3225

RADIOLOGICAL SCIENCES LABORATORY RADIOANALYTICAL LABORATORY PROCEDURES VOL. II

04/07/87

300
MANUAL

[redacted]

IT/RSL QUALITY ASSURANCE MANUAL COMPENDIUM

3225

The following list provides an index of Radioanalytical Laboratory Procedures contained in the IT/RSL QA Manual:

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RSL-002	Standardization of Carrier Solutions	0	5-22-87
RSL-102	Operation of Alpha Spectrometer Systems	0	5-22-87
RSL-103	Calibration of Liquid Scintillation Counting Systems	0	5-22-87
RSL-104	Operation of Low Background Alpha/Beta Counting Instruments	0	5-22-87
RSL-105	Calibration of Alpha Spectrometer Systems	0	5-22-87
RSL-106	Calibration of Alpha/Beta Counting Instruments	0	5-22-87
RSL-107	Operation of Liquid Scintillation Counting Instruments	0	5-22-87
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RSL-305	Determination of Strontium - 89, 90 in Water Samples	0	6-23-87
RSL-306	Determination of Strontium - 89, 90 in Milk Samples	0	5-22-87
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RSL-901	Training and Qualifications of Laboratory Technicians	0	6-23-87
RSL-902	Q.A. Orientation of New Employees	0	6-23-87
RSL-903	Material and Equipment Procurement, Receipt, Storage and Control	0	5-22-87
RSL-904	Reporting of Defects and Noncompliances per 10 CFR 21	0	8-28-87
RSL-1001	Sample Receiving	0	5-22-87
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INTERNATIONAL TECHNOLOGY CORPORATION

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RADIOLOGICAL SCIENCES LABORATORY

NO.: RSL-501

RADIOANALYTICAL LABORATORY PROCEDURE

TITLE: Data Verification

APPROVED: James T. Harvey DATE: 4-28-87
Laboratory Manager

APPROVED: Paul [illegible] DATE: 5/1/87
ITAS QA Director

CONCURRENT: John L. Conklin DATE: 4-28-87
RSL Director

COPY NO.: [illegible] ISSUED COPY

REVISION: 0				
DATE: 4-07-87				

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1.0 PURPOSE

This procedure establishes the requirements and assigns the responsibilities for the recording, review and analysis of data as well as computational checks.

2.0 SCOPE

This procedure applies to all data generated from sample analyses and quality control activities.

3.0 RESPONSIBILITY

3.1 It is the responsibility of the Laboratory Manager, or his designee, to ensure that the recording, review, analysis and computational checks of data are performed according to this procedure. (Excluding review by Quality Assurance Coordinator).

3.2 It is the responsibility of the Laboratory Manager, or his designee, to delegate the performance of this procedure to personnel who are experienced with this procedure.

3.3 It is the responsibility of those persons performing any activities included in this procedure to follow the procedure and report any suspect results to the Laboratory Manager.

3.4 It is the responsibility of the Quality Assurance Coordinator to ensure that the Quality Assurance report and data reviews are performed according to this procedure.

4.0 REFERENCES

4.1 Requirements and Specifications

4.1.1 ITAS Quality Assurance Manual

4.1.2 "Quality Assurance Program Requirements for Nuclear Facilities", ANSI/ASME NQA-1 (latest edition).

4.1.3 ITAS-RSL Quality Assurance Manual, Laboratory Specific Attachment.

4.1.4 USNRC, Regulatory Guide 4.15, Quality Assurance for Radiological Monitoring Program (Normal Operations) - Effluent Streams and the Environment.

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4.2 Standards

None

4.3 Procedures

None

4.4 Other Publications

4.4.1 "Handbook for Analytical Quality Control in Radioanalytical Laboratories, L.G. Kanipe, EPA-600/7-77-088, August 1977.

4.4.2 "Establishing a Quality Assurance Program for Analytical Chemistry Laboratories Within the Nuclear Industry", Annual Book of ASTM Standards, Vol. 12, C1009-83.

5.0 REQUIREMENTS

5.1 Equipment

None

5.2 Materials

None

5.3 Reagents

None

6.0 PROCEDURE

6.1 Data Recording

6.1.1 Record all data in a clear, legible manner in appropriate boxes on lab work order (appendix 10.1), lab work sheets (appendix 10.2), and Quality Control sample data sheets, (appendix 10.3, & 10.4) using black indelible ink.

6.1.2 If it is necessary to perform calculations manually, make calculations on IT calculation form (appendix 10.5). Sign (full signature) and date in black, indelible ink each page of calculations.

6.1.3 Enter "N/A" (non-applicable) in analytical sections of lab worksheet which do not apply to that particular analysis.

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6.1.4 For each analytical step performed, initial and date the corresponding box under the "remarks and calculations" section of the lab work sheet. (See appendix 10.6 for description of task and date for each section. If more than one technician performs a step of an analysis, both technicians shall initial and date that section.)

6.1.5 To correct a data entry or calculation error, draw a single line through the entry, make correction, initial and date.

6.1.6 Submit completed sample lab work sheet(s), work order (if more than one analysis) and computer printouts (if applicable) to Laboratory Manager, or his designee, promptly after completion of all analyses and data entries for data review.

6.2 Data Review

Review a minimum of 20% of all data (if errors are found in data set, 100 percent review must be performed). Data review must be performed by the Laboratory Manager, or a designee, other than the person performing the analysis or computations. The following method shall be used:

- Review data for:
  - Appropriateness of equations used
  - Correctness of numerical input
  - Numerical correctness of all calculations by re-performing numerical calculations
  - Reasonableness of data results for type of analysis performed.
- Mark all entries and calculations reviewed with a check mark. To make entry or calculation change, mark through the number with a single line and place revised number above it.
- Review changes with the originator. If the originator does not agree with change, the Laboratory Manager shall resolve the problem.
- Sign and date lab work sheet, and/or calculation sheet and associated quality control sample work sheets indicating agreement with calculations.
- Have originator sign and date lab work sheet and/or calculation sheet and associated quality control sample work sheets indicating that he/she agrees with any changes which have been made.

- If data is computer-generated, check each input entry. Indicate agreement with a check mark on each line. To make a change, mark through entry with a single line and place corrected entry above it. Back check all corrections with originator as discussed above.

- If an input error is found, reprocess data. Check second set of data inputs and indicate agreement with changes by signing and dating the computer sheet.

6.3 Data Approval

The Laboratory Manager shall approve 100 percent of sample and quality control lab work sheet data results before a data report can be generated. The following method shall be used:

- If the Laboratory Manager performs the data review, he shall initial and date the approval box on the lab work sheet and quality control sample worksheet.

- If a designee performs the data review, the Laboratory Manager shall:

  - Check the sample and quality control data for completeness and reasonableness for the type of analysis.
  - Check the Data Review box for designee's initials and date.
  - Initial and date Approval box on the lab work sheet as an indication that the data has been reviewed and is approved for report generation.

- If approval is not made, mark "Void" or "rejected data" on lab worksheet. Submit worksheet to Quality Assurance Coordinator for filing in customer file under "Void/Rejected Data" file in Analytical Data section, Category "F".

- Submit approved analytical data to Data Base Manager for generation of data report.

6.4 Review of Data Report

6.4.1 The Data Base Manager shall check draft data report against lab work order and work sheets for transcription errors using the following method:

- Check customer and sample identification information (e.g., customer identification number) on draft data report against lab work sheet information.

- Check data entries on draft data report against lab work sheet entries.

- Check reporting units on draft data report against lab work sheet units.

6.4.2 Indicate correct entries with a black ink check mark next to draft data report entry.

6.4.3 Indicate errors by circling incorrect information on draft data report in red ink and enter correct information beside it.

6.4.4 If no changes are to be made, generate and submit final data report to Laboratory Manager for approval.

6.4.5 If errors were found in draft report, make corrections in computer data base, regenerate draft data report and review report using previous steps.

6.4.6 Generate and submit final data report to Laboratory Manager for approval and signature.

6.5 Quality Assurance Report and Data Review

6.5.1 The Quality Assurance Staff shall review the completed data paperwork for a minimum of twenty percent of all samples analyzed at IT/RSL. Selection will be by random sampling.

6.5.2 Quality Assurance review will be performed using the following method:

- Duplicate the following sample paperwork: request for analysis, analytical data sheets, Quality Control sample data, data reports, requirements and non-conformances as applicable.
- Cross-check all information included for correctness, completeness and correct data calculations.
- Indicate review by making a check-mark in black, indelible ink next to items reviewed.
- Circle any errors found in red, indelible ink.
- Submit sample data package to Laboratory Manager for appropriate action if errors are discovered.
- If errors found cause other associated sample data packages to be suspect, pull paperwork for immediate review by Laboratory Manager.

- Indicate Quality Assurance Review by initialing and dating the copy of the Data Report and placing that in the front of the sample data package.

- Maintain documentation of the Quality Assurance Report and Data Review in the OP/QA files.

6.6 Final Data Report Approval

6.6.1 The Laboratory Manager shall approve all final reports before issuance to the customer.

6.6.2 The Laboratory Manager shall review the final data report for reasonableness and completeness of entries.

6.6.3 He shall indicate final approval by signing "certified by" entry on report.

7.0 PRECISION AND ACCURACY

None

8.0 QUALITY ASSURANCE PROVISIONS

8.1 Responsibility for Inspection

8.1.1 The Quality Assurance Staff shall perform periodic surveillances to determine compliance to appropriate sections of this procedure by laboratory personnel.

8.1.2 The ITAS semi-annual systems audit shall determine compliance to applicable sections of this procedure by the Quality Assurance Coordinator.

8.2 Acceptance Criteria

As stated in procedure.

8.3 Material Monitoring

None

8.4 Equipment Monitoring

None

8.5 Certification

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None

9.0 CALCULATIONS

None

10.0 APPENDICES

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APPENDIX 10.1

INTERNATIONAL TECHNOLOGY CORPORATION

IT/RSL LAB WORK ORDER

CUSTOMER _____

SAMPLE IDENTIFICATION _____

LABORATORY NUMBER _____

SAMPLE MATRIX _____

COLLECTION DATE AND TIME: _____

START _____

STOP _____

SAMPLE VOLUME _____

DATE RECEIVED _____

P.O. NUMBER _____

SURVEY INSTRUMENT READING _____ mR/hr.

WIPE COUNTING RESULT _____ cpm

_____ OF _____ PAGES

SPECIAL INSTRUCTIONS:

ANALYSIS								
COMPLETED								

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APPENDIX 10.2

INTERNATIONAL TECHNOLOGY CORPORATION

IT/RSL LAB WORK SHEET

CUSTOMER _____ DATE RECEIVED _____

SAMPLE IDENTIFICATION _____ P.O. NUMBER _____

LABORATORY NUMBER _____ SURVEY INSTRUMENT READING _____ mR/hr.

SAMPLE MATRIX _____ WIPE COUNTING RESULT _____ cpm

COLLECTION DATE AND TIME: _____ _____ OF _____ PAGES

START _____ SPECIAL INSTRUCTIONS:

STOP _____

SAMPLE VOLUME _____

ALIQUOT						
ANALYSIS						
DATE AND TIME OF ANALYSIS						
% RECOVERY						
COUNTER NO.						
COUNTER BKG c/m						
COUNTER EFF. d/c						
COUNT START DATE AND TIME						
COUNT STOP DATE AND TIME						
COUNT TIME-MIN.						
TOTAL COUNTS						
GROSS c/m						
BKG c/m						
NET c/m						
d/m PER ALIQUOT						

RESULTS REQUESTED IN: _____

REMARKS AND CALCULATIONS

SAMPLE PREPARATION						
SAMPLE ANALYSIS						
SAMPLE COUNTING						
CALCULATION						
DATA REVIEW						
APPROVAL						

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INTERNATIONAL TECHNOLOGY CORPORATION

APPENDIX 10.3

INTRALABORATORY QUALITY CONTROL DATA SHEET

DUPLICATE ANALYSIS DATA

Project _____ Sample Type: Water _____

_____ Soil _____

Analytical Method: _____ Sediment _____

Instrument Used: _____ Other _____

(Analytical results reported in d/m or pCi/unit)

SAMPLE #	INIT'LS	DATE ANALYZED	1st ANALYSIS	DATE ANALYZED	2nd ANALYSIS

COMMENTS:

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INTERNATIONAL TECHNOLOGY CORPORATION

APPENDIX 10.4

INTRALABORATORY QUALITY CONTROL DATA SHEET

SPIKE ANALYSIS DATA

Project _____

_____

Analytical Method: _____

STANDARD NUMBER _____

Sample Type: Water _____

Soil _____

Sediment _____

Other _____

(d/m or pCi/unit)

SAMPLE #	DATE SPIKED	INIT'LS	ADDED	OBSERVED	DEVIATION

COMMENTS:

000015

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APPENDIX 10.5

INTERNATIONAL TECHNOLOGY CORPORATION

IT/RADIOLOGICAL SCIENCES LABORATORY CALCULATION SHEET

Sample number _____ Date _____

Calculations performed by _____

000016

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APPENDIX 10.6

Section Title	Description	Date
Sample Preparation	All preparation steps including drying, grinding and ashing.	Start Date
Sample Analysis	Chemical separation activities	Start Date
Sample Counting	Putting sample on counter; entering data after completion of sample counting.	Count Date
Calculations	Calculations using raw data and appropriate formulas to obtain values in units to be reported	Calculation Date
Data Review	Review of all entries on lab data sheet for completeness, reasonableness and correctness as far as can be determined	Date Data Checked
Approval	Data approval for generation of data report	Approval Date

INTERNATIONAL TECHNOLOGY CORPORATION

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RADIOLOGICAL SCIENCES LABORATORY

NO.: RSL-601

RADIOANALYTICAL LABORATORY PROCEDURE

TITLE: Performing Intralaboratory Quality Control Analysis

APPROVED: James T. Harvey DATE: 4-28-87
Laboratory Manager

APPROVED: Paul Mills DATE: 5/4/87
ITAS QA Director

CONCURRED: J. A. Cuifer DATE: 4-28-87
RSL Director

COPY NO.: ISSUED: UNCONTROLLED COPY

REVISION: 0				
DATE: 4-07-87				

TITLE: Performing Intralaboratory Quality Control Analysis	NO: RSL-601	PAGE: 1
	REVISION: 0	DATE: 4-07-87

1.0 PURPOSE

This procedure outlines the use of quality control samples required at IT/RSL. The procedure describes: type of sample, purpose of sample, frequency with which the sample is to be analyzed within the normal sample stream, and person responsible for entering the quality control sample into the sample stream.

2.0 SCOPE

This procedure applies to all quality control samples routinely analyzed at IT/RSL.

3.0 RESPONSIBILITY

3.1 It is the responsibility of the Laboratory Manager, or his designee, to ensure that Method Blank, Duplicate and Matrix Spike Quality Control Samples are performed at the required frequency as indicated in this procedure.

3.2 It is the responsibility of the Laboratory Manager, or his designee, to delegate the performance of the preparation and analysis of quality control samples to personnel who are experienced with this procedure and with the use of equipment used to perform this procedure.

3.3 It is the responsibility of the Quality Assurance (QA) staff to ensure that all blind quality control samples and verification/ reference standards are prepared and entered into the routine sample stream as indicated in this procedure at the required frequency.

4.0 REFERENCES

4.1 Requirements and Specifications

4.1.1 ITAS Quality Assurance Manual.

4.1.2 ITAS-RSL Quality Assurance Manual, Laboratory Specific Attachment.

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4.1.3 U.S. Nuclear Regulatory Commission, Regulatory Guide 4.15, Quality Assurance for Radiological Monitoring Programs (Normal Operations) - Effluent Streams and the Environment.

4.1.4 "Quality Assurance Program Requirements for Nuclear Facilities", ANSI/ASME NQA-1 (latest edition).

4.1.5 U.S. Nuclear Regulatory Commission, Regulatory Guide 4.1, Program for Monitoring Radioactivity in the Environ of Nuclear Power Plants.

4.1.6 Title 10, Code of Federal Regulations, Part 50, Appendix I, Numerical Guides for Design Objectives and Limiting Conditions for Operation to Meet the Criteria "As Low as Reasonably Achievable" for Radioactive Material in Light-Water-Cooled Nuclear Power Reactor Effluents.

4.2 Standards

None

4.3 Procedures

None

4.4 Other

4.4.1 "Handbook for Analytical Quality Control in Radioanalytical Laboratories", L.C. Kanipe, EPA-600/7-77-088, August 1977.

4.4.2 "Establishing a Quality Assurance Program for Analytical Chemistry Laboratories Within the Nuclear Industry", Annual Book of ASTM Standards, Vol. 12, C1009-83.

5.0 REQUIREMENTS

5.1 Equipment

None

5.2 Materials

None

5.3 Reagents

None

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6.0 PROCEDURE

6.1 Method Blank

6.1.1 The technician shall take a volume of demineralized water or an appropriate solid matrix for soil/sediment samples approximately equal to the volume or weight of the sample to be processed and carry it through the entire analytical process using identical conditions used for sample analysis, including the addition of all the reagents in the quantity required by the method.

6.1.2 The technician shall record the results on the appropriate procedure analysis form and identify as "Method Blank".

6.1.3 If blank interference is found it must be taken into account when computations are made.

6.1.4 A method blank shall be performed with each new group of samples, on 1 out of every 20 samples or daily, whichever is more frequent, if that specific analysis is to be performed.

6.2 Blind Replicate

6.2.1 The QA staff shall take an aliquot of sample approximately equal in mass or volume to the original sample and enter it into the routine sample stream.

6.2.2 The QA staff shall complete a "Duplicate Analysis Data" form (appendix 10.1) when the data results are received from the lab.

6.2.3 One blind repeat sample shall be performed for every 50 samples or at least once a week.

6.3 Duplicate

6.3.1 The technician shall take an aliquot of sample approximately equal in mass or volume to the original sample and enter it into the routine sample stream for analysis.

6.3.2 The technician preparing the sample shall initiate a "Duplicate Analysis Data" form (see appendix 10.1) to be completed by the technician performing the analysis.

6.3.3 Data sheets shall be submitted to the QA staff for data compilations and reporting.

6.3.4 Duplicate analysis shall be performed on 1 out of 20 samples or 1 per set of samples.

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6.4 Matrix Spike

6.4.1 The technician shall take a separate aliquot of sample and spike the sample with a known concentration of the analyte of interest. (The concentration shall be determined by the Laboratory Manager.) The standard used for spiking must be checked to be sure that the expiration date has not been exceeded.

6.4.2 The technician shall enter necessary data on the "Spike Analysis Data" sheet, (see appendix 10.2).

6.4.3 The sample shall be analyzed and the results computed.

6.4.4 The data sheets shall be submitted to the QA staff for data compilation and reporting.

6.4.5 A matrix spike analysis shall be performed on 1 out of 20 samples or with each new group of samples, which ever is more frequent.

6.5 Verification/Reference Standard

6.5.1 The QA staff shall introduce either a verification sample or a reference standard sample into the routine sample stream. Triplicate analysis is required.

6.5.2 Verification/Reference standard samples shall be analyzed on a quarterly basis or more often as deemed necessary by the QA staff or the Laboratory Manager.

6.5.3 The data sheets should be submitted to the QA staff for data compilation and reporting.

6.6 Blind Replicate Standard

6.6.1 The QA/QC staff shall enter a replicate standard of fixed concentration into the routine sample stream as a blind sample. Triplicate analysis is required.

6.6.2 A blind replicate standard shall be analyzed on a monthly basis or more often as deemed necessary by the QA staff or the Laboratory Manager.

6.6.3 The data sheet shall be reviewed and calculations made by the QA Coordinator to determine accuracy and precision.

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7.0 PRECISION AND ACCURACY

None

8.0 QUALITY ASSURANCE PROVISIONS

8.1 Responsibility for Inspection

8.1.1 The Quality Assurance staff shall periodically perform surveillances to ensure compliance to this procedure by laboratory personnel and submit a report to the Laboratory Manager.

8.2 Acceptance Criteria

None

8.3 Material Monitoring

8.3.1 All standards shall be used before expiration date given on the standard's label. After the expiration date, standards shall be disposed of per Section 6.6 of RSL-001, Acquistion and Use of Standard Reference Material.

8.4 Equipment Monitoring

None

8.5 Certification

None

9.0 CALCULATIONS

9.1 Duplicate analyses are analyzed by computer program maintained by the Quality Assurance staff.

9.2 Verification standards are analyzed by computer program maintained by the Quality Assurance staff.

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10.0 APPENDICES

10.1 Abbreviations and Definitions

10.1.1 Accuracy - A measure of the agreement between observed and known values.

10.1.2 Precision - A measure of the reproducibility among replicate observations.

10.1.3 Method Blank - A volume of demineralized water of similar volume or weight of the sample to be processed, which is carried through the analytical process using identical conditions to the actual sample analysis.

10.1.4 Duplicate Sample - An aliquot of a sample known to the analyst.

10.1.5 Matrix Spike - An aliquot of sample which is spiked with a known concentration of the analyte of interest.

10.1.6 Blind Replicate - A duplicate sample unknown to the analyst which is introduced as a separate sample into the sample stream.

10.1.7 Verification/Reference Standard - A prepared sample of known concentration of a purchased standard reference material.

10.1.8 Standard Reference Materials - Standards prepared by a recognized external agency such as the National Bureau of Standards or the Environmental Protection Agency.

10.1.9 Blind Replicate Standard - A prepared sample of known concentration of a purchased standard reference material submitted as a blind sample to the technician.

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APPENDIX 10.1

INTERNATIONAL TECHNOLOGY CORPORATION

INTRALABORATORY QUALITY CONTROL DATA SHEET

DUPLICATE ANALYSIS DATA

Project _____ Sample Type: Water _____

_____ Soil _____

Analytical Method: _____ Sediment _____

Instrument Used: _____ Other _____

(Analytical results reported in d/m or pCi/unit)

SAMPLE #	INIT'LS	DATE ANALYZED	1st ANALYSIS	DATE ANALYZED	2nd ANALYSIS

COMMENTS:

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APPENDIX 10.2

INTERNATIONAL TECHNOLOGY CORPORATION

INTRALABORATORY QUALITY CONTROL DATA SHEET

SPIKE ANALYSIS DATA

Project _____ Sample Type: Water _____

_____ Soil _____

Analytical Method: _____ Sediment _____

STANDARD NUMBER _____ Other _____

(d/m or pCi/unit)

SAMPLE #	DATE SPIKED	INIT'LS	ADDED	OBSERVED	DEVIATION

COMMENTS:

INTERNATIONAL TECHNOLOGY CORPORATION

RADIOLOGICAL SCIENCES LABORATORY

NO.: RSL-602

RADIOANALYTICAL LABORATORY PROCEDURE

TITLE: Performing Interlaboratory Quality Control

APPROVED: James T. Harvey DATE: 4-28-87
Laboratory Manager

APPROVED: Paul Mann DATE: 5/4/87
ITAS QA Director

CONCURRED: John C. Cuyjet DATE: 4-28-87
RSL Director

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TITLE: Performing Interlaboratory Quality Control	NO: RSL-602	PAGE: 1
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1.0 PURPOSE

This procedure documents IT/RSL participation in available interlaboratory crosscheck programs.

2.0 SCOPE

The procedure applies to all interlaboratory cross-check programs in which IT/RSL participates.

3.0 RESPONSIBILITY

3.1 It is the responsibility of the Quality Assurance Coordinator to coordinate IT/RSL participation in interlaboratory cross-checks applicable to the overall work scope performed by the radioanalytical laboratory, as frequently as administered.

3.2 It is the responsibility of the Laboratory Manager to ensure that the radioanalytical laboratory performs the required analysis on the cross-check samples in a timely manner and reports the required results on time.

3.3 It is the responsibility of the laboratory technician to perform the required analyses in a timely manner so the results may be reported when due.

4.0 REFERENCES

4.1 Requirements and Specifications

4.1.1 Title 10, Code of Federal Regulations, Part 50, Appendix I, Numerical Guides for Design Objectives and Limiting Conditions for Operation to Meet the Criteria "As Low as is Reasonably Achievable" for Radioactive Material in Light-Water-Cooled Nuclear Power Reactor Effluents.

4.1.2 U.S. Nuclear Regulatory Commission, Regulatory Guide 4.1, Programs for Monitoring Radioactivity in the Environs of Nuclear Power Plants.

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4.1.3 U.S. Nuclear Regulatory Commission, Regulatory Guide 4.15, Quality Assurance for Radiological Monitoring Programs (Normal Operations) - Effluent Streams and the Environment.

4.1.4 "Quality Assurance Program Requirements for Nuclear Facilities", ANSI/ASME NQA-1 (latest edition).

4.1.5 ITAS Quality Assurance Manual.

4.1.6 ITAS-RSL Quality Assurance Manual, Laboratory Specific Attachment.

4.2 Standards

None

4.3 Procedures

None

4.4 Other Publications

4.4.1 "Environmental Radioactivity Laboratory Intercomparison Studies Program" - Fiscal Year 1981 - 1982"; Authur N. Jarvis and Leonard Sin, EPA-600/4-81-004, February, 1981 (or latest edition).

4.4.2 "Handbook for Analytical Duality Control in Radioanalytical Laboratories", L.G. Kanipe, EPA-600/7-77-088, August 1977.

4.4.3 "Establishing a Quality Assurance Program for Analytical Chemistry Laboratories Within the Nuclear Industry", Annual Book of ASTM Standards, Vol. 12, C1009-83.

5.0 REQUIREMENTS

5.1 Equipment

None

5.2 Materials

None

5.3 Reagents

None

TITLE: Performing Interlaboratory Quality Control	NO: RSL-602	PAGE: 3
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6.0 PROCEDURE

6.1 Interlaboratory cross-check samples are received and processed into the laboratory analysis scheme by routine methods applicable to all samples received. Original paperwork shall be given to Quality Assurance Coordinator.

6.2 Once logged into the data management system, the samples shall be analyzed by the routine laboratory procedures as applicable to the required analyses.

6.3 When the analyses are completed, the results are reviewed through the normal process and reported to the Quality Assurance staff.

6.4 The Quality Assurance staff shall fill out and return the appropriate report forms to the agency submitting the samples to the laboratory. A copy of each report shall be maintained in the Quality Assurance files with associated documents.

6.5 Interlaboratory cross-check results returned to IT/RSL shall be reviewed by the Quality Assurance staff and the Laboratory Manager on a routine basis. If the values reported fall outside the two standard deviation limit set by the EPA, the Laboratory Manager shall investigate the particular analysis in question. If values reported fall outside the three standard deviation limit, an investigation of the particular analysis shall be performed by the Laboratory Manager and a written explanation of the corrective action taken, if necessary, shall be sent to the Quality Assurance Coordinator.

6.6 If the values reported have fallen outside the three standard deviation limits for two consecutive reports for the same analysis of the same matrix, the Quality Assurance staff shall issue a non-conformance report (NCR) per procedure RSL-1005.

6.7 The Laboratory Manager shall instruct the laboratory staff to analyze no further samples of that type until the NCR is satisfied.

6.8 The Quality Assurance staff and the Laboratory Manager shall review the other available quality control data to determine if the out-of-limits results indicate the analysis in question must be evaluated in detail. If evaluation is deemed necessary, any customer results obtained during the time frame covered by the out-of-limits data for the analysis and matrix in question shall be considered suspect and the customer(s) notified.

6.9 If the procedure for the analysis in question is found to be at fault, all samples must be rerun. After corrections to the procedure are made, a set of quality control samples must be run satisfactorily through the procedure. When successfully completed, the effected customers' samples may be rerun.

6.10 If the procedure for the analysis in question is found not to be at fault, the affected customer(s) may be notified.

6.11 The NCR may be closed and the data documenting the actions taken filed appropriately.

7.0 PRECISION AND ACCURACY

7.1 For each analysis performed, the agency issuing the cross-check sample sets precision and accuracy requirements and reports the requirements as the data report.

8.0 QUALITY ASSURANCE PROVISIONS

8.1 Responsibility for Inspection

8.1.2 The Quality Assurance staff shall maintain and control all original documents pertaining to the performance of this procedure.

8.2 Acceptance Criteria

8.2.1 The following sections of this procedure contain acceptance criteria:

6.5 Control limits

6.6 Control limits

8.3 Material Monitoring

None

8.4 Equipment Monitoring

None

8.5 Certification

None

TITLE: Performing Interlaboratory Quality Control	NO: RSL-602	PAGE: 5
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9.0 CALCULATIONS

None

10.0 APPENDICES

None

INTERNATIONAL TECHNOLOGY CORPORATION

3225

RADIOLOGICAL SCIENCES LABORATORY

NO.: RSL-603

RADIOANALYTICAL LABORATORY PROCEDURE

TITLE: Internal Surveillances and Audits

APPROVED: James T. Harvey DATE: 4-28-87
Laboratory Manager

APPROVED: Carl Watts DATE: 5/4/87
ITAS QA Director

CONCURRED: John A. Cooper DATE: 4-28-87
RSL Director

COPY NO.: UNCONTROLLED COPY ISSUED:

REVISION: 0				
DATE: 4-07-87				

429-1-87

TITLE: Internal Surveillances and Audits	NO: RSL-603	PAGE: 1
	REVISION: 0	DATE: 4-07-87

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1.0 PURPOSE

This procedure provides the requirements for the scheduling, preparation, performance, reporting and documentation of internal surveillances and audits of the IT/RSL Quality Assurance Program to verify compliance with and determine the effectiveness of the program. Descriptions of surveillances and audits are covered to clearly distinguish their differences.

2.0 SCOPE

This procedure applies to all internal surveillance and audit activities at IT/RSL and to project specific audits.

3.0 RESPONSIBILITY

3.1 It is the responsibility of the Quality Assurance Staff to follow this procedure when performing any surveillance and audit activities.

3.2 It is the responsibility of the Quality Assurance Staff to maintain and control all surveillance and audit-related documents as quality records.

3.3 It is the responsibility of the Laboratory Manager, or his designee, to attend pre-audit and post-audit meetings and provide necessary personnel, documents and other information as requested by the Auditor.

3.4 It is the responsibility of the Laboratory Manager to respond to audit findings and to recommend and initiate corrective action.

4.0 REQUIREMENTS

4.1 Requirements and Specifications

4.1.1 ITAS Quality Assurance Manual.

4.1.2 "Quality Assurance Program Requirements for Nuclear Facilities", ANSI/ASME NQA-1 (latest edition).

4.1.3 ITAS-RSL Quality Assurance Manual, Laboratory Specific Attachment.

4.1.4 USNRC, Regulatory Guide 4.15, Quality Assurance for Radiological Monitoring Program (Normal Operations) - Effluent Streams and the Environment.

3225

4.2 Standards

None

4.3 Procedures

None

4.4 Other Publications

4.4.1 "Establishing a Quality Assurance Program for Analytical Chemistry Laboratories Within the Nuclear Industry", Annual Book of ASTM Standards, Volume 12, C1009-83.

5.0 REQUIREMENTS

5.1 Equipment

None

5.2 Materials

None

5.3 Reagents

None

6.0 PROCEDURE

6.1 Surveillance

6.1.1 A surveillance is the act of monitoring or observing to verify whether an item or activity conforms to specified requirements. Notification of the Laboratory Manager is not required. Planning and preparation shall be less extensive than an audit.

6.1.2 Monthly surveillance activities shall be performed using the following steps:

- Identify all areas or activities of the Quality Assurance program that are to be monitored or observed.

- Prepare a monthly schedule (appendix 10.1) to include surveillance of each area or activity at a minimum of twice a year. The schedule shall be prepared in the last quarter of the preceeding year.

- Before performing a surveillance, review all applicable procedures, instructions, and sections of the Quality Assurance Manual.

- Observe or monitor the activity or item of interest.

- Make appropriate entries on the Quality Assurance Surveillance checklist (appendix 10.2).

- Report all deficiencies to the Laboratory Manager upon completion of the surveillance.

- If a non-conformance is found, notify the Laboratory Manager immediately.

- Issue a non-conformance report for any non-conformance identified.

- Follow-up on each corrective action and close-out non-conformance when associated corrective action is verified.

- Maintain a copy of all surveillance records in Quality/Operations audit file.

6.2 Audit

6.2.1 An audit is a planned and documented activity performed to determine by investigation, examination, or evaluation of objective evidence the adequacy of and compliance with established procedures, instructions, drawings and other applicable documents, and the effectiveness of implementation. The audit shall be performed by persons who are independent of any direct responsibility for the performance of audit activities.

6.2.2 The Quality Assurance Coordinator shall perform quality intensive internal audits every two months as a minimum using the following steps:

- Identify all areas or activities of the Quality Assurance program that require auditing.

- Prepare an audit schedule (appendix 10.3) for the calendar year in the last quarter of the preceeding year.

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- Distribute copies of the schedule to the Laboratory Manager and the ITAS Quality Assurance Manager.

- Notify the Laboratory Manager in writing two weeks prior to the audit. Make arrangements for availability of necessary personnel for the audit.

- Become familiar with various aspects of the quality program by reviewing audit plans, audit reports, pertinent procedures and requirements.

- Prior to the audit, prepare the audit plan to include:

  - Audit team members

  - Requirements

  - Activities to be audited

  - Applicable documents

  - Schedule

  - Checklists (appendix 10.4)

- During the pre-audit meeting with the Laboratory Manager, other laboratory personnel and audit team members, identify the scope of the audit and the planned audit agenda.

- Conduct the audit according to the audit plan using the ITAS System Audit checklist as applicable and the IT/RSL laboratory specific checklist (latest edition). Make additions or probe areas more intensely as necessary to satisfy the audit objectives.

- Report immediately any serious findings or conditions to the Laboratory Manager or appropriate supervisor.

- Initiate an Audit Action Report (appendix 10.5) for each finding noted during the audit.

- Conduct a post-audit meeting with Laboratory Manager, other laboratory personnel and audit team members. Provide an overview of findings, recommendations, and a date for formal audit report completion.

- Prepare the formal audit report using the format outlined on appendix 10.6. Be factual, orderly and brief (without sacrificing clarity). All members of the audit team shall sign the report.

- Prepare audit report cover letter.

- Issue the audit report with attached Audit Action Reports within thirty days of audit conclusion to the IT/RSL Laboratory Director and Laboratory Manager and to the ITAS Quality Assurance Manager.

6.2.3 A response of corrective action taken or a schedule for corrective action must be issued to the Quality Assurance Coordinator by the Laboratory Manager, or his designee within thirty days of the issuance of the audit report.

6.2.4 The Quality Assurance Coordinator shall follow-up on audit corrective/preventive action by performing the following steps:

- Evaluate each corrective/preventive action report response for adequacy.

- Indicate whether response is satisfactory or un-satisfactory under the evaluation section of appendix 10.4. If response is un-satisfactory, request further corrective action and indicate date for response.

- File all Audit Action Reports in the Quality/Operations audit files.

- Perform a follow-up corrective action audit during the next scheduled audit. Report, in writing, findings to the Laboratory Manager and Director.

- Sign and date "Follow-up and Final Close-out" section of appendix 10.4 when corrective action has been verified.

6.2.5 Maintain and control the following audit documentation as quality records:

- Audit reports

- Audit action reports

- Completed audit plans

- Checklists

- Associated correspondence

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7.0 PRECISION AND ACCURACY

None

8.0 QUALITY ASSURANCE PROVISIONS

8.1 Responsibility for Inspection

8.1.1 Compliance to this procedure shall be determined by ITAS semi-annual systems audits.

8.2 Acceptance Criteria

None

8.3 Material Monitoring

None

8.4 Equipment Monitoring

None

8.5 Certification

None

9.0 CALCULATIONS

None

10.0 APPENDICES

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APPENDIX 10.1

IT/Radiological Sciences Laboratory

Surveillance Schedule

Calendar Year:_____ Prepared by:_____

Date Issued:_____ Q.A. Coordinator

Date Revised:_____

Surveillance Number	Subject & Scope	Dates		Performed by
		Target	Actual	

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APPENDIX 10.2

Reviewer:_____

Date:_____

Page:_____

IT/Radiological Sciences Laboratory

Quality Assurance

Surveillance Checklist

Attribute or Condition Checked	N/A	Satisfactory	
		YES	NO

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APPENDIX 10.3

YEARLY AUDIT PLAN AND SCHEDULE

IT/Radiological Sciences Laboratory
Audit Plan and Schedule

Calendar Year:_____	Prepared by:_____ Quality Assurance
Date Issued:_____	
Date Revised:_____	Approved by:_____

Audit Number	Subject and Scope	Auditor(s)	Dates		
			Target	Actual	Report

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APPENDIX 10.4

INTERNAL AUDIT CHECKLIST

IT/RADIOLOGICAL SCIENCES LABORATORY

SHEET 1 of _____

INTERNAL AUDIT CHECKLIST

1.0 AUDIT SCOPE: _____

_____

2.0 AUDIT PURPOSE: _____

_____

3.0 APPLICABLE DOCUMENTS: _____

_____

4.0 AUDIT CHECKLIST: Prepared By: _____ Date: _____

Approved By: _____ Date: _____

QUESTIONS	AUDITOR'S COMMENTS

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APPENDIX 10.5

AUDIT ACTION REPORT

Audit Number:_____
AAR Number:_____

To:_____ Title:_____

Organization:_____

Description of Finding Discovered by Audit Team:

Signature:_____ _____
Lead Auditor - Date Quality Coordinator

Complete Items 1, 2, & 3 Within ____ Days and Return to Lead Auditor.

1) Reason For Discrepancy:

2) Corrective Action Plan (Including Action to Prevent Recurrence):

3) Corrective Action
Will Be Completed By: _____ Signature:_____
Cognizant Mgr. - Date

Evaluation of Proposed Corrective Action:

Signature:_____ _____
Lead Auditor - Date ITAS QA/C Director - Date

Follow-Up and Final Close-Out:

Signature:_____ _____
Lead Auditor - Date ITAS QA/C Director - Date

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APPENDIX 10.6

AUDIT REPORT FORMAT
(TYPE OF AUDIT PERFORMED) (AUDIT NUMBER)

1.0 OBJECTIVE

Short paragraphs that outline the objectives of the audit.

2.0 SCOPE

A short paragraph that states when the audit was performed, who performed it, what areas were reviewed, and the names of the key persons contacted.

3.0 CONCLUSIONS

3.1 A sentence or short paragraph, separately numbered for each major conclusion. The conclusions shall directly relate to the objective(s) of the audit as stated in "1.0 OBJECTIVE".

3.2 A sentence or short paragraph detailing the status (if applicable) of corrective/preventive action of previous audits.

3.3 A short sentence detailing how many attributive checks were made and how many were found to be nonconforming.

4.0 OBSERVATIONS

The following statement will be entered in this section of the report:

"An audit report is attached describing each finding"

Audit Performed By:

Name:_____

Title:_____

Lead Auditor:

Name:_____

Approved By:

Name:_____

Title:_____

INTERNATIONAL TECHNOLOGY CORPORATION

RADIOLOGICAL SCIENCES LABORATORY

NO.: RSL-604

RADIOANALYTICAL LABORATORY PROCEDURE

TITLE: Software Quality Assurance

APPROVED: James T. Harvey DATE: 11-5-87
Laboratory Manager

APPROVED: Paul Mills DATE: 11-8-87
ITAS QA Director

CONCURRED: John A. Cuquin DATE: 11-9-87
RSL Director

COPY NO.: UNCONTROLLED COPY ISSUED:

REVISION: 0				
DATE: 11-12-87				

TITLE: Software Quality Assurance	NO: RSL-604	PAGE: 1 of 15
	REVISION: 0	DATE: 11-12-87

1.0 PURPOSE

This procedure establishes the requirements for a Quality Assurance software program to assure adequate confidence that computer software developed by IT/RSL or procured for specific application at IT/RSL performs its intended function.

2.0 SCOPE

The procedure applies to all computer and programmable - calculator software which is used to acquire, process, or report analytical data.

3.0 RESPONSIBILITY

3.1 It is the responsibility of the Laboratory Manager, or his designee to comply with the requirements of this procedure.

3.2 It is the responsibility of those persons performing any section of this procedure, to follow it and report any problems to the Laboratory Director, or his designee.

3.3 It is the responsibility of the Quality Assurance Coordinator to monitor the Software quality assurance program and to maintain an all associated records as quality assurance documents.

4.0 REFERENCES

4.1 Requirements and Specifications

4.1.1 ITAS Quality Assurance Manual.

4.1.2 "Quality Assurance Program Requirements for Nuclear Facilities", ANSI/ASME NQA-1.

4.1.3 ITAS-RSL Quality Assurance Manual, Laboratory Specific Attachment.

4.1.4 USNRC, Regulatory Guide 4.15, Quality Assurance for Radiological Monitoring Programs (Normal Operations) - Effluent Streams and the Environment.

4.1.5 IEEE Standard 829-1983, "IEEE Standard for Software Test Documentation."

4.1.6 "Guidelines for Verification and Validation of Scientific and Engineering Computer Programs for the Nuclear Industry", ANS 10.4, May, 1984.

4.1.7 "Guidelines for the Documentation of Digital Computer Programs", ANS 10.3/ANSI N413-1974.

4.2 Standards

None

4.3 Procedures

None

4.4 Other Publications

None

5.0 REQUIREMENTS

None

6.0 PROCEDURE

6.1 Initiation

6.1.1 When a problem is identified and a decision is made to develop a computer program to solve the problem, the requestor shall initiate software development by completing the "Statement of Problem" section of appendix 10.1, "Computer Software Development". The problem to be solved or function to be performed shall be described.

6.1.2 The requester shall define in the "Development Plan" section of appendix 10.1, the design requirements that the computer software must meet including inputs, outputs, interfaces required, models to be used and acceptance criteria.

6.1.3 The requester shall submit completed sections of appendix 10.1 to the Laboratory Manager for approval. Appendix 10.1 is then submitted to the programmer for review and design development.

6.2 Design

6.2.1 The programmer shall design the software program using the design requirements as a basis for development. He shall document in the "Program Design" section of appendix 10.1, the method of solution, logic flow chart, processing steps, data structure, auxiliary program or external data file requirements, program limitations, machine requirements and references used.

6.2.2 The programmer shall return the completed sections of appendix 10.1 to the requester for review.

6.2.3 The requester shall review the "Program Design" section of appendix 10.1 to determine if all design requirements have been satisfied as outlined in the "Development Plan".

6.2.4 If the requester determines that design requirements have not been met, he shall return appendix 10.1 to the programmer and describe in writing the unacceptability of the program design. The programmer shall make changes to the design as required and resubmit appendix 10.1 until requester approval is made.

6.2.5 If the requester determines the program design is acceptable, he shall indicate approval by signing and dating the "Program Design" section of appendix 10.1 and returning it to the programmer for coding.

6.3 Source Coding

6.3.1 The programmer shall code the program design into the applicable programming language. Documentation of the source code shall be done in the "Source Code" section of appendix 10.1.

6.3.2 The programmer shall complete documentation of software development by completing "Program Title" and "Revision Number" sections. He shall sign "Programmer Signature" line and enter the date completed.

6.4 User Procedure

6.4.1 The programmer shall document in a written procedure or in an attachment to an existing procedure (when the software is procedure specific) instructions to ensure the correct use of the software program. The IT/RSL routine procedures format should be used. The following information should be included as applicable:

* Program Description (Overview of program function)

* Program considerations (Program option functions; restrictions on ranges of variable values; assigned constant values used)

* External Data Files' Contents and Use

* Input Data Techniques and Requirements

* System Control Requirements (Commands required to execute programs)

* Output Information (Discussion of program output to include relation of edited output to input options and output to appropriate equations; description of any normalization of results and listing of associated dimensional units).

* Sample Problems (Description of physical problem and associated data files; input data and results)

6.4.2 User procedures are subject to the same review and approval requirements and document control as all IT/RSL standard operating procedures.

TITLE: Software Quality Assurance	NO: RSL-604	PAGE: 5 of 15
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6.5 Integration and Testing

6.5.1 The programmer shall perform testing of the software on the computer system to verify integration of all components and verify test results. This performance check shall test all program options, data entry ranges, error entrapment and the ability of the software to store and manage files. A bench mark problem where available or a well defined example should be used to validate the process.

6.5.2 Where numerical manipulation is required, a sample set of numbers for which the results are known shall be processed and compared against known results. Known results shall be generated by performing hand calculations using identical equations and procedures as the software. All hand calculations shall be performed on appendix 10.2, IT/RSL Laboratory Calculation Sheet.

6.5.3 Where software performs as part of the instrument operation, reference materials shall be processed through the instrument system. Instrument response shall be compared against the standard used.

6.5.4 All testing activities shall be documented on standard IT calculation paper and become part of a data package that includes: appendix 10.1, a copy of the user procedure, all calculation sheets, all computer printouts, and copies of reference material certificates as applicable. The programmer shall mark the input and output with checkmarks to indicate that the comparisons are acceptable when using test problems. He/she shall sign and date in ink all supporting documents of the software verification.

6.5.5 Any changes to the software program shall require retesting and revisions to the user's procedure as appropriate.

6.5.6 When testing of the software program and associated documentation has been completed, the programmer shall complete the following sections of appendix 10.3, Software Data Package Coversheet:

* Software Program/Rev. No.

* User Procedure No./Rev. No.

6.5.7 Appendix 10.3 shall be attached to the top of the software data package (see 6.5.3) and the data package submitted to the Technical Director for an independent review.

6.6 Independent Review

6.6.1 The Technical Director shall review the complete software data package to determine if:

* All documentation is included in data package
* Requestor reviewed and approved the Program Design prior to the Coding phase
* Program Design adequately covers design requirements
* Source Code is consistent with design plan
* User procedure covers all program options and is consistent with the layout of the program
* Testing activities and documentation provide objective evidence of verification of software to perform its intended function

6.6.2 If the Technical Director finds any deficiency in the data package, he/she shall indicate rejection, make appropriate comments, sign and date appendix 10.3 and return data package to programmer.

6.6.3 If the software data package is determined to be acceptable by the Technical Director, he/she shall check the "approved" section, sign and date appendix 10.3 and submit the package to the Laboratory Manager.

6.6.4 The Laboratory Manager shall sign appendix 10.3 as documentation of approval for computer software use. He shall then submit the data package to the Q.A. Coordinator.

6.6.5 The Q.A. Coordinator shall review the data package for compliance to the requirements of ANS 10.3/ANSI N413, "Guidelines for the Documentation of Digital Computer Program." If documentation requirements have been met, the Q.A. Coordinator shall sign the approval line and date on appendix 10.3. If requirements have not been met, he/she shall return the data package to the programmer for changes; additions or deletions. Reapproval by the Technical Director and Laboratory Manager is required.

6.6.6 When the Q.A. Coordinator's approval has been made, the software is available for use.

6.7 Implementation/Training

6.7.1 When a software program has been approved for use, approved user procedures shall be issued.

6.7.2 Training shall be given to personnel prior to the use of the program. Training shall cover in sufficient detail the contents of the user procedure to ensure correct program use by personnel and training on the operation of computer hardware.

6.7.3 All training shall be documented using "Laboratory Personnel Qualifications" form, and "Personnel Development Session" form in RSL-901, "Training and Qualifications of Laboratory Technicians".

6.8 Document Control

6.8.1 Computer software programs and associated user procedures shall be issued for use using controlled distribution. A controlled distribution list shall be maintained by the QA office.

6.8.2 Software program and user procedure identification, number, and revision level shall be listed on software and user procedure. Any changes shall require change in revision level.

6.8.3 Master and backup copies of all software versions shall be maintained in separate locations to protect against inadvertent destruction.

6.8.4 Password information shall be made available only to personnel trained in the use of the software program.

6.9 Procurement of Computer Software

6.9.1 When software programs are purchased form sources outside of RSL, the procurement documents (purchase requisition and purchase order) shall specify software program and documentation requirements.

6.9.2 All purchase requisitions must be approved by the Laboratory Manager and checked by the QA Coordinator to determine that specification and documentation requirements for computer software have been identified.

6.9.3 When software programs are received, the receiving person shall perform receiving activities for quality-related equipment and materials as outlined in RSL-903.

6.9.4 Software programs which are developed external to IT/RSL do not require independent testing/ qualification if they have not been modified by RSL and have been accepted as "industry standards". However, a standard data set should be run to verify correct operation of the program prior to initial use.

6.9.5 If purchased software is modified by RSL, the same qualifications/testing steps (Section 6.5) must be completed before software use.

6.10 Retesting/Requalification

6.10.1 All software programs shall be retested/requalified using steps outlined previously in this procedure after any modification to the program or on an annual basis as a minimum. Activities shall include:

* Reprocess test problems used in initial verification and compare results.

* If software performance has changed, initiate a nonconformance report. Determine the effect upon the intended function since the last verification was performed.

* As necessary, reprocess data and notify affected customers.

7.0 PRECISION AND ACCURACY

None

8.0 QUALITY ASSURANCE PROVISIONS

8.1 Responsibility for Inspection

8.1.1 The Quality Assurance staff shall perform periodic surveillances to determine compliance to this procedure by laboratory personnel.

8.2 Acceptance Criteria

None

8.3 Material Monitoring

None

8.4 Equipment Monitoring

None

8.5 Certification

None

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9.0 CALCULATIONS

9.1 As required and noted on appropriate form (Appendix 10.2).

10.0 APPENDICES

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APPENDIX 10.1
Page 1 of 3

COMPUTER SOFTWARE DEVELOPMENT

Requester: _____ Date: _____

Laboratory Manager: _____ Date: _____

STATEMENT OF PROBLEM

DEVELOPMENT PLAN

TITLE: Software Quality Assurance	NO: RSL-604	PAGE: 12 of 15
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APPENDIX 10.1 (Continued)
Page 2 of 3

PROGRAM DESIGN

Requester Approval _____ Date _____

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APPENDIX 10.1 (Continued)
Page 3 of 3

SOURCE CODE

PROGRAM TITLE:_____ REVISION NO:_____

_____ _____
PROGRAMMER SIGNATURE DATE COMPLETED

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APPENDIX 10.2

IT/RADIOLOGICAL SCIENCES LABORATORY CALCULATION SHEET

Sample number_____ Date_____

Calculations performed by: _____

APPENDIX 10.3

Software Data Package

Software Program: _____ Rev. No:_____

User Procedure No: _____ Rev. No:_____

Programmer: _____

INDEPENDENT REVIEW

_____ Approved

_____ Rejected

_____ _____

Reviewer Signature Date

COMMENTS:_____

_____

_____

_____

APPROVED: _____ _____

Laboratory Manager Date

APPROVED: _____ _____

Q.A. Coordinator Date

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INTERNATIONAL TECHNOLOGY CORPORATION

RADIOLOGICAL SCIENCES LABORATORY

NO.: RSL-701

RADIOANALYTICAL LABORATORY PROCEDURE

TITLE: File Set-Up and Inventory for Perry Nuclear Power Plant

APPROVED: James T. Harvey DATE: 4-28-87
Laboratory Manager

APPROVED: [signature] DATE: 5/4/87
ITAS QA Director

CONCURRED: John A. Auxier DATE: 4-28-87
RSL Director

COPY NO.: UNCONTROLLED COPY ISSUED:

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DATE: 4-20-87				

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TITLE: File Set-Up and Inventory for Perry Nuclear Power Plant	NO: RSL-701	PAGE: 1
	REVISION: 0	DATE: 4-20-87

1.0 PURPOSE

This procedure describes the file set up and inventory procedures to be used in conjunction with Section 12 (Records Management) of the ITAS QA Manual.

2.0 SCOPE

This procedure applies to Perry Nuclear Power Plant project files at Radiological Sciences Laboratory (RSL).

3.0 RESPONSIBILITY

The QA Coordinator shall be responsible for the maintenance of Quality records and for supervision of the file inventory.

4.0 REFERENCES

4.1 Requirements and Specifications

4.1.1 Memo dated 10-22-86, from W.R. Humphries (Perry Nuclear) to Cheryl Prince (RSL).

4.1.2 ITAS QA Manual, Section 12.

4.2 Standards

None

4.3 Procedures

None

4.4 Other Publications

None

5.0 REQUIREMENTS

None

TITLE: File Set-Up and Inventory for Perry Nuclear Power Plant	NO: RSL-701	PAGE: 2
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6.0 PROCEDURE

6.1 Set-Up

6.1.1 Each Report Packet (Analytical Data - category "F" in ITAS QA Manual, Section 12) will consist of the Report and the sample data sheets grouped by matrix (soil, water, etc.).

6.1.2 Each Report and sample group will be maintained in an individual manila folder.

6.1.3 The Report Packet (collection of manila folders) will be grouped in an accordian folder.

6.2 Labeling

6.2.1 The "F" category (Analytical Data) will be subnumbered so that each Report Packet (accordian folder) will have a unique number i.e., F1, F2, F3, etc.

6.2.2 The "F" category will be further sub-lettered so that each Report and sample group will have a unique number i.e., F1A-Report, F1B-Soil Samples, F1C-Water Samples, etc.

6.2.3. Each page in a Report or sample group will have a unique number by adding a page number to the above system.

Example: The 1st Quarter, 1985 Report Package has been given the next available Analytical Data number, F20.

The accordian folder would be labeled:

1st Q, 1985 F20
Perry Nuclear

The manila folder for the Report would be labeled:

Report F20A
1st Q, 1985

The Reports six (6) pages would be marked in the upper right hand corner: F20A1, F20A2 .... F20A6.

TITLE: File Set-Up and Inventory for Perry Nuclear Power Plant	NO: RSL-701	PAGE: 3
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The manila folder for the sediment sample group would be labeled:

Sediments F20B
1st Q, 1985

The individual data pages would be marked in the upper right hand corner: F20B1, F20B2, etc.

6.3 Inventory

6.3.1 Each page will be marked with its unique page number, as described in paragraph B above.

6.3.2 An inventory sheet (see appendix 10.1) will be stapled to the outside of each accordian folder (Report Packet).

6.3.3 The inventory sheet is in addition to the Project File Index (as per ITAS QA Manual, Section 12).

6.3.4 A copy of the inventory sheet, signed by the QA Coordinator will be shipped with each Report Packet (accordian folder) when files are transferred to Perry Nuclear. Receipt acknowledgement by Perry Nuclear, should be requested. Complete "File Transfer Procedures" are given in Perry Nuclear Standard Operational Procedure number RSL-702.

7.0 PRECISION AND ACCURACY

None

8.0 QUALITY ASSURANCE PROVISIONS

8.1 Responsibility for Inspection

8.1.1 The QA Coordinator shall review all data packages before signing inventory sheet for transfer.

8.2 Acceptance Criteria

None

TITLE: File Set-Up and Inventory for Perry Nuclear Power Plant	NO: RSL-701	PAGE: 4
	REVISION: 0	DATE: 4-20-87

8.3 Material Monitoring

None

8.4 Equipment Monitoring

None

8.5 Certification

None

9.0 CALCULATIONS

None

10.0 APPENDICES

APPENDIX 10.1

PERRY NUCLEAR POWER PLANT

REPORT PACKET INVENTORY

Report Packet No.:____________________________

Sampling Event:______________________________

Transfer Signature:___________________________
QC Coordinator

FILE SUB-NUMBER	DESCRIPTION	NUMBER OF PAGES

INTERNATIONAL TECHNOLOGY CORPORATION

RADIOLOGICAL SCIENCES LABORATORY

NO.: RSL-702

RADIOANALYTICAL LABORATORY PROCEDURE

TITLE: Perry Nuclear Records Transfer

APPROVED: James T. Harney DATE: 4-28-87
Laboratory Manager

APPROVED: Paul Mertz DATE: 5/4/87
ITAS QA Director

CONCURRED: John A. Cerpin DATE: 4-28-87
RSL Director

COPY NO.: UNCONTROLLED COPY ISSUED:

REVISION: 0				
DATE: 4-27-87				

TITLE: Perry Nuclear Records Transfer	NO: RSL-702	PAGE: 1
	REVISION: 0	DATE: 4-27-87

1.0 PURPOSE

This procedure describes the requirements for transfer of analytical records from Radiological Science Laboratory (RSL) to customer.

2.0 SCOPE

This procedure applies to Perry Nuclear Power Plant (PNPP) records generated by RSL.

3.0 RESPONSIBILITY

3.1 The QA coordinator shall be responsible for the identification of records to be transferred, supervision of the preparation of records for transfer, documentation of transfer, and customer notification of transfer.

3.2 The personnel performing these activities are responsible for preparing transfer shipments according to this procedure.

4.0 REFERENCES

4.1 Requirements and Specifications

4.1.1 Memo dated 10-22-85, from W.R. Humphries (PNPP) to Cheryl Prince (RSL).

4.1.2 ITAS Quality Assurance Manual.

4.1.3 ITAS-RSL Quality Assurance Manual, Laboratory.

4.2 Standards

None

4.3 Procedures

None

4.4 Other Publications

None

TITLE: Perry Nuclear Records Transfer	NO: RSL-702	PAGE: 2
	REVISION: 0	DATE: 4-27-87

5.0 REQUIREMENTS

None

6.0 PROCEDURE

6.1 Records

6.1.1 Transfer the original laboratory data package for each sample and retain a copy of each document.

6.1.2 Group records to include the report submitted and all sample data sheets in the order in which they are included in the report.

6.1.3 Records to be included in a single shipment will be determined by data sheet format. Only those of the same format will be transferred together except where a single report may have a combination of forms.

6.1.4 Include in the data package the laboratory sheet(s), gamma scan print-out, where applicable, and laboratory work order, when applicable.

6.1.5 Check to be sure record packets and the content of each has been numbered sequentially. Put into sturdy file boxes and secure with shipping tape.

6.1.6 Do not transfer correspondence and contractual documents, but retain in client file.

6.2 Frequency of Transfer

6.2.1 Original documents will be transferred in monthly shipments until all records have been shipped. Thereafter, a monthly shipment will be sent which will include only those samples reported in the previous month.

6.2.2 Do not send a shipment until verification of receipt for the previous shipment has been received by RSL.

6.3 Receipt Documentation

6.3.1 Include a cover letter and a copy of each inventory sheet in each transfer shipment. Under separate cover, send a notification letter and another copy of each inventory sheet associated with shipment. Maintain a copy of each in the client's file.

TITLE: Perry Nuclear Records Transfer	NO: RSL-702	PAGE: 3
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6.3.2 The RSL Q.A. Coordinator will notify the Supervisor of Administrative Records Unit at PNPP the day the shipment is sent.

6.3.3 Upon arrival of the shipment, a PNPP representative will notify the RSL Q.A. Coordinator of receipt.

6.3.4 Upon receipt and verification of transferred documents, one copy of each inventory sheet will be signed by responsible person at PNPP as confirmation of receipt and returned to IT/RSL Q.A. Coordinator within 5 working days.

6.4 Mode of Transfer

6.4.1 Ship records by commercial courier, one day delivery and requirement tracer numbers. Ship records to:

Administrative Records Unit
Perry Nuclear Power Plant
W-160
10 North Center Road
Perry, Ohio 44081

7.0 PRECISION AND ACCURACY

None

8.0 QUALITY ASSURANCE PROVISIONS

8.1 Responsibility for Inspection

8.1.1 The Q.A. Coordinator shall monitor preparation of each shipment to assure the activities are in accordance with this procedure.

8.2 Acceptance Criteria

None

8.3 Material Monitoring

None

8.4 Equipment Monitoring

None

TITLE: Perry Nuclear Records Transfer	NO: RSL-702	PAGE: 4
	REVISION: 0	DATE: 4-27-87

8.5 Certification

None

9.0 CALCULATIONS

None

10.0 APPENDICES

None

INTERNATIONAL TECHNOLOGY CORPORATION

3225

RADIOLOGICAL SCIENCES LABORATORY

NO.: RSL-703

RADIOANALYTICAL LABORATORY PROCEDURE

TITLE: Storage and Maintenance of Records

APPROVED: James T. Harvey DATE: 4-28-87
Laboratory Manager

APPROVED: Paul Mills DATE: 5/4/87
ITAS QA Director

CONCURRED: John G. Cupin DATE: 4-28-87
RSL Director

COPY NO.: UNCONTROLLED COPY ISSUED:

REVISION: 0				
DATE: 4-21-87				

TITLE: Storage and Maintenance of Records	NO: RSL-703	PAGE: 1
	REVISION: 0	DATE: 4-21-87

1.0 PURPOSE

This procedure establishes storage requirements for the maintenance, preservation and protection of quality assurance records.

2.0 SCOPE

This procedure applies to all records that provide documentary evidence of quality as related to IT/RSL's overall performance and operation. In addition, any project specific records which are contractually designated as quality assurance records shall be stored per this procedure until they are transferred to the customer or destroyed.

3.0 RESPONSIBILITY

It is the responsibility of the Quality Assurance Staff to follow this procedure when storing and controlling all quality assurance records.

4.0 REFERENCES

4.1 Requirements and Specifications

4.1.1 ITAS Quality Assurance Manual.

4.1.2 ITAS-RSL Quality Assurance Manual, Laboratory Specific Attachment.

4.1.3 "Quality Assurance Program Requirements for Nuclear Facilities", ANSI/ASME NQA-1 (latest edition).

4.1.4 "Requirements for Collection, Storage, and Maintenance of Quality Assurance Records for Nuclear Power Plants", ANSI N 45.2.9 (latest edition).

4.1.5 U.S. Nuclear Regulatory Commission, Regulatory Guide 4.15, Quality Assurance for Radiological Monitoring Programs (Normal Operations) - Effluent Streams and the Environment.

4.2 Requirements

None

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4.3 Procedures

None

4.4 Other Publications

4.4.1 "Establishing a Quality Assurance Program for Analytical Chemistry Laboratories Within the Nuclear Industry", Annual Book of ASTM Standards, Vol. 12, C1009-83.

5.0 REQUIREMENTS

5.1 Equipment

None

5.2 Materials

None

5.3 Reagents

None

6.0 PROCEDURE

6.1 Storage Facility

6.1.1 In general, the records storage facilities shall provide a suitable environment to minimize the risk of damage or destruction from:

- natural disaster such as fires, floods or winds;
- environmental conditions such as temperature and humidity extremes;
- infestation from rodents and insects.

6.1.2 Dual facilities shall be used for record storage at IT/RSL. The facilities shall be sufficiently remote from each other to prevent the posibility of exposure to the same hazard.

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6.2 Filing System

6.2.1 See Section No. 12.0 of ITAS-RSL Quality Assurance Manual Laboratory Specific Attachment for a description of the filing system used at IT/RSL.

6.2.2 Duplicate files shall be set up and maintained using the requirements of this procedure.

6.3 Record Receiving and Control

6.3.1 The Quality Assurance Staff shall be responsible for the receiving and control of all Quality Assurance Records. Responsibilities shall include the following:

- Set up new project index and files.
- Add new records to existing files. (Original records shall be placed in master file and copies of original records shall be placed in duplicate file.)
- Withdraw records from master file as requested by laboratory personnel and return records to file.
- Maintain record control with the use of master sign-out sheet to indicate:
  - Project from which file is removed
  - File category
  - Date and person taking file
  - Return date to file system
- Lock all file cabinets when leaving IT/RSL facilities.

6.4 Record Retention

6.4.1 Quality Assurance records shall be classified as "Lifetime" or "Non-Permanent" records for the purpose of retention. (See Section 12.5 of the ITAS-RSL Quality Assurance Manual, Laboratory Specific Attachment for the list and complete description of records under the two classifications.)

6.4.2 Mark record index with the classification of each file.

6.4.3 Maintain "Lifetime" records for the lifetime of the project (Lifetime of plant for nuclear power plants).

6.4.4 Maintain "Non-Permanent" records for seven years or until applicable regulatory or customer's contractual requirements are satisfied.

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6.5 Record Transfer

6.5.1 The transfer of "Lifetime" records shall take place upon request of the customer or at the end of the contract period.

6.5.2 The Quality Assurance Coordinator shall contact the customer and develop a procedure for the records transfer to include as a minimum:

- Records grouping
- Packaging requirements
- Frequency of transfer
- Receipt documentation
- Mode of transfer
- Customer contact

6.5.3 The Quality Assurance Coordinator shall review the retention period for adequacy before destroying any "Non-Permanent" records.

7.0 PRECISION AND ACCURACY

None

8.0 QUALITY ASSURANCE PROVISIONS

8.1 Responsibility for Inspection

8.1.1 Compliance to this procedure by IT/RSL personnel shall be determined by the ITAS semi-annual systems audit.

8.2 Acceptance Criteria

None

8.3 Material Monitoring

None

TITLE: Storage and Maintenance of Records	NO: RSL-703	PAGE: 5
	REVISION: 0	DATE: 4-21-87

8.4 Equipment Monitoring

None

8.5 Certification

None

9.0 CALCULATIONS

None

10.0 APPENDICES

INTERNATIONAL TECHNOLOGY CORPORATION

3225

RADIOLOGICAL SCIENCES LABORATORY

NO.: RSL-801

RADIOANALYTICAL LABORATORY PROCEDURE

TITLE: Instructions for Glassware Cleaning and Laboratory Housekeeping

APPROVED: James T. Harvey DATE: 4-28-87
Laboratory Manager

APPROVED: [signature] DATE: 5/4/87
ITAS QA Director

CONCURRED: John G. Cuyjet DATE: 4-28-87
RSL Director

COPY NO.: UNCONTROLLED COPY ISSUED:

REVISION: 0				
DATE: 4-07-87				

TITLE: Instructions for Glassware Cleaning and Laboratory Housekeeping	NO: RSL-801	PAGE: 1
	REVISION: 0	DATE: 4-07-87

1.0 PURPOSE

This procedure provides instructions for general glassware cleaning and requirements for the maintenance of laboratory facilities to ensure the performance of analytical work in an efficient, accurate, precise and safe manner.

2.0 SCOPE

2.1 This procedure applies to the cleaning of all washable laboratory apparatus. This procedure should be followed unless instructions for glassware cleaning are provided in a specific laboratory analysis procedure.

2.2 Requirements for housekeeping apply to laboratory areas where analytical work is performed and sample storage and handling areas.

3.0 RESPONSIBILITY

3.1 It is the responsibility of the Laboratory Manager to ensure that this procedure is followed during the cleaning of all glassware and the cleaning and maintenance of laboratory areas where analytical work is performed and where samples are stored and handled.

3.2 It is the responsibility of the Health Physics Supervisor to ensure that janitorial duties are performed as required.

3.3 It is the responsibility of all laboratory personnel to ensure that lab work areas are kept clean and orderly on a routine basis.

4.0 REFERENCES

4.1 Requirements and Specifications

4.1.1 ITAS Quality Assurance Manual.

4.1.2 ITAS-RSL Quality Assurance Manual, Laboratory Specific Attachment.

4.2 Standards

None

TITLE: Instructions for Glassware Cleaning and Laboratory Housekeeping	NO: RSL-801	PAGE: 2
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4.3 Procedures

None

4.4 Other Publications

4.4.1 Standard Methods for the Examination of Water and Wastewater, APHA, Washington, D.C. (latest edition).

5.0 REQUIREMENTS

5.1 Equipment

5.1.1 Laboratory sink and/or laboratory dishwasher

5.2 Materials

5.2.1 Brushes, towels, etc.

5.3 Reagents

5.3.1 Commercial detergent and/or liquid cleaner for laboratory use such as but not limited to:

a) Liqui-Nox
b) Sparkleen
c) Radiacwash

6.0 PROCEDURE

6.1 Glassware Cleaning

6.1.1 Rinse glassware thoroughly with tap water immediately after use.

6.1.2 Soak soiled glassware in a solution of hot water and a commercial detergent specifically formulated for laboratory use. Amount of detergent and soak time shall be based on detergent manufacturer's instructions.

6.1.3 Scrub glassware thoroughly with brushes. Never use abrasive materials.

6.1.4 Rinse thoroughly with running tap water followed by thorough rinse with demineralized water. Invert, allow to drain and air dry at room temperature.

6.1.5 Inspect glassware for remaining residue. If glassware is not clean rewash using steps 6.1.2 through 6.1.4. It may be necessary to soak some glassware, etc. in acid solutions. Items falling in this category will be identified as a case-by-case basis and noted in the individual procedure where possible.

6.1.6 If glassware becomes cracked, etched or cannot be cleaned, check with Laboratory Manager, or his designee, before using.

6.2 Housekeeping

6.2.1 The Laboratory Manager, or his designee, shall post a monthly checklist (appendix 10.1) in a conspicuous location in the laboratory.

6.2.2 The Laboratory Manager, or his designee, shall make weekly assignments to selected laboratory technicians for the required routine clean up and maintenance of specified work areas.

6.2.3 Each technician shall be responsible for keeping his/her own work area clean and orderly.

6.2.4 Each technician shall notify the Laboratory Manager of any items or equipment which need repair or routine maintenance performed.

7.0 PRECISION AND ACCURACY

None

8.0 QUALITY ASSURANCE PROVISIONS

8.1 Responsibility for Inspection

8.1.1 The Quality Assurance staff shall perform periodic surveillances to determine compliance to this procedure by laboratory personnel.

8.1.2 The Quality Assurance staff shall maintain Monthly Housekeeping Checklists in the Quality Assurance file as a quality-related document.

8.2 Acceptance Criteria

8.2.1 The following sections of this procedure contain acceptance criteria:

6.1.5 Clean glassware

6.1.6 Broken, cracked or dirty glassware

8.3 Material Monitoring

None

8.4 Equipment Monitoring

None

8.5 Certification

None

9.0 CALCULATIONS

None

10.0 APPENDICES

TITLE: Instructions for Glassware Cleaning and Laboratory Housekeeping	NO: RSL-801	PAGE: 5
	REVISION: 0	DATE: 4-07-87

ADDENDIX 10.1

HOUSEKEEPING

DATE_____

REVISION 0

PAGE 1 of 1

MONTHLY HOUSEKEEPING CHECKLIST

✓ Work Performed NA Not Applicable

Work Area Description	Week 1	Week 2	Week 3	Week 4	Week 5	Comments
Samples Properly Stored						
Chemicals and Reagents Capped, Labeled, and Properly Stored						
Glassware Cleaned and Stored						
Workbenches Clear and Wiped Down						
Sink Areas Clean						
Eyewash Fountains and Safety Shower Areas Clear						
Cabinets Cleaned						
Hoods Cleaned						
Desk Area Clean, Papers and Books Properly Filed						
Performed By						
Verified By						

Remarks and Action Items:

000084

INTERNATIONAL TECHNOLOGY CORPORATION

3225

RADIOLOGICAL SCIENCES LABORATORY

NO.: RSL-802

RADIOANALYTICAL LABORATORY PROCEDURE

TITLE: Checking Laboratory Measuring and Test Equipment

APPROVED: James T. Harvey DATE: 4-28-87
Laboratory Manager

APPROVED: [signature] DATE: 5/4/87
ITAS QA Director

CONCURRED: John A. Auxier DATE: 4-28-87
RSL Director

COPY NO.: UNCONTROLLED COPY ISSUED:

REVISION: 0				
DATE: 4-07-87				

429-1-87

PROCEDURE DEVELOPMENT/CHANGE

Supplement to existing procedure? Yes (X) No ( )
If yes, enter paragraph number to reference insertion point: 2.0; 3.3; 3.4; 6.2.3; 6.3.3; 6.3.4; 6.3.5; 6.4.5; 6.5; 6.5.1; 6.5.2; 6.5.3; 8.1.1; 8.1.2; 8.2.1
Procedure Title & Number (If exists) RSL-802, RO
Checking Laboratory Measuring and Test Equipment
Description of experiment or method Add procedure for annual check for working thermometers. Comply with RSL-QA Manual forms.
Time Period From: 8/11/87 To: Issue of RSL-802, R1 Samples Affected All from

Procedure: (Test Eqpt., Data Recorded, Problems, Steps Used, etc.) DATE

8-11-87

2.0 SCOPE

This procedure applies to all working thermometers, all analytical balances, all top loading balances, and all autopipettes and glass pipettes used in critical steps of laboratory procedures. Critical steps for pipette and autopipette use are defined as those measurements of volume for which an absolute volume of liquid must be measured within two percent of the nominal value of pipette delivery. This procedure does not apply to measuring equipment used for delivery of approximate volumes nor does it apply to adjustable autopipettes.

Working thermometers in the laboratory should be calibrated annually against reference thermometers that have initial NBS traceability and that are recertified every three years with equipment directly traceable to the NBS.

3.3 The Quality Assurance staff shall ~~also~~ set control limits for various balances, ~~and~~ pipettes, and working thermometers. The QC Coordinator shall maintain calibration forms, certificates and copies of log books.

Submitted by: James M. Dallard
Approved by: John R. Frazier, Laboratory Manager
Approved by: John C. Griffin, Laboratory Director
Approved by: Cheryl D. Prince, QA/QC/Director, ITAS

000086

3.4 It is the responsibility of the technician to follow this procedure and to report any abnormal results to the Laboratory Manager, or his designee. The technician is responsible for recording results of measurements in the record ~~books~~ for balance and pipette checks and for adhering to the appropriate schedule for these quality control checks. working thermometers

6.2.3 Record the weights in the balance logbook and plot the values on control charts. on the "Balance Calibration" form (Appendix 10.2)

6.3.3 Record the weight of the deionized water and the room temperature ~~in~~ on the ~~pipette logbook.~~ "Pipette Calibration" form (Appendix 10.3).

6.3.4 If the value falls outside the control limits recorded ~~in~~ on the ~~pipette logbook~~, report it to the Laboratory Manager, or his designee. 1 "Pipette Calibration" form.

6.3.5 Inspect the pipette for chips or cracks. If any are observed, destroy the pipette and note this ~~in~~ on the ~~logbook;~~ "Pipette Calibration" form.

6.4.5 Record the weight and room temperature ~~in~~ on the ~~pipette logbook.~~ "Pipette Calibration" form (Appendix 10.3).

6.5 Annual Check for Working Thermometes

6.5.1 Every working thermometer in use in the laboratory will be assigned a unique number, ~~a list of which will be kept in the Equipment Maintenance and Calibration schedule binder.~~ Each working thermometer will be calibrated annually against a reference thermometer using the calibration methods listed below:

Calibration Method 1:

Working thermometer and reference thermometers are allowed to remain together in the same room for at least 24 hours. The bulbs are then put together on desk top for at least 30 minutes and read.

Calibration Method 2:

One liter beaker filled with regular refrigerator ice cubes prepared with deionized water. Remainder of space in beaker filled with deionized water. The working thermometer and reference thermometer are immersed with bottom of bulbs at same level. Wait at least 30 minutes and read.

Calibration Method 3:

Fill one liter glass beaker with deionized water and bring to a boil on a hot plate. The working and reference thermometers are immersed with bottom of bulbs at same level. At least the whole bulb on each thermometer should be completely immersed. Wait 5 minutes and read.

6.5.2 A Thermometer Calibration form (Appendix 10.4 ~~attached~~) shall be completed for each working thermometer calibrated ~~and placed in the "Thermometer Calibration" file of Category B in the Quality/Operations files.~~

6.5.3 Any thermometer that does not meet the acceptance criteria (± 1°C) shall be tagged to prevent inadvertent use. New thermometers that do not meet the acceptance criteria will be sent back to the vendor. Old thermometers that do not meet the acceptance criteria will be removed from the lab.

8.1.1 It is the responsibility of the technician to inspect data to ascertain that it falls within control limits and to inspect balances and pipettes for obvious changes or problems. working thermometers

8.1.2 It is the responsibility of the Quality Assurance staff to inspect logbooks and calibration forms regularly for trends in data and for completeness.

8.2.1 Acceptance criteria for the tests contained herein are specified in the individual logbooks or calibration forms as control limits.

Appendix 10.2

BALANCE CALIBRATION

EQUIPMENT NUMBER: _____

EQUIPMENT NAME: _____

DATE: _____ DATE LAST CALIBRATED: _____

CALIBRATION PERIOD: _____

Weights Applied to Balance	Balance Reading	Does Balance Meet Standard

Signed: _____

Appendix 10.3

PIPETTE CALIBRATION

EQUIPMENT NUMBER: _____

EQUIPMENT NAME: _____

DATE: _____ DATE LAST CALIBRATED: _____

CALIBRATION PERIOD: _____

PIPETTE VOLUME	WEIGHT OF WATER PIPETTED

AVERAGE: _____

2σ STANDARD DEVIATION: _____

Signed: _____

Appendix 10.4

THERMOMETER CALIBRATION

EQUIPMENT NUMBER: _____

EQUIPMENT NAME: _____

DATE: _____ DATE LAST CALIBRATED: _____

CALIBRATION PERIOD: _____

Temperature According To Reference	Thermometer Being Calibrated

WORKING RANGE: _____

ACCEPTANCE CRITERIA: _____ °C

Signed: _____

RSL 802, R0 CH1

1/3

PROCEDURE DEVELOPMENT/CHANGE

Supplement to existing procedure? Yes (X) No ( )
If yes, enter paragraph number to reference insertion point: 2.0, 4.4.1, 4.4.2, 5.1.6, 5.1.7, 5.1.8, 5.2.3, 5.5, 5.7, 6.8
Procedure Title & Number (if exists) RSL-802.R0

CHECKING LABORATORY MEASURING AND TEST EQUIPMENT

Description of experiment or method *Add procedure for pH meter Two-point Standardization, Water Deionizer System Check and Oven Check. Includes CH1 for 2.0 Scope*
Issue of RSL-802, R1

Time Period From: 8/28/87 To: / / Samples Affected All from 8-28-87

Procedure: (Test Eqpt., Data Recorded, Problems, Steps Used, etc.) DATE 8-28-87

2.0 SCOPE

This procedure applies to all *ovens, pH meters, water deionizer system, all working thermometers,* all analytical balances, all top loading balances, and all autopipettes and glass pipettes used in critical steps of laboratory procedures. Critical steps for pipette and autopipette use are defined as those measurements of volume for which an absolute volume of liquid must be measured within two percent of the nominal value of pipette delivery. This procedure does not apply to measuring equipment used for delivery of approximate volumes. ~~nor does it apply to adjustable autopipettes.~~

4.4.1 Fisher Accumet Model 815 MP pH Meter Instruction Manual

4.4.2 Labconco Water Pro Model 90000 Instruction Manual

5.1.6. pH Meter

5.1.7 Water Pro System

5.1.8 Ovens

3225

Submitted by: *[signature]*

Approved by: *[signature]*, Laboratory Manager

Approved by: *[signature]*, Laboratory Director

Approved by: *[signature]*, QA/QC/Director, ITAS

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5.3.2 pH Buffer Solutions pH4, pH7, pH10
(Traceable to 5.3.8)

6.6 pH Meter Two-point Standardization

6.6.1. While meter is in STBY, remove electrodes from storage solution, rince with deionized water into a waste container and blot dry with a lint free tissue.
6.6.2. Place electrodes into a pH 4 Standard solution
6.6.3. Press the TWO POINT CAL key
6.6.4 Measure temperature of solution and determine corrected pH of standard at the measured temperature from the provided table on the reagent container.
6.6.5. Key in the temperature corrected pH value of the standard. Press ENTER
6.6.6 When displayed mV is stable, press ENTER
6.6.7 Key in solution temperature. Press ENTER
6.6.8 Place meter in STBY
6.6.9 Remove electrodes from standard solution, rince with deionized water into a waste container and blot dry with a lint free tissue.
6.6.10 Place electrode in a pH 10 standard solution 322
6.6.11 Place meter in MEAS
6.6.12 Repeat steps 6.6.4 through 6.6.9
6.6.13 Place meter in STBY
6.6.14 Check meter standardization by measuring pH4, pH7 and pH10 standards, record values in the pH meter log book and plot the points on the control chart

6.6.5 Report any values falling outside the control limits to the Laboratory Manager, or his designee.

6.7 Water Deionizer System Check

6.7.1 Record the following operating conditions in the Water Pro System log book:

- water quality
- alarm set point
- alarm status
- Inlet µS
- R/O µS
- % Reject
- inlet °C
- R/O °C
- outlet °C
- inlet PSI
- R/O PSI
- Filter PSI

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6.7.2 Report any values falling outside the control limits to the Laboratory Manager, or his designee

6.8. Oven Check

6.8.1 Record all oven temperatures in the oven log book

6.8.2 Report any values falling outside the control limits to the Laboratory Manager, or his designee.

Supplement to SOP or procedure [illegible]

Procedure Title & Number (if exists) [illegible]

CHECKING LABORATORY MEASURING AND TEST EQUIPMENT

Description of experiment or method Modify procedure to use QA procedure

Time Period From: 10/87 To: 11 Samples Affected ALL

Procedure: (Test Eqpt., Data Recorded, Problems, Steps Used, etc.) DATE

10/23/87

SEE ATTACHED

3225

Submitted by: [signature]

Approved by: [signature], Laboratory Manager

Approved by: [signature], Laboratory Director

Approved by: [signature] for [illegible], QA/QC/Director, ITAS

000095

6.6.2 Place electrodes into a pH4 Standard Solution

6.6.3 Press the STBY/MEAS key, confirm that the instrument is displaying pH, if not depress MODE key until pH is displayed.

6.6.4 Press the TWO POINT CALIBRATION key

6.6.5 Measure temperature of solution. Determine corrected pH of standard at the measured temperature from provided table on the reagent container.

6.6.6 Key in the temperature corrected pH value of the standard. Press ENTER.

6.6.7 When displayed mV is stable, press ENTER.

6.6.8 Key in solution temperature. Press ENTER.

6.6.9 Place meter in STBY.

6.6.10 Remove electrodes from standard solution, rinse with deionized water into a waste container and blot dry with a lint free-tissue.

6.6.11 Place electrode in a pH10 standard solution.

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6.6.12 Place meter in MEAS.

6.6.14 Once the temperature is entered, the efficiency will be displayed. This value must be ENTERED, this will complete the calibration.

6.6.15 Place meter in STBY.

6.6.16 Check meter standardization by measuring pH4, pH7, and pH10 standards. Record these values in the pH meter log book and plot the points on the control chart.

TITLE: Checking Laboratory Measuring and Test Equipment	NO: RSL-802	PAGE: 1
	REVISION: 0	DATE: 4-07-87

1.0 PURPOSE

This procedure provides methods for checking the quality of standard laboratory measuring and test equipment.

2.0 SCOPE

This procedure applies to all analytical balances, all top loading balances, and all autopipettes and glass pipettes used in critical steps of laboratory procedures. Critical steps for pipette and autopipette use are defined as those measurements of volume for which an absolute volume of liquid must be measured within two percent of the nominal value of pipette delivery. This procedure does not apply to measuring equipment used for delivery of approximate volumes nor does it apply to adjustable autopipettes.

3.0 RESPONSIBILITY

3.1 It is the responsibility of the Laboratory Manager, or his designee, to ensure that this procedure is followed during quality control checks of standard laboratory equipment.

3.2 It is the responsiblity of the Laboratory Manager, or his designee, to delegate the performance of this procedure to personnel that are experienced with this procedure and with the equipment associated with implementation of this procedure.

3.3 The Quality Assurance staff shall also set control limits for various balances and pipettes.

3.4 It is the responsibility of the technician to follow this procedure and to report any abnormal results to the Laboratory Manager, or his designee. The technician is responsible for recording results of measurements in the record books for balance and pipette checks and for adhering to the schedule for these quality control checks.

4.0 REFERENCES

4.1 Requirements and Specifications

TITLE: Checking Laboratory Measuring and Test Equipment	NO: RSL-802	PAGE: 2
	REVISION: 0	DATE: 4-07-87

4.1.1 Title 10, Code of Federal Regulations, Part 50, Appendix I, Numerical Guides for Design Objectives and Limiting Conditions for Operation to Meet the Criteria "As Low as is Reasonably Achievable" for Radioactive Material in Light-Water-Cooled Nuclear Power Reactor Effluents.

4.1.2 U.S. Nuclear Regulatory Commission, Regulatory Guide 4.1, Programs for Monitoring Radioactivity in the Environs of Nuclear Power Plants.

4.1.3 U.S. Nuclear Regulatory Commission, Regulatory Guide 4.15, Quality Assurance for Radiological Monitoring Programs (Normal Operations) - Effluent Streams and the Environment.

4.1.4 "Quality Assurance Program Requirements for Nuclear Facilities", ANSI/ASME NQA-1 (latest edition).

4.1.5 ITAS Quality Assurance Manual.

4.1.6 ITAS-RSL Quality Assurance Manual, Laboratory Specific Attachment.

4.2 Standards

None

4.3 Procedures

None

4.4 Other Publications

None

5.0 REQUIREMENTS

5.1 Equipment

5.1.1 Balances

5.1.2 Pipettes

5.1.3 Autopipettes

5.1.4 Thermometer

5.1.5 Standard Weights protected from dust and fingerprints

5.2 Materials

5.2.1 Stainless steel planchet protected from dust and fingerprints

5.3 Reagents

5.3.1 Deionized water equilibrated to room temperature

6.0 PROCEDURE

6.1 Daily Check for Balances

6.1.1 Zero the balance according to manufacturer's instructions.

6.1.2 Weigh the standard weights designated for the purpose for that individual balance.

6.1.3 Record the weights in the balance logbook and plot the point on the control chart.

6.1.4 Report any value falling outside the control limits as noted in the logbook to the Laboratory Manager, or his designee.

6.2 Monthly Check for Balances

6.2.1 Zero the balance according to manufacturer's instructions.

6.2.2 Weigh standard weights according to the schedule in the logbook. Zero the balance between weighings.

6.2.3 Record the weights in the balance logbook and plot the values on control charts.

6.2.4 Report any values which fall outside the control limits to the Laboratory Manager, or his designee. If maintenance is found to be necessary, appropriate IT/RSL form shall be attached to the balance (see appendix 10.1).

6.3 Annual Check for Glass Pipettes

6.3.1 Wash the pipette and rinse it with deionized water which has been equilibrated to room temperature.

6.3.2 Fill the pipette to the mark with room temperature deionized water and dispense the water into a tared container.

6.3.3 Record the weight of the deionized water and the room temperature in the pipette logbook.

TITLE: Checking Laboratory Measuring and Test Equipment	NO: RSL-802	PAGE: 4
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6.3.4 If the value falls outside the control limits recorded in the pipette logbook, report it to the Laboratory Manager, or his designee.

6.3.5 Inspect the pipette for chips or cracks. If any are observed, destroy the pipette and note this in the logbook.

6.4 Monthly Check for Autopipettes

6.4.1 Place an unused tip on the autopipette.

6.4.2 Depress the plunger twice to free the movement.

6.4.3 Fill the pipette with room temperature deionized water.

6.4.4 Pipette the water into a tared container and obtain its weight.

6.4.5 Record the weight and room temperature in the pipette logbook.

6.4.6 If the weight falls outside the control limits recorded in the logbook, contact the Laboratory Manager, or his designee.

7.0 PRECISION AND ACCURACY

7.1 The precision and accuracy of each piece of measuring and test equipment is set by the Quality Assurance staff.

8.0 QUALITY ASSURANCE PROVISIONS

8.1 Responsibility for Inspection

8.1.1 It is the responsibility of the technician to inspect data to ascertain that it falls within control limits and to inspect balances and pipettes for obvious changes or problems.

8.1.2 It is the responsibility of the Quality Assurance staff to inspect logbooks regularly for trends in data and for completeness.

8.2 Acceptance Criteria

8.2.1 Acceptance criteria for the tests contained herein are specified in the individual logbooks as control limits.

8.2.2 The control limits are twice the calculated standard deviation for a set of ten replicate measurements. If the manufacturer specifies expected standard deviations, twice these values may be used as control limits if they prove to be realistic and suitable after a period of testing.

8.3 Material Monitoring

None

8.4 Equipment Monitoring

None

8.5 Certification

None

9.0 CALCULATIONS

None

10.0 APPENDICES

TITLE: Checking Laboratory Measuring and Test Equipment	NO: RSL-802	PAGE: 6
	REVISION: 0	DATE: 4-07-87

APPENDIX 10.1

Nonconforming Item Tag

C A U T I O N

NONCONFORMING TAG

Affected Item:_____

_____

I.D. No.:_____

Description of Nonconformance:

_____

_____

_____

_____

____ Work may continue with this item subject to the following limitations:

_____

_____

_____

_____

____ Work may not proceed with this item until the disposition of the nonconformance.

_____ _____

Signature Date

INTERNATIONAL TECHNOLOGY CORPORATION

RADIOLOGICAL SCIENCES LABORATORY

NO.: RSL-901

RADIOANALYTICAL LABORATORY PROCEDURE

TITLE: Training and Qualifications of Laboratory Technicians

APPROVED: James T. Harvey DATE: 6-3-87
Laboratory Manager

APPROVED: Paul Mig DATE: 6-4-87
ITAS QA Director

CONCURRED: John A. Caples DATE: 6-12-87
RSL Director

COPY NO.: UNCONTROLLED COPY ISSUED:

REVISION: 0				
DATE: 4-21-87				

RSL 901 R0 Sh1
(3)1

PROCEDURE DEVELOPMENT/CHANGE

Supplement to existing procedure? Yes (X) No ( )
If yes, enter paragraph number to be referenced/inserted below: 6.6

Procedure Title & Number (if exists) RSL-901, R0

Training and Qualification of Laboratory Technicians

Description of experiment or method Comply with RSL-QA Manual requirements

Time Period From: 8/28/87 To: Present Issue of RSL-901, A1 Samples Affected All from 8-28-87

Procedure: (Test Eqpt., Data Recorded, Problems, Steps Used, etc.) DATE 8-28-87

6.6 Training Schedule

6.6.1 Group training sessions on topics of general interest should be held monthly or as frequently as deemed necessary by identified discrepancies.

6.6.2 Individual or group training sessions shall be held on new procedures and changes to procedures as a portion of the continuing qualification process.

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Submitted by: James T. Dellard

Approved by: James T. Hussey, Laboratory Manager

Approved by: John C. Corbin, Laboratory Director

Approved by: Cheryl D. Prince, QA/QC/Director, ITAS

000104

PROCEDURE DEVELOPMENT/CHANGE

Supplement to existing procedure: Yes X No

If yes, enter paragraph number or reference insertion point: 6.3.4, Appendix 10.1, Appendix 10.3

Procedure Title & Number (if exists) RSL 901, R0

Training and Qualifications of Laboratory Technicians

Description of experiment or method Add Laboratory Personnel Training Form and correct Appendix 10.1

Time Period From: 9/23/87 To: Issue of RSL-901, R1 Samples Affected All from 9-23-87

Procedure: (Test Eqpt., Data Recorded, Problems, Steps Used, etc.) DATE

9-23-87

6.3.4. On the job training shall be documented (Appendix 10.3) for employees performing work under the direction of a trainer (qualified laboratory technician or the Laboratory Manager, or his designee). Quality assurance records generated during on the job training activities shall be co-signed or initial by the trainer.

see attached

3225

Submitted by: James [illegible]

Approved by: James T. Harvey, Laboratory Manager

Approved by: [illegible], Laboratory Director

Approved by: Vicky L. [illegible] for C. Prince, QA/QC/Director, ITAS

000105

TITLE	NO.	PAGE
	REVISION	DATE

APPENDIX (X-10)

In accordance with RSP [illegible] I verify that I am qualified to perform the following procedures or activities as described in FI/RSI procedures.

Verified by: _____ Date: _____

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430 1-87

Appendix [illegible]

Laboratory Personnel Testing

In accordance with RSL-901, _____ is performing the following procedures or activities as described in LT/RSL procedures under the direction of the Laboratory Manager, his designee or an assigned qualified laboratory technician:

_____

_____

_____

_____

_____

_____

_____

_____

_____ Date: _____
Laboratory Manager

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000107

TITLE: Training and Qualifications of Laboratory Technicians	NO: RSL-901	PAGE: 1
	REVISION: 0	DATE: 4-21-87

1.0 PURPOSE

This procedure provides the training and qualification requirements for radioanalytical laboratory technicians. Additionally, it provides the method for initially, and periodically thereafter, determining the laboratory technician's ability to perform the analytical and counting procedures used by the laboratory and to produce results consistent with the quality assurance program requirements.

2.0 SCOPE

This procedure applies to all IT/RSL laboratory employees performing analyses and using counting equipment.

3.0 RESPONSIBILITY

3.1 It is the responsibility of the Laboratory Manager, or his designee, to ensure that the training and qualification program outlined in this procedure is followed and that the training and qualification data are current and documented to certify that the technicians performing quality related work are properly qualified.

3.2 It is the responsibility of the technicians to remain aware of the procedures which they are qualified on, the qualification dates, and perform only those procedures on which they are qualified unless directed by the Laboratory Manager, or his designee.

4.0 REFERENCES

4.1 Requirements and Specifications

4.1.1 ITAS Quality Assurance Manual.

4.1.2 ITAS-RSL Quality Assurance Manual Laboratory Specific Attachment.

4.1.3 U.S. Nuclear Regulatory Commission, Regulatory Guide 4.15, Quality Assurance for Radiological Monitoring Programs (Normal Operations) - Effluent Streams and the Environment.

4.1.4 "Quality Assurance Program Requirements for Nuclear Facilities", ANSI/ASME NQA-1 (latest edition).

4.2 Standards

None

4.3 Procedures

None

4.4 Other Publications

4.4.1 "Training and Qualification of Radiochemical Laboratory Analysts", Laboratory Services Administrative Procedure, LSAP-0005, Radiological Health Staff, Tennessee Valley Authority.

4.4.2 "Establishing a Quality Assurance Program for Analytical Chemistry Laboratories Within the Nuclear Industry", Annual Book of ASTM Standards, Vol. 12, C1009-83.

4.4.3 "Handbook for Analytical Quality Control in Radioanalytical Laboratories", L.G. Kanipe, EPA-600/7-77-088, August 1977.

5.0 REQUIREMENTS

5.1 Equipment

None

5.2 Materials

None

5.3 Reagents

None

6.0 PROCEDURE

6.1 Training Requirements for Analytical Procedures

6.1.1 The technician trainee (referred to as trainee) shall become familiar with the procedure(s) and observe experienced personnel.

6.1.2 The trainee shall receive one-on-one instruction from the Laboratory Manager, or his designee.

6.1.3 The trainee shall perform the analysis of spike samples under the close supervision of an experienced technician designated by the Laboratory Manager, or his designee.

6.1.4 The trainee may perform the analysis independently when the results for spiked samples are consistently within two standard deviations of the spike known value, however, the trainee's work must be checked frequently by a qualified technician.

6.1.5 The Laboratory Manager may qualify the trainee for independent procedural work when sufficient demonstration of working knowledge of the procedure is achieved through observation and analysis of spike samples.

6.1.6 The Laboratory Manager, or his designee, shall provide retraining when:

A. a technician requests retraining;

B. a technicians's results for spiked samples fall consistently outside three standard deviations of the known value for the spikes;

C. a technician does not perform the analysis for one year.

6.1.7 Retraining shall, at a minimum, include instruction on the procedure and a series of three spike samples analyzed by the technician for which the result must fall within two standard deviations of the known value of the spiked samples.

6.2 Training Requirements for Counting Procedures

6.2.1 The trainee shall observe experienced personnel and become familiar with the procedure.

6.2.2 The trainee shall receive one-on-one instruction from the Laboratory Manager, or his designee.

6.2.3 The trainee shall perform operation of equipment under close supervision of the Laboratory Manager, or his designee.

6.2.4 The trainee may then perform independent counting, but his/her work must be checked frequently by a qualified technician.

6.2.5 The Laboratory Manager may qualify the trainee for independent counting when sufficient demonstration of a working knowledge of the procedure is achieved.

6.2.6 The Laboratory Manager, or his designee, shall provide retraining when:

A. a technician requests retraining;

B. departure from the procedure is identified;

C. a technician does not perform counting activity for one year.

6.2.7 Retraining shall, at a minimum, include instruction on the procedure and operation of equipment under close supervision.

6.3 Documentation of Employee Training

6.3.1 When a trainee has qualified for independent procedural work, the Laboratory Manager shall notify the Quality Assurance staff by completing the "Laboratory Personnel Qualification" form (appendix 10.1).

6.3.2 The Quality Assurance staff shall update the technician qualification record maintained by the Quality Assurance staff. Once updated, copies shall be distributed to the technician and the Laboratory Manager.

6.3.3 Laboratory group training, safety training and QA training shall be documented by attendees signing an attendance record sheet (Appendix 10.2).

6.4 Requirements for Periodic Requalification

6.4.1 Periodic requalification of laboratory technicians is based on the results obtained from running:

A. routine internal known spike samples;

B. internal blind spike samples;

C. interlaboratory cross-check samples.

6.4.2 Requalification of a laboratory technician shall be performed within one year of their qualification date. The Quality Assurance staff shall notify the Laboratory Manager of any laboratory technician whose qualification is within 30 days of expiration on any procedure.

6.5 Records Maintenance

6.5.1 The Quality Assurance staff shall maintain all training records and provide the Laboratory Manager with a current list of qualified technicians.

6.5.2 Copies of all training records shall be maintained in a training file and in each individuals training file.

TITLE: Training and Qualifications of Laboratory Technicians	NO: RSL-901	PAGE: 5
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7.0 PRECISION AND ACCURACY

None

8.0 QUALITY ASSURANCE PROVISIONS

8.1 Responsibility for Inspection

8.1.1 It is the responsibility of the Quality Assurance staff to maintain documentation of employee training and review qualification data quarterly to provide a summary that may be used by the Laboratory Manager to assess technician's performance.

8.2 Acceptance Criteria

8.2.1 The following sections of this procedure contain acceptance criteria:

6.1.6 Retraining requirements

6.2.6 Retraining requirements

6.4.1 Requalification requirements

8.3 Material Monitoring

None

8.4 Equipment Monitoring

None

8.5 Certification

None

9.0 CALCULATIONS

None

10.0 APPENDICES

TITLE: Training and Qualifications of Laboratory Technicians	NO: RSL-901	PAGE: 6
	REVISION: 0	DATE: 4-21-87

APPENDIX 10.1

Lab Personnel Qualification

In accordance with SOP-905, I verify that _____ is qualified to perform the following procedures or activities as described in IT/RSL procedures.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Verified by: _____ Date: _____

TITLE: Training and Qualifications of Laboratory Technicians	NO: RSL-901	PAGE: 7
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APPENDIX 10.2

ATTENDANCE RECORD

PERSONNEL DEVELOPMENT SESSION

Date: _____ Time: _____ Category: _____

Title of Session: _____

_____

Description of Session: _____

_____

_____

Session Conducted by: _____

NAME	SIGNATURE	NAME	SIGNATURE

Approved: _____ Date: _____

INTERNATIONAL TECHNOLOGY CORPORATION

RADIOLOGICAL SCIENCES LABORATORY

NO.: RSL-902

RADIOANALYTICAL LABORATORY PROCEDURE

TITLE: Q.A. Orientation of New Employees

APPROVED: James T. Harvey DATE: 6-3-87
Laboratory Manager

APPROVED: Paul Miller DATE: 6-4-87
ITAS QA Director

CONCURRED: John A. Cuspin DATE: 6-12-87
RSL Director

COPY NO.: UNCONTROLLED COPY ISSUED:

REVISION: 0				
DATE: 5-12-87				

TITLE: Q.A. Orientation of New Employees	NO: RSL-902	PAGE: 1
	REVISION: 0	DATE: 5-12-87

1.0 PURPOSE

This procedure provides the requirements for new employee orientation and indoctrination to the IT/RSL Quality Assurance Program as well as associated documentation requirements.

2.0 SCOPE

This procedure applies to the Q.A. Program orientation and indoctrination of all personnel hired at IT/RSL whose jobs are of a technical and/or managerial nature and affect the quality of results produced and reported.

3.0 RESPONSIBILITY

3.1 It is the responsibility of the Quality Assurance Coordinator to follow this procedure when performing new employee Q.A. orientation and training and the documentation of these activities.

3.2 It is the responsibility of the personnel office to inform the Q.A. Coordinator of the hire of any new employee at IT/RSL.

4.0 REFERENCES

4.1 Requirements and Specifications

4.1.1 ITAS Quality Assurance Manual.

4.1.2 ITAS-RSL Quality Assurance Manual Laboratory Specific Attachment.

4.1.3 U.S. Nuclear Regulatory Commission, Regulatory Guide 4.15, Quality Assurance for Radiological Monitoring Programs (Normal Operations) - Effluent Streams and the Environment.

4.1.4 "Quality Assurance Program Requirements for Nuclear Facilities", ANSI/ASME NQA-1 (latest edition).

4.2 Standards

None

4.3 Procedures

None

TITLE: Q.A. Orientation of New Employees	NO: RSL-902	PAGE: 2
	REVISION: 0	DATE: 5-12-87

4.4 Other Publications

4.4.1 "Training and Qualification of Radiochemical Laboratory Analysts", Laboratory Services Administrative Procedure, LSAP-0005, Radiological Health Staff, Tennessee Valley Authority.

4.4.2 "Establishing a Quality Assurance Program for Analytical Chemistry Laboratories Within the Nuclear Industry", Annual Book of ASTM Standards, Vol. 12, C1009-83.

4.4.3 "Handbook for Analytical Quality Control in Radioanalytical Laboratories", L.G. Kanipe, EPA-600/7-77-088, August 1977.

5.0 REQUIREMENTS

None

6.0 PROCEDURES

6.1 The personnel office shall notify the Q.A. Coordinator within seven days of new employee's report-to-work date. Information shall include:

- Employee's name,
- Job title,
- Date of hire,
- Report-to-work date.

6.2 Q.A. Coordinator shall identify ITAS-RSL & ITAS Quality Assurance Manual sections and/or topics which describe quality-related responsibilities for new employee's job title.

6.3 Q.A. Coordinator shall schedule an orientation session with new employee within fourteen days of his/her report-to-work date.

TITLE: Q.A. Orientation of New Employees	NO: RSI-902	PAGE: 3
	REVISION: 0	DATE: 5-12-87

6.4 During orientation session, the Q.A. Coordinator shall review the following topics with new employee:

- Statement of management position;
- Sections and/or topics describing quality-related responsibilities for job title;
- Nonconformances and corrective action (including 10 CFR 21);
- Data entries and corrections.

6.5 Q.A. Coordinator shall document new employee's orientation session attendance by completing appropriate sections of appendix 10.1, "Quality Assurance Orientation Session Checklist", and have employee sign and date form.

6.6 The Q.A. Coordinator shall check with employee within one month of orientation session date to determine if training was adequate. If training was adequate, indication of this accessment as well as signature and date shall be made on attachment 10.1.

6.7 If further training is needed, Q.A. Coordinator shall perform follow-up training session, document training, sign and date attachment 10.1. New employee shall also sign form.

6.8 Attachment 10.1 shall be maintained as a quality assurance record in employee training file.

7.0 PRECISION AND ACCURACY

None

8.0 QUALITY ASSURANCE PROVISIONS

8.1 Responsibility for Inspection

8.1.1 Compliance to this procedure shall be determined by the ITAS semi-annual systems audit.

8.2 Acceptance Criteria

None

8.3 Material Monitoring

None

TITLE: Q.A. Orientation of New Employees	NO: RSL-902	PAGE: 4
	REVISION: 0	DATE: 5-12-87

8.4 Equipment Monitoring

None

8.5 Certification

None

9.0 CALCULATIONS

None

10.1 APPENDICES

TITLE: Q.A. Orientation of New Employees	NO: RSL-902	PAGE: 5
	REVISION: 0	DATE: 5 12 87

ATTACHMENT 10.1

Quality Assurance Orientation Session Checklist

NAME: _____ DATE OF HIRE: _____

JOB TITLE: _____ REPORT-TO-WORK DATE: _____

Quality Assurance Program Section	Reviewed (X)
• Statement of Management Position	_____
• Nonconformances and Corrective Action (Including 10 CFR 21)	_____
• Data Entries and Corrections	_____
• Quality-related Responsibilities for Job Title: (Section and/or Topic)	
_____	_____
_____	_____
_____	_____

I attended the session covering Q.A. sections and/or topics as described above.

_____ _____
Employee Signature Date

_____ _____
Q.A. Coordinator Signature Date

Recheck on _____ indicates _____ Training was adequate
Date

_____ Further training is needed

_____
Q.A. Coordinator Signature

Follow-up training session covered: _____
_____
_____

_____ _____ _____
Employee Signature Q.A. Coordinator Signature Date

INTERNATIONAL TECHNOLOGY CORPORATION

RADIOLOGICAL SCIENCES LABORATORY

NO.: RSL-903

RADIOANALYTICAL LABORATORY PROCEDURE

TITLE: Material and Equipment Procurement, Receipt, Storage and Control

APPROVED: James T. Harvey DATE: 4-28-87
Laboratory Manager

APPROVED: Paul Matty DATE: 5/4/87
ITAS QA Director

CONCURRED: John A. Cuffin DATE: 4-28-87
RSL Director

COPY NO.: UNCONTROLLED COPY ISSUED:

REVISION: 0				
DATE: 4-21-87				

TITLE: Material and Equipment Procurement, Receipt, Storage and Control	NO: RSL-903	PAGE: 1
	REVISION: 0	DATE: 4-21-87

1.0 PURPOSE

This procedure provides the requirements for the procurement, receipt, storage and control of purchased materials and equipment to assure conformance to quality requirements.

2.0 SCOPE

This procedure applies to the following purchased materials and equipment.

- Chemical reagents, solvents and gases
- Analytical instruments and replacement parts
- Analytical glassware
- Laboratory containers
- Miscellaneous quality-related laboratory materials

3.0 RESPONSIBILITY

3.1 It is the responsibility of the Laboratory Manager to follow this procedure in procuring and controlling quality-related materials and equipment.

3.2 It is the responsibiity of the Material & Equipment Receiving person to follow this procedure during the receipt and storage of quality-related materials and equipment.

3.3 It is the responsibility of the Quality Assurance Coordinator to monitor the procurement and control of quality related materials and equipment for adherence to this procedure and maintain records of documentary evidence of compliance.

4.0 REFERENCES

4.1 Requirements and Specifications

4.1.1 ITAS Quality Assurance Manual.

TITLE: Material and Equipment Procurement, Receipt, Storage and Control	NO: RSL-903	PAGE: 2
	REVISION: 0	DATE: 4-21-87

4.1.2 "Quality Assurance Program Requirements for Nuclear Facilities", ANSI/ASME NOA-1 (latest edition).

4.1.3 ITAS-RSL Quality Assurance Manual, Laboratory Specific.

4.1.4 U.S. Nuclear Regulatory Commission, Regulatory Guide 4.15, Quality Assurance for Radiological Monitoring Programs (Normal Operations) - Effluent Streams and the Environment.

4.2 Standards

None

4.3 Procedures

4.3.1 ITAS/MWL SOP No: MW870129RO-7, "Procurement, Receipt, Storage and Use of Quality Related Purchased Materials".

4.4 Other Publications

4.4.1 "Establishing a Quality Assurance Program for Analytical Chemistry Laboratories Within the Nuclear Industry", Annual Book of ASTM Standards, Vol. 12, C1009-83.

5.0 REQUIREMENTS

5.1 Equipment

None

5.2 Materials

None

5.3 Reagents

None

6.0 PROCEDURE

6.1 Procurement of Quality Related Materials and Equipment

TITLE: Material and Equipment Procurement, Receipt, Storage and Control	NO: RSL-903	PAGE: 3
	REVISION: 0	DATE: 4-21-87

6.1.1 The quality requirements for the procurement of materials and equipment shall be given by the Laboratory Manager in procurement documents for the specific item or in Standard Operating Procedures.

6.1.2 The Laboratory Manager shall perform the following steps in procuring quality-related materials and equipment:

- Identify the quality requirements for the material or equipment as specified in specific item procurement document or the Standard Operating Procedure.
- Identify supplier or vendor. (The supplier is required to provide written quality requirement documentation with materials or equipment, as appropriate. If commercial grade materials or equipment are purchased, catalog numbers referencing the item description in the supplier's catalog is sufficient for documentation.)
- Complete Purchase Requistion form, appendix 10.1, specifying appropriate grades or other quality requirements, as appropriate.
- Submit Purchase Requisition to Accounting Supervisor for approval and ordering.

6.2 Receipt of Quality Related Materials and Equipment

6.2.1 When materials and equipment are received from supplier, the material and equipment receiving person shall perform the following steps:

- Check the items received against procurement documents (e.g., purchase order) and the receiving documents (e.g., packing list, material certificates).
- If an item which is identified on the procurement or receiving documents is missing notify the Laboratory Manager and Accounting Supervisor.
- Check each item for physical damage.
- Check quality requirements specified on procurement documents against that identified on item label and shipping documents.
- Document any deficiencies on a Materials and Equipment Nonconformance Report, (appendix 10.2); submit original to the Quality Assurance Coordinator and a copy to the Laboratory Manager.

- Initial and date shipping document as evidence of acceptance of materials and equipment. (Note on shipping documents any missing or damaged items or quality related deficiencies.)
- Submit original shipping documents to accounting supervisor.
- Maintain copy of shipping documents in receiving files.
- Submit material certificates to Quality Assurance office for filing.

6.3 Storage and Control of Quality-Related Materials and Equipment

6.3.1 The material and equipment receiving person shall store and control quality related materials and equipment by performing the following steps:

- Check labeling of item for quality level. If not displayed, mark item with information.
- Mark receipt date on item when appropriate.
- Rotate stock to assure use of older items first, when appropriate.
- Store materials and equipment per manufacturer's recommendations.
- Remove materials from storage when shelf life has expired as appropriate.

7.0 PRECISION AND ACCURACY

None

8.0 QUALITY ASSURANCE PROVISIONS

8.1 Responsibility for Inspection

8.1.1 The Quality Assurance Coordinator shall perform periodic surveillances and audits to determine compliance with this procedure by laboratory personnel.

TITLE: Material and Equipment Procurement, Receipt, Storage and Control	NO: RSL-903	PAGE: 5
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8.2 Acceptance Criteria

None

8.3 Material Monitoring

As noted in section 8.1

8.4 Equipment Monitoring

As noted in section 8.1

8.5 Certification

None

9.0 CALCULATIONS

None

10.0 APPENDICES

TITLE: Material and Equipment Procurement, Receipt, Storage and Control	NO: RSL-903	PAGE: 6
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APPENDIX 10.1

REQUESTOR MUST FILL IN SHADED AREAS ONLY.

PLEASE PRINT HARD

INTERNATIONAL TECHNOLOGY CORPORATION

PURCHASE REQUISITION

NO. 101828

P.O. NO.	VENDOR NO.			
VENDOR NAME	VENDOR ADDRESS	CITY AND STATE	ZIP CODE	VENDOR PHONE NO.
SHIP TO	ATTENTION	ADDRESS	CITY & STATE	ZIP CODE
REQUESTED BY	REQUISITION DATE	REQUESTOR PHONE NO.	REQUESTED DELIV. DATE	DATE ORDERED
		CONFIRMING TO	CONFIRMATION ☐ YES ☐ NO	DATE PROMISED
BUYERS I.D.	F.O.B.	TERMS	SHIP VIA	ORIG. BAY REGION
			BILLABLE ITEM ☐ YES ☐ NO	

LINE ITEM	PART NO	U/M	DESCRIPTION	QUANTITY	UNIT PRICE	PHASE	TASK	SUB TASK	PRODUCT G.L. NO.	EXTENDED

AUTHORIZED SIGNATURE	REMARKS	SUBTOTAL	
BUYER SIGNATURE		TAX (%)	
		FREIGHT	
		TOTAL	

THIS IS NOT A PURCHASE ORDER

PURCHASING

TITLE: Material and Equipment Procurement, Receipt, Storage and Control	NO: RSL-903	PAGE: 7
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APPENDIX 10.2

MATERIALS AND EQUIPMENT NON-CONFORMANCE REPORT

Item:_____ Vendor:_____

Description:_____ Purchase Order No.:_____

Receiving Date:_____

Non-Conformance Description:_____

_____

_____

_____

_____

_____

Corrective Action Taken: _____

_____

_____

_____

_____

_____

_____

_____
Signature/Materials & Equipment Receiving Person

INTERNATIONAL TECHNOLOGY CORPORATION

RADIOLOGICAL SCIENCES LABORATORY

NO.: RSL-904

RADIOANALYTICAL LABORATORY PROCEDURE

TITLE: Reporting of Defects and Noncompliances per 10 CFR 21

APPROVED: James T. Harvey DATE: 8-20-87
Laboratory Manager

APPROVED: Paul Mills DATE: 8-24-87
ITAS QA Director

CONCURRENT: John A. Auxier DATE: 8-24-87
RSL Director

COPY NO.: UNCONTROLLED ISSUED: COPY

REVISION: 0				
DATE: 7-29-87				

TITLE: Reporting of Defects and Noncompliances per 10 CFR 21	NO: RSL-904	PAGE: 1
	REVISION: 0	DATE7-29-87

1.0 PURPOSE

This procedure provides the method used to report defects and noncompliances per the requirements of 10CFR21 and establishes associated responsibilities.

2.0 SCOPE

This procedure applies to any condition within the IT/RSL scope of work which appears to be a failure to comply with regulatory requirements by IT/RSL which could result in a substantial safety hazard. In addition, any condition as described above which is identified while performing work for any NRC licensed facility is reportable by this procedure.

3.0 RESPONSIBILITY

3.1 It is the responsibility of the Quality Assurance Coordinator to instruct all employees on the requirements of reporting defects and noncompliances per 10CFR21 during the quality assurance orientation of new employees (RSL-902).

3.2 It is the responsibility of the QA Coordinator to post in a conspicuous location(s) Section 206 of the Energy Reorganization Act of 1974 (Appendix 10.1) and a notice which describes the regulations/procedure for reporting defects and noncompliances (Appendix 10.2). The QA Coordinator shall maintain a copy of the full text of Regulation 10CFR21 in the QA office.

3.3 It is the responsibility of each employee to follow this procedure when he/she is aware of any condition which he/she perceives to be a defect or noncompliance per 10CFR21.

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	REVISION: 0	DATE: 7-29-87

3.4 It is the responsibility of the Laboratory Director or a designated representative to inform the customer or the Nuclear Regulatory Commission, as applicable, of the possible defect or noncompliance verbally within 24 hours and in writing within five days of its identification.

4.0 REFERENCE

4.1 Requirements and Specifications

4.1.1 ITAS-RSL Quality Assurance Manual, Laboratory Specific Attachment.

4.1.2 U.S. Nuclear Regulatory Commission, 10CFR21, Reporting of Defects and Noncompliance

4.1.3 Section 206, Energy Reorganization Act of 1974

4.2 Standards

None

4.3 Procedures

None

4.4 Other Publications

None

5.0 REQUIREMENTS

None

TITLE: Reporting of Defects and Noncompliances per 10 CFR 21	NO: RSL-904	PAGE: 3
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6.0 PROCEDURE

6.1 When a condition is identified which is perceived to be a potential defect or noncompliance as defined in 10CFR21, complete the "Notice of Anomaly" form (Appendix 10.3) by:

* Entering all available information including:
  - Date (if applicable)
  - Customer
  - Date of anomaly
  - Category
  - Sample identification (if applicable)
  - Requirements
  - Description of anomaly
* Submitting "Notice of Anomaly" form to the Laboratory Manager.

6.2 The Laboratory Manager shall perform the following steps after receiving "Notice of Anomaly" form:

* Review information on form.
* Enter any additional pertinent information such as customer contract number or purchase order number.
* Sign and date Verification section.
* Submit "Notice of Anomaly" form to the Laboratory Director, or his designee.

6.3 After receiving the "Notice of Anomaly" form, the Laboratory Director, or his designee, shall perform the following steps:

* Review for completeness.
* Review the description of the anomaly and the requirements or specifications as related to that category.
* Determine if available information reasonably indicates a defect or nonconformance per 10CFR21.
* Sign and date Verification section.

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*If defect or noncompliance is the result of IT/RSL's failure to comply with regulatory requirements:

- Verbally inform Nuclear Regulatory Commission of the possible defect or noncompliance within twenty-four (24) hours of its identification and document notification on "Notice of Anomaly".

- Issue a written report to the Nuclear Regulatory Commission of the possible defect or noncompliance within five days of its identification.

* If defect or noncompliance is the result of services provided by IT/RSL to an NRC licensed facility:

- Verbally inform the customer of the possible defect or nonconformance within twenty-four (24) hours of its identification and document notification on "Notice of Anomaly".

- Issue a written report to the customer of the possible defect or nonconformance within five days of its identification.

7.0 PRECISION AND ACCURACY

None

8.0 QUALITY ASSURANCE PROVISIONS

8.1 Responsibility for Inspection

8.1.1 The ITAS semi-annual systems audit shall determine compliance to applicable sections of this procedure by the Laboratory Director, or his designee.

8.1.2 The Quality Assurance Coordinator shall perform periodic surveillances to determine compliance to this procedure by laboratory personnel.

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8.2 Acceptance Criteria

8.2.1 The following sections of this procedure contain acceptance criteria:

6.3 Time requirements for NRC/customer notification.

8.3 Material Monitoring

None

8.4 Equipment Monitoring

None

8.5 Certification

None

9.0 CALCULATIONS

None

10.0 APPENDICES

TITLE: Reporting of Defects and Noncompliances per 10 CFR 21	NO: RSL-904	PAGE: 6
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Appendix 10.1

Federal Law Concerning the Reporting of NONCOMPLIANCES AND DEFECTS in Products/Services Subject to Regulation by the NUCLEAR REGULATORY COMMISSION

Section 206 of the Energy Reorganization Act of 1974, as amended, is as follows:

(a) Any individual director, or responsible officer of a firm constructing, owning, operating, or supplying the components of any facility or activity which is licensed or otherwise regulated pursuant to the Atomic Energy Act of 1954, as amended, or pursuant to this Act, who obtains information reasonably indicating that such facility or activity or basic components supplied to such facility or activity --

(1) Fails to comply with the Atomic Energy Act of 1954, as amended, or any applicable rule, regulation, order, or license of the Commission relating to substantial safety hazards, or

(2) Contains a defect which could create a substantial safety hazard, as defined by regulations which the Commission shall promulgate, shall immediately notify the Commission of such failure to comply, or of such defect, unless such person has actual knowledge that the Commission has been adequately informed of such defect or failure to comply.

(b) Any person* who knowingly and consciously fails to provide the notice required by subsection (a) of this section shall be subject to a civil penalty in an amount equal to the amount provided by section 234 of the Atomic Energy Act of 1954, as amended.

(c) The requirements of this section shall be prominently posted on the premises of any facility licensed or otherwise regulated pursuant to the Atomic Energy Act of 1954, as amended.

(d) The Commission is authorized to conduct such reasonable inspections and other enforcement activities as needed to insure compliance with the provisions of this section.

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Regulation 10CFR21 for implementing the foregoing requirement of the law was promulgated by the Nuclear Regulatory Commission on June 6, 1977. This regulation sets forth the kinds of non-compliance or defect situations which suppliers must report to the Commission, and requires suppliers to institute various measures in order that the Commission can effectively enforce the reporting requirement.

One such requirement is that each supplier subject to the regulation must establish a Procedure for dealing with deviations, and for informing its responsible officer of any resulting defect or failure to comply.

A copy of the full text of Regulation 10CFR21, and of the Procedure to be followed in this facility pursuant thereto, is available for examination by any employee in the office of the _____, Bldg._____, Room_____.

ANY EMPLOYEE WHO HAS REASON TO BELIEVE THAT GOODS OR SERVICES SUBJECT TO REGULATION BY THE NUCLEAR REGULATORY COMMISSION HAVE BEEN DELIVERED FROM THIS FACILITY WHICH ARE NONCOMPLIANT OR DEFECTIVE, AS DEFINED IN SECTION 206 ABOVE, OR REGULATION 10CFR21, IS HEREBY INSTRUCTED TO SO INFORM HIS IMMEDIATE SUPERVISOR OR MANAGER.

* "Any person" in this paragraph refers to the director or responsible officer identified in Paragraph (a).

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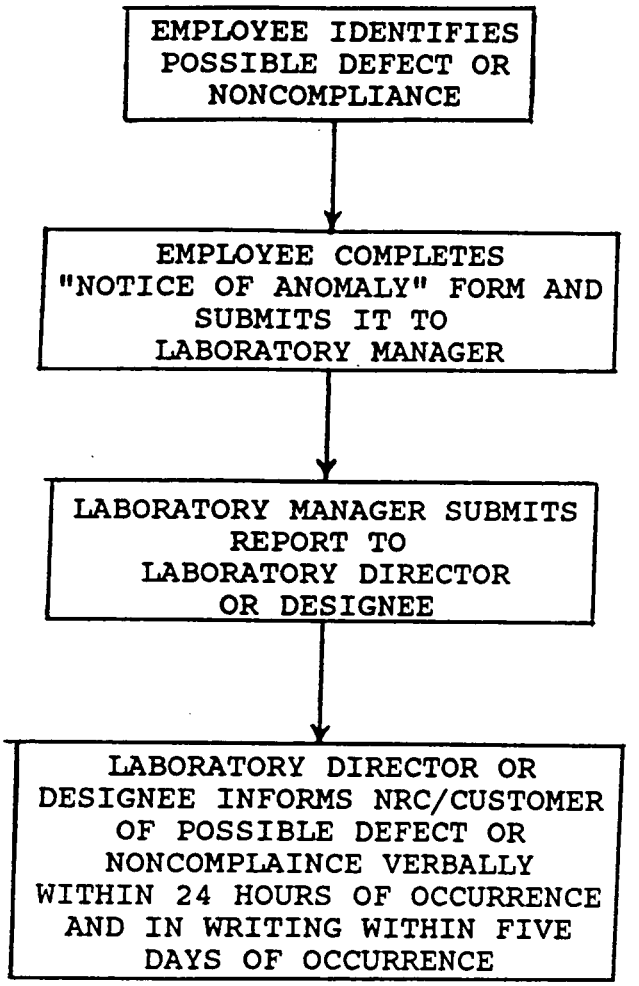
Appendix 10.2

PROCEDURE FOR REPORTING OF DEFECTS AND NONCOMPLIANCES PER 10 CFR PART 21



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Appendix 10.3

NOTICE OF ANOMALY DATE:

NOTICE NO: _____ P.O. NO: _____ CONTRACT NO: _____

CUSTOMER: _____ JOB NO: _____

NOTIFICATION MADE TO: _____ NOTIFICATION DATE: _____

NOTIFICATION MADE BY: _____ VIA: _____

CATEGORY:

____SPECIMEN _____PROCEDURE _____TEST EQUIPMENT DATE OF ANOMALY_____

SAMPLE: _____ SAMPLE NO: _____

TEST: _____ I.D. NO: _____

SPECIFICATION: _____ PARA NO: _____

REQUIREMENTS:

DESCRIPTION OF ANOMALY:

DISPOSITION - COMMENTS - RECOMMENDATIONS

EMPLOYEE SIGNATURE: _____

VERIFIED BY:

LABORATORY MANAGER: _____

LABORATORY DIRECTOR: _____

INTERNATIONAL TECHNOLOGY CORPORATION

RADIOLOGICAL SCIENCES LABORATORY

NO.: RSL-1001

RADIOANALYTICAL LABORATORY PROCEDURE

TITLE: Sample Receiving

APPROVED: James T. Harvey DATE: 4-28-87
Laboratory Manager

APPROVED: Paul Mills DATE: 5/1/87
ITAS QA Director

CONCURRED: John A. Auxier DATE: 4-28-87
RSL Director

COPY NO.: ____ ISSUED: UNCONTROLLED COPY

REVISION: 0				
DATE: 4-21-87				

PROCEDURE DEVELOPMENT/CHANGE

Supplement to existing procedure? Yes (X) No ( )
If yes enter paragraph number to reference insertion point 6.4.3, 6.4.6

Procedure Title & Number (if exists) RSL-1001.2(0)

SAMPLE RECEIVING

Description of experiment or method CORRECT IDENTIFIED DISCREPANCY

IN NCR No. 87-22 AND CLARIFY PROCEDURE

Issue of RSL-1001.R1

Time Period - From: 8/28/87 To: ~~/ /~~ Samples Affected: All from 8-28-87

Procedure: (Test Eqpt., Data Recorded, Problems, Steps Used, etc.) DATE

8-28-87

6.4.3 A container of each sample should be provided by the customer for the additional sample screening required for mixed waste samples. These samples shall be treated as radiological samples and logged into the sample tracking system to be counted for gross alpha ~~and~~ gross beta, and other requested analyses.

6.4.6 After the screening has been completed, a designated RSL health physicist shall review the data and classify the sample per procedure RSL-~~1006~~ 1002. A "Mixed Waste Sample Screening" form shall be completed, signed, and submitted to the MWL Manager, or his designee. A copy shall be retained in the project file, routed to the RSL sample custodian then

3225

Submitted by: James M. Dallas

Approved by: James T. Harvey, Laboratory Manager

Approved by: John R. Fraga, Laboratory Director

Approved by: Cheryl D. Bruce, QA/QC/Director, ITAS

000140

PROCEDURE DEVELOPMENT/CHANGE

Supplement to existing procedure: Yes (X) No ( )

If yes, enter paragraph number to reference insertion point:
5.3, 6.1.4, 6.1.5

Procedure Title & Number (If exists): Sample Receiving RSL-1001-R1

Description of experiment or method: Add smear counting capability for Tritium (H-3) samples

RSL-1001-R1

Time Period From: 11/3/87 To: __/__/__ Samples Affected: All from 11/3/87

Procedure:

(Test Eqpt., Data Recorded, Problems, Steps Used, etc.) DATE

5.3 Liquid scintillation counter for Tritium (H-3) counting.

5.4 Numbered smears for alpha or beta/gamma counting.

5.5 Poly-foam smears for Tritium (H-3) counting.

5.6 Liquid scintillation vials using the smears listed in 5.4 and 5.5, as necessary.

6.1.4 Smear thoroughly the incoming sample shipment, being sure to include all samples in the shipment, to determine if there is removable surface contamination. Place the foam smears in separate liquid scintillation vials and label the lids of the vials for identification purposes. Place a clean foam smear in two separate liquid scintillation vials, label the vials as background samples.

6.1.5 Count each alpha and beta/gamma smear for five minutes. (Be sure that the smeared side is facing up. Deliver the foam smears, in the Liquid Scintillation vials, to the counting lab, for counting. Activity levels which are acceptable in the laboratory are $\leq$5 cpm alpha, $\leq$25 cpm for beta/gamma, and $<$50 cpm for Tritium (H-3).

3265

Submitted by: Steven D. Rieker

Approved by: James T. Harvey, Laboratory Manager

Approved by: John A. Cooper, Laboratory Director

Approved by: Paul Mac, QA/QC/Director, ITAS

TITLE: Sample Receiving	NO: RSL-1001	PAGE: 1
	REVISION: 0	DATE: 4-21-87

1.0 PURPOSE

This procedure specifies the required activities for receiving samples at IT/Radiological Sciences Laboratory to ensure compliance with applicable industry standards, licenses, quality requirements, and customers' specifications.

2.0 SCOPE

The procedure applies to all samples received at IT/RSL.

3.0 RESPONSIBILITY

3.1 It is the responsibility of the Laboratory Manager, or his designee, to ensure that this procedure is followed during the receipt of all samples.

3.2 It is the responsibility of the Laboratory Manager, or his designee, to delegate the performance of these activities to personnel experienced with this procedure and with the equipment required for the implementation of this procedure.

3.3 It is the responsibility of the assigned personnel to follow this procedure and report any discrepancies or nonconformances found with in-coming samples or associated paperwork to the laboratory manager or his designee.

4.0 REFERENCES

4.1 ITAS Quality Assurance Manual.

4.2 ITAS-RSL Quality Assurance Manual, Laboratory Specific Attachment

4.3 U.S. Nuclear Regulatory Commission, Regulatory Guide 4.15, Quality Assurance for Radiological Monitoring Programs (Normal Operations) - Effluent Streams and the Environment.

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5.0 REQUIREMENTS

5.1 Scintillation survey meter

5.2 Ludlum Scalers, Model 1000 and 2000 or equal, with probe Model 43-10 for alpha particle counting and probe Model 44-40 for beta/gamma counting

6.0 PROCEDURE

6.1 Sample Screening

6.1.1 Receive all sample shipments at the designated receiving area and inspect each shipping container for damage.

6.1.2 Remove samples from shipping container and inspect for spillage, breakage or other damage which might affect sample integrity. If such damage has occurred, place sample into a plastic bag or a clean container. Complete a nonconformance form and notify the Laboratory Manager immediately.

6.1.3 Survey each sample with a scintillation survey meter to determine exposure rate and enter the reading into the sample receiving logbook along with the customer name, sample description, sample condition, date and initial. Only samples with an exposure rate less than or equal to 1 mr/hr shall be accepted into the laboratory unrestricted. Samples with readings higher than 1 mr/hr must be stored in the radioactive waste storage area until disposal or return to customer. Aliquots of these samples may be diluted and analyzed as routine samples if the exposure rate of the aliquot meets the stated requirement.

6.1.4 Smear thoroughly the incoming sample shipment, being sure to include all samples in the shipment, to determine if there is removable surface contamination.

6.1.5 Count each smear for five minutes. (Be sure that the smeared side is facing up.) Activity levels which are acceptable in the laboratory are <5 cpm alpha and <25 cpm for beta/gamma.

6.1.6 If either count is higher than acceptable, decontaminate the sample containers by cleaning with a wet soapy cloth. Dry sample with clean cloth, re-smear and count. If re-smear count continues to be above the acceptable limits, repeat process until acceptable limits are reached. Enter each smear count into the appropriate logbook.

6.1.7 When screening is completed, place samples in appropriate storage facilities for analyses requested. Hold times and required storage are listed on appendix 10.1 for typical samples and analyses. The Laboratory Manager shall be notified of any sample which is not covered by this table and shall provide storage instructions for such samples.

6.2 Chain of Custody

6.2.1 Compare sample information provided on the chain of custody which is received with the sample shipment to the actual samples received. Samples received from other IT personnel must have a properly completed chain of custody or the samples shall not be accepted. The approved IT chain of custody form is provided in appendix 10.2.

6.2.2 Note on the chain of custody the condition of the samples received. Identify any damaged or missing samples. Sign and date the chain of custody.

6.2.3 If samples are delivered via commercial carrier, attach the waybill to the chain of custody.

6.2.4 Submit the completed chain of custody to the QA office to be filed in the project file. If the samples are to be screened for radiation and then released to another section of ITAS for analysis, enter the IT/RSL laboratory number onto the completed chain of custody, copy and submit the copy for filing in the project file.

6.2.5 If a chain of custody is not received with a sample(s), complete an IT chain of custody form before transferring the sample to another laboratory. Sign and date the designated section of the chain of custody for relinquishing the samples.

6.3 Sample Log-In

6.3.1 Check paperwork received with samples to be sure that the required analyses are clearly defined. Samples received from other sections of IT Corporation must be accompanied by a completed request for analysis form (as shown in appendix 10.3) or samples must be held until proper documentation is received. If any sample is received without proper documentation, tag sample with a "hold" tag and notify the customer services representative. Samples will be processed when appropriate documentation is received.

6.3.2 Log all properly documented samples received for radiological analysis into the computer software for Sample and Analysis Management (SAM). Enter sample information and testing requirements into the appropriate fields.

6.3.3 The computer will assign a work order to each group of samples received from a customer at one time. Each work order will be seven digits long and will be in a xx-xx-xxx format. The first digit will be the letter "R" to indicate RSL. The second digit indicates the last numeral of the year in which the sample is received (i.e., R6 for RSL, 1986). The second set of digits indicate the month in which the sample is received (i.e., 05 for May). The last three digits are assigned in numerical order beginning at the first of each month (i.e., 031 for the thirty first set received during that month). Each sample is then given a "dash" number that identifies each sample uniquely. This number is also assigned in numerical order as the individual sample is logged in (i.e., 02 for the second sample of the group). Use the work order and dash number assigned by the computer program together as the laboratory number to identify each individual sample. Label the sample container with this assigned laboratory number (i.e., R605031-02 for a sample received May, 1986 which was the thirty first group received and the second sample of the group.)

6.3.4 Generate a laboratory work sheet, with all pertinent sample information, for each distinct analysis to be performed. Place the laboratory work sheet in the appropriate work-pending file in the laboratory.

6.3.5 File the paperwork received with samples in the corresponding project file.

6.4 Mixed Waste Samples

6.4.1 When samples are received for the mixed waste laboratory, the MWL Manager, or his designee, shall be notified to determine if samples are expected and should be accepted.

6.4.2 When approval for the acceptance is received from the MWL Manager, or his designee, normal receiving activities shall be performed as described in section 6.1 and 6.2 of this procedure.

6.4.3 A container of each sample should be provided by the customer for the additional sample screening required for mixed waste samples. These samples shall be treated as radiological samples and logged into the sample tracking system to be counted for gross alpha and gross beta.

6.4.4 The unopened container of the sample received shall be transferred to the MWL for storage. The original of the chain of custody and all paperwork associated with samples should be given to the MWL Manager or his designee along with the samples. A copy of the chain of custody and request for analysis shall be retained in RSL project files.

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6.4.5 When a sample shipment is received in which some samples are for the MWL, only to be screened by RSL, and others are for analytical work by RSL, the original paperwork shall be filed in the RSL project files. A new chain of custody form shall be completed for only those samples to be transferred to MWL. The new chain of custody form should reference the original form's number. A copy of the request for analysis shall be made and sent with the chain of custody and samples to the MWL.

6.4.6 After the screening has been completed, a designated RSL health physicist shall review the data and classify the sample per procedure RSL-1006. A "Mixed Waste Sample Screening" form shall be completed, signed, and submitted to the MWL Manager, or his designee.. A copy shall be retained in the project file.

7.0 PRECISION AND ACCURACY

None

8.0 QUALITY ASSURANCE

8.1 Responsibility for Inspection

8.1.1 The Quality Assurance staff shall perform periodic surveillances and audits to determine compliance to this procedure by laboratory personnel.

8.2 Acceptance Criteria

8.2.1 The following sections of this procedure contain acceptance criteria:

6.1.2 Sample condition on receipt

6.1.3 Survey reading limit

6.1.4 Sample smear activity limits

8.3 Material Monitoring

None

8.4 Equipment Monitoring

8.4.1 Counting instruments shall be calibrated prior to use.

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8.5 Certification

None

9.0 CALCULATIONS

None

10.0 APPENDICES

APPENDIX 10.1

SAMPLING AND PRESERVATION REQUIREMENTS

PARAMETER	CONTAINER(a)	VOLUME REQUIRED(mL)	PRESERVATION(b)	MAXIMUM HOLDING TIMES(C)
Inorganic Tests				
Acidity	P,G	50	Cool 4°C	14 days
Alkalinity	P,G	50	Cool 4°C	14 days
Ammonia	P,G	100	Cool 4°C, H_2SO_4 to pH<2	28 days
Biochemical Oxygen Demand	P,G	1,000	Cool 4°C	48 hours
Bromide	P,G	200	None Required	28 days
Chemical Oxygen Demand	P,G	75	Cool 4°C, H_2SO_4 to pH<2	28 days
Chloride	P,G	50	None Required	28 days
Chlorine, Total Residual	P,G	200	None Required	Analyze Immediately
Color	P,G	50	Cool 4°C	48 hours
Cyanide, Total and Amenable to Chlorination	P,G	1,500	Cool 4°C, NaOH to pH>12, 0.6g ascorbic acid(d)	14 days
Fluoride	P	300	None Required	28 days
Hardness	P,G	100	HNO_3 to pH<2, H_2SO_4 to pH<2	6 months
Hydrogen Ion (pH)	P,G	25	None Required	Analyze Immediately
Kjeldahl and Organic Nitrogen	P,G	500	Cool 4°C, H_2SO_4 to pH<2	28 days

APPENDIX 10.1
Continued

PARAMETER	CONTAINER(a)	VOLUME REQUIRED(mL)	PRESERVATION(b)	MAXIMUM HOLDING TIMES(c)
Metals				
Chromium VI	P,G	50	Cool 4°C	24 hours
Mercury	P,G	100	HNO_3 to pH<2	28 days
Metals, Except Chromium VI and Mercury	P,G	200	HNO_3 to pH<2	6 months
Nitrate	P,G	100	Cool 4°C	48 hours
Nitrate-Nitrite	P,G	100	Cool 4°C, H_2SO_4 to pH<2	28 days
Nitrite	P,G	50	Cool 4°C	48 hours
Oil and Grease	G	1,000	Cool 4°C, H_2SO_4 to pH<2	28 days
Organic Carbon	P,G	25	Cool 4°C, HCl or H_2SO_4 to pH<2	28 days
Orthophosphate	P,G	50	Filter Immediatley, Cool 4°C	48 hours
Oxygen, Dissolved Probe	G bottle and top	300	None Required	Analyze Immediately
Phenols	G	500	Cool 4°C, H_2SO_4 to pH<2	28 days
Residue, Total	P,G	100	Cool 4°C	7 days
Residue, Nonfilterable	P,G	250	Cool 4°C	7 days

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APPENDIX 10.1
Continued

PARAMETER	CONTAINER(a)	VOLUME REQUIRED(mL)	PRESERVATION(b)	MAXIMUM HOLDING TIMES(c)
Metals (continued)				
Residue, Settleable	P,G	1,000	Cool 4°C	48 hours
Residue, Volatile	P,G	100	Cool 4°C	7 days
Silica	P	50	Cool 4°C	28 days
Specific Conductance	P,G	100	Cool 4°C	28 days
Sulfate	P,G	100	Cool 4°C	28 days
Sulfide	P,G	500	Cool 4°C, add zinc acetate plus sodium hydroxide to pH>9	7 days
Sulfite	P,G	50	None Required	Analyze Immediately
Temperature	P,G	1,000	None Required	Analyze Immediately
Turbidity	P,G	100	Cool 4°C	48 hours
Organic Tests				
Purgeable Halocarbons	G, Teflon-lined septum	40	Cool 4°C, 0.008% $Na_2S_2O_3$(d)	14 days
Purgeable Aromatic Hydrocarbons	G, Teflon-lined septum	40	Cool 4°C, 0.008% $Na_2S_2O_3$(d) HCl to pH 2	14 days
Acrolein and Acrylonitrile	G, Teflon-lined septum	40	Cool 4°C, 0.008% $Na_2S_2O_3$(d) adjust pH to 4-5	14 days

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APPENDIX 10.1
Continued

PARAMETER	CONTAINER(a)	VOLUME REQUIRED(mL)	PRESERVATION(b)	MAXIMUM HOLDING TIMES(c)
Organic Tests(continued)				
Phenols	G, Teflon-lined cap	1,000	Cool 4°C, 0.008% $Na_2S_2O_3$(d)	7 days until extraction 40 days after extraction
Benzidines	G, Teflon-lined cap	1,000	Cool 4°C, 0.008% $Na_2S_2O_3$(d)	7 days until extraction 7 days after extraction (oxidant-free atmosphere)
Phthalate Esters	G, Teflon-lined cap	1,000	Cool 4°C	7 days until extraction 40 days after extraction
Nitrosamines	G, Teflon-lined cap	1,000	Cool 4°C, store in dark, 0.008% $Na_2S_2O_3$(d)	7 days until extraction 40 days after extraction
PCBs	G, Teflon-lined cap	1,000	Cool 4°C	7 days until extraction 40 days after extraction
Nitroaromatics and Isophorone	G, Teflon-lined cap	1,000	Cool 4°C, store in dark, 0.008% $Na_2S_2O_3$(d)	7 days until extraction 40 days after extraction
Polynuclear Aromatic Hydrocarbons	G, Teflon-lined cap	1,000	Cool 4°C, 0.008% $Na_2S_2O_3$	7 days until extraction 40 days after extraction
Haloethers	G, Teflon-lined cap	1,000	Cool 4°C, 0.008% $Na_2S_2O_3$	7 days until extraction 40 days after extraction
Chlorinated Hydrocarbons	G, Teflon-lined cap	1,000	Cool 4°C	7 days until extraction 40 days after extraction
TCDD	G, Teflon-lined cap	1,000	Cool 4°C, 0.008% $Na_2S_2O_3$	7 days until extraction 40 days after extraction
Pesticides				
Pesticides	G, Teflon-lined cap	1,000	Cool 4°C, pH 5-9	7 days until extraction 40 days after extraction

APPENDIX 10.1
Continued

EPA METHOD Liquids	MINIMUM VOLUME REQUIRED (mL)	CONTAINER	PRESERVATIVE	MAXIMUM HOLDING TIME	COMMENTS
601	40	G	Cool 4°C	14 days	*
602	40	G	Cool 4°C	14 days	*
603	40	G	Cool 4°C Adjust pH to 4-5 Dilute sulfuric acid.	14 days,	*
604	1,000	G	Cool 4°C	Analyze by 40 days Extract by 7 days	*
605	1,000	G	Cool 4°C	Analyze by 14 days Extract by 7 days	*
606	1,000	G	Cool 4°C	Extract by 7 days Analyze by 40 days	*
607	1,000	G	Cool 4°C	Analyze by 40 days Extract by 7 days	*
608	1,000	G	Cool 4°C	Analyze by 40 days Extract by 7 days	*
609	1,000	G	Cool 4°C	Analyze by 40 days Extract by 7 days	*
610	1,000	G	Cool 4°C	Analyze by 40 days Extract by 7 days	*
611	1,000	G	Cool 4°C	Analyze by 40 days Extract by 7 days	*
612	1,000	G	Cool 4°C	Analyze by 40 days Extract by 7 days	*
613	1,000	G	Cool 4°C	Analyze by 40 days Extract by 7 days	*
614	1,000	G	Cool 4°C	Extract within 7 days Analyze within 40 days	*
615	1,000	G	Cool 4°C	Extract within 7 days Analyze within 40 days	*
624	40	G	Cool 4°C	Analyze by 14 days	*
625	1,000	G	Cool 4°C	Analyze by 40 days Extract by 7 days	•

For chlorinated waste, immediately add 35mg sodium thiosulfate per ppm of free chlorine per liter.

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APPENDIX 10.1
Continued

METHOD	MINIMUM VOLUME REQUIRED(mL)	CONTAINER	PRESERVATIVE	MAXIMUM HOLDING TIME	COMMENTS
Solids and Liquids					
8010 Halogenated	25	G	4°C	Analyze by 14 days	*
8015 Nonhalogenated	25	G	4°C	Analyze by 14 days	*
8020 Aromatics	25	G	Adjust pH <2 with Hydrochloric acid	Analyze by 14 days	*
8030 Acrolein Acrylonitrile Acetonitrile	25	G	4°C	Analyze by 14 days	*
8040 Phenols	25	G	4°C Adjust pH -2 with H_2SO_4 or NaOH	Extract by 7 days, Analyze by 30 days	*
8060 Phthalate Esters	25	G	4°C	Extract by 7 days Analyze within 30 days	*
8080 Organochlorine Pesticides PCB's	25	G	4°C	Extract by 7 days Analyze within 30 days	*
8090 Nitroaromatics Cyclic Ketones	25	G	4°C	Extract by 7 days Analyze within 30 days	*
8100 Polynuclear Aromatic Hydrocarbons	25	G	4°C	Extract by 7 days Analyze by 30 days	*
8120 Chlorinated Hydrocarbons	25	G	4°C	Extract by 7 days Analyze by 30 days	*
8140 Organophosphorus Pesticides	25	G	4°C	Extract by 48 hours Analyze by 14 days	*

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APPENDIX 10.1
Contined

METHOD	MINIMUM VOLUME REQUIRED(mL)	CONTAINER	PRESERVATIVE	MAXIMUM HOLDING TIME	COMMENTS
Solids and Liquids					
8150 Chlorinated Herbicides	25	G	4°C	Extract by 7 days Analyze by 30 days	*
8240 Volatile Organics	25	G, Teflon screw cap	4°C	Extract by 7 days Analyze by 14 days	
8250 Semivolatile Organics	25	G, Teflon screw cap	4°C	Extract by 14 days Analyze by 40 days	
8270 Semivolatile Organics	25	G, Teflon screw cap	4°C	Extract by 14 days Analyze by 30 days	
9020 Total Organic Halides (TOH)	250	Teflon septa protected from light with Teflon, Teflon screw cap	4°C	Not specified	

NOTE: *Do not prewash bottle with samples

REFERENCE: This table includes the requirements of the U.S. Environmental Protection Agency, as published in the Code of Federal Regulations, Volume 49, Number 209, 40CFR 136, dated October 26, 1984, page 43260.

APPENDIX 10.1
Continued

TABLE K5-1 (continued)

(a) Polyethylene (P) or glass (G).

(b) Sample preservation should by performed immediately upon sample collection. For composite chemical samples, each aliquot should be preserved at the time of collection. When use of an automatic sampler makes it impossible to preserve each aliquot, then chemical samples may be preserved by maintaining at 4°C until compositing and sample splitting are completed.

(c) Samples should be analyzed as soon as possible after collection. The times listed are maximum times that samples may be held before analysis and still be considered valid. Samples may be held for longer periods only if permittee, or monitoring laboratory, has data on file to show that the specific types of samples under study are stable for the longer time. Some samples may not be stable for the maximum time period given in the table. A permittee, or monitoring laboratory, is obligated to hold the sample for a shorter period if knowledge exists to show this is necessary to maintain sample stability.

(d) Should only be used in the presence of residual chlorine.

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APPENDIX 10.2
Continued

INTERNATIONAL TECHNOLOGY CORPORATION

CHAIN-OF-CUSTODY RECORD

R/A Control No. _____

C/C Control No. 39854

000156

PROJECT NAME/NUMBER _____ LAB DESTINATION _____

SAMPLE TEAM MEMBERS _____ CARRIER/WAYBILL NO. _____

Sample Number	Sample Location and Description	Date and Time Collected	Sample Type	Container Type	Condition on Receipt (Name and Date)	Disposal Record No.

Special Instructions: _____

Possible Sample Hazards: _____

SIGNATURES: (Name, Company, Date and Time)

1. Relinquished By: _____ 3. Relinquished By: _____

Received By: _____ Received by: _____

2. Relinquished By: _____ 4. Relinquished By: _____

Received By: _____ Received By: _____

WHITE - To accompany samples
YELLOW - Field copy

430-1-87

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APPENDIX 10.2
Continued

INSTRUCTIONS FOR COMPLETING CHAIN-OF-CUSTODY RECORD

The Chain-of-Custody record must be accurately completed and the original must accompany the sample(s). When sending samples to the laboratory, a Request for Analysis form must also be submitted.

R/A Control No.: Record the printed control number from th top right corner of the Request for Analysis form, *if you are sending* these samples to the laboratory.

Project Name/Number: Record the name of the project or client/site location, and the billing number of the project. (Example - 613215: X, Y, Z Chemical Co., WA)

Sample Team Members: List the names of *all* the members of the team taking these samples; team leader's name first.

Lab Destination: Indicate to which laboratory you are sending the samples. Do not list more than one lab on a single chain-of-custody record. Be certain before sending the samples that the laboratory you are designating is aware of the shipment.

Carrier/Waybill No.: If you are sending these samples by a commercial carrier such as Airborne or Federal Express, record the courier company name and the waybill or airbill number under which these samples will be shipped. (Example - Federal Express/#513631771)

Sample Number: List the complete identifying number of each of the samples you are sending. These numbers must correspond with the identifying labels on the sample containers.

Sample Location and Description: Briefly record where the sample was taken and provide a short physical description of the sample. Draw a sketch on the Sample Collection Log if necessary.

Date and Time Collected: Record date and exact time each sample was collected. Use a 24 hour clock; i.e. 1645 not 4:45 p.m.

Sample Type: Indicate the sample type such as soil,, sediment, sludge, water, wipe, air, or bulk.

Container Type: Indicate the volume, color, and type of the sample container used. (Examples - 1 gallon amber glass, 1 liter clear plastic, 40 ml clear glass)

Condition on Receipt: Before a custody transfer, the intended recipient should verify all samples are present and in good condition. This column may be used by the recipient to record any abnormalities found at the time of the transfer. (Examples - jar lid cracked, sample label torn)

Special Instructions: Use this space to record any special instructions to the laboratory regarding the processing of these samples. Leave blank if there are no special instructions.

Possible Sample Hazards: Indicate if the samples are suspected to contain high concentrations of any hazardous materials, or if they may pose other hazards. If you are unaware of any possible hazards, leave this line blank.

Signatures: When releasing custody of these samples, use the "Relinquished By" space to sign your full name, company name, date, and time of release. After verifying that all samples indicated are present, the person receiving the samples must sign in the "Received By" space to take custody of the samples.

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TITLE: Sample Receiving

APPENDIX 10.3

INTERNATIONAL TECHNOLOGY CORPORATION

REQUEST FOR ANALYSIS

R/A Control No. 029813

C/C Control No. _____

0001581

PROJECT NAME _____

PROJECT NUMBER _____

PROJECT MANAGER _____

BILL TO _____

_____

_____

PURCHASE ORDER NO. _____

DATE SAMPLES SHIPPED _____

LAB DESTINATION _____

LABORATORY CONTACT _____

SEND LAB REPORT TO _____

_____

_____

DATE REPORT REQUIRED _____

PROJECT CONTACT _____

PROJECT CONTACT PHONE NO. _____

Sample No	Sample Type	Sample Volume	Preservative	Requested Testing Program	Special Instructions

TURNAROUND TIME REQUIRED: (Rush must be approved by the Project Manager.)

Normal _____ Rush _____ (Subject to rush surcharge)

POSSIBLE HAZARD IDENTIFICATION: (Please indicate if sample(s) are hazardous materials and/or suspected to contain high levels of hazardous substances)

Nonhazard _____ Flammable _____ Skin Irritant _____ Highly Toxic _____ Other _____ (Please Specify)

SAMPLE DISPOSAL: (Please indicate disposition of sample following analysis. Lab will charge for packing, shipping, and disposal.)

Return to Client _____ Disposal by Lab _____

FOR LAB USE ONLY

Received By _____ Date/Time _____

WHITE - Original, to accompany samples
YELLOW - Field copy

4/01/87

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APPENDIX 10.3
Continued

INSTRUCTIONS FOR COMPLETING REQUEST FOR ANALYSIS FORM

The original Request for Analysis form must be completed and sent with samples shipped to the laboratory for analysis. All samples must also be accompanied by a Chain-of-Custody record.

C/C Control No.: Record the printed control number from the top right corner of the Chain-of-Custody record you are submitting with these samples.

Project Name: Record the name of the project or client/site location. (Example - X,Y,Z, Chemical Co., WA)

Project Number: Indicate the project number to be charged for the analysis of these samples. (Example: 613215)

Project Manager: Record the project manager's name.

Bill To: Non-IT personnel should indicate the correct billing address and the person to whom the invoice should be sent. IT personnel and IT subcontractors should fill in IT office responsible for project accounting (if known).

Purchase Order No.: Non-IT personnel should use this space to record the purchase order number authorizing the analysis of these samples. IT personnel and IT subcontractors should leave this space blank if a project number has been given for billing.

Date Samples Shipped: Indicate the date these samples are being shipped to the laboratory.

Lab Destination: Indicate the laboratory designated for sample shipment. Do not list more than one lab on this Request for Analysis. Be certain before sending samples that the laboratory you are designating is aware of the shipment, and is capable of accepting high hazard samples if applicable.

Laboratory Contact: Give the name of the laboratory employee you have contacted regarding these samples.

Send Lab Report To: Give the name, address, and phone number of the person to receive the data report for these samples.

Date Report Required: Record the date which you and the laboratory contact have determined the results will be reported.

Project Contact: Indicate the name of the project person to be contacted in case of any questions regarding these samples.

Project Contact Phone No.: Give the phone number where the project contact can be reached on the day these samples should arrive at the laboratory.

Sample Number: List the complete identifying number of each of the samples you are sending, as recorded on the accompanying Chain-of-Custody.

Sample Type: Indicate the sample type such as soil, sediment, sludge, water, wipe, air, or bulk.

Sample Volume: Estimate the amount of sample in the container. For air samples, indicate the volume of air sampled.

Preservative: Indicate what type preservative, if any, has been used for the sample. (Examples - ice, blue ice, nitric acid, sulfuric acid)

Requested Testing Program: List the analyses to be performed on the sample.

Special Instructions: Use this space to record any special instructions to the laboratory regarding the processing of these samples. Leave blank if there are no special instructions.

Turnaround Time Required: Check "normal" or "rush" as determined by the Project Manager and the laboratory contact.

Possible Hazard Identification: Indicate all hazard classes associated with the sample(s).

Sample Disposal: Indicate how the samples should be disposed of following analysis. All samples are held six weeks and then disposed of unless other arrangements for storage have been previously requested.

INTERNATIONAL TECHNOLOGY CORPORATION

RADIOLOGICAL SCIENCES LABORATORY

NO.: RSL-1002

RADIOANALYTICAL LABORATORY PROCEDURE

TITLE: Radiological Screening and Classification of Mixed Waste Samples

APPROVED: James T. Harvey DATE: 4-28-87
Laboratory Manager

APPROVED: Paul Mills DATE: 5/1/87
ITAS QA Director

CONCURRENT: John A. Auplin DATE: 4-28-87
RSL Director

COPY NO.: UNCONTROLLED COPY ISSUED:

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DATE: 4-21-87				

PROCEDURE DEVELOPMENT/CHANGE

Supplement to existing procedure: Yes (x) No ( )

If yes, enter paragraph number or reference section:
Appendix 10.[illegible] 10.4

Procedure Title & Number (if exists) KSL Lab [illegible] and Classification of [illegible] Samples [illegible]

Description of experiment or method Addition of [illegible] for samples containing H-3, correct appendix 10.3 and 10.4

KSL-1002-87

Time Period From: 11/3/87 To: ___ Samples Affected All [illegible] /87

Procedure:

(Test Eqpt., Data Recorded, Problems, Steps Used, etc.) DATE

See Attached.

Submitted by: [signature]

Approved by: [signature], Laboratory Manager

Approved by: [signature], Laboratory Director

Approved by: [signature], QA/QC/Director, ITAS

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APPENDIX [illegible]

UT/Radiological Sciences Laboratory
Mixed Waste Sample Screening

The maximum content of radioactive material in any sample delivered to UT/RSL cannot exceed the following:

Radionuclide	Maximum Sample Content
U-235	0.03 gram *
U-235	0.03 gram *
Plutonium	0.03 gram *
Am-241	1 uCi
Ra-226	1 uCi
Ra-228	1 uCi
Natural Uranium	1000 uCi
Natural Thorium	1000 uCi
Mixed Activation/ Fission Products	2000 uCi
H-3	300 mCi **

* Total amount of samples not to exceed 350 grams of U-235, 200 grams of U-233, 200 grams of Pu, or the sum of such ratios of special nuclear material in combination shall not exceed 1.

** Total activity to be on site at any one time.

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APPENDIX 10.4

IT/Radiological Sciences Laboratory
Offsite Waste Sample Shipment

Customer Identification: _____

Laboratory number: _____

Sample matrix: Liquid _____ Soil/Solid _____ Air Filter: _____

Results (uCi/ml): Gross Alpha _____ Gross Beta _____ Other _____

Date Sample counted: _____

* Total Activity of the Sample: _____

* Copy of this form sent to the facility RSO _____

Sample Category: _____ **

** Sample activity below RSL license limits _____ Yes _____ No

Precautions: _____

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By: _____ Date: _____

* If Tritium (H-3) Is Present

** Only Category I samples can be transferred to other IT laboratories.

Category III samples require special handling instructions provided by IT Health Physics personnel.

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TITLE: Radiological Screening and Classification of Mixed Waste Samples	NO: RSL-1002	PAGE: 1
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1.0 PURPOSE

This procedure provides the method for radiological screening and classification of mixed waste samples prior to analysis.

2.0 SCOPE

This procedure applies to all samples classified as "mixed waste samples".

3.0 RESPONSIBILITIY

3.1 It is the responsibility of the Laboratory Manager, or his designee, to ensure that this procedure is followed during the screening and classification of mixed waste samples.

3.2 It is the responsibility of the Laboratory Manager, or his designee, to delegate the performance of this procedure to personnel who are experienced with this procedure and with associated equipment.

3.3 It is the responsibility of those persons performing this procedure to follow the procedure and report any abnormal results to the Laboratory Manager, or his designee.

4.0 REFERENCES

4.1 Requirements and Specifications

4.1.1 ITAS Quality Assurance Manual.

4.1.2 "Quality Assurance Program Requirements for Nuclear Facilities", ANSI/ASME NQA-1 (latest edition).

4.1.3 ITAS-RSL Quality Assurance Manual, Laboratory Specific Attachment.

4.1.4 U.S. Nuclear Regulatory Commission, Regulatory Guide 4.1.5, Quality Assurance for Radiological Monitoring Programs (Normal Operations) - Effluent Streams and the Environment.

4.2 Standards

4.2.1 "State Regulations For Protecting Against Radiation", Tennessee Department of Health and Environment (latest edition).

4.3 Procedures

4.3.1 RSL-1001, "Sample Receiving", IT/RSL Laboratory Procedures Manual (latest edition).

4.3.2 RSL-104, "Operation of Low Background Alpha/Beta Instruments", IT/RSL Laboratory Procedures Manual (latest edition).

4.3.3 RSL-308, "Determination of Gross Alpha and/or Beta Activity", IT/RSL Laboratory Procedures Manual (latest edition).

4.4 Other Publications

None

5.0 REQUIREMENTS

5.1 Equipment

None

5.2 Material

None

5.3 Reagent

None

6.0 PROCEDURE

6.1 Receipt

6.1.1 Mixed waste samples shall be received in accordance with procedure RSL-1001.

6.2 Determining Alpha and Beta Activity

6.2.1 Procedures RSL-104 and RSL-308 shall be followed in determining the gross alpha and gross beta activity of the mixed waste sample.

6.2.2 Mixed waste samples that are known to contain or suspected of containing low-energy beta emitters such as tritium (H-3), carbon-14, and iron-55, shall be analyzed for the suspected radionuclide prior to classification.

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6.3. Liquid Samples Classification

6.3.1 Once the alpha and beta activity has been determined per step 6.2, classification of the sample shall be determined by following the flow chart given in Appendix 10.1, "Flow chart for classification of liquid samples".

6.4 Soil/Solid Samples Classification

6.4.1 Once the alpha and beta activity has been determined in step 6.2, the classification of the sample shall be determined by following the flow chart given in Appendix 10.2, "Flow chart for classification of soil/solid samples".

6.5 Air Filters Classification

6.5.1 The alpha and beta activity of the filters, as determined in step 6.2, should be divided by the filter weight to determine the activity per gram of sample. The filter shall be classified using the flow chart in Appendix 10.2, "Flow chart for classification of soil/solid samples".

6.6 Documentation

6.6.1 A properly completed "Mixed Waste Sample Screening" form (Appendix 10.4), shall be included with the laboratory worksheet.

7.0 PRECISION AND ACCURACY

None

8.0 QUALITY ASSURANCE PROVISIONS

8.1 Responsibility for Inspection

8.1.1 The Quality Assurance staff shall perform periodic surveillances to determine compliance with this procedure by laboratory personnel.

8.2 Acceptance Criteria

8.2.1 The following sections of this procedure contain acceptance criteria:

6.3.1 Sample activity below license quantities,

6.4.1 Sample activity below license quantities,

6.5.1 Sample activity below license quantities.

8.3 Material Monitoring

None

8.4 Equipment Monitoring

None

8.5 Certification

None

9.0 CALCULATIONS

None

10.0 APPENDICES

TITLE: Radiological Screening and Classification of Mixed Waste Samples	NO: RSL-1002	PAGE: 5
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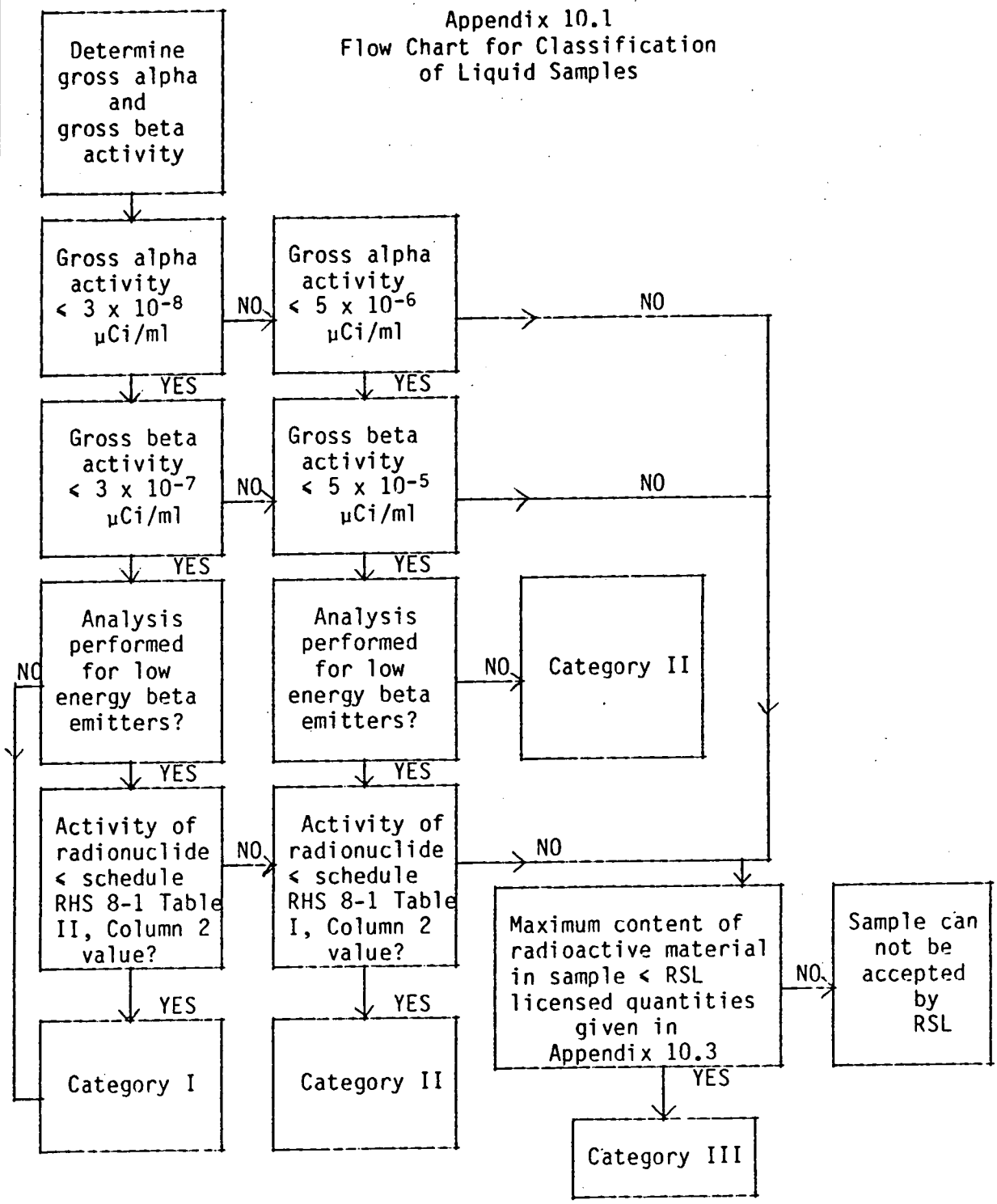
Appendix 10.1
Flow Chart for Classification
of Liquid Samples



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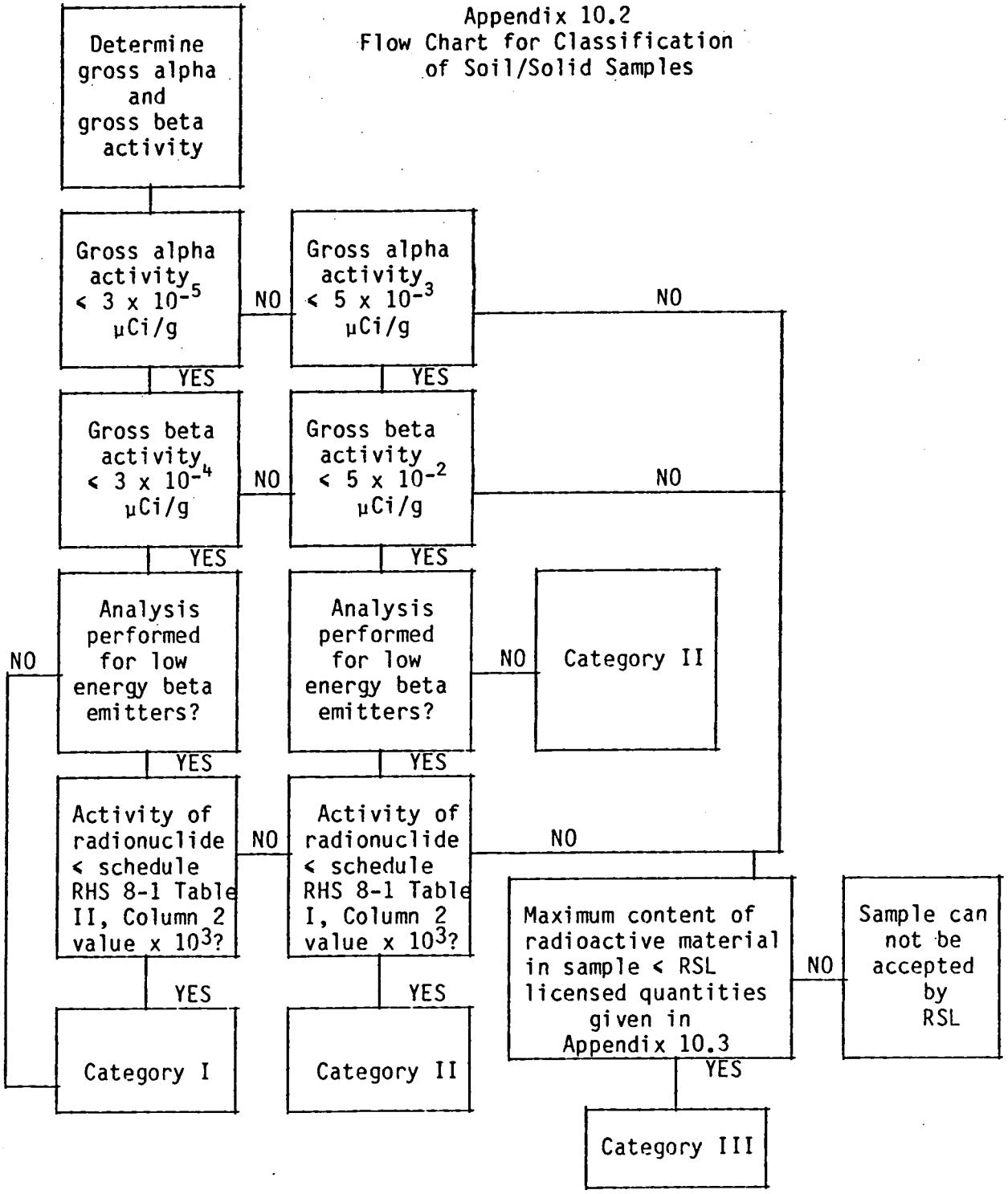
Appendix 10.2
Flow Chart for Classification
of Soil/Solid Samples



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Appendix 10.3
IT/Radiological Sciences Laboratory
Mixed Waste Sample Screening

The maximum content of radioactive material in any sample delivered to IT/RSL cannot exceed the following:

Radionuclide	Maximum Sample Content
U-233	0.03 gram *
U-235	0.03 gram *
Plutonium	0.03 gram *
Am-241	1 μCi
Ra-226	1 μCi
Ra-228	1 μCi
Natural Uranium	1000 μCi
Natural Thorium	1000 μCi
Mixed Activation/Fission Products	2000 μCi

* Total amount of samples not to exceed 350 grams of U-235, 200 grams of U-233, 200 grams of Pu, or the sum of such ratios of special nuclear material in combination shall not exceed 1.

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Appendix 10.4
IT/Radiological Sciences Laboratory
Mixed Waste Sample Screening

Customer identification: _____

Laboratory number: _____

Sample matrix: Liquid _____ Soil/Solid _____ Air Filter _____

Results (μCi/ml): Gross Alpha _____ Gross Beta _____ Other _____

Date sample counted: _____

Sample category: _____ *

Sample activity below RSL license limits _____ Yes _____ No

Precautions _____

_____

_____

_____

By: _____ Date: _____

* Only Category I samples can be transferred to other IT laboratories.

Category III samples require special handling instructions provided by IT Health Physics personnel.

INTERNATIONAL TECHNOLOGY CORPORATION

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RADIOLOGICAL SCIENCES LABORATORY

NO.: RSL-1004

RADIOANALYTICAL LABORATORY PROCEDURE

TITLE: Sample and Data Flow

APPROVED: James T. Harvey DATE: 8-20-87
Laboratory Manager

APPROVED: Paul Mills DATE: 8-24-87
ITAS QA Director

CONCURRED: John A. Caplan DATE: 8-27-87
RSL Director

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DATE: 8-19-87				

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1.0 PURPOSE

This procedure provides the requirements for the movement of samples and associated paperwork through the laboratory.

2.0 SCOPE

This procedure applies to all analytical samples received at IT/RSL.

3.0 RESPONSIBILITY

3.1 It is the responsibility of the Laboratory Manager, or his designee, to ensure that this procedure is followed during the analysis of any sample at IT/RSL.

3.2 It is the responsibility of the Laboratory Manager, or his designee, to delegate performance of activities to personnel who are experienced with this procedure.

3.3 It is the responsibility of those persons performing this procedure to follow it and report any discrepancies or problems to the Laboratory Manager, or his designee.

3.4 It is the responsibility of the Q.A. Coordinator to maintain applicable paperwork as quality assurance documents.

4.0 REFERENCES

4.1 ITAS Quality Assurance Manual.

4.2 ITAS-RSL Quality Assurance Manual, Laboratory Specific Attachment.

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4.3 U.S Nuclear Regulatory Commission, Regulatory Guide 4.15, Quality Assurance for Radiological Monitoring Programs (Normal Operations)- Effluent Streams and the Environment.

4.4 "Quality Assurance Program Requirements for Nuclear Facilities", ANSI/ASME NQA-1 (latest edition).

5.0 REQUIREMENTS

None

6.0 PROCEDURE

6.1 When samples are received, receiving activities shall be performed according to RSL-1001. They shall include:

* sample screening (receiving person)
* chain of custody, request for analysis review (receiving person)
* sample log-in (sample custodian)
* sample coversheet and work sheet generation (sample custodian)
* classification of samples as "routine" or "priority" according to customer request (sample custodian)

6.2 After completion of receiving activities, the sample(s) shall be placed in temporary or controlled storage, as applicable, by sample custodian or transferred to MWL per RSL-1001 and RSL-1002.

6.3 The sample custodian shall transfer chain of custody, requests for analysis and any shipping documents to the Q.A. office for filing in customer file.

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6.4 The sample custodian shall place sample cover sheet and worksheets in either the "Priority" or "Routine" Analysis file. Coversheets shall be placed in the front section of the file in numerical order. Individual analytical worksheets shall be placed in the file folder that corresponds to each analysis. Routine sample worksheets shall be filed numerically. Priority sample worksheets shall be filed according to due date; first due in front of file.

6.5 When the sample prep technician is ready to begin sample prep activities, he/she shall remove the worksheet for the particular analysis.

6.6 The sample prep technician shall contact Sample Custodian to locate sample. The technician shall take an aliquot of sample and return the remainder of the sample to the sample storage area.

6.7 He/she shall perform sample prep activities and transfer sample to the counting room for counting. If wet chemistry is required prior to counting, sample(s) shall be held in the sample prep lab and worksheet(s) shall be returned to the appropriate file section until the wet chemistry technician is ready to perform those activities.

6.8 The wet chemistry technician shall remove the worksheet from the file and the sample from the sample prep lab for the analysis that he/she is to perform. After completion of wet chemistry activities, he/she shall transfer the sample and worksheet to the counting room.

6.9 The counting room technician shall count the sample, enter all appropriate information on worksheet, and return sample and worksheet to the lab technician if calculations are necessary.

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6.10 Lab technician shall perform calculations, sign appropriate box on worksheet and return it to the file, attaching it to the corresponding coversheet. He/she shall indicate completion of analysis by checking appropriate box on coversheet.

6.11 The lab technician who performs the last analysis on a sample shall remove coversheet and attached worksheets from the file and place them in Laboratory Manager's, or his designees', in-box.

6.12 The lab technician shall return sample to Sample Custodian for storage or, as applicable, dispose of plated samples or filters as directed by Laboratory Manager, or his designee.

6.13 The Laboratory Manager, or his designee, shall review and approve all sample worksheet data per RSL-501. He/she shall transfer sample worksheets to Data Base Manager. (If re-analysis is needed, Laboratory Manager, or his designee, shall notify lab technicians and Sample Custodian. New coversheets and worksheets shall be generated and the previous sections beginning with 6.6 shall be followed.)

6.14 Data Base Manager shall enter data into Sample and Analysis Management System (SAM) and generate customer data report. He/she shall review report for transcription errors per RSL-501.

6.15 If randomly selected for Q.C. review, the Q.A. staff shall review completed paperwork per RSL-501.

6.16 Lab Manager shall perform final approval on data report per RSL-501.

6.17 Data Base Manager shall duplicate approved customer data report, place a copy of report in customer file and send the original copy to customer. Sample cover and worksheets shall be placed in customer file.

6.18 Sample Custodian shall identify samples for disposal or transfer to customer after holding requirements have been met per customer or IT requirements. He/she shall notify Health Physics Services Manager for the disposal of samples or notify Q.A. Coordinator for sample shipping instructions.

6.19 Quality Control samples shall be inserted into the routine sample stream as described in RSL-601, "Performing Interlaboratory Quality Control Analysis" and RSL-602, "Performing Interlaboratory Quality Control Analysis." Sample and data flow shall correspond with routine sample analysis up to the reporting activity. At that point, the analytical results shall be given to the Quality Assurance staff by the Data Base Manager for review and transmittal of information to appropriate management.

6.20 The Q.A. Coordinator shall store and maintain all customer/quality control sample records as outlined in RSL-703.

7.0 PRECISION AND ACCURACY

None

8.0 QUALITY ASSURANCE RECORDS

8.1 Responsibility for Inspection

8.1.1 The Quality Assurance Staff shall perform periodic surveillances to determine compliance to appropriate sections of this procedure by laboratory personnel.

8.1.2 The ITAS semi-annual systems' audit shall determine compliance to applicable sections of this procedure by the Quality Assurance Staff.

8.2 Acceptance Criteria

None

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8.3 Material Monitoring

None

8.4 Equipment Monitoring

None

8.5 Certification

None

9.0 CALCULATIONS

None

10.0 APPENDICES

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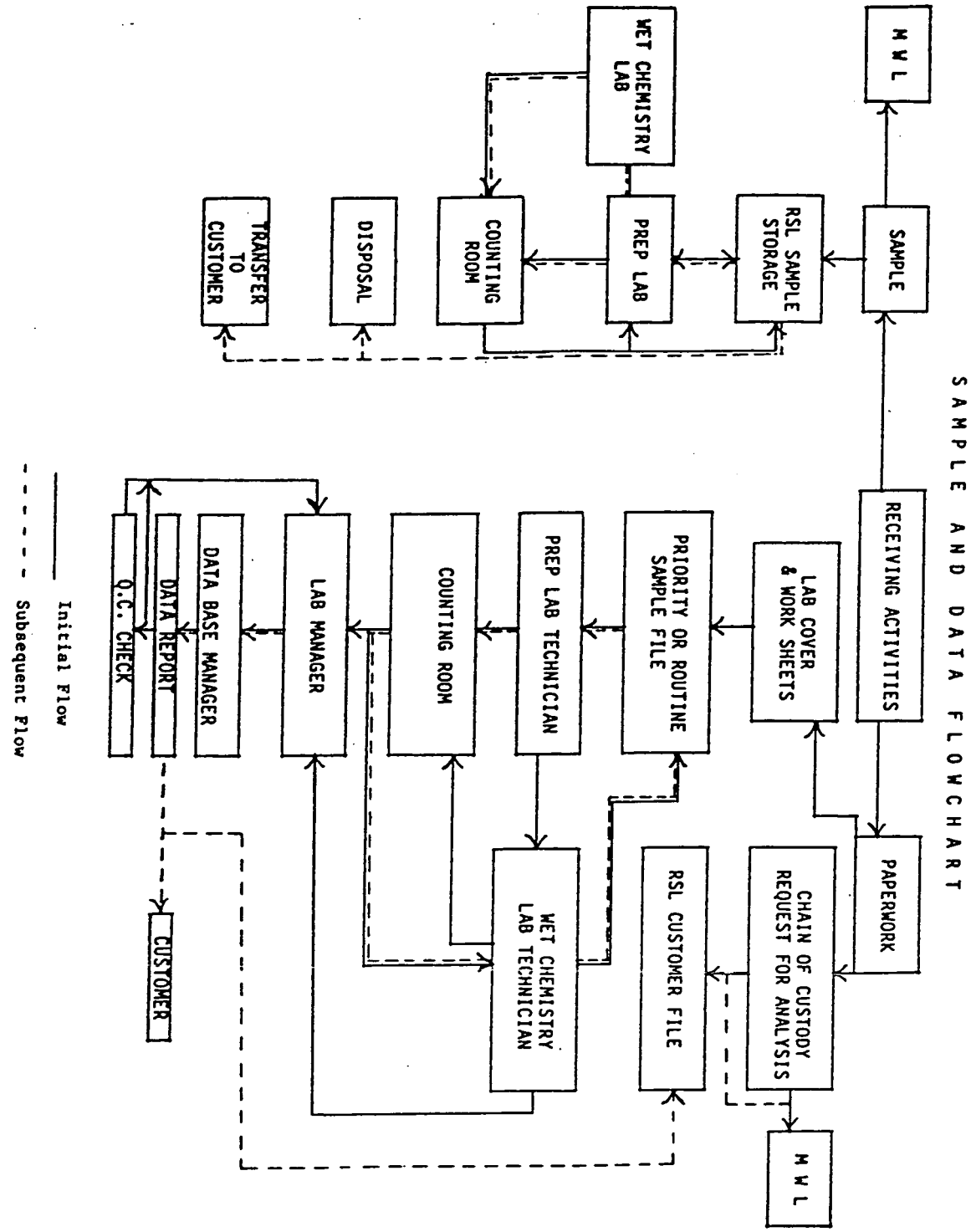

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INTERNATIONAL TECHNOLOGY CORPORATION

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RADIOLOGICAL SCIENCES LABORATORY

NO.: RSL-1005

RADIOANALYTICAL LABORATORY PROCEDURE

TITLE: Sample Transfer to the Shipping Department

APPROVED: James T. Harney DATE: 11-5-87
Laboratory Manager

APPROVED: Paul Mills DATE: 11-9-87
ITAS QA Director

CONCURRED: John A. Caplan DATE: 11/9/87
RSL Director

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TITLE: Sample Transfer to the Shipping Department	NO: RSL-1005	PAGE: 1 of 3
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1.0 PROCEDURE

This procedure specifies the required activities for the transfer of samples from the IT/Radiological Sciences Laboratory and the IT/Mixed Waste Laboratory to the shipping department, to ensure compliance with applicable industry standards, licenses, quality requirements, and customers specifications.

2.0 SCOPE

The procedure applies to all samples transferred from IT/RSL and IT/MWL.

3.0 RESPONSIBILITY

3.1 It is the responsibility of the Laboratory Manager, or his designee, to ensure that this procedure is followed for the transfer of all samples to the shipping department.

3.2 It is the responsibility of the Laboratory Manger, or his designee, to delegate the performance of these activities to personnel experienced with this procedure and with the equipment required for the implementation of this procedure.

3.3 It is the responsibility of the assigned personnel to follow this procedure and report any discrepancies or nonconformances found with the transfer of samples or associated paperwork, to the laboratory manager or his designee.

4.0 REFERENCES

4.1 ITAS Quality Assurance Manual.

4.2 ITAS-RSL Quality Assurance Manual, Laboratory Specific Attachment.

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5.0 REQUIREMENTS

None

6.0 PROCEDURE

6.1 Sample Transfer

6.1.1 Once it has been determined that the analysis for a sample has been completed and the designated holding time (after report issue) has expired, then the sample should be transferred to the IT/RSL shipping department.

6.1.2 Prior to transfer lab personnel should retrieve the chain of custody for that sample from the project file in the QA office. Sign and date the designated sections of the chain of custody for relinquishing the samples.

6.1.3 Obtain a copy of the lab analyses results for the sample.

6.1.4 If the sample is being returned to the client then all of the pertinent shipping information is to be furnished to the shipping department.

6.1.5 If the sample is to be disposed of by IT/RSL then information as to hazards, other than radioactive hazards, is to be provided to the shipping department.

6.1.6 Submit the sample, the chain of custody, and the analyses results to the shipping department.

6.1.7 The shipping department designee shall compare the sample information provided on the chain of custody with the samples delivered by the laboratory.

6.1.8 Identify and note on the chain of custody any damaged or missing samples. Sign and date the chain of custody.

6.1.9 Copy the chain of custody and submit copy to the QA office to be filed in the project file.

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7.0 PRECISION AND ACCURACY

None

8.0 QUALITY ASSURANCE

8.1 Responsibility for Inspection

8.1.1 The Quality Assurance staff shall perform periodic surveillances and audits to determine compliance to this procedure by laboratory personnel.

8.2 The following sections of this procedure contain acceptance criteria:

6.1.4 Pertinent shipping information to be supplied with the sample.

6.1.5 Chain of Custody and analyses results to be submitted with the sample.

8.3 Material Monitoring

None

8.4 Equipment Monitoring

None

8.5 Certification

None

9.0 CALCULATIONS

None

10.0 APPENDICES

None

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INTERNATIONAL TECHNOLOGY CORPORATION

3225

RADIOLOGICAL SCIENCES LABORATORY

NO.: RSL-2103

RADIOANALYTICAL LABORATORY PROCEDURE

TITLE: Instructions for the Calibration of the Duall pH Control System

APPROVED: James T. Harvey DATE: 8-27-87
Laboratory Manager

APPROVED: Paul Mill DATE: 8-28-87
ITAS QA Director

CONCURRED: John A. Cutler DATE: 8-28-87
RSL Director

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TITLE: Instructions for the Calibration of the Duall pH Control System	NO: RSL-2103	PAGE: 1
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1.0 PURPOSE

This procedure provides instructions for the calibration of the Duall pH Control System.

2.0 SCOPE

This procedure applies to the calibration of all Duall pH Control Systems.

3.0 RESPONSIBILITY

3.1 It is the responsibility of the Health Physics Service Manager, or his designee, to ensure this procedure is followed during the calibration of any Duall pH Control System.

3.2 It is the responsibility of the Health Physics Services Manager, or his designee, to delegate the performance of this procedure to personnel that are experienced with this procedure and the Duall pH Control System.

3.3 It is the responsibility of the technician performing this procedure to follow it and report any abnormal reading or results to the Health Physics Services Manager, or his designee.

4.0 REFERENCES

4.1 Duall Industries, Inc. instrument manual.

5.0 REQUIREMENTS

5.1 Equipment

5.1.1 Duall pH Control System

5.1.2 Clean beakers

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5.2 Materials

5.3 Reagents

5.3.1 pH 7.0 and pH 10.0 buffers

5.3.2 7 M HCl acid

6.0 PROCEDURES

6.1 Set Point Adjustment

6.1.1 Remove G.L.I. nameplate from front of pH analyzer.

6.1.2 Place "RUN/TEST" switch to "TEST". (If the analyzer has been calibrated, note the value on the display after placing the "RUN/TEST" switch to "TEST".) After establishing control set points, use the "CALIBRATE" control to first restore the noted reading, then place the "RUN/TEST" switch to "RUN" to maintain instrument calibration.

6.1.3 Turn "HI" deadband fully counter clockwise.

6.1.4 Turn "CALIBRATE" control to make the meter read pH 9.0 (chemical feed pump should turn on).

6.1.5 Adjust the "LO" set point until the red L.E.D. light for the "LO" relay turns on.

6.1.6 Adjust the "LO" set point back and forth to get it at the point where the "LO" L.E/D. comes on.

6.1.7 With the L.E.D. on, turn the "LO" deadband fully clockwise.

6.1.8 Turn "CALIBRATE" control until the meter reads pH 10.0. (Chemical feed pump should turn off).

6.1.9 Slowly turn the "LO" deadband counter clockwise until the "LO" L.E.D. turns off.

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6.1.10 Use the "CALIBRATE" control to move the meter reading back and forth through the control points to verify that the relay and chemical feed pump turn off and on at pH 9.0 - 10.0.

6.1.11 Turn "CALIBRATE" control back to noted reading and them place "RUN/TEST" switch to run to maintain;n system calibration.

6.2 Meter Calibration

6.2.1 Turn off chemical feed pump.

6.2.2 Turn off scrubber recirculation pump.

6.2.3 Close suction line ball valve.

6.2.4 Remove pH probe. (Do not use a wrench, remove by hand.)

6.2.5 Insert 11/2" plug into fitting and reopen valve.

6.2.6 Inspect pH probe and clean, if necessary. If the glass bubble is frosted and not clear, then place the probe in 7M HCl for 1-2 minutes.

6.2.7 Leave "RUN/TEST" switch on "RUN" position.

6.2.8 Place probe in pH 7.0 buffer and allow reading to stabilize (usually 1 - 2 minutes.)

NOTE: Use fresh buffers and clean beakers only. Always rinse pH probe thoroughly when moving probe between buffers.

6.2.9 Adjust calibrate control until the display reads pH 7.0.

6.2.10 Rinse the probe thoroughly, place in pH 10.0 buffer, and allow reading to stabilize.

6.2.11 Adjust span to indicate pH "10.0" on the display.

6.2.12 The probe is now calibrated. To obtain the highest degree of accuracy, repeat steps 6.2.8, 6.2.9, 6.2.10, and 6.2.11 until no difference occurs between the display reading and the known buffer value.

6.2.13 Wrap the threads of the probe with teflon tape and reinsert the probe into the pump suction line following steps 6.2.5, 6.2.4, 6.2.3, and 6.2.2 in that order. (Hand tighten only, do not use a wrench.)

6.2.14 Turn chemical feed pump back on.

NOTE: It is recommended that the probe be checked and calibrated every 3-4 weeks.

7.0 PRECISION AND ACCURACY

None

8.0 QUALITY ASSURANCE PROVISIONS

8.1 Responsibility for Inspection

8.1.1 The Health Physics Services Manager shall be responsible for personnel performing this procedure.

8.1.2 The Health Physics Services Manager shall periodically observe the technician during the performance of this procedure to ensure compliance to this procedure.

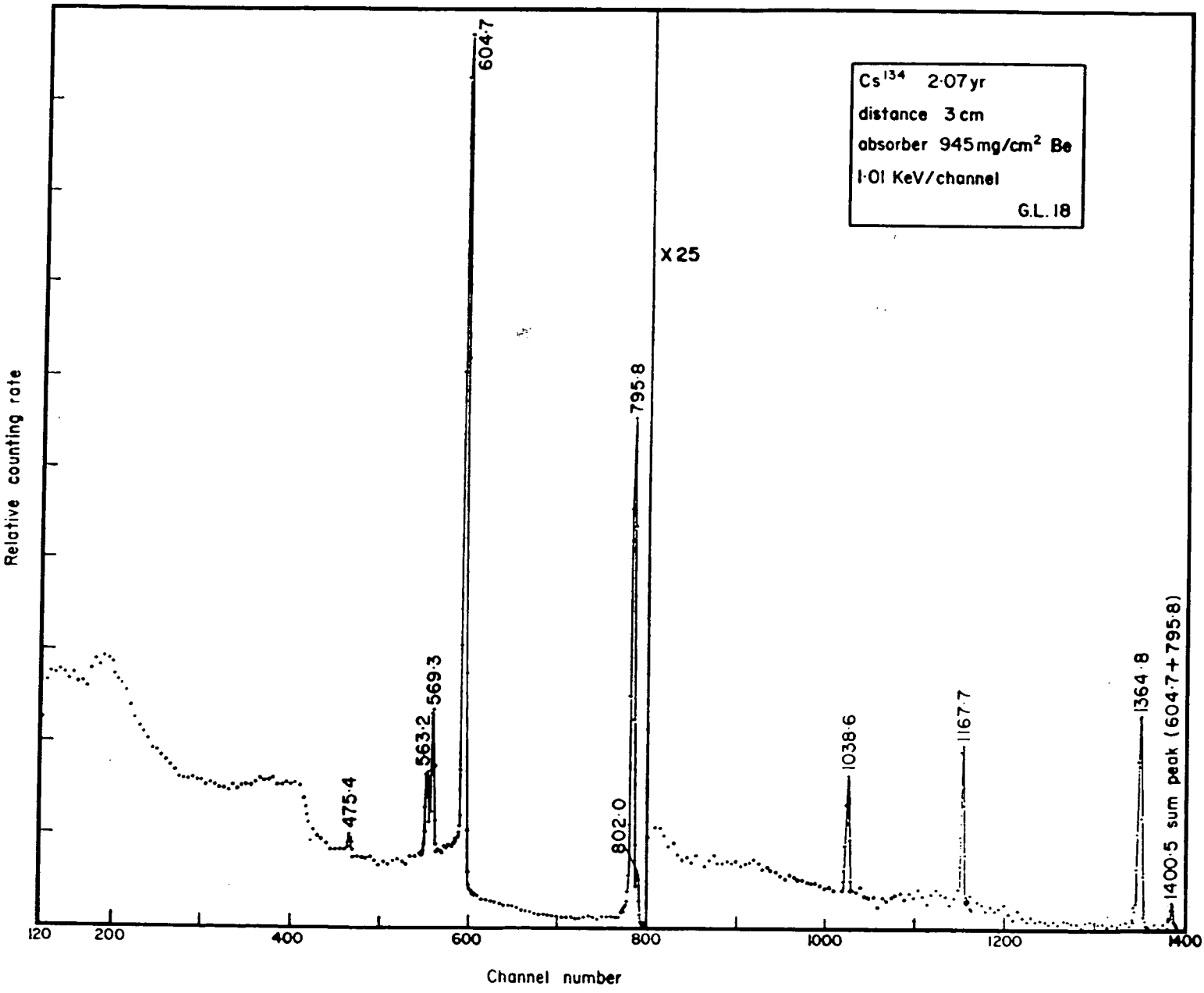
8.1.3 The technician performing this procedure shall ensure that all equipment is working properly and all instrument settings are set to the proper value or position.

8.2 Acceptance Criteria

None

Radiological Sciences Laboratory

Radioanalytical Laboratory Procedures



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