259/260

THIS SYSTEM IS THE RBM (ROD-BLOCK MONITOR) DESCRIBED IN APPENDIX G. FINAL LOGIC AND PERFORMANCE DATA WILL BE AVAILABLE LATER. THE SYSTEM USES SIGNALS FROM SEVERAL LOCAL-POWER-RANGE MONITORS NEAR THE ROD TO PREVENT POWER PEAKING IF THE ROD IS MOVED.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + CONTROL ROD + INSTRUMENTATION, IN CORE + POWER DISTRIBUTION + REACTOR, BOILING WATER

18-14578 ALSO IN CATEGORIES 9 AND 5

QUESTION E.5 - DESCRIBE THE PROTECTION SYSTEM IN DETAIL, RELIABILITY, AND TESTING ASSOCIATED WITH STEAM LINE RIPTURE  
TENNESSEE VALLEY AUTHORITY

PAGE E.5.1 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966,  
DOCKET NO. 50-259/260

INCLUDED IN ANSWER G-1.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + BROWNS FERRY + REACTOR, BOILING WATER

18-14588 ALSO IN CATEGORIES 14 AND 17

QUESTION F6. SENSITIVITY OF WASTE MONITORING  
TENNESSEE VALLEY AUTHORITY

PAGE F5.1 OF BROWNS FERRY CONSTRUCTION PERMIT, AMENDMENT 3, ANSWERS TO AEC QUESTIONS, NOVEMBER 10, 1966,  
DOCKET NO. 50-259/260

(1) EXPERIENCE SHOWS THAT OFF-GAS AND STACK-MONITOR CALIBRATION VARIES BECAUSE OF CHANGING ISOTOPIC RATIOS, DEPENDING ON THE NATURE OF THE FUEL LEAKS. MONITOR CALIBRATION IS BASED ON GAMMA ANALYSIS OF GRAB SAMPLES (WHICH ARE TAKEN ROUTINELY OR ON INCREASED READINGS). (2) GRAB SAMPLES THEN ALLOW A CALIBRATION OF GROSS GAMMA VS MICROCURIES/SFC.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + INSTRUMENTATION CALIBRATION + MONITOR, RADIATION, STACK + OPERATING EXPERIENCE + REACTOR OFFGAS

18-14623

DUKE POWER COMPANY OCONEE NUCLEAR STATION UNITS 1 AND 2 PRELIMINARY SAFETY ANALYSIS REPORT, VOLUME I  
DUKE POWER COMPANY

450 PAGES, FIGURES, TABLES, 1966, DOCKET NO. 50-269, 50-270

EACH PWR WILL ORIGINALLY OPERATE AT 2452 MWH/039 MWE. UNIT 1 TO BE COMPLETED OCTOBER 1970, UNIT 2, OCTOBER 1971. DUKE POWER COMPANY WILL DESIGN THE STATION, B AND W WILL SUPPLY THE NUCLEAR STEAM SYSTEM. VOLUME I CONTAINS DESCRIPTIONS OF SITE, REACTOR, COOLING SYSTEM, CONTAINMENT, ENGINEERED SAFEGUARDS, I AND C, ELECTRICAL SYSTEM, AUXILIARY AND EMERGENCY SYSTEM, AND POWER-CONVERSION SYSTEM.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + AEC CONSTRUCTION PERMIT CRITERIA + OCONEE 1, 2, AND 3 + REACTOR DESCRIPTION + REACTOR, PRESSURIZED WATER

18-14624

DUKE POWER COMPANY OCONEE NUCLEAR STATION UNITS 1 AND 2 PRELIMINARY SAFETY ANALYSIS REPORT, VOLUME II  
DUKE POWER COMPANY

400 PAGES, FIGURES, TABLES, 1966, DOCKET NO. 50-269, 50-270

VOLUME II CONTAINS DESCRIPTIONS OF WASTE DISPOSAL, OPERATIONS, INITIAL TESTS, SAFETY ANALYSIS, AND APPENDICES ON FOUNDATIONS, SEISMOLOGY AND METEOROLOGY, GROUNDWATER HYDROLOGY, FIELD

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-14624 \*CONTINUED\*  
PERMEABILITY TESTS, GEOLOGY, THE ONCE-THROUGH STEAM GENERATOR, AND DESIGN CRITERIA FOR THE REACTOR BUILDING.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT, GENERAL + DESIGN CRITERIA + GROUND WATER, PROPERTY + OCONEE 1, 2, AND 3 + REACTOR, PRESSURIZED WATER + SEISMOLOGY

18-14625 ALSO IN CATEGORIES 1 AND 17  
MANUAL OF LECTURE NOTES REACTOR SAFETY COURSE NO. 4, JUNE 6 TO JULY 1, 1966  
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, HARWELL, ENGLAND  
500 PAGES +. FIGURES, TABLES, REFERENCES, 1966

PROVIDES MAIN DATA FOR LECTURE NOTES AND DISCUSSIONS. SECTIONS INCLUDE - I. INTRODUCTION (UNITED KINGDOM HEALTH AND SAFETY ORGANIZATION). II. FISSION PRODUCT RELEASE (DEPOSITION WITHIN A SYSTEM, FILTRATION). III. PRESSURE-CIRCUIT ENGINEERING (REACTOR VESSEL AND CONTAINMENT). IV. CONTROL AND INSTRUMENTATION (EXPERIENCE, RELIABILITY). V. GAS-COOLED REACTORS. VI. WATER-COOLED REACTORS. VII. FAST REACTORS. VIII. GENERAL (SAFETY REPORTS, RESEARCH REACTORS, ACCIDENT REPORTING, TRAINING). IX. SITING AND EMERGENCY PROCEDURES.

AVAILABILITY - UNITED KINGDOM ATOMIC ENERGY AUTHORITY, AUTHORITY HEALTH AND SAFETY BRANCH AT THE POST-GRADUATE EDUCATION CENTRE, A.F.R.E., HARWELL, BERKS., \$75.00 COPY

\*STAFFING, TRAINING, QUALIFICATION + CONCRETE, PRESTRESSED + CONTAINMENT, GENERAL + FISSION PRODUCT RELEASE, GENERAL + INSTRUMENTATION, GENERAL + MAIN COOLING SYSTEM + REACTOR, GAS COOLED + SAFETY ANALYSIS REPORT, GENERAL + SITING, REACTOR + UNITED KINGDOM

18-14626  
PLANT DESIGN AND ANALYSIS REPORT, VOLUME I, VERMONT YANKEE NUCLEAR POWER STATION  
VERMONT YANKEE NUCLEAR POWER CORPORATION  
450 PAGES, FIGURES, TABLES, DECEMBER 1966, DOCKET NO. 50-271

1593-MWTH/537-MWE BWR, WITH A TURBINE THAT WILL ACCEPT 1665 MWTH, LOCATED AT VERNON, VERMONT. COMMERCIAL OPERATION IN OCTOBER 1970. VOLUME I CONTAINS SECTIONS ON SITE, REACTOR CORE, COOLING SYSTEM, CONTAINMENT, ENGINEERED SAFEGUARDS, ELECTRICAL POWER, AND I AND C

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT, PRESSURE SUPPRESSION + ENGINEERED SAFETY SYSTEM + INSTRUMENTATION, GENERAL + MAIN COOLING SYSTEM + REACTOR DESCRIPTION + REACTOR, BOILING WATER + VERMONT YANKEE

18-14627  
PLANT DESIGN AND ANALYSIS REPORT, VOLUME II, VERMONT YANKEE NUCLEAR POWER STATION  
VERMONT YANKEE NUCLEAR POWER CORP.  
400 PAGES, FIGURES, TABLES, DECEMBER 1966, DOCKET NO. 50-271

VOLUME II CONTAINS DESCRIPTION OF AUXILIARY COOLING SYSTEMS, POWER CONVERSION, STRUCTURES, OPERATIONS, AND ACCIDENT ANALYSES. APPENDIXES INCLUDE - A (AEC DESIGN CRITERIA), B (CONTAINMENT FISSION-PRODUCT-RETENTION CAPABILITY), C (ROD DRIVE), D (JET-PUMP DEVELOPMENT), E (CORE-SPRAY COOLING TESTS), F (CORE THERMAL DESIGN), G (SITE ASSEMBLY OF REACTOR VESSEL), H (SEISMIC DESIGN CRITERIA).

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + AEC CONSTRUCTION PERMIT CRITERIA + CONTAINMENT, PRESSURE VESSEL + CORE SPRAY + FISSION PRODUCT RETENTION + REACTOR DESCRIPTION + REACTOR, BOILING WATER + SEISMOLOGY + VERMONT YANKEE

18-14628  
PLANT DESIGN AND ANALYSIS REPORT, VOLUME III, VERMONT YANKEE NUCLEAR POWER STATION  
VERMONT YANKEE NUCLEAR POWER CORPORATION  
300 PAGES, FIGURES, TABLES, DECEMBER 1966, DOCKET NO. 50-271

CONTAINS THE ILLUSTRATIONS.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + REACTOR, BOILING WATER + VERMONT YANKEE

18-14629  
PUBLIC SERVICE ELECTRIC AND GAS COMPANY BURLINGTON NUCLEAR GENERATING STATION NO. 1 UNIT, PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT  
PUBLIC SERVICE ELECTRIC AND GAS COMPANY

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-14629 \*CONTINUED\*  
275 PAGES, FIGURES, TABLES, DECEMBER 1966, DOCKET NO. 50-272

WESTINGHOUSE-BUILT 3083 MW(TH)/1035 MW(E) PWR OF INDIAN POINT 2 CLASS, LOCATED 17 MILES FROM PHILADELPHIA/CAMDEN, TO BE OPERATED BY PUBLIC SERVICE CO. OF NEW JERSEY AFTER COMPLETION IN THE SUMMER OF 1971. VOLUME 1 CONTAINS DESCRIPTION OF SITE AND REACTOR. ANALYSIS BASED ON 3083 MW(TH), THOUGH 3217 EXPECTED.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + BURLINGTON 1 + REACTOR DESCRIPTION + REACTOR, PRESSURIZED WATER

18-14630  
PUBLIC SERVICE ELECTRIC AND GAS COMPANY BURLINGTON NUCLEAR GENERATING STATION NO. 1 UNIT, PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT  
PUBLIC SERVICE ELECTRIC AND GAS COMPANY  
250 PAGES, FIGURES, TABLES, DECEMBER 1966, DOCKET NO. 50-272

VOLUME 2 INCLUDES REACTOR COOLANT SYSTEM, CONTAINMENT SYSTEM, ENGINEERED SAFEGUARDS, I AND C, ELECTRICAL SYSTEM, AUXILIARY SYSTEMS.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + BURLINGTON 1 + CONTAINMENT, HIGH PRESSURE + ENGINEERED SAFETY SYSTEM + REACTOR DESCRIPTION

18-14631  
PUBLIC SERVICE ELECTRIC AND GAS COMPANY BURLINGTON NUCLEAR GENERATING STATION NO. 1 UNIT, PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT  
PUBLIC SERVICE ELECTRIC AND GAS COMPANY  
300 PAGES, FIGURES, TABLES, DECEMBER 1966, DOCKET NO. 50-272

VOLUME 3 CONTAINS POWER-CONVERSION, WASTE-DISPOSAL, AND SAFETY-EVALUATION SECTIONS. APPENDIXES INCLUDE - A (METEOROLOGICAL ANALYSIS), B (SITE ENVIRONMENTAL STUDIES), AND C (SEISMIC-DESIGN CRITERIA).

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + BURLINGTON 1 + METEOROLOGY + REACTOR, PRESSURIZED WATER + SEISMOLOGY

18-14632  
WISCONSIN MICHIGAN POWER COMPANY, POINT BEACH NUCLEAR PLANT, PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, VOLUME II  
WISCONSIN MICHIGAN POWER COMPANY  
500 PAGES, FIGURES, TABLES, AUGUST 1966, DOCKET NO. 50-266

A WESTINGHOUSE 1306-MW(TH)/480-MW(E) PWR SIMILAR TO GINNA, TO BE OPERATED BY WISCONSIN-MICHIGAN POWER COMPANY. VOLUME 2 CONTAINS DESCRIPTIONS OF SITE, REACTOR, COOLANT, AND CONTAINMENT SYSTEM.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

CONTAINMENT, HIGH PRESSURE + MAIN COOLING SYSTEM + POINT BEACH + REACTOR DESCRIPTION + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY

18-14633  
WISCONSIN MICHIGAN POWER COMPANY, POINT BEACH NUCLEAR PLANT, PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, VOLUME III  
WISCONSIN MICHIGAN POWER COMPANY  
500 PAGES, FIGURES, TABLES, AUGUST 1966, DOCKET NO. 50-266

VOLUME 2 INCLUDES ENGINEERED SAFEGUARDS, I AND C, ELECTRICAL SYSTEM, AUXILIARY SYSTEM, POWER-CONVERSION SYSTEM, WASTE DISPOSAL, AND SAFETY EVALUATION. APPENDIXES INCLUDE A (INDEPENDENT SITE EVALUATION), B (NUS CORP. METEOROLOGY COMPUTER PROGRAM), C (SEISMIC DESIGN CRITERIA), AND D (RECOMMENDED EARTHQUAKE).

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

COMPUTER PROGRAM, METEOROLOGICAL + EARTHQUAKE + POINT BEACH + REACTOR, PRESSURIZED WATER + SAFETY ANALYSIS REPORT, PRELIMINARY + SEISMOLOGY + WASTE DISPOSAL, GENERAL

18-14634 ALSO IN CATEGORIES 11 AND 17  
OPERATING EXPERIENCE WITH U.S. FIELD ASSEMBLED PRESSURE VESSELS  
NORTHERN STATES POWER COMPANY  
6 PAGES, 3 TABLES, ATOMIC ENERGY CLEARING HOUSE 13(6) PAGES 5-10 (FEBRUARY 6, 1967)

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-14634 \*CONTINUED\*

BRIEF HISTORY OF 200 CHICAGO BRIDGE AND IRON FIELD-ASSEMBLED (NONNUCLEAR) VESSELS. NINE HAVE CONDITIONS SIMILAR TO THE MONTICELLO VESSEL. ALL WERE PERFORMING SATISFACTORILY. LETTER SUMMARIZES CONDITIONS (SERVICE, DESIGN PRESSURE AND TEMPERATURE, ETC.).

\*CONTAINMENT, PRESSURE VESSEL + \*DESIGN STUDY + \*OPERATING EXPERIENCE + MONTICELLO + REACTOR, BOILING WATER

18-14635 ALSO IN CATEGORIES 15 AND 17

MEHANN RO

REVIEW OF N S SAVANNAH POST MCA

FIRST ATOMIC SHIP TRANSPORT, INC., NEW YORK, NEW YORK

3 PAGES, 1 TABLE, ATOMIC ENERGY CLEARING HOUSE 13(6) PAGES 17-19 (FEBRUARY 6, 1967) DOCKET NO. 50-238

REVIEWS NS SAVANNAH RADIATION AND CONTAINMENT MONITORING SYSTEM FEATURES. REVIEW OF OTHER FACILITIES SHOWS NO PROVISION FOR STACK MONITORING OF HIGH-LEVEL IODINE RELEASE. SPECIFICATIONS FOR SUCH AN IODINE MONITOR WERE RETURNED BY ALL 22 MANUFACTURERS CONTACTED. THREE WERE INTERESTED IN ITS DEVELOPMENT. AS A RESULT, FAST CONCLUDES PRESENT INSTRUMENTATION IS ADEQUATE, AND DEVELOPMENT OF AN IODINE MONITOR WOULD NOT ADD SIGNIFICANTLY TO PUBLIC SAFETY.

\*FISSION PRODUCT, IODINE + \*MONITOR, RADIATION, STACK + \*SAFETY REVIEW (OPERATIONS, EXPERIMENTS) + N S SAVANNAH + REACTOR, MARITIME + REACTOR, PRESSURIZED WATER

18-14636 ALSO IN CATEGORY 9

ZIEMANN DL

PIQUA ROD DRIVE MODIFICATIONS

PIQUA NUCLEAR POWER FACILITY, PIQUA, OHIO

1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(6) PAGE 20 (FEBRUARY 6, 1967), DOCKET NO. 115-2

COMPREHENSIVE INVESTIGATION (AND RECOMMENDATIONS) OF PIQUA ROD DRIVE AND OTHER PROBLEMS IS SENT TO AFC-ORL AS - SAFETY EVALUATION OF PNPF MODIFICATIONS - (NAA-SR-MEMO-12103), WITHHELD FROM PUBLIC INSPECTION.

\*CONTROL ROD DRIVE + \*MODIFICATION, SYSTEM OR EQUIPMENT + \*OPERATING EXPERIENCE + PIQUA + REACTOR, ORGANIC COOLED

18-14637 ALSO IN CATEGORY 17

WOLTER FE

IODINE RELEASE DURING ELK RIVER SYSTEM HEATUP

RURAL COOPERATIVE POWER ASSOCIATION

2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(6) PAGES 20-21 (FEBRUARY 6, 1967) DOCKET NO. 115-1

ON SYSTEM HEATUP JANUARY 8, 1967, THE PRIMARY SYSTEM WAS VENTED BY HOSE FROM THE EMERGENCY CONDENSER TO THE OVERHEAD STORAGE TANK BELOW THE WATER LEVEL. THE VENTING OPERATION WAS TERMINATED AT 9-30 AM AFTER 3 HOURS, WHEN THE HOSE WAS DISCOVERED TO BE FREE IN THE TANK, RELEASING PRIMARY COOLANT TO THE CONTAINMENT VESSEL. I-131 RELEASE WAS 36 MICROCURIES AT ABOUT THE YEARLY AVERAGE RELEASE RATE.

\*FAILURE, OPERATOR ERROR + \*INCIDENT, ACTUAL, HUMAN ERROR + ELK RIVER + FISSION PRODUCT, IODINE + PROCEDURES AND MANUALS + REACTOR, BOILING WATER + SOURCE, CONTINUOUS

18-14639 ALSO IN CATEGORIES 1 AND 17

NERTNEY PJ

THE TRA SAFEGUARD COMMITTEE

IDAHO NUCLEAR CORPORATION

IN-1022 +. 9 PAGES, SEPTEMBER 1966

THIS DOCUMENT CONSTITUTES THE WORKING CHARTER OF THE TRA SAFEGUARD COMMITTEE. IT DESCRIBES THE DUTIES AND FUNCTIONS OF THE TRA SAFEGUARD COMMITTEE - DOCUMENTS CERTAIN EXISTING PROCEDURES REGARDING REACTOR AND EXPERIMENTAL SAFETY AT THE MTR, ETR, AND ATR - INDICATES THOSE ACTIVITIES WHICH REQUIRE TRA SAFEGUARD COMMITTEE APPROVAL, DESCRIBES THE PROCEDURES FOR OBTAINING SUCH APPROVAL AND RELATES THE ACTIVITIES OF THE TRA SAFEGUARD COMMITTEE TO THE FUNCTIONS AND RESPONSIBILITIES OF IDAHO NUCLEAR CORPORATION LINE-SUPERVISION.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*CODES AND STANDARDS + \*SAFETY PRINCIPLES AND PHILOSOPHY + \*SAFETY REVIEW (OPERATIONS, EXPERIMENTS) + ATR (ADVANCED TEST REACTOR - NRTS) + ETR (ENGINEERING TEST REACTOR) + MTR (MATERIAL TESTING REACTOR) + REACTOR, AEC OWNED + REACTOR, TEST

18-14645 ALSO IN CATEGORY 17

DATES LR

DESIGN, CONSTRUCTION DETAILS, AND PREOPERATIONAL TESTING OF AN ARGONNE FAST CRITICAL FACILITY

ARGONNE NATIONAL LABORATORY



CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-14645 \*CONTINUED\*  
ANL-7195 +. 66 PAGES, 47 FIGURES, 3 REFERENCES, APRIL 1966

DESCRIBES THE COMPONENT DETAILS AND METHODS, ETC., OF ZPR-6, A SPLIT-TABLE ASSEMBLY FOR DRY-MODERATOR EXPERIMENTS. CERTAIN TESTS AND DATA WERE INCLUDED TO ILLUSTRATE STRUCTURAL STABILITY. ACCURACIES OF FITS AND ALIGNMENT OF MATING PARTS, TABLE-SURFACE FLATNESS, PRECISE LEVELING, ETC., ARE GIVEN TO INDICATE THE RELIABILITY OF THE DATA TAKEN DURING REACTOR EXPERIMENTS. THE BASIC MACHINE WAS DESIGNED AND BUILT TO TOLERANCES THAT ARE CONSISTENT WITH LARGE MACHINE-TOOL FABRICATION. FURTHER DIMENSIONAL REFINEMENT WOULD RESULT IN MUCH HIGHER COST WITH VERY LITTLE, IF ANY, GAIN IN RELIABILITY. THE ERECTION OF THE FACILITY IS DISCUSSED STEPWISE TO PROVIDE A CLEAR DESCRIPTION OF EACH PART AND HOW IT FITS THE OVERALL ASSEMBLY. SAFETY AND FAIL-SAFE FEATURES ARE EXPLAINED IN DETAIL. MUCH OF THE DESIGN CRITERIA WAS DICTATED BY EXPERIENCE GAINED FROM THE OPERATION OF ZPR-3. MATRIX DEFLECTION BEHAVIOR AND MAGNITUDE WERE PREDICTABLE THROUGH STUDIES MADE ON THE ZPR-3 MATRIX LOADINGS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*REACTOR DESCRIPTION + ANL (ARGONNE NATIONAL LABORATORY) + CRITICAL ASSEMBLY FACILITY + OPERATING EXPERIENCE + ZPR 6 (ANL ZERO POWER REACTOR)

18-14647 ALSO IN CATEGORIES 5 AND 11  
EXTERNAL COLLAPSING PRESSURE FOR ELK RIVER REACTOR FUEL ELEMENT TUBING  
ALLIS-CHALMERS MANUFACTURING COMPANY  
ACNP-64509 +. 21 PAGES, JANUARY 1964, DOCKET NO. 115-1

TEST AND CALCULATIONS WERE MADE ON THE COLLAPSING PRESSURE OF THE UNIRRADIATED 304L STAINLESS TUBING WITH 600 PPM BORON ADDED. TUBES WERE 62 INCHES LONG, 0.452 INCH OD, WITH A WALL THICKNESS 0.020 TO 0.018 INCH. COLLAPSE TESTS AT 600 F AVERAGED 2010 PSI (LOWEST 1800), AND 70 F AVERAGED 2750 PSI (LOWEST 2400). CALCULATIONS WERE 1500 PSI AT 600 F, AND 2500 PSI AT 70 F. OPERATING PRESSURE MAY REACH 1250 PSIG AT 600 F, AND 1375 DURING COLD HYDRO TEST. THE CRITICAL BUCKLING PRESSURE IS 1825 PSI AT 600 F.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*CLAD + \*FUEL ELEMENT + \*STRESS ANALYSIS + BUCKLING + ELK RIVER + REACTOR, BOILING WATER + TEST, PROOF

18-14648 ALSO IN CATEGORIES 11 AND 17  
BARRON WE  
CVTR VAPOR CONTAINER LEAK RATE TEST, SEPTEMBER 1966  
CAROLINAS VIRGINIA NUCLEAR POWER ASSOCIATES, INC.  
CVNA-266 +. 35 PAGES, NOVEMBER 18, 1966

THE 1966 LEAK-RATE TEST WAS PERFORMED AT 13 PSIG FOR 3 DAYS, BY THE REFERENCE METHOD, AND CHECKED BY TEMPERATURE AND ABSOLUTE-PRESSURE MEASUREMENTS. AT THE END OF THE TEST, A METERED AMOUNT OF AIR WAS ADDED TO MAKE THE ORIGINAL PRESSURE. THE LEAK RATE AT DESIGN PRESSURE (21 PSIG) IS CALCULATED TO BE 0.184 PERCENT/DAY, LESS THAN HALF OF TECH.-SPEC. LIMIT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*CONTAINMENT, HIGH PRESSURE + \*TEST, LEAK RATE + CONTAINMENT REFERENCE MEASURING SYSTEM + CVTR (CAROLINAS VIRGINIA TUBE REACTOR) + OPERATING LIMITS/TECHNICAL SPECIFICATIONS + REACTOR, HEAVY WATER + REACTOR, PRESSURE TUBE + REACTOR, PRESSURIZED WATER

18-14649  
ACTIVITY REPORT OF THE FIRST QUARTER OF 1965. FAST NEUTRONS PROJECT  
COMMISSARIAT A L ENERGIE ATOMIQUE, CADARACHE, FRANCE  
NP-15478 +. 125 PAGES, 1965

REPORTS STUDIES AND PREPARATIONS FOR OPERATION AND EXPERIMENTATION OF HARMONIE-MASURCA CRITICAL FACILITIES, RAPSODIE REACTOR AND ITS LOOPS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*OPERATIONS REPORT, GENERAL + CRITICAL ASSEMBLY FACILITY + EURATOM + FRANCE + IN PILE LOOP + REACTOR, BREEDER + REACTOR, FAST

18-14650  
THORIUM FUEL CYCLE FOR HEAVY WATER MODERATED ORGANIC COOLED REACTORS. TECHNICAL PROGRESS REPORT NO. 5,  
APRIL-JUNE 1966  
BARCOCK AND WILCOX COMPANY  
BAW-393-8 +. 111 PAGES, 21 TABLES, 15 FIGURES, 1966

THE PRIMARY EFFORT DURING THIS REPORT PERIOD WAS SELECTION OF A THORIUM FUEL ELEMENT FOR FUTURE DEVELOPMENT. THREE TYPES WERE STUDIED IN DETAIL - (NESTED CYLINDER), OXIDE (CLUSTERED

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-14650 \*CONTINUED\*

PINS), AND CARBIDE (CLUSTERED PINS). AN OPTIMUM DESIGN OF EACH TYPE WAS SELECTED FOR FINAL EVALUATION IN A 1000-MWE HWOCR. TECHNICAL FEASIBILITY, DEVELOPMENT COSTS, AND COMPATIBILITY WITH A URANIUM-OPTIMIZED HWOCR WERE ALSO CONSIDERED. A TEST PROGRAM WAS PLANNED TO DEFINE KEY TECHNICAL PROBLEMS AND THE DEVELOPMENT REQUIRED FOR THEIR SOLUTION. ON TECHNICAL CONSIDERATIONS ALONE, BOTH THE OXIDE AND METAL FUEL ELEMENTS SHOULD HAVE SEVERAL PHASES OF IRRADIATION TESTING BEFORE A FINAL SELECTION IS MADE. IF PRACTICAL CONSIDERATIONS REQUIRE SELECTION OF ONE TYPE, PRIORITY SHOULD BE GIVEN TO THE DEVELOPMENT OF THE THORIUM OXIDE ELEMENT.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY

\*DESIGN STUDY + \*FUEL ELEMENT + \*THORIUM + REACTOR, HEAVY WATER + REACTOR, ORGANIC COOLED

18-14652 ALSO IN CATEGORY 5

DRESDEN 1 REQUESTS CHANGE TO ALLOW (PU,U) OXIDE FUEL ROD USAGE  
DIVISION OF REACTOR LICENSING, UNITED STATES ATOMIC ENERGY COMMISSION  
11 PAGES, 1 TABLE, JANUARY 9, 1967, DOCKET NO. 50-10

A ROD (WITH APPROX. 1.2 W/O PU IN NATURAL URANIUM) WILL REPLACE A GADOLINIA-URANIA ROD IN EACH OF 4 FUEL ELEMENTS DURING THE JANUARY 1967 REFUELING. EACH ROD CONTAINS (PU, U)O<sub>2</sub> HOT-PRESSED PELLETS, BUT THE WEIGHT PERCENTS VARY. THE PLUTONIUM IN THE NEW ROD IS ONLY 2-3 TIMES THE PU IN AN IRRADIATED NORMAL ROD. THE PEAK HEAT FLUX IN THE SINGLE 1.7 W/O ROD IS 275,000 BTU/HR/SQ.FT. GIVING A MAX. CRITICAL HEAT FLUX RATION OF 2.5 AT 125 PERCENT RATED POWER. HOWEVER, THIS ROD INITIALLY PRODUCES ABOUT 1.2 TIMES THE PEAK URANIUM-ROD HEAT FLUX, AND SLIGHTLY LESS THAN THE PEAK HEAT FLUX AT THE END OF CYCLE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + DRESDEN 1 + FUEL ELEMENT + PLUTONIUM DIOXIDE + REACTOR, BOILING WATER + REFUELING + URANIUM DIOXIDE

18-14653 ALSO IN CATEGORY 17

QUESTION VI-1. LIMITS ON REACTIVITY AND FLUX ANOMALIES  
ALLIS-CHALMERS COMPANY  
ACNP-67501 +. 2 PAGES, DISCUSSION OF OPERATING CONSIDERATIONS QUESTIONED BY THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS AS A RESULT OF THEIR REVIEW OF THE LA CROSSE BOILING WATER REACTOR, SUBMITTED IN RESPONSE TO DIVISION OF REACTOR LICENSING LETTER (DATED DECEMBER 19, 1966) PAGES 1-2, JANUARY 1967, DOCKET NO. 115-5

REACTIVITY - THE REACTOR WILL BE SHUT DOWN IF THE ANOMALY WITHOUT REFUELING IS GREATER THAN 0.6 PERCENT DELTA RHO. FOLLOWING A CORE CHANGE, AN ANOMALY GREATER THAN 2 PERCENT DELTA PHO WILL REQUIRE SHUTDOWN. \*\*\*\* FLUX - POWER DISTRIBUTIONS WILL BE OBSERVED AND THE ROD PATTERN ADJUSTED IF HEAT-FLUX LIMITS MAY BE EXCEEDED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

CONTROL ROD PROGRAM + LACROSSE + POWER DISTRIBUTION + REACTIVITY EFFECT, ANOMALOUS + REACTOR, BOILING WATER + SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS

18-14654 ALSO IN CATEGORY 17

QUESTION VI-2. OPERATOR ACTION UPON PRIMARY SYSTEM LEAKS  
ALLIS-CHALMERS COMPANY  
ACNP-67501 +. 2 PAGES, DISCUSSION OF OPERATING CONSIDERATIONS QUESTIONED BY THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS AS A RESULT OF THEIR REVIEW OF THE LA CROSSE BOILING WATER REACTOR, SUBMITTED IN RESPONSE TO DIVISION OF REACTOR LICENSING LETTER (DATED DECEMBER 19, 1966) PAGES 2-3, JANUARY 1967, DOCKET NO. 115-5

LEAKS WILL BE INDICATED BY CONTAINMENT AIR ACTIVITY AND SYSTEM-LEVEL/PRESSURE/TEMPERATURE MONITORS. ALL LEAKS WILL BE INVESTIGATED AND 10 CFR 20 CRITERIA USED TO DETERMINE IF A SHUTDOWN IS NECESSARY.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

ADMINISTRATIVE CONTROLS AND PRACTICES + LACROSSE + MAIN COOLING SYSTEM + REACTOR, BOILING WATER + SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS

18-14655 ALSO IN CATEGORY 17

QUESTION VI-3. TORNADO ALERT WARNINGS  
ALLIS-CHALMERS COMPANY  
ACNP-67501 +. 1 PAGE, DISCUSSION OF OPERATING CONSIDERATIONS QUESTIONED BY THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS AS A RESULT OF THEIR REVIEW OF THE LA CROSSE BOILING WATER REACTOR, SUBMITTED IN RESPONSE TO DIVISION OF REACTOR LICENSING LETTER (DATED DECEMBER 19, 1966) PAGE 3, JANUARY 1967, DOCKET NO. 115-5

WHENEVER LACBWR IS WITHIN THE WARNING AREA OF A US WEATHER BUREAU TORNADO ALERT, THE SHIFT SUPERVISOR SHALL KEEP INFORMED. IF A TORNADO STRIKE IS IMMINENT NEAR LACBWR, HE SHALL REDUCE

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-14655 \*CONTINUED\*

POWER TO NEAR STATION LOAD, OR SHUT DOWN PLANT IF SAFETY REQUIRES IT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

DESTRUCTIVE WIND + LACROSSE + REACTOR, BOILING WATER + SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS

18-14656 ALSO IN CATEGORY 17

QUESTION VI-4. STACK INSPECTION PROGRAM

ALLIS-CHALMERS COMPANY

ACNP-67501 +. 1 PAGE, DISCUSSION OF OPERATING CONSIDERATIONS QUESTIONED BY THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS AS A RESULT OF THEIR REVIEW OF THE LA CROSSE BOILING WATER REACTOR, SUBMITTED IN RESPONSE TO DIVISION OF REACTOR LICENSING LETTER (DATED DECEMBER 19, 1966) PAGE 3, JANUARY 1967, DOCKET NO. 115-5

SCHEDULED INSPECTION OF LACBWR STACK AND CONVENTIONAL PLANT STACK WILL BE EVERY 5 YEARS. AN UNSCHEDULED INSPECTION WILL BE MADE, IF RECOMMENDED BY LACBWR SAFETY COMMITTEE, AFTER SEISMIC ACTIVITY OR SEVERE METEOROLOGICAL DISTURBANCES (TORNADOES, HURRICANES).

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

DESTRUCTIVE WIND + EXAMINATION + LACROSSE + REACTOR, BOILING WATER + SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS + STACK

18-14657 ALSO IN CATEGORY 5

BIG ROCK POINT PROPOSED CHANGE - LATEST CRITICAL HEAT FLUX CORRELATION

CONSUMERS POWER COMPANY

5 PAGES, DECEMBER 23, 1966, DOCKET NO. 50-155

MULTI-ROD DATA GAVE A NEW CORRELATION, AS IN APED5286 (SEPT. 66), TO REPLACE THAT BASED ON ONE ROD TEST DATA (APED 3892, APRIL 64). APPLICATIONS OF THE NEW CORRELATION INCREASES THE CALCULATED CRITICAL HEAT FLUX RATIO BY 10%. FURTHERMORE, FUEL-ROD SPACERS INCREASE TURBULENCE ENOUGH TO INCREASE THE CH FLUX BY 100,000 B/HR-FT. SQ. CREDIT FOR THIS LATTER IS NOT TAKEN, TO ASSURE CONSERVATISM.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*HEAT TRANSFER CORRELATION + \*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + BIG ROCK POINT + RURNOUT HEAT FLUX + POWER DISTRIBUTION + REACTOR, BOILING WATER

18-14662

NUCLEAR TECHNOLOGY BRANCHES QUARTERLY REPORT, APRIL 1-JUNE 30, 1966

PHILLIPS PETROLEUM COMPANY

IDC-17202 +. 47 PAGES, 31 FIGURES, 7 TABLES, 14 REFERENCES, NOVEMBER 1966

CRITICAL FACILITIES.- ATRC SAFETY-ROD WORTH WAS MEASURED BY ROD DROP AND PULSED-NEUTRON TECHNIQUE. THE ROD-DROP WORTHS DEPEND STRONGLY ON DETECTOR GEOMETRY, SHOWING THE CHANGE IN SUPERCRITICAL FLUX DISTRIBUTION. THE PULSED-NEUTRON VALUES WERE INDEPENDENT OF GENERATOR-DETECTOR GEOMETRY. POWER DISTRIBUTION AND EXCESS REACTIVITY MEASURED. \*\*\*ENGINEERING EXPERIMENTS. ATR FUEL ELEMENTS HAVE TESTED HYDRAULICALLY AND DIMENSIONALLY ALLRIGHT. CALCULATIONS WERE MADE ON FUEL ELEMENTS WITH 3 FUEL AND 3 BORON ZONES. \*\*\*MATERIALS/METALLURGY. LIQUID LEAD IS COMPATIBLE WITH UAL3 UP TO 300 C FOR SHORT-TERM USE. UAL3 PARTICLES DISPERSED IN 300 STAINLESS REACTED SLIGHTLY AT 800 C, WHILE AT 1200 THEY REACTED WITH CR, NI, AND NB AS WELL.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*RESEARCH AND DEVELOPMENT PROGRAM + ATR (ADVANCED TEST REACTOR - NRTS) + CONTROL ROD CALIBRATION + CRITICALITY EXPERIMENT + FUEL ELEMENT + INSTRUMENTATION, ABNORMAL INDICATION + PULSED NEUTRON TECHNIQUE + REACTOR, TEST

18-14664 ALSO IN CATEGORY 2

PORT REVIEW 23 (THESSALONIKI, GREECE) FOR N S SAVANNAH

DIVISION OF REACTOR LICENSING, UNITED STATES ATOMIC ENERGY COMMISSION

4 PAGES, DECEMBER 13, 1966, DOCKET NO. 50-238

PROPOSED OPERATION IS CONSISTENT WITH NS SAVANNAH IN U.S. PORTS IF ENOUGH TUGS ARE IN ATTENDANCE OR ON CALL, IN ACCORD WITH TIME-TO-MELT CRITERIA (UNLESS REACTOR IS SHUT DOWN AND DEPRESSURIZED).

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY EVALUATION + \*SITING, GENERAL + N S SAVANNAH + REACTOR, MARITIME + REACTOR, PRESSURIZED WATER + REGULATION, AEC

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-14665 ALSO IN CATEGORIES 5 AND 11  
ACRS APPROVES QUAD CITIES 1 AND 2 CONSTRUCTION PERMIT  
UNITED STATES ATOMIC ENERGY COMMISSION  
3 PAGES, 6 REFERENCES, DECEMBER 14, 1966, DOCKET NOS. 50-254 AND 50-265

ACRS NOTES THAT MORE INFORMATION IS AVAILABLE ON THE EMERGENCY COOLING SYSTEM OF THIS DRESDEN-2 CLASS OF REACTOR, THAT IMPROVEMENTS WERE MADE IN THE PROCEDURES FOR INSPECTING THE REACTOR VESSEL DURING FABRICATION AND DURING OPERATION. ACRS MAY REVIEW REACTOR-VESSEL TESTS AT INTERVALS LATER, AND RECOMMENDS THAT APPLICANT TEST STEAM-LINE-ISOLATION VALVES UNDER ACCIDENT CONDITIONS AND THAT REGULATORY STAFF CHECK EMERGENCY-COOLING ANALYSES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) + \*CONTAINMENT PENETRATION, CLOSURE OF + \*SAFETY ANALYSIS REPORT, REVIEW OF + \*TEST, PROOF + CONTAINMENT, PRESSURE VESSEL + EXAMINATION + QUAD CITIES 1 AND 2

18-14675  
QUARTERLY STATUS REPORT ON ADVANCED REACTOR TECHNOLOGY (ART) FOR PERIOD ENDING OCTOBER 31, 1966  
LOS ALAMOS SCIENTIFIC LABORATORY  
LA-3625-MS +. 28 PAGES, NOVEMBER 1966

THIS REPORT IS ONE OF A SERIES OF SUCH REPORTS ON THE FOLLOWING SUBJECTS - UHTREX, GENERAL STUDIES RELEVANT TO SODIUM-COOLED REACTORS, III PLASMA THERMOCOUPLE, IV HEAT PIPES, AND MOLTEN PLUTONIUM WORK (BEING PHASED OUT). CERAMIC PLUTONIUM FUEL STUDIES WILL BE PART OF THE LASL ADVANCED PLUTONIUM FUELS PROGRAM.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*MOLTEN FUEL + \*PLUTONIUM + DIRECT ENERGY CONVERSION DEVICES + LASL (LOS ALAMOS SCIENTIFIC LABORATORY) + REACTOR, GAS COOLED + REACTOR, LIQUID METAL COOLED + UHTREX (ULTRA HIGH TEMP. REACTOR EXPERIMENT)

18-14678 ALSO IN CATEGORY 12  
ACRS APPROVES INDIAN POINT 2 CONSTRUCTION PERMIT  
UNITED STATES ATOMIC ENERGY COMMISSION  
4 PAGES, 7 REFERENCES, AUGUST 16, 1966, DOCKET NO. 50-247

ACRS NOTED THE CONTAINMENT-LEAKAGE CONTROL BY PRESSURIZATION OF WELD AREAS, INTERNAL RECIRCULATION OF SODIUM THIOSULPHATE CONTAINMENT SPRAY, AND AIR RECIRCULATION-COOLING UNITS (TO PROVIDE LONG-TERM COOLING WITHOUT PUMPING RADIOACTIVE LIQUID OUTSIDE THE CONTAINMENT), PROTECTION AGAINST MISSILES FROM REACTOR VESSEL. ACRS RECOMMENDS ATTENTION TO EMERGENCY COOLING SYSTEM, REFRACTORY-LINED PIT BENEATH THE CORE, USE OF SOLID BURNABLE POISONS TO REDUCE POSITIVE MODERATOR COEFFICIENT (DUE TO CHEMICAL SHIM).

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) + \*CONSTRUCTION PERMIT PROCESS + CHEMICAL SHIM + EMERGENCY COOLING CONSIDERATIONS + INDIAN POINT 2 + REACTOR, PRESSURIZED WATER

18-14691  
PEACH BOTTOM AMENDMENT 1 - FULL POWER OPERATION  
DIVISION OF REACTOR LICENSING, UNITED STATES ATOMIC ENERGY COMMISSION  
2 PAGES, JANUARY 12, 1967, DOCKET NO. 50-171

AUTHORIZATION GIVEN FOR POWER LEVELS UP TO 115 MW THERMAL

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + PEACH BOTTOM 1 + POWER UPGRATING + REACTOR, GAS COOLED

18-14711 ALSO IN CATEGORY 9  
PROGRESS REPORT OF NORA PROJECT JANUARY 1-MARCH 31, 1966  
INSTITUTT FOR ATOMENERGI, KJELLER, NORWAY  
TAEA-3498-12 + NC-74 +. 24 PAGES, MAY 1966

THIS IS ONE OF A SERIES OF REPORTS ON THE FOLLOWING SUBJECT - REACTOR-NOISE STUDIES, PULSED NEUTRON RESEARCH, CONTROL RODS, MEASUREMENT AND ANALYSIS OF CELL PARAMETERS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*OPERATIONS REPORT, ANALYSIS + CONTROL ROD CALIBRATION + MEASUREMENT, NOISE + NOISE ANALYSIS + NORWAY + POWER DISTRIBUTION + PULSED NEUTRON TECHNIQUE + REACTOR, RESEARCH

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-14722  
EXCAVATION AND TURBINE BUILDING WORK PRIOR TO MONTICELLO CONSTRUCTION PERMIT AUTHORITY  
NORTHERN STATES POWER COMPANY  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(7) PAGES 2-3 (FEBRUARY 13, 1967)

NSP (JAN. 27, 1967) REQUESTS THE OPINION OF THE AEC GENERAL COUNSEL REGARDING EXCAVATION OF REACTOR/TURBINE BUILDING AND FOUNDATIONS FOR LATER. AT THIS TIME THEY CAN EITHER PHYSICALLY SEPARATE THE TURBINE BUILDING FROM THE REACTOR BUILDING (AND THUS STAY WITHIN STRICT INTERPRETATION OF 10 CFR 50) OR POUR A COMBINED REACTOR/TURBINE BUILDING WALL AND RISK ENSURE FOR IMPROPER ACTIVITY PRIOR TO CONSTRUCTION PERMIT ISSUANCE. THEY REQUEST AN ANSWER, TO PROCEED MARCH 1.

\*BUILDING + \*CONSTRUCTION PERMIT PROCESS + MONTICELLO + REACTOR, WATER

18-14723 ALSO IN CATEGORIES 1 AND 11  
TURKEY POINT INTERVENTION PETITION  
FLORIDA POWER AND LIGHT  
3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(7) PAGES 6-8 (FEBRUARY 13, 1967)

PAUL SIEGEL, MIAMI RESIDENT, FILES INTERVENTION PETITION TO ENSURE THOROUGH STUDY OF THE CONTAINMENT VESSELS ABILITY TO WITHSTAND A CONVENTIONAL BOMB BLAST, WHICH MIGHT BREACH CONTAINMENT AND INITIATE A LOSS-OF-COOLANT ACCIDENT. REFERENCE IS MADE TO CUBA BEING 200 MILES AWAY.

\*CONSTRUCTION PERMIT PROCESS + \*CONTAINMENT DESIGN + \*EXPLOSION + CIVIL DEFENSE + REACTOR, PRESSURIZED WATER + TURKEY POINT 3 + TURKEY POINT 4

18-14724 ALSO IN CATEGORY 1  
PUBLIC RELATIONS REGARDING COLUMBIA U TRIGA  
COLUMBIA UNIVERSITY  
3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(7) PAGES 14-16 (FEBRUARY 13, 1967) DOCKET NO. 50-208

ON DECEMBER 23, 1966 CBS-TV INTERVIEWED THE 69TH DISTRICT (N.Y. CITY) LEADER, AND THAT EVENING BROADCAST CRITICAL STATEMENTS REGARDING THE SITING IN MORNINGSID HEIGHTS AND THE SECRECY OF THE PROJECT. A LETTER FROM THE MORNINGSID RENEWAL COUNCIL ASKING 6 QUESTIONS, AND AEC ANSWER IS GIVEN. 1. WHAT DOES TRIGA STAND FOR. 2. WHEN DID COLUMBIA UNIVERSITY APPLY FOR A LICENSE (1963). 4.6 WHY WAS NO ONE TOLD OF THIS (MAYOR, LIBRARIES, HEALTH DEPARTMENTS, AND NEWSPAPERS GOT COPIES OF APPLICATIONS). 5. WHEN WILL PUBLIC HEARINGS BE HELD (AFTER CONSTRUCTION IS COMPLETED IN JUNE 1967).

\*RADIATION, PUBLIC EDUCATION/ACCEPTANCE + \*SITING, REACTOR + REACTOR, RESEARCH + TRIGA (TRAINING REACTOR, ISOTOPES, G.A.)

18-14725 ALSO IN CATEGORY 17  
1966 YEARLY OPERATIONS REPORT TO AEC  
UNIVERSITY OF VIRGINIA  
3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(7) PAGES 18-20 (FEBRUARY 13, 1967) DOCKET NO. 50-62

(1) A GRADUATE STUDENTS INDIUM IRRADIATION CALCULATIONS WERE NOT CHECKED. THE SAMPLE BEING WITHDRAWN CAUSED HIGH RADIATION INDICATIONS, BUT ONLY A 20-MR DOSE. (2) THE OUTLET HEADER FUNNEL LIFTING MECHANISM UNDER THE CORE WAS CHANGED. AIR FLOTATION NOW LIFTS THE FUNNEL INTO PLACE, AIR IS VENTED, AND FLOW FORCES HOLD IT IN PLACE. LOSS OF FLOW ALLOWS IT TO DROP FOR CONVECTION COOLING. (3) THE WASTE DISCHARGE VALVE FROM THE POND WAS FOUND OPEN DURING A COMPLIANCE INSPECTION. A SAMPLING PROGRAM IS NOW SET UP TO SAMPLE BEFORE DUMPING INTO THE POND, USING TESTS FOR I-131 TO ENSURE THAT I-129 IS NOT PRESENT. A HIGHER MPC CAN BE USED.

EMERGENCY COOLING CONSIDERATIONS + FAILURE, ADMINISTRATIVE CONTROL + FISSION PRODUCT, IODINE + INCIDENT, ACTUAL, HUMAN ERROR + MAXIMUM PERMISSIBLE CONCENTRATION (MPC) + OPERATIONS SUMMARY FOR AEC + REACTOR, POOL TYPE + SAMPLING + WASTE DISPOSAL, LIQUID

18-14726 ALSO IN CATEGORIES 15 AND 17  
LAGRUA JD  
OVEEXPOSURE AT NAVAL SHIPYARD DURING DEMINERALIZER RESIN TRANSFER  
LONG ISLAND NUCLEAR SERVICE CORPORATION  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(7) PAGE 21 (FEBRUARY 13, 1967)

A LONG ISLAND NUCLEAR SERVICE CORPORATION EMPLOYEE RECEIVED AT LEAST 3-6 REMS (AS SHOWN BY A NUCLFAR CHICAGO FILM BADGE) BETWEEN NOVEMBER 27 AND DECEMBER 4 INCLUSIVE. DURING THE PERIOD 12-22, THE SHIPYARD SYSTEM SHOWED AN EXPOSURE OF 1.69 REMS. THESE EXPOSURES WERE RECEIVED BY THE CONTRACTORS SUPERVISOR DURING RESIN TRANSFERS AT PORTSMOUTH NAVAL YARD.

\*COOLANT PURIFICATION SYSTEM + \*INCIDENT, ACTUAL, HUMAN ERROR + \*PERSONNEL EXPOSURE, RADIATION + FAILURE, ADMINISTRATIVE CONTROL + FAILURE, MAINTENANCE ERROR + RESIN

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-14727 ALSO IN CATEGORIES 13 AND 17  
NUCLEAR FUEL SERVICES CITED FOR NONCOMPLIANCES  
NUCLEAR FUEL SERVICES, INC.  
3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(7) PAGES 22-24 (FEBRUARY 13, 1967) DOCKET NO. 50-201

VARIOUS VIOLATIONS ARE NOTED, MOSTLY WASTE DISCHARGE WITHOUT PROPER MONITORING, FOLLOWING AN OCTOBER COMPLIANCE INSPECTION. ABSENCE OF SAFETY COMMITTEE REVIEWS OR OPERATING PROBLEM INVESTIGATIONS, AND USE OF PARTS FROM STANDBY EQUIPMENT RATHER THAN SPARE PARTS INDICATES, AMONG OTHER ITEMS, THAT NUMEROUS FILTER FAILURES DUE TO HIGH DELTA P SHOW THAT THE STACK MONITOR IS AS SENSITIVE AS THE DOP TEST. FAILURE OF THE TOP LAYER OF HIGH-EFFICIENCY GLASS WOOL OCCURRED.

\*INSPECTION AND COMPLIANCE + \*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + FAILURE, ADMINISTRATIVE CONTROL + FILTER OPERATION + FILTER, DAMAGED + FUEL REPROCESSING + MONITOR, RADIATION, STACK + NFS (NUCLEAR FUEL SERVICES) + TEST, DOP FILTER

18-14728 ALSO IN CATEGORIES 13 AND 17  
LEWIS WH  
POTENTIAL INHALATION INCIDENT AT NFS, OCTOBER 1966  
NUCLEAR FUEL SERVICE  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(7) PAGES 24-25 (FEBRUARY 13, 1967) DOCKET NO. 50-201

TWO SUBCONTRACTOR EMPLOYEES SANDBLASTED A VAULT WITHOUT THE RESPIRATORY EQUIPMENT ORDERED BY A NFS FOREMAN. (THE VAULT HAD PREVIOUSLY BEEN DECONTAMINATED TO A MAXIMUM SURFACE READING OF 23 MR/HR). TWO WEEKS LATER, SODIUM IODIDE COUNTS (GAMMA RAYS ABOVE 100 KEV) WERE ONLY 1 PERCENT ABOVE CONTROLS. ALL SUBCONTRACT WORK NOW MUST HAVE A SPECIAL WORK PERMIT.

\*FAILURE, ADMINISTRATIVE CONTROL + \*INCIDENT, ACTUAL, HUMAN ERROR + FUEL REPROCESSING + INHALATION + NFS (NUCLEAR FUEL SERVICES)

18-14762 ALSO IN CATEGORIES 2 AND 12  
ARNOLD HG + GALL WR + MORRIS G  
FEASIBILITY OF OFFSHORE DUAL-PURPOSE NUCLEAR POWER AND DESALINATION PLANTS  
OAK RIDGE NATIONAL LABORATORY  
ORNL-TM-1329 +. 105 PAGES, 23 FIGURES, 3 TABLES, JANUARY 1966

THE SURGE PRESSURE FROM THE MAXIMUM CREDIBLE ACCIDENT WILL PROBABLY BE LESS THAN ATMOSPHERIC IF THE RELEASED VAPORS ARE ALLOWED TO EXPAND INTO THE EVAPORATOR SPACE. IF THE ENTIRE VOLUME OF THE CONTAINING SHELL IS SUBMERGED BELOW THE SURFACE OF THE SEA, THE EXTERNAL PRESSURE WILL BE GREATER THAN THE INTERNAL PRESSURE AT ALL TIMES. THIS MAY ENSURE THAT NO RADIOACTIVE FISSION PRODUCTS CAN ESCAPE. WITH THE LOW-PRESSURE STAGES OF THE EVAPORATOR AS A PRESSURE-SUPPRESSION CHAMBER AND THE SURROUNDING SEAWATER AS HEAT SINK, THE SAFETY OF THE PLANT TO THE PUBLIC MIGHT BE ENHANCED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*ACCIDENT ANALYSIS + ACCIDENT, MAXIMUM CREDIBLE (MCA) + CONTAINMENT LEAKAGE CONTROL + CONTAINMENT, PRESSURE SUPPRESSION + REACTOR, DESALINATION + SITING, OFF SHORE

18-14764 ALSO IN CATEGORIES 5 AND 17  
DETAILS ON 500 GPM HOT SPOT DNB ANALYSIS  
WESTERN NEW YORK NUCLEAR RESEARCH CENTER, INC.  
1 PAGE, JANUARY 18, 1967, DOCKET NO. 50-57

METHOD OF ANALYSIS WAS AS GIVEN ON PG 133 OF HAZARDS ANALYSIS (REV.2) AND INCLUDES A FACTOR FOR FLOW BEING 10 PERCENT LESS THAN MEASURED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + DNB (DEPARTURE FROM NUCLEATE BOILING) + FLOW ORIFICE OR RESTRICTION + HOT SPOT + REACTOR, POOL TYPE + REACTOR, PULSED

18-14765 ALSO IN CATEGORIES 5 AND 17  
WESTERN NEW YORK PROPOSED CHANGE - 1 MW OPERATION AT 500 GPM TO OBSERVE N-16 CONDITIONS  
WESTERN NEW YORK NUCLEAR RESEARCH CENTER, INC.  
1 PAGE, JANUARY 16, 1967, DOCKET NO. 50-57

AT 500 GPM, WITH A BULK-COOLANT INLET TEMPERATURE OF 80 F, HEAT FLUXES EQUIVALENT TO 1.14-MW OPERATION CORRESPOND TO THE ONSET OF NUCLEATE BOILING AND ARE A FACTOR OF 16 BELOW THE BURNOUT HEAT FLUX. WNYRC WISHES A SPECIFIC TECH.-SPEC. CHANGE TO AUTHORIZE THIS EXPERIMENT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-14765 \*CONTINUED\*  
\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + DNB (DEPARTURE FROM NUCLEATE BOILING) +  
FLOW ORIFICE OR RESTRICTION + HOT SPOT + REACTOR, POOL TYPE + REACTOR, PULSED

18-14767 ALSO IN CATEGORIES 5 AND 9  
TRUSHIN JT + MILLER JK + PETRIE TW  
PM-3A SAFETY SYSTEM SET POINT ANALYSIS  
MARTIN COMPANY, BALTIMORE, MARYLAND  
MND-M3A-3146 +. 95 PAGES, JUNE 5, 1964

A PERFORMANCE ANALYSIS OF THE PRIMARY SYSTEM IS PRESENTED IN DETAIL TO PERMIT REEVALUATION OF THE REACTOR SAFETY SYSTEM SET-POINTS UNDER CHANGED CONDITIONS. DETAILED THERMAL AND HYDRAULIC CHARACTERISTICS OF THE PRESENT CORE DESIGN ARE PRESENTED FOR THE CASE OF STEADY-STATE OPERATION. STEADY-STATE OPERATING LIMITS WERE ESTABLISHED FOR NO BULK BOILING IN THE HOT CHANNEL. TRANSIENT ANALYSES (NEITHER DNB NOR HOT-CHANNEL EXIT QUALITY ABOVE 15 PERCENT WERE ALLOWED) INCLUDED LOSS OF PUMPING POWER, LOCKED PUMP IMPELLER, COLD AND HOT ROD-WITHDRAWAL ACCIDENTS, AND STEAM-DEMAND LOAD TRANSIENTS. IN ALL CASES, THE RESTRICTION OF NO BULK BOILING DURING STEADY STATE PRECLUDED DNB DURING A TRANSIENT. THE SAFETY SYSTEM SET-POINTS ARE OBTAINED FROM THE THERMAL OPERATING LIMITS AND THE ACCURACY OF THE SYSTEM INSTRUMENTATION. A SAMPLE CALCULATION FOR DETERMINING THE MAXIMUM POWER SCRAM SET-POINT IS PRESENTED.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

\*ANALOG SIMULATION + \*PERFORMANCE LIMIT + \*SAFETY ANALYSIS + HEAT TRANSFER ANALYSIS +  
PM 3A (PORTABLE MEDIUM NUCLEAR POWER PLANT) + REACTOR, ARMY + REACTOR, PRESSURIZED WATER

18-14775  
LITTLE WW + HOFMANN PL  
NEUTRONICS CHARACTERISTICS OF CERMET OXIDE, AND CARBIDE DRIVER FUELS FOR THE FAST TEST REACTOR  
RAFFIIF-NORTHWEST  
1 PAGES, 3 REFERENCES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PA., OCTOBER 30-NOVEMBER 3, 1966, ANS TRANS. 9(2), PAGE 581, (NOVEMBER 1966)

IN GENERAL, THE CERAMIC FUELS OFFER A HIGHER DELAYED-NEUTRON FRACTION, HIGHER CONVERSION RATIO, LONGER REACTIVITY LIFE (FOR A GIVEN DELTA K), AND A MORE FAVORABLE DOPPLER COEFFICIENT. THE CERMET FUEL OFFERS A MUCH MORE NEGATIVE NA COEFFICIENT AND A HIGHER FLUX-TO-POWER RATIO.

\*REACTOR, TEST + CARBIDE + DELAYED NEUTRON + DOPPLER COEFFICIENT + OXIDE + PLUTONIUM + REACTOR, FAST +  
SODIUM COEFFICIENT

18-14780 ALSO IN CATEGORIES 5 AND 11  
LAWPOSKI H  
THE ZERO-POWER PLUTONIUM REACTOR FACILITY  
ARGONNE NATIONAL LABORATORY  
4 PAGES, 2 FIGURES, 1966 WINTER MEETING AMERICAN NUCLEAR SOCIETY, PITTSBURGH, PA., OCTOBER 30-NOVEMBER 3, 1966. ANS TRANS. 9(2), PAGE 552 (NOVEMBER 1966)

ZPPR IS A CRITICAL MACHINE FOR LARGE, FAST POWER REACTOR CORES (UP TO 1000 MWE, 3000 KG PU). FOR THE FACILITY ASSUMED, MAXIMUM CREDIBLE ACCIDENT IS A FIRE WITHOUT EXCURSION, AND ASSUMED DESIGN-BASIS ACCIDENT IS A VIGOROUS FIRE DUE TO VAPORIZATION OF FUEL DURING AN EXCURSION. FILTERING THROUGH A GRAVEL-SAND ROOF AND ADDITIONAL FILTERS LIMITS RELEASE OF PLUTONIUM TO ATMOSPHERE.

\*ACCIDENT, HYPOTHETICAL + \*ACCIDENT, MAXIMUM CREDIBLE (MCA) + \*ZPPR (ANL ZERO POWER PLUTONIUM REACTOR) +  
CRITICAL ASSEMBLY FACILITY + FILTER + PLUTONIUM

18-14793 ALSO IN CATEGORIES 9 AND 6  
MANGAN MA  
CONNECTICUT YANKEE SET POINT STUDY  
WESTINGHOUSE ELECTRIC CORPORATION, ATOMIC POWER DIVISION  
NYO-3250-7 + WCAP-2948 +. 127 PAGES, JUNE 1966, DOCKET NO. 50-213

THIS STUDY FORMED THE BASIS FOR THE DEFINITION OF A CONSISTENT SET OF CONTROL SYSTEM SET POINTS TO BE USED DURING INITIAL PLANT TESTS AND OPERATION, BASED ON MAINTAINING ADEQUATE CONTROL-SYSTEM PERFORMANCE OVER THE WHOLE RANGE OF PREDICTED PLANT OPERATING CONDITIONS. ALSO PRESENTS AN INSIGHT INTO THE PREDICTED CONTROL-SYSTEM PERFORMANCE UNDER VARIOUS PLANT CONDITIONS. CONTROL SYSTEM PERFORMANCE IS PREDICTED FOR MORE PROBABLE OR BEST-ESTIMATE PLANT-DESIGN PARAMETERS FOR VARIOUS TIMES THROUGHOUT CORE LIFETIME AND MAY BE INDICATIVE OF WHAT MAY BE EXPECTED DURING OPERATION. THE SENSITIVITY OF CONTROL-SYSTEM PERFORMANCE TO VARIOUS CONTROL-PARAMETER SET POINTS IS ALSO INDICATED TO GIVE THE OPERATOR A FEEL FOR POSSIBLE ADJUSTMENTS IN CONTROL-SYSTEM PARAMETERS TO IMPROVE CERTAIN ASPECTS OF PLANT TRANSIENT RESPONSE.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U. S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICRONEGATIVE

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-14793 \*CONTINUED\*

\*ANALOG SIMULATION + \*REACTOR TRANSIENT + HADDAM NECK + PLANT PROTECTIVE SYSTEM + REACTOR CONTROL + REACTOR STABILITY + REACTOR, PRESSURIZED WATER

18-14796 ALSO IN CATEGORIES 5 AND 6  
ANALYTICAL INVESTIGATION OF NUCLEAR AND THERMAL-HYDRAULIC DESIGN CHARACTERISTICS OF SM-1A, CORE 3, VOLUME I  
HITTMAN ASSOCIATES, INC.  
HIT-3459-11 (VOL. I AND II) + HIT-161 +. 80 PAGES, FIGURES, TABLES, REFERENCES, MARCH 1965

AN EARLIER REPORT INDICATING POTENTIAL PROBLEMS REQUIRED THIS DETAILED STUDY. CONCLUSIONS -  
(1) REACTIVITY CAN BE PREDICTED WITHIN 1% DELTA K OVER LIFETIME. (2) CORE SHOULD BE COLD SHUTDOWN WITH ANY TWO RODS OUT. (3, 4) CORE LIFETIME IS 32 MW YEARS, ROD POSITION CONSTANT AT 10.45 INCHES FROM 10 TO 18 MW YEARS. (5, 6) POWER DISTRIBUTIONS ARE LESS ADVERSE. MINIMUM DNB RATIO OF 2.67 OCCURS IN CONTROL-ROD FUEL ELEMENTS DURING PEAK REACTIVITY. (7) CORE IS HYDRAULICALLY STABLE UP TO 29 MW THERMAL.

\*SAFETY STUDY + DNB (DEPARTURE FROM NUCLEATE BOILING) + FUEL BURNUP + POWER DISTRIBUTION + REACTIVITY, EXCESS + REACTOR STABILITY + REACTOR, ARMY + REACTOR, PRESSURIZED WATER + SHUTDOWN MARGIN + SM 1 (STATIONARY MEDIUM POWER PLANT)

18-14797 ALSO IN CATEGORIES 5 AND 6  
ANALYTICAL INVESTIGATION OF NUCLEAR AND THERMAL HYDRAULIC DESIGN CHARACTERISTICS OF SM-1A, CORE 3, VOLUME II  
HITTMAN ASSOCIATES  
HIT-3459-11 + HIT-161 +. 112 PAGES, FIGURES, TABLES, REFERENCES, MARCH 1965

TECHNICAL APPENDIX TO VOLUME I. GIVES VARIOUS PLANT AND CORE-3 DESCRIPTIONS, NUCLEAR PHYSIC ANALYSIS METHODS, AND THERMAL-HYDRAULIC ANALYSES METHODS.

\*COMPUTER PROGRAM + \*HEAT TRANSFER ANALYSIS + \*HYDRODYNAMIC ANALYSIS + \*REACTOR PHYSICS + REACTOR, ARMY + REACTOR, PRESSURIZED WATER + SM 1 (STATIONARY MEDIUM POWER PLANT) + SM 1A (STATIONARY MEDIUM POWER PLANT, ALASKA)

18-14800 ALSO IN CATEGORY 6  
PFLASTERER GR + CALDAROLA L  
SEFOR EXPERIMENTAL PROGRAM PLANNING. VOLUME II. DESCRIPTIONS OF PLANNED TESTS  
GENPAC ELECTRIC, SAN JOSE, ADVANCED PRODUCTS OPERATION  
GEAP-5002 (VOL. 2) +. 116 PAGES, AUGUST 1965

VOL. 1 CONTAINS FUNCTIONAL REQUIREMENTS (FOR MAJOR EQUIPMENT ITEMS), BASED ON INFORMATION IN VOL. 2. VOL. 2 DESCRIBES THE TESTS, ANALYSES, AND REQUIRED MEASUREMENTS. TESTS INCLUDE (1) CRITICAL, (2) STATIC, (3) FREQUENCY RESPONSE, (4) REACTIVITY OSCILLATOR, (5) SUPERCRITICAL TRANSIENTS, AND (6) SUPER-PROMPT-CRITICAL TRANSIENTS.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*DESIGN CRITERIA + \*REACTOR KINETICS + \*TEST, PLANT RESPONSE + NOISE ANALYSIS + OSCILLATOR, REACTIVITY + REACTOR TRANSIENT + REACTOR, BREEDER + REACTOR, LIQUID METAL COOLED + SEFOR (SOUTHWEST EXP. FAST OXIDE REACTOR)

18-14804  
ENRICO FERMI REACTOR- USE FOR IRRADIATION TESTING AND BACKGROUND INFORMATION  
JOINT COMMITTEE ON ATOMIC ENERGY  
270 PAGES, FIGURES, TABLES, APRIL 5, 1966, U.S. GOVERNMENT PRINTING OFFICE, 1966

37 PAGES OF TWO HOURS OF ORAL TESTIMONY. THE REST CONSISTS OF LETTERS, SUMMARIES OF FINANCES AND COSTS, ACRS, DRL, LEGAL OPINIONS, ETC. CONTENT IS A COMPLETE SUMMARY OF FERMI-REACTOR ADMINISTRATIVE HISTORY TO THE MELTDOWN OF OCT. 10, 1966. THE POINT WAS MADE THAT FAST-NEUTRON FUEL-CLADDING DAMAGE CAN BE OBTAINED QUICKER AND IN THE ACTUAL OPERATING CONDITIONS THROUGH FERMI USAGE.

AVAILABILITY - GOVERNMENT PRINTING OFFICE, WASHINGTON, D. C. 20402

\*CONGRESSIONAL ACTIVITY + \*FUEL ELEMENT + \*IRRADIATION TESTING + FERMI + REACTOR, BREEDER + REACTOR, FAST + REACTOR, LIQUID METAL COOLED

18-14805  
STEELE H  
ADDITIONAL INFORMATION ON PROPOSED CHANGES TO BIG ROCK POINT TECHNICAL SPECIFICATIONS  
CONSUMERS POWER COMPANY  
2 PAGES, AUGUST 16, 1966, DOCKET NO. 50-155, PDR

TXW SUGGESTS THAT THERE ARE NO CONCLUSIVE TESTS WHICH SUGGEST ANY REASON THAT THERE IS A SIGNIFICANT DIFFERENCE BETWEEN PELLET FUEL OR POWDER FUEL. NUMBER OF NEW ELEMENTS ADDED WILL



CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-14805 \*CONTINUED\*  
DEPEND ON NUMBER OF FAILED ELEMENTS DISCOVERED. REACTIVITY AND FLUX-PEAKING CONTROL WILL BE BY COBALT RODS INSTEAD OF BY STAINLESS-STEEL CHANNELS.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + BIG ROCK POINT + CORE COMPONENTS, MISCELLANEOUS + FUEL ELEMENT + REACTOR, BOILING WATER + VIBRATION

18-14806  
YANKEE PROPOSED CHANGE 72 - PRESSURIZER CHANGES  
ATOMIC ENERGY COMMISSION, DIVISION OF REACTOR LICENSING  
2 PAGES, SEPTEMBER 7, 1966, DOCKET NO. 50-29, PDR

YANKEE PERSONNEL BELIEVE THAT THERE IS SOME GAS STRATIFICATION IN THE PRESSURIZER. THEY WILL RE-ROUTE THE VENT LINE INSTALLED NEAR THE TOP SO SAMPLING CAN BE DONE OUTSIDE THE CONTAINMENT, AND THEY WILL INSTALL A SECOND SAMPLING LINE NEAR THE WATER-GAS INTERPHASE.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + \*SAFETY EVALUATION + PRESSURIZER + REACTOR, PRESSURIZED WATER + SAMPLING + STEAM + YANKEE

18-14808 ALSO IN CATEGORIES 13 AND 17  
DRL ADVISES IMPROVEMENTS TO NFS ADMINISTRATIVE CONTROL  
DIVISION OF REACTOR LICENSING  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(8), PAGES 6-7 (FEBRUARY 20, 1967)

DRL HAS BECOME INCREASINGLY CONCERNED ABOUT SPREAD OF LOW-LEVEL CONTAMINATION, LACK OF INTERNAL COMMUNICATION, AND VARYING DEGREE OF EFFECTIVENESS OF CORRECTIVE ACTIONS. NEW DEFICIENCIES ARE FOUND AT EACH INSPECTION, SIMILAR TO PAST ONES. DPL REQUESTS MODIFICATIONS TO MANAGEMENT SYSTEM AND FACILITY SUFFICIENT TO DEMONSTRATE IN 60 DAYS THAT ABNORMAL SITUATIONS CAN BE PREVENTED OR CONTROLLED. DRL WILL SEND PROPOSED TECHNICAL-SPECIFICATION REVISIONS FOR RADIOACTIVE-EFFLUENT CONTROL, SINCE THIS HAS BEEN HANDLED DIFFERENTLY FROM THE FINAL SAFETY-ANALYSIS REPORT.

\*ADMINISTRATIVE CONTROLS AND PRACTICES + \*WASTE DISPOSAL, GENERAL + EFFLUENT + FUEL REPROCESSING + INSPECTION AND COMPLIANCE + MONITOR, RADIATION, STACK + NFS (NUCLEAR FUEL SERVICES) + OPERATING LIMITS/TECHNICAL SPECIFICATIONS

18-14809 ALSO IN CATEGORY 1  
REVISED TO CFR 50, CONSTRUCTION PERMIT APPLICATION FOR ULTIMATE POWER LEVEL  
ATOMIC ENERGY COMMISSION  
3 PAGES, ATOMIC ENERGY CLEARINGHOUSE 13(8), PAGES 10-12 (FEB. 20, 1967)

PROPOSED REVISION WOULD REQUIRE APPLICANTS TO PROVIDE ADDITIONAL INFORMATION AND TO EVALUATE FACILITY (AT CONSTRUCTION-PERMIT STAGE) FOR THE ULTIMATE POWER LEVEL, RATHER THAN AT THE LOWER MANUFACTURERS-GUARANTEE LEVEL. LATER INCREASES IN POWER LEVELS AFTER THE PLANT IS OPERATIONAL WOULD NOT BE PREJUDICED.

\*REGULATION, AEC + REACTOR POWER + SITING, REACTOR

18-14830  
QUARTERLY TECHNICAL PROGRESS REPORT. JANUARY THROUGH MARCH, 1966. HEAVY WATER ORGANIC COOLED REACTOR  
ATOMICS INTERNATIONAL, CANOGA PARK  
AI-CF-31 +. 170 PAGES, FIGURES, 28 TABLES, MAY 15, 1966

THIS REPORT IS ONE OF A SERIES OF REPORTS. SUBJECTS ENUMERATED BELOW WILL BE SUMMARIZED IN THE PROGRAM - (A) REACTOR PHYSICS, (B) PRESSURE TUBE, (C) TRANSITION JOINTS, (D) REACTIVITY CONTROL SYSTEMS, (E) EVALUATION AND ANALYTICAL TECHNIQUES, (F) FILM-FORMATION PARAMETERS, (G) FUEL, (H) ON-POWER REFUELING, (I) LARGE COMPONENTS

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*RESEARCH AND DEVELOPMENT PROGRAM + FUEL HANDLING + HEAT TRANSFER + REACTOR PHYSICS + REACTOR, HEAVY WATER + REACTOR, ORGANIC COOLED + REACTOR, PRESSURE TUBE + SURFACE FILM DEPOSIT

18-14844 ALSO IN CATEGORIES 1 AND 12  
AEC AUTHORIZED FERMI TO USE PROTECTION FACTORS FOR RESPIRATORY DEVICES  
DIVISION OF REACTOR LICENSING  
6 PAGES, 1 TABLE, JANUARY 1967, DOCKET NO. 50-16

PENDING AMENDMENT OF 10 CFR 20, A SET OF FILTER FACTORS (TO ADJUST THE CONCENTRATION INHALED ACCORDING TO RESPIRATORY DEVICE USED) WAS ESTABLISHED. FERMI PERSONNEL MAY NOW USE THESE.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*PERSONNEL PROTECTIVE DEVICE + FERMI + FILTER EFFICIENCY + RADIATION SAFETY AND CONTROL +

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-14844 \*CONTINUED\*  
REACTOR, BREEDER + REACTOR, FAST

18-14845  
PAWLING LATTICE TEST RIG AMENDMENT 5 + TECHNICAL SPECIFICATIONS, AND CHANGE FROM D2O TO H2O  
DIVISION OF REACTOR LICENSING, AEC  
25 PAGES, 1 TABLE, JANUARY 1967, DOCKET NO-50-101

NEW TECHNICAL SPECIFICATIONS ARE AUTHORIZED FOR THIS UNC CRITICALITY FACILITY TO MAKE MEASUREMENTS OF LOW-ENRICHED URANIUM OXIDE FUEL IN LIGHT WATER. COVER-GAS SYSTEM ELIMINATED (HEAVY WATER NO LONGER USED), BUT BORATED WATER SYSTEM ADDED (BECAUSE OF TWO FLEXIBLE-USE INNER-CORE SECTIONS). EXCESS REACTIVITY LIMITED TO \$1.00. 170-MW-SEC EXCURSION IS 1/6TH THAT ALLOWED BY 10 CFR 100 SITE CRITERIA.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + \*SAFETY EVALUATION + CRITICAL ASSEMBLY FACILITY

18-14846 ALSO IN CATEGORY 17  
TEXAS A AND M CHANGE 5 - POOL COOLING SYSTEM  
DIVISION OF REACTOR LICENSING, AEC  
4 PAGES, JANUARY 1966, DOCKET NO. 50-128

ORGANIZATION-CHART JOB TITLES REVISED. 100-KW OPERATION WITH THE REDUCED POOL VOLUME INCREASES POOL TEMPERATURE 1-2 F, AND EVAPORATION INCREASE OVERLOADS BUILDING AIR CONDITIONING. PIPING PENETRATIONS INSTALLED IN ORIGINAL CONSTRUCTION WILL BE USED. THE PRIMARY SYSTEM COMPONENTS WILL BE IN A LOCKED CONCRETE BUILDING.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + \*SAFETY EVALUATION + MAIN COOLING SYSTEM + REACTOR, POOL TYPE + VENTILATION SYSTEM

18-14847 ALSO IN CATEGORY 5  
PROPOSED ELK RIVER CHANGE 10 - REVISED FUEL ELEMENT LIMITATIONS AND CORRELATIONS  
RURAL COOPERATIVE POWER ASSOCIATION  
8 PAGES, 1 TABLE, 6 REFERENCES, NOVEMBER 8, 1966, DOCKET NO. 115-1

MAXIMUM FUEL TEMPERATURE NOT TO EXCEED 5800 F DURING ACCIDENTAL TRANSIENTS. CRITICAL HEAT FLUX SHALL BE ABOVE 2.0 IN STEADY STATE, AND ABOVE 1.7 DURING (CREDIBLE) ACCIDENTAL TRANSIENTS. THE JANSSEN-LEVY (1962) CORRELATION SHALL BE USED (INSTEAD OF THE GRIFFITH CORRELATION BASED ON POOL BURNOUT DATA). BURNOUT HEAT FLUX LIMIT REPLACED BY ABOVE. MCHF RATIO OF 1.7 USED INSTEAD OF 1.5 BECAUSE ERR HAS NO IN-CORE INSTRUMENTATION. INTEGRAL OF KDT FOR UO2 USED AS CONSERVATIVE FOR (U, TH) OXIDE FUEL. CALCULATIONS SUMMARIZED.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*FUEL ELEMENT + \*HEAT TRANSFER CORRELATION + \*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + \*PERFORMANCE LIMIT + BURNOUT HEAT FLUX + OXIDE + REACTOR, BOILING WATER + THORIUM

18-14849 ALSO IN CATEGORIES 11 AND 17  
ELK RIVER CHANGE 9A - EXTENDED DATE FOR CONTAINMENT LEAK RATE TEST  
DIVISION OF REACTOR LICENSING, AEC  
2 PAGES, JANUARY 1967, DOCKET NO. 115-1

DRL AUTHORIZES TEST BE POSTPONED NOT LATER THAN MAY 15, 1967, SINCE THE REFERENCE-SYSTEM REVISIONS ARE INCOMPLETE.

AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*CONTAINMENT REFERENCE MEASURING SYSTEM + \*MODIFICATION, SYSTEM OR EQUIPMENT + \*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + \*TEST, LEAK RATE + ELK RIVER + REACTOR, BOILING WATER

18-14850 ALSO IN CATEGORY 17  
CHANGE 1 TO MISSOURI UNIVERSITY FLUX TRAP REACTOR - LESS NEGATIVE TEMPERATURE COEFFICIENT.  
DIVISION OF REACTOR LICENSING, AEC  
3 PAGES, JANUARY 25, 1967, DOCKET NO. 50-186

DURING INITIAL PHYSICS TESTS, THE COLUMBIA MO. REACTOR WAS FOUND TO HAVE A CORE TEMPERATURE COEFFICIENT OF  $-3.4 \times 10$  TO THE MINUS 5TH DELTA K/F, INSTEAD OF THE VALUE (MINUS 7TH) USED IN ANALYSIS. REEVALUATION BASED ON A COEFFICIENT OF MINUS 3 DOES NOT CHANGE STARTING ACCIDENT, BUT CORE DAMAGE MAY BEGIN WITH A STEP INCREASE OF 0.004 DELTA K. THEREFORE LIMITING WORTH OF AN INDIVIDUAL EXPERIMENT (AND SUM OF ALL EXPERIMENTS) IS TO BE REDUCED FROM 0.007 TO 0.004 DELTA K, AND AVERAGE CORE COEFFICIENT MUST BE MORE NEGATIVE THAN MINUS 3 X 10 TO THE MINUS 5TH DELTA K/F.

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-14850 \*CONTINUED\*  
AVAILABILITY - USAEC-PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + REACTOR, FLUX TRAP

18-14851 ALSO IN CATEGORY 11  
ELK RIVER REQUESTS DEFERRED LEAK RATE TESTS  
RURAL COOPERATIVE POWER ASSOCIATION  
2 PAGES, DECEMBER 15, 1966, DOCKET NO. 115-1

FURTHER DEFERRMENT OF LEAK RATE TESTS (TO 15 MAY 67) IS DESIRABLE BECAUSE  
REFERENCE-MEASURING-SYSTEM MODIFICATIONS ARE DELAYED, AND NEW B4C RODS ARE ALSO DELAYED.

\*CONTAINMENT REFERENCE MEASURING SYSTEM + \*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + \*TEST, LEAK RATE +  
FLK RIVER + REACTOR, BOILING WATER

18-14861 ALSO IN CATEGORIES 7 AND 11  
N S SAVANNAH CHANGE 5 - MISC. ADMINISTRATION AND TESTING  
DIVISION OF REACTOR LICENSING, UNITED STATES ATOMIC ENERGY COMMISSION  
9 PAGES, FEBRUARY 5, 1967, DOCKET NO. 50-238

CHANGES ALLOWED ARE - (1) CHANGE IN ORGANIZATIONAL TITLES, (2) PROVIDE FOR TRITIUM MONITORING  
IN WASTE DISPOSAL, (3) LESS FREQUENT EVACUATION DRILLS, (4) CLARIFY REPORTING RESPONSIBILITY  
OF STAFF HEALTH PHYSICIST, (5) ALTER CHANNEL 10 AND 11 REQUIREMENTS OF RADIATION MONITORING  
DURING FILTER TESTS, AND (6) ALLOW PORT ENTRY IF A DOP TEST WITHIN 1 WEEK PAST SHOWED A  
FILTER FACTOR OF 1000 OR MORE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + \*SAFETY EVALUATION + ADMINISTRATIVE CONTROLS AND PRACTICES +  
CONTAINMENT FILTERING SYSTEM + INSTRUMENTATION, RADIATION MONITORING + N S SAVANNAH + REACTOR, MARITIME +  
REACTOR, PRESSURIZED WATER + TEST, DOP FILTER + TRITIUM + WASTE DISPOSAL, GENERAL

18-14899 ALSO IN CATEGORY 17  
PETRY WM  
UNIVERSITY OF AKRON DISMANTLING THEIR AGN-201  
UNIVERSITY OF AKRON  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(9) PAGE 7 (FEBRUARY 27, 1967) DOCKET NO. 50-64

U. OF AKRON OHIO WISHES AUTHORITY TO TRANSFER ITS REACTOR TO GEORGIA INSTITUTE OF TECHNOLOGY.

\*REACTOR DECOMMISSIONING EXPERIENCE + AGN (TRAINING REACTOR, AEROJET-GEN. NUCLEONICS) + REACTOR, TRAINING

18-15006 ALSO IN CATEGORIES 5 AND 11  
GINNA CORE COOLING AND CONTAINMENT SPRAY REVISIONS  
ROCHESTER GAS AND ELECTRIC CORP., ROCHESTER  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(10) PAGE 26 (MARCH 6, 1967) DOCKET NO. 50-244

TWO PRESSURIZED ACCUMULATORS WILL BE ADDED FOR BORATED WATER INJECTION ON LOSS-OF-COOLANT  
ACCIDENT. SPACE PROBLEMS REQUIRED A THIOSULFATE SPRAY TO REPLACE 2 OF THE 4 IODINE  
(CHARCOAL) FILTERS. THE REMAINING 2 WILL BE ELIMINATED IF WESTINGHOUSE ANALYSIS SHOWS IT  
POSSIBLE.

\*CONTAINMENT FILTERING SYSTEM + \*CONTAINMENT SPRAY + \*EMERGENCY COOLING CONSIDERATIONS + GINNA +  
REACTOR, PRESSURIZED WATER

18-15007 ALSO IN CATEGORIES 13 AND 17  
NUCLEAR FUEL SERVICES PLANT SHUTDOWN, FEBRUARY 17  
NUCLEAR FUEL SERVICES, INC., WHEATON  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(10), PAGE 26 (MARCH 6, 1967) DOCKET NO. 50-101

NFS WILL SHUT DOWN FOR 30 DAYS FOR MAINTENANCE AND EXAMINE OPERATIONS FROM VIEW POINT OF AEC  
FEBRUARY 7 LETTER. A LETTER 14 FEBRUARY RELATED AN ACCIDENTAL TRANSFER OF LOW-LEVEL WASTE  
SOLUTIONS TO THE WASTE INTERCEPTOR.

\*ADMINISTRATIVE CONTROLS AND PRACTICES + \*INCIDENT, ACTUAL, HUMAN ERROR + FUEL REPROCESSING +  
NFS (NUCLEAR FUEL SERVICES) + WASTE HANDLING

18-15008 ALSO IN CATEGORIES 13 AND 17  
NUCLEAR FUEL SERVICES TO REORGANIZE PLANT OPERATIONS, FEBRUARY 11, 1967  
NUCLEAR FUEL SERVICES, INC., WHEATON  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(10), PAGES 26 (MARCH 6, 1967) DOCKET NO. 50-201

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-1500P \*CONTINUED\*

NFS REPLY TO AEC LETTER OF FEBRUARY 7 MENTIONS A FORTHCOMING REORGANIZATION AND APPOINTS DR. RUSSEL WISCHOW AS ASSISTANT GENERAL MANAGER FOR THE WEST VALLEY PLANT. HE WILL COORDINATE AEC MATTERS AND HAVE EXTENSIVE ADDITIONAL DUTIES.

\*ADMINISTRATIVE CONTROLS AND PRACTICES + \*RADIATION SAFETY AND CONTROL +  
\*STAFFING, TRAINING, QUALIFICATION + NFS (NUCLEAR FUEL SERVICES) + RADIOCHEMICAL PROCESSING

18-1500P ALSO IN CATEGORIES 6 AND 17  
POWER INCREASE DURING LOAD REJECTION TESTS AT PATHFINDER, FEBRUARY 20, 1967  
NORTHERN STATES POWER, MINNEAPOLIS  
1 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(10), PAGES 25 (MARCH 6, 1967) DOCKET NO. 50-130

LOAD-REJECTION TESTS AT 20, 50, AND 70% POWER WERE WITHOUT INCIDENT, BUT AT 90% A HIGH-FLUX SCRAM OCCURRED. AT 85%, THE POWER INCREASED TO ABOUT 110% IN ABOUT 0.6 SEC AND LEVELED OFF. THE INCREASE WAS CAUSED BY TURBINE OVERSPEED, WITH THE INCREASED FREQUENCY INCREASING THE RECIRCULATION FLOW TO ADD \$0.25 BUT FASTER THAN THE \$0.12/SEC TECHNICAL-SPECIFICATION LIMIT. A LOAD-DUMP ANTICIPATOR CLOSES THROTTLE VALVES TO HOLD TURBINE AT STATION LOAD.

\*ACCIDENT, REACTIVITY + \*FLOW, RECIRCULATION + \*INCIDENT, ACTUAL, GENERAL +  
\*REACTOR STARTUP EXPERIENCE, INITIAL + ACCIDENT, LOAD REJECTION + PATHFINDER + REACTOR, SUPERHEAT + TEST, SYSTEM OPERABILITY

18-15010 ALSO IN CATEGORIES 14 AND 17  
MIT REACTOR HEAT EXCHANGER LEAK, FEBRUARY 21-23, 1967  
MASSACHUSETTS INSTITUTE OF TECHNOLOGY  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(10), PAGE 24 (MARCH 6, 1967) DOCKET NO. 50-20

15 GAL OF D2O (TRITIUM CONCENTRATION 1.3 MILLICURIES/CC) REACHED THE 20,000-GAL H2O SECONDARY SYSTEM. SOME CONTAMINATED SECONDARY WATER WAS RELEASED. THE HEAT EXCHANGER WILL BE FIXED. PERMISSION ASKED TO DISCHARGE SECONDARY WATER AT 5 GPM INTO SANITARY SEWER AND CHARLES RIVER.

\*FAILURE, PIPE + \*INCIDENT, ACTUAL, EQUIPMENT + EFFLUENT + REACTOR, HEAVY WATER + REACTOR, RESEARCH + TRITIUM + WASTE DISPOSAL, RIVER

18-15011 ALSO IN CATEGORIES 9 AND 17  
STUCK CONTROL ROD AT GETR, FEBRUARY 1967  
GENERAL ELECTRIC, SAN JOSE  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(10), PAGES 23-24 (MARCH 6, 1967) DOCKET NO. 50-20

A SHORT BOLT FROM A FUEL TOOL FELL INTO A CONTROL-ROD GUIDE DURING RELOADING AND WAS DISCOVERED ON STARTUP CHECKS WHEN ROD 5 STUCK AT 22 IN. WITHDRAWN. ONLY SELF-LOCKING NUTS WILL BE USED FROM NOW ON.

\*FAILURE, SCRAM MECHANISM + \*INCIDENT, ACTUAL, EQUIPMENT + FUEL HANDLING MACHINE + GETR (GENERAL ELECTRIC TEST REACTOR) + REACTOR, TEST

18-15012  
1967 SUPPLEMENT TO THE 1962 REPORT ON THE CIVILIAN NUCLEAR POWER PROGRAM  
8 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(10), PAGES 5-12 (MARCH 6, 1967)

100-PAGE DOCUMENT MAY BE OBTAINED FROM THE DIVISION OF PUBLIC INFORMATION, USAEC. AN UPDATING ACCOMPLISHED PRIOR TO SPECIFIC STUDIES TO BE COMPLETED IN 1967, WHICH WILL BE THE BASIS FOR A REDUCTION IN THE NUMBER OF CONCEPTS BEING PURSUED. JCAE COMMENT IS CRITICAL, AS REPORT DOES NOT PROVIDE DEVELOPMENTAL GUIDELINE. ATOMIC ENERGY CLEARING HOUSE GIVES REPORT SUMMARY. REPORT CONTAINS REVIEW OF REACTOR DEVELOPMENTAL PROGRAM TO 1967, TECHNICAL FACTORS FOR PREDICTING ELECTRICITY-DEMAND GROWTH, AND LEGAL/ADMINISTRATIVE MATTERS.

\*ECONOMICS + \*REGULATION, AEC + LAW + REACTOR, POWER + RESEARCH AND DEVELOPMENT PROGRAM

18-15036 ALSO IN CATEGORY 9  
LARGE CLOSED-CYCLE WATER REACTOR RESEARCH AND DEVELOPMENT PROGRAM PROGRESS REPORT, APRIL 1 - JUNE 30, 1966  
ATOMIC POWER DIVISION, WESTINGHOUSE ELECTRIC CORP, PITTSBURGH, PA.  
WCAP-3269-18 +. 28 PAGES, 7 FIGURES, 3 TABLES, APRIL 1-JUNE 30, 1966

(PAGE 3.1). -A STUDY WAS BEGUN TO DETERMINE BOILING/TEMPERATURE EFFECT ON THE HYDRIDING OF ZIRCALOY CLADDING. (PAGE 3.10). -A ROD-CLUSTER CONTROL ELEMENT IN TEST SHOWED MARKING BUT NO SEVERE WEAR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPARTMENT OF COMMERCE, SPRINGFIELD, VIRGINIA 22151, \$3.00 COPY, \$0.65 MICROFICHE

\*RESEARCH AND DEVELOPMENT PROGRAM + CLAD + CONTROL ROD + EMBRITTLEMENT + HYDROGEN + REACTOR, PRESSURIZED WATER + ZIRCALOY

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-15037  
POWER REACTOR CHARACTERISTICS, REPORT NO. 1  
ORGANIZATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT, EUROPEAN NUCLEAR ENERGY AGENCY, PARIS, FRANCE  
NP-16364 +. 84 PAGES, 4 FIGURES, 8 TABLES, SEPTEMBER 1966

BRIEF SUMMARY OF WORLD REACTOR CHARACTERISTICS (DOWNTIME, % ON STREAM, FUEL MASS) FOR MAKING  
CALCULATIONS OF FUEL-CYCLE COSTS.

AVAILABILITY - MICROCARD EDITIONS, INC. (FOR SALE) ACCOUNTING AND SHIPPING DEPARTMENT, WEST SALEM,  
WISCONSIN 54669

\*ECONOMICS + \*FUEL BURNUP + REACTOR, POWER

18-15075  
FURTHER CORRESPONDENCE FROM MORNINGSIDE RENEWAL COUNCIL FEBRUARY 28, 1967  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(10), PAGES 26-27, (MARCH 6, 1967) DOCKET NO. 50-208

LETTER QUOTES A FEB. 15, 1965, LETTER FROM CHAIRMAN OF COLUMBIA UNIVERSITY INDUSTRIAL  
ENGINEERING DEPARTMENT OPPOSING REACTOR ON GROUNDS OF DANGER AND ADVERSE PUBLIC RELATIONS.  
MENTIONS A REPORT BY 4 COLUMBIA UNIVERSITY PROFESSORS THAT HUMAN ERROR CANNOT BE EXCLUDED,  
THAT NOT ALL RISKS ARE CALCULABLE, AND THAT MORALITY OF EXPOSING OTHERS (OFFSITE) IS IN DOUBT.

\*CONSTRUCTION PERMIT PROCESS + \*RADIATION, PUBLIC EDUCATION/ACCEPTANCE + REACTOR, RESEARCH +  
TRIGA (TRAINING REACTOR, ISOTOPES, G.A.)

18-15076 ALSO IN CATEGORIES 11 AND 17  
PATHFINDER CONTAINMENT INTEGRITY BROKEN, FEBRUARY 8, 1967  
NORTHERN STATES POWER COMPANY  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(11), PAGE 28, (MARCH 13, 1967) DOCKET NO. 50-130

ON FEB. 27, PATHFINDER REPORTED THAT BOTH PERSONNEL AIRLOCK DOORS WERE OPENED FOR 2 MINUTES TO  
REMOVE EQUIPMENT. WHILE REACTOR WAS SHUT DOWN, THE SYSTEM WAS ABOVE THE 250 PSIG AS  
SPECIFIED IN TS AS REQUIRING CONTAINMENT INTEGRITY.

\*CONTAINMENT AIR LOCK + \*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + CONTAINMENT INTEGRITY +  
FAILURE, ADMINISTRATIVE CONTROL + PATHFINDER + REACTOR, BOILING WATER + REACTOR, SUPERHEAT

18-15077 ALSO IN CATEGORIES 14 AND 17  
NUCLEAR FUEL SERVICES ADVISED (FEBRUARY 24) OF EFFLUENT DISCHARGE TECHNICAL SPECIFICATIONS CHANGES  
NUCLEAR FUEL SERVICES, INC.  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(11), PAGES 28-29 (MARCH 13, 1967) DOCKET NO. 50-201

AFC DIVISION OF REACTOR LICENSING SUGGESTS TECHNICAL-SPECIFICATIONS CHANGES FOR NUCLEAR FUEL  
SERVICES CONSIDERATION. (A) GASEOUS EFFLUENTS (4), INCLUDES SPECIFYING METEOROLOGICAL  
PARAMETERS FOR DISCHARGES, QUANTITY, MONITORING AND PARTICULATES LIMITS FOR STACK DISCHARGE.  
(B) LIQUID EFFLUENTS (5) INCLUDING CONCENTRATION LIMITS, COLLECTION OF POTENTIALLY  
CONTAMINATED MATERIAL IN AN INTERCEPTOR TANK. (C) ADMINISTRATIVE REQUIREMENTS (4), INCLUDING  
RESPONSIBILITY FOR SAFETY REVIEW, PLANT PERSONNEL KNOWLEDGE OF EMERGENCY PROCEDURES, RECORDS  
OF INTERNAL INVESTIGATIONS, AND PERIODIC AUDITS.

\*EFFLUENT + \*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + ADMINISTRATIVE CONTROLS AND PRACTICES +  
NFS (NUCLEAR FUEL SERVICES) + RADIOCHEMICAL PROCESSING + WASTE DISPOSAL, GAS + WASTE DISPOSAL, LIQUID

18-15078 ALSO IN CATEGORIES 2 AND 14  
CALIFORNIA NUCLEAR DISCUSSES COMPLEX HYDROGEOLOGY OF SHEFFIELD ILL. WASTE BURIAL SITE  
CALIFORNIA NUCLEAR, INC.  
3 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(11), PAGES 30-32 (MARCH 13, 1967) DOCKET NO. 27-39

CONVENTIONAL PUMPING AND GRAVITY INJECTION TESTS FAIL TO YIELD ANY UNDERGROUND-WATER  
TRANSMISSION MEASUREMENTS. CN DEFENDS USE OF AVERAGE TRANSMISSIBILITY VALUES BASED ON LAB  
MEASUREMENTS OF SMALL SAMPLES, AND NOTES VARIOUS INCONSISTENCIES IN AEC SUGGESTIONS.

\*HYDROLOGICAL CONSIDERATION, GENERAL + \*WASTE DISPOSAL, TERRESTRIAL + GROUND WATER, GENERAL +  
HYDROLOGICAL CONSIDERATION, RATE OF MOVEMENT + LICENSING STATUS OF NUCLEAR PROJECTS + OPERATING EXPERIENCE

18-15079 ALSO IN CATEGORIES 15 AND 17  
RADIOGRAPHY EXPOSURE AT EASTERN TESTING AND INSPECTION INC., DEC. 31, 1966  
EASTERN TESTING AND INSPECTION, INC.  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(11), PAGE 33, (MARCH 13, 1967)

ON FEB. 7, EASTERN TESTING AND INSPECTION REPORTED THAT A FORMER EMPLOYEE HAD CHECKED INTO A

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-15079 \*CONTINUED\*

HOSPITAL WITH RADIATION BURNS ON THE LEFT HAND. CALCULATIONS INDICATED 600 R TO THE FINGERS AND 2 R TO THE BODY, AS THE EMPLOYEE CHANGED THE POSITION OF THE UNSHIELDED SOURCE WITH HIS HANDS. HE DID NOT CHECK THE SOURCE-POSITION LIGHTS, DID NOT USE A SURVEY METER, AND LEFT HIS FILM BADGE ON HIS COAT.

\*FAILURE, OPERATOR ERROR + \*INCIDENT, ACTUAL, HUMAN ERROR + \*PERSONNEL EXPOSURE, RADIATION + \*RADIOGRAPHY

18-15080 ALSO IN CATEGORIES 15 AND 17  
RADIOGRAPHY EXPOSURE AT ERIE FORGE AND STEEL CORP., JAN. 10, 1967  
ERIE FORGE AND STEEL CORP.  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(11), PAGES 33-34, (MARCH 13, 1967)

ON FEB. 7, ERIE FORGE AND STEEL REPORTED AN EXPOSURE OF 4472 R (HARD GAMMA) AS A RADIOGRAPHER ATTEMPTED TO PLUS THE STORAGE SAFE AT THE END OF THE WORK. HE FOUND THE SOURCE 5 IN. FROM THE OPENING AND THEN LEFT. AFTER SEVERAL TRIALS, THE SOURCE WAS FULLY RUN IN. SILT AND DIRT CAUSED THE TROUBLE. THE TECHNICIAN USED A SURVEY METER (APPARENTLY INEFFECTIVE BECAUSE OF GEOMETRY). SOURCE-POSITION INDICATING LIGHTS WERE INEFFECTIVE BECAUSE OF CONTROL-BOX MODIFICATIONS. BLOOD TESTS SHOWED NO IRREGULARITIES.

\*FAILURE, MAINTENANCE ERROR + \*INCIDENT, ACTUAL, EQUIPMENT + \*INSTRUMENTATION, POSITION + MAINTENANCE AND REPAIR + PERSONNEL EXPOSURE, RADIATION + RADIOGRAPHY

18-15081 ALSO IN CATEGORIES 15 AND 17  
JOHNS HOPKINS UNIVERSITY TRITIUM RELEASE, FEB. 20, 1967  
JOHN HOPKINS UNIVERSITY, BALTIMORE  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(11), PAGE 34, (MARCH 13, 1967)

JOHNS HOPKINS REPORTS FEB. 21, THAT 10 CURES OF TRITIUM (IN URANIUM HYDRIDE) WERE RELEASED AS A GLASS TUBE BROKE AND THE UH BURNED SPONTANEOUSLY. TWO PERSONS WERE EXPOSED TO 3 MPC AIR; URINE SPECIMENS PEAKED AT 0.1 MPC. VENTILATION SYSTEM SPREAD AIR CONTAMINATION THROUGHOUT BUILDING. INCIDENT OCCURRED AT 6 PM.

\*INCIDENT, ACTUAL, GENERAL + \*PERSONNEL EXPOSURE, RADIATION + \*TRITIUM + INHALATION + VENTILATION SYSTEM

18-15082 ALSO IN CATEGORIES 13 AND 17  
NUCLEAR FUEL SERVICES SIX DAY SHUTDOWN FEB. 14, 1967  
NUCLEAR FUEL SERVICES, WEST VALLEY, NEW YORK  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(11), PAGE 35 (MARCH 13, 1967) DOCKET NO. 50-201

NUCLEAR FUEL SERVICES REPORTS FEB. 15 THAT A PIPE LEAK IN THE ACID-RECOVERY SYSTEM DURING WASTE SYSTEM TRANSFER RELEASED NEUTRALIZED EVAPORATION BOTTOMS, WHICH WERE CAUGHT BY INTERCEPTOR GATE (0.001 CURIE/LITER). LAGOON ITSELF SHOWED NO INCREASE IN ACTIVITY. NO OTHER RELEASES OR EXPOSURES OCCURRED.

\*FAILURE, PIPE + \*INCIDENT, ACTUAL, EQUIPMENT + EVAPORATION + NFS (NUCLEAR FUEL SERVICES) + RADIOCHEMICAL PROCESSING + WASTE DISPOSAL, LIQUID + WASTE HANDLING

18-15083 ALSO IN CATEGORIES 15 AND 17  
TRITIUM EXPOSURE AT U.S. RADIUM CORP., DEC. 13, 1966  
U.S. RADIUM CORPORATION  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(11), PAGES 35-36, (MARCH 13, 1967)

U.S. RADIUM CORP. REPORTS JAN. 24 THAT AN R AND D SCIENTIST BREATHED AIR CONTAINING TRITIUM FROM A LEAKY GLASS TUBE FILL FACILITY. LATE REPORTING IS DUE TO ORIGINAL USE OF SUBMERSIBLE TRITIUM MPC (WHICH INDICATED NO OVEREXPOSURE). IF THE SOLUBLE MPC VALUE IS USED, ASSUMING OXIDATION HAD TAKEN PLACE, AN OVEREXPOSURE OCCURRED. IN ADDITION, AN ION CHAMBER INDICATED 100 TIMES HIGHER THAN AN IMPINGER SAMPLE.

\*FAILURE, EQUIPMENT + \*INCIDENT, ACTUAL, EQUIPMENT + \*PERSONNEL EXPOSURE, RADIATION + INHALATION + MAXIMUM PERMISSIBLE CONCENTRATION (MPC) + TRITIUM

18-15084 ALSO IN CATEGORIES 15 AND 17  
TRITIUM EXPOSURE AT U.S. RADIUM CORP. JAN. 11, 1967  
U.S. RADIUM CORPORATION  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(11), PAGE 36, (MARCH 13, 1967)

U.S. RADIUM CORP., JAN. 25, REPORTS THAT A DIAL PAINTER WAS EXPOSED TO 1.46 MPC, DUE TO (1) AN ACCUMULATION OF FRESHLY PAINTED DIALS NEXT TO THE MACHINE, (2) RESIDUAL CONTAMINATION OF SAMPLING-TRAIN COMPONENTS (DRY GAS METER). THE MACHINE IS COMPLETELY ENCLOSED AND KEPT AT MINUS 3 INCHES (WATER) PRESSURE, ALTHOUGH THE AIR FLOW IS BARELY PERCEPTIBLE.

\*GLOVE BOX + \*PERSONNEL EXPOSURE, RADIATION + FAILURE, ADMINISTRATIVE CONTROL + FAILURE, DESIGN ERROR + INCIDENT, ACTUAL, GENERAL + TRITIUM + VENTILATION SYSTEM

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-15085 ALSO IN CATEGORIES 15 AND 17  
U.S. RADIUM CORPORATION TRITIUM LEAK AND STACK-DISCHARGE  
U.S. RADIUM CORPORATION  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(11), PAGES 36-37, (MARCH 13, 1967)

U.S. RADIUM CORP. REPORTS JAN. 31 TWO INCIDENTS. (1) JAN. 10. DURING FILLING OF GAS TUBES, SOLUBLE TRITIUM WAS MONITORED AT STACK AS 33.65 X MPC AND 763.3 X MPC. THIS IS BELIEVED DUE TO FLUSHING GAS TRAPPED IN PUMP OIL. (2) JAN. 20. DURING A REPAIR OF A GAS-FILLING TUBE, 76 CURIES WAS LOST, GIVING STACK DISCHARGE AS EITHER 9.05 X MPC (USING SUBMERSIBLE MPC) OR 1810 X MPC (USING SOLUBLE MPC). STACK WAS NOT BEING MONITORED THAT DAY.

\*INCIDENT, ACTUAL, EQUIPMENT + EFFLUENT + MONITOR, RADIATION, STACK + STACK + TRITIUM

18-15086  
PRELIMINARY SAFETY ANALYSIS REPORT, PEACH BOTTOM ATOMIC POWER STATION UNITS NO. 2 AND 3. VOLUME I  
PHILADELPHIA ELECTRIC COMPANY  
400 PAGES, FIGURES, TABLES, MARCH 2, 1967, DOCKET NO. 50-277, 50-278

TWO 3295-MW(TH) REACTORS (BROWNS FERRY CLASS) AT PEACH BOTTOM (HTGR) SITE, WITH NO. 2 COMMERCIAL OPERATION BY MARCH 1971 AND NO. 3 BY MARCH 1973. ANALYSIS FOR 3440 MW(TH) (TURBINE RATING). CONDENSING POND (WATER SUPPLY FOR BALTIMORE) WATER MOVEMENT EXTENSIVELY REPORTED. DRY WELL DESIGNED FOR 62 PSIG AT 281 F, WITH VARIOUS APPLIED LOADS. PRIMARY RELIEF VALVES RELIEVE TO SUPPRESSION POOL ON ISOLATION, AND A COOLING SYSTEM COOLS THE POOL. BOTH LOW- AND HIGH-PRESSURE COOLANT INJECTIONS ARE PROVIDED, AS WELL AS CORE SPRAY. MCA Doses ARE IN MILLIREMS, AS CREDIT IS TAKEN FOR FILTERED DRY-WELL LEAKAGE DISCHARGED UP THE STACK.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + EMERGENCY COOLING CONSIDERATIONS + PEACH BOTTOM 2 AND 3 + REACTOR, BOILING WATER + THERMAL ANALYSIS + THERMAL POLLUTION

18-15087  
PRELIMINARY SAFETY ANALYSIS REPORT, PEACH BOTTOM ATOMIC POWER STATION UNITS NO. 2 AND 3. VOLUME II  
PHILADELPHIA ELECTRIC COMPANY  
350 PAGES, FIGURES, TABLES, MARCH 1967, DOCKET NO. 50-277 AND 50-278

VOL. 2 CONTAINS ALL DRAWINGS AND 10 APPENDICES (A-J). (E) REVIEWS GE 1965 TESTS ON ELECTRICALLY HEATED RODS, 25 IN A SIMPLE CORE-SPRAY-EFFECTIVENESS TEST, 4 IN A BLOWDOWN HEAT-EXCHANGE TEST (G)--CORE THERMAL DESIGN PROCEDURES WERE MODIFIED, ALTHOUGH DESIGN CRITERIA WERE UNCHANGED. BRIEFLY REVIEWS REASONS FOR SETTING VARIOUS KW/FT LIMITS AND POWER-PEAKING FACTORS. (H)--USUAL COMPARISON WITH AEC DESIGN CRITERIA. (J)--INTEGRATED PERFORMANCE OF EMERGENCY COOLING SYSTEMS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, PRELIMINARY + AEC CONSTRUCTION PERMIT CRITERIA + BLOWDOWN + CORE SPRAY + EMERGENCY COOLING CONSIDERATIONS + PEACH BOTTOM 2 AND 3 + THERMAL CONSIDERATION

18-15088 ALSO IN CATEGORY 2  
POHM AND HAAS CONCERN ABOUT THERMAL POLLUTION OF DELAWARE RIVER MARCH 3  
PUBLIC SERVICE ELECTRIC AND GAS COMPANY  
1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(11), PAGE 26, (MARCH 20, 1967), DOCKET NO. 50-272

LETTER TO DRL EXPRESSES CONCERN THAT UNLESS HEATED RIVER WATER IS DISCHARGED WITH CARE, THE WARMED WATER WILL LEAD TO DECREASED OXYGEN CONTENT (DUE TO INCREASED BIOCHEMICAL ACTIVITY) AND INCREASED ECOLOGICAL PROBLEMS.

\*ECOLOGICAL CONSIDERATION + \*HEAT SINK + \*RIVER, GENERAL + BURLINGTON 1 + REACTOR, POWER + SITING, REACTOR

18-15092 ALSO IN CATEGORIES 5 AND 7  
GFIER JD  
FAST REACTOR TEST FACILITY (FARET). VOLUME II. SUMMARY OF PRELIMINARY SAFETY ANALYSIS  
ARGONNE NATIONAL LABORATORY, ILL.  
ANL-716P (VOL. 2) +. 179 PAGES, 46 FIGURES, 23 TABLES, 54 REFERENCES, APRIL 1966.

FOLLOWING AN INTRODUCTION (SECTION I) THIS REPORT CONSISTS OF TWO MAIN PARTS, THE FIRST OF WHICH DESCRIBES AND EVALUATES THE POSSIBLE CIRCUMSTANCES LEADING TO AND CULMINATING IN THE MAXIMUM CREDIBLE ACCIDENT. THIS ACCIDENT AND ITS SUBSEQUENT EFFECTS ON THE FARET SURROUNDINGS IS DESCRIBED IN SECTION II. THE SECOND MAIN PART OF THIS REPORT IS CONTAINED IN SECTION III. IT DESCRIBES THE RESULTS OF INVESTIGATIONS AND ANALYSES PERFORMED IN CONNECTION WITH THE FARET PSAR AND WHICH RESULTED IN CONDITIONS LESS SEVERE THAN THE MAXIMUM CREDIBLE ACCIDENT.

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-15092 \*CONTINUED\*

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*ACCIDENT, MAXIMUM CREDIBLE (MCA) + \*FARET (FAST ARGONNE REACTOR EXPERIMENT TEST) + ACCIDENT ANALYSIS + ACCIDENT MODEL + ACCIDENT, CONSEQUENCES + ACCIDENT, FUEL SLUMP + ACCIDENT, LOSS OF COOLANT + ACCIDENT, PROBABILITY OF + ACCIDENT, REFUELING + ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) + CONTAMINATION + CORE MELTDOWN + ENVIRONMENTAL CONDITION + FISSION PRODUCT RELEASE, GENERAL + MISSILE GENERATION AND PROTECTION

18-15125 ALSO IN CATEGORIES 11 AND 12

ACRS APPROVES TURKEY POINT CONSTRUCTION PERMIT  
U.S. ATOMIC ENERGY COMMISSION

PRESS REL. K-20 +. 1 PAGE, JANUARY 27, 1967, DOCKET NO. 50-250, 50-251

ACRS NOTES USE OF ACCUMULATORS FOR VERY RAPID INJECTION OF BORATED WATER AFTER A LOSS-OF-COOLANT ACCIDENT, AND POSITIVE MODERATOR COEFFICIENT, PLUS HURRICANE AND ASSOCIATED WAVES. ACRS FEELS REVIEW WILL BE NECESSARY LATER ON THE QUESTION OF CONTINUED OPERATION IF ONE OF TWO REDUNDANT ENGINEERED SAFEGUARDS BECOMES INOPERABLE.

AVAILABILITY - AEC, DIVISION OF PUBLIC INFORMATION, WASHINGTON, D. C. 20545

\*ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) + CONSTRUCTION PERMIT PROCESS + CONTAINMENT DESIGN + EMERGENCY COOLING CONSIDERATIONS + MODERATOR COEFFICIENT + REACTOR, PRESSURIZED WATER + REDUNDANCE + REVIEW + TURKEY POINT 3 + TURKEY POINT 4

18-15126 ALSO IN CATEGORIES 16 AND 12

ACRS APPROVES PALISADES POINT CONSTRUCTION PERMIT  
U.S. ATOMIC ENERGY COMMISSION

PRESS REL. K-18 +. 1 PAGE, JANUARY 24, 1967, DOCKET NO. 50-255

ACRS NOTES THAT EMERGENCY CORE-COOLING WILL BE DESIGNED TO PREVENT FUEL/CLAD DAMAGE AND LIMIT METAL-WATER REACTIONS TO 1% ON LOSS-OF-COOLANT ACCIDENTS. POSITIVE MODERATOR COEFFICIENT WILL BE EVALUATED AND MADE MORE NEGATIVE IF NECESSARY BY BURNABLE POISON. A METEOROLOGICAL PROGRAM WILL JUSTIFY USE OF MORE RAPID ATMOSPHERIC DIFFUSION THAN GIVEN IN TID-14844. HOWEVER, A CONTAINMENT IODINE-REMOVAL SYSTEM CAPABILITY IS PROVIDED.

AVAILABILITY - AEC, DIVISION OF PUBLIC INFORMATION, WASHINGTON, D. C. 20545

\*ACRS (ADVISORY COMMITTEE ON REACTOR SAFEGUARDS) + CONSTRUCTION PERMIT PROCESS + EMERGENCY COOLING CONSIDERATIONS + MODERATOR COEFFICIENT + PALISADES POINT + REACTOR, PRESSURIZED WATER + REVIEW + WIND STATISTICS

18-15257

CAMPANA RJ + BOLD F + DEXTER RW + HOMEYER WG + SARGENT WE + WALLACE WP  
FINAL SAFETY AND HAZARDS REPORT FOR THE SNAP-15A GENERATOR

GENERAL ATOMIC, SAN DIEGO

GA-4554 (REV.) +. 109 PAGES, FIGURES, TABLES, REFERENCES, OCTOBER 30, 1964

THE BASIC CRITERIA FOR THE USE OF PU-238 WERE ESTABLISHED, AND THE MAXIMUM CREDIBLE ACCIDENT TO THE SNAP-15A GENERATOR WAS DEFINED. THE MOST SERIOUS OF POSSIBLE ACCIDENTS WERE FOUND TO BE FIRE, IMPACT, AND LOSS. TEN TYPES OF TESTS WERE CONDUCTED TO PROVE THE ADEQUACY OF THE DESIGN AND THE SAFETY ASPECTS OF THE CAPSULE AND GENERATOR IN THE EVENT OF THE MAXIMUM CREDIBLE ACCIDENT. THE TESTS WERE - FIRE, THERMAL SHOCK, PRESSURE BURST, IMPACT, VIBRATION, HAMMER DROP, SALT-WATER CORROSION, FRESH-WATER CORROSION, AIR CORROSION, AND DOSE-RATE MEASUREMENT. VOL. I PRESENTS THE TEST PROGRAM RESULTS, VOL II PROCEDURES FOR HANDLING FUEL CAPSULES AND FUELED GENERATORS, AND VOL III IS THE HANDLING MANUAL FOR THE GENERATOR.

AVAILABILITY - CLEARINGHOUSE FOR FEDERAL SCIENTIFIC AND TECHNICAL INFORMATION, NATIONAL BUREAU OF STANDARDS, U.S. DEPT. OF COMMERCE, SPRINGFIELD, VA., \$3.00 COPY, \$0.65 MICROFICHE

\*HAZARDS ANALYSIS + \*SAFETY ANALYSIS + \*SAFETY ANALYSIS REPORT, GENERAL + CORROSION + DIRECT ENERGY CONVERSION DEVICES + FIRE + IMPACT SHOCK + PLUTONIUM + PRESSURE, INTERNAL + PROCEDURES AND MANUALS + RADIATION SAFETY AND CONTROL + SNAP 15 (SYSTEMS FOR NUCLEAR AUXILIARY POWER) + TEST, PROOF + VIBRATION

18-15265 ALSO IN CATEGORY 15

SURVEY OF ENVIRONMENTAL RADIOACTIVITY IN THE VICINITY OF INDIAN POINT STATION, FEBRUARY 1, 1966 THROUGH JULY 31, 1966

U. S. ATOMIC ENERGY COMMISSION

22 PAGES, FIGURES, TABLES, AUGUST 20, 1966, DOCKET NO. 50-3

AFTER 8 YEARS, THE PATTERN OF 30 SAMPLING POINTS WITHIN A 10-MILE RADIUS WAS CHANGED TO 11 POINTS WITHIN A 2-MILE RADIUS DOWNWIND/DOWNRIVER. DATA GIVEN ON ROUTINE MONITORING. NO. 14 ROILER HAD TUBE LEAKAGE (AIR EJECTOR OFFGAS SHOWED AR-41, N-13, KR-88, AND BA/LA-140 BUT NO IODINE). CHARCOAL MONITORS IN THE STACK SHOWED RADON DAUGHTERS, BUT NO IODINE. AIRBORNE ACTIVITY WAS UP IN JUNE AND JULY FROM WEAPONS TESTING. RIVER MUD AND ALGAE SHOWED COBALT AND MN-54, MOSTLY FROM WEAPONS TESTING.



CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-15265 \*CONTINUED\*

AVAILABILITY - UNITED STATES ATOMIC ENERGY COMMISSION PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SURVEY, RADIATION, ENVIRONMENTAL + FAILURE, PIPE + FALLOUT + HEAT EXCHANGER + INDIAN POINT 1 + REACTOR OFFGAS + REACTOR, PRESSURIZED WATER

18-15305 ALSO IN CATEGORIES 14 AND 17

THOMPSON TJ

DRL EXEMPTS MIT FROM 10CFR20 TO ALLOW TRITIUM DISCHARGE

MASS. INSTITUTE OF TECHNOLOGY, CAMBRIDGE, MASS.

1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(13), PAGE 25, (MARCH 27, 1967)

AFC EXEMPTS MIT REACTOR FROM 10 CFR 20.203(D) TO ALLOW DISCHARGE OF 20,000 GAL OF SECONDARY COOLANT CONTAMINATED WITH 12 CURIES OF TRITIUM. THE LIQUID WILL BE DISCHARGED TO SANITARY SEWER (AND CHARLES RIVER) SUCH THAT IT WILL BE REDUCED TO LESS THAN THE MPC.

\*EFFLUENT + \*TRITIUM + \*WASTE DISPOSAL, RIVER + REACTOR, HEAVY WATER + REACTOR, RESEARCH

18-15306 ALSO IN CATEGORIES 6 AND 17

EMMONS AH

UNIVERSITY OF MISSOURI REACTOR MEASURED VOID COEFFICIENT LOW

UNIVERSITY OF MISSOURI, COLUMBIA, MO.

1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(13), PAGE 26, (MARCH 27, 1967)

UNIVERSITY OF MISSOURI AT COLUMBIA REQUESTS (MARCH 6) CHANGE IN TECHNICAL-SPECIFICATION VOID COEFFICIENT FROM MORE NEGATIVE THAN MINUS 2 X 10 TO THE MINUS 3RD DELTA K PER % VOID TO MINUS 1.2 (THE MEASURED VALUE). EARLIER TRANSIENT ANALYSIS USED MINUS 1.11. COMPLETE VOIDING WILL GIVE ONLY 0.0058 DELTA K.

\*OPERATING LIMITS/TECHNICAL SPECIFICATIONS + MEASUREMENT, REACTIVITY + REACTOR, FLUX TRAP + REACTOR, RESEARCH + VOID COEFFICIENT

18-15307 ALSO IN CATEGORY 15

FREDRICKSON RL

IODINE INHALATION AT ABBOTT LABORATORIES, DEC. 20-26, 1966

ABBOTT LABORATORY, NORTH CHICAGO

2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(13), PAGES 29-30, (MARCH 27, 1967)

ABBOTT LABS., NORTH CHICAGO, ILL., REPORTS (JANUARY 29, 1967) THAT AN EMPLOYEE'S THYROID MEASURED 116% OF MAX. PERMISSIBLE BODY BURDEN (I-131). AIR-CONCENTRATION MEASUREMENTS DO NOT ACCOUNT FOR THIS. ALSO, A SIMILAR OPERATOR DID NOT SHOW THYROID ACCUMULATION.

\*INCIDENT, ACTUAL, GENERAL + \*PERSONNEL EXPOSURE, RADIATION + FISSION PRODUCT, IODINE + INHALATION + MAXIMUM PERMISSIBLE BODY BURDEN

18-15308 ALSO IN CATEGORY 15

FREDRICKSON RL

IODINE INHALATION AT ABBOTT LABORATORIES. JAN 30 - FEB. 5, 1967

ABBOTT LABORATORIES, NORTH CHICAGO, ILL.

1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(13), PAGE 30, (MARCH 27, 1967)

ABBOTT LABS., NORTH CHICAGO, ILL., REPORTS (FEB. 27, 1967) THAT AN EMPLOYEE AVERAGED 102% MAX. PERMISSIBLE BODY BURDEN OF I-131 (PEAK 158%) OVER FIVE DAYS. AIR-SAMPLING DATA SHOWS AVERAGE FOR A WEEK WAS 54% OF MPC, EXCEPT THAT NO SAMPLE WAS TAKEN JAN. 27. EMPLOYEE TERMINATED IN FEBRUARY 1967.

\*INCIDENT, ACTUAL, GENERAL + \*PERSONNEL EXPOSURE, RADIATION + FISSION PRODUCT, IODINE + INHALATION + MAXIMUM PERMISSIBLE BODY BURDEN

18-15309 ALSO IN CATEGORY 15

FORSCHER F

INHALATION OVEREXPOSURES OF 8 EMPLOYEES AT NUMEC APOLLO, PA.

NUCLEAR MATERIALS AND EQUIPMENT CORP., APOLLO, PA.

1 PAGE, ATOMIC ENERGY CLEARING HOUSE 13(13), PAGE 31, (MARCH 27, 1967)

NUMEC REPORTS (FEB. 20, 1967) 8 AIRBORNE EXPOSURES ABOVE 40 MPC-HOURS TO ENRICHED URANIUM. (1) TWO BLENDEPS (ONE TOOK 1500 MPC-HOURS) FOUND THAT CONTAMINATED GLOVES RELEASED AEROSOLS. (2) THREE MAJAC-MILL/FILTER CUTTERS BEAT DUST BAGS THROUGH OPEN HOOD-DOORS. (3) ONE FURNACE OPERATOR WAS INEXPERIENCED AND HAD JUST BEEN TRANSFERRED. (4) TWO INCINERATOR EXPOSURES WERE DUE TO NOT CONFINING ASHES DURING TRANSFER FROM INCINERATOR TO ASH BOX.

\*INCIDENT, ACTUAL, GENERAL + \*PERSONNEL EXPOSURE, RADIATION + FAILURE, ADMINISTRATIVE CONTROL + INHALATION

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-15310 ALSO IN CATEGORIES 15 AND 17  
FORSCHER F  
DETAILS OF NUMEC IRIIDIUM 192 RELEASE JAN. 14, 1967  
NUCLEAR MATERIALS AND EQUIPMENT CORP., APOLLO, PA.  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(13), PAGES 31-32, (MARCH 27, 1967)

NUMEC REPORTS (FEB. 13, 1967) THAT ABOUT NOON DURING DECAPSULATION OF 2000 CURIES OF IRIIDIUM-192, SIX PELLETS WERE CUT INTO WITH A HIGH-SPEED WHEEL. HOT-CELL AIRFLOW PATTERN WAS DISTURBED BY VARIOUS OPENINGS, INCREASED FILTER PRESSURE DROP, AND INTERACTION BETWEEN THE INTRACELL ALPHA-BOXES VENT SYSTEMS AND THE NORMAL HOT-CELL VENTILATION SYSTEMS. TWO OPERATORS RECEIVED ABOUT 1 REM AND WERE EXPOSED AT 125 MPC-HOURS. DOSIMETERS INDICATED ONLY 1/10 THE FILM-BADGE READINGS. CELL MODIFICATION WILL TAKE A MONTH.

\*HOT CELL + \*PERSONNEL EXPOSURE, RADIATION + \*VENTILATION SYSTEM + FAILURE, OPERATOR ERROR + INCIDENT, ACTUAL, HUMAN ERROR + MODIFICATION, SYSTEM OR EQUIPMENT

18-15311 ALSO IN CATEGORIES 14 AND 17  
BURTSVAVAGE EM  
US RADIUM CORP. LISTS 87 TRITIUM RELEASES JULY - DECEMBER 1966  
U.S. RADIUM CORP., BLOOMSBURG, PA.  
2 PAGES, ATOMIC ENERGY CLEARING HOUSE 13(13), PAGES 32-33, (MARCH 27, 1967)

U.S. RADIUM REPORTS (FEB. 17, 1967) 51 RELEASES OF TRITIUM (TO UNRESTRICTED AREAS) IN EXCESS OF MPC, AND 36 RELEASES OF TRITIUM (TO UNRESTRICTED AREAS) OF 10 TIMES THE LICENSED LIMITS. ALL WERE STACK DISCHARGES OF HTO FROM FOUR FACILITIES, CAUSED BY VARIOUS LEAKS.

\*AIRBORNE RELEASE + \*STACK + \*TRITIUM + EFFLUENT

18-15372  
CAROLINA POWER + LIGHT COMPANY, H. B. ROBINSON UNIT NO. 2, FIRST. SECOND. THIRD. SUPPLEMENTS TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
250 PAGES TO FIRST, 200 PAGES TO SECOND, 300 PAGES TO THIRD, 750 PAGES, FIGURES, TABLES TO FIRST, SECOND, AND THIRD SUPPLEMENTS TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, DECEMBER 1966, DOCKET 50-261

252 QUESTIONS, ARRANGED IN GROUPS AS FOLLOWS -

		I.	SITE		
		(4)	II	NOVEL FEATURES OF PLANT	
A	CONTROL	(5)	C	NET LOAD REJECTION	B AUTOMATIC LOAD
DISPATCH			(10)		(7)
III PLANT LAYOUT		(14)	V	PLANT SYSTEMS	IV
INSTRUMENTATION AND CONTROL		(25)	VI	ENGINEERED SAFEGUARDS	(70)
VII ACCIDENT ANALYSIS		(57)	VIII CONTAINMENT		
STRUCTURE		(57)			

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15373 ALSO IN CATEGORIES 2 AND 14  
QUESTION I.A. - PREOPERATIONAL ENVIRONMENTAL MONITORING PROGRAM FOR THE SITE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, DECEMBER 28, 1966, DOCKET NO. 50-261, H. B. ROBINSON UNIT NUMBER 2, FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, PAGE A-1

I. QUESTIONS CONCERNING THE SITE. A. DESCRIBE THE SCOPE OF THE PREOPERATIONAL ENVIRONMENTAL MONITORING PROGRAM, PARTICULARLY WITH REFERENCE TO THE NATURAL ACTIVITY OF THE WATER, FISH, AND LAKE BOTTOM.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + MONITOR, RADIATION, ENVIRONMENTAL + REACTOR, PRESSURIZED WATER + ROBINSON 2 + SURVEY, RADIATION, ENVIRONMENTAL

18-15374 ALSO IN CATEGORIES 2 AND 14  
QUESTION I B - BOATERS ON LAKE WITHIN EXCLUSION DISTANCE.  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, DECEMBER 28, 1966, DOCKET NO. 50-261, H.B. ROBINSON UNIT NUMBER 2, FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, PAGE B-1

WE NOTE THAT A CONSIDERABLE PORTION OF LAKE ROBINSON IS LOCATED WITHIN THE EXCLUSION DISTANCE

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-15374 \*CONTINUED\*

AND THAT THE IMMEDIATE VICINITY OF THE PLANT AND THE WATER INTAKES ARE ACCESSIBLE TO THE PUBLIC. IN VIEW OF THIS, DISCUSS THE HAZARDS THIS COULD INVOLVE DURING BOTH NORMAL AND EMERGENCY OPERATIONS. WHAT TYPE OF CONTROL WILL BE IMPLEMENTED TO PROTECT THE PUBLIC IN THESE AREAS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ADMINISTRATIVE CONTROLS AND PRACTICES + POPULATION DISTRIBUTION + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15375 ALSO IN CATEGORY 2  
QUESTION I C - PROTECTION OF LOCAL RESIDENTS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, DECEMBER 28, 1966, DOCKET NO. 50-261, H. B. ROBINSON UNIT NUMBER 2, FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, PAGE C-1

DISCUSS THE TYPE OF EMERGENCY ARRANGEMENTS WHICH WILL BE MADE TO PROTECT THE RESIDENTS WHO LIVE IN THE IMMEDIATE VICINITY (LESS THAN ONE MILE) OF THE PLANT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + POPULATION DISTRIBUTION + RADIATION SAFETY AND CONTROL + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15376 ALSO IN CATEGORY 2  
QUESTION I D - CHOICE OF COLUMBIA OR FLORENCE, S.C., AS POPULATION CENTER  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, 1 TABLE, DECEMBER 28, 1966, DOCKET NO. 50-261, H. B. ROBINSON UNIT NUMBER 2, FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, PAGE D-1-AND-D-2

DISCUSS THE POPULATION OF FLORENCE AND ITS CONTIGUOUS METROPOLITAN AREA TO SHOW WHY IT SHOULD NOT BE CONSIDERED AS THE NEAREST POPULATION CENTER OF 25,000 OR MORE, RATHER THAN COLUMBIA.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + POPULATION DISTRIBUTION + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15377 ALSO IN CATEGORY 9  
QUESTION II A (1) - COMMON CONTROL ROOM  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, 1 FIGURE, DECEMBER 28, 1966, DOCKET NO. 50-261, H. B. ROBINSON UNIT NUMBER 2, FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, PAGE A (1)-1-AND-A (1)-2

II. QUESTIONS ON NOVEL PLANT FEATURES. A. CONTROL. (1) PLEASE DESCRIBE THE CONTROL-ROOM LAYOUT AND LOCATE THE CONTROL BOARDS FOR EACH PLANT. DISCUSS YOUR REASONS FOR NOT LOCATING EACH BOARD IN A SEPARATE ROOM. IN THIS DISCUSSION, CONSIDER POSSIBLE INTERACTION OF ALARMS AND OPERATOR FUNCTION UNDER NORMAL AND ABNORMAL CONDITIONS FOR THESE TWO DIFFERENT-TYPE PLANTS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + BUILDING + CONTROL PANEL/ROOM + CONTROL, GENERAL + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15378 ALSO IN CATEGORIES 9 AND 14  
QUESTION II A (2) - WASTE DISPOSAL CONTROL BOARD  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, N. C.  
1 PAGE, DECEMBER 28, 1966, DOCKET NO. 50-261, H. B. ROBINSON UNIT NUMBER 2, FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, PAGE A(2)-1

DESCRIBE THE LOCATION AND FUNCTION OF THE WASTE-DISPOSAL CONTROL BOARD. WHAT INDICATIONS RELATING TO THE RELEASE OF CONTAMINATED WASTES ARE ON THIS BOARD AND ON THE MAIN CONTROL BOARD.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTROL PANEL/ROOM + CONTROL, GENERAL + REACTOR, PRESSURIZED WATER + ROBINSON 2 + WASTE DISPOSAL, GENERAL

18-15379  
QUESTION II A (3) - SHIFT-CREW COMPETENCE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, DECEMBER 28, 1966, DOCKET NO. 50-261, H. B. ROBINSON UNIT NUMBER 2, FIRST SUPPLEMENT TO

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-15379 \*CONTINUED\*  
PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, PAGES A (3)-1-AND-A (3)-2

INDICATE WHICH PERSONNEL WILL BE AT THE SITE DURING OFF-HOURS, AND THEIR ADEQUACY TO PROPERLY RESPOND TO THE MORE DEMANDING TYPES OF CREDIBLE ACCIDENTS AND POST-ACCIDENT REQUIREMENTS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + REACTOR, PRESSURIZED WATER + ROBINSON 2 + STAFFING, TRAINING, QUALIFICATION

18-15380 ALSO IN CATEGORY 9  
QUESTION II B (1) - AUTOMATIC-LOAD-DISPATCH DETAILS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
4 PAGES, 1 FIGURE, DECEMBER, 1966, DOCKET NO. 50-261, H.B. ROBINSON UNIT NUMBER 2, THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, PAGES B (1)(2)-1 TO B(1)(2)-4

B. AUTOMATIC LOAD-DISPATCH. (1) PROVIDE A DIAGRAM OF ALL COMPONENTS FROM THE COMPUTER TO THE TURBINE THROTTLE VALVE. WHAT INTERLOCKS OR OPERATOR ACTIONS DEFEAT THE SYSTEM. WHAT IS THE FREQUENCY OF DEMAND SIGNAL AND CHANGE REQUESTED PER DEMAND. DISCUSS FAILURE MODES AND REDUNDANCY, INCLUDING THAT OF RATE-LIMITING EQUIPMENT. ARE POWER DEMANDS CONTINUOUSLY RECORDED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTROL, COMPUTER + REACTOR POWER + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15381 ALSO IN CATEGORY 9  
QUESTION II B(2) - COMPONENT FUNCTION IN AUTOMATIC-LOAD-DISPATCH SYSTEM  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
4 PAGES, 1 FIGURE, DECEMBER, 1966, DOCKET NO. 50-261, H. B. ROBINSON UNIT NUMBER 2, THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, PAGES B (1)(2)-1-TO B(1)(2)-4

DESCRIBE THE FUNCTION OF EACH COMPONENT IN THE ALD SYSTEM PROPOSED.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTROL, COMPUTER + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15382 ALSO IN CATEGORY 9  
QUESTION II B (3) - OPERATOR INTERACTION WITH AUTOMATIC-LOAD-DISPATCH SYSTEM  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, DECEMBER 1966, DOCKET NO. 50-261, H.B. ROBINSON UNIT NUMBER 2, THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, PAGES B(3)-1 TO B(3)-2

INDICATE HOW THE CONTROL OPERATOR BECOMES AWARE THAT THE ALD SYSTEM HAS SIGNALLED FOR A CHANGE IN REACTOR POWER. DOES THE CONTROL OPERATOR KNOW THE NEW DEMAND SETTING. INDICATE THE MINIMUM AMOUNT AND RATE OF POWER CHANGE WHICH WOULD BE INDICATED TO THE OPERATOR.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTROL, COMPUTER + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15383  
QUESTION II B (4) - OPERATOR ACKNOWLEDGMENT OF NEW SIGNAL  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, DECEMBER 1966, DOCKET NO. 50-261, H.B. ROBINSON UNIT NUMBER 2, THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, PAGE B(4)-1

HAVE YOU GIVEN CONSIDERATION TO REQUIRING THAT THE OPERATOR ACKNOWLEDGE THE REQUEST BY THE COMPUTER BEFORE A NEW POWER SETTING IS MADE BY THE ALD SYSTEM. DISCUSS YOUR REASONING.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTROL, COMPUTER + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15384 ALSO IN CATEGORY 9  
QUESTION II B (5) - OPERATOR DISTINGUISHING ALD FROM ROD-WITHDRAWAL INCIDENT  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, DECEMBER 1966, DOCKET NO. 50-261, H.B. ROBINSON UNIT NUMBER 2, THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, PAGE B (5)-1

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-15384 \*CONTINUED\*

HOW WOULD THE OPERATOR DISTINGUISH BETWEEN ROD WITHDRAWAL DEMANDED BY THIS SYSTEM VERSUS AN UNCONTROLLED ROD WITHDRAWAL.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, CONTROL ROD WITHDRAWAL + CONTROL, COMPUTER + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15385

QUESTION II C (1) - STEAM-SYSTEM EQUIPMENT FOR NET LOAD REJECTION  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

1 PAGE, DECEMBER 1966, DOCKET NO. 50-261, H. B. ROBINSON UNIT NUMBER 2, FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, PAGE C (1)-1

C. NET LOAD REJECTION. (1) DESCRIBE THE EQUIPMENT PROVIDED IN THE STEAM SYSTEM WHICH PROVIDES CAPABILITY TO SAFELY MAINTAIN THE REACTOR AT CRITICAL AFTER A NET LOAD REJECTION.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOAD REJECTION + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15386

ALSO IN CATEGORY 6

QUESTION II C (2) - SYSTEM RESPONSE TO LOSS OF LOAD  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

1 PAGE, DECEMBER 1966, DOCKET NO. 50-261, H. B. ROBINSON UNIT NUMBER 2, FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, PAGE C (2)-1

PROVIDE PLOTS OF VALVE POSITION, S.G. AND PRIMARY PRESSURE AND LEVEL, STEAM-DUMPED CORE REACTIVITY AND POWER LEVEL, PRIMARY COOLANT FLOW RATE, CONTROL-ROD POSITION, AND TURBINE SPEED AS A FUNCTION OF TIME AFTER A NET LOAD REJECTION.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C.

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOAD REJECTION + REACTOR DYNAMICS + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15387

ALSO IN CATEGORY 9

QUESTION II C (3) - PROTECTIVE ACTION ON LOAD REJECTION IF CONTROL VALVES FAIL  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

1 PAGE, DECEMBER 1966, DOCKET NO. 50-261, H. B. ROBINSON UNIT NUMBER 2, FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, PAGE C (3)-1

DISCUSS THE AUTOMATIC ACTION THAT WILL TAKE PLACE TO PROTECT THE CORE, TURBINE, AND STEAM SYSTEM IF THE CONTROL VALVES FAIL TO OPERATE AS ASSUMED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOAD REJECTION + FATLURF, COMPONENT + PLANT PROTECTIVE SYSTEM + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15388

ALSO IN CATEGORY 9

QUESTION II C (4) - CHANGES TO CONTROL SYSTEM TO USE NET LOAD REJECTION  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

1 PAGE, DECEMBER 1966, DOCKET NO. 50-261, H. B. ROBINSON UNIT NUMBER 2, FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, PAGE C (4)-1

DISCUSS THE CHANGES MADE IN THE CONTROL-ROD DRIVE SPEED AND DELTA-T PROGRAMMER TO ACCOMMODATE THIS FEATURE. HOW ARE THE CRITERIA ON ROD-WORTH LIMITS AFFECTED DURING LOAD REJECTION.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOAD REJECTION + CONTROLLER + REACTOR POWER + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15389

ALSO IN CATEGORY 9

QUESTION II C (5) - SEPARABILITY OF SAFETY AND CONTROL IN NET-LOAD REJECTION CIRCUITS

CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

2 PAGES, DECEMBER 1966, DOCKET NO. 50-261, H. B. ROBINSON UNIT NUMBER 2, FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, PAGES C (5)-1 AND C(5)-2

DESCRIBE AND DIAGRAM THE CONTROL CIRCUITS WHICH SIGNAL FOR OPERATION OF THE ADDITIONAL VALVES IN THE STEAM SYSTEM. INDICATE WHAT INFORMATION FROM SENSORS IN THE PRIMARY AND SECONDARY SYSTEM WILL BE USED FOR CONTROLLING THESE VALVES. WILL THERE BE SEPARABILITY OF CONTROL AND

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-15389 \*CONTINUED\*  
SAFETY FUNCTION.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOAD REJECTION + CONTROL SYSTEM + INDEPENDENCE + REACTOR SAFETY SYSTEM + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15390 ALSO IN CATEGORY 9  
QUESTION II C (6) - BORON CHANGES REQUIRED  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, DECEMBER 1966, DOCKET NO. 50-261, H.B. ROBINSON UNIT NUMBER 2, FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, PAGE C (6)-1

IS ANY RAPID CHANGE IN BORON CONCENTRATION REQUIRED.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOAD REJECTION + CHEMICAL SHIM + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15391  
QUESTION II C (7) - SYSTEM OPERABILITY TESTS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, DECEMBER 1966, DOCKET NO. 50-261, H. B. ROBINSON UNIT NUMBER 2, FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, PAGE C (7)-1

DISCUSS PROOF TESTS FROM 100% POWER WHICH ARE PLANNED TO DEMONSTRATE PROPER OPERABILITY OF THE SYSTEM.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOAD REJECTION + CONTROLLER + REACTOR POWER + REACTOR, PRESSURIZED WATER + ROBINSON 2 + TEST, SYSTEM OPERABILITY

18-15392 ALSO IN CATEGORY 11  
QUESTION III A (1) - LOCATION (AND DAMAGE TO) CLASS-I EQUIPMENT  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, 1 FIGURE, DECEMBER 1966, DOCKET NO. 50-261, H.B. ROBINSON UNIT NUMBER 2, FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, PAGE A (1)-1

III. PLANT LAYOUT. A. DISCUSSION AND UPDATED DRAWINGS. (1) LOCATION OF ALL CLASS-I EQUIPMENT AND BUILDINGS. DISCUSS THE POTENTIAL DAMAGE (UNDER THE 0.2G EARTHQUAKE LOADINGS) WHICH COULD OCCUR AT THESE LOCATIONS AND DESCRIBE HOW PROTECTION IS PROVIDED. WHAT ALTERNATE EQUIPMENT IS PROVIDED TO BACK UP THIS CLASS-I EQUIPMENT FOR THE APPLICABLE POSTULATED ACCIDENTS.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + BUILDING + FOUNDATION ENGINEERING + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15393 ALSO IN CATEGORIES 11 AND 12  
QUESTION III A (2) - PIPING EXTERNAL TO CONTAINMENT  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, DECEMBER 1966, DOCKET NO. 50-261, H.B. ROBINSON UNIT NUMBER 2, THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, PAGES A(2)-1 AND A(2)-2

THE GENERAL LOCATION OF ALL PIPING PENETRATIONS AND PIPING RUNS EXTERNAL TO THE CONTAINMENT. FOR THOSE ASSOCIATED WITH THE ENGINEERED SAFEGUARDS, SHOW THE EXTERNAL PIPING AND VALVE LOCATIONS. INCLUDE LOCATION OF, AND CRITERIA FOR, NECESSARY MISSILE SHIELDING.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ENGINEERED SAFETY SYSTEM + MISSILE GENERATION AND PROTECTION + PIPING + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15394 ALSO IN CATEGORY 12  
QUESTION III A (3) - RADIATION SHIELDING FOLLOWING MCA  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE A(3)-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

UPDATED DRAWING AND DISCUSSION OF PLANT LAYOUT, INCLUDING AREAS IN THE AUXILIARY BUILDING WHERE ACCESS TO THE RECIRCULATION LOOPS OF THE SAFETY INJECTION SYSTEM IS REQUIRED. STATE

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-15394 \*CONTINUED\*

THE CRITERIA FOR THE LOCATION OF RADIATION SHIELDING WHICH WILL ENABLE THE OPERATOR TO PERFORM THE REQUIRED DUTY. WHAT IS THE DOSE CRITERION AT THESE LOCATIONS DURING THE 100% CORE-MELT MCA.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, MAXIMUM CREDIBLE (MCA) + CORE REFLOODING SYSTEM + REACTOR, PRESSURIZED WATER + ROBINSON 2 + SHIELDING

18-15395 ALSO IN CATEGORY 11

QUESTION III B - CONSEQUENCES OF TURBINE (BLADE) MISSILES  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
14 PAGES, 4 FIGURES, 4 TABLES, PAGES B-1 TO B-14 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

DISCUSS THE CONSEQUENCES OF A TURBINE-GENERATOR FAILURE IN WHICH MISSILES ARE GENERATED. REFERRING TO THE DRAWING PROVIDED IN A ABOVE, PRESENT AN ANALYSIS OF THE ABILITY OF ALL CRITICAL STRUCTURES AND COMPONENTS, INCLUDING THE CONTROL ROOM, TO MAINTAIN THE NO-LOSS-OF-FUNCTION CRITERIA IF THEY ARE IN A POTENTIAL TRAJECTORY OF SUCH MISSILES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, RALEIGH, NORTH CAROLINA

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ENGINEERED SAFETY SYSTEM + FAILURE, EQUIPMENT + HEAT SINK + MISSILE GENERATION AND PROTECTION + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15396 ALSO IN CATEGORIES 11 AND 2

QUESTION III C - CONCRETE REINFORCEMENT, SO PIECES WONT FALL DURING EARTHQUAKES  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE C-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

CLASS-I STRUCTURES (EXCLUDING CONTAINMENT) ARE DESIGNED USING A CRITICAL DAMPING OF 5.0 PERCENT. DISCUSS THE CRITERIA FOR PLACEMENT OF REINFORCING STEEL OR MESH STEEL IN ALL CLASS-I STRUCTURES (OTHER THAN CONTAINMENT) TO ENSURE THAT CRACKING OF CONCRETE WILL NOT RESULT IN LARGE PIECES FALLING DURING AN EARTHQUAKE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONCRETE + DAMPING + DISPLACEMENT, DESIGN FOR + EARTHQUAKE + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15397 ALSO IN CATEGORIES 1 AND 2

QUESTION III D - EQUIPMENT DESIGN CRITERIA FOR 0.2-G EARTHQUAKE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE D-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

FOR ALL CLASS-I EQUIPMENT OTHER THAN CONTAINMENT, STATE YOUR CRITERIA IN TERMS OF % YIELD STRESS OR % YIELD STRAIN TO ENSURE NO LOSS OF FUNCTION UNDER 0.2G EARTHQUAKE LOADINGS. FOR AREAS OF LOCAL HIGH STRESS CONCENTRATIONS, INDICATE IF CODE RULES ARE FOLLOWED.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + DESIGN CRITERIA + EARTHQUAKE ENGINEERING + EQUIPMENT DESIGN + INELASTIC BEHAVIOR + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15398 ALSO IN CATEGORIES 12 AND 16

QUESTION III E - PROTECTION AGAINST TORNADO-OR HURRICANE-DRIVEN MISSILES  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
3 PAGES, PAGE E-1 TO E-3 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

DISCUSS THE ABILITY OF ALL CLASS-I STRUCTURES AND SAFEGUARDS LOCATED EXTERNAL TO CLASS-I STRUCTURES TO WITHSTAND, WITHOUT LOSS OF FUNCTION, MISSILES GENERATED BY HURRICANES OR TORNADOES. WHAT SIZE AND VELOCITY CRITERIA ARE USED.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + DESTRUCTIVE WIND + ENGINEERED SAFETY SYSTEM + MISSILE GENERATION AND PROTECTION + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15399 ALSO IN CATEGORY 9

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-15399 \*CONTINUED\*

QUESTION III F - CONTROL-ROOM OCCUPATION DURING ELECTRICAL-SYSTEM FIRE  
CAROLINA LIGHT AND POWER COMPANY, RALEIGH, NORTH CAROLINA  
3 PAGES, PAGES F-1 TO F-3 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS  
REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

WE UNDERSTAND THAT THE CONTROL ROOM IS LOCATED ABOVE THE DIESEL GENERATOR AND SWITCH-GEAR  
ROOMS. IF A FIRE WERE TO OCCUR IN EITHER LOCATION, DISCUSS THE PROTECTION AVAILABLE TO ALLOW  
OPERATING PERSONNEL TO REMAIN IN THE CONTROL ROOM AND ALSO TO PROTECT VITAL CONTROL SYSTEMS.  
WHERE IS THE WIRING WHICH LEADS TO THE CONTROL SYSTEMS LOCATED.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTROL PANEL/ROOM + FIRE +  
REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15400 ALSO IN CATEGORY 1

QUESTION III G - QUALITY-CONTROL SYSTEM  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
7 PAGES, 1 FIGURE, PAGES G-1 TO G-7 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY  
ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

DISCUSS THE FABRICATION INSPECTION AND QUALITY CONTROL TECHNIQUES, AS WELL AS THE  
ORGANIZATIONS AND THEIR RESPONSIBILITY FOR INSPECTION AND QUALITY CONTROL, WHICH WILL BE USED  
IN FIELD FABRICATION OF CLASS-I ITEMS, EXCLUDING CONTAINMENT. PROVIDE INFORMATION TO  
ESTABLISH THE DEGREE OF INDEPENDENCE OF THE INSPECTION AND QUALITY CONTROL ORGANIZATIONS FROM  
PRODUCTION AND SCHEDULAR PRESSURES.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ENGINEERED SAFETY SYSTEM +  
QUALITY CONTROL + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15401 ALSO IN CATEGORY 11

QUESTION III H - MAIN SUMP LINER  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE H-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B.  
ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

WHERE IS THE LINER PLACED IN RELATION TO THE CONCRETE IN THE MAIN SUMP.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + BUILDING +  
CONTAINMENT SPRAY + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15402 ALSO IN CATEGORY 11

QUESTION III I - ADDITIONAL VERTICAL-SECTION DRAWINGS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, 11 FIGURES, PAGE I-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS  
REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

ONLY ONE VERTICAL SECTION DRAWING OF THE CONTAINMENT INTERNALS APPEARS IN THE APPLICATION.  
PLEASE PROVIDE SIMILAR DRAWINGS TO LOCATE ALL THE PRINCIPAL SYSTEM COMPONENTS AND SHIELDING.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + BUILDING +  
REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15403 ALSO IN CATEGORIES 9 AND 12

QUESTION IV - REDUNDANCY IN ENGINEERED SAFEGUARDS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGE A-1 AND A-2 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS  
REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

IV. INSTRUMENTATION AND CONTROL. A. DISCUSS THE REDUNDANCY CRITERIA FOR THE INSTRUMENTATION,  
RELAYS, WIRING, ETC., TO BE PROVIDED FOR THE CIRCUITRY OF THE REMOTELY OPERABLE COMPONENTS IN  
THE SAFEGUARDS SYSTEM (INCLUDING VALVES). DISCUSS WHETHER A SINGLE SHORT WILL DISABLE THE  
CONTROL CIRCUITS.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ENGINEERED SAFETY SYSTEM +  
REACTOR, PRESSURIZED WATER + REDUNDANCE + ROBINSON 2 + SINGLE-FAILURE CRITERION



CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-15404 ALSO IN CATEGORIES 9 AND 12  
QUESTION IV B - POST-MCA INSTRUMENTATION  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGE B-1 AND B-2 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS  
REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

STATE YOUR CRITERIA FOR PROVIDING INSTRUMENTS TO INDICATE THE REACTIVITY STATUS OF THE  
REACTOR, THE PRESSURE, TEMPERATURE, AND WATER LEVELS, AND ACTIVITY INSIDE THE CONTAINMENT  
AFTER THE MCA. DISCUSS THE DESIGN LIFETIME CRITERIA OF THE CRITICAL COMPONENTS ASSOCIATED  
WITH THIS EQUIPMENT WHEN OPERATED IN THE POST-MCA CONTAINMENT ENVIRONMENT.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + DESIGN CRITERIA +  
INSTRUMENTATION, GENERAL + INSTRUMENTATION, SHUTDOWN REACTIVITY + REACTOR, PRESSURIZED WATER +  
ROBINSON 2 + SYSTEM OPERABILITY IN ACCIDENT CONDITIONS

18-15405 ALSO IN CATEGORIES 11 AND 9  
QUESTION IV C - CONTAINMENT PRESSURE MONITORING SYSTEM  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE C-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B.  
ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

DESCRIBE THE LOCATION, TYPE OF DETECTOR, AND CIRCUITRY ASSOCIATED WITH THE  
CONTAINMENT-PRESSURE MONITORING SYSTEM. WILL A CONTINUOUS RECORDING OF CONTAINMENT PRESSURE  
BE MADE. IF THIS IS CONSIDERED UNNECESSARY, DISCUSS YOUR REASONING.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY +  
CONTAINMENT INSTRUMENTATION + PRESSURE, INTERNAL + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15406 ALSO IN CATEGORIES 9 AND 12  
QUESTION IV D - CONTROL-ROOM OPERABILITY IN CASE OF FIRE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGE D-1 AND D-2 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS  
REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

DISCUSS PROVISIONS INCORPORATED TO PREVENT CONTROL-ROOM FIRE. ANALYZE THE CONSEQUENCES OF THE  
CONTROL ROOM BECOMING UNINHABITABLE OR INEFFECTIVE. THIS SHOULD ALSO INCLUDE CONSIDERATION  
OF THE AVAILABILITY OF ENGINEERED SAFEGUARDS SYSTEMS POWER AND CONTROLS. WILL ALTERNATE  
CONTROL AREAS FOR OPERATION OF EMERGENCY EQUIPMENT BE FURNISHED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTROL PANEL/ROOM +  
ENGINEERED SAFETY SYSTEM + FIRE + REACTOR, PRESSURIZED WATER + ROBINSON 2 +  
SYSTEM OPERABILITY IN ACCIDENT CONDITIONS

18-15407 ALSO IN CATEGORIES 9 AND 12  
QUESTION IV E - ACCIDENT-CAUSED FAULTS DISABLING SAFEGUARDS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE E-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B.  
ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

WHAT ASSURANCES ARE THERE THAT FAULTS CREATED WITHIN WIRING AS A CONSEQUENCE OF BEING LOCATED  
IN THE POST-ACCIDENT ENVIRONMENT SHOULD NOT BE REFLECTED INTO ESSENTIAL SAFEGUARDS CIRCUITS  
EXTERNAL TO CONTAINMENT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ENGINEERED SAFETY SYSTEM +  
FAILURE, INSTRUMENT + REACTOR, PRESSURIZED WATER + ROBINSON 2 + SYSTEM OPERABILITY IN ACCIDENT CONDITIONS

18-15408 ALSO IN CATEGORIES 9 AND 12  
QUESTION IV F - INDEPENDENCE OF SAFETY AND CONTROL SYSTEMS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE F-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B.  
ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

PLEASE LIST THOSE INSTRUMENT CHANNELS WHICH PROVIDE BOTH SAFETY (SCRAM) AND CONTROL FUNCTIONS.  
CAN A SINGLE FAILURE WHICH INITIATES A CONTROL MALFUNCTION SIMULTANEOUSLY REMOVE THE  
REUNDANCY OF THOSE SAFETY CHANNELS DESIGNED TO TERMINATE SUCH A MALFUNCTION. IF SO PLEASE  
JUSTIFY YOUR DESIGN.

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-15408 \*CONTINUED\*

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTROL SYSTEM + INDEPENDENCE + PLANT PROTECTIVE SYSTEM + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15409 ALSO IN CATEGORIES 11 AND 9

QUESTION IV G - CONTAINMENT ISOLATION VALVES

CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

2 PAGES, PAGE G-1 AND G-2 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

SEVERAL LINES PENETRATE CONTAINMENT WHICH WOULD BE OPEN TO CONTAINMENT SUBSEQUENT TO MCA. HAS CONSIDERATION BEEN GIVEN TO PROVIDING DOUBLE, INDEPENDENT, AUTOMATIC ISOLATION VALVES ON SUCH LINES THAT ALSO TERMINATE IN OPEN (UNCONTAINED) SYSTEMS EXTERNAL TO CONTAINMENT. JUSTIFY YOUR ANSWER. WILL THE CONTAINMENT ISOLATION VALVES AUTOMATICALLY REOPEN (AFTER AN ACCIDENT) WHEN THE INITIATING PARAMETER (RADIATION, HIGH PRESSURE, ETC.) RETURNS TO A LOW VALUE AT THE SENSOR, OR IS A POSITIVE RESETTING ACTION REQUIRED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT PENETRATION, CLOSURE OF + CONTROL SYSTEM + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15410 ALSO IN CATEGORY 9

QUESTION IV H - ROD-POSITION INDICATION

CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

2 PAGES, PAGE H-1 AND H-2 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

ROD POSITION INDICATION AS MEASURED BY THE ELECTRICAL COIL STACKS (LVDTs) WILL BE READ OUT ON A RECORDER ON A (GROUP) SELECTED BASIS. SINCE ALL ROD POSITIONS WILL NOT BE INDICATED SIMULTANEOUSLY, DISCUSS WHY A STUCK ROD WOULD NOT GO UNNOTICED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTROL ROD + FAILURE, COMPONENT + INSTRUMENTATION, POSITION + INSTRUMENTATION, RECORDER + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15411 ALSO IN CATEGORY 9

QUESTION IV I - SEPARATE RECORDERS FOR FLUX CHANNELS

CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

1 PAGE, PAGE I-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

A TWO-PEN RECORDER IS PROVIDED TO RECORD AND INDICATE TWO LOG OR LINEAR FLUX CHANNELS IN TERMS OF COMPLETE COVERAGE (WITH VARIABLE GAIN) OR IN STEPS OF TWO DECADES. IN OUR OPINION, THIS CAN BE CONFUSING. DISCUSS THE CONSIDERATION THAT HAS BEEN GIVEN TO PROVIDING A SEPARATE RECORDER FOR THE LINEAR FLUX CHANNELS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + INSTRUMENTATION, POWER RANGE + INSTRUMENTATION, RECORDER + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15412 ALSO IN CATEGORIES 9 AND 10

QUESTION IV J - RELIABILITY OF DIESEL CONTROL SYSTEM

CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

1 PAGE, PAGE J-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

IN THE EVENT OF A SIMULTANEOUS LOSS-OF-COOLANT LOSS OF OUTSIDE POWER, A COMPLICATED AUTOMATIC SEQUENCING ACTION TAKES PLACE TO START THE DIESEL GENERATORS AND (UPON THE FAILURE OF A PARTICULAR SAFEGUARD) CONNECT THE ALTERNATE SAFEGUARD. DISCUSS THE RELIABILITY, REDUNDANCY, FAIL-SAFETY, AND SINGLE-FAILURE ASPECTS. IS THERE MANUAL OVERRIDE WHEN THE CONTROL SYSTEM TAKES INAPPROPRIATE ACTION (NOT MERELY A PASSIVE FAILURE). WHAT TYPE OF PREOPERATIONAL AND PERIODIC TESTS ARE PLANNED.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + ACCIDENT, LOSS OF COOLANT + ACCIDENT, LOSS OF POWER + CONTROL SYSTEM + EMERGENCY POWER, ELECTRIC + ENGINEERED SAFETY SYSTEM + GENERATOR, DIESEL + REACTOR, PRESSURIZED WATER + REDUNDANCE + ROBINSON 2 + SAFE FAILURE CRITERION + SAFETY ANALYSIS REPORT, PRELIMINARY + SINGLE-FAILURE CRITERION

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-15413 ALSO IN CATEGORIES 9 AND 10  
QUESTION IV K - ROD-POSITION INDICATION  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE K-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B.  
ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

DO THE LINEAR VARIABLE DIFFERENTIAL TRANSFORMERS USED FOR ROD-POSITION INDICATION REQUIRE FORCED AIR COOLING. IF SO, WHAT EFFECT CAN LOSS OF COOLING HAVE ON POSITION INDICATION ACCURACY.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + AUXILIARY COOLING + CONTROL ROD + ELECTRIC POWER, AUXILIARY + INSTRUMENTATION, POSITION + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15414 ALSO IN CATEGORY 9  
QUESTION IV L - INSTRUMENTATION RESPONSE TO HIGH AMBIENT TEMPERATURE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE L-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B.  
ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

HOW SOON AFTER A TOTAL LOSS OF CONTROL ROOM VENTILATION (INCLUDING AIR CONDITIONING AND FORCED AIR COOLING AT THE INSTRUMENT CABINETS) WOULD THE REACTOR INSTRUMENTATION SIGNALS BE DEGRADED BELOW ACCEPTABLE ACCURACIES.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTROL PANEL/ROOM + HIGH TEMPERATURE + INSTRUMENTATION, GENERAL + REACTOR, PRESSURIZED WATER + ROBINSON 2 + VENTILATION SYSTEM

18-15415 ALSO IN CATEGORY 9  
QUESTION IV M - EFFECT OF HIGH AMBIENT TEMPERATURE ON ION CHAMBERS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE M-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B.  
ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

PLEASE ANALYZE THE METHOD OF DETECTION AND EFFECTS OF LOSS OF FORCED AIR COOLING AT THE ION CHAMBERS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + AUXILIARY COOLING + FAILURE, COMPONENT + HIGH TEMPERATURE + INSTRUMENTATION, POWER RANGE + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15416 ALSO IN CATEGORY 9  
QUESTION IV N - INSTRUMENTATION OPERABILITY IN LOSS-OF-COOLANT ACCIDENTS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE N-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B.  
ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

DESCRIBE THE OPERATION OF THE MAIN COOLANT PUMPS AFTER PRIMARY-SYSTEM PIPE BREAKS OF DIFFERENT SIZES. DESCRIBE THE CIRCUITS WHICH SIGNAL FOR SUCH OPERATION. WHAT ARE THE CONSEQUENCES TO THE MAIN COOLANT PUMPS AND MOTORS IF THE INSTRUMENTATION FAILS TO OPERATE AS DESIGNED.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT + INSTRUMENTATION, PROCESS + MAIN COOLING SYSTEM + PUMP + REACTOR, PRESSURIZED WATER + ROBINSON 2 + SYSTEM OPERABILITY IN ACCIDENT CONDITIONS

18-15417 ALSO IN CATEGORY 11  
QUESTION V A (1) - SHIELDING AGAINST MISSILES FROM MAIN PUMPS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGES V(A)1-1 AND V(A)1-2 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

IT IS NOT STATED THAT PROTECTION WILL BE PROVIDED FOR MISSILES GENERATED FROM FAILURE OF A MAIN COOLANT PUMP. PLEASE DISCUSS THE ABILITY OF THE PRIMARY AND SECONDARY SYSTEM TO REMAIN INTACT UPON FAILURE OF THE IMPELLER, FLYWHEEL, OR ROTOR OF A MAIN COOLANT PUMP. ALSO, DISCUSS THE ABILITY OF THE MISSILE SHIELDING TO PRECLUDE SUCH MISSILES FROM DAMAGING THE CONTAINMENT LINER OR SAFEGUARDS SYSTEMS.

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-15417 \*CONTINUED\*  
AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT, HIGH PRESSURE MAIN COOLING SYSTEM + MISSILE GENERATION AND PROTECTION + PUMP + REACTOR, PRESSURIZED WATER + ROBINSON 2 + SHIELDING

18-15418 ALSO IN CATEGORY 11  
QUESTION V A (2) - MISSILE SHIELDING AGAINST PRESSURIZER FAILURE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE A(2)-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT,  
H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

ON PAGES 1-42, IT IS STATED THAT THE PRESSURIZER IS COMPLETELY ENCLOSED IN CONCRETE. WOULD THIS CONCRETE PROVIDE SUFFICIENT SHIELDING TO WITHSTAND MISSILES GENERATED FROM MASSIVE FAILURE OF THE PRESSURIZER.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONCRETE + MISSILE GENERATION AND PROTECTION + PRESSURIZER + REACTOR, PRESSURIZED WATER + ROBINSON 2 + SHIELDING

18-15419 ALSO IN CATEGORIES 9 AND 5  
QUESTION V B - SINGLE CONTROL-ROD EJECTION AFFECTING OTHER RODS BY MISSILE ACTION  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
4 PAGES, 1 FIGURE, PAGE B-1 TO B-4 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

PROVIDE A DRAWING OF THE CONTROL-ROD HOUSING ARRANGEMENT. DISCUSS IN DETAIL THE POSSIBILITY THAT A ROD EJECTION DUE TO CONTROL-ROD-DRIVE THIMBLE FAILURE COULD LEAD TO FAILURE OF ADJACENT THIMBLES. CONSIDER THE EFFECT OF THE THIMBLE HITTING THE MISSILE SHIELD ABOVE THE ROD HOUSINGS AND BEING DEFLECTED, CAUSING FAILURE OF ADJACENT THIMBLES.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, CONTROL ROD EJECTION + MISSILE GENERATION AND PROTECTION + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15420 ALSO IN CATEGORY 12  
QUESTION C (1) - DESIGN ADEQUACY OF PRIMARY-SYSTEM EQUIPMENT  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
13 PAGES, 1 TABLE, PAGES C (1)(A)-1 TO C(1)(F)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

EQUIPMENT CONSISTS OF REACTOR VESSEL, STEAM GENERATORS, PIPING AND PUMP CASINGS, AND PRESSURIZER. INFORMATION DESIRED CONCERNS CODE VESSEL CLASSIFICATIONS, QUALITY CONTROL, LEAKAGE DETECTION, FIELD WELDING, IN-SERVICE INSPECTION, EARTHQUAKE DESIGN CRITERION.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT, PRESSURE VESSEL + CONTAINMENT, PRESSURE VESSEL + DESIGN CRITERIA + DESIGN CRITERIA + EARTHQUAKE ENGINEERING + EARTHQUAKE ENGINEERING + EXAMINATION + EXAMINATION + HEAT EXCHANGER + HEAT EXCHANGER + PIPING + PIPING + PRESSURIZER + PRESSURIZER + QUALITY CONTROL + QUALITY CONTROL + REACTOR, PRESSURIZED WATER + REACTOR, PRESSURIZED WATER + ROBINSON 2 + ROBINSON 2 + TEST, LEAK LOCATION + TEST, LEAK LOCATION + WELDING + WELDING

QUESTION C (1) - DESIGN ADEQUACY OF PRIMARY-SYSTEM EQUIPMENT  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
13 PAGES, 1 TABLE, PAGES C (1)(A)-1 TO C(1)(F)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

EQUIPMENT CONSISTS OF REACTOR VESSEL, STEAM GENERATORS, PIPING AND PUMP CASINGS, AND PRESSURIZER. INFORMATION DESIRED CONCERNS CODE VESSEL CLASSIFICATIONS, QUALITY CONTROL, LEAKAGE DETECTION, FIELD WELDING, IN-SERVICE INSPECTION, EARTHQUAKE DESIGN CRITERION.

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18-15421 ALSO IN CATEGORY 11  
QUESTION V C (2) A - REACTOR VESSEL AND INTERNALS - NDT  
CAROLINA LIGHT AND POWER COMPANY, RALEIGH, NORTH CAROLINA  
5 PAGES, PAGES C(2)A-1 TO C(2)A-5 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

DETAILS OF THE SURVEILLANCE PROGRAM INDICATING LOCATION OF SAMPLE CAPSULES AND NUMBER AND TYPE OF SAMPLES. WHAT IS THE EXPECTED INTEGRATED FAST NEUTRON FLUX AT THE VESSEL WALL.

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-15421 \*CONTINUED\*

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT, PRESSURE VESSEL + CORE COMPONENTS, MISCELLANEOUS + NDT DATA (NIL DUCTILITY TRANSITION) + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15422 ALSO IN CATEGORIES 11 AND 5

QUESTION V C (2) (B) - BLOWDOWN FORCES ON REACTOR VESSEL INTERNALS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGES C (2) (B)-1 AND C (2) (B)-2 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

STATE THE MAGNITUDE OF FORCES ON THE REACTOR VESSEL INTERNALS DURING BLOWDOWN ACCIDENTS RESULTING FROM HOT-LINE OR COLD-LINE BREAKS, AND DISCUSS THE ABILITY OF THESE COMPONENTS TO WITHSTAND SUCH FORCES.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT + BLOWDOWN + CORE COMPONENTS, MISCELLANEOUS + HYDRODYNAMIC ANALYSIS + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15423 ALSO IN CATEGORY 11

QUESTION V C (2) (C) - EFFECT OF VESSEL INSULATION ON INSPECTION OR ON POST-MCA COOLING  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE C (2) (C)-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

INDICATE THE TYPE OF INSULATION (AND CLEARANCE) TO BE USED ON THE OUTER SURFACE OF THE VESSEL. IS THIS MATERIAL DESIGNED TO ALLOW FOR WATER FLOW IN CONTACT WITH THE VESSEL AFTER AN MCA. IS SUFFICIENT SPACE PROVIDED TO PERMIT UT OR OTHER METHODS OF INSPECTION.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT, PRESSURE VESSEL + EMERGENCY COOLING CONSIDERATIONS + REACTOR, PRESSURIZED WATER + ROBINSON 2 + TEST, NONDESTRUCTIVE + THERMAL INSULATION

18-15424 ALSO IN CATEGORY 11

QUESTION V C (2) (D) - THERMAL SHOCK TO REACTOR VESSEL AS A RESULT OF WATER INJECTION  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
5 PAGES, PAGES C (2) (D)-1 TO C (2) (D)-5 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2 DECEMBER 1966, DOCKET 50-261

SHOW THAT THE REACTOR VESSEL ACCOMMODATES AT THE END OF ITS FATIGUE LIFE THERMAL SHOCK DUE TO SAFETY INJECTION. STATE YOUR FAILURE CRITERION. ESTIMATE THE INITIAL VESSEL TEMPERATURE WHICH COULD CAUSE VESSEL FAILURE UPON INJECTION. RELATE THIS TO THE MAXIMUM DELAYED INJECTION TIME BEFORE VESSEL WALL TEMPERATURE COULD REACH THE LIMIT.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT, PRESSURE VESSEL + CORE REFLOODING SYSTEM + REACTOR, PRESSURIZED WATER + ROBINSON 2 + THERMAL MECHANICAL EFFECT

18-15425 ALSO IN CATEGORY 11

QUESTION V C (3) (A) - STEAM-GENERATOR TEST FOR STEAM-LINE-RUPTURE CONDITIONS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE C (3) (A)-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2 DECEMBER 1966, DOCKET 50-261

IT IS STATED THAT THE STEAM-GENERATOR TUBE SHEETS WILL REMAIN WITHIN 90% OF YIELD IN A STEAM-LINE-RUPTURE ACCIDENT. WILL A HYDROSTATIC TEST AT 100 F AND 3110 PSI SIMULATE THE LOAD CONDITIONS THAT WOULD APPLY STRESSES EQUIVALENT TO 90% OF YIELD AT 650 F AND PRESSURE EQUIVALENT TO THE PRIMARY-SYSTEM SAFETY-VALVE SETTING. IS AN AMPLE MARGIN TO FAILURE ASSURED BY THE 90%-YIELD CRITERIA. DISCUSS THE APPROPRIATENESS OF YOUR DESIGN LIMITS RELATING TO SECTION-III REQUIREMENTS.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, STEAM LINE RUPTURE + FAILURE, TUBING + HEAT EXCHANGER + REACTOR, PRESSURIZED WATER + ROBINSON 2 + TEST, NONDESTRUCTIVE

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-15426 ALSO IN CATEGORY 11  
QUESTION V D (1) - VENTILATION SYSTEM - COMPONENT LOCATION  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
4 PAGES, 1 FIGURE, PAGES D (1)-1 TO D (1)-4 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND  
SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2 DECEMBER 1966, DOCKET 50-261

PROVIDE A DIAGRAM OF THE LISTED VENTILATION SYSTEMS. LOCATE ALL INTERCONNECTIONS, VALVES,  
FANS, AND FILTERS

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + REACTOR, PRESSURIZED WATER +  
ROBINSON 2 + VENTILATION SYSTEM

18-15427 ALSO IN CATEGORY 11  
QUESTION V D (2) - POST-MCA CONTROL-ROOM FILTRATION AND OPERATOR DOSE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, 1 FIGURE, PAGES D (2)-1 AND D (2)-2 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND  
SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2 DECEMBER 1966, DOCKET 50-261

DESCRIBE THE POSTACCIDENT VENTILATION AND FILTRATION OF THE CONTROL ROOM. PLOT THE THYROID  
DOSE AS A FUNCTION OF TIME AFTER THE MCA RECEIVED DURING EGRESS FROM THE CONTROL ROOM OR IN  
AREAS INSIDE THE AUXILIARY BUILDING, ASSUMING 100% CORE MELTING. HOW WILL RESTRICTED EGRESS  
AFFECT THE ABILITY TO MANUALLY OPERATE SAFEGUARDS EQUIPMENT.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AFC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTROL PANEL/ROOM +  
DOSE CALCULATION, INTERNAL + FILTER + FISSION PRODUCT, IODINE + REACTOR, PRESSURIZED WATER + ROBINSON 2 +  
VENTILATION SYSTEM

18-15428 ALSO IN CATEGORY 11  
QUESTION V D (3) - CONTAINMENT PRESSURE-CONTROL SYSTEM  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE D (3)-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT,  
H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

DESCRIBE THE VALVE TYPE, ARRANGEMENT, AND CONTROL CIRCUIT TO BE USED TO MAINTAIN THE  
CONTAINMENT PRESSURE BELOW 0.3 PSIG. IS THIS AN AUTOMATIC CONTROL SYSTEM. IS IT DISABLED  
UPON ISOLATION.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT, HIGH PRESSURE +  
CONTROLLER + PRESSURE, INTERNAL + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15429 ALSO IN CATEGORY 11  
QUESTION V E (1) - LEAK RATE TESTING OF CONTAINMENT PENETRATION  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE E (1)-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT,  
H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

V.E. PENETRATION ISOLATION SYSTEM. STATE YOUR CRITERIA IN TERMS OF LEAKAGE THROUGH BOTH  
ELECTRICAL AND PIPING PENETRATIONS. WHAT TESTS AND EQUIPMENT WILL BE USED TO VERIFY THIS  
RATE. WHAT IS THE ACCURACY OF THE METHOD.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT PENETRATION +  
DESIGN CRITERIA + REACTOR, PRESSURIZED WATER + ROBINSON 2 + TEST, LEAK RATE

18-15430 ALSO IN CATEGORY 11  
QUESTION V E (2) - NEW ISOLATION-VALVE WATER-SEAL SYSTEM  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
4 PAGES, PAGES E (2)-1 TO E (2)-4 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY  
ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

DESCRIBE YOUR DIFFERENT ISOLATION-VALVE WATER-SEAL SYSTEM AND ITS OPERATION. HOW IS THE  
SYSTEM PERIODICALLY TESTED TO ENSURE INJECTION FLOW INTO ALL LINES PROVIDED WITH THE  
INJECTION SYSTEM. CAN THE SYSTEM BE TESTED FOR INJECTION FLOW DURING REACTOR OPERATION.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY +

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-15430 \*CONTINUED\*  
CONTAINMENT PENETRATION, CLOSURE OF + REACTOR, PRESSURIZED WATER + ROBINSON 2 + TEST, LEAK RATE

19-15431 ALSO IN CATEGORY 11  
QUESTION V E (3) - DETAILS OF ALL PIPING PENETRATIONS AND CLOSURES  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
15 PAGES, 1 FIGURE, PAGES E (3)-1 TO E (3)(M)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION  
AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

PROVIDE PIPING DIAGRAM, SHOW MISSILE SHIELDING, TYPES OF VALVES AND ACTUATION,  
INSTRUMENTATION, POWER SOURCE, PENETRATION TESTING.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT PENETRATION +  
CONTAINMENT PENETRATION, CLOSURE OF + REACTOR, PRESSURIZED WATER + REDUNDANCE + RELIABILITY, COMPONENT +  
ROBINSON 2 + TEST, LEAK RATE + VALVE

19-15433 ALSO IN CATEGORIES 2 AND 11  
QUESTION V G - INTEGRATED LEAK-RATE TEST AT DESIGN PRESSURE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE G-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B.  
ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

WILL PROVISIONS BE MADE FOR INSTALLING THE NECESSARY EQUIPMENT TO PERFORM AN ACCURATE  
INTEGRATED CONTAINMENT LEAK-RATE TEST AT DESIGN PRESSURE.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT, HIGH PRESSURE +  
PRESSURE, INTERNAL + REACTOR, PRESSURIZED WATER + ROBINSON 2 + TEST, LEAK RATE

19-15434 ALSO IN CATEGORY 5  
QUESTION V H - CORE THERMAL AND HYDRAULIC DESIGN  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
5 PAGES, 2 FIGURES, PAGES H(1)-1 TO H(3)-2 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND  
SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

PREFATORY STATEMENT - YOUR PRESENTATION CONSISTS OF EVALUATIONS OF STEADY STATE AND TRANSIENT  
DNR RATIOS AND FUEL TEMPERATURES FOR THE HOTTEST CORE LOCATION. A COMPLETE ASSESSMENT OF THE  
CONSERVATISM OF SAFETY REQUIRES SOME UNDERSTANDING OF THE CONDITION OF THE ENTIRE CORE SO WE  
CAN EVALUATE THE MARGINS AVAILABLE BEFORE LARGE NUMBERS OF FUEL RODS EXCEED DESIGN  
LIMITATIONS. THUS, OUR EVALUATION OF THE DESIGN MUST BE BASED ON THE OVERALL CORE CONDITION,  
AS WELL AS THAT OF THE SO CALLED HOT SPOT.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY +  
DNR (DEPARTURE FROM NUCLEATE BOILING) + HYDRODYNAMIC ANALYSIS + POWER DISTRIBUTION +  
REACTOR, PRESSURIZED WATER + ROBINSON 2 + THERMAL ANALYSIS

19-15435 ALSO IN CATEGORY 5  
QUESTION V H (1) - FRACTION OF CORE AT VARIOUS POWER DENSITIES  
CALIFORNIA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, 1 FIGURE, PAGE H (1)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS  
REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

PREPARE A DISTRIBUTION CURVE SHOWING THE FRACTION OF THE CORE (OR NUMBER OF RODS) OPERATING AT  
THE VARIOUS POWER LEVELS FOR DESIGN AND OVERPOWER CONDITIONS.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + POWER DISTRIBUTION +  
REACTOR, PRESSURIZED WATER + ROBINSON 2

19-15436 ALSO IN CATEGORY 5  
QUESTION V H (2) - NUMBER OF RODS EXCEEDING DNB RATIO  
CALIFORNIA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, 1 FIGURE, PAGES H (2)-1 AND H (2)-2 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND  
SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

USING THE STATISTICAL W-3 DNB CORRELATION AND THE ABOVE DISTRIBUTION, DETERMINE THE  
CORRESPONDING DNB RATIOS AND THE STATISTICAL NUMBER OF FUEL RODS THAT COULD EXPERIENCE DNB.

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CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-15436 \*CONTINUED\*

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY +  
DNB (DEPARTURE FROM NUCLEATE BOILING) + POWER DISTRIBUTION + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15437 ALSO IN CATEGORY 5

QUESTION V H (3) - DNB RATIO UNCERTAINTY ANALYSIS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGES H (3)-1 AND H (3)-2 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY  
ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

PERFORM AN UNCERTAINTY ANALYSIS BY ARBITRARILY ASSUMING CERTAIN ERRORS IN MAJOR PARAMETERS  
USED IN CALCULATING THE NUMBER OF RODS EXPERIENCING DNB. FOR EXAMPLE, CALCULATE THE NUMBER  
OF RODS WITH DNB, AS A FUNCTION OF POSSIBLE PERCENTAGE ERRORS IN THE DNB CORRELATION, POWER  
DISTRIBUTIONS, FLOW RATES, AND POWER LEVELS.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY +  
DNB (DEPARTURE FROM NUCLEATE BOILING) + ERROR ANALYSIS + POWER DISTRIBUTION + REACTOR, PRESSURIZED WATER +  
ROBINSON 2

18-15438 ALSO IN CATEGORIES 5 AND 12

QUESTION VI A - DETAILS OF ACCUMULATOR SYSTEM FOR RAPID CORE REFLOODING  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
14 PAGES, 2 FIGURES, PAGES A (1)-1 TO A (12)-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND  
SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

VI. ENGINEERED SAFEGUARDS. (A). TWELVE QUESTIONS ABOUT VARIOUS DESIGN, EQUIPMENT, AND  
PERFORMANCE DETAILS REQUESTED FOR ACCUMULATOR SYSTEM FOR RAPID INJECTION OF BORATED WATER  
INTO REACTOR VESSEL FOLLOWING A PRIMARY-PIPE RUPTURE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CORE REFLOODING SYSTEM +  
REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15439 ALSO IN CATEGORIES 5 AND 12

QUESTION VI B (1) SAFETY INJECTION SYSTEM  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE B (1)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT,  
H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

VI B. SAFETY INJECTION SYSTEM. (1) WHAT CRITERIA PERTAINING TO PIPE MOTION UNDER  
HYPOTHETICAL EARTHQUAKE FORCES WILL BE USED IN THE DESIGN OF THE PIPING AND NOZZLES  
ASSOCIATED WITH THE INJECTION LINES CONNECTED TO THE PRIMARY SYSTEM.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CORE REFLOODING SYSTEM +  
EARTHQUAKE ENGINEERING + PIPING + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15440 ALSO IN CATEGORIES 11 AND 5

QUESTION VI B (2) - THERMAL SHOCK TO VESSEL NOZZLES FOLLOWING A SAFETY INJECTION  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGES B (2)-1 AND B (2)-2 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY  
ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

ASSUME THAT SAFETY INJECTION HAS BEEN DELAYED FOLLOWING A PIPE RUPTURE AND THAT THE  
TEMPERATURE OF THE PRIMARY PIPE AND INJECTION NOZZLE HAS INCREASED. WILL THE THERMAL SHOCK  
UPON INJECTION BE ACCOMMODATED BY THE NOZZLE WITHOUT FAILURE. WHAT IS THE LIMITING INITIAL  
TEMPERATURE.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT +  
CONTAINMENT, PRESSURE VESSEL + CORE REFLOODING SYSTEM + REACTOR, PRESSURIZED WATER + ROBINSON 2 +  
THERMAL MECHANICAL EFFECT

18-15441 ALSO IN CATEGORY 12

QUESTION VI R (3) - SAFETY-INJECTION-PUMP-HEAD CURVES  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, 2 FIGURES, PAGE B (3)-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY  
ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

PLOT THE APPROXIMATE HORSEPOWER REQUIREMENTS AND FLOW AS A FUNCTION OF DISCHARGE PRESSURE FOR



CATEGORY 1A  
SAFETY ANALYSIS AND DESIGN REPORTS

18-15441 \*CONTINUED\*

THE RESIDUAL-HEAT-REMOVAL PUMPS, CHARGING PUMPS, AND THE HIGH-HEAD INJECTION PUMPS.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CORE REFLOODING SYSTEM + PUMP + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15442 ALSO IN CATEGORIES 9 AND 12

QUESTION VI B (4) - INSTRUMENTS TO VERIFY SAFETY INJECTION

CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

1 PAGE, PAGE B (4)-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. R. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

DESCRIBE WHAT METHODS AND INSTRUMENTS ARE AVAILABLE UNDER POSTACCIDENT CONDITIONS TO VERIFY THAT SAFETY INJECTION OR CORE DOUSING IS OPERATING TO COVER THE CORE.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CORE REFLOODING SYSTEM + INSTRUMENTATION, PROCESS + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15443 ALSO IN CATEGORIES 11 AND 12

QUESTION VI B (5) - EARTHQUAKE EFFECT ON WATER STORAGE TANK

CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

1 PAGE, PAGE B (5)-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. R. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

PROVIDE DETAILS OF THE REFUELING-WATER STORAGE TANK. PRESENT THE RESULTS AND METHODS OF A DETAILED STRESS ANALYSIS THAT INDICATES THAT THE TANK CAN WITHSTAND THE STRESSES DUE TO A HYPOTHETICAL EARTHQUAKE. WHAT IS YOUR ALLOWABLE STRESS CRITERION FOR THESE LOADS.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CORE REFLOODING SYSTEM + EARTHQUAKE ENGINEERING + REACTOR, PRESSURIZED WATER + ROBINSON 2 + STORAGE CONTAINER

18-15444 ALSO IN CATEGORY 12

QUESTION VI B (6) - EARTHQUAKE ENGINEERING OF PIPE FROM STORAGE TANKS

CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

2 PAGES, 1 FIGURE, PAGES B (6)-1 AND B (6)-2 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. R. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

DESCRIBE THE ENVIRONMENT AND DESIGN DETAILS OF THE SINGLE HEADER LEADING FROM THE REFUELING WATER STORAGE TANK UP TO THE VARIOUS PUMP INTAKES. ALSO PROVIDE A STRESS ANALYSIS SIMILAR TO THAT REQUESTED IN VI B (5) ABOVE.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CORE REFLOODING SYSTEM + EARTHQUAKE ENGINEERING + EQUIPMENT DESIGN + PIPING + REACTOR, PRESSURIZED WATER + ROBINSON 2 + STORAGE CONTAINER

18-15445 ALSO IN CATEGORY 12

QUESTION VI B (7) - BACKUP FOR SINGLE PIPE IN HIGH-HEAD SYSTEM

CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

2 PAGES, PAGES B (7)-1 AND B (7)-2 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. R. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

THERE APPEARS TO BE ONLY A SINGLE HIGH-PRESSURE PIPE LEADING FROM THE HIGH-HEAD PUMP DISCHARGE TO THE INJECTION SYSTEM IN THE CONTAINMENT. DISCUSS WHETHER THERE IS A BACKUP TO THE HIGH-HEAD INJECTION SYSTEM, AND ANALYZE THE CONSEQUENCES, ASSUMING ONLY THAT THE BACKUP OPERATES FROM DIESEL POWER. THIS SHOULD BE DONE FOR A SPECTRUM OF SMALL BREAK SIZES.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CORE REFLOODING SYSTEM + EMERGENCY POWER, ELECTRIC + REACTOR, PRESSURIZED WATER + REDUNDANCE + ROBINSON 2 + SINGLE-FAILURE CRITERION

18-15446 ALSO IN CATEGORY 5

QUESTION VI B (8) - PRESSURE SAFETY MARGIN IN HIGH-HEAD INJECTION SYSTEM

CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

1 PAGE, PAGE B (8)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. R. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-15446 \*CONTINUED\*

DISCUSS THE SAFETY MARGIN BETWEEN EXPECTED OPERATING PRESSURES AND THE DESIGN PRESSURES OF THE SYSTEMS DISCUSSED IN VI B (7) ABOVE. WHAT TYPE OF FAILURE COULD LEAD TO PRESSURES IN EXCESS OF DESIGN PRESSURE.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CORE REFLOODING SYSTEM + FAILURE, PIPE + PRESSURE, INTERNAL + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15447 ALSO IN CATEGORY 5

QUESTION VI B (9) - PIPING CODE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE B (9)-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT,  
H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

STATE THE PIPING CODE USED FOR EACH PIPING RUN SHOWN ON FIGURE 6-1.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CODES AND STANDARDS + CORE REFLOODING SYSTEM + DESIGN CRITERIA + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15448 ALSO IN CATEGORIES 5 AND 12

QUESTION VI B (10) - HIGH-HEAD INJECTION VS RECIRCULATION  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE B (10)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT,  
H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

IN FIGURE 6-1 IT APPEARS THAT PROVISIONS HAVE BEEN MADE TO PERMIT HIGH-HEAD INJECTION AFTER RECIRCULATION HAS BEEN STARTED. DISCUSS THE CIRCUMSTANCES THAT WOULD REQUIRE SUCH OPERATION. IS OPERATION OF A RESIDUAL-HEAT-REMOVAL PUMP REQUIRED. IF SO, DISCUSS THE INDEPENDENCE AND RELIABILITY OF THIS MODE OF OPERATION.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CORE REFLOODING SYSTEM + FLOW, RECIRCULATION + INDEPENDENCE + REACTOR, PRESSURIZED WATER + RELIABILITY, SYSTEM + ROBINSON 2 + SHUTDOWN COOLING SYSTEM

18-15449 ALSO IN CATEGORY 12

QUESTION VI C (1) - RELIEF VALVES FOR EXTERNAL RECIRCULATION COOLING LOOP  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGES C (1)-1 AND C (1)-2 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

SECTION VI C. EXTERNAL RECIRCULATION COOLING LOOP. (1) WHEN FIGURE 6-1 IS REVISED, PLEASE INCLUDE ALL RELIEF VALVES AND ASSOCIATED PIPING IN THE REVISION. DESCRIBE THE BASIS FOR SIZING EACH RELIEF VALVE. IF RELIEF IS TO OTHER THAN A CLOSED SYSTEM OR CONTAINMENT, DISCUSS THE CONSEQUENCES OF RELEASE OF CONTAMINATED WATER TO THE ENVIRONMENT.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + FLOW, RECIRCULATION + PRESSURE RELIEF + REACTOR, PRESSURIZED WATER + ROBINSON 2 + VALVE

18-15450 ALSO IN CATEGORY 12

QUESTION VI C (2) - PROTECTION FOR SINGLE SUMP LINE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE C (2)-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT,  
H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

DISCUSS THE LOCATION OF THE SINGLE SUMP RETURN LINE FOR RECIRCULATION AND PROTECTION PROVIDED TO PREVENT DAMAGE UP TO THE RESIDUAL-HEAT-REMOVAL PUMPS. WHAT MARGIN IS INCORPORATED IN THE DESIGN TO WITHSTAND FORCES (EARTHQUAKE, PRESSURE, AND TEMPERATURE) WITHOUT LOSS OF FUNCTION. ARE WORKING STRESS LIMITS EXCEEDED UNDER HYPOTHETICAL EARTHQUAKE LOADINGS.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CORE REFLOODING SYSTEM + DESIGN CRITERIA + EARTHQUAKE ENGINEERING + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15451 ALSO IN CATEGORY 12

QUESTION VI C (3) - DEBRIS PICKUP FROM CONTAINMENT SUMP  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-15451 \*CONTINUED\*  
2 PAGES, 1 FIGURE, PAGES C (3)-1 AND C (3)-2 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

STATE CRITERIA AND PROVIDE DRAWING FOR SIZE OF DEBRIS WHICH WILL BE SCREENED FROM ENTRY TO THE RECIRCULATION SYSTEM. WHAT SIZE DEBRIS WOULD RESULT IN FLOW RESTRICTIONS OR FAILURE. WHAT IS THE INLET VELOCITY. HOW MUCH WATER MUST BE INJECTED IN THE CONTAINMENT BEFORE RECIRCULATION CAN BEGIN. DESCRIBE THE OPERATIONAL PROGRAM TO REMOVE CONSTRUCTION DEBRIS ACCUMULATED IN THE PIPING. OF PARTICULAR INTEREST ARE THE SUMP RETURN AND CONTAINMENT SPRAY LINES.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CORE REFLODDING SYSTEM + FLOW BLOCKAGE + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15452 ALSO IN CATEGORY 12  
QUESTION VI C (4) - REDUNDANCE OF COMPONENTS IN RECIRCULATION LOOP  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE C (4)-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

WHICH COMPONENTS IN THE LOOP WILL BE ALLOWED TO BE INOPERABLE DURING REACTOR OPERATION. IS REDUNDANCY OF FUNCTION STILL AVAILABLE.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CORE REFLODDING SYSTEM + REACTOR, PRESSURIZED WATER + REDUNDANCE + ROBINSON 2

18-15453 ALSO IN CATEGORY 12  
QUESTION VI C (5) - RECIRCULATION COOLING RESPONSE FOLLOWING MCA  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, 3 FIGURES, PAGE C (5)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, (H. B. ROBINSON UNIT NUMBER 2,) DECEMBER 1966, DOCKET 50-261

PROVIDE A PLOT OF PRESSURES AND TEMPERATURES IN THE RESIDUAL HEAT REMOVAL, COMPONENT COOLING, AND SERVICE WATER SYSTEMS AS A FUNCTION OF TIME AFTER THE ACCIDENT. ASSUME MINIMUM SAFEGUARDS.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT + CORE REFLODDING SYSTEM + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15454 ALSO IN CATEGORY 12  
QUESTION VI C(6)- AUXILIARY BUILDING VENTILATION  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
3 PAGES, PAGES C (6)-1 TO C (6)-3 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

DESCRIBE DETAILED CRITERIA FOR LEAK TIGHTNESS OR POSITIVE FLOW OF AIR IN THE PRIMARY AUXILIARY BUILDING THROUGH THE FILTER UNITS. DESCRIBE THE PROVISIONS AT THE ENTRANCES TO MAINTAIN A VACUUM. WHAT IS THE FLOW RATE, VACUUM, MOTOR AND FAN SIZE, AND DUCT LOCATION OF THE EXHAUST SYSTEM. DESCRIBE THE FILTERS AND INDICATE REDUNDANCY AND VALVING. COMPARE THE LARGEST INLEAKAGE THAT COULD BE ACCOMMODATED BY THE BUILDING VENTILATION SYSTEM WITH THE MAXIMUM LEAKAGE DUE TO PACKING OR SEAL FAILURE IN ONE OF THE PUMPS OR VALVES.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + BUILDING + CORE REFLODDING SYSTEM + DESIGN CRITERIA + REACTOR, PRESSURIZED WATER + ROBINSON 2 + VENTILATION SYSTEM

18-15455  
QUESTION VI D - COMPONENT COOLING LOOP DETAILS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
9 PAGES, PAGES D (1)(A)-1 TO D (1)(I)-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, AND PAGE D (1)(G)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, (H. B. ROBINSON UNIT NUMBER 2,) DECEMBER 1966, DOCKET 50-261

NINE QUESTIONS ASKED ON DETAIL OF DESIGN, COOLANT VOLUMES AND SURGE CAPACITIES, LEAKAGE FROM RESIDUAL-HEAT-REMOVAL LOOP, AND USE OF CC LOOP IN ENGINEERED SAFEGUARDS.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + AUXILIARY COOLING + REACTOR, PRESSURIZED WATER + ROBINSON 2

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-15456

QUESTION VI E - SERVICE WATER SYSTEM DETAIL  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, 1 FIGURE, PAGES E-1 AND E-2 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

PROVIDE A DRAWING OF THE SYSTEM. INDICATE THE TYPES OF VALVES, AND DISCUSS THE ABILITY TO RAPIDLY ISOLATE PORTIONS OF THE SYSTEM NOT PROTECTED ACCORDING TO CLASS-I CRITERIA. WHAT FLOW RATE IS REQUIRED TO OPERATE THE FANCOOLER AND THE COMPONENT COOLING LOOP.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + AUXILIARY COOLING + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15458

ALSO IN CATEGORIES 12 AND 7

QUESTION VI F (2) - DESIGN CRITERIA FOR FAN COOLER FILTER  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE F (2)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

STATE THE DESIGN CRITERIA FOR THE PARTICLE FILTERS AND DEMISTERS IN THE FAN-COOLER SYSTEM. WHAT PRESSURE DROP IS ASSUMED ACROSS THE DEMISTER.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT AIR COOLING + DESIGN CRITERIA + FILTER + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15459

ALSO IN CATEGORIES 12 AND 11

QUESTION VI G (1) - CONTAINMENT-SPRAY DESIGN DETAILS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
6 PAGES, PAGE G(1)(A)-1 TO G(1)(F) OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, (H. B. ROBINSON UNIT NUMBER 2,) DECEMBER 1966, DOCKET 50-261

SIX QUESTIONS ON THE CONTAINMENT SPRAY/SODIUM THIOSULFATE SOLUTION SYSTEM. (A) REDUNDANCY OF EQUIPMENT. (E)(B) RECRYSTALLIZATION PROBLEMS. (C) CHECKING PIPING FOR FLOW RESTRICTIONS. (D) REFRESHING SOLUTION. (F) PERIODIC FLOW-RATE CHECKS.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT SPRAY + FISSION PRODUCT RETENTION + REACTOR, PRESSURIZED WATER + ROBINSON 2 + TEST, SYSTEM OPERABILITY

18-15460

ALSO IN CATEGORIES 11 AND 12

QUESTION VI G (2) - CONTAINMENT SPRAY SYSTEM (SODIUM THIOSULPHATE) TESTING PROGRAM  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
5 PAGES, PAGE G (2)(A),(B)-1 TO G(2)(E)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

FIVE QUESTIONS - (A) DETAILS OF PROPOSED TEST PROGRAM. (B) EFFECTIVENESS AGAINST VARIOUS FORMS OF IODINE, PARTICULARLY AFTER REFUSE. (C) LIST OF PARAMETERS TO BE STUDIED. (D) SCALEUP FACTORS. (E) WHAT WILL YOU DO IF THE R AND D PROGRAM SHOWS SYSTEM WILL NOT BE AS EFFECTIVE AS DESIRED.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT SPRAY + FISSION PRODUCT RETENTION + REACTOR, PRESSURIZED WATER + RESEARCH AND DEVELOPMENT PROGRAM + ROBINSON 2

18-15461

ALSO IN CATEGORY 10

QUESTION VI H - DETAILS OF EMERGENCY POWER SOURCE (DIESELS)  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
6 PAGES, PAGE H(1)-1 TO H(5)-1 OF FIRST SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, (H. B. ROBINSON UNIT NUMBER 2,) DECEMBER 1966, DOCKET 50-261

FIVE QUESTIONS - (1) FUEL STORAGE AND RELIABILITY OF FULL SUPPLY. (2) TIME REQUIRED TO START AND BRING UP TO LOAD. (3) POWER RATING OF EACH UNIT. (4) REDUNDANCE OF DIESEL STARTING POWER. (5) FIRE PROTECTION.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + EMERGENCY POWER, ELECTRIC + GENERATOR, DIESEL + REACTOR, PRESSURIZED WATER + REDUNDANCE + RESPONSE TIME + ROBINSON 2

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-15462 ALSO IN CATEGORIES 11 AND 12  
QUESTION VII A (1) - POST-ACCIDENT CONTAINMENT PRESSURES  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
19 PAGES, 23 FIGURES, PAGE A(1)(A), (B)(C)-1-TO-A(1)(N)-2 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY  
DESCRIPTION AND SAFETY ANALYSIS REPORT, (H. B. ROBINSON UNIT NUMBER 2,) DECEMBER 1966, DOCKET 50-261

FOURTEEN QUESTIONS TO ENABLE DRL TO ASCERTAIN ADEQUACY OF CONTAINMENT TO WITHSTAND  
POSTACCIDENT PRESSURES. INCLUDES MANY PLOTS OF PRESSURE VS TIME FOR VARIOUS CONDITIONS  
(METAL-WATER REACTIONS, ONE OF THREE SAFEGUARDS WORKING, ETC.).

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT +  
CONTAINMENT DESIGN + CONTAINMENT, HIGH PRESSURE + PERFORMANCE LIMIT + PRESSURE, INTERNAL +  
REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15463  
QUESTION VII A 1 (A,B,C) - POST MCA CONTAINMENT PRESSURES  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
4 PAGES, 4 FIGURES, PAGE A.(1)(A),(B),(C)-1-TO-A.(1)(A),(B),(C)-4 OF THIRD SUPPLEMENT TO PRELIMINARY  
FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, (H. B. ROBINSON UNIT NUMBER 2,) DECEMBER 1966, DOCKET  
50-261

PLOT THE CONTAINMENT PRESSURE USING YOUR MODEL (A) ASSUMING THAT ALL HEAT PRODUCES STEAM, NO  
CORE COOLING BUT THE OTHER MINIMUM SAFEGUARDS OPERATE, (B) ASSUMING THAT THE MINIMUM  
SAFEGUARDS ARE 25% AND 50% LESS EFFECTIVE THAN DESIGNED, (C) ASSUMING THAT THE ACCUMULATORS  
OPERATE ALONG WITH MINIMUM INJECTION.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT +  
CONTAINMENT DESIGN + CONTAINMENT, HIGH PRESSURE + CORE REFLOODING SYSTEM +  
EMERGENCY COOLING CONSIDERATIONS + PRESSURE, INTERNAL + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15464 ALSO IN CATEGORIES 12 AND 5  
QUESTION VII A (1)(D) AND (G) - REACTOR-VESSEL WATER LEVEL FOLLOWING PIPE RUPTURE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, 5 FIGURES, PAGES A(1)(D)-1 AND A(1)(G)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION  
AND SAFETY ANALYSIS REPORT, (H. B. ROBINSON UNIT NUMBER 2,) DECEMBER 1966, DOCKET 50-261

PLOT WATER LEVEL IN THE REACTOR VESSEL AS A FUNCTION OF TIME FOLLOWING A SPECTRUM OF BREAK  
SIZES, ASSUMING (1) THAT TWO ACCUMULATORS OPERATE AND (2) THAT ONLY ONE OPERATES. IN BOTH  
CASES ASSUME THAT THE MINIMUM INJECTION FLOW EXISTS AFTER ACCUMULATOR INJECTION. (G) PLOT  
CORE REACTIVITY AND POWER AS A FUNCTION OF TIME FOR DIFFERENT SIZE BREAKS, ASSUMING A  
CONSERVATIVE POSITIVE MODERATOR COEFFICIENT. INDICATE THE TIME AT WHICH SCRAM WOULD BE  
ASSUMED TO OCCUR. BUT, FOR PURPOSES OF ANALYSIS, ASSUME NO SCRAM.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT +  
ACCUMULATOR + BLOWDOWN + CONTAINMENT, PRESSURE VESSEL + CORE REFLOODING SYSTEM +  
REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15465 ALSO IN CATEGORIES 5 AND 12  
QUESTION VII A (1) (E) - SAFETY INJECTION VESSEL NOZZLE PRESSURE DURING LOSS-OF-COOLANT ACCIDENTS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, 4 FIGURES, PAGE A(1)(E)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY  
ANALYSIS REPORT, (H. B. ROBINSON UNIT NUMBER 2,) DECEMBER 1966, DOCKET 50-261

PLOT PRESSURE AT THE SAFETY-INJECTION NOZZLES BOTH IN THE HOT AND COLD LEGS AS A FUNCTION OF  
TIME FOR BREAKS OF VARIOUS SIZES.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT +  
BLOWDOWN + CORE REFLOODING SYSTEM + PRESSURE, INTERNAL + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15466 ALSO IN CATEGORIES 5 AND 12  
QUESTION VII A (1) (F) - COOLANT ACCUMULATING IN CONTAINMENT PUMP  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, 8 FIGURES, PAGE A(1)(F)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY  
ANALYSIS REPORT, (H. B. ROBINSON UNIT NUMBER 2,) DECEMBER 1966, DOCKET 50-261

ASSUME NO CORE COOLING. PROVIDE A PLOT OF LIQUID VOLUME AND TEMPERATURE IN THE REACTOR SUMP

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-15466 \*CONTINUED\*

AND CONTAINMENT FLOOR AS A FUNCTION OF TIME AFTER THE ACCIDENT. TWO PLOTS SHOULD BE PRESENTED, ONE ASSUMING THAT THE MOLTEN CORE HEATS THE SUBCOOLED WATER AND THE OTHER ASSUMING THAT THIS ENERGY GOES TO FLASHING STEAM.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT + BLOWDOWN + CORE REFLUDDING SYSTEM + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15467 ALSO IN CATEGORIES 8 AND 5

QUESTION VII A (1) (H,I,K) - METAL-WATER REACTION WITH VARIOUS EMERGENCY COOLING CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
3 PAGES, PAGES A(1)(H),(I)-1 TO A(1)(H),(I)-2 AND A(1)(K)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

(H) WHAT IS THE PERCENT METAL-WATER REACTION, ASSUMING (1) TWO ACCUMULATORS AND MINIMUM SAFETY INJECTION, (2) ONE ACCUMULATOR AND MINIMUM SAFETY INJECTION, (3) SAME AS 1 BUT NO HEAT TRANSFER FROM CORE DURING BLOWDOWN FOR THE LARGEST BREAK. CONSIDER A SPECTRUM OF PIPE-BREAK SIZES EXCEPT FOR 3. (I) FOR THE WORST CASE IN H, PROVIDE A SIMILAR PLOT, ASSUMING THAT TWO ACCUMULATORS OPERATE BUT THAT THE SAFETY INJECTION IS DELAYED 2, 5, 10, AND 20 MINUTES. (K) PLOT THE WEIGHT PERCENTAGE OF CLAD AND FUEL AT A CERTAIN TEMPERATURE AS A FUNCTION OF TIME, ASSUMING THAT TWO ACCUMULATORS OPERATE ALONG WITH SAFETY INJECTION FOLLOWING VARIOUS PIPE-BREAK SIZES.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT + ACCUMULATOR + EMERGENCY COOLING CONSIDERATIONS + FAILURE, CLADDING + METAL WATER REACTION + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15468 ALSO IN CATEGORY 5

QUESTION VII A (1) (J) - ACCUMULATOR FLOW RATES TO LIMIT CLAD FAILURE TO 5% CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, 4 FIGURES, PAGES A(1)(J)-1-TO-A(1)(J)-2 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, (H. B. ROBINSON UNIT NUMBER 2,) DECEMBER 1966, DOCKET 50-261

PLOT FLOW RATE PROVIDED BY TWO ACCUMULATORS AND THE MINIMUM SAFETY INJECTION AS A FUNCTION OF TIME FOR VARIOUS BREAK SIZES. ON THIS SAME PLOT, DRAW LINES FOR EACH BREAK SIZE WHICH SHOWS THE RATE THAT YOU CONSIDER NECESSARY TO LIMIT CLADDING FAILURE TO 5% OF THE FUEL RODS.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT + ACCUMULATOR + EMERGENCY COOLING CONSIDERATIONS + FAILURE, CLADDING + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15469 ALSO IN CATEGORY 10

QUESTION VII A (1) (1) - ALLOWABLE DIESEL DELAY TIME CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGES A(1)(1)-1 TO A(1)(1)-2 OF THIRD SUPPLEMENT TO PRELIMINARY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

WHAT IS THE MAXIMUM TIME INTERVAL THAT THE DIESELS COULD BE INOPERABLE AT VARIOUS TIMES AFTER THE LARGEST BREAK AND STILL PREVENT CORE MELTING.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT + EMERGENCY COOLING CONSIDERATIONS + GENERATOR, DIESEL + REACTOR, PRESSURIZED WATER + RESPONSE TIME + ROBINSON 2

18-15470 ALSO IN CATEGORY 5

QUESTION VII A (1) (M) - TIME SEQUENCE OF EVENTS FOLLOWING MCA CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGES A(1)(M)-1-TO-A(1)(M)-2 OF THIRD SUPPLEMENT TO PRELIMINARY DESCRIPTION AND SAFETY ANALYSIS REPORT, (H. B. ROBINSON UNIT NUMBER 2,) DECEMBER 1966, DOCKET 50-261

PROVIDE A TIME SEQUENCE OF EVENTS BOTH AUTOMATIC AND MANUAL WHICH THE OPERATOR MUST OBSERVE OR PERFORM DURING THE MCA. INDICATE THE TIME THAT EACH ENGINEERED SAFEGUARD IS ACTUATED, INCLUDING CONTAINMENT ISOLATION.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, MAXIMUM CREDIBLE (MCA) + ENGINEERED SAFETY SYSTEM + REACTOR, PRESSURIZED WATER + RESPONSE TIME + ROBINSON 2

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-15471            ALSO IN CATEGORY 5  
QUESTION VII A (1) (N) - STEAM-GENERATOR RESPONSE TO MCA  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGES A(1)(N)-1 TO A(1)(N)-2 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY  
ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

ASSUME NO OFF-SITE POWER. PLOT THE STEAM-GENERATOR PRESSURE, WATER LEVEL, AND STEAM-VALVE  
POSITION AFTER VARIOUS SIZE PRIMARY SYSTEM BREAKS, ASSUMING THAT THE OPERATOR TAKES NO ACTION  
THAT AFFECTS THE STEAM GENERATORS. WHAT ACTION WOULD THE OPERATOR BE REQUIRED TO TAKE IN THE  
FIRST TWO HOURS. WHAT IS THE CONDITION OF THE STEAM GENERATOR AFTER SEVERAL DAYS. RELATE  
YOUR ANSWER TO LEAKAGE POTENTIAL OF CONTAINMENT ATMOSPHERE THROUGH THE STEAM LINES.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY +  
CONTAINMENT PENETRATION, CLOSURE OF + HEAT EXCHANGER + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15472            ALSO IN CATEGORIES 9 AND 5  
QUESTION VII A (2) - EFFECT OF LOSS OF COOLANT ON SCRAM CAPABILITY  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE A(2)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT,  
(H. B. ROBINSON UNIT NUMBER 2,) DECEMBER 1966, DOCKET 50-261

IF SCRAM IS NEEDED TO LIMIT THE CONSEQUENCES OF THE ACCIDENT, INCLUDE THE FOLLOWING  
INFORMATION FOR THE SPECTRUM OF BREAK SIZES - SCRAM SIGNAL, TIME TO SCRAM INITIATION, EFFECT  
OF BLOWDOWN FORCES ON SCRAM TIME.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT +  
CONTROL ROD, SHIM SAFETY + REACTOR, PRESSURIZED WATER + ROBINSON 2 + SCRAM, REAL +  
SYSTEM OPERABILITY IN ACCIDENT CONDITIONS

18-15473            ALSO IN CATEGORY 5  
QUESTION VII A (3) - EFFECT OF NORMAL POWER REDISTRIBUTION ON MCA  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE A (3)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT,  
(H. B. ROBINSON UNIT NUMBER 2,) DECEMBER 1966, DOCKET 50-261

PLEASE DISCUSS THE SIGNIFICANCE, IN RELATION TO THE MAXIMUM-ACCIDENT ANALYSIS, OF POWER  
PROFILE CHANGES AS THE CORE FUEL IS DEPLETED.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY +  
ACCIDENT, MAXIMUM CREDIBLE (MCA) + POWER DISTRIBUTION + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15474            ALSO IN CATEGORY 11  
QUESTION VII A (4) - EFFECT ON CONTAINMENT POST-MCA PRESSURE OF STEAM-GENERATOR FAILURE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, 1 FIGURE, PAGES A (4)-1 AND A (4)-2 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND  
SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

WHAT IS THE VOLUME OF THE SECONDARY SIDE OF A STEAM GENERATOR. INDICATE THE FRACTION OCCUPIED  
BY WATER AND THE TEMPERATURE OF THE WATER AT 10% AND 100% POWER LEVEL. WHAT ADDITIONAL  
CONTAINMENT PRESSURE WOULD RESULT IF THE MCA OCCURRED ALONG WITH A STEAM-GENERATOR FAILURE AT  
EITHER POWER LEVEL.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY +  
ACCIDENT, MAXIMUM CREDIBLE (MCA) + CONTAINMENT DESIGN + CONTAINMENT, HIGH PRESSURE + FAILURE, PIPE +  
FAILURE, SEQUENTIAL + HEAT EXCHANGER + PRESSURE, INTERNAL + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15475            ALSO IN CATEGORY 5  
QUESTION VII A (5) - EFFECT OF PIPE-BREAK LOCATION ON MCA  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGES A (5)-1-AND-A (5)-2 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY  
ANALYSIS REPORT, (H. B. ROBINSON UNIT NUMBER 2,) DECEMBER 1966, DOCKET 50-261

DISCUSS THE EFFECT OF PIPE-BREAK LOCATION ON THE CONSEQUENCES OF THE LOSS-OF-COOLANT  
ACCIDENTS, CONSIDERING BOTH POSITIVE AND NEGATIVE MODERATOR COEFFICIENTS.

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CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-15475 \*CONTINUED\*

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF COOLANT + FAILURE, PIPE + MODERATOR COEFFICIENT + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15476 ALSO IN CATEGORIES 5 AND 6  
QUESTION VII B (1) - METHODS OF ANALYZING ROD-INJECTION ACCIDENT  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

9 PAGES, 1 FIGURE, PAGES B (1)-1-TO-B (1)(D)-6 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, (H. B. ROBINSON UNIT NUMBER 2,) DECEMBER 1966, DOCKET 50-261

WE UNDERSTAND THAT THE METHODS AND RESULTS WILL BE VERY SIMILAR TO THOSE ON INDIAN POINT 2, REPORTED IN WCAP-2940. WE WILL NEED ADDITIONAL INFORMATION - (A) QUANTITATIVELY DISCUSS THE SIGNIFICANT DIFFERENCES IN THE INPUT PARAMETERS USED FROM THOSE USED IN WCAP-2940. (B) QUANTITATIVELY DISCUSS THE EFFECTS ON THE ACCIDENT CONSEQUENCES THAT RESULT FROM THESE CHANGES. (C) DESCRIBE THE ENTHALPY DISTRIBUTION IN THE CORE FUEL FOR BOTH THE PREACCIDENT CONDITION AND THE MOST PESSIMISTIC POSTACCIDENT CONDITION. (D) DISCUSS THE CRITERIA (AND THEIR BASES) UPON WHICH YOU EVALUATE THE ACCEPTABILITY OF THE ENTHALPY DISTRIBUTION IN THE FUEL DURING POWER EXCURSIONS.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, CONTROL ROD EJECTION + ANALYTICAL MODEL + FUEL ELEMENT + PERFORMANCE LIMIT + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15477 ALSO IN CATEGORIES 5 AND 9

QUESTION VII B (2) - DETAILS OF ROD-EJECTION ACCIDENT

CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

3 PAGES, 1 FIGURE, PAGE B (2)-1-TO-B (2)-3 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, (H. B. ROBINSON UNIT NUMBER 2,) DECEMBER 1966, DOCKET 50-261

WCAP-2940 ROD-EJECTION RESULTS WERE SENSITIVE TO THE SCRAM-DELAY TIME. PLEASE DISCUSS THE EXPERIMENTAL JUSTIFICATION FOR THE RANGE OF VALUES USED AND INDICATE THEIR APPLICABILITY TO ROBINSON. IN ADDITION, DISCUSS THE EFFECT THAT ACCIDENT CONDITIONS WITHIN THE CORE WILL HAVE ON THE PERFORMANCE OF THE SCRAM FUNCTION. CONSIDER SUCH ITEMS AS - THE EFFECT OF THERMAL-HYDRAULIC CONDITIONS ON THE EXPULSION OF WATER FROM THE RCC GUIDE TUBES AS RODS COME IN, TRANSIENT-INDUCED PRESSURE EFFECTS, ROD BOWING, ETC. ALSO, QUANTITATIVELY DISCUSS THE EFFECTS OF THE MODERATOR COEFFICIENT ON THE SENSITIVITY OF CONSEQUENCES OF THE ACCIDENT TO TRIP DELAY.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, CONTROL ROD EJECTION + CONTROL ROD SCRAM MECHANISM + MODERATOR COEFFICIENT + REACTOR, PRESSURIZED WATER + RESPONSE TIME + ROBINSON 2 + SYSTEM OPERABILITY IN ACCIDENT CONDITIONS

18-15478 ALSO IN CATEGORY 6

QUESTION VII B (3) - CONTROL OF MODERATOR COEFFICIENT WITH FIXED POISON

CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

4 PAGES, PAGES B (3)(A)-1-TO-B (3)(B)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, (H. B. ROBINSON UNIT NUMBER 2,) DECEMBER 1966, DOCKET 50-261

FIXED POISONS MAY BE USED TO CONTROL THE MODERATOR COEFFICIENT. PLEASE PROVIDE THE FOLLOWING INFORMATION - (A) DISCUSS THE TECHNIQUES AND PROCEDURES TO EVALUATE THE POTENTIAL REQUIREMENTS FOR CONTROLLING THE MODERATOR COEFFICIENT. INCLUDE CONSIDERATIONS OF THE EFFECT OF THE COEFFICIENT ON REACTOR STABILITY AS WELL AS ITS EFFECT ON THE CONSEQUENCES OF PROMPT POWER EXCURSIONS. (B) DESCRIBE THE WAY THAT THE FIXED POISONS WOULD BE INCORPORATED WITHIN THE CORE, AND THE WAY THEIR INCLUSION WOULD AFFECT CORE DESIGN CHARACTERISTICS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + MODERATOR COEFFICIENT + POISON, FIXED + REACTOR STABILITY + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15479 ALSO IN CATEGORY 6

QUESTION VII B (4) - XENON AND COOLANT-FLOW INSTABILITIES

CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

1 PAGE, PAGE B (4)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, (H. B. ROBINSON UNIT NUMBER 2,) DECEMBER 1966, DOCKET 50-261

WESTINGHOUSE RECENTLY EXPANDED THEIR ANALYSES OF XENON AND COOLANT-FLOW STABILITY IN REPORTS WCAP-2983 AND WCAP-2987. PLEASE INDICATE YOUR POSITION ON THE INFORMATION CONTAINED IN THESE REPORTS.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + FLOW STABILITY + REACTOR STABILITY + REACTOR, PRESSURIZED WATER + ROBINSON 2 + XENON OSCILLATION



CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-15480 ALSO IN CATEGORY 6  
QUESTION VII B (5) - POSSIBILITY AND POTENTIAL CONSEQUENCES OF RAPID INSERTION OF UNBORATED, RELATIVELY COLD PRIMARY COOLANT AS RESULT OF DISPLACEMENT BY ACTUATION OF SAFETY-INJECTION AND RECUMMULATOR SYSTEMS CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE B (5)-1 OF THIRD SUPPLEMENT TO FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, (H. B. ROBINSON UNIT NUMBER 2,) DECEMBER 1966, DOCKET 50-261

DISCUSS THE POSSIBILITY AND POTENTIAL CONSEQUENCES OF RAPID INSERTION OF THE UNBORATED, RELATIVELY COLD PRIMARY COOLANT REMAINING IN THE PRIMARY SYSTEM AS A RESULT OF DISPLACEMENT BY ACTUATION OF THE SAFETY INJECTION SYSTEM AND ACCUMULATOR SYSTEM. ASSUME THAT THE CONTROL RODS DO NOT GO IN. THIS DISCUSSION SHOULD INCLUDE VARIOUS SIZE BREAKS FOR BOTH BEGINNING AND END OF CORE LIFE.

AVAILABILITY - USAEC PUBLIC DOCUMENT ROOM, WASHINGTON, D. C. 20432

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, COLD COOLANT + ACCIDENT, LOSS OF COOLANT + ACCUMULATOR + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15481 ALSO IN CATEGORY 6  
QUESTION VII C (1 THROUGH 5) - CONTROL-ROD DROP ACCIDENT DETAILS CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
4 PAGES, PAGES C-1 TO C-5 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

C. RCC DROP ACCIDENT - (1) SHOW THAT A FLUX DECREASE CAUSED BY DROPPING ANY OF THE RCCS INTO THE CORE AT POWER WILL BE DETECTED BY ONE OR MORE NUCLEAR DETECTORS, AND THAT A NEGATIVE SIGNAL OUTPUT LESS THAN APPROXIMATELY 10% WILL NOT REQUIRE A TURBINE CUTBACK. (2) IF ONE OF THE FOUR HIGH-LEVEL CHANNELS IS OUT OF SERVICE, WILL THE REMAINING DETECTORS PROTECT. (3) HOW WILL THIS BE DISTINGUISHED FROM A NORMAL TRANSIENT CORE IMBALANCE. (4) WHAT IS THE TIME RELATION BETWEEN THE SIGNAL THAT WOULD CUT BACK THE TURBINE AND THE SIGNAL THAT WOULD CAUSE RCC WITHDRAWAL TO RESTORE REACTOR POWER. (5) HOW IS THE PROPER TURBINE CUTBACK DETERMINED.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, CONTROL ROD DROP IN + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15482 ALSO IN CATEGORY 6  
QUESTION VII D - STARTUP ACCIDENT ANALYSIS CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGES D-1 AND D-2 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

PLEASE PERFORM THE FOLLOWING STARTUP ACCIDENT ANALYSIS - ASSUME THE SIMULTANEOUS WITHDRAWAL OF ALL RODS FROM THEIR FULL-IN POSITIONS UNDER INITIAL COLD, CLEAN, 1% SHUTDOWN CONDITIONS. CREDIT SHOULD BE TAKEN ONLY FOR SCRAM INITIATED BY THE NUCLEAR-LINEAR-LEVEL SAFETY CHANNELS SET AT THEIR HIGHEST TRIP POINTS AND THE INHERENT NEGATIVE FEEDBACK WITHIN THE REACTOR ITSELF. WILL ANY FUEL DAMAGE RESULT.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, CONTROL ROD WITHDRAWAL + REACTOR, PRESSURIZED WATER + ROBINSON 2 + SAFETY ANALYSIS

18-15483 ALSO IN CATEGORIES 6 AND 5  
QUESTION VII E - LOSS OF FLOW FROM ONE LOOP CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, 1 FIGURE, PAGE E-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

PLEASE SHOW, BY ANALYSIS, THAT THE LOSS OF COOLANT FLOW IN ONE PRIMARY LOOP WITHOUT OPERATOR ACTION WOULD NOT RESULT IN FUEL FAILURE. WHAT IS THE MINIMUM DNBR UNDER THIS CONDITION. CONSIDER THE EFFECTS OF POSITIVE MODERATOR COEFFICIENTS. THE ANALYSIS SHOULD INCLUDE CASES OF INITIAL TWO-LOOP OPERATION AS ALLOWED BY PERMISSIVE INTERLOCK CIRCUITRY.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF FLOW + DNBR (DEPARTURE FROM NUCLEATE BOILING) + MODERATOR COEFFICIENT + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15484 ALSO IN CATEGORIES 11 AND 7  
QUESTION VII (F) - IODINE REMOVAL EFFICIENCY OF CONTAINMENT SPRAY (SODIUM THIOSULPHATE) CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, 2 FIGURES, PAGES F (1-3)-1 AND F (1-3)-2 OF THIRD SUPPLEMENT FACILITY DESCRIPTION AND SAFETY

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-15484 \*CONTINUED\*

ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

PROVIDE GRAPHS OUT TO 30 DAYS WHERE G EQUALS THE EFFECTIVE REDUCTION RATE OF SOLUBLE IODINE, AND R EQUALS THE PRODUCTION RATE OF INSOLUBLE FORMS OF IODINE (STOPPING WHEN THE 25% INITIALLY ASSUMED TO PLATE OUT HAS BEEN DISSIPATED.) (1) PLOT THE AMOUNT OF IODINE REMAINING AIRBORNE FOR G EQUALS 0, 5, AND 10 FOR EACH OF THE VALUES OF R EQUAL TO 0, 0.03, 0.1, AND 0.5. (2) THE INCREASE IN DOSE PER UNIT TIME AT THE SITE BOUNDARY AND LOW POPULATION ZONE, AS A FUNCTION OF TIME USING THE ASSUMPTIONS IN (1). (3) THE INTEGRAL OF THE CURVES IN (2) SHOWING THE TOTAL DOSE AS A FUNCTION OF TIME IF THE PERSISTENCE MODEL USED FOR TIMES IN EXCESS OF TWO HOURS IS THE SAME AS DESCRIBED IN THE APPLICATION. EXPLAIN WHY THE FREQUENCY OF OBSERVATIONS OF INSTANCES OF PERSISTENCE IS MORE APPLICABLE TO ACCIDENT ANALYSES THAN THE OVERALL HOURLY FREQUENCY OF PERSISTENCE.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + AIRBORNE RELEASE + CONTAINMENT SPRAY + DOSE + FISSION PRODUCT RETENTION + FISSION PRODUCT, IODINE + REACTOR, PRESSURIZED WATER + ROBINSON 2 + WIND STATISTICS

18-15485 ALSO IN CATEGORIES 5 AND 11

QUESTION VII G - HYDROGEN FOLLOWING MCA  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
3 PAGES, PAGE G-1 TO G-3 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

ASSUMING A LOSS OF COOLANT WITH NO CORE COOLING, HOW MUCH HYDROGEN COULD BE FORMED FROM (A) METAL-WATER REACTION, (B) DECOMPOSITION OF UO<sub>2</sub> TO U<sub>3</sub>O<sub>8</sub> AND (C) RADIOLYTIC DECOMPOSITION OF WATER. (1) DISCUSS THE LOCAL EFFECTS DUE TO THE HYDROGEN BURNING UPON EXIT FROM THE PRIMARY PIPE. (2) WHAT WOULD CONTAINMENT PRESSURE BE IF THE HYDROGEN WERE RAPIDLY BURNED. (3) DISCUSS IN DETAIL THE MODEL USED FOR RADIOLYTIC DECOMPOSITION.

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18-15486 ALSO IN CATEGORY 11

QUESTION VII H - CAPABILITY FOR SHUTTING DOWN THE PLANT, ASSUMING THAT EMERGENCY TURBINE-DRIVEN FEEDWATER PUMP DOES NOT OPERATE UPON LOSS OF OFF-SITE POWER AND TURBINE TRIP  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGES H-1 AND H-2 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

PROVIDE THE RESULTS OF THE STUDY OF THE CAPABILITY TO SHUT DOWN THE PLANT, ASSUMING THAT THE EMERGENCY TURBINE-DRIVEN FEEDWATER PUMP DOES NOT OPERATE UPON LOSS OF OFF-SITE POWER AND TURBINE TRIP. INDICATE WHICH SYSTEMS MUST OPERATE TO EFFECT SAFE SHUTDOWN.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, LOSS OF POWER + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15487

QUESTION VII I (1 THROUGH 6) - STEAM GENERATOR TUBE RUPTURE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
16 PAGES, 2 TABLES, PAGE I (1)(1)-1 TO I (6)-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

(1) PROVIDE RESULTS OF THE CONSEQUENCES OF RUPTURE OF A SINGLE STEAM-GENERATOR TUBE. (2) HOW MANY TUBES WOULD HAVE TO RUPTURE SIMULTANEOUSLY TO LIFT A STEAM SAFETY VALVE OR CAUSE SIGNIFICANT FUEL-CLAD FAILURES. (3) DISCUSS THE PROBABILITY THAT ONE STEAM GENERATOR TUBE FAILURE WOULD CAUSE OTHERS. HOW MANY COULD FAIL WITHOUT EXCEEDING A WHOLE BODY DOSE OF 1/2 RFM AT THE EXCLUSION DISTANCE. HOW IS THIS AFFECTED IF THE MAIN STEAM ISOLATION VALVE FAILS TO CLOSE. (4) WHAT IS THE BASIS OF THE MAXIMUM ALLOWABLE RADIOACTIVITY INVENTORY CIRCULATING IN THE PRIMARY SYSTEM. WHAT PRIMARY COOLANT ACTIVITY CORRESPONDS TO DEFECTS IN 5% OF THE FUEL ELEMENTS USED IN THE ACCIDENT ANALYSES IN TERMS OF ISOTOPIC INVENTORY OR CONCENTRATION IN THE PRIMARY SYSTEM. PROVIDE THE BASIS FOR THE ISOTOPIC INVENTORY ASSUMED. (5) PLOT ADDITIONAL WATER NEEDED FOR THE PRIMARY SYSTEM SHUTDOWN VS. THE NUMBER OF TUBE RUPTURES. WHAT SOURCES ARE AVAILABLE. WHAT ACTION BY OPERATOR AND ENGINEERED SAFEGUARD ARE REQUIRED. PLOT THE PRESSURIZER LEVEL AS A FUNCTION OF TIME FOR VARIOUS NUMBERS OF TUBE RUPTURES ASSUMING MINIMUM HIGH HEAD SAFETY INJECTION IS OPERABLE. (6) DESCRIBE THE BASIS FOR USING AN IODINE PARTITION FACTOR OF 0.0001 FOR RELEASES FROM THE SECONDARY SYSTEM WATER.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + FAILURE, PIPE + FISSION PRODUCT RETENTION + FISSION PRODUCT, IODINE + HEAT EXCHANGER + REACTOR, PRESSURIZED WATER + ROBINSON 2

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-15488 ALSO IN CATEGORY 5  
QUESTION VII J - OFF-SITE DOSE FROM CONTAMINATED STEAM DUMP TO ATMOSPHERE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
6 PAGES, 1 FIGURE, PAGES J-1 TO J-6 OF THIRD SUPPLEMENT TO PRELIMINARY DESCRIPTION AND SAFETY ANALYSIS  
REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

LIST ALL POSSIBLE CAUSES OF ATMOSPHERIC STEAM DUMP. USING THE EXPECTED MAXIMUM CONCENTRATION  
OF FISSION AND CORROSION PRODUCTS IN THE PRIMARY SYSTEM, AND THE MAXIMUM AMOUNT OF STEAM  
GENERATOR LEAKS WHICH WOULD NOT FORCE ISOLATION OF THE STEAM GENERATOR, CALCULATE THE  
OFF-SITE DOSES RESULTING FROM THE ATMOSPHERIC STEAM DUMP.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + AIRBORNE RELEASE + CRUD +  
DOSE + PRESSURE RELIEF + REACTOR, PRESSURIZED WATER + ROBINSON 2 + STEAM

18-15489 ALSO IN CATEGORY 5  
QUESTION VII K - MELTDOWN OF FUEL ELEMENT DROPPED IN REFUELING  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE K-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B.  
ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

CONSIDER A FUEL ELEMENT WHICH IS DROPPED, DAMAGED AS ASSUMED, AND COMES TO REST ON ITS SIDE IN  
THE POOL. WILL RADIATION LEVELS FORCE EVACUATION BEFORE THE ELEMENT CAN BE UPRIGHTED. WILL  
THE FUEL THEN BECOME HOT ENOUGH TO RELEASE MUCH MORE FISSION PRODUCTS THAN ASSUMED. DISCUSS  
THE RELEASE OF IODINE BOTH FOR THIS AND AS DESCRIBED IN THE PSAR. CALCULATE THE DOSES FOR  
THIS CASE IF THEY ARE SIGNIFICANTLY DIFFERENT.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, REFUELING +  
AIRBORNE RELEASE + DOSE + FISSION PRODUCT, IODINE + FUEL MELTDOWN + REACTOR, PRESSURIZED WATER +  
ROBINSON 2

18-15490 ALSO IN CATEGORIES 15 AND 5  
QUESTION VII L - CONSEQUENCES OF COOLANT-HOLDUP-TANK RUPTURE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE L-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B.  
ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

ANALYZE THE CONSEQUENCES OF THE VOLUME-CONTROL-TANK RUPTURE. PROVIDE DATA ON THE FLOW RATES  
AND CLEANUP CONSTANTS USED TO DETERMINE THE FISSION-PRODUCT CONCENTRATION. HOW MANY CURIES  
OF NOBLE GASES AND IODINE ARE AVAILABLE FOR RELEASE BY THIS MECHANISM. WHAT SPECIFIC  
ASSUMPTIONS WERE MADE TO CAUSE THE THYROID DOSE TO BE INSIGNIFICANT WITH RESPECT TO THE  
WHOLE-BODY DOSE.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + AIRBORNE RELEASE +  
COOLANT PURIFICATION SYSTEM + DOSE + FAILURE, PRESSURE VESSEL + FISSION PRODUCT, IODINE +  
REACTOR, PRESSURIZED WATER + ROBINSON 2 + STORAGE CONTAINER

18-15491 ALSO IN CATEGORY 15  
QUESTION VII M AND N - DETAILS OF ANALYSIS OF GAS-DECAY-TANK RUPTURE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGE M-1 AND N-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS  
REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

IN THE GAS-DECAY-TANK-RUPTURE ACCIDENT, WHAT CONSTANTS WERE USED TO CALCULATE THE INVENTORY OF  
THIS VESSEL. WHAT IS THE ISOTOPIC BREAKDOWN OF THE CONTENTS. WHAT IS THE AVERAGE HOLDUP  
TIME IN THIS VESSEL. WHY IS THERE NO SIGNIFICANT THYROID DOSE. (N) WHAT FAILURES OR  
MALOPERATIONS WOULD BE REQUIRED TO OVER-PRESSURIZE A GAS-DECAY TANK FROM THE NITROGEN  
BOTTLES, THUS CAUSING A LEAK OR RUPTURE. WHAT ARE THE DESIGN AND OPERATING PRESSURES OF  
THESE TANKS.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + AIRBORNE RELEASE + DOSE +  
FAILURE, PRESSURE VESSEL + FISSION PRODUCT, IODINE + REACTOR OFFGAS + REACTOR, PRESSURIZED WATER +  
ROBINSON 2 + STORAGE CONTAINER + WASTE DISPOSAL, GAS

18-15492 ALSO IN CATEGORY 5  
QUESTION VII O - STEAM-LINE RUPTURE WITH A STUCK ROD  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-15492 \*CONTINUED\*  
2 PAGES, PAGES 0-1 AND 0-2 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

INDICATE THE EXTENT OF CORE DAMAGE IF RUPTURE OF THE LARGEST STEAM LINE OCCURS WITH ONE CONTROL ASSEMBLY STUCK IN THE FULLY WITHDRAWN POSITION AT THE END OF CORE LIFE (MOST NEGATIVE TEMPERATURE COEFFICIENT). WHAT IS THE MAXIMUM K-EFFECTIVE ATTAINED. COMPARE THE RESULTANT MAXIMUM STEAM GENERATOR TUBE-SHEET STRESS WITH THE YIELD STRESS, AND DISCUSS THE EFFECT OF THIS ACCIDENT ON PRIMARY-SYSTEM INTEGRITY. IF PRIMARY-SYSTEM PRESSURE PULSES CAN BE INITIATED BY FUEL FAILURES, DISCUSS THE EFFECT THEY HAVE ON PRIMARY-SYSTEM INTEGRITY.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, STEAM LINE RUPTURE + FAILURE, PIPE + FAILURE, SCRAM MECHANISM + FAILURE, SCRAM MECHANISM + HEAT EXCHANGER + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15493 ALSO IN CATEGORY 5  
QUESTION VII P - NO-DAMAGE CRITERIA FOR OPERATING TRANSIENTS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGES P-1 AND P-2 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

THE ACCEPTABILITY CRITERION FOR UNCONTROLLED RCC WITHDRAWAL AND TURBINE-TRIP ACCIDENTS IS THAT DNR WILL NOT OCCUR. WHAT IS THE MINIMUM DNB MARGIN THAT WILL COMPLY WITH THIS CRITERION. SIMILARLY, FOR THE LOSS-OF-COOLANT-FLOW INCIDENT, IT IS STATED THAT CLAD FAILURE WILL NOT OCCUR. INDICATE THE MARGIN TO DNB, CLAD MELTING TEMPERATURES, AND CLAD YIELD WHICH ARE ASSUMED AS LIMITING IN YOUR ANALYSIS.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, CONTROL ROD WITHDRAWAL + ACCIDENT, LOAD REJECTION + ACCIDENT, LOSS OF FLOW + DNR (DEPARTURE FROM NUCLEATE BOILING) + FAILURE, CLADDING + PERFORMANCE LIMIT + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15494 ALSO IN CATEGORY 12  
QUESTION VII Q - COOLING WATER SUPPLY IN CASE OF DAM FAILURE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE Q-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

DISCUSS THE PROVISIONS MADE TO ENSURE THAT SUFFICIENT COOLING WATER IS AVAILABLE IF THE DAM SHOULD FAIL. ARE THE STRUCTURES AND COMPONENTS WHICH WILL CONTAIN AND TRANSPORT THIS WATER TO THE COOLING SYSTEMS CLASS I. INDICATE WHICH COOLING SYSTEM WILL BE USED TO REMOVE DECAY HEAT FROM THE CORE. IS THIS COOLING WATER ALSO AVAILABLE TO ALL SAFEGUARDS SYSTEMS.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + EARTHQUAKE ENGINEERING + EMERGENCY COOLING CONSIDERATIONS + REACTOR, PRESSURIZED WATER + ROBINSON 2 + SHUTDOWN COOLING SYSTEM + STORAGE CONTAINER

18-15495 ALSO IN CATEGORIES 5 AND 12  
QUESTION VII R - ANALYSIS OF THYROID DOSE IF FAN-COOLER TUBE RUPTURES AFTER MCA  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE R-1 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

ANALYZE THE OFF-SITE THYROID DOSE RESULTING FROM COMPLETE RUPTURE OF A FAN-COOLER TUBE, ASSUMING 100% CORE MELT. PROVIDE ALL ASSUMPTIONS MADE. YOU MAY TERMINATE THE CALCULATION WHEN CONTAINMENT PRESSURE IS REDUCED BELOW THAT OF THE SERVICE WATER (ABOUT 3000 SECONDS).

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, MAXIMUM CREDIBLE (MCA) + AIRBORNE RELEASE + CONTAINMENT AIR COOLING + DOSE + FAILURE, PIPE + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15496 ALSO IN CATEGORIES 15 AND 5  
QUESTION VII S - OFF-SITE DOSE DUE TO PLUTONIUM DURING MCA  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
8 PAGES, 1 FIGURE, PAGES S-1 TO S-8 OF THIRD SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

PROVIDE THE PLUTONIUM (PU-238 TO PU-241) ISOTOPIC CONCENTRATIONS WHICH EXIST IN THE CORE AT THE END OF CORE LIFE. DISCUSS THE CREDIBILITY THAT IF CORE MELTDOWN OCCURS, SUFFICIENT QUANTITIES COULD BECOME AIRBORNE TO CONTRIBUTE SIGNIFICANTLY TO THE OFF-SITE DOSE. EXPLAIN

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-15496 \*CONTINUED\*  
YOUR ASSUMPTIONS.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ACCIDENT, MAXIMUM CREDIBLE (MCA) + AIRBORNE RELEASE + DOSE + FUEL BURNUP + PLUTONIUM + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15497 ALSO IN CATEGORY 11  
QUESTION VIII A (1) - CONSERVATIVENESS OF DESIGN ANALYSIS FOR CONTAINMENT STRUCTURE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGES A (1)-1 TO A (1)-3 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

SECTION VIII. CONTAINMENT STRUCTURE. A. STRUCTURAL DESIGN. (1) SOME OF THE APPARENT MARGIN PRESENT IN THE LOAD-FACTOR DESIGN APPROACH MIGHT BE ASSOCIATED WITH UNCERTAINTIES IN THE CALCULATIONAL METHODS AND DESIGN EQUATIONS. IF THE MARGINS ARE TO BE CONSIDERED PRIMARILY AS OVERLOAD MARGINS (PSAR 5-17), AN EVALUATION OF THE VALIDITY OF USING THESE MARGINS IN THIS MANNER IS REQUIRED. IN PARTICULAR, SHOW THAT YOUR DESIGN-ANALYSIS PROCEDURES ENSURE THAT ALL STRUCTURAL ELEMENTS ARE TREATED CONSERVATIVELY, PLACING NO RELIANCE ON THE SPECIFIED FACTORS TO PROVIDE FOR UNDER-STRENGTH DUE TO ANALYTICAL SIMPLIFICATION AND ASSUMPTIONS IN THE STRUCTURAL ANALYSIS.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + ANALYTICAL MODEL + CONTAINMENT STRUCTURE + CONTAINMENT, HIGH PRESSURE + PERFORMANCE LIMIT + REACTOR, PRESSURIZED WATER + ROBINSON 2 + STRESS ANALYSIS

18-15498 ALSO IN CATEGORY 12  
QUESTION VIII A (2) - STRESS ANALYSIS DESIGN PROCEDURES  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGES A (2)-1 TO A (2)-3 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

EXPLAIN IN DETAIL THE BASIS FOR THE LOAD FACTORS SELECTED. STATE IF ULTIMATE-STRENGTH OR ELASTIC-DESIGN PROCEDURES WILL BE USED IN THE DESIGN OF THE ELEMENTS OF THE CONTAINMENT, PARTICULARLY THOSE SUBJECTED TO BENDING AND SHEARS. DESCRIBE IN DETAIL WHAT IS MEANT BY, QUOTE, THE REQUIRED LIMITING CAPACITY OF ANY STRUCTURAL ELEMENT, UNQUOTE, AND DISCUSS THE DESIGN PROCEDURES IN THIS REGARD.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT DESIGN + DESIGN CRITERIA + REACTOR, PRESSURIZED WATER + ROBINSON 2 + STRESS ANALYSIS

18-15499 ALSO IN CATEGORY 12  
QUESTION VIII A (3) - CONTAINMENT STRUCTURE STRESS DESIGN LIMITS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGES A (3)-1 AND A (3)-2 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

THE DESIGN LIMIT OF THE LONGITUDINAL PRESTRESSED ELEMENTS OF THE STRUCTURE ARE NOT CLEARLY SPECIFIED. PROVIDE THE STRESS LIMITS FOR CONCRETE AT TRANSFER OF PRESTRESS, UNDER SUSTAINED PRESTRESS, AND AT DESIGN LOADS. FOR THE FACTORED-LOAD CONDITIONS, IS FLEXURAL CRACKING PERMITTED, IS MEMBRANE TENSION PERMITTED, IS THE INTENT TO DESIGN TO THE ULTIMATE STRENGTH OF THE SECTION IN FLEXURE OR TENSION. AMPLIFY THE MEANING (IN PSAR 5-19), QUOTE, THE DESIGN LIMIT FOR TENSION MEMBERS (THE CAPACITY REQUIRED FOR THE DESIGN LOADS) WILL BE BASED ON THE YIELD STRESS...OF THE PRESTRESSING TENDON, UNQUOTE.

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18-15500 ALSO IN CATEGORY 12  
QUESTION VIII A (4) - JUSTIFICATION FOR INCLUDING LIVE LOADS IN DEAD-LOAD FACTORS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGES A (4)-1 AND A (4)-2 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

STRUCTURE LIVE LOADS ARE INCORPORATED IN THE DEAD-LOAD FACTORS OF THE DESIGN CRITERIA. IN VIEW OF THE LARGER LOAD FACTORS NORMALLY ASSOCIATED WITH LIVE LOADS, THE BASIS FOR NEGLECTING IMPACT AND DYNAMIC LOAD CHARACTERISTICS OF SUCH EQUIPMENT SHOULD BE PROVIDED. CONSIDER PROVIDING A SEPARATE LOAD FACTOR FOR LIVE LOADS, OR JUSTIFY IN DETAIL YOUR PRESENT APPROACH.

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CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-15500 \*CONTINUED\*

\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT STRUCTURE + DESIGN CRITERIA + DYNAMICS, NONLINEAR + REACTOR, PRESSURIZED WATER + ROBINSON 2 + STRESS ANALYSIS

18-15501 ALSO IN CATEGORIES 12 AND 5  
QUESTION VIII A (5 AND 9) - MORE DETAILS OF THERMAL-STRESS ANALYSIS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

3 PAGES, 10 FIGURES, PAGES A (5)-1 TO A(5)-2 AND A (9)-1 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

THE HANDLING OF THERMAL LOADS NEEDS AMPLIFICATION. IN PARTICULAR, PROVIDE THE THERMAL GRADIENT ACROSS THE CONTAINMENT LINER AND CONCRETE STRUCTURE AS A FUNCTION OF TIME, INDICATE THE DESIGN CONDITIONS UNDER WHICH THERMAL LOADING DUE TO LINER AND CONCRETE TEMPERATURE GRADIENTS ARE CRITICAL, AND PROVIDE THE LOADING DIAGRAMS FOR THE SEPARATE LINER AND CONCRETE THERMAL CONTRIBUTIONS. A 2-PSIG INTERNAL NEGATIVE PRESSURE RESULTS FROM AN RO F DIFFERENTIAL. RELATE THE SELECTED OPERATING AND/OR ENVIRONMENTAL CONDITIONS THAT COULD CAUSE SUCH A DIFFERENTIAL, AND STATE WHY VACUUM RELIEF IS NOT CONSIDERED NECESSARY.

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\*SAFETY ANALYSIS REPORT, AEC QUESTION + \*SAFETY ANALYSIS REPORT, PRELIMINARY + CONTAINMENT STRUCTURE + DESIGN CRITERIA + REACTOR, PRESSURIZED WATER + ROBINSON 2 + STRESS ANALYSIS + THERMAL ANALYSIS + THERMAL MECHANICAL EFFECT + VACUUM RELIEF

18-15502 ALSO IN CATEGORY 11  
QUESTION VIII A (6) - EFFECT OF WIND ON CONTAINMENT STRUCTURE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

2 PAGES, 1 FIGURE, PAGES A (6)-1 AND A (6)-2 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

ASA STANDARD A58.1-1955 WAS USED TO CLASSIFY THE SITE WITHIN A 25-PSF ZONE. MORE DETAILED INFORMATION ON THE SELECTION OF THE 30-PSF LOADING MUST BE SUBMITTED. IN PARTICULAR, THE DESIGN WIND SPEED, STAGNATION PRESSURE, DRAG COEFFICIENT, GUST FACTORS, AND ASSUMED VERTICAL VARIATION OF PRESSURE ON THE STRUCTURE ARE OF INTEREST. WHAT IS THE BASIS FOR THE SELECTION OF THE VALUES SUPPLIED.

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18-15503 ALSO IN CATEGORIES 12 AND 16  
QUESTION VIII A (7 AND 8) - CONTAINMENT DESIGN FOR TORNADO LOADING  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

3 PAGES, PAGES A (7)-1 TO A (8)-1 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

IT IS INDICATED THAT THE STRUCTURE WILL BE ANALYZED FOR TORNADO LOADING. THE BASIS FOR THE SELECTED WIND SPEED, EQUIVALENT PRESSURE, AND 1.25 LOAD FACTOR IS REQUESTED. IN ADDITION, A DESIGN LOAD FACTOR EQUATION TO INDICATE HOW THIS LOADING WILL BE TREATED IN COMBINATION WITH DEAD AND LIVE LOADS IS REQUESTED. PSAR PAGE 2-29 SUGGESTS THAT THE DESIGN WIND AT THE SITE WILL BE THE ONCE-IN-FIFTY-YEARS WIND. THE BASIS FOR THIS SELECTION IS REQUESTED.

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18-15504 ALSO IN CATEGORY 12  
QUESTION VIII A (10) - JUSTIFICATION OF CONTAINMENT PROOF-TEST PRESSURE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

4 PAGES, PAGES A (10)-1 TO A (10)-4 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

TO JUSTIFY THE SELECTED PROOF-TEST PRESSURE OF THE COMPLETED CONTAINMENT, PROVIDE CHARTS OF THE CALCULATED STRESSES IN THE (A) CIRCUMFERENTIAL SHELL REINFORCING STEEL; (B) AXIAL SHELL TENDONS, (C) DOME REINFORCING STEEL, AND (D) BASE REINFORCING STEEL FOR (1) TEST CONDITION, (2) ACCIDENT CONDITION, AND (3) ACCIDENT PLUS EARTHQUAKE.

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CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-15505 ALSO IN CATEGORY 12  
QUESTION VIII A (11) - EFFECT OF DAM FAILURE ON CONTAINMENT  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
3 PAGES, PAGE A (11)-1 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT,  
H. A. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

DISCUSS THE POSSIBILITY THAT FAILURE OF THE EARTH DAM WOULD HAVE AN ADVERSE AFFECT ON THE  
CONTAINMENT OR OTHER STRUCTURES IMPORTANT TO PLANT SAFETY.

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REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15506 ALSO IN CATEGORY 12  
QUESTION VIII A (12) - METHODS OF HANDLING SHEAR LOADS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
6 PAGES, PAGES A(12)(A)-1 TO A(12)(D)-1 OF SECOND PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS  
REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

THE CRITERIA CONCERNING METHODS BY WHICH YOU PROPOSE TO HANDLE SHEAR LOADS IS NOT CLEAR.  
PROVIDE ANSWERS TO 7 SPECIFIC QUESTIONS ON LONGITUDINAL, RADIAL, AND TANGENTIAL SHEAR. IN  
ALL CASES DESCRIBE FULLY THE EXTENT TO WHICH THE LINER WILL BE RELIED UPON TO CARRY SHEAR AND  
THE LINER SHEAR DEFORMATIONS REQUIRED.

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CONTAINMENT STRUCTURE + DESIGN CRITERIA + REACTOR, PRESSURIZED WATER + ROBINSON 2 + STRESS ANALYSIS

18-15507 ALSO IN CATEGORIES 12 AND 5  
QUESTION VII A (13) - STRESS ANALYSIS IN THE VICINITY OF CONTAINMENT AIR LOCKS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
3 PAGES, PAGE A (13)-1 TO A (13)-3 OF SECOND PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT,  
H. A. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

PROVIDE DRAWINGS, STRESS ANALYSIS, AND CONSTRUCTION DETAILS IN VICINITY OF PERSONNEL AND  
EQUIPMENT AIR LOCKS. DESCRIBE PROPOSED RING ANALYSIS, LOCAL MARGINS TO FAILURE IN SHEAR.

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CONTAINMENT EQUIPMENT HATCH + CONTAINMENT STRUCTURE + REACTOR, PRESSURIZED WATER + ROBINSON 2 +  
STRESS ANALYSIS

18-15508 ALSO IN CATEGORY 12  
QUESTION VIII A (14) - CONTAINMENT AIR-LOCK VULNERABILITY TO EARTHQUAKE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE A (14)-1 OF SECOND PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B.  
ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

IT IS NOTED THAT THE EQUIPMENT HATCH AND PERSONNEL HATCH PROTRUDE SOME DISTANCE FROM THE  
CYLINDRICAL SURFACE OF THE MAIN STRUCTURE. DISCUSS THE POTENTIAL FOR INCREASED LEAKAGE OR  
IMPROPER OPERATION OF THE ACCESS DUE TO EARTHQUAKE AND PRESSURE FORCES.

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CONTAINMENT EQUIPMENT HATCH + EARTHQUAKE ENGINEERING + REACTOR, PRESSURIZED WATER + ROBINSON 2

18-15509 ALSO IN CATEGORY 12  
QUESTION VIII A (15) - ANALYSIS OF CONTAINMENT BASE SLAB  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, 1 FIGURE, PAGES A (15)-1 AND A (15)-2 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION  
AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

THE ASSUMPTION THAT THE BASE SLAB WILL BEHAVE AS AN ANNULUS APPEARS IMPORTANT IN THE  
STRUCTURAL DESIGN OF THE CONTAINMENT. PLEASE PROVIDE INFORMATION ON THE VALIDITY AND  
CONSERVATISM OF THE ASSUMPTION THAT THE CENTRAL SUMP WILL OFFER NO BENDING OR DEFLECTION  
RESISTANCE TO THE BASE SLAB. IN ADDITION, DESCRIBE IN MORE DETAIL THE ANALYTICAL PROCEDURES  
TO BE USED IN THE BASE SLAB DESIGN.

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CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-15509 \*CONTINUED\*

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18-15510 ALSO IN CATEGORY 12

QUESTION VIII A (16 AND 17) - TENDON AND REINFORCEMENT ANALYSIS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGES A (16)-1 AND A (17)-1 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.R. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

(16) PROVIDE INFORMATION ON THE AMOUNT OF MILD-STEEL REINFORCEMENT REQUIRED TO PROVIDE CRACK CONTROL. IS FAILURE TO DEVELOP TENDON BOND TAKEN INTO ACCOUNT. (17) IT IS NOTED THAT THE DESIGN, AS IT NOW EXISTS, PROVIDES FOR USE OF GROUTED TENDONS. WHAT ARE THE BOND-DEVELOPMENT LENGTHS FOR THE TENDON SYSTEMS PROPOSED. GIVEN AN ANCHORAGE FAILURE AND THE BOND-DEVELOPMENT LENGTHS CITED, PRESENT AN ANALYSIS OF THE CONSEQUENCES OF THE FAILURE OR SERIES OF SUCH FAILURES UNDER DESIGN-BASIS-ACCIDENT LOADING.

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18-15511 ALSO IN CATEGORY 12

QUESTION VIII A (18) - STRESSES AT CYLINDER-TO-DOME TRANSITION  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, 1 FIGURE, PAGE A (18)-1 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. R. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

THE MEANS OF PROVIDING THE PRESTRESSING ANCHORAGE-ZONE REINFORCEMENT AT THE CYLINDER-DOME TRANSITION REQUIRES AMPLIFICATION. PROVIDE THE ANALYTICAL PROCEDURES THAT WILL BE USED FOR CALCULATING THE BURSTING AND SPALLING STRESSES. ALSO PROVIDE A DESCRIPTION OF THE SIZE OF THESE STRESSES AND A DETAIL OF THE REINFORCING THAT WILL BE USED.

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18-15512 ALSO IN CATEGORY 12

QUESTION VIII A (19 THROUGH 21) - EARTHQUAKE ENGINEERING OF CONTAINMENT STRUCTURE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
4 PAGES, 2 FIGURES, PAGE A (19)-1 TO A (21)-2 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

(19) DISCUSS CRANE DESIGN PROVISIONS TO RESIST SEISMIC LOADING. (20) WILL A CRITICAL DAMPING OF TWO PERCENT ALSO BE USED FOR THE DOME AND OTHER PORTIONS OF THE ENTIRE CONTAINMENT STRUCTURE. (21) A MORE DETAILED DESCRIPTION OF THE PILE DESIGN IS REQUIRED. HOW IS THE BEHAVIOR AFFECTED BY THE SOIL PROPERTIES AROUND AND BELOW THE PILES. PROVIDE INFORMATION ON EXPECTED LIQUEFACTION, NEGATIVE SKIN FRICTION DUE TO COMPRESSION OF SOFTER OVERLYING STRATA, AND UPLIFT-FORCE EFFECTS ON PILE ACTION. CONSIDER THE EFFECTS DUE TO THE HYPOTHETICAL EARTHQUAKE AS IT MIGHT LEAD TO A SERIOUS INSTABILITY IN THIS CASE. PRESENT THE PILE LOAD TEST DATA.

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18-15513 ALSO IN CATEGORY 12

QUESTION VIII A (22) - STRESS-ANALYSIS MODEL (THREE-LUMPED-MASS SYSTEM)  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE A (22)-1 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

THE PROPOSED IDEALIZATION OF THE STRUCTURE OF A THREE-LUMPED-MASS-SYSTEM MODEL IS NOT UNDERSTOOD. PROVIDE DETAILED INFORMATION TO SHOW THE ADEQUACY OF THIS IDEALIZATION UNDER THE VARIOUS COMBINED LOADINGS.

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18-15514 ALSO IN CATEGORY 12



CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

19-15514 \*CONTINUED\*

QUESTION VIII B (1) - CONTAINMENT LINER ATTACHMENT DETAILS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, 1 FIGURE, PAGE B (1)-1 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

SECTION VIII B. LINER DESIGN. (1) DISCUSS THE METHOD CHOSEN FOR LINER ATTACHMENT. PROVIDE DETAILS OF THE ATTACHMENT SPACING AND TYPE, AND TYPICAL DISCONTINUITY DETAILS FOR THE SLAB-CYLINDER AND SLAB-SUMP TRANSITIONS.

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19-15515 ALSO IN CATEGORY 12

QUESTION VIII B (2) - ELASTIC STABILITY OF CONTAINMENT LINER  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGE B (2)-1 AND B (2)-2 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

PROVIDE AN ANALYSIS OF THE ELASTIC STABILITY OF THE LINER UNDER THE APPLIED COMPRESSIVE LOADS DUE TO PRESTRESS AND DESIGN-BASIS ACCIDENT CONDITIONS.

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19-15516 ALSO IN CATEGORY 12

QUESTION VIII B (3) - CONTAINMENT-LINER FATIGUE FAILURE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGES B (3)-1 AND B (3)-2 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

PROVIDE THE FATIGUE LOADINGS CONSIDERED IN THE DESIGN OF THE LINER AND ITS ATTACHMENTS. DISCUSS THE EFFECTS OF VIBRATION LOADING OF THE LINER FROM ITS PENETRATIONS UNDER BOTH NORMAL OPERATING AND ACCIDENT CONDITIONS. DISCUSS THE PROVISION TO PRECLUDE EXCESSIVE LOADINGS OF THIS TYPE FROM CAUSING INCREASED LEAKAGE OF THE LINER.

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19-15517 ALSO IN CATEGORIES 12 AND 5

QUESTION VIII B (4) - STURDINESS OF PIPING JOINED TO CONTAINMENT LINER  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
1 PAGE, PAGE B (4)-1 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

PROPOSED PIPING PENETRATIONS THAT PENETRATE AND ARE JOINED TO THE CONTAINMENT LINER WILL BE ANCHORED AT THE WALL OF THE CONTAINMENT. STATE THE DESIGN CRITERION TO BE USED TO ENSURE THAT, UNDER A POSTULATED PIPE RUPTURE, THE TORSIONAL, AXIAL, AND BENDING FORCES TRANSMITTED TO THE PENETRATION WILL NOT BREACH THE CONTAINMENT. ALSO INCLUDE THE DESIGN CRITERION WHICH WILL BE APPLIED TO ENSURE THAT PIPE RUPTURE IS PRECLUDED BETWEEN THE PENETRATION AND CONTAINMENT ISOLATION VALVES, SINCE THESE PIPE SECTIONS REPRESENT AN EXTENSION OF THE CONTAINMENT BOUNDARY.

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19-15518

QUESTION VIII C (1) - CONCRETE SPECIFICATIONS  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGES C (1)-1 AND C (1)-2 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

SECTION VIII C. MATERIALS OF CONSTRUCTION. (1) CONCRETE. SINCE SHRINKAGE AND CREEP WILL GREATLY AFFECT BOTH THE ACCURACY OF PREDICTING THE FINAL PRESTRESS AND STRUCTURAL BEHAVIOR UNDER PROOF-TEST LOADING, PROVIDE THE DETAILS TO DEVELOP AND VERIFY THE DESIGN CREEP AND SHRINKAGE PROPERTIES. IDENTIFY THE ADMIXTURES TO BE USED, AND PROVIDE THE BASIS FOR DETERMINING THE EFFECT OF THESE ADMIXTURES ON SHRINKAGE AND CREEP. EXPLAIN THE BASIS FOR THE TYPE OF CEMENT SELECTED.

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SAFETY ANALYSIS AND DESIGN REPORTS

18-15518 \*CONTINUED\*

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18-15519 ALSO IN CATEGORY 12

QUESTION VIII C (2) - CONSTRUCTION MATERIALS, TENDONS, AND ANCHORAGES  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
10 PAGES, 8 FIGURES, PAGES C (2)(A)-1 TO C (2)(E)-4 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

FIVE DETAILED QUESTIONS - (A) TENDON-ANCHORAGE-SYSTEM DETAILS. (B) JUSTIFY YOUR CHOICE OF GALVANIZED/UNGALVANIZED WIRE/STRAND. (C) QUALITY CONTROL OF TENDON. (D) TENDON COUPLING AND ANTICORROSION PROTECTION. (E) TEST RESULTS ON PRESTRESSING SYSTEM CHOSEN.

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QUESTION VIII D (1) - GENERAL CONSTRUCTION PRACTICES  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGES D (1)(A)-1 AND D (1)(B)-1 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

SECTION VIII D. CONSTRUCTION. (1) GENERAL. DETAIL THE CODES OF PRACTICE THAT WILL BE FOLLOWED FOR CONSTRUCTION. DESCRIBE WHERE AND TO WHAT EXTENT STANDARD PRACTICE FOR CONSTRUCTION WILL BE EQUALLED, EXCEEDED, AND, IF APPLICABLE, NOT MET. PROVIDE A LIST OF ALL MATERIALS OF CONTAINMENT CONSTRUCTION AND INDICATE THE ON-SITE USER TESTING THAT WILL BE DONE FOR EACH MATERIAL.

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QUESTION VIII D (2) - DETAILS OF CONCRETE USED  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
16 PAGES, PAGES D (2)(A)-1 TO D (2)(D)-1 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

DESCRIBE THE MIXING, TRANSPORTING, PLACING, AND CURING PROCEDURES TO BE USED. DESCRIBE THE QUALITY-CONTROL PROGRAM FOR THE CONCRETE. DESCRIBE PROCEDURES TO ENSURE PROPER BONDING BETWEEN LIFTS. SPECIFY THE CHLORIDE CONTENT LIMIT OF THE CONCRETE MIXING WATER.

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18-15522 ALSO IN CATEGORY 12

QUESTION VIII D (3) - SPLICING OF BARS IN PRESTRESSED CONCRETE  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
2 PAGES, PAGES D (3)(A)-1 AND D (3)(B)-1 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

DETAIL THE METHODS TO BE USED FOR REINFORCING STEEL SPLICING AND THE QUALITY-CONTROL PROGRAM. PRESENT TEST DATA TO SHOW THE ADEQUACY OF THE SPLICING SYSTEM CHOSEN.

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18-15523 ALSO IN CATEGORY 12

QUESTION VIII D (4) - QUALITY CONTROL IN CONTAINMENT-LINER CONSTRUCTION  
CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA  
6 PAGES, PAGES D (4)(A)-1 TO D (4)(E)-2 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

OUTLINE CODES TO BE USED IN THE MAKING AND TESTING THE LINER. PRESENT THE SEQUENCE OF THE LINER CONSTRUCTION WITH RESPECT TO CONCRETE CONSTRUCTION. OF PARTICULAR INTEREST IS THE

CATEGORY 18  
SAFETY ANALYSIS AND DESIGN REPORTS

18-15523 \*CONTINUED\*

PLACEMENT OF THE LINER ON THE BASE SLAB. JUSTIFY THE USE OF ONLY TWO PERCENT RADIOGRAPHY IN THE SEAM WELDING. DETAIL THE EXTENT TO WHICH WELD DUCTILITY WILL BE COMPARABLE TO THAT OF THE LINER MATERIAL. PROVIDE INSPECTION PROCEDURES FOR THE LINER ATTACHMENTS AND PENETRATION WELDS.

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ALSO IN CATEGORY 12

QUESTION VIII D (5) - COOLING FOR HOT PIPE PENETRATION

CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

1 PAGE, PAGE D (5)(A)-1 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

DESCRIBE THE HOT PIPE PENETRATION COOLING WATER SYSTEM. WHAT IS THE SOURCE OF WATER. IS EACH PENETRATION MONITORED FOR PROPER COOLING.

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ALSO IN CATEGORY 12

QUESTION VII D 6(A THROUGH D) - CONSTRUCTION INSPECTION

CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

3 PAGES, PAGES D (6)(A)-1 TO D (6)(D)-1 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H.B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

(A) DESCRIBE THE ORGANIZATION FOR INSPECTION, THE QUALIFICATIONS AND AUTHORITY OF INSPECTORS, AND EXTENT OF DESIGN-GROUP PARTICIPATION IN THE INSPECTION. (B) JUSTIFY THE CONSTRUCTOR ALSO PERFORMING THE CONSTRUCTION INSPECTION. (C) DESCRIBE THE PRESTRESSING SEQUENCE, PROCEDURES, AND TENDON-STRESS VERIFICATION METHODS. (D) PROVIDE THE METHOD USED TO GROUT THE TENDONS. WHAT CLEANING AGENT WILL BE USED PRIOR TO GROUTING.

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ALSO IN CATEGORIES 11 AND 9

QUESTION VIII E (1) - CONTAINMENT ACCEPTANCE TESTS

CAROLINA POWER AND LIGHT COMPANY, RALEIGH, NORTH CAROLINA

3 PAGES, PAGE E (1)(A)-1 TO E (1)(C)-1 OF SECOND SUPPLEMENT TO PRELIMINARY FACILITY DESCRIPTION AND SAFETY ANALYSIS REPORT, H. B. ROBINSON UNIT NUMBER 2, DECEMBER 1966, DOCKET 50-261

(A) DESCRIBE THE SEQUENCE OF CONTAINMENT PROOF-TESTING. PROVIDE THE CRITERIA FOR STRUCTURAL ACCEPTANCE AND THE GENERAL STRAIN AND DEFLECTION TOLERANCES THAT WILL BE PERMITTED. (B) PROVIDE THE INSTRUMENTATION PROGRAM TO VERIFY THE DESIGN, INCLUDING PROTECTIVE MEASURES TO BE TAKEN TO ENSURE PERFORMANCE OVER THE INTERVAL BETWEEN PLACEMENT AND USE. INCLUDE THE EXTENT TO WHICH THE LOCATION OF THESE INSTRUMENTS WILL PROVIDE VERIFICATION OF THE DESIGN. (C) DESCRIBE THE PROVISIONS TO MONITOR CONCRETE CREEP AND RELAXATION OF TENDON STRESS.

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18-15744

PRELIMINARY SAFETY ANALYSIS REPORT VOLUME I. NUCLEAR PLANT DIABLO CANYON SITE

PACIFIC GAS AND ELECTRIC COMPANY

300 PAGES, FIGURES, TABLES, FEBRUARY 3, 1967, DOCKET NO. 50-275

SINGLE WESTINGHOUSE PWR 3250-MWTH/1090-MWE, BUT TURBINE WILL ACCEPT 3391. OPERATIONAL IN 1972 BY PG AND E. SITE MIDWAY BETWEEN L.A. AND SAN FRANCISCO. INDIAN POINT 2 CLASS, BUT 18% REDUCTION IN FLUX PEAKING (DUE TO RCC FUEL ELEMENT DESIGN) ALLOWS HIGHER POWER. CLOSEST FAULT IS NACIMIENTO, 20 MILES AWAY. CONTAINMENT SPRAY WILL CONTAIN SODIUM THIOSULPHATE. CONTROLLED-LEAKAGE REACTOR COOLANT PUMPS HAVE FLYWHEELS. COOLANT LOOPS HAVE NO ISOLATION VALVES.

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CATEGORY 18  
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18-15745  
PRELIMINARY SAFETY ANALYSIS REPORT VOLUME II. NUCLEAR PLANT DIABLO CANYON SITE  
PACIFIC GAS AND ELECTRIC COMPANY  
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TWO DIESELS CONNECT TO 4.16-KV BUSES. MAXIMUM OFF-SITE DOSE WITH CORE MELTDOWN IS 36 REMS  
(THYROID). BLOWDOWN USES LOFT TEST AND SATAN CODE. APPENDIXES DISCUSS GEOLOGY, SEISMOLOGY,  
EARTHQUAKE-DESIGN CRITERIA, TSUNAMIS, AND SITE METEOROLOGY.

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\*SAFETY ANALYSIS REPORT, PRELIMINARY + BLOWDOWN + DIABLO CANYON + EARTHQUAKE ENGINEERING +  
EMERGENCY POWER, ELECTRIC + REACTOR, PRESSURIZED WATER + SEISMOLOGY + TSUNAMI

18-15894  
POTENTIALITIES AND POSSIBILITIES OF DESALTING FOR NORTHERN NEW JERSEY AND NEW YORK CITY  
OFFICE OF SALINE WATER, WASHINGTON, D.C.  
NP-16250 +. 112 PAGES, FIGURES, TABLES, FEBRUARY 11, 1966

THE REPORT EXPLORES DESALTING IN TERMS OF ITS COST AND ITS RELATIONSHIP TO THE GROWING NEED  
FOR WATER AND ELECTRICAL POWER, THE EXISTING SURFACE WATER SUPPLY SYSTEM, AND ADDITIONS TO  
THE SURFACE SYSTEM THAT HAVE BEEN PROPOSED PUBLICLY. VARIOUS DESIGN CONFIGURATIONS INCLUDING  
NUCLEAR, FOSSIL, AND REFUSE-DISPOSAL FUEL SOURCES, PLUS DUAL-PURPOSE ARRANGEMENTS WITH  
ELECTRICAL PRODUCTION ARE CONSIDERED. THE STUDY IS INTENDED TO PROVIDE USEFUL INFORMATION  
FOR RESPONSIBLE PUBLIC OFFICIALS WHO MUST WEIGH THE PRACTICABILITY OF DESALTING AND COMPARE  
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ARDENNES NUCLEAR POWER PLANT QUARTERLY REPORT NO. 12, APRIL 1-JUNE 30, 1965. SUMMARY. I. DESIGN STUDIES.  
II. PREFABRICATED COMPONENTS. III. ON-SITE WORK  
SOCIETE DENERGIE NUCLEAIRE FRANCO-BELGE DES ARDENNES, CHOOZLEZ-GIVET, FRANCE  
TID-22329 +. 60 PAGES, AUGUST 1965

THIS REPORT IS ONE OF A SERIES OF SUCH REPORTS ON THE FOLLOWING SUBJECTS - DESIGN STUDIES,  
COMPONENTS FABRICATED OFF-SITE, AND ON-SITE WORK.

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\*OPERATIONS REPORT, GENERAL + EURATOM + FRANCE + ON SITE WORK + REACTOR, PRESSURIZED WATER

CATEGORY 19  
BIBLIOGRAPHIES

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WASTE MANAGEMENT RESEARCH ABSTRACTS NO. 2  
INTERNATIONAL ATOMIC ENERGY AGENCY  
90 PAGES, 1966

ABSTRACTS FROM AUSTRALIA, CANADA, CZECHOSLOVAKIA, WEST GERMANY, JAPAN, POLAND, SOUTH AFRICA, UAR, UK, US, AND YUGOSLOVIA ARE INCLUDED. IT IS PROPOSED TO PUBLISH A SIMILAR SET OF ABSTRACTS EACH YEAR. THE ABSTRACTS WILL BE PUBLISHED IN THE LANGUAGE OF SUBMITTAL. THE TITLE AND THE NAMES OF AUTHORS AND OF THE INSTITUTE OF ABSTRACTS SUBMITTED IN RUSSIAN WILL BE TRANSLATED INTO ENGLISH.

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19-14065 ALSO IN CATEGORY 15  
RESEARCH AND DEVELOPMENT IN PROGRESS. BIOLOGY AND MEDICINE ISSUE NO. 4  
AEC, DIVISION OF BIOLOGY AND MEDICINE  
TID-4204 +. 527 PAGES, APRIL 1966

RESEARCH PROJECTS SUPPORTED BY THE DIVISION OF BIOLOGY AND MEDICINE, USAEC, ARE DESCRIBED. THE PROJECTS ARE DIVIDED INTO ELEVEN CATEGORIES DEALING WITH BIOLOGICAL EFFECTS OF RADIATION, ECOLOGICAL STUDIES, HEALTH PHYSICS RESEARCH, WEAPONS-EFFECTS STUDIES, CANCER RESEARCH, AND FOOD PRESERVATION.

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CHEMICAL TOXICITY + ECOLOGICAL CONSIDERATION + METEOROLOGY + RADIATION DAMAGE + RADIATION EFFECT + TEST, WEAPONS (HP ASPECTS)

19-14285  
APPLICATIONS OF RADIOISOTOPES IN HYDROLOGY. A LITERATURE SEARCH  
PHILIPPINE ATOMIC ENERGY COMMISSION, MANILA  
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SIXTY-SIX REFERENCES ON GEOLOGY AND MINERALOGY, ISOTOPE TECHNOLOGY, METEOROLOGY, PHYSICS, AND WASTE DISPOSAL AND PROCESSING ARE GIVEN TO JOURNALS AND REPORTS PUBLISHED FROM 1948 THROUGH TO 1964. SEPARATE CORPORATE AND PERSONAL AUTHOR INDEXES ARE INCLUDED.

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INFORMATION AT NSIC IS DIVIDED INTO 19 CATEGORIES. AN ITEM OF INFORMATION MAY BE KEYS TO AS MANY AS THREE OF THESE. A COLLECTION OF SELECTORS OR KEYWORDS IS USED TO DENOTE THE MAIN SAFETY RELATED POINTS COVERED IN AN ARTICLE. THE FOLLOWING INDEX IS AN ALPHABETICAL LISTING OF SELECTORS GIVING REFERENCES TO EACH ARTICLE WHICH WAS KEYS TO IT. THE CATEGORY NUMBER IS GIVEN FIRST, FOLLOWED BY THE ACCESSION NUMBER. THE ACCESSION NUMBERS ARE USED TO LOCATE BIBLIOGRAPHIC ITEMS WITHIN A CATEGORY.

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				12-14762 18-13675 18-14555 18-14557			

18-14558	18-14561	18-14564	18-14762	7-16586	7-16587	7-16588	9-14192
CONTAINMENT LINER				9-14795	11-12476	11-13672	11-13837
5-15517	12-15506	12-15514	12-15515	11-13845	11-13975	11-13987	11-14521
12-15516	12-15517	12-15523	18-15506	11-14522	11-14523	11-14524	11-14546
18-15514	18-15515	18-15516	18-15517	11-14553	11-14568	11-14571	11-14634
18-15523				11-14660	11-14665	11-14668	11-14672
CONTAINMENT PENETRATION				11-14710	11-15109	11-15110	11-15111
5-15517	11-14568	11-15259	11-15429	11-15121	11-15131	11-15133	11-15135
11-15431	12-15516	12-15517	12-15524	11-15139	11-15220	11-15345	11-15421
18-14568	18-15429	18-15431	18-15516	11-15423	11-15424	11-15440	12-13675
18-15517	18-15524			12-14546	12-15420	12-15464	16-15337
CONTAINMENT PENETRATION, CLOSURE OF				17-12237	17-12245	17-12995	17-13975
5-14665	5-15471	5-15517	9-15409	17-14008	17-14308	17-14634	17-14669
11-14556	11-14557	11-14561	11-14665	17-14795	17-15110	18-12207	18-13666
11-15220	11-15409	11-15430	11-15431	18-13672	18-13674	18-13675	18-13987
12-15517	18-14556	18-14557	18-14561	18-14537	18-14546	18-14553	18-14568
18-14665	18-15409	18-15430	18-15431	18-14571	18-14627	18-14634	18-14665
18-15471	18-15517			18-15420	18-15420	18-15421	18-15423
CONTAINMENT REFERENCE MEASURING SYSTEM				18-15424	18-15440	18-15464	
11-14648	11-14849	11-14851	11-15259	CONTAINMENT, SHOCK GENERATION AND PROTECTION			
17-14648	17-14849	18-14648	18-14849	11-15132			
18-14851				CONTAINMENT, SOURCE			
CONTAINMENT RESEARCH AND DEVELOPMENT.				11-13844	13-13844		
7-15114	11-13837	11-15131	11-15132	CONTAINMENT, UNDERGROUND			
CONTAINMENT SPRAY				1-14073			
5-15006	7-15484	11-15006	11-15401	CONTAMINATION			
11-15459	11-15460	11-15484	12-13968	5-15092	7-13683	7-15092	12-13831
12-15459	12-15460	18-13968	18-15006	12-15319	14-13926	14-14541	15-13831
18-15401	18-15459	18-15460	18-15484	15-13926	15-14177	16-15332	17-15319
CONTAINMENT STRUCTURE				18-14541	18-15092		
1-14524	2-14524	2-14673	5-15501	CONTROL PANEL/ROOM			
5-15507	5-15517	7-13691	11-13749	9-15377	9-15378	9-15399	9-15406
11-14049	11-14346	11-14524	11-14673	9-15414	11-15427	12-15406	14-15378
11-15259	11-15497	11-15502	12-15499	18-15377	18-15378	18-15399	18-15406
12-15500	12-15501	12-15503	12-15504	18-15414	18-15427		
12-15506	12-15507	12-15509	12-15510	CONTROL ROD			
12-15511	12-15512	12-15513	12-15515	4-14334	5-14071	5-14576	6-14333
12-15516	12-15517	12-15519	12-15522	9-14191	9-14329	9-14333	9-14576
13-14346	16-15503	18-15497	18-15499	9-15036	9-15410	9-15413	10-15413
18-15500	18-15501	18-15502	18-15503	11-14329	14-14329	17-13315	17-14071
18-15504	18-15506	18-15507	18-15509	17-14334	18-14576	18-15036	18-15410
18-15510	18-15511	18-15512	18-15513	18-15413			
18-15515	18-15516	18-15517	18-15518	CONTROL ROD BURNUP			
18-15519	18-15522			17-12245	17-14854		
CONTAINMENT VESSEL LOADING				CONTROL ROD CALIBRATION			
2-13950	11-14674	12-13950		6-14696	9-14711	17-14794	18-14662
CONTAINMENT, CONTINUOUS MONITORING SYSTEM				18-14711			
11-10528	18-10528			CONTROL ROD DRIVE			
CONTAINMENT, FUEL REPROCESSING				1-14641	9-12195	9-14185	9-14191
2-13525	11-13839	11-13840	11-13841	9-14325	9-14636	9-14641	9-14773
11-13844	13-13525	13-13839	13-13840	9-14822	9-14892	9-15054	9-15242
13-13841	13-13844	18-13525		9-15920	17-12195	17-13994	17-14641
CONTAINMENT, GENERAL				17-14642	17-14892	17-15681	18-12195
1-14290	1-14524	1-14625	2-14524	18-13956	18-13994	18-14636	
2-14673	3-14290	4-15129	7-13691	CONTROL ROD INTERACTION			
7-14670	7-15345	7-15346	7-16586	6-14333	9-14333		
7-16587	7-16588	11-10528	11-14290	CONTROL ROD PROGRAM			
11-14346	11-14524	11-14670	11-14673	9-13059	9-15924	17-12995	17-13059
11-15129	11-15134	11-15345	12-13838	17-14653	18-14653		
12-14670	13-14346	17-13838	17-14625	CONTROL ROD SCRAM MECHANISM			
18-10528	18-14537	18-14624	18-14625	1-14641	5-15477	9-14190	9-14641
CONTAINMENT, HIGH PRESSURE				9-15477	9-15920	17-14641	17-14642
2-15433	5-15485	7-14144	7-14670	18-15477			
9-15526	11-07901	11-14522	11-14648	CONTROL ROD WORTH			
11-14670	11-15259	11-15417	11-15428	6-13882	6-13904	6-14754	6-15153
11-15433	11-15462	11-15474	11-15485	9-13882	9-13904	9-15153	9-15924
11-15497	11-15526	12-14670	12-15462	17-14006	17-15683		
17-07901	17-14144	17-14648	18-14144	CONTROL ROD, SHIM SAFETY			
18-14630	18-14632	18-14648	18-15417	5-15472	9-15472	18-15472	
18-15428	18-15433	18-15462	18-15463	CONTROL SYSTEM			
18-15474	18-15485	18-15497	18-15526	4-14334	4-14379	6-14379	6-15148
CONTAINMENT, LOW PRESSURE				9-12297	9-14325	9-14329	9-14379
9-07758	17-07758			9-14581	9-14582	9-15041	9-15042
CONTAINMENT, MULTIPLE				9-15148	9-15389	9-15408	9-15409
2-13950	11-14674	12-13950		9-15412	10-15412	11-14329	11-15409
CONTAINMENT, PRESSURE SUPPRESSION				12-15408	14-14329	17-14334	18-15389
2-14762	7-14670	11-14670	11-15218	18-15408	18-15409	18-15412	
11-15219	12-14670	12-14762	18-13969	CONTROL, COMPUTER			
18-14626	18-14762			9-14577	9-15380	9-15381	9-15382
CONTAINMENT, PRESSURE VENTING				9-15384	18-15380	18-15381	18-15382
7-13836	11-13836	11-13839	11-13841	18-15383	18-15384		
11-13842	11-13844	11-14553	11-14555	CONTROL, GENERAL			
11-14556	11-14557	11-14558	11-14561	1-14291	1-15895	5-13669	5-15091
11-14562	11-14563	11-14564	12-13836	6-14781	6-14842	6-15091	8-15091
13-13839	13-13841	13-13844	18-14553	9-15377	9-15378	11-14291	14-15378
18-14555	18-14556	18-14557	18-14558	18-13669	18-15377	18-15378	
18-14561	18-14562	18-14563	18-14564	CONTROLLER			
CONTAINMENT, PRESSURE VESSEL				9-15388	11-15428	18-15388	18-15391
1-14524	1-14660	1-15928	2-12476	18-15428			
2-14524	5-13666	5-14665	5-15440	COOLANT CHEMISTRY			
5-15464	6-13666	7-12476	7-15345	17-12245	17-13315	17-13892	17-14001

17-15432	17-15677	17-15678		7-15345	7-16586	7-16587	7-16588
COOLANT COEFFICIENT				11-15345			
6-14810				CURIUM			
COOLANT PURIFICATION SYSTEM				15-15225	17-14063		
5-15490	14-14586	15-14726	15-15490	CVTR (CAROLINAS VIRGINIA TUBE REACTOR)			
17-14726	17-15678	18-13670	18-14726	9-15216	11-14648	17-14008	17-14009
18-15490				17-14648	17-15216	18-14009	18-14148
COOLANT QUALITY				18-14648			
7-15163	7-15251	17-14854	17-15251	CYLINDER			
COOLING, SHUTDOWN				11-14521	11-14522	11-15109	
18-13671				CZECHOSLOVAKIA			
COPPER				14-15104	15-15104		
7-15529	7-15942	12-15942	13-15942	DAMAGE			
14-13913	17-15173			5-14569	5-14570	9-13899	11-14569
CORE COMPONENTS, MISCELLANEOUS				11-14570	12-13899	18-14569	18-14570
5-14569	5-14570	5-15422	9-14892	DAMPING			
11-14569	11-14570	11-15421	11-15422	2-15396	11-15396	12-15512	18-15396
17-12207	17-13892	17-14892	17-15678	18-15512			
18-12207	18-14569	18-14570	18-14805	DANGER COEFFICIENT			
18-15421	18-15422			6-14696	6-15138		
CORE MELTDOWN				DATA PROCESSING			
5-15092	7-15092	18-15092		6-14791	7-15205	9-14577	9-14791
CORE REFLOODING SYSTEM				17-14644	17-14791		
5-14572	5-15438	5-15439	5-15440	DECAY HEAT			
5-15446	5-15447	5-15448	5-15464	4-15021	4-15022	5-13945	5-15015
5-15465	5-15466	9-15442	11-15424	7-13945	7-15015	8-13945	
11-15440	11-15443	12-13968	12-15394	DECONTAMINATION			
12-15438	12-15439	12-15441	12-15442	7-13683	7-13848	9-15920	11-13839
12-15443	12-15444	12-15445	12-15448	12-13948	12-15032	12-15034	13-13839
12-15450	12-15451	12-15452	12-15453	13-14082	13-15032	14-13731	14-14127
12-15454	12-15464	12-15465	12-15466	14-14532	14-14533	14-14534	14-14968
18-13968	18-14572	18-15394	18-15424	14-15002	14-15004	14-15956	15-13924
18-15438	18-15439	18-15440	18-15441	15-14175	15-14177	15-14532	15-14533
18-15442	18-15443	18-15444	18-15445	15-14534	15-14968	15-14997	15-15004
18-15446	18-15447	18-15448	18-15450	15-15294	15-15354	15-15956	17-14082
18-15451	18-15452	18-15453	18-15454	17-14127	17-14305	17-14306	17-14308
18-15463	18-15464	18-15465	18-15466	18-14082			
CORE SPRAY				DECONTAMINATION FACTOR			
12-13968	18-13968	18-14627	18-15087	7-13848	12-13948		
CORE, PLATE TYPE				DECONTAMINATION SPRAY			
5-14071	6-15141	17-14071		7-15193			
CORROSION				DEFORMATION			
5-15108	7-13739	7-13744	7-13745	11-13752	11-14047	11-14049	11-14050
7-13746	7-13748	7-14299	7-15103	11-14522			
7-15178	7-15181	7-15182	7-15201	DELAYED NEUTRON			
7-15207	7-15694	7-15695	9-14660	6-14760	6-14772	6-14786	6-14821
9-14891	9-15920	11-13672	11-13748	6-14842	6-15151	6-15153	6-15254
11-14048	11-14692	11-15207	11-15694	9-14821	9-15153	18-14775	
12-14640	12-15245	12-15690	13-15245	DENMARK			
13-15951	17-14640	17-14642	17-14891	1-14660	11-14660	14-14949	15-14949
17-15173	17-15202	18-13672	18-13969	15-15237	16-15340	17-14308	
18-15257				DEPOSITION			
COUNTER				5-15016	7-13544	7-13545	7-13665
14-14954	15-13347	15-13941	15-14137	7-13683	7-13847	7-15016	7-15114
15-14954	15-14962			7-15234	7-15248	7-15253	7-15255
COUNTER, WHOLE BODY				7-15346	14-13926	14-14501	14-14505
14-14956	15-13635	15-13912	15-13983	15-13783	15-13811	15-13926	15-13953
15-14128	15-14956	15-14975	15-15264	15-14322	15-14505	16-14336	18-13665
15-15317	17-14128			DESALINATION			
COUPLED CORES				5-13641			
1-14180	6-14180	18-14180		DESCRIBING FUNCTION			
CRFEP				6-15148	9-15148		
2-14015	2-14019	2-14683	2-14716	DESIGN CRITERIA			
CRFEP BEHAVIOR				1-13667	1-14524	1-15397	1-15928
9-15526	11-14047	11-14049	11-14050	2-14524	2-15397	5-15447	5-15501
11-15526	18-15526			5-15517	6-14800	7-13834	7-15116
CRFEP PROPERTY				7-15120	7-15172	7-15191	7-15458
7-15173	7-15359	11-14047	11-14050	9-14542	9-14543	9-15330	9-15404
11-14692	11-15051	11-15170		11-13752	11-13837	11-13840	11-13841
CRITICAL ASSEMBLY FACILITY				11-13844	11-13845	11-14049	11-14522
5-14780	6-15090	11-14780	13-14129	11-14524	11-14552	11-14557	11-14562
15-14130	17-14129	17-14130	17-14272	11-14563	11-14692	11-15122	11-15420
17-14645	17-15677	18-14420	18-14645	12-13834	12-14542	12-14543	12-14544
18-14649	18-14780	18-14845		12-15404	12-15423	12-15450	12-15454
CRITICALITY EXPERIMENT				12-15458	12-15498	12-15499	12-15500
1-14752	1-14759	1-14866	3-14752	12-15501	12-15506	12-15517	13-13840
3-14759	3-14866	6-14811	13-14147	13-13841	13-13844	13-15330	14-14590
13-14866	18-14147	18-14662		17-15678	18-13667	18-14542	18-14543
CRITICALITY SAFETY				18-14544	18-14552	18-14557	18-14562
1-13980	1-14752	1-14759	1-14799	18-14563	18-14624	18-14800	18-15397
1-14866	1-14868	1-15898	2-13525	18-15404	18-15420	18-15420	18-15429
3-14752	3-14759	3-14771	3-14866	18-15447	18-15450	18-15454	18-15458
3-14868	6-15033	7-15033	12-15245	18-15498	18-15499	18-15500	18-15501
13-13525	13-14069	13-14866	13-14868	18-15506	18-15517		
13-15245	14-15033	15-14977	18-13525	DESIGN STUDY			
18-13991	18-13992			1-14524	1-15893	2-14524	9-14822
CROSS SECTION				9-15240	11-14524	11-14634	12-14344
7-15696				12-15245	13-14069	13-14340	13-14344
CRUD				13-15245	13-15903	17-14377	17-14634
5-15488	9-15920	12-15958	18-15488	18-13668	18-14380	18-14634	18-14650
GSE (CONFINEMENT SYSTEMS EXPERIMENT)				DESORPTION			

7-15228	15-13953			13-14083	14-13926	15-13926	15-14083
DESTRUCTIVE TRANSIENT				15-14128	15-14972	17-14083	17-14128
6-14737				DOSIMETRY, GENERAL			
DESTRUCTIVE WIND				3-15901	9-15901	12-15901	15-13636
11-15502	12-15398	12-15503	16-15398	15-13730	15-13783	15-13920	15-14248
16-15503	17-14655	17-14656	18-14655	15-14270	15-14496	15-14706	15-14963
18-14656	18-15398	18-15502	18-15503	15-14969	15-14972	15-14973	15-14994
DIABLO CANYON				15-14999	15-15000	15-15238	15-15282
18-15744	18-15745			DOSIMETRY, PHOTOGRAPHIC			
DIETARY HABIT				15-13346	15-13729	15-13861	15-13920
14-15273	15-13996	15-15262	15-15273	15-14131	15-14807	15-15230	15-15300
15-15291	15-15315			DOSIMETRY, RADIOPHOTOLUMINESCENCE			
DIFFUSION				15-14320			
7-09533	7-13545	7-13681	7-13688	DOSIMETRY, THERMOLUMINESCENCE			
7-13745	7-14286	7-15159	7-15162	15-13861	15-13920	15-13921	15-14138
7-15166	7-15196	7-15199	7-15255	15-14972	15-15269		
7-15933	8-14312			DOUNREAY (UK)			
DIFFUSION BOARD				6-14696			
7-13691				DRAGON (UK)			
DIFFUSION CHANNEL				7-14299	7-15210		
7-13544				DRESDEN 1			
DIFFUSION COEFFICIENT				1-14641	5-14652	9-14072	9-14641
7-09533	7-13544	7-15159	7-15167	12-14072	14-14586	15-14587	17-13976
7-15530	7-15933			17-14072	17-14641	18-13956	18-14652
DILUTION				DYNAMICS, NONLINEAR			
14-13855	14-14178	14-14539	14-14705	6-14814	6-15143	6-15148	9-15148
15-13953	16-14909	18-14539		12-15500	18-15500		
DIRECT ENERGY CONVERSION DEVICES				EARTH MATERIAL, DYNAMIC PROPERTY			
18-14380	18-14675	18-15257		2-14010	2-14021	2-14086	2-14213
DISPERSION				2-14214	2-14224	2-14509	2-14512
7-13683	14-13978	14-14178	14-14705	2-14513	2-14719	2-15026	2-15064
14-15304	15-13953	15-13958	15-13959	EARTH TREMOR, INDUCED			
16-13961	17-13961			2-14010	2-14709	2-14978	
DISPLACEMENT, DESIGN FOR				EARTHQUAKE			
2-15396	11-15396	12-15512	18-15396	1-14524	2-14524	2-15396	11-14524
18-15512				11-15396	18-14633	18-15396	
DISPLACEMENT, GENERAL				EARTHQUAKE ENGINEERING			
2-14015	2-14019	2-14023	2-14215	1-15397	2-14224	2-14673	2-14708
2-14227	2-14513	2-14515	2-14517	2-14709	2-15397	2-15905	5-15439
2-14680	2-14683	2-14713	2-14715	11-14673	11-15443	12-15420	12-15439
2-14937				12-15443	12-15444	12-15450	12-15494
DISSOLUTION				12-15504	12-15508	12-15512	18-15397
13-15951				18-15420	18-15420	18-15439	18-15443
DNR (DEPARTURE FROM NUCLEATE BOILING)				18-15444	18-15450	18-15494	18-15504
5-14452	5-14764	5-14765	5-14796	18-15508	18-15512	18-15745	
5-15434	5-15436	5-15437	5-15483	EARTHQUAKE EPICENTER			
5-15493	6-14796	6-15483	17-14764	2-14010	2-14014	2-14024	2-14026
17-14765	18-12189	18-14764	18-14765	2-14393	2-14516	2-15906	
18-14796	18-15434	18-15436	18-15437	EARTHQUAKE PREDICTION			
18-15483	18-15493			2-14510	2-14518	2-14519	2-14520
DOPPLER COEFFICIENT				2-14681	2-14686	2-14687	2-14689
5-14777	5-15091	6-14053	6-14777	2-14720	2-14932	2-14938	
6-15073	6-15074	6-15091	6-15102	EARTHQUAKE RECORDS			
6-15157	6-15254	6-15344	8-15091	2-14014	2-14023	2-14024	2-14026
18-14775				2-14218	2-14229	2-14392	2-14518
DOPPLER EFFECT				2-14689	2-14713	2-14933	2-15026
6-15124	6-15142	6-15144	6-15145	2-15905	2-15906		
6-15146	6-15148	6-15153	6-15154	EARTHQUAKE, GENERAL			
9-15148	9-15153			2-14010	2-14011	2-14012	2-14013
DOSE				2-14014	2-14015	2-14016	2-14017
4-13946	4-15019	5-15488	5-15489	2-14018	2-14019	2-14020	2-14021
5-15490	5-15495	5-15496	6-15033	2-14022	2-14023	2-14024	2-14025
7-15033	7-15484	11-14558	11-15484	2-14026	2-14027	2-14028	2-14029
12-15495	14-13926	14-13927	14-14507	2-14030	2-14031	2-14032	2-14086
14-14533	14-15033	15-13912	15-13914	2-14206	2-14213	2-14214	2-14215
15-13926	15-13927	15-13937	15-13965	2-14218	2-14219	2-14220	2-14224
15-14134	15-14138	15-14319	15-14496	2-14225	2-14226	2-14227	2-14229
15-14507	15-14531	15-14533	15-14706	2-14392	2-14393	2-14456	2-14509
15-14960	15-14963	15-14969	15-14972	2-14510	2-14512	2-14513	2-14515
15-14999	15-15000	15-15001	15-15490	2-14516	2-14517	2-14518	2-14519
15-15491	15-15496	16-15019	18-14558	2-14520	2-14679	2-14680	2-14681
18-15484	18-15488	18-15489	18-15490	2-14683	2-14686	2-14687	2-14688
18-15491	18-15495	18-15496		2-14689	2-14708	2-14709	2-14713
DOSE CALCULATION, EXTERNAL				2-14714	2-14715	2-14716	2-14717
14-15273	15-13348	15-13853	15-14130	2-14719	2-14720	2-14931	2-14932
15-14155	15-14248	15-15226	15-15229	2-14933	2-14935	2-14937	2-14938
15-15273	15-15293	15-15371	17-14130	2-14939	2-14941	2-15023	2-15024
18-13967				2-15025	2-15026	2-15064	2-15905
DOSE CALCULATION, INTERNAL				2-15906	2-15911	2-15912	14-14698
7-15250	11-15427	14-15273	15-14155	15-14698			
15-14248	15-14704	15-15273	15-15288	EBOP (EXPERIMENTAL BERYLLIUM OXIDE REACTOR)			
17-15250	18-15427			7-15117			
DOSE MEASUREMENT, EXTERNAL				EBR 1 AND 2 (EXPERIMENTAL BREEDER REACTORS)			
9-14042	14-13926	14-14950	14-15004	10-15925	17-14395		
15-13348	15-13636	15-13853	15-13861	EBWR (EXPERIMENTAL BOILING WATER REACTOR)			
15-13862	15-13926	15-13937	15-14041	6-14663	11-13975	17-13975	17-14052
15-14042	15-14130	15-14132	15-14134	17-14663			
15-14248	15-14320	15-14950	15-14972	ECOLOGICAL CONSIDERATION			
15-15001	15-15004	15-15230	15-15238	2-15088	14-14178	14-14309	14-14703
15-15293	15-15296	15-15299	17-14130	14-14707	14-14948	14-14956	14-14965
DOSE MEASUREMENT, INTERNAL				14-14966	14-14968	14-14970	14-15223

14-15230	14-15273	14-15291	14-15290	5-13986	5-15470	6-13986	7-13848
15-13301	15-13811	15-13826	15-13916	7-14670	7-15113	7-15252	9-14072
15-13919	15-13940	15-13983	15-14065	9-14641	9-15403	9-15406	9-15407
15-14156	15-14157	15-14175	15-14309	9-15412	10-15412	11-14670	11-15393
15-14322	15-14948	15-14956	15-14965	11-15395	12-13675	12-13838	12-14072
15-14966	15-14967	15-14968	15-14970	12-14670	12-15113	12-15393	12-15398
15-14971	15-15223	15-15239	15-15262	12-15403	12-15406	12-15407	16-15398
15-15263	15-15264	15-15269	15-15273	17-13838	17-14072	17-14641	17-15252
15-15281	15-15288	15-15290	15-15315	18-13667	18-13675	18-13986	18-14626
15-15368	18-15088	19-14065		18-14630	18-15393	18-15395	18-15398
ECONOMIC STUDY				18-15400	18-15403	18-15406	18-15407
1-14291	3-15047	11-14291	18-15894	18-15412	18-15470		
ECONOMICS				ENVIRONMENTAL CONDITION			
1-14180	6-14180	11-15131	11-15134	5-15092	6-15033	7-15033	7-15092
12-13934	12-13935	14-14506	15-13830	9-15242	14-15033	15-13811	15-13916
15-14506	17-13962	17-14306	17-15914	15-13919	15-13940	15-13958	15-13959
18-14180	18-15012	18-15037		18-15092			
EFFLUENT				EQUATION, GENERAL			
1-14074	2-13950	12-13950	13-14808	16-14337	16-14349		
14-14074	14-15010	14-15077	14-15305	EQUATION, IN HOUR			
14-15311	15-14247	15-14661	15-15085	6-14772			
17-14661	17-14808	17-14890	17-15010	EQUATION, NONLINEAR			
17-15077	17-15095	17-15305	17-15311	11-15045			
18-14074	18-14808	18-15010	18-15077	EQUIPMENT DESIGN			
18-15085	18-15305	18-15311		1-15397	2-15397	7-13909	7-15954
EGCR (EXPERIMENTAL GAS COOLED REACTOR)				9-14822	9-15054	9-15055	9-15065
6-15150	7-15117	9-14191		9-15066	9-15241	12-14344	12-15032
EGYPT				12-15245	12-15246	12-15444	13-14344
15-15229				13-14345	13-15032	13-15245	13-15246
ELASTICITY				18-15397	18-15444		
11-14521	11-14523	11-15045		ERROR ANALYSIS			
ELECTRIC POWER, AUXILIARY				5-15437	18-15437		
9-15413	10-15413	10-15925	10-15926	ETR (ENGINEERING TEST REACTOR)			
18-15413				1-14639	9-15216	17-14639	17-15216
ELECTRIC POWER, GENERAL				18-14639			
4-13930	7-13930	9-14332	10-14332	EURATOM			
ELECTRIC POWER, NORMAL				6-13905	15-15353	15-15367	17-15919
10-15925	10-15926			18-14649	18-15919		
ELECTRIC POWER, VITAL				EUROCHEM			
10-15925				14-13728			
ELECTRON MICROSCOPY				EUROPIUM			
7-13678	7-13681	7-15174	11-15689	14-15281	15-15281		
ELECTROSTATIC PRECIPITATION				EVAPORATION			
7-13527				5-13641	7-15166	13-14082	13-15082
ELEMENTS AND ISOTOPES				14-14323	17-14082	17-15082	18-14082
17-15914				18-15082			
ELK RIVER				EXAMINATION			
5-14647	9-15049	11-13975	11-14647	5-14146	5-14665	6-14146	11-13975
11-14710	11-14849	11-14851	11-15110	11-13987	11-14546	11-14553	11-14665
11-15133	14-15050	17-04916	17-13975	12-14546	12-15130	12-15420	12-15525
17-14637	17-14690	17-14849	17-15048	17-12207	17-12245	17-13897	17-13975
17-15049	17-15050	17-15110	18-14637	17-14052	17-14656	17-15053	17-15917
18-14647	18-14849	18-14851		18-12207	18-13956	18-13987	18-14146
EMARRITTEMENT				18-14546	18-14553	18-14656	18-14665
1-14864	3-14864	5-13743	7-13743	18-15420	18-15420	18-15525	
7-13748	7-15207	7-15208	7-15688	EXCURSION, LARGE			
9-15036	11-13748	11-13750	11-15051	4-13871	5-13071	6-13871	18-13967
11-15121	11-15179	11-15207	11-15208	EXPLOSION			
11-15688	14-14864	17-14063	18-15036	1-14723	1-14801	1-14860	4-14317
EMERGENCY COOLING CONSIDERATIONS				5-14317	7-13684	8-13833	8-14787
1-14641	4-15021	5-13985	5-13997	11-14723	12-13833	12-13833	13-13833
5-15006	5-15467	5-15468	7-15117	13-14085	14-14787	15-14128	16-13684
8-15467	9-14641	10-15469	11-14546	17-14085	17-14128	17-14787	17-14801
11-15006	11-15125	11-15423	12-13675	17-14860	17-15038	17-15932	18-14085
12-13838	12-13968	12-13985	12-14546	18-14723			
12-14678	12-15125	12-15126	12-15494	EXPLOSIVE, CONVENTIONAL			
16-15126	17-13838	17-14641	17-14725	11-15132	16-15334		
18-13675	18-13968	18-13997	18-14540	FABRICATION			
18-14546	18-14678	18-14725	18-15006	1-14799	6-15171	7-15171	11-14546
18-15096	18-15087	18-15125	18-15125	11-14553	11-15135	12-14546	18-14546
18-15423	18-15463	18-15467	18-15468	18-14553			
18-15469	18-15494			FAILURE, ADMINISTRATIVE CONTROL			
EMERGENCY POWER, ELECTRIC				11-15076	13-12308	13-14129	13-14727
1-14641	9-14641	9-15412	10-15412	13-14728	14-15050	15-14726	15-15084
10-15461	10-15925	10-15926	12-13838	15-15309	17-12308	17-13315	17-13999
12-15445	17-13315	17-13838	17-14641	17-14129	17-14725	17-14726	17-14727
18-15412	18-15445	18-15461	18-15745	17-14728	17-15050	17-15076	17-15084
EMERGENCY SYSTEM				18-13999	18-14725	18-14726	18-14727
1-14641	7-13848	9-14542	9-14641	18-14728	18-15076	18-15084	18-15309
12-14542	12-14544	17-14641	18-14542	FAILURE, CLADDING			
18-14544				1-14864	3-14864	5-13743	5-15091
ENERGY LEVEL				5-15467	5-15468	5-15493	6-15091
2-14013	2-14016	2-14017	2-14018	7-13743	7-13748	7-15174	7-15178
2-14020	2-14023	2-14030	2-14215	7-15221	8-15091	8-15467	9-14891
2-14219	2-14456	2-14686	2-14689	9-15216	11-13748	11-13975	11-14047
2-14720	2-14931	2-14932	2-14935	11-15179	14-14864	17-13975	17-14051
2-15911				17-14891	17-15216	17-15917	18-15467
ENERGY SOURCE				18-15468	18-15493		
4-13946				FAILURE, COMPONENT			
ENGINEERED SAFETY SYSTEM				9-14640	9-14892	9-15387	9-15410
1-13667	1-14641	1-15400	1-15897	9-15415	11-14550	12-14640	12-15130

17-14550	17-14640	17-14857	17-14892	15-14960	15-14962	15-14965	15-14966
17-15680	17-15681	18-15387	18-15410	15-14967	15-14968	15-14970	15-14976
18-15415				15-14997	15-15001	15-15005	15-15104
FAILURE, DESIGN ERROR				15-15237	15-15263	15-15265	15-15274
7-14330	9-14893	11-14330	13-14082	15-15281	15-15287	15-15291	15-15353
13-14083	15-14083	15-15084	17-13892	15-15357	15-15367	15-15956	16-13684
17-14000	17-14082	17-14083	17-14330	16-14337	17-15005	18-15265	19-14285
17-14893	17-15084	17-15347	17-15679	FARET (FAST ARGONNE REACTOR EXPERIMENT TEST)			
18-14082	18-15084			5-15092	7-15092	18-15092	
FAILURE, EQUIPMENT				FAST NEUTRON			
5-14790	9-14035	9-14332	9-14790	9-14042	9-14060	15-14042	15-14060
9-14795	9-14822	9-15920	9-15924	15-14994	17-15035	17-15215	
10-14332	11-15395	15-15083	17-14008	FAULT			
17-14790	17-14795	17-15083	17-15680	2-14011	2-14015	2-14016	2-14019
18-13314	18-15083	18-15395		2-14020	2-14022	2-14023	2-14025
FAILURE, FABRICATION ERROR				2-14028	2-14030	2-14031	2-14032
17-14642				2-14215	2-14225	2-14226	2-14227
FAILURE, FATIGUE				2-14229	2-14392	2-14393	2-14509
1-15929	5-14790	7-15170	9-14790	2-14515	2-14516	2-14517	2-14518
11-13749	11-14692	11-15170	11-15179	2-14680	2-14681	2-14682	2-14683
12-15516	17-13315	17-14790	17-15038	2-14713	2-14714	2-14715	2-14717
18-15516				2-14719	2-14931	2-14933	2-14937
FAILURE, FUEL ELEMENT				2-14939	2-14941	2-15024	2-15911
5-14784	5-14898	5-15091	6-13883	18-15744			
6-14738	6-14739	6-14784	6-15091	FERMI			
7-11795	7-14784	8-15091	9-14891	1-14844	7-11795	12-14844	17-11795
9-14947	17-11795	17-14002	17-14051	17-13315	17-13534	17-13536	18-13314
17-14077	17-14377	17-14677	17-14891	18-13537	18-13979	18-14804	18-14844
17-14898	17-14947	17-15917	18-14077	FFTF (FAST FLUX TEST FACILITY)			
FAILURE, GENERAL				1-15892			
4-14179	7-15194			FILM, GENERAL			
FAILURE, INSTALLATION ERROR				5-14447	15-14079	17-14079	
17-14000				FILM, LIQUID			
FAILURE, INSTRUMENT				5-13641	5-14452		
9-13899	9-15407	12-13899	12-15407	FILTER			
17-13315	17-15680	18-13314	18-15407	5-14780	7-09150	7-13676	7-13678
FAILURE, MAINTENANCE ERROR				7-13679	7-13681	7-13683	7-13685
15-14726	15-15080	17-14726	17-15080	7-13836	7-14078	7-14144	7-14330
18-14726	18-15080			7-14381	7-14383	7-14666	7-14670
FAILURE, OPERATOR ERROR				7-15096	7-15116	7-15120	7-15172
5-14898	9-15924	13-14083	13-14084	7-15193	7-15194	7-15248	7-15458
13-14085	13-14129	14-15050	15-14080	7-15693	9-14878	11-13836	11-14330
15-14083	15-14084	15-15079	15-15310	11-14666	11-14670	11-14780	11-15427
17-13999	17-14005	17-14080	17-14083	12-13836	12-14670	12-15032	12-15458
17-14084	17-14085	17-14129	17-14272	12-15958	13-15032	15-14878	17-14078
17-14637	17-14898	17-15050	17-15079	17-14144	17-14330	17-14666	17-14878
17-15310	18-13999	18-14085	18-14637	18-14078	18-14144	18-14780	18-15427
18-15079	18-15310			18-15458			
FAILURE, PIPE				FILTER CHARACTERISTICS			
1-15929	5-14790	5-15446	5-15475	7-09533	7-10333	7-13679	
5-15492	5-15495	6-14791	9-14789	FILTER COST			
9-14790	9-14791	9-15049	11-14522	7-09533	7-10333		
11-14571	11-15474	12-15495	13-15082	FILTER DESIGN			
14-15010	15-15265	17-13536	17-14789	7-09150	7-09533	7-10333	7-13679
17-14790	17-14791	17-15010	17-15049	7-14383	7-15096	7-15116	7-15172
17-15082	17-15347	17-15680	17-15915	7-15191	12-15245	13-15245	
18-14571	18-15010	18-15082	18-15265	FILTER EFFICIENCY			
18-15446	18-15474	18-15475	18-15487	1-14844	7-13676	7-15194	7-15199
18-15492	18-15495			7-15252	7-15346	12-14844	17-15252
FAILURE, PRESSURE VESSEL				18-14844			
1-15929	5-15490	11-13975	11-14522	FILTER IMPACTION			
11-15179	15-15490	15-15491	17-13975	7-13681			
18-15490	18-15491			FILTER INSPECTION			
FAILURE, SCRAM MECHANISM				7-13834	12-13834		
5-15492	5-15492	6-14791	9-07758	FILTER INSTALLATION			
9-14640	9-14791	9-14795	9-14892	7-15116	7-15191		
9-15011	12-14640	17-07758	17-13315	FILTER LIFE			
17-14000	17-14640	17-14642	17-14791	7-10333			
17-14795	17-14892	17-15011	17-15679	FILTER MAINTENANCE			
17-15680	17-15681	17-15683	18-15011	7-13685			
18-15492	18-15492			FILTER OPERATION			
FAILURE, SEQUENTIAL				13-14727	17-14727	18-14727	
11-15474	18-15474			FILTER PACK			
FAILURE, TUBING				12-15032	13-15032		
11-15425	17-14005	17-14150	17-14854	FILTER SAFETY EVALUATION			
18-14150	18-15425			7-13834	12-13834		
FALLOUT				FILTER SYSTEM			
7-13684	7-13692	14-13926	14-13928	2-12476	7-12476	7-13527	7-13836
14-14309	14-14500	14-14501	14-14502	7-14383	7-15116	7-15172	7-15191
14-14505	14-14506	14-14532	14-14533	7-15203	7-15249	11-12476	11-13836
14-14534	14-14948	14-14950	14-14952	11-13839	11-13841	11-13842	11-13843
14-14953	14-14965	14-14966	14-14968	11-13844	12-13836	13-13839	13-13841
14-14970	14-14976	14-15002	14-15005	13-13844			
14-15104	14-15233	14-15281	14-15316	FILTER TEST REQUIREMENT			
14-15956	15-13301	15-13429	15-13783	7-14075	17-14075	18-14075	
15-13811	15-13856	15-13862	15-13917	FILTER THEORY, DIFFUSION			
15-13926	15-13928	15-13942	15-13983	7-15199			
15-14155	15-14175	15-14309	15-14498	FILTER THEORY, IMPACTION			
15-14499	15-14505	15-14506	15-14531	7-15187			
15-14532	15-14533	15-14534	15-14948	FILTER THEORY, INTERCEPTION			
15-14950	15-14953	15-14955	15-14957	7-09150	7-15096		



7-15120	7-15193			GE-NTR (GE NUCLEAR TEST REACTOR)			
FORESHOCK				17-14526	18-14526		
2-14014	2-14518	2-14520	2-14932	GENERATOR, DIESEL			
FOUNDATION ENGINEERING				9-15412	10-15412	10-15461	10-15469
2-14160	2-14224	11-15392	12-15512	17-14857	18-15412	18-15461	18-15469
18-14160	18-15392	18-15512		GEOLOGICAL CONSIDERATION, GENERAL			
FPCE PLANT				1-14524	2-14010	2-14011	2-14015
12-14194	12-14446	13-14194	13-14446	2-14018	2-14020	2-14023	2-14024
18-14194	18-14446			2-14218	2-14225	2-14516	2-14517
FRANCE				2-14518	2-14519	2-14524	2-14679
5-13113	6-13882	6-15072	6-15157	2-14715	2-14716	2-14717	2-14719
7-14286	9-13882	9-14735	11-14668	2-14939	2-14941	2-15026	2-15064
12-14530	12-15034	13-14295	14-13728	2-15911	2-15912	11-14524	14-14698
14-14949	14-15223	15-14247	15-14949	14-14699	14-14952	14-14964	15-14698
15-15223	17-14295	17-14735	17-15919	15-14699	19-14285		
18-14649	18-15919			GEOLOGICAL CONSIDERATION, GEOCHEMICAL			
FRGTF (FAST REACTOR CORE TEST FACILITY)				14-14964			
6-14053				GEOLOGICAL CONSIDERATION, GEOPHYSICAL			
FT. ST. VRAIN				2-14025	2-14026	2-14029	2-14031
1-13667	5-13666	5-13669	6-13666	2-14032	2-14717	2-15023	2-15025
7-13665	9-13673	11-13672	12-13675	2-15912			
18-13665	18-13666	18-13667	18-13668	GERMANY			
18-13669	18-13670	18-13671	18-13672	1-12183	1-13949	1-14297	1-14660
18-13673	18-13674	18-13675		2-13949	2-13950	6-14697	6-14753
FUFL BURNUP				6-14769	6-15044	6-15138	6-15147
5-14658	5-14796	5-14803	5-15496	7-14670	7-15213	9-14038	11-14660
6-14796	7-15115	7-15166	7-15183	11-14670	12-13950	12-14670	14-13728
9-14188	9-14375	9-14803	13-14340	14-13923	14-14949	15-13347	15-14949
15-15496	17-13893	17-14052	17-14375	15-15357	18-14186	18-14187	
17-14658	17-14690	17-14794	17-14803	GETR (GENERAL ELECTRIC TEST REACTOR)			
17-15048	18-14796	18-15037	18-15496	9-15011	17-15011	18-15011	
FUEL COEFFICIENT				GINNA			
6-14810				5-15006	11-15006	18-15006	
FUFL ELEMENT				GLASS			
1-14759	1-14799	1-14868	3-14759	14-13728	14-13960		
3-14868	4-14802	4-15369	5-13955	GLOVE BOX			
5-14071	5-14146	5-14162	5-14231	1-14290	3-14290	7-15120	9-15039
5-14235	5-14452	5-14647	5-14652	11-14290	13-14085	15-14128	15-15039
5-14802	5-14847	5-15476	6-14053	15-15084	15-15185	17-14085	17-14128
6-14146	6-15476	7-15164	7-15167	17-15038	17-15039	17-15084	18-14085
7-15213	7-15346	7-15531	9-14375	18-15084			
11-14647	13-14868	15-13075	17-13897	GRAPHITE			
17-14052	17-14071	17-14375	17-14377	1-15902	2-12476	5-13666	6-13666
17-14853	17-14854	17-15053	17-15215	6-15033	7-12476	7-13665	7-14299
17-15677	17-15682	17-15917	18-13955	7-15033	7-15183	7-15187	7-15209
18-14146	18-14647	18-14650	18-14652	7-15210	7-15359	7-15933	8-15900
18-14662	18-14804	18-14805	18-14847	8-15902	11-12476	12-13675	14-15033
18-15476				17-15215	18-13665	18-13666	18-13675
FUEL ELEMENT BOWING				GROSS ALPHA			
6-15101	17-15215			14-14323	15-14421		
FUFL EXPANSION COEFFICIENT				GROSS BETA			
6-15141				14-14323	14-14953	14-14970	15-13346
FUFL HANDLING				15-14134	15-14137	15-14421	15-14953
1-09286	2-12476	3-15901	7-12476	15-14955	15-14970	15-15271	
9-14184	9-14188	9-14580	9-15901	GROSS GAMMA			
11-12476	12-09286	12-14530	12-15901	15-13346	15-13348	15-13783	15-14322
13-14340	17-13893	18-09286	18-14830	GROUND MOTION			
FUEL HANDLING MACHINE				2-14010	2-14021	2-14086	2-14213
7-13665	9-15011	13-14340	17-13315	2-14214	2-14227	2-14708	2-14709
17-13536	17-14051	17-14690	17-15011	2-15905			
17-15678	18-13665	18-15011		GROUND WATER, GENERAL			
FUEL INTEGRITY				2-15078	14-15078	14-15260	18-15078
8-15900	17-13897	17-14377		GROUND WATER, NUCLIDE OCCURRENCE			
FUEL MELTDOWN				14-15292	15-15237		
5-13113	5-15489	7-11795	7-13847	GROUND WATER, PROPERTY			
7-15346	17-11795	18-15489		18-14624			
FUEL REPROCESSING				GROUND WATER, TRACER			
7-15841	12-15841	13-14295	13-14727	14-15304			
13-14728	13-14808	13-15007	13-15841	HADDAM NECK			
14-13731	17-14295	17-14727	17-14728	6-14793	9-14793	18-14793	
17-14808	17-15007	18-14727	18-14728	HALLAM			
18-14808	18-15007			8-14787	14-14787	17-14787	17-14856
FUEL STORAGE				17-14857	17-14858	17-14859	
3-14992	3-15918	11-14992	12-14992	HALOGEN			
13-14147	13-15918	17-12192	17-14305	11-07901	17-07901		
17-15918	18-12192	18-13991	18-13992	HANFORD PRODUCTION REACTOR			
18-14147				9-15041	14-14127	17-14127	
FUEL, POWDER TYPE				HANFORD SITE			
9-14891	17-14891			7-15251	12-14193	12-14194	13-14193
GAMMA				13-14194	13-14341	13-14342	13-14343
7-15162	15-13636	15-13753	15-13937	13-15244	17-15251	18-14194	
15-14131	15-14134	15-14135	15-14137	HAZARD, RELATIVE			
15-14138	15-14963	15-14973	15-14975	15-13938	15-15185		
15-15001	15-15226	15-15230	15-15237	HAZARDS ANALYSIS			
15-15300	15-15353			3-14867	4-13943	12-14194	12-14446
GAMMA EMITTER				13-14194	13-14446	14-13943	15-14155
7-14384	7-15684	11-13839	11-13840	15-15232	15-15371	16-13943	18-14194
11-13842	13-13839	13-13840	14-14533	18-14446	18-15257		
14-14534	15-14533	15-14534		HBWR (HALDEN BOILING WATER REACTOR)			
GAS DYNAMICS, RAPIDIFIED				6-15143	17-14002		
5-13642				HEALTH PHYSICS TRAINING			



15-14055	17-14055			19-14765					
HEAT EXCHANGER				HTGR (HIGH TEMPERATURE GAS COOLED REACTOR)					
1-14860	4-14163	4-14164	4-14379	6-15069	7-15345	7-15933	7-16586		
5-13641	5-14163	5-14164	5-14167	7-16587	7-16588	11-15345			
5-15471	5-15492	6-14379	7-13665	HUMBOLDT BAY					
9-14379	9-14795	9-15041	9-15049	1-14641	5-13986	6-13986	9-14072		
11-15425	11-15474	12-15420	15-15265	9-14641	11-13987	12-14072	17-13976		
17-13536	17-14150	17-14690	17-14795	17-14072	17-14641	18-13986	18-13987		
17-14854	17-14860	17-15049	17-15347	HWCTR (HEAVY WATER COMPONENT TEST REACTOR)					
17-15432	17-15580	18-13665	18-14150	9-07758	9-14947	11-07901	17-07517		
18-14186	18-15265	18-15420	18-15420	17-07758	17-07901	17-14947			
18-15425	18-15471	18-15474	18-15487	HWOCR (HEAVY WATER ORGANIC COOLED REACTOR)					
18-15492				6-13905	6-14817				
HEAT GENERATION, INTERNAL				HYDRAULIC ANALYSIS					
9-14378				5-14071	5-14162	5-14167	5-14230		
HEAT SINK				5-15017	5-15094	6-14311	6-14737		
2-15088	5-13984	5-14790	6-13984	6-15094	6-15148	6-15243	7-15017		
9-14790	11-13971	11-15395	17-14790	9-14311	9-15148	17-14071			
18-13971	18-15088	18-15395		HYDRAULIC EFFECT					
HEAT TRANSFER				17-04916					
4-14161	4-14163	4-14164	4-14165	HYDRAULIC EXPERIMENT					
4-15364	5-13641	5-13642	5-13945	6-15072					
5-13984	5-14161	5-14162	5-14163	HYDRODYNAMIC ANALYSIS					
5-14164	5-14165	5-14167	5-14168	5-14166	5-14167	5-14233	5-14797		
5-14170	5-14230	5-14232	5-14234	5-15422	5-15434	5-15971	6-13896		
5-14235	5-14447	5-14452	5-15320	6-14791	6-14797	7-12153	7-13689		
5-15321	5-15322	5-15323	5-15328	9-14791	11-15422	17-13896	17-14791		
5-15329	6-13984	6-14842	7-13945	18-14797	18-15422	18-15434			
7-14170	8-13945	8-14170	14-13731	HYDROGEN					
14-15235	15-15235	18-14830		5-13743	5-15485	7-13743	7-13745		
HEAT TRANSFER ANALYSIS				7-13748	7-15196	7-15209	7-15210		
4-14164	5-14162	5-14164	5-14230	9-14329	9-15036	9-15176	11-13748		
5-14767	5-14797	5-15328	6-14738	11-14329	11-15485	14-14329	18-15036		
6-14797	6-15141	9-14767	13-14340	18-15485					
18-14767	18-14797			HYDROLOGICAL CONSIDERATION, GENERAL					
HEAT TRANSFER AUGMENTATION				2-15078	14-15093	14-15078	18-15078		
4-14164	5-14164	5-14168	5-15320	HYDROLOGICAL CONSIDERATION, QUALITY OF WATER					
HEAT TRANSFER CORRELATION				14-13978					
5-13985	5-14167	5-14657	5-14847	HYDROLOGICAL CONSIDERATION, RATE OF MOVEMENT					
12-13985	18-14657	18-14847		2-15078	14-13978	14-15078	14-15304		
HEAT TRANSFER EXPERIMENT				18-15078					
4-14161	4-14162	4-14165	5-12471	IAEA (INTERNATIONAL ATOMIC ENERGY AGENCY)					
5-14161	5-14163	5-14165	5-14168	1-14291	11-14291				
5-14447	5-14676	17-14676		ICRP (INT. COMM. ON RADIOLOGICAL PROTECTION)					
HEAT TRANSFER, BOILING				15-13965	15-14155				
5-12471	5-14231	5-14232	5-14235	IDAHO FALLS					
5-14447	5-14452	5-14676	5-15322	13-15951	14-13731	15-13636			
6-14818	6-15148	9-15148	17-14676	IGNITION					
HEAT TRANSFER, CONDUCTION				3-15918	7-14666	7-15201	7-15841		
5-14230	5-15328	7-15211		8-15900	11-14666	12-15841	13-15841		
HEAT TRANSFER, CONVECTION				13-15918	17-14666	17-15918			
5-14230	5-15320	6-15148	9-15148	IMPACT PROPERTY					
HEAT TRANSFER, NATURAL CONVECTION				7-15170	7-15208	7-15345	7-16586		
4-14161	5-14161	5-14234	5-14788	7-16587	7-16588	11-13750	11-14692		
6-14788	17-14788			11-15170	11-15208	11-15345			
HEAT TRANSFER, RADIANT				IMPACT SHOCK					
4-14164	5-13984	5-14164	5-15320	1-14864	3-14864	3-15324	4-14733		
6-13984				14-14864	18-15257				
HEAT TREATMENT				IN CORE MEASUREMENT					
11-15121				9-14378					
HEAVY WATER				IN PILE EXPERIMENT					
6-14821	9-14821	17-14002		2-12476	7-12476	7-13544	7-13909		
HEIGHT OF RISE				7-15213	7-15345	7-16586	7-16587		
16-15334				7-16588	9-13998	11-12476	11-15345		
HELIUM				17-13998					
7-15196	7-15211	9-15176	11-15051	IN PILE LOOP					
18-13670				1-14801	5-13113	7-13544	7-14299		
HFIR (HIGH FLUX ISOTOPE REACTOR)				7-15162	9-13998	12-14801	17-13998		
7-14330	9-14640	11-14330	12-13966	17-14677	17-14801	17-15917	18-14649		
12-14640	17-13966	17-14330	17-14640	INCIDENT COMPILATION					
17-15347	17-15914	18-13966		11-14550	17-14550				
HIGH TEMPERATURE				INCIDENT, ACTUAL, EQUIPMENT					
1-15902	4-14317	5-13669	5-14317	9-14893	9-15011	11-14550	13-14081		
5-15184	7-13729	7-13744	7-14666	13-14082	13-15082	14-15010	15-14128		
7-15159	7-15533	7-15695	7-15697	15-15080	15-15083	15-15085	17-11607		
7-15933	8-15902	9-14579	9-15414	17-14077	17-14081	17-14082	17-14128		
9-15415	11-14047	11-14666	12-15319	17-14550	17-14893	17-15010	17-15011		
12-15958	14-15533	17-14666	17-15319	17-15080	17-15082	17-15083	17-15085		
18-13669	18-15414	18-15415		17-15932	18-14077	18-14081	18-14082		
HOT CELL				18-15010	18-15011	18-15080	18-15082		
11-13070	11-13830	11-13840	11-13841	18-15083	18-15085				
11-13842	11-13842	11-13844	11-15122	INCIDENT, ACTUAL, GENERAL					
11-15217	12-13070	12-15247	13-13839	6-15009	7-11795	14-13951	14-15005		
13-13840	13-13841	13-13844	13-15247	15-15005	15-15081	15-15084	15-15307		
15-15310	17-11607	17-15217	17-15310	15-15308	15-15309	17-11795	17-13951		
18-15310				17-15005	17-15009	17-15081	17-15084		
HOT CHANNEL				18-15009	18-15081	18-15084	16-15307		
6-14528	18-14528	18-15744		18-15308	18-15309				
HOT SPOT				INCIDENT, ACTUAL, HUMAN ERROR					
5-14144	5-14764	5-14765	6-14146	5-14898	12-13832	13-14083	13-14129		
17-14764	17-14765	18-14146	18-14764	13-14728	13-15007	14-15050	15-14083		

15-14130	15-14726	15-15079	15-15310	12-15901	13-15330	14-14535	14-14954
17-13999	17-14083	17-14129	17-14130	14-15033	15-14535	15-14954	17-13998
17-14272	17-14637	17-14725	17-14726	17-14625	17-14795	18-14625	18-14626
17-14728	17-14898	17-15007	17-15050	18-15404	18-15414		
17-15079	17-15310	18-13999	18-14637	INSTRUMENTATION, IN CORE			
18-14725	18-14726	18-14728	18-15007	5-14576	5-14658	5-14803	6-14791
18-15079	18-15310			9-14036	9-14575	9-14576	9-14791
INCIDENT, ACTUAL, NONNUCLEAR				9-14803	9-15240	9-15266	17-12995
1-14860	17-14860			17-14658	17-14791	17-14803	18-14576
INCIDENT, ACTUAL, NONREACTOR				INSTRUMENTATION, INTERLOCK			
12-13832	17-11607			9-14580	9-15055	17-14857	
INCIDENT, ACTUAL, RECOVERY FROM				INSTRUMENTATION, LINEAR			
14-15004	15-15004			9-15240			
INCIDENT, WINDSCALE				INSTRUMENTATION, LIQUID LEVEL DETECTION			
15-15289				9-15049	9-15176	17-15049	
INCINERATION				INSTRUMENTATION, LOGARITHMIC			
14-13939	15-14316			9-14061	9-15240		
INCONFL				INSTRUMENTATION, METEOROLOGICAL			
9-14891	17-14891			16-14911	16-15336	16-15339	
INDEPENDENCE				INSTRUMENTATION, NUCLEAR			
5-15448	9-14542	9-14543	9-15389	9-14188	9-14376	9-15055	9-15065
9-15408	12-14542	12-14543	12-14544	9-15240	9-15241	9-15921	9-15923
12-15408	12-15448	18-14542	18-14543	14-14954	14-15003	15-14322	15-14954
18-14544	18-14545	18-15389	18-15408	15-15267			
18-15448				INSTRUMENTATION, OPERATING REACTIVITY			
INDIA				17-14794			
6-13904	9-13904	14-13939		INSTRUMENTATION, PERIOD			
INDIAN POINT 1				9-15240	9-15241		
1-14641	9-14007	9-14072	9-14641	INSTRUMENTATION, POSITION			
12-14072	15-15265	17-12207	17-13234	9-15242	9-15410	9-15413	10-15413
17-13976	17-14003	17-14004	17-14005	15-15080	17-15080	18-15080	18-15410
17-14006	17-14007	17-14072	17-14641	18-15413			
18-12207	18-13234	18-14003	18-15265	INSTRUMENTATION, POWER RANGE			
INDIAN POINT 2				9-14574	9-14575	9-15216	9-15411
12-14678	18-14678			9-15415	9-15923	17-15216	18-14574
INELASTIC BEHAVIOR				18-15411	18-15415		
1-15397	2-15397	18-15397		INSTRUMENTATION, PROCESS			
INFORMATION RETRIEVAL				9-14038	9-14332	9-14574	9-15266
1-14297				9-15330	9-15416	9-15442	10-14332
INGESTION				12-15442	13-15330	18-14574	18-15416
14-15234	15-13996	15-15234	15-15314	18-15442			
INHALATION				INSTRUMENTATION, PROTECTIVE			
13-14728	14-14507	15-13783	15-14507	9-13891	9-14040	9-14332	9-15055
15-14995	15-15081	15-15083	15-15224	10-14332	17-13891		
15-15269	15-15307	15-15308	15-15309	INSTRUMENTATION, PULSE			
17-14728	17-15081	17-15083	18-14728	9-15240			
18-15081	18-15083	18-15307	18-15308	INSTRUMENTATION, RADIATION MONITORING			
18-15309				7-14861	9-14038	9-14060	9-15921
INSPECTION AND COMPLIANCE				11-14861	14-14505	14-14954	14-14956
1-14074	1-14660	11-14660	13-12308	15-13729	15-13783	15-14041	15-14060
13-14341	13-14342	13-14727	13-14808	15-14505	15-14531	15-14706	15-14954
14-14074	17-12308	17-14727	17-14808	15-14956	15-14963	15-14969	15-14972
18-14074	18-14145	18-14727	18-14808	15-14975	15-14994	15-14998	15-14999
INSTRUMENTATION CALIBRATION				15-15000	15-15275	15-15280	18-14861
9-15176	14-14588	15-13783	15-14041	INSTRUMENTATION, RECORDER			
15-14248	17-14588	18-14588		9-15410	9-15411	18-15410	18-15411
INSTRUMENTATION, ABNORMAL INDICATION				INSTRUMENTATION, REDUNDANT			
6-14791	6-14843	9-14007	9-14040	9-15065	9-15066		
9-14791	9-14893	9-15049	17-13534	INSTRUMENTATION, RELAY			
17-14007	17-14791	17-14843	17-14893	9-14040			
17-15048	17-15049	18-14662		INSTRUMENTATION, SHUTDOWN REACTIVITY			
INSTRUMENTATION, AIR SAMPLING				9-15404	12-15404	18-15404	
7-13676	7-13681	7-15349	12-13831	INSTRUMENTATION, STARTUP			
15-13831	15-14422	16-15335		9-14833			
INSTRUMENTATION, AMPLIFIER				INSTRUMENTATION, STARTUP RANGE			
9-14061				6-15152	9-12195	9-15049	9-15152
INSTRUMENTATION, CAMPBELLING				17-12195	17-15049	18-12195	
9-15240				INSTRUMENTATION, SURVEILLANCE			
INSTRUMENTATION, COINCIDENT				17-14001			
7-14078	17-14078	18-14078		INSTRUMENTATION, SWITCH			
INSTRUMENTATION, COMPONENT				9-14376	9-15242		
15-13783				INSTRUMENTATION, TEMPERATURE			
INSTRUMENTATION, CONTROL				9-13673	9-14036	9-14378	17-14077
9-15065	9-15066			18-13673	18-14077		
INSTRUMENTATION, COOLANT QUALITY				INSTRUMENTATION, TESTING			
12-13675	18-13675			1-15929			
INSTRUMENTATION, DETECTION FAILED FUEL ELEMENT				INSTRUMENTATION, WIDE RANGE			
9-14891	9-14947	17-13944	17-14891	9-14061	9-15240	9-15241	
17-14947				INSURANCE			
INSTRUMENTATION, EARTHQUAKE				3-15047			
2-14018	2-14028	2-14031	2-14219	INTEGRITY			
2-14681	2-14720			7-15115	7-15213		
INSTRUMENTATION, FLOW				INTERACTION, FOUNDATION AND STRUCTURE			
9-14036	9-14192			2-14224			
INSTRUMENTATION, GENERAL				IODINE			
1-14625	3-15901	4-13930	4-14730	2-13846	4-13930	4-13943	5-13546
6-15033	7-13676	7-13930	7-15033	7-13544	7-13545	7-13546	7-13548
7-15159	9-12297	9-13998	9-14038	7-13836	7-13847	7-13908	7-13911
9-14040	9-14579	9-14580	9-14730	7-13930	7-14330	7-14384	7-15172
9-14795	9-14833	9-15268	9-15330	7-15346	8-13548	11-13836	11-14330
9-15404	9-15414	9-15901	12-15404	12-13836	14-13926	14-13927	14-13943

14-13978	14-14506	14-14954	14-15273	9-15416	11-15417	12-15913	12-15958
15-13610	15-13635	15-13811	15-13857	17-13988	17-14625	17-14654	17-14846
15-13926	15-13927	15-14155	15-14506	17-15347	17-15678	18-13671	18-14145
15-14954	15-15269	15-15273	16-13943	18-14625	18-14626	18-14632	18-14654
17-14330				18-14846	18-15416	18-15417	
ION EXCHANGE				MAINTENANCE AND REPAIR			
7-13931	7-15228	12-13934	12-13935	1-14641	9-14072	9-14641	9-14789
14-13860	14-13960	14-14536	14-14964	12-13887	12-13890	12-14072	12-14193
14-15256	14-15270	14-15278	14-15304	12-14731	12-15130	12-15913	13-14084
15-13953	15-15354			13-14193	13-14345	13-15903	15-14084
IRON				15-15080	17-13886	17-13887	17-13889
7-15201	14-15233	15-13301	15-13783	17-13890	17-13892	17-13894	17-14072
15-15262	15-15264	15-15269		17-14084	17-14641	17-14789	17-14890
IRRADIATION TESTING				17-15080	18-15080		
1-14660	1-14801	1-14864	3-14864	MANGANESE			
7-13544	7-15161	7-15162	7-15163	14-15233	15-13783	15-15237	
7-15359	7-15530	11-14660	11-14672	MASS TRANSFER			
11-14710	11-15051	12-14801	14-14864	7-14299	7-15103		
17-14801	17-14854	17-15917	18-14804	MATERIAL			
ISOCHEM, INC				1-14291	1-15928	11-14291	12-15032
12-14446	13-14343	13-14446	13-14446	12-15519	13-15032	17-15677	18-15518
ISOTOPIC FRACTIONATION				18-15519			
15-14315	17-15258			MATHEMATICAL STUDY			
ISOTOPIC GENERATOR				1-14643	2-14013	2-14020	2-14021
5-12471				2-14022	2-14028	2-14032	2-14206
ITALY				2-14214	2-14219	2-14456	2-14515
2-14673	5-14788	5-14790	6-14770	2-14517	2-14714	2-14937	2-15023
6-14789	6-14791	6-14843	6-15137	4-14379	6-14379	6-14821	6-14945
9-13059	9-14789	9-14790	9-14791	7-15113	7-15166	7-15167	7-15196
11-14673	14-14949	14-15270	15-14949	7-15199	7-15205	9-14329	9-14379
15-15353	15-15367	17-12995	17-13059	9-14821	9-14945	9-15922	11-14329
17-14788	17-14789	17-14790	17-14791	11-14521	11-14523	12-14643	12-15113
17-14843				14-14329	14-15234	14-15235	14-15304
JAPAN				15-13753	15-15234	15-15235	16-14349
2-14673	11-14673	15-13856	15-13925	16-15338	17-14643		
15-13982	15-14957	15-15226	15-15287	MATHEMATICAL TREATMENT			
16-14336	16-15338			2-14010	9-15922		
KIWI				MAXIMUM PERMISSIBLE BODY BURDEN			
4-13943	9-14325	14-13943	16-13943	15-15307	15-15308	15-15317	18-15307
KRYPTON				18-15308			
2-13846	4-13930	7-13930	7-14384	MAXIMUM PERMISSIBLE CONCENTRATION (MPC)			
7-15159	7-15203	7-15213	7-15531	15-15083	17-14725	17-15083	18-14725
14-13926	15-13926			18-15083			
LACROSSE				MAXIMUM PERMISSIBLE DOSE (MPD)			
17-14653	17-14654	17-14655	17-14656	1-13949	2-13949	14-14590	15-13965
17-15366	18-14145	18-14653	18-14654	MEASUREMENT, GENERAL			
18-14655	18-14656			7-15162	7-15941	14-15003	
LAMPPE 1 (LASL MOLTEN PU REACTOR EXPERIMENT)				MEASUREMENT, NOISE			
7-15168				9-14183	9-14711	17-04916	18-14711
LANDSLIDE				MEASUREMENT, REACTIVITY			
2-14513				6-13896	6-15306	9-14059	9-14060
LANTHANUM				9-14183	9-14833	15-14060	17-13896
14-13913				17-13936	17-14008	17-15214	17-15306
LASER HEATING				18-13933	18-13936	18-15306	
6-14740	8-14740			MEASUREMENT, TEMPERATURE			
LASL (LOS ALAMOS SCIENTIFIC LABORATORY)				7-15164	9-14378	17-13936	18-13936
14-15004	15-13626	15-14661	15-15004	METAL			
17-14661	18-14675			7-15841	8-15900	11-14047	11-14048
LAW				11-14692	12-15841	13-15841	
1-12271	1-14660	11-14660	18-15012	METAL WATER REACTION			
LAYER				5-15014	5-15467	6-14740	6-15014
16-14296				7-14670	8-14312	8-14740	8-14787
LEAD				8-15014	8-15467	8-15899	11-14670
14-14950	14-15290	15-13429	15-14704	12-13832	12-14670	14-14787	17-13315
15-14950	15-14962	15-15288	15-15290	17-14787	18-15467		
LIABILITY				METAL, ALKALI			
1-12271				8-15900			
LIAPUNOV'S FUNCTION				METAL, LIQUID			
6-14814	6-15149			4-14161	4-14379	5-14161	5-14234
LICENSING STATUS OF NUCLEAR PROJECTS				5-15184	5-15321	5-15322	6-14379
1-09206	2-15078	12-09206	14-15078	6-15171	7-14384	7-14385	7-15169
18-09286	18-13314	18-15078		7-15171	7-15181	7-15182	7-15697
LITHIUM				8-14385	9-14379	17-15173	
7-15169				METAL, REFRACTORY			
LOFT (LOSS OF FLUID TEST)				7-15695			
2-12476	5-13546	5-15015	5-15017	METEOROLOGICAL SUPPORT			
5-15018	5-15094	6-15094	7-12476	16-15341			
7-13546	7-15015	7-15017	7-15018	METEOROLOGY			
7-15345	7-15346	7-16586	7-16587	4-13943	7-15250	14-13943	14-13978
7-16588	11-12476	11-15345	14-13731	14-14968	15-14065	15-14968	16-13943
16-15341				16-14350	16-15337	16-15339	16-15340
LRL (LAWRENCE RADIATION LABORATORY)				17-15250	18-14631	19-14065	19-14285
15-13636	15-15293			MFRP (MIDWEST FUEL RECOVERY PLANT)			
LUBRICATION				2-13525	13-13525	18-13525	
7-15694	11-15694			MICROEARTHQUAKE			
LURCHING				2-14027			
2-14513				MICROSEISMICITY			
MAGNESIUM				2-14018	2-14027	2-14518	
17-15682				MILITARY CONSIDERATION			
MAIN COOLING SYSTEM				15-14960	15-15001		
1-14625	7-15531	9-13988	9-15041	MILLING			



NUCLEAR EXPLOSION DEBRIS				5-14788	5-14793	6-14788	9-14789
4-15020	7-13684	14-13926	14-14309	9-14790	9-15049	12-15247	13-15247
14-14534	14-15292	15-13926	15-14309	17-14000	17-14001	17-14644	17-14690
15-14534	15-15287	16-13684	16-14337	17-14788	17-14789	17-14790	17-14856
16-14350	16-15335	16-15336		17-14857	17-14858	17-14859	17-15048
NUCLEAR INCIDENT COSMETER				17-15049	17-15347	17-15678	17-15679
15-13636				17-15680	17-15681	17-15682	17-15683
NUCLEAR ROCKET				17-15919	18-14649	18-15919	
4-14317	4-15019	4-15021	4-15022	OPERATIONS SUMMARY FOR AEC			
5-14317	9-14325	15-14661	16-15019	9-12195	9-14007	9-14891	9-14892
17-14661				9-14893	17-12195	17-12245	17-13534
NUCLEATE BOILING				17-13536	17-14003	17-14004	17-14005
5-14676	9-13998	17-13998	17-14676	17-14036	17-14007	17-14008	17-14009
OCEAN AND SEA				17-14725	17-14890	17-14891	17-14892
3-15047	7-09533	7-13687	14-13926	17-14893	18-12195	18-14003	18-14009
14-14158	14-14500	14-14501	14-14502	18-14725			
14-14503	14-14504	14-14707	14-14948	ORGANIC COOLANT			
14-14966	14-14974	14-15281	15-13917	5-12471	8-15900	8-15900	
15-13926	15-13958	15-13959	15-14948	ORGANIC IODIDE			
15-14966	15-14971	15-14974	15-15281	7-13545	7-13836	7-13908	7-14330
15-15368				7-15112	7-15255	11-13836	11-14330
OCCUPANCY 1, 2, AND 3				12-13836	17-14330		
18-14623	18-14624			ORNL (OAK RIDGE NATIONAL LABORATORY)			
ON SITE WORK				11-14346	13-14340	13-14345	13-14346
17-15919	18-15919			15-13636	15-13912	15-13953	15-14425
OPERATING EXPERIENCE				17-14425			
1-14641	1-14643	2-15078	5-14778	ORR (OAK RIDGE RESEARCH REACTOR)			
6-14663	6-14778	7-13836	7-14666	17-15035			
7-14778	7-15116	7-15194	7-15206	OSCILLATOR, REACTIVITY			
9-07758	9-12195	9-13891	9-13988	6-14800	6-14945	6-15153	9-14945
9-14007	9-14072	9-14636	9-14641	9-15153	18-14800		
9-14795	9-14822	9-14878	9-14893	OUT OF PILE LOOPS AND EXPERIMENTS			
9-14947	11-07901	11-13836	11-13975	2-12476	5-15184	6-15072	6-15136
11-14634	11-14666	11-15217	12-13836	7-12476	7-13744	7-14299	7-14384
12-13836	12-13887	12-13890	12-14072	7-14385	7-15345	7-15886	7-16587
12-14643	13-14295	14-14585	14-14586	7-16588	8-14385	11-12476	11-15345
14-14588	14-15078	15-14587	15-14878	OXIDATION			
17-07758	17-07901	17-12195	17-13315	1-15902	2-12476	7-12476	7-13739
17-13938	17-13887	17-13890	17-13891	7-15172	7-15186	7-15201	7-15207
17-13892	17-13893	17-13894	17-13975	7-15209	7-15210	7-15359	7-15841
17-13976	17-13988	17-14000	17-14001	7-15942	8-13833	8-15902	11-12476
17-14002	17-14003	17-14004	17-14005	11-15207	12-13833	12-15841	12-15942
17-14006	17-14007	17-14008	17-14009	13-13833	13-15841	13-15942	
17-14052	17-14072	17-14295	17-14551	OXIDE			
17-14585	17-14588	17-14634	17-14641	5-14847	7-14286	7-15182	7-15183
17-14642	17-14643	17-14644	17-14645	7-15187	18-14775	18-14847	
17-14663	17-14666	17-14795	17-14853	OXYGEN			
17-14878	17-14893	17-14947	17-15035	7-15163	7-15181	7-15196	7-15940
17-15048	17-15202	17-15217	17-15347	12-15690	12-15940		
17-15678	17-15679	17-15680	17-15681	OYSTER CREEK			
17-15682	17-15683	18-12195	18-13314	17-15140			
18-14003	18-14009	18-14551	18-14588	PALISADES POINT			
18-14634	18-14636	18-14645	18-15078	12-15126	16-15126	18-15126	
OPERATING LIMITS/TECHNICAL SPECIFICATIONS				PALLADIUM			
5-13986	5-14146	5-14527	5-14652	15-14315			
5-14657	5-14764	5-14765	5-14847	PARTICLE SIZE			
6-13986	6-14146	6-15306	7-14075	7-13678	7-13681	7-13682	7-13684
7-14076	7-14078	7-14144	7-14861	7-13687	7-13692	7-13931	7-14385
9-13964	11-10528	11-13987	11-14525	7-15163	7-15172	7-15192	7-15197
11-14648	11-14849	11-14851	11-14861	7-15198	7-15205	7-15211	7-15693
11-15076	12-13835	12-13966	13-14076	8-14385	15-13783	15-13811	15-15185
13-14147	13-14727	13-14808	14-15077	16-13684	16-14296		
15-14151	17-13234	17-13835	17-13936	PARTICLE SIZE DISTRIBUTION			
17-13966	17-13994	17-14075	17-14078	7-13678	7-13681	7-13682	7-13687
17-14144	17-14150	17-14151	17-14152	7-15187	7-15188	7-15192	7-15197
17-14525	17-14526	17-14648	17-14727	7-15198	7-15205	15-13953	
17-14764	17-14765	17-14808	17-14846	PARTICULATE			
17-14849	17-14850	17-14890	17-15076	5-13945	5-13984	5-15323	6-13984
17-15077	17-15306	18-10528	18-12189	7-13683	7-13836	7-13848	7-13911
18-13234	18-13537	18-13835	18-13933	7-13945	7-15120	7-15192	7-15199
18-13936	18-13952	18-13956	18-13964	7-15204	7-15213	7-15255	7-15841
18-13966	18-13979	18-13986	18-13987	8-13945	11-13836	12-13836	12-15841
18-13989	18-13991	18-13992	18-13993	13-15841	14-14952		
18-13994	18-13995	18-14075	18-14076	PATHFINDER			
18-14078	18-14144	18-14146	18-14147	6-15009	11-15076	17-14054	17-15009
18-14149	18-14150	18-14151	18-14152	17-15076	18-15009	18-15076	
18-14525	18-14526	18-14527	18-14648	PEACH BOTTOM 1			
18-14652	18-14657	18-14691	18-14727	6-13120	17-13944	18-14691	
18-14764	18-14765	18-14805	18-14806	PEACH BOTTOM 2 AND 3			
18-14808	18-14845	18-14846	18-14847	18-15086	18-15097		
18-14849	18-14850	18-14851	18-14861	PERFORMANCE LIMIT			
18-15076	18-15077	18-15306		5-14146	5-14767	5-14847	5-15476
OPERATION				5-15493	6-14146	6-15476	9-14767
9-15920	9-15924			11-15462	11-15497	12-15462	18-14146
OPERATIONS REPORT, ANALYSIS				18-14767	18-14847	18-15462	18-15476
5-14658	5-14803	6-14791	9-13059	18-15493	18-15497		
9-14711	9-14791	9-14795	9-14803	PERSONNEL EXPOSURE, RADIATION			
17-04915	17-12995	17-13059	17-14054	1-14290	3-14290	7-15250	11-14290
17-14658	17-14791	17-14794	17-14795	13-14083	13-14084	13-14129	14-14507
17-14803	17-14853	17-14854	18-14711	14-14950	14-15004	14-15005	15-13346
OPERATIONS REPORT, GENERAL				15-13853	15-13859	15-13912	15-13929

15-13965	15-14079	15-14080	15-14083	15-14131	15-14132	15-15297	
15-14084	15-14130	15-14177	15-14270	POLONIUM			
15-14313	15-14507	15-14726	15-14807	14-14950	15-14950	15-15288	
15-14953	15-14960	15-14995	15-15004	POPULATION DISTRIBUTION			
15-15005	15-15079	15-15080	15-15081	2-14538	2-15374	2-15375	2-15376
15-15083	15-15084	15-15307	15-15308	14-15374	17-14152	18-14152	18-14538
15-15309	15-15310	15-15371	17-13999	18-15374	18-15375	18-15376	
17-14079	17-14080	17-14083	17-14084	POPULATION EXPOSURE			
17-14129	17-14130	17-14726	17-15005	4-13943	14-13943	15-13635	15-13912
17-15079	17-15080	17-15081	17-15083	15-13929	15-13938	15-13965	15-13982
17-15084	17-15250	17-15310	18-13999	15-14155	15-15226	15-15229	15-15232
18-14726	18-15079	18-15080	18-15081	15-15272	15-15297	15-15371	16-13943
18-15083	18-15084	18-15307	18-15308	POROUS DIFFUSION			
18-15309	18-15310			7-09150	7-15096	7-15166	
PERSONNEL PROTECTIVE DEVICE				POROUS MEDIA			
1-09286	1-14844	7-15248	12-09286	7-09533	7-10333	7-11820	7-13691
12-14844	12-15319	13-14083	14-14427	7-15196			
15-14083	15-14270	15-14427	15-14995	POTASSIUM			
17-14083	17-15319	18-09286	18-14844	5-15322	8-13833	12-13833	13-13833
PHANTOM, HUMAN BODY				14-15233	15-15264	15-15274	
15-14973				POWER COEFFICIENT			
PHASE CHANGE				6-14697	6-14816	6-15147	17-15683
5-13945	7-13945	8-13945		POWER DISTRIBUTION			
PHOSPHATE				5-13985	5-14576	5-14657	5-14658
7-15533	14-15533			5-14796	5-14803	5-15434	5-15435
PHOSPHORUS				5-15436	5-15437	5-15473	6-14528
14-13913	14-13927	14-14178	14-14956	6-14791	6-14796	9-13059	9-14576
14-15233	15-13916	15-13927	15-14956	9-14711	9-14791	9-14803	12-13985
15-15315				17-13059	17-14008	17-14653	17-14658
PIPING				17-14791	17-14803	18-14528	18-14576
5-15439	11-14552	11-15393	12-14344	18-14653	18-14657	18-14711	18-14796
12-15393	12-15420	12-15439	12-15444	18-15434	18-15435	18-15436	18-15437
13-14344	18-13972	18-14552	18-15393	18-15473			
18-15420	18-15420	18-15439	18-15444	POWER UPGRATING			
PIQUA				5-13985	12-13835	12-13985	17-12192
9-14636	17-13892	17-15679	17-15680	17-13835	17-14002	17-15678	18-12192
17-15681	17-15682	17-15683	18-14636	18-13835	18-13952	18-14691	
PLANT PROTECTIVE SYSTEM				PRASEODYMIUM			
1-14641	6-14793	9-14035	9-14641	7-13569			
9-14793	9-15387	9-15408	12-15408	PRECIPITATION			
15-13075	17-14641	18-14537	18-14793	15-15237	15-15271	15-15291	
18-15387	18-15408			PRESSURE DROP			
PLASTICITY				5-14071	5-14168	5-14230	5-14235
11-13752	11-14050	11-14522	11-15045	5-14452	5-14788	6-14788	7-14075
PLOWSHARE PROGRAM				17-14071	17-14075	17-14788	18-14075
14-14698	14-14699	14-15292	15-13811	PRESSURE RELIEF			
15-13983	15-14698	15-14699		5-15488	12-15449	17-14008	18-15449
PLUME BEHAVIOR, GENERAL				18-15488			
16-14909	16-15340	16-15341		PRESSURE, EXTERNAL			
PLUME, SMOKE, PHOTOGRAPHY				4-14317	5-14317	11-13752	17-14054
16-15341				PRESSURE, INTERNAL			
PLUTONIUM				2-15433	5-15446	5-15465	5-15485
1-14290	1-14752	1-14866	2-13525	7-15161	9-15405	11-14522	11-15111
3-14290	3-14752	3-14866	4-14179	11-15405	11-15428	11-15433	11-15462
5-14780	5-15496	6-15074	6-15090	11-15474	11-15485	12-15462	12-15465
6-15145	6-15146	6-15344	7-13682	12-15504	17-15915	18-15257	18-15405
7-15168	7-15182	7-15183	7-15186	18-15428	18-15433	18-15446	18-15462
7-15193	7-15194	7-15201	7-15841	18-15463	18-15465	18-15474	18-15485
8-15900	11-13843	11-14290	11-14780	18-15504			
12-14530	12-15245	12-15841	13-13525	PRESSURIZER			
13-14084	13-14085	13-14295	13-14343	11-13975	11-15418	12-15420	17-12207
13-14866	13-15245	13-15841	14-14158	17-13975	17-14004	17-14854	18-12207
14-14176	14-14505	14-14535	14-15005	18-14806	18-15418	18-15420	18-15420
14-15290	14-15316	15-13075	15-13783	PROCEDURES AND MANUALS			
15-13859	15-13914	15-14084	15-14128	1-09286	1-14643	1-14860	1-15929
15-14177	15-14315	15-14505	15-14535	3-14867	12-09286	12-14643	14-14127
15-14998	15-15005	15-15224	15-15225	14-15050	15-14962	17-14127	17-14637
15-15269	15-15285	15-15290	15-15357	17-14643	17-14644	17-14860	17-15050
15-15496	17-14084	17-14085	17-14128	17-15348	17-15366	18-09286	18-14637
17-14295	17-14677	17-15005	18-13525	18-15257			
18-13537	18-14085	18-14675	18-14775	PROMETHIUM			
18-14780	18-15257	18-15496		12-14194	12-14446	13-14194	13-14446
PLUTONIUM DIOXIDE				15-13429	15-13783	15-14315	15-15269
5-14652	5-14658	7-15182	7-15183	18-14194	18-14446		
13-15244	17-14658	18-14652		PROMPT NEUTRON LIFETIME			
PLUTONIUM OXIDE				6-14772	6-14820	6-14821	6-15044
6-13883	6-15142	6-15145	7-15164	6-15138	6-15156	6-15254	9-14821
15-15185				PROPERTY, PHYSICAL			
PM 1 (PORTABLE MEDIUM NUCLEAR POWER PLANT)				5-14169	5-14170	7-14170	7-15170
17-15053				7-15200	7-15228	7-15697	8-14169
PM 3A (PORTABLE MEDIUM NUCLEAR POWER PLANT)				8-14170	11-13543	11-14382	11-15170
5-14767	7-15250	9-14767	17-15250	11-15689			
18-14767				PROTACTINIUM			
POINT BEACH				15-14996			
2-14160	18-14160	18-14632	18-14633	PRTR (PLUTONIUM RECYCLE TEST REACTOR)			
POISON, FIXED				6-14811	6-15093	9-14192	17-15917
6-15478	18-15478			PULSED NEUTRON TECHNIQUE			
POISON, SOLUBLE				6-15098	9-14183	9-14711	17-13944
9-14573	9-14735	17-14735	17-14794	18-14662	18-14711		
17-15678	18-14573			PUMP			
POLAND				4-14334	9-15416	11-14550	11-15417

12-15441	12-15913	17-14334	17-14550	12-14194	12-14446	12-15245	12-15246
17-15347	18-13671	18-13972	18-13979	12-15247	13-13525	13-14069	13-14082
18-14187	18-15416	18-15417	18-15441	13-14193	13-14194	13-14340	13-14341
PYROLYTIC				13-14342	13-14343	13-14345	13-14346
5-13666	6-13666	7-15183	7-15187	13-14446	13-15008	13-15082	13-15244
7-15210	7-15211	7-15213	7-15359	13-15245	13-15246	13-15247	13-15903
7-15933	18-13666			13-15951	14-15077	17-14082	17-15008
QUAD CITIES 1 AND 2				17-15077	17-15082	18-13525	18-14082
5-14665	11-13970	11-13971	11-13973	18-14194	18-14446	18-15008	18-15077
11-14665	12-13968	18-13968	18-13969	18-15082			
18-13970	18-13971	18-13972	18-13973	RADIOGRAPHY			
18-14665				7-13682	7-15684	15-15079	15-15080
QUALITY CONTRCL				15-15229	17-13999	17-15079	17-15080
1-15400	1-15928	1-15929	11-14553	18-13999	18-15079	18-15080	
12-15420	12-15523	12-15525	18-13972	RADIOISOTOPE			
18-14553	18-15400	18-15420	18-15420	5-12471	7-13569	7-15120	15-14702
18-15523	18-15525			RADIONUCLIDE, INDUCED			
RADIATION DAMAGE				17-15682			
7-13748	7-15213	7-15359	7-15688	RADIUM			
9-15266	11-13543	11-13672	11-13748	14-13915	14-14502	14-14503	14-14504
11-14382	11-15051	11-15688	11-15689	14-14950	14-14954	15-13914	15-13929
14-13927	14-14309	14-14968	14-15052	15-14704	15-14950	15-14954	
15-13826	15-13914	15-13927	15-13929	RADON			
15-13982	15-14065	15-14070	15-14309	14-14954	15-13783	15-14954	
15-14319	15-14960	15-14967	15-14968	RAINOUT			
17-15035	17-15215	18-13672	19-14065	14-13926	14-14950	14-14953	14-14966
RADIATION EFFECT				14-14976	14-15239	14-15316	15-13301
6-15033	7-15033	7-15167	7-15174	15-13783	15-13926	15-14283	15-14313
7-15208	7-15209	7-15221	7-15259	15-14950	15-14953	15-14955	15-14957
7-15688	11-13543	11-13750	11-14382	15-14966	15-14976	15-15239	15-15291
11-15051	11-15179	11-15208	11-15688	16-14283	16-14336		
14-13927	14-13928	14-14159	14-14309	RARE EARTH			
14-14968	14-15033	14-15276	14-15292	14-14323			
15-13826	15-13914	15-13921	15-13927	REACTIVITY COEFFICIENT			
15-13928	15-13929	15-13982	15-13983	6-13682	6-14311	6-15090	9-13882
15-14065	15-14070	15-14155	15-14309	9-14311			
15-14319	15-14960	15-14967	15-14968	REACTIVITY EFFECT			
15-15269	15-15298	16-14350	17-12995	6-14333	6-14821	6-15171	7-15171
17-15202	19-14065			9-14333	9-14821	17-13315	
RADIATION IN PERSPECTIVE				REACTIVITY EFFECT, ANOMALOUS			
1-14667	2-13846			5-14658	9-14735	17-13315	17-14004
RADIATION INJURY, TREATMENT OF				17-14006	17-14054	17-14653	17-14658
14-15005	15-13982	15-14177	15-14319	17-14690	17-14735	17-14794	17-15678
15-15005	17-15005			17-15683	18-14145	18-14653	
RADIATION MODEL				REACTIVITY EFFECT, EXPANSION			
15-14960	15-15001			5-15091	6-14053	6-15091	8-15091
RADIATION PROTECTION, CHEMICAL				REACTIVITY, EXCESS			
3-15901	9-15901	12-15901	15-14066	5-14796	6-14796	6-15044	18-14796
15-14067	15-15225	15-15269	15-15285	REACTIVITY, NEGATIVE			
RADIATION PROTECTION, ORGANIZATION				6-14821	9-14821		
3-15901	9-15901	12-15901	15-13912	REACTOR CONTROL			
15-14055	15-14270	15-15272	17-14055	6-14189	6-14793	6-15067	6-15123
RADIATION SAFETY AND CONTROL				9-14189	9-14793	9-15042	9-15065
1-14844	2-15375	7-14383	7-15120	9-15067	9-15123	9-15924	17-12995
12-13887	12-13890	12-14844	12-15319	18-14793			
13-15008	14-14505	14-14507	14-14532	REACTOR COOLANT			
14-14533	14-14534	14-14535	14-15002	6-15033	7-13665	7-15033	7-15251
14-15956	15-13830	15-13912	15-13937	14-15033	17-15251	17-15678	16-13665
15-13965	15-14151	15-14270	15-14313	REACTOR DECOMMISSIONING EXPERIENCE			
15-14319	15-14422	15-14425	15-14496	8-14787	14-14127	14-14787	17-07517
15-14498	15-14499	15-14505	15-14507	17-14127	17-14305	17-14306	17-14307
15-14532	15-14533	15-14534	15-14535	17-14308	17-14787	17-14856	17-14858
15-14702	15-14973	15-14977	15-14995	17-14859	17-14899	18-14899	
15-14998	15-15236	15-15272	15-15956	REACTOR DESCRIPTION			
17-13887	17-13890	17-14151	17-14425	17-14645	17-15914	18-13674	18-14623
17-15008	17-15258	17-15319	18-14148	18-14626	18-14627	18-14629	18-14630
18-14151	18-14844	18-15008	18-15257	18-14632	18-14645		
18-15375				REACTOR DYNAMICS			
RADIATION UNIT				4-13871	5-13871	6-13871	6-13903
15-14248				6-13904	6-13906	6-13981	6-14189
RADIATION, PUBLIC EDUCATION/ACCEPTANCE				6-14303	6-14701	6-14781	6-14782
1-14724	3-14529	14-13951	15-14055	6-14812	6-14945	6-15100	6-15107
17-13951	17-14055	17-14520	18-14724	6-15143	6-15148	6-15149	6-15243
18-15075				6-15386	9-13904	9-14189	9-14945
RADIOACTIVITY, RELEASE				9-15041	9-15148	17-14002	18-15386
1-13667	2-13846	4-14179	7-13684	REACTOR KINETICS			
7-14383	7-15113	12-15113	16-13684	6-14756	6-14800	6-14821	6-15148
16-15338	17-15678	18-13667		6-15152	6-15171	7-15171	9-14821
RADIOCHEMICAL ANALYSIS				9-15148	9-15152	18-14800	
1-14291	7-13569	11-14291	14-15281	REACTOR OFFGAS			
14-15316	15-13953	15-14313	15-14316	7-15112	7-15116	7-15203	7-15349
15-14322	15-15281	15-15357	19-14285	14-14584	14-14588	15-14587	15-15265
RADIOCHEMICAL PLANT SAFETY				15-15491	17-14588	17-14690	18-14588
2-13525	7-15841	11-14346	12-14194	18-15265	18-15491		
12-14446	12-15247	12-15841	13-13525	REACTOR PHYSICS			
13-14194	13-14340	13-14343	13-14345	5-14797	6-14053	6-14528	6-14797
13-14346	13-14446	13-15244	13-15247	17-14853	18-14528	18-14797	18-14830
13-15841	13-15903	18-13525	18-14194	REACTOR POWER			
18-14446				1-14809	9-15380	9-15388	18-14809
RADIOCHEMICAL PROCESSING				18-15380	18-15388	18-15391	
2-13525	7-13569	11-14346	12-14193	REACTOR SAFETY SYSTEM			

1-14641	9-13891	9-14007	9-14038	17-15050	17-15076	17-15366	18-13954
9-14072	9-14182	9-14374	9-14574	18-13955	18-13956	18-13968	18-13969
9-14579	9-14580	9-14581	9-14641	18-13970	18-13971	18-13972	18-13973
9-14878	9-15389	12-14072	15-14878	18-13986	18-13987	18-13990	18-13994
15-14977	17-13891	17-14007	17-14072	18-14145	18-14537	18-14538	18-14539
17-14641	17-14878	18-14574	18-15389	18-14540	18-14541	18-14542	18-14543
REACTOR STABILITY							
5-14788	5-14796	6-13903	6-14663	18-14544	18-14545	18-14546	18-14547
6-14753	6-14769	6-14788	6-14791	18-14551	18-14552	18-14553	18-14554
6-14793	6-14796	6-14945	6-15067	18-14555	18-14556	18-14557	18-14558
6-15072	6-15097	6-15099	6-15105	18-14561	18-14562	18-14563	18-14564
6-15107	6-15136	6-15143	6-15148	18-14565	18-14566	18-14567	18-14568
6-15149	6-15243	6-15478	6-15479	18-14569	18-14570	18-14571	18-14572
9-14791	9-14793	9-14945	9-15067	18-14573	18-14574	18-14576	18-14578
9-15148	17-04916	17-14663	17-14788	18-14626	18-14627	18-14628	18-14634
17-14791	18-14537	18-14793	18-14796	18-14637	18-14647	18-14652	18-14653
18-15478	18-15479			18-14654	18-14655	18-14656	18-14657
REACTOR STARTUP EXPERIENCE, INITIAL							
6-15009	17-15009	17-15914	18-15009	18-14805	18-14847	18-14849	18-14851
REACTOR STARTUP TESTING							
17-13944	17-14054	17-15214	17-15348	18-15076	18-15086		
REACTOR STARTUP, LOW SOURCE							
6-15153	9-15153			REACTOR, REEDED			
REACTOR TEST FACILITY							
6-15171	7-15171	14-15004	15-15004	1-14180	1-14844	6-14180	6-14800
REACTOR TRANSIENT							
4-13871	5-13871	6-13871	6-14311	6-15071	6-15074	7-11795	7-13548
6-14737	6-14793	6-14800	6-14816	7-15169	7-15182	8-13548	12-14844
6-14820	6-14842	6-15069	6-15071	17-11795	17-13315	17-13315	18-13314
6-15141	6-15151	6-15957	7-15161	18-13537	18-14180	18-14649	18-14800
9-14311	9-14325	9-14793	18-14793	18-14804	18-14844		
REACTOR, AEC OWNED							
1-14639	6-14663	9-14640	9-15216	REACTOR, CIRCULATING FUEL			
12-13835	12-13887	12-13966	12-14640	6-15099	6-15105	12-13887	17-13887
17-07517	17-13835	17-13887	17-13889	REACTOR, DESALINATION			
17-13966	17-14052	17-14305	17-14306	2-14762	9-14062	12-14762	15-13919
17-14307	17-14639	17-14640	17-14663	18-14762	18-15894		
17-14677	17-15035	17-15216	17-15347	REACTOR, FAST			
17-15348	17-15914	17-15917	18-13835	1-14180	1-14844	5-13113	5-14777
18-13966	18-14639			5-15091	6-14053	6-14180	6-14697
REACTOR, AIRCRAFT							
1-14759	3-14759			6-14738	6-14739	6-14770	6-14776
REACTOR, ARMY							
5-14071	5-14767	5-14796	5-14797	6-14777	6-14819	6-15033	6-15044
6-14795	6-14797	7-15250	9-14767	6-15071	6-15073	6-15074	6-15090
11-15121	17-12192	17-14071	17-14308	6-15091	6-15124	6-15142	6-15144
17-15053	17-15250	18-12192	18-14767	6-15145	6-15146	6-15147	6-15157
18-14796	18-14797			6-15243	6-15254	6-15344	7-11795
REACTOR, BED MODERATED							
7-15117				7-13548	7-15033	7-15164	7-15169
REACTOR, BOILING WATER							
1-14547	1-14641	2-14538	5-13954	7-15182	8-13548	8-15091	11-15134
5-13955	5-13985	5-13986	5-14569	12-14844	14-15033	17-11795	17-12341
5-14570	5-14572	5-14576	5-14578	17-13315	17-13534	17-13536	17-15677
5-14647	5-14652	5-14657	5-14788	18-13314	18-13537	18-13979	18-14180
5-14790	5-14847	5-14898	5-15015	18-14420	18-14649	18-14775	18-14804
6-13896	6-13903	6-13986	6-14189	18-14844			
6-14663	6-14753	6-14769	6-14788	REACTOR, FAST BURST			
6-14791	6-14843	6-15072	6-15136	1-14799	15-13937	18-13995	
6-15148	7-15015	7-15103	9-13059	REACTOR, FLUX TRAP			
9-14036	9-14072	9-14189	9-14542	6-15306	7-14330	9-14640	11-14330
9-14543	9-14573	9-14574	9-14575	12-14640	17-14330	17-14526	17-14640
9-14576	9-14577	9-14578	9-14579	17-14850	17-15306	17-15347	17-15914
9-14580	9-14581	9-14582	9-14641	18-14526	18-14853	18-15306	
9-14789	9-14790	9-14791	9-14891	REACTOR, GAS COOLED			
9-14892	9-14893	9-15049	9-15148	1-13667	1-14625	5-13666	5-13669
9-15924	11-13970	11-13971	11-13973	5-14777	5-15323	6-13666	6-14777
11-13975	11-13987	11-14546	11-14550	7-13544	7-13665	7-15117	7-15117
11-14552	11-14553	11-14555	11-14556	7-15209	7-15210	7-15211	7-15213
11-14557	11-14558	11-14561	11-14562	7-15940	9-13673	9-14184	9-14185
11-14563	11-14564	11-14565	11-14566	9-14188	9-14191	9-15041	11-13672
11-14568	11-14569	11-14570	11-14571	11-13845	11-15131	11-15134	12-13675
11-14634	11-14647	11-14710	11-14849	12-15940	17-13944	17-14306	17-14625
11-14851	11-15076	12-13890	12-13968	17-15214	17-15215	17-15677	18-13665
12-13985	12-14072	12-14542	12-14543	18-13666	18-13667	18-13668	18-13669
12-14544	12-14546	12-15690	14-14539	18-13670	18-13671	18-13672	18-13673
14-14541	14-14583	14-14584	14-14585	18-13674	18-13675	18-14186	18-14187
14-14586	14-14589	14-14590	14-15050	18-14625	18-14675	18-14691	
16-14583	17-04916	17-12245	17-12995	REACTOR, GENERAL			
17-13059	17-13890	17-13896	17-13975	6-15033	7-15033	7-15117	7-15178
17-13976	17-13994	17-14000	17-14002	14-15033			
17-14052	17-14072	17-14377	17-14550	REACTOR, GRAPHITE MODERATED			
17-14551	17-14585	17-14634	17-14637	1-13667	1-15893	4-14334	5-13666
17-14641	17-14653	17-14654	17-14655	5-13669	5-14784	6-13666	6-13883
17-14656	17-14663	17-14690	17-14788	6-14738	6-14784	7-13665	7-14784
17-14789	17-14790	17-14791	17-14843	7-15117	8-14787	9-13673	9-14184
17-14849	17-14890	17-14891	17-14892	9-14185	9-14188	9-14191	9-15041
17-14893	17-14898	17-15048	17-15049	11-13672	12-13675	14-14787	17-13894
				17-13944	17-14334	17-14787	17-14856
				17-14857	17-14858	17-14859	18-13665
				18-13666	18-13667	18-13668	18-13669
				18-13670	18-13671	18-13672	18-13673
				18-13674	18-13675	18-14186	18-14187
				REACTOR, HALF FAST			
				6-15138			
				REACTOR, HEAVY WATER			
				6-13905	6-14786	6-14810	6-14811
				6-14816	6-15093	6-15148	9-07758
				9-14192	9-14735	9-14795	9-14947
				9-15148	9-15216	11-07901	11-14648
				12-15913	14-15010	14-15305	17-07517
				17-07758	17-07901	17-13893	17-14002



17-14008	17-14009	17-14648	17-14735	9-14878	9-15036	9-15067	9-15377
17-14795	17-14947	17-15010	17-15216	9-15378	9-15380	9-15381	9-15382
17-15305	17-15917	18-14009	18-14148	9-15384	9-15387	9-15388	9-15389
18-14648	18-14650	18-14830	18-15010	9-15390	9-15399	9-15403	9-15404
18-15305				9-15405	9-15406	9-15407	9-15408
REACTOR, HOMOGENEOUS				9-15409	9-15410	9-15411	9-15412
7-15529	18-14153			9-15413	9-15414	9-15415	9-15416
REACTOR, INTERACTING				9-15419	9-15442	9-15472	9-15477
3-14771				9-15526	9-15920	9-15923	10-15412
REACTOR, LARGE				10-15413	10-15461	10-15469	11-07901
6-15124				11-10528	11-13975	11-14525	11-14648
REACTOR, LIQUID METAL COOLED				11-14666	11-14673	11-14723	11-14861
1-15893	4-14334	5-14676	6-14800	11-15006	11-15121	11-15125	11-15392
7-11795	7-13548	7-14384	7-14385	11-15393	11-15395	11-15396	11-15401
7-15182	8-13548	8-14385	8-14787	11-15402	11-15405	11-15409	11-15417
9-14190	14-14787	17-11795	17-12341	11-15418	11-15421	11-15422	11-15423
17-13315	17-13534	17-13536	17-14334	11-15424	11-15425	11-15426	11-15427
17-14676	17-14787	17-14856	17-14857	11-15428	11-15429	11-15430	11-15431
17-14858	17-14859	18-13314	18-13537	11-15433	11-15440	11-15443	11-15459
18-13979	18-14675	18-14800	18-14804	11-15460	11-15462	11-15474	11-15484
REACTOR, MARTIME				11-15485	11-15486	11-15497	11-15502
2-14664	5-13997	7-14666	7-14861	11-15526	11-15527	12-14072	12-14678
9-14878	11-14525	11-14666	11-14861	12-15125	12-15126	12-15393	12-15394
11-15134	15-14635	15-14878	17-14525	12-15398	12-15403	12-15404	12-15406
17-14635	17-14666	17-14878	17-15258	12-15407	12-15408	12-15420	12-15438
18-13997	18-14525	18-14635	18-14664	12-15439	12-15441	12-15442	12-15443
18-14861				12-15444	12-15445	12-15448	12-15449
REACTOR, MOLTEN SALT				12-15450	12-15451	12-15452	12-15453
6-13981	6-14701	7-14381	12-13887	12-15454	12-15458	12-15459	12-15460
17-13887	17-13889	17-15348		12-15462	12-15464	12-15465	12-15466
REACTOR, ORGANIC COOLED				12-15494	12-15495	12-15498	12-15499
6-13905	6-14810	6-14816	9-14636	12-15500	12-15501	12-15503	12-15504
17-13992	17-15679	17-15680	17-15681	12-15505	12-15506	12-15507	12-15508
17-15682	17-15683	18-14636	18-14650	12-15509	12-15510	12-15511	12-15512
18-14930				12-15513	12-15514	12-15515	12-15516
REACTOR, PEARLE BED				12-15517	12-15519	12-15520	12-15521
5-15323	9-14184	9-14185	9-14198	12-15522	12-15523	12-15524	12-15525
18-14186	18-14187			13-15951	14-15373	14-15374	14-15378
REACTOR, POOL TYPE				15-14151	15-14635	15-14878	15-15265
5-14146	5-14527	5-14764	5-14765	15-15490	15-15491	15-15496	16-15126
6-14146	9-13998	12-13835	13-14147	16-15398	16-15503	17-07517	17-07758
14-13951	17-12192	17-13835	17-13936	17-07901	17-12207	17-13234	17-13897
17-13951	17-13998	17-14725	17-14764	17-13975	17-13976	17-14001	17-14003
17-14765	17-14846	18-12192	18-13835	17-14004	17-14005	17-14006	17-14007
18-13933	18-13936	18-13952	18-13967	17-14051	17-14072	17-14075	17-14078
18-13993	18-14146	18-14147	18-14527	17-14144	17-14150	17-14151	17-14152
18-14725	18-14764	18-14765	18-14846	17-14377	17-14525	17-14635	17-14641
REACTOR, POWER				17-14648	17-14650	17-14666	17-14794
1-13667	1-14073	1-14644	1-14643	17-14795	17-14803	17-14853	17-14854
2-15088	5-13666	5-13669	5-15971	17-14878	17-15053	17-15140	17-15250
6-13666	6-15243	6-15687	7-13665	17-15251	17-15432	17-15527	17-15678
9-13673	9-13891	9-14641	11-13672	17-15919	18-10528	18-12207	18-13234
12-14643	17-15913	15-15232	17-13891	18-13997	18-14003	18-14075	18-14078
17-13894	17-14001	17-14644	17-14647	18-14144	18-14148	18-14149	18-14150
17-14643	17-14644	17-15258	17-15678	18-14151	18-14152	18-14160	18-14386
17-15679	17-15680	17-15681	17-15682	18-14525	18-14528	18-14623	18-14624
17-15683	18-13665	18-13666	18-13667	18-14629	18-14631	18-14632	18-14633
18-13668	18-13669	18-13670	18-13671	18-14635	18-14648	18-14664	18-14678
18-13672	18-13673	18-13674	18-15012	18-14723	18-14767	18-14793	18-14796
18-15037	18-15088			18-14797	18-14806	18-14861	18-15006
REACTOR, PRESSURE TURE				18-15036	18-15125	18-15126	18-15265
6-14811	6-15093	9-14192	9-14735	18-15372	18-15373	18-15374	18-15375
9-14947	9-15216	11-14648	17-07517	18-15376	18-15377	18-15378	18-15379
17-14008	17-14009	17-14648	17-14735	18-15380	18-15381	18-15382	18-15383
17-14947	17-15216	18-14009	18-14648	18-15384	18-15385	18-15386	18-15387
18-14930				18-15388	18-15389	18-15390	18-15391
REACTOR, PRESSURIZED WATER				18-15392	18-15393	18-15394	18-15395
1-14641	1-14723	1-15397	1-15400	18-15396	18-15397	18-15398	18-15399
2-14160	2-14386	2-14664	2-14673	18-15400	18-15401	18-15402	18-15403
2-15373	2-15374	2-15375	2-15376	18-15404	18-15405	18-15406	18-15407
2-15396	2-15397	2-15433	5-13997	18-15408	18-15409	18-15410	18-15411
5-14659	5-14767	5-14796	5-14797	18-15412	18-15413	18-15414	18-15415
5-14803	5-15006	5-15094	5-15419	18-15416	18-15417	18-15418	18-15419
5-15422	5-15434	5-15435	5-15436	18-15420	18-15420	18-15421	18-15422
5-15437	5-15438	5-15439	5-15440	18-15423	18-15424	18-15425	18-15426
5-15446	5-15447	5-15448	5-15449	18-15427	18-15428	18-15429	18-15430
5-15465	5-15466	5-15467	5-15468	18-15431	18-15433	18-15434	18-15435
5-15470	5-15471	5-15472	5-15473	18-15436	18-15437	18-15438	18-15439
5-15475	5-15476	5-15477	5-15478	18-15440	18-15441	18-15442	18-15443
5-15485	5-15488	5-15489	5-15490	18-15444	18-15445	18-15446	18-15447
5-15492	5-15493	5-15495	5-15496	18-15448	18-15449	18-15450	18-15451
5-15501	5-15507	5-15517	6-14529	18-15452	18-15453	18-15454	18-15455
6-14793	6-14796	6-14797	6-15067	18-15456	18-15458	18-15459	18-15460
6-15094	6-15386	6-15476	6-15478	18-15461	18-15462	18-15463	18-15464
6-15479	6-15480	6-15481	6-15482	18-15465	18-15466	18-15467	18-15468
6-15483	7-14075	7-14078	7-14144	18-15469	18-15470	18-15471	18-15472
7-14386	7-14666	7-14861	7-15103	18-15473	18-15474	18-15475	18-15476
7-15206	7-15250	7-15251	7-15458	18-15477	18-15478	18-15479	18-15480
7-15484	7-15531	8-15467	9-07758	18-15481	18-15482	18-15483	18-15484
9-14007	9-14072	9-14183	9-14641	18-15485	18-15486	18-15487	18-15488
9-14767	9-14793	9-14795	9-14803	18-15489	18-15490	18-15491	18-15492

18-15493	18-15494	18-15495	18-15496	12-14072	12-14643	13-14341	13-14342
18-15497	18-15498	18-15499	18-15500	17-13838	17-13891	17-14072	17-14641
18-15501	18-15502	18-15503	18-15504	17-14642	17-14643	17-14644	
18-15505	18-15506	18-15507	18-15508	RELIABILITY, COMPONENT			
18-15509	18-15510	18-15511	18-15512	9-14059	9-14374	9-15266	9-15268
18-15513	18-15514	18-15515	18-15516	9-15922	11-15431	12-13838	17-13838
18-15517	18-15518	18-15519	18-15520	18-15431			
18-15521	18-15522	18-15523	18-15524	RELIABILITY, SYSTEM			
18-15525	18-15526	18-15744	18-15745	5-15448	9-14035	9-14182	9-14374
18-15919				9-14579	9-15268	9-15922	12-13838
REACTOR, PRODUCTION				12-15448	17-13838	18-15448	
17-14307				REMOTE MANIPULATING AND VIEWING			
REACTOR, PULSED				11-13070	11-14565	12-13070	12-13887
5-14145	5-14527	5-14764	5-14765	17-12207	17-13886	17-13887	17-13889
6-14146	6-14754	6-14770	17-14077	17-13892	18-12207	18-14565	
17-14764	17-14765	18-12189	18-14077	RESEARCH AND DEVELOPMENT PROGRAM			
18-14146	18-14527	18-14764	18-14765	7-13665	9-15036	9-15216	11-15460
REACTOR, RESEARCH				12-15460	12-15913	17-14853	17-15214
1-14724	1-15358	6-15306	7-15249	17-15215	17-15216	17-15258	17-15677
7-15529	9-12195	9-14711	9-15042	18-13665	18-14662	18-14830	18-15012
12-13966	14-15004	14-15010	14-15305	18-15036	18-15460		
15-15004	17-12195	17-13966	17-14077	RESIN			
17-14526	17-14677	17-15010	17-15035	12-13934	12-13935	15-14726	17-14726
17-15305	17-15306	17-15915	18-12195	18-14726			
18-13957	18-13966	18-13989	18-14077	RESPONSE SPECTRUM			
18-14153	18-14173	18-14526	18-14711	2-14086			
18-14724	18-15010	18-15075	18-15305	RESPONSE TIME			
18-15306				5-15470	5-15477	9-14190	9-15477
REACTOR, SPACE				10-15461	10-15465	18-15461	18-15469
4-13943	4-14058	4-14181	4-14802	18-15470	18-15477		
5-14802	6-14058	9-14325	14-13943	REVIEW			
16-13943	17-14058			1-15897	1-15898	9-15054	11-15125
REACTOR, SPECTRAL SHIFT				12-15125	12-15126	16-15126	17-12341
17-14272				18-15125	18-15126	18-15894	
REACTOR, SUPERHEAT				RHODIUM			
5-14898	6-13896	6-15009	11-15076	15-14315			
12-13890	17-12245	17-13890	17-13896	RIVER, CLINCH			
17-13994	17-14000	17-14054	17-14898	14-14705	15-13912	15-13953	
17-15009	17-15076	18-13994	18-15009	RIVER, COLUMBIA			
18-15076				14-13913	14-14178	14-14707	15-13916
REACTOR, TEST				15-15315			
1-12183	1-14639	1-14759	1-15892	RIVER, GENERAL			
3-14759	5-14071	5-14784	6-13883	2-15088	14-14174	18-14540	18-15088
6-14053	6-14738	6-14760	6-14784	RIVER, TENNESSEE			
6-15090	6-15157	7-14784	9-07758	15-13953	18-14540		
9-14947	9-15011	9-15055	9-15216	ROBINSON 2			
12-13966	17-07758	17-13966	17-14071	1-15397	1-15400	2-15373	2-15374
17-14639	17-14947	17-15011	17-15035	2-15375	2-15376	2-15396	2-15397
17-15216	18-13966	18-14639	18-14662	2-15433	5-15419	5-15422	5-15434
18-14775	18-15011			5-15435	5-15436	5-15437	5-15438
REACTOR, TRAINING				5-15439	5-15440	5-15446	5-15447
1-09286	12-09286	17-14899	18-09286	5-15448	5-15464	5-15465	5-15466
18-13933	18-14899			5-15467	5-15468	5-15470	5-15471
REACTOR, WATER				5-15472	5-15473	5-15475	5-15476
6-13906	7-15178	11-14674	12-15958	5-15477	5-15483	5-15485	5-15488
18-14722				5-15489	5-15490	5-15492	5-15493
RECOMBINER				5-15495	5-15496	5-15501	5-15507
7-15529				5-15517	6-15386	6-15476	6-15478
REDUNDANCE				6-15479	6-15480	6-15481	6-15482
9-14182	9-14542	9-15403	9-15412	6-15483	7-15458	7-15484	8-15467
10-15412	10-15461	11-14556	11-15125	9-15377	9-15378	9-15380	9-15381
11-15431	12-14542	12-15125	12-15403	9-15382	9-15384	9-15387	9-15388
12-15445	12-15452	18-14542	18-14556	9-15389	9-15390	9-15399	9-15403
18-15125	18-15403	18-15412	18-15431	9-15404	9-15405	9-15406	9-15407
18-15445	18-15452	18-15461		9-15408	9-15409	9-15410	9-15411
REENTRY, ATMOSPHERIC				9-15412	9-15413	9-15414	9-15415
4-14165				9-15416	9-15419	9-15442	9-15472
REFLECTOR				9-15477	9-15526	10-15412	10-15413
1-14868	3-14868	6-14770	6-14819	10-15461	10-15469	11-15392	11-15393
6-14820	13-14868	17-15035		11-15395	11-15396	11-15401	11-15402
REFUELING				11-15405	11-15409	11-15417	11-15418
5-14146	5-14652	5-14790	5-14803	11-15421	11-15422	11-15423	11-15424
6-14146	9-13998	9-14790	9-14803	11-15425	11-15426	11-15427	11-15428
17-13893	17-13998	17-14790	17-14803	11-15429	11-15430	11-15431	11-15433
17-15678	18-13995	18-14146	18-14652	11-15440	11-15443	11-15459	11-15460
REGULATION, AEC				11-15462	11-15474	11-15484	11-15485
1-12184	1-14074	1-14419	1-14809	11-15486	11-15497	11-15502	11-15526
1-15895	1-15896	2-14664	5-13997	11-15527	12-15393	12-15394	12-15398
14-14074	17-13999	17-14419	17-15932	12-15403	12-15404	12-15406	12-15407
18-13997	18-13999	18-14074	18-14148	12-15408	12-15420	12-15438	12-15439
18-14419	18-14664	18-14809	18-15012	12-15441	12-15442	12-15443	12-15444
REGULATION, GENERAL				12-15445	12-15448	12-15449	12-15450
1-14297				12-15451	12-15452	12-15453	12-15454
REGULATION, IAEA				12-15458	12-15459	12-15460	12-15462
3-14863				12-15464	12-15465	12-15466	12-15494
REGULATION, STATE				12-15495	12-15498	12-15499	12-15500
1-15895				12-15501	12-15503	12-15504	12-15505
RELIABILITY ANALYSIS				12-15506	12-15507	12-15508	12-15509
1-14641	1-14643	9-13891	9-14072	12-15510	12-15511	12-15512	12-15513
9-14182	9-14374	9-14641	9-14831	12-15514	12-15515	12-15516	12-15517
9-15065	9-15066	9-15922	12-13838	12-15519	12-15520	12-15521	12-15522



9-15409	9-15410	9-15411	9-15412	18-15524	18-15525	18-15526	18-15744
9-15413	9-15414	9-15415	9-15416	18-15745			
9-15419	9-15442	9-15472	9-15477	SAFETY ANALYSIS REPORT, REVIEW OF			
9-15526	10-15412	10-15413	10-15461	5-14665	11-14665	18-13314	18-14665
10-15469	11-14546	11-14550	11-14552	SAFETY ANALYSIS RPT, RESPONSE TO AEC QUESTIONS			
11-14553	11-14555	11-14556	11-14557	1-14547	2-14538	5-14569	5-14570
11-14558	11-14561	11-14562	11-14563	5-14572	5-14576	5-14578	9-14542
11-14564	11-14565	11-14566	11-14568	9-14543	9-14573	9-14574	9-14575
11-14569	11-14570	11-14571	11-15392	9-14576	9-14577	9-14578	9-14579
11-15393	11-15395	11-15396	11-15401	9-14580	9-14581	9-14582	11-13970
11-15402	11-15405	11-15409	11-15417	11-13971	11-13973	11-14546	11-14550
11-15418	11-15421	11-15422	11-15423	11-14552	11-14553	11-14555	11-14556
11-15424	11-15425	11-15426	11-15427	11-14557	11-14558	11-14561	11-14562
11-15428	11-15429	11-15430	11-15431	11-14563	11-14564	11-14565	11-14566
11-15433	11-15440	11-15443	11-15459	11-14568	11-14569	11-14570	11-14571
11-15460	11-15462	11-15474	11-15484	12-14542	12-14543	12-14544	12-14546
11-15485	11-15486	11-15497	11-15502	14-14539	14-14541	14-14543	14-14584
11-15526	11-15527	12-13675	12-14542	14-14585	14-14586	14-14588	14-14589
12-14543	12-14544	12-14546	12-15393	14-14590	15-14587	16-14583	17-13936
12-15394	12-15398	12-15403	12-15404	17-14550	17-14551	17-14585	17-14588
12-15406	12-15407	12-15408	12-15420	17-14653	17-14654	17-14655	17-14656
12-15438	12-15439	12-15441	12-15442	18-13936	18-13967	18-13969	18-13970
12-15443	12-15444	12-15445	12-15448	18-13971	18-13972	18-13973	18-14537
12-15449	12-15450	12-15451	12-15452	18-14538	18-14539	18-14540	18-14541
12-15453	12-15454	12-15458	12-15459	18-14542	18-14543	18-14544	18-14545
12-15460	12-15462	12-15464	12-15465	18-14546	18-14547	18-14551	18-14552
12-15466	12-15494	12-15495	12-15498	18-14553	18-14554	18-14555	18-14556
12-15499	12-15500	12-15501	12-15503	18-14557	18-14558	18-14561	18-14562
12-15504	12-15505	12-15506	12-15507	18-14563	18-14564	18-14565	18-14566
12-15508	12-15509	12-15510	12-15511	18-14567	18-14568	18-14569	18-14570
12-15512	12-15513	12-15514	12-15515	18-14571	18-14572	18-14573	18-14574
12-15516	12-15517	12-15519	12-15520	18-14576	18-14578	18-14588	18-14653
12-15521	12-15522	12-15523	12-15524	18-14654	18-14655	18-14656	
12-15525	14-14539	14-14541	14-14583	SAFETY EVALUATION			
14-14584	14-14585	14-14586	14-14588	2-14664	3-14288	7-14861	7-15252
14-14589	14-14590	14-15373	14-15374	9-13964	11-14861	13-14147	17-13234
14-15378	15-14587	15-15490	15-15491	17-13994	17-14846	17-15252	18-13234
15-15496	16-14583	16-15398	16-15503	18-13952	18-13957	18-13964	18-13979
17-14550	17-14551	17-14585	17-14588	18-13992	18-13993	18-13994	18-13995
17-15432	17-15527	18-13666	18-13674	18-14147	18-14149	18-14664	18-14806
18-13675	18-13957	18-13990	18-14153	18-14845	18-14846	18-14861	
18-14386	18-14537	18-14538	18-14539	SAFETY INJECTION			
18-14540	18-14541	18-14542	18-14543	9-07758	17-07758		
18-14544	18-14545	18-14546	18-14547	SAFETY PRINCIPLES AND PHILOSOPHY			
18-14551	18-14552	18-14553	18-14554	1-12183	1-13949	1-14290	1-14291
18-14555	18-14556	18-14557	18-14558	1-14297	1-14639	1-15358	1-15897
18-14561	18-14562	18-14563	18-14564	2-13949	2-13950	3-14290	9-14581
18-14565	18-14566	18-14567	18-14568	9-15924	11-14290	11-14291	12-13832
18-14569	18-14570	18-14571	18-14572	12-13950	15-14702	15-14977	15-15185
18-14573	18-14574	18-14576	18-14578	17-14639	17-15140	17-15258	18-14639
18-14588	18-14623	18-14624	18-14626	SAFETY REVIEW (OPERATIONS, EXPERIMENTS)			
18-14627	18-14628	18-14629	18-14630	1-14180	1-14297	1-14419	1-14639
18-14631	18-14632	18-14633	18-15086	1-14641	6-14180	9-14641	9-14878
18-15087	18-15372	18-15373	18-15374	15-14635	15-14878	17-14419	17-14635
18-15375	18-15376	18-15377	18-15378	17-14639	17-14641	17-14878	18-13993
18-15379	18-15380	18-15381	18-15382	18-14180	18-14419	18-14635	18-14639
18-15383	18-15384	18-15385	18-15386	SAFETY STUDY			
18-15387	18-15388	18-15389	18-15390	1-14641	1-15897	3-15047	5-14796
18-15391	18-15392	18-15393	18-15394	6-14796	9-14641	17-14641	17-14642
18-15395	18-15396	18-15397	18-15398	17-14644	18-13668	18-14796	
18-15399	18-15400	18-15401	18-15402	SALT			
18-15403	18-15404	18-15405	18-15406	14-15175	14-15177		
18-15407	18-15408	18-15409	18-15410	SAMARIUM			
18-15411	18-15412	18-15413	18-15414	15-14315			
18-15415	18-15416	18-15417	18-15418	SAMPLING			
18-15419	18-15420	18-15420	18-15421	3-14992	4-15020	5-13546	7-13545
18-15422	18-15423	18-15424	18-15425	7-13546	7-13678	7-13681	7-13692
18-15426	18-15427	18-15428	18-15429	7-15187	7-15192	7-15346	7-15693
18-15430	18-15431	18-15433	18-15434	11-14992	12-14992	14-14705	14-14707
18-15435	18-15436	18-15437	18-15438	14-14953	14-14954	15-13783	15-13859
18-15439	18-15440	18-15441	18-15442	15-13942	15-13953	15-14283	15-14953
18-15443	18-15444	18-15445	18-15446	15-14954	15-15236	16-14283	16-14336
18-15447	18-15448	18-15449	18-15450	17-14725	18-14725	18-14806	
18-15451	18-15452	18-15453	18-15454	SAMPLING, HIGH ALTITUDE			
18-15455	18-15456	18-15458	18-15459	16-14314	16-14337	16-14911	16-15334
18-15460	18-15461	18-15462	18-15463	16-15335	16-15336		
18-15464	18-15465	18-15466	18-15467	SAN ONOFRE			
18-15468	18-15469	18-15470	18-15471	6-14528	18-14528		
18-15472	18-15473	18-15474	18-15475	SAVANNAH RIVER PLANT			
18-15476	18-15477	18-15478	18-15479	9-15055	15-14807	15-15261	17-07517
18-15480	18-15481	18-15482	18-15483	SAVANNAH RIVER PRODUCTION REACTORS			
18-15484	18-15485	18-15486	18-15487	7-13836	11-13836	12-13836	
18-15488	18-15489	18-15490	18-15491	SAXTON			
18-15492	18-15493	18-15494	18-15495	5-14658	7-15531	9-13988	17-13988
18-15496	18-15497	18-15498	18-15499	17-14658	17-14794		
18-15500	18-15501	18-15502	18-15503	SCRAM, REAL			
18-15504	18-15505	18-15506	18-15507	1-14641	5-15472	6-13981	6-15152
18-15508	18-15509	18-15510	18-15511	9-14007	9-14641	9-15152	9-15472
18-15512	18-15513	18-15514	18-15515	17-14007	17-14641	17-14642	17-15347
18-15516	18-15517	18-15518	18-15519	17-15680	18-15472		
18-15520	18-15521	18-15522	18-15523	SCRAM, SPURIOUS			

1-14641	9-12195	9-13891	9-14641	5-14796	5-14797	6-14796	6-14797
17-12195	17-13891	17-14641	17-14642	18-14796	18-14797		
17-15048	18-12195			SM 1A (STATIONARY MEDIUM POWER PLANT, ALASKA)			
SCURBER				5-14797	6-14797	11-15121	18-14797
7-15954				SMOKE			
SEAL				7-14385	8-14385	16-13961	16-15342
11-15111	12-15913			17-13961			
SEDIMENT				SNAP 10A (SYSTEMS FOR NUCLEAR AUXILIARY POWER)			
15-13942	15-13953			4-14058	6-14058	17-14058	
SEFOR (SOUTHWEST EXP. FAST OXIDE REACTOR)				SNAP 15 (SYSTEMS FOR NUCLEAR AUXILIARY POWER)			
6-14800	6-15071	6-15074	6-15153	4-13947	18-15257		
9-15153	18-14800			SNAP 19 (SYSTEMS FOR NUCLEAR AUXILIARY POWER)			
SEICHE				4-14732			
2-14012	2-14206	2-14218	2-15905	SNAP 2 (SYSTEMS FOR NUCLEAR AUXILIARY POWER)			
SEISMIC ZONE				4-14181			
2-14017	2-14018	2-14020	2-14023	SNAP 8 (SYSTEMS FOR NUCLEAR AUXILIARY POWER)			
2-14024	2-14026	2-14225	2-14229	4-14379	6-14379	9-14379	
2-14393	2-14510	2-14516	2-14519	SNAP, GENERAL (SYSTEMS FOR NUCLEAR AUX. POWER)			
2-14680	2-14681	2-14686	2-14687	4-14317	5-14317	12-15247	13-15247
2-14689	2-14713	2-14716	2-14717	14-14974	15-14974		
2-14720	2-14932	2-14938	2-14939	SODIUM			
2-14941	2-15023	2-15026	2-15905	1-15893	4-14161	5-14161	5-14234
2-15911				5-14676	5-15184	6-15124	6-15142
SEISMOLOGY				6-15145	6-15147	6-15171	7-13548
2-14978	11-14552	11-14563	11-14565	7-13676	7-13911	7-14384	7-14385
11-14566	14-15292	18-13668	18-14552	7-15163	7-15166	7-15168	7-15169
18-14563	18-14565	18-14566	18-14567	7-15170	7-15171	7-15181	8-13548
18-14624	18-14627	18-14631	18-14633	8-14385	8-14787	11-15170	12-14344
18-15745				13-14344	14-13913	14-14787	14-14950
SELENIUM				15-14950	15-15180	17-14063	17-14676
15-15269				17-14787	17-15173		
SERVO MECHANISM				SODIUM COEFFICIENT			
9-15065	9-15066			5-15091	6-14776	6-15091	6-15254
SEFLL				8-15091	18-14775		
11-14521				SOIL			
SHIELDING				15-13942			
11-14571	11-15417	11-15418	12-13887	SOIL MECHANICS			
12-15394	15-13753	15-14706	15-15293	2-14021	2-14086	2-14213	2-14214
17-13536	17-13886	17-13887	17-15038	2-14224	2-14227	2-14512	2-14513
17-15915	18-14554	18-14571	18-15394	SOIL PROPERTY, IN SITU			
18-15417	18-15418			2-14512			
SHIPPING CONTAINER				SOIL, NUCLIDE OCCURRENCE			
3-14289	3-14292	3-14529	17-14529	14-13926	14-14950	14-14953	14-14965
SHIPPINGPORT				14-15235	14-15292	15-13811	15-13926
1-14641	5-14803	9-14072	9-14641	15-14421	15-14950	15-14953	15-14965
9-14803	12-14072	13-15951	17-13976	15-15235	15-15237	15-15367	
17-14072	17-14641	17-14803	17-14853	SOIL, PROPERTY			
17-14854				14-14703	14-14964	14-14965	14-15235
SHOCK ABSORBER				14-15290	15-14322	15-14965	15-15235
9-14822				15-15290			
SHUTDOWN COOLING SYSTEM				SOIL, RADIONUCLIDE MOVEMENT THROUGH			
4-15021	4-15022	5-15448	12-13968	14-13978	14-14965	14-15260	14-15292
12-15448	12-15494	18-13968	19-15448	14-15303	14-15304	15-14965	15-15269
18-15494				SOLID STATE DEVICE			
SHUTDOWN MARGIN				15-14969	15-14972	15-15000	
5-14796	6-06225	6-14796	9-14183	SOLVENT EXTRACTION PROCESS			
9-14878	15-14878	17-14000	17-14878	13-15951			
18-14796				SORPTION			
SHUTDOWN MECHANISM, SELF				12-15245	13-15245	14-14964	14-15278
9-14185				14-15303			
SHUTDOWN SYSTEM, SECONDARY				SOURCE MATERIAL			
1-14641	5-14790	9-14573	9-14641	1-12184			
9-14789	9-14790	12-13675	12-13838	SOURCE MECHANISM			
17-13838	17-14641	17-14789	17-14790	2-14016	2-14017	2-14019	2-14022
18-13675	18-14573			2-14025	2-14027	2-14028	2-14029
SILICON				2-14030	2-14031	2-14032	2-14215
14-15233	17-15173			2-14219	2-14220	2-14226	2-14229
SIMULATION				2-14392	2-14456	2-14509	2-14510
4-13930	4-14379	4-14733	6-14379	2-14515	2-14518	2-14680	2-14686
7-13930	7-13931	7-15346	9-14062	2-14688	2-14719	2-14720	2-14931
9-14379	9-15041			2-14933	2-14935	2-14937	2-14939
SINGLE-FAILURE CRITERION				2-15024	2-15025	2-15064	
9-14580	9-15403	9-15412	10-15412	SOURCE, CONTINUOUS			
12-15403	12-15445	18-15403	18-15412	14-14583	14-14584	15-14587	16-14583
18-15445				17-14637	18-14637		
SITE ASSEMBLY				SOURCE, POINT			
11-15111				16-14349	16-14351	16-14352	16-15338
SITE CLIMATOLOGY				SOURCE, PULSED NEUTRON			
16-15341				6-06225			
SITE CRITERIA, EARTHQUAKE				SOURCE, RADIATION			
2-14938	2-14941			14-14950	15-14950	15-15001	
SITING, GENERAL				SPACE DEPENDENT DYNAMICS			
2-14664	18-14664			6-13905	6-14755	6-14756	6-14812
SITING, OFF SHORE				6-14814	6-14817	6-14842	6-15067
2-14762	12-14762	18-14762		6-15123	6-15143	6-15158	9-15067
SITING, REACTOR				9-15123			
1-13949	1-14625	1-14724	1-14809	SPACECRAFT			
1-15897	2-13846	2-13949	2-13950	4-13871	4-13930	5-13871	6-13871
2-15088	12-13950	17-14625	18-14537	7-13930			
18-14625	18-14724	18-14809	18-15088	SPAIN			
SM 1 (STATIONARY MEDIUM POWER PLANT)				2-14673	11-14673		

SPECTROMETRY, GAMMA				7-15346	7-15533	7-15933	11-13844
7-13931	15-13811	15-13862	15-15180	12-14194	12-14446	12-15247	13-13844
SPHERE				13-14194	13-14446	13-15247	14-13731
5-15323				14-13860	14-13926	14-13978	14-14133
SPRAY, GENERAL				14-14323	14-14500	14-14501	14-14502
2-14386	7-13687	7-13689	7-14386	14-14506	14-14536	14-14948	14-14953
11-15218	18-14386			14-14954	14-14964	14-14965	14-14966
SRE (SODIUM REACTOR EXPERIMENT)				14-14970	14-15104	14-15239	14-15256
9-14190				14-15270	14-15273	14-15277	14-15281
STACK				14-15304	14-15533	14-15908	15-13429
11-13970	11-14566	14-14583	14-15311	15-13610	15-13783	15-13811	15-13858
15-14587	15-15085	16-13961	16-14349	15-13914	15-13926	15-13938	15-13953
16-14351	16-14352	16-14583	16-14909	15-13983	15-13996	15-14155	15-14156
17-13961	17-14656	17-15085	17-15311	15-14157	15-14175	15-14283	15-14315
18-13970	18-14145	18-14566	18-14656	15-14316	15-14506	15-14948	15-14951
18-15085	18-15311			15-14953	15-14954	15-14955	15-14957
STAFFING, TRAINING, QUALIFICATION				15-14959	15-14965	15-14966	15-14970
1-14625	1-14860	13-15008	15-14068	15-15104	15-15237	15-15239	15-15262
17-13962	17-14551	17-14625	17-14860	15-15263	15-15269	15-15271	15-15273
17-15008	18-14551	18-14625	19-15008	15-15281	15-15287	15-15291	15-15294
18-15379				15-15297	15-15301	15-15312	15-15367
STATISTICAL ANALYSIS				15-15908	16-14283	16-14336	18-13665
5-14166	9-13891	16-15334	17-13891	18-14194	18-14446		
STATISTICAL CORRELATION				STRUCTURAL INTEGRITY			
16-15340				3-14289	5-13666	5-14569	5-15018
STEAM				6-13666	7-15018	8-15900	11-14569
5-15488	7-13745	7-15112	7-15200	11-14571	18-13666	18-14569	18-14571
7-15210	7-15255	7-15346	8-14312	SUBSIDIENCE			
8-15899	12-15690	17-15202	18-14806	2-14218	2-14518	2-14519	2-14683
18-15488				2-14687	2-15023	2-15024	
STEAM GENERATOR				SUPPORT STRUCTURE			
9-14043	12-14043	17-14043		11-14571	18-14571		
STEEL				SURFACE CONTAMINATION			
1-14524	2-14524	7-13745	7-15170	7-13683	15-13075		
7-15208	7-15345	7-16586	7-16587	SURFACE FILM DEPOSIT			
7-16588	11-13543	11-13749	11-13750	5-14788	5-14790	6-14788	7-13683
11-14048	11-14522	11-14524	11-14672	9-14790	17-13892	17-13897	17-14001
11-14674	11-14692	11-15110	11-15111	17-14052	17-14788	17-14790	17-15679
11-15121	11-15133	11-15135	11-15170	17-15682	18-14830		
11-15179	11-15208	11-15220	11-15345	SURFACE WATER, DISPOSAL MEDIA			
17-15110				14-14174	14-14178	15-13940	15-13953
STEEL LINER				SURFACE WATER, GENERAL			
11-14049	11-14672	11-14674		14-15003	15-14283	16-14283	
STEEL, STAINLESS				SURFACE WATER, NUCLIDE OCCURRENCE			
3-15326	4-15129	5-15184	6-14819	14-13913	14-13926	14-14500	14-14501
6-15171	7-13744	7-13745	7-13746	14-14502	14-14503	14-14504	14-14705
7-13748	7-15115	7-15164	7-15170	14-14707	14-14948	14-14953	14-14956
7-15171	7-15174	7-15178	7-15183	14-14966	14-14970	14-15281	14-15908
7-15206	7-15207	7-15221	7-15688	15-13347	15-13912	15-13917	15-13925
8-15899	11-13748	11-14047	11-14382	15-13926	15-13938	15-13942	15-13953
11-14692	11-15051	11-15129	11-15170	15-14421	15-14948	15-14953	15-14956
11-15207	11-15688	11-15689	12-15690	15-14957	15-14966	15-14970	15-15237
13-15326	17-14001	17-14063	17-14642	15-15261	15-15271	15-15281	15-15368
17-15173	17-15202			15-15908			
STORAGE CONTAINER				SURFACE WATER, PROPERTY			
3-15326	5-15490	8-13833	11-15443	14-14705	14-14974	15-13938	15-13940
12-13833	12-15443	12-15444	12-15494	15-13958	15-13959	15-14958	15-14974
13-13833	13-15326	15-15490	15-15491	SURFACE WATER, SEDIMENT			
18-15443	18-15444	18-15490	18-15491	14-14174	14-14178	14-14707	14-14948
18-15494				14-14966	14-15003	14-15908	15-13953
STRATOSPHERE				15-14948	15-14966	15-15908	
7-13684	14-13926	15-13926	16-13684	SURFACE WATER, SUSPENDED MATERIAL			
16-14296	16-15332			15-13953			
STRESS				SURFACE, GENERAL			
1-14524	2-14524	7-13746	7-13748	7-13683			
7-15161	9-07758	9-14891	11-13748	SURVEY, RADIATION, AERIAL			
11-13749	11-14048	11-14049	11-14050	15-13811	15-14137	15-15222	
11-14521	11-14522	11-14523	11-14524	SURVEY, RADIATION, EMERGENCY			
17-07758	17-14891			15-15272			
STRESS ANALYSIS				SURVEY, RADIATION, ENVIRONMENTAL			
5-14647	5-15501	5-15507	5-15517	2-15373	14-13731	14-13926	14-14950
11-13749	11-13837	11-14050	11-14521	14-14953	14-14954	14-14965	14-14970
11-14522	11-14523	11-14566	11-14647	14-15281	14-15373	15-13348	15-13429
11-14672	11-15109	11-15497	11-15502	15-13783	15-13811	15-13912	15-13916
12-15498	12-15499	12-15500	12-15501	15-13926	15-13938	15-13942	15-13953
12-15503	12-15504	12-15506	12-15507	15-13958	15-13959	15-14313	15-14421
12-15509	12-15510	12-15511	12-15512	15-14661	15-14950	15-14953	15-14954
12-15513	12-15515	12-15516	12-15517	15-14955	15-14957	15-14965	15-14970
16-15503	18-14566	18-14647	18-15497	15-15236	15-15237	15-15261	15-15265
18-15498	18-15499	18-15500	18-15501	15-15271	15-15275	15-15281	15-15291
18-15502	18-15503	18-15504	18-15506	15-15296	15-15299	15-15367	17-14661
18-15507	18-15509	18-15510	18-15511	18-15265	18-15373		
18-15512	18-15513	18-15515	18-15516	SURVEY, RADIATION, GENERAL			
18-15517				9-15921	15-13937	17-14854	
STRESS RUPTURE				SUTTON DIFFUSION FORMULA			
7-15174	11-14047	11-14050	11-14522	16-14352			
11-15051				SWEDEN			
STRESS STRAIN DATA				1-14660	11-14660	14-14323	15-13301
7-15174	11-14692			15-13938	15-13940	16-14337	
STRONTIUM				SWITZERLAND			
4-14179	4-15369	7-13665	7-13931	2-14673	11-14673		

SYSTFM DESCRIPTION				4-14058	4-14181	5-14788	6-13896
9-14184	18-14186	18-14187		6-14058	6-14663	6-14788	6-14791
SYSTEM OPERABILITY IN ACCIDENT CONDITIONS				6-14800	9-14791	17-04916	17-13896
5-15472	5-15477	9-15404	9-15406	17-14058	17-14663	17-14788	17-14791
9-15407	9-15416	9-15472	9-15477	18-14800			
11-15527	12-15404	12-15406	12-15407	TEST, PREOPERATIONAL			
17-15527	18-14545	18-15404	18-15406	4-14181	5-14071	17-14071	17-15348
18-15407	18-15416	18-15472	18-15477	TEST, PRESSURE VESSEL			
TANTALUM				11-13750	11-14668	11-15109	11-15110
4-15129	11-15129			11-15133	17-15110		
TARGET (THRML ADV RCTR GASCOOLED EXPLOITING TH)				TEST, PROOF			
17-15215				1-15892	3-14292	5-14647	5-14665
TECHNETIUM				9-15242	9-15526	11-14647	11-14665
15-14315				11-15526	12-15504	18-14647	18-14665
TECTONICS				18-15257	18-15504	18-15526	
2-14011	2-14017	2-14020	2-14023	TEST, SYSTEM OPERABILITY			
2-14025	2-14029	2-14215	2-14220	4-14181	6-15009	9-15240	11-15459
2-14225	2-14226	2-14229	2-14393	12-15459	17-04916	17-14890	17-15009
2-14510	2-14516	2-14518	2-14679	18-15009	18-15391	18-15459	
2-14680	2-14683	2-14687	2-14713	TEST, WEAPONS (HP ASPECTS)			
2-14714	2-14715	2-14716	2-14717	15-14065	19-14065		
2-14931	2-14933	2-14935	2-14937	TESTING			
2-14939	2-14941	2-15023	2-15024	1-15929	4-14181	4-14730	4-14732
2-15025	2-15026	2-15064	2-15911	4-14733	4-15020	4-15021	4-15129
2-15912				5-15971	6-15171	7-15171	7-15174
TELLURIUM				7-15191	7-15194	9-14730	11-13837
5-13546	5-14169	7-13546	8-14169	11-14658	11-15109	11-15111	11-15129
TEMPERATURE COEFFICIENT				12-13948	13-14147	18-14147	
6-13120	6-13904	6-14842	6-15137	THEORETICAL INVESTIGATION			
6-15148	6-15150	9-13904	9-15148	1-14866	3-14866	7-12153	7-13688
17-13936	17-14054	18-13936	18-13967	7-13689	7-13690	7-13848	7-15113
18-13989				7-15196	7-15197	7-15198	7-15199
TEMPERATURE GRADIENT				7-15204	7-15253	7-15954	12-15113
7-15167	14-15235	15-15235		13-14956			
TEMPERATURE REACTIVITY EFFECT				THERMAL ANALYSIS			
17-14005				5-13113	5-15434	5-15501	6-13896
TEMPERATURE TRANSIENT				6-14737	6-14738	6-14740	6-15071
14-15235	15-15235			6-15074	6-15148	6-15243	6-15957
TENSILE PROPERTY				8-14740	9-15148	11-13837	11-14668
11-13750	11-14047	11-14672	11-14692	12-15501	17-13896	17-14853	18-15086
11-15051	11-15689			18-15434	18-15501		
TEST, BENCH				THERMAL CONSIDERATION			
4-14181	9-14773			7-15159	7-15167	7-15255	14-14968
TEST, COMPONENT				14-14974	14-15052	14-15276	15-14320
1-15929	4-13947	4-14181	4-14732	15-14967	15-14968	15-14974	18-15087
7-13665	9-14059	9-14822	18-13665	THERMAL EXPERIMENT			
TEST, CONTROL ROD DRIVE				5-15184	7-15172	9-15176	15-13921
7-13665	9-14190	9-14773	9-14822	THERMAL INSULATION			
9-15242	9-15920	18-13665		11-13837	11-15423	18-15423	
TEST, DESTRUCTIVE				THERMAL MECHANICAL EFFECT			
1-14801	3-15324	4-14733	9-13899	5-15440	5-15501	6-15101	11-15424
11-13752	11-14692	11-15109	12-13899	11-15440	12-15501	17-15677	18-15424
12-14801	17-14801			18-15440	18-15501		
TEST, DOP FILTER				THERMAL NEUTRON			
7-13676	7-14075	7-14144	7-14861	15-14131			
7-15116	7-15104	11-14525	11-14861	THERMAL POLLUTION			
13-14727	17-14075	17-14144	17-14525	18-15086			
17-14727	18-14075	18-14144	18-14525	THERMAL PROPERTY			
18-14727	18-14861			5-14169	5-14170	5-15184	7-14170
TEST, DROP				7-15172	7-15359	7-15697	8-14169
3-14292	3-15324			8-14170	9-15176		
TEST, FILTER				THERMODYNAMICS			
7-13676	7-14078	7-14144	7-14330	5-13945	5-14169	5-14170	7-09533
7-14766	7-15116	7-15191	7-15193	7-13945	7-14170	7-15697	8-13945
7-15195	9-14878	11-14330	13-12308	8-14169	8-14170		
15-14878	17-12308	17-14078	17-14144	THORIUM			
17-14330	17-14766	17-14878	18-14078	5-14847	6-14776	7-15211	7-15213
18-14144				14-14504	15-13914	15-14704	15-15225
TEST, FILTER SYSTEM				17-15932	18-14650	18-14847	
7-13676	7-15194	7-15249		TITANIUM			
TEST, INSTRUMENT RESPONSE				9-14329	11-13844	11-14329	11-15051
9-12297				13-13844	14-14329	14-15253	
TEST, LEAK LOCATION				TOPOGRAPHY			
7-14766	11-13973	12-15420	17-12192	14-14953	15-14953		
17-14766	18-12192	18-13973	18-15420	TRACER, GENERAL			
18-15420				7-13676			
TEST, LEAK RATE				TRACER, RADIOACTIVE			
2-15433	7-15250	9-07758	11-07901	7-13678	7-14299	7-14384	7-15188
11-10528	11-14648	11-14849	11-14851	7-15195	7-15249	14-14965	14-15239
11-15259	11-15429	11-15430	11-15431	15-14965	15-14975	15-15239	19-14285
11-15433	17-07758	17-07901	17-13315	TRANSFER FUNCTION			
17-14008	17-14648	17-14849	17-15250	6-13903	6-13906	6-14663	6-14701
18-10528	18-14648	18-14849	18-14851	6-14782	6-14812	6-14818	6-14843
18-15429	18-15430	18-15431	18-15433	6-15093	6-15127	6-15148	6-15243
TEST, NONDESTRUCTIVE				9-14183	9-15148	17-14663	17-14843
1-15929	3-15326	11-14692	11-14710	TRANSPORT THEORY			
11-15111	11-15423	11-15425	13-15326	6-15073			
18-15423	18-15425			TRANSPORTATION AND HANDLING			
TEST, PHYSICS				1-09286	2-12476	3-14288	3-14863
6-15073	17-13944	17-15258	18-12189	3-14867	3-15047	7-12476	8-13833
TEST, PLANT RESPONSE				11-12476	12-09286	12-13833	13-13833

15-14702	17-15678	18-09286			VALVE				
TRANSURANIUM ELEMENT					9-07758	9-14795	11-15431	12-15245	
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GREEN AE				5-14233			
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17-15348				HENRY AF			
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HACKE J				15-15180			
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HALE RJ				9-14378			
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HAMMOND SE				14-14506	15-14506		
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HANDEL H				1-12271			
9-14185				HILL JE			
HANSEN AI				15-14995			
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HANSEN HE				15-13729			
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HANSON CH				17-15053			
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HASSAN HH				1-14180	6-14180	18-14180	
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