UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
631 PARK AVENUE
KING OF PRUSSIA, PENNSYLVANIA 19406

Seabrook 10

June 22,1981

Docket No. 50-443

MEMORANDUM FOR: R. Baer, Chief, Reactor Engineering Branch, DR&RRI, IE

THRU: R. M. Gallo, Chief, RPS 1A, DRPI, RI

E. J. Brunner, Chief, Projects Branch 1, DRPI, RI

FROM: A. C. Cerne, Sr. Resident Inspector, Seabrook, RI

SUBJECT: Torch-Cut Slotted Holes for Structural Steel High-Strength Friction Type Connections

REFERENCES:

(1) PSNH Response (12/2/80) to NRC Noncompliance 80-10-01 (Encl 1)
(2) NRC Response (1/8/81) to PSNH Letter (Encl 2)
(3) UE&C Letter (2/25/81) with A/E Position (Encl 3)
(4) PSNH Letter (3/16/81) with current Licensee Position (Encl 4)

The high-strength bolted connections of the friction-type for the containment annulus structural steel at Seabrook Station, Unit 1, are being installed in structural members in which the slotted holes have been burned and left undressed by the steel fabricator, Cives Steel Company. While the licensee has agreed to prepare the final surface of all bearing-type connections, they maintain that notches up to 3/16 inch deep will have no adverse effect upon the performance of friction-type connections.

The attached four enclosures document this issue from the original NRC noncompliance (443/80-10-01) and original licensee response (Enclosure 1) to the revised licensee response (Enclosure 4). While the licensee is not committed to that portion of ANSI Standard N45.2.5 which states that, "Burning of bolt holes is not permitted," the resident inspector's telephonic communications with personnel in the NRC Office of Standards have indicated that the acceptance of undressed, notched slots, even on friction-type connections, is a matter for evaluation. The licensee's evaluation is based primarily upon the UE&C, the Architect/Engineer's, position included as Enclosure 3. The main question, as I can determine, is whether the potential areas of high hardness created by the burning process might react adversely under load and enlarge the slot such that the requirements of the AISC Specification for "Structural Joints Using A325 or A490 Bolts" are being violated.

9

Request that the resident inspector be informed of the NRC position regarding this matter in order that corrective action, if necessary, be initiated prior to the erection of safety-related piping and supports on the questionable structural steel.

Antone C. Cerne
Sr. Resident Inspector
Seabrook, Region I

4 Enclosures as stated

→ TO: RW McGaughy, RC+ES Branch

FROM: AC Cerne, Seabrook Res.

8/22/80

SUBJECT: RPV Nozzle Safe End Inspection

- NED
- Primary Equipment Engineering
- Reactor Vessels and Piping

REPORT FILE: PE-RVP-3507 11

DATE PREPARED: 8/8/80

PLANT	LOCATION	DATE(S) OF TRIP
Seabrook Site	Seabrook, New Hampshire	July 28-29, 1980

PURPOSE: Inspection of Seabrook Unit No. 2 reactor vessel outlet nozzle safe ends to determine if sufficient length of stainless steel is present at the O.D. to facilitate field welding.

P.O. NEGOTIATION CONTRACT NO.:

S.O. BUDGET NO.: NCHH-105

SUMMARY ACTION:

Each of the four (4) Unit 2 reactor vessel primary outlet nozzles were visually examined. Etching was not necessary since the stainless steel and inconel were distinguishable on the machined surfaces of the safe end due to the contrast in colors in light. The inconel appeared duller than the stainless when light struck the safe end from an appropriate angle. The length of the stainless steel on the O.D. of each of the four (4) outlet nozzle safe ends was measured. The minimum length of stainless steel was found to be 19/32 inches (resulting length dimensions at the approximate locations on the nozzles are shown on the attached sheet). Therefore, all of the safe ends were longer than the required one-half inch (1/2") minimum length and are considered to be of sufficient lengths to facilitate satisfactory field welds if normal welding precautions are taken.

Several Non-conformance Report (NCR) items were also inspected. FDR's will be required on the damaged safe end weld prep land and the pitted support pad on the "down" outlet nozzle. The flange cover was not removed so that the gouge in the vessel mating surface could be examined, but an FDR was also requested for that deficiency. Location and size of the gouge should be available from inspection reports.

PERSONS PRESENT (NAME/TITLE/ORG./DIV./DEPT./GROUP):

S. L. Abbott/Reactor Vessels and Piping/Westinghouse NED
C. Walker/Westinghouse Seabrook Site Start-up Engineer/Westinghouse NSD
J. W. Rogers, Jr./Project Engineer/Combustion Engineering, Inc.

AUTHOR SIGNATURE: S.L. Abbott 8/14/80

S. L. Abbott, Engineer
(NAME & TITLE)

DATE: 8/8/80

DISTRIBUTION:

R. W. Beer/MNC-466
A. A. Sepp/MNC-352B
R. E. Tome/MNC-358
C. L. Gotshall/MNC-410
N. T. Dressel/PC#2, 222
F. B. Davis/PC#2, 225
T. R. Mager/FH A, 300
E. W. Williams/FH A, 300
W. E. Wright/MNC-522
W. G. Jordan/MNC-522
C. Walker/Seabrook

Combustion Engineering reported by letter on 3/6/80 that the required one-half inch (1/2") minimum length of stainless steel could not be guaranteed on the 4-loop reactor vessel outlet nozzles fabricated after a design change in 1970. Due to tolerance stack-ups, the length of the stainless steel on the outlet nozzle safe end O.D. could be significantly less than one-half inch (1/2"). The NCH vessel, as well as SAP, TCX, GAE, GBE, DDP, PBJ, NAH and NEU vessels have the outlet nozzle design in question. The SAP, TCX, GAE, GBE, DDP, PBJ and NCH vessels have now been inspected at their respective sites to determine the location of the interface between the stainless steel safe end forging and the inconel transition weld. Plans have been made to inspect the NAH and NEU vessels during the week of August 18-22.

The Seabrook site was visited on July 28, 1980 in order to inspect the Unit No. 2 (NCH) safe ends. The Unit No. 1 vessel is presently in storage at Braden Point in Massachusetts and was not available for inspection at this time.*

After removal of the nozzle covers and the coating of Tectyl 506 in the areas to be examined, the four (4) outlet nozzle safe ends were visually examined. Etching was not necessary since the stainless steel and inconel were distinguishable on the machined O.D. surface of the safe ends due to the contrast in the appearance of the two materials when light struck the nozzles at an appropriate angle. The inconel appeared duller than the stainless steel on these machined surfaces. This phenomena had been seen previously on the Georgia Power Company Vogtle Unit No. 1 vessel where in each case the etch line appeared at the locations where the color change occurred. Since the use of acid on the NCH safe ends could be avoided while obtaining the desired dimensions, the requirement to etch was waived. The lengths of the stainless steel from the color change to the end of the safe end on the O.D. were measured and recorded using a metallic rule. The recorded results are attached. All of the lengths have been reviewed by W and CE, and are considered to be of sufficient length to facilitate a satisfactory field weld with normal welding precautions.

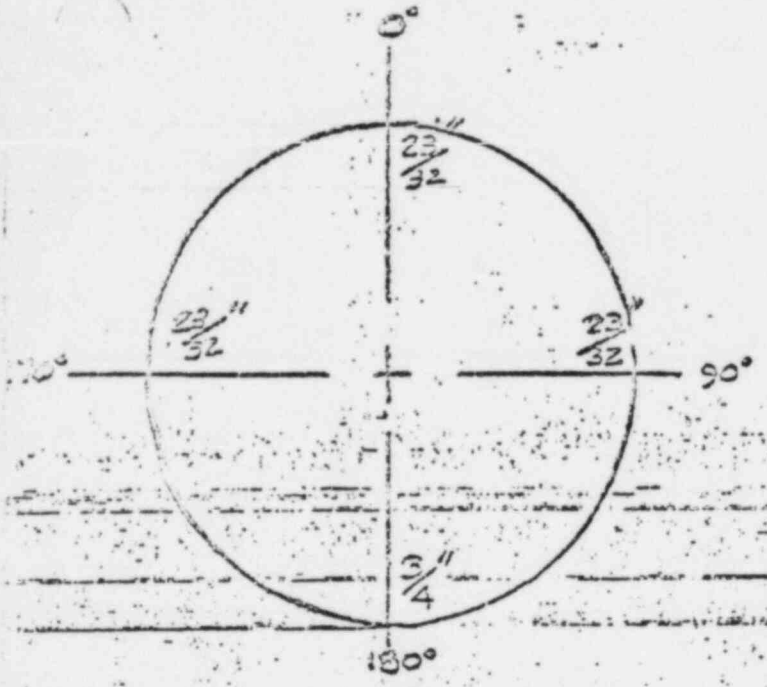
The safe ends were subsequently to be recoated with Tectyl 506, and the nozzle covers were to be replaced.

While at the site, W and CE personnel also inspected two items which had been reported on Non-conformance Reports (NCR's). The land on the safe end weld prep of the "down" outlet nozzle (as the vessel is oriented in storage on the shipping skid) had apparently been damaged prior to shipment and will require a repair. The land is bent inward in an irregular pattern and appears to have been hammered upon. One of the upper outlet nozzles has several notches cut into the I.D. surface of its weld prep land in a sawtooth pattern. This condition was not reported on an NCR, but this land could be "cleaned up" at the same time that the other one is repaired.

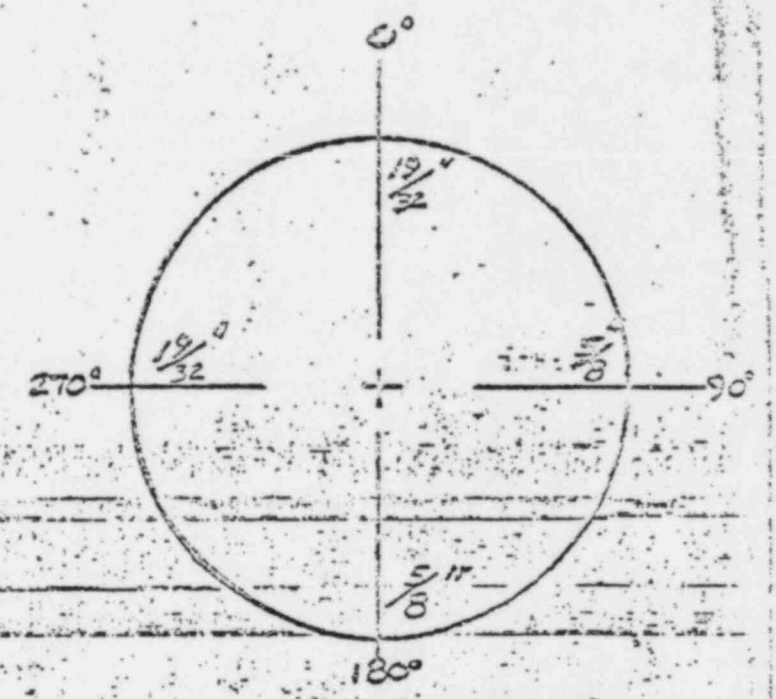
The second deficiency noted on an NCR which was inspected was pitting on the

* NOTE: Unit 1 RPV also passed visual safe end exam.. conducted by (W) on 8/20/80. I have requested Report.

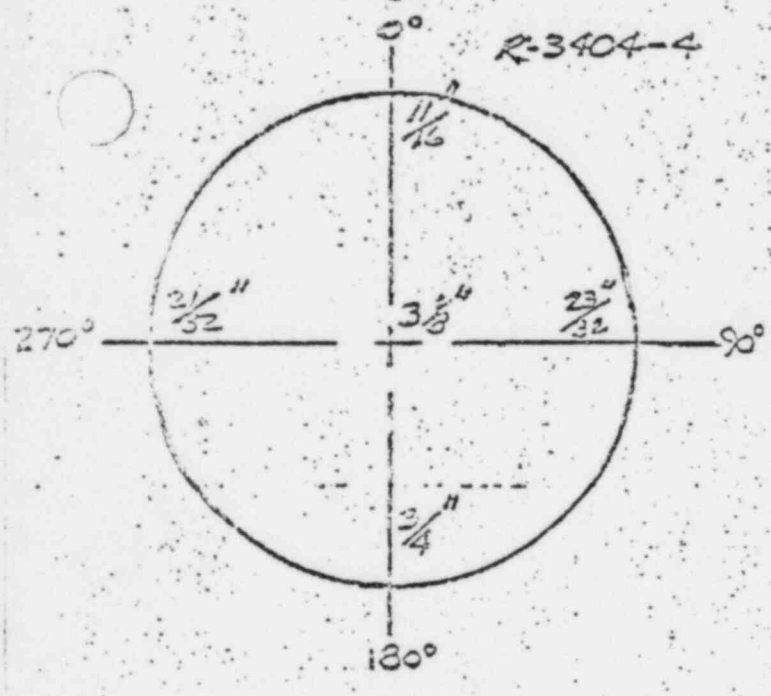
R-3404-3



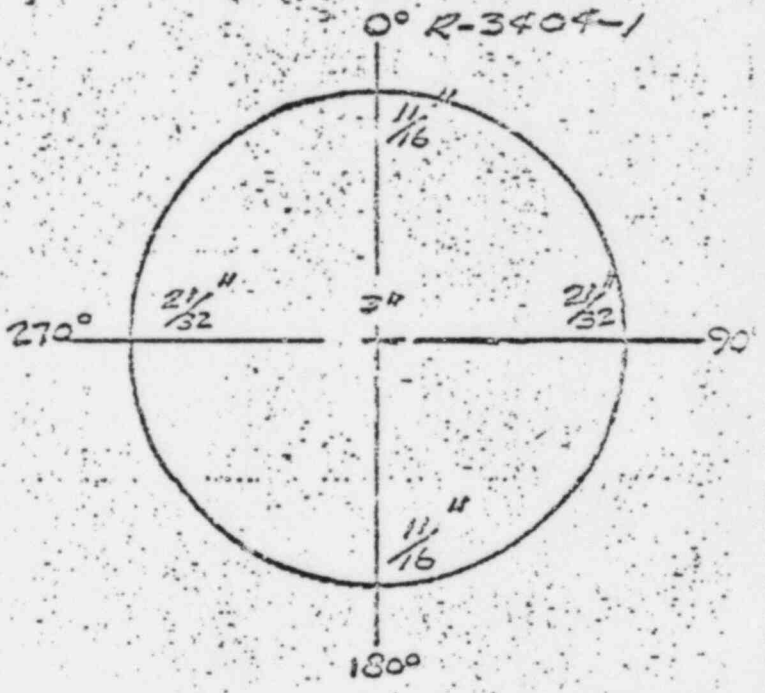
R-3404-2



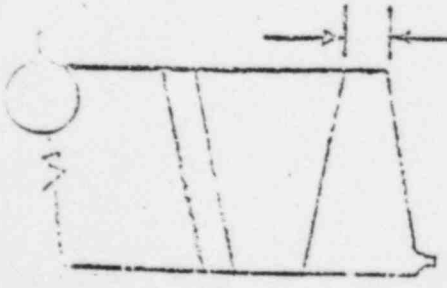
R-3404-4



R-3404-1



0° IS TOWARD THE VESSEL FLANGE. AXES ARE C.W. LOOKING FROM VESSEL C



BLUE SHEET

SEABROOK STATION

REQUEST FOR FOLLOW-UP ACTION

NRC INSPECTIONS

IMS # - B 4.2.7
FORM - 001
PAGE 1 OF 1

NO. 032

TO: J. F. Vought DATE: 6/22/81

Inspection Item Description: Clarify Cross-Over Restraint Requirements UNIT: #1
(Dwg. F101482)

Ref: RFI 73/1442

Field Instruction F1-92 Rev. 1

As a result of NRC Inspection 81-08 by Inspectors Reynolds and Sanders, the following preliminary questions need response.

1. Justification for not stress relieving field welds (material being susceptible to laminar tearing, underbead cracking, etc.).
2. The elimination of NDE after weld buttering in field.

ective Action Required: As indicated above. UE&C's response should include the shop fabrication requirements (Cives).

SAM,

Attached Request for Info (RFI) by Pullman to UE+C with answers relater to X-over-Leg welding. Your two specific questions weren't addressed + so are asked by the licensee to UE+C above

Tony

Date Required: 6/29/81 Approved By: J. W. Singleton

Requested By: W Gagnon
YAEC FQAE

NOTE: Contractor is requested to respond by memo referring ident. number of this report. (12)

5430-9763 REV. 5/80

PROJECT CHANGE

CONTRACTOR USE ONLY: 1442 0

united engineers & constructors inc

PH

SEABROOK STATION

DATE 03/11/81 — 2-18-81

J	0	9	7	6	3	0	1	3
1	2	3	4	5	6	7	8	9

TYPE OF CHANGE (DCN, ECA, FCR, SAC RFI)

R	F	I
10	11	12

SERIAL NUMBER

DIS	NUMBER					REV
7	3	1	4	4	2	A
13	14	15	16	17	18	19

NOTE: ALL ENTRIES IN COLUMNS WILL GO INTO COMPUTER STORAGE FOR CHANGE-LOG AND OTHER REPORTS

DESCRIPTION OF CHANGE/REQUEST — ASME YES XX NO ___ — SAFETY RELATED YES XX NO ___

* C I 1 N S A X-O V E R L E G R E S T R A I N T W E L D I N G R E Q T S

NOTE: ENTRY SHOULD INCLUDE, (1) SYSTEM AND/OR BUILDING DESIGNATION IN FIRST FEW COLUMNS (2) UNIT AND SHORT DESCRIPTION OF CHANGE IN REMAINING COLUMNS. AMPLIFYING INFORMATION CAN BE ENTERED IN SPACE BELOW.

Answers

1. A) Pullman-Higgins is responsible as directed by Resident Construction Manager.
   B) Yes.
   C) Send sequencing drawing to UE&C for information.
2. A) No.
   B) Filler metal shall be E7018.
   C) Use standard preheat and interpass temperature per AWS D 1.1.

(cont. sheet 2 of 4)

REASON FOR CHANGE: REQUEST FOR INFO

NOTE: ENTER BRIEF REASON FOR CHANGE IN COLUMNS 31-66. - AMPLIFYING INFORMATION CAN BE ENTERED IN SPACE BELOW.

C L A R I F Y C R O S S - O V E R R E S T R A I N T R E Q M N T S

SEE ATTACHED

REFERENCE DOCUMENT

#	D W G F 1 0 1 4 8 2
#	S P E C 1 2 - 2
#	A W S D 1 . 1
#	
F C R	7 3 1 4 4 2 A (REV. / CONTR'R ID)

RECEIVED
MAR 12 1981
PULLMAN-HIGGINS

NAME / INITIATED BY	TITLE
C.A.Scannell	C.F.E.

ORGANIZATION: Pullman-Higgins

WORKING DOCUMENT REQ'D BY: 2-25-81 (DATE)

FCR/SAC/RFI APPROVED BY

CRAFT SUPT. AFFECTED/DATE

UE&C RES. CONSTR. ENGR./DATE

SAC/FCR DISCUSSED WITH

FOR ORIGINATOR

FOR CRAFT SUPT.

FOR RES. CONSTR. ENGR.

AFFECTED DOCUMENTS

SIZE	NUMBER
W	G
W	G
W	G
W	G

SIZE	NUMBER
D	W G
D	W G
D	W G
D	W G

PIPING DWGS ONLY

NUMBER
S P E C -
S P E C -
S P E C -
S D

ENTER SEISMIC DOCUMENT IF APPLICABL

SUB-SECTION
S A R
E R
+
+

DCN/ECA APPROVALS

PREPARED BY JA Grusetskie

LEAD DISC RE: GC Hatwal

LEAD DISCIPLINE

APPROVED

PEM OR LIAISON ENGR./RES CONSTR. ENGR.

APP YES ___ NO XX — DATE 03/11/81

INTER-DISCIPLINE REVIEW

AWAITING AS-BUILT INFO/DWG FROM FIELD/CONTRACTOR YES ___

	INITIAL	DATE		INITIAL	DATE
I & C	N/A		MECH. SERV.	N/A	
MECH.	N/A		NUCLEAR	N/A	
ELEC./ SUB. STA.	N/A		PIPING/ P.S.E.G.	N/A	
ARCH.	N/A		STRUCT.	GCH	3/11/8

SAFETY RELATED APPROVAL

QA APPROVAL: NOT REQUIRED

OWNER REVIEW: NOT REQUIRED (IF REQUIRED)

Answers Cont'd

RESPONSE TO RFI 73/1442A continued

3. A) & B) See ECA 19/0203A.

4. A) Yes.
   B) Yes.

5. A) & B) Regardless of welding process used, all single or double bevel groove butt welds will require radiography and Magnetic Particle and Visual Examinations on both surfaces. All other single or double bevel groove welds will require Visual and Mag Particle examinations on both surfaces.

6. A) & B) All corner and tee joints require buttering.

7. Welding continuity as it relates to preheating is based on the thickness of the material and the requirements of AWS.

   After at least 1/3 of the joint is completed, preheat and welding can be terminated.

   Before starting the second or subsequent welds, a Visual Examination is required. Re-establish preheat and continue welding.

8. Method of tightening bolts is, of course, based on the type of bolt furnished and approved by Construction Managers in our Specifications. Type of bolt and tightening method can be determined in the field.

9. No preservative will be required. Field touch-up and painting will be performed by others as directed by the Resident Construction Manager.

Questions

1. UE&C drawing 9763-F-101482,note 4, requires sequencing of all field welds in order to minimize distortion. Pullman Higgins has been informed by the UE&C Welding department that sequencing is Pullman Higgins' responsibility.

   A. Please verify responsibility

   B. If responsibility is that of Pullman-Higgins', then will UE&C function as the engin as required by AWSD1.1,paragraphs 1.1.2 & 3.4.3.

   C. If item 1.B is affirmative, then who from and by what means will Pullman-Higgins obtain UE&C's approval and/or comment.

2. UE&C dwg. 9763-F-101482,note 2, indicates all sections and plates are of ASTM A588, grade 50 or A572,grade 50. We have been informed through UE&C Liaison Engineering, that the material is primarily if not exclusively ASTM A588,grade 50, purchased not tempered and quenched nor lamellar free. Experience has shown that this material is prone to lamellar tearing and must be closely controlled.

   A. Extension bars or run-off plates are required to be removed upon completion and cool of groove welds per 9763-WS-3. Shall backing strips be removed when used?

   B. Shall filler metal be E7018 or is there a requirement to match notch toughness of base material involving impact loading,requiring E8018 per AWSD1.1,Table 4.1.1, group II,note 6.

   C. Have highly restrained joints been identified? Is a standard preheat and interpass temperature sufficient for all applications or has a higher minimum preheat been established for highly restrained joints per AWS1.1, Table 4.2,note 3?

3. UE&C hanger engineering has informed Pullman-Higgins that specification 9763-12-2 applies to this installation and is a contractual requirement.

   A. Please verify that this specification is applicable.

   B. Please identify how Pullman-Higgins is tied in contractually to 12-2.

4. UE&C specification 9763-12-2,paragraph 3.6.7.a, and 3.6.7b.,refer to the terms "Limited" and "Unlimited" thickness per AWS specification. Research of AWS specific leads to Chapter 5 qualification, Part C Welder Qualification. Are we to understand the following definitions:
   a. Joints of limited thickness shall be plate, pipe or tube wall to 3/4" nominal maximum thickness per AWS D1.1,table 5.26.1

   b. Joints of unlimited thickness shall be plate, pipe or tube wall in excess of 3/4" nominal thickness per AWS D1.1,table 5.26.1.

5. UE&C specification 9763-12-2,paragraph 3.6.7a,single-bevel groove and paragraph 3.6.7b,square groove indicate Radiographic Examination if location of weld is critical. Paragraph 3.6.7a,single-bevel groove also adds "and Geometry permits".

   a. How will critical welds be identified to assure completion of the required Radiographic Examination?

   b. What action is required if Geometry does not permit Radiographic Examination? Who makes the final determination?

6. UE&C specification 9763-12-2,paragraph 3.6.7b,under type of weld, single-Vee groove, is a note which indicates Corner Joint require buttering.

Questions Cont'd

a. Do all single-Vee groove corner joints require buttering at the joined face? Doe this requirement also apply to a Tee connection? Single-Vee and/or double-Vee groove?

b. If all corner joints do not require buttering, who will make this determination?

7. UE&C specification 9763-12-2 does not address welding continuity.

8. UE&C specification 9763-12-2,paragraph 3.6.5 appears to indicate that the Construction Manager will specify the method of tightening of high strength bolts.

a. Of the three methods, which is required? Can one method be used in all cases?

b. If turn-of-nut method is used, will witness of required turning be adequate assurance of tightening, or will the requirements of paragraph 3.6.5.3 be required

9. UE&C specification 9763-12-2,paragraph 3.8.2 requires weld joints be painted. Who will co-ordinate this painting effort? In order to preclude a possibility of missing a joint due to inaccessibility, a clean-cut,expedient method should be developed. Furthermore, in order to prevent corrosion, will Pullman-Higgins be required to coat the weld area with any type of preservative, prior to painting immediately after successful inspection? If so, what type of preservative should be used?

PULLMAN - MACHINE

PRELIMINARY SCHEDULE

PREPARATION FOR WELDING LOOP PIPING

		16	① JUNE 17 - CLEAR HOT LEG SUPPORTS 6 MEN - 2 SH. - 12 HRS. - START FAB OF ALIGNMENT CLAMPS - 2 MEN - 1 SH. - 10 HRS. - EVALUATION OF ENGINEERING DOCUMENTATION	② 18 - REMOVE SIDE BARS FROM R.V. - 4 MEN - 1 SH. - BEGIN GRINDING 2 MEN - 1 SH. - 10 HRS. - WORKING 130'S & PROC. SHEETS - ENG. - UE&C TO ADVISE ON MAINT. OF DIAMETRICS - START TEMP. ARGON 2 MEN - 2 SH. - 10 HRS. - FAB. ALIGNMENT CLAMPS 2 MEN - 1 SH. - 8 HRS.	③ 19 - COMP. REMOVAL OF SIDE BARS 4 MEN - 2 SH. - START FAB OF PROTECTION CAGES (POWER PACKS) 2 MEN - 1 SH. - 8 HRS - FAB ALIGNMENT CLAMPS 2 MEN - 1 SH. 8 HRS - SST PWR. PACKS & TEMP. PROTECTING COVERING (ELECTRICAL) - GRIND HOT LEGS 2 MEN - 1 SH. - 10 HRS. - TEMP. ARGON 2 MEN - 2 SH - 10 HRS.	④ 20 - GRIND HOT LEGS 2 MEN - 1 SH. - 10 HRS. - TEMP. ARGON 2 MEN - 2 SH. - 10 HRS. - OPEN R.V. CAVITY AND PREP. FOR STAGING 10 MEN - 2 SH. - 12 HRS. - INSTALL ALLIGNMENT CLAMPS 2 MEN - 1 SH. - 8 HRS - FAB. PROTECTION CAGES 2 MEN - 1 SH - 8 HRS
⑤ 21 - GRIND HOT LEGS 2 MEN - 1 SH. - 10 HRS. - TEMP ARGON 2 MEN - 2 SH. - 10 HRS. - INSTALL FLOATING STAGING, PREP. HOLES & CLOSE CAVITY - 10 MEN - 2 SH. - 12 HRS - PT HOT LEG - 1 MAN - 3RD SH - INSTALL ALLIGNMENT CLAMPS 2 MEN - 1 SH. - 8 HRS. - FAB PROTECTION CAGES 2 MEN - 1 SH - 8 HRS.	⑥ 22 - SWITCH BOLTS ON TRUNNIONS FROM "A" TO "D" 6 MEN - 2 SH. - GRIND HOT LEGS 2 MEN. 1 SH - 10 HRS. - TEMP ARGON 2 MEN - 2 SH - 10 HRS	⑦ 23 - COMP. GRINDING 2 MEN - 1 SH - 10 HRS - INSTALL UPPER LATERAL SUPPORTS 6 MEN - 3 SH. - TEMP ARGON 2 MEN - 2 SH - 10 HRS.	⑧ 24 - COMP & ISSUE 130'S AND PROCESS SHEETS - PREP S.G. "D" FOR DRIFTING INTO PLACE 6 MEN - 3 SH. - PREP FOR FINAL FIT 6 MEN - 2 SH - 10 HRS - TEMP ARGON 2 MEN - 2 SH - 10 HRS	⑨ 25 - REQUIRE 42" TRACK, LEVELERS & EXTENSIONS ON SITE. - STRIP ORANGE WALL "MS" - "FW" FOR TEMP. ARGON - BEGIN FINAL FIT-UP AND ALLIGNMENT OF S.G. "D" 18 MEN - 2 SH. - 12 HRS. - TEMP ARGON 2 MEN - 2 SH. - 10 HRS.	⑩ 26 - COMP. DROPS FOR DIAMETRICS (ELECTRICAL) - COMP. TEMP. ARGON 2 MEN - 2 SH - 10 HRS. - CONTINUE FINAL FIT-UP 18 MEN - 2 SH - 12 HRS. - PREP FOR BASE LINE X-RAY - BEGIN ON 3RD SH. 3 MEN	⑪ 27 - SHOOT BASE LINE 3 MEN - 2 SH.
⑫ 28 - SHOOT BASE LINE 3 MEN - 1 SH. (AND/OR CONTINUE FINAL FIT-UP IF X-RAY IS COMPLETE) SHIFT WORK AS AVAIL.	⑬ 29 - CONTINUE FINAL FIT-UP 18 MEN - 2 SH - 12 HRS - DROP PROTECTION CAGES 2 MEN - 1 SH - 8 HRS	⑭ 30 - CONTINUE FINAL FIT-UP 18 MEN - 2 SH - 12 HRS	⑮ JULY 1 - CONTINUE FINAL FIT-UP 18 MEN - 2 SH. - 12 HRS	⑯ 2 - CONTINUE FINAL FIT-UP 18 MEN - 2 SH - 12 HRS	⑰ 3 - COMPLETE FINAL FIT-UP 18 MEN - 2 SH - 12 HRS.	⑱ 4 - INSTALL DIAMETRIC TRACKS 2 MEN - 2 SH - 10 HRS
⑲ 5 - INSTALL DIAMETRIC TRACKS 2 MEN - 2 SH - 10 HRS	⑳ 6 - BEGIN WELDOUT OF HOT LEG "D" 2-10 HR SHIFTS					

JULY

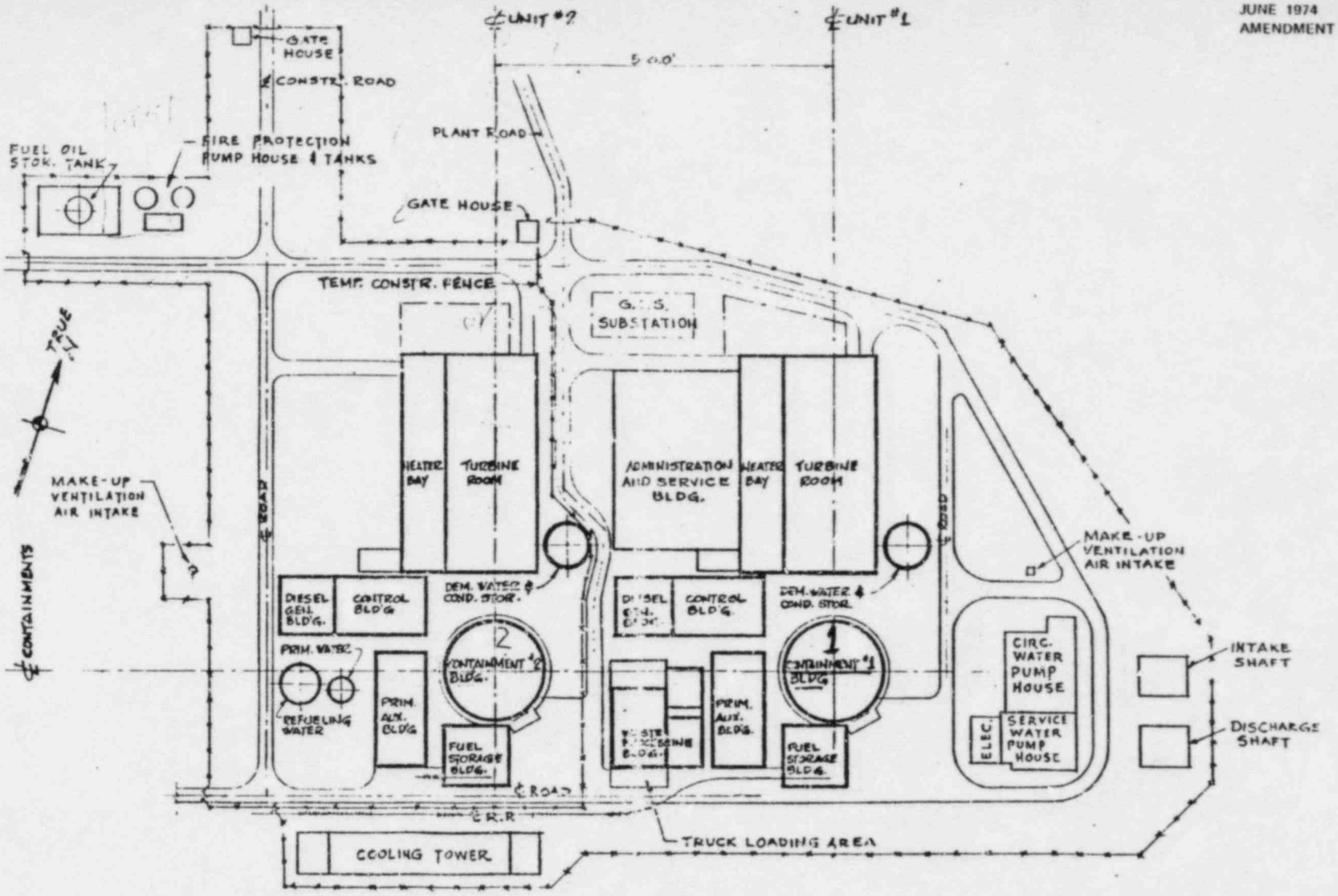
GENERAL NOTES

1) CONTAINMENT AREA WILL REQUIRE COMPLETE EVACUATION FOR ALL RT. SHOTS
2) FROM THE 6TH OF JULY - 2-10 HR. SHIFTS WILL BE REQUIRED THROUGH OUT 1ST SHIFT (5:30 AM - 3:30 PM) 2ND SHIFT (3:00 PM - 12:30 AM) RT SHIFT (11:30 PM - 7:30 AM)
3) UE&C TO ADVISE ON MAINTENANCE PROGRAM TO BE ESTABLISHED TO ACCOMODATE SHIFT OPERATION OF THE DIAMETRIC WELDING MACHINES
4) WELD TRAINING ON THE DIAMETRIC WELDING MACHINES WILL BE EMPHASIZED IN ALL AVAILABLE TIME THROUGH THE 6TH OF JULY INCLUDING OVERTIME IF FEASABLE.
5) MANPOWER LISTED DOES NOT INCLUDE FOREMAN SUPERVISION AND NON-MANUAL SUPPORT PERSONELL.
6) BEGINNING WELDOUT ON JULY 6 '81 IS CONTINGENT UPON THE RECIEVING, QUALIFIED, EXPERIENCED JOURNEYMAN DIAMETRIC WELDERS FROM THE UA. (THIS IS BEING WORKED ON PRESENTLY.)

TOTAL CRAFT MANHOURS (SEE NOTE 5)
3,924 MHS ST
1,712 MHS OT
} THROUGH JULY 6

6/18/81

BCM

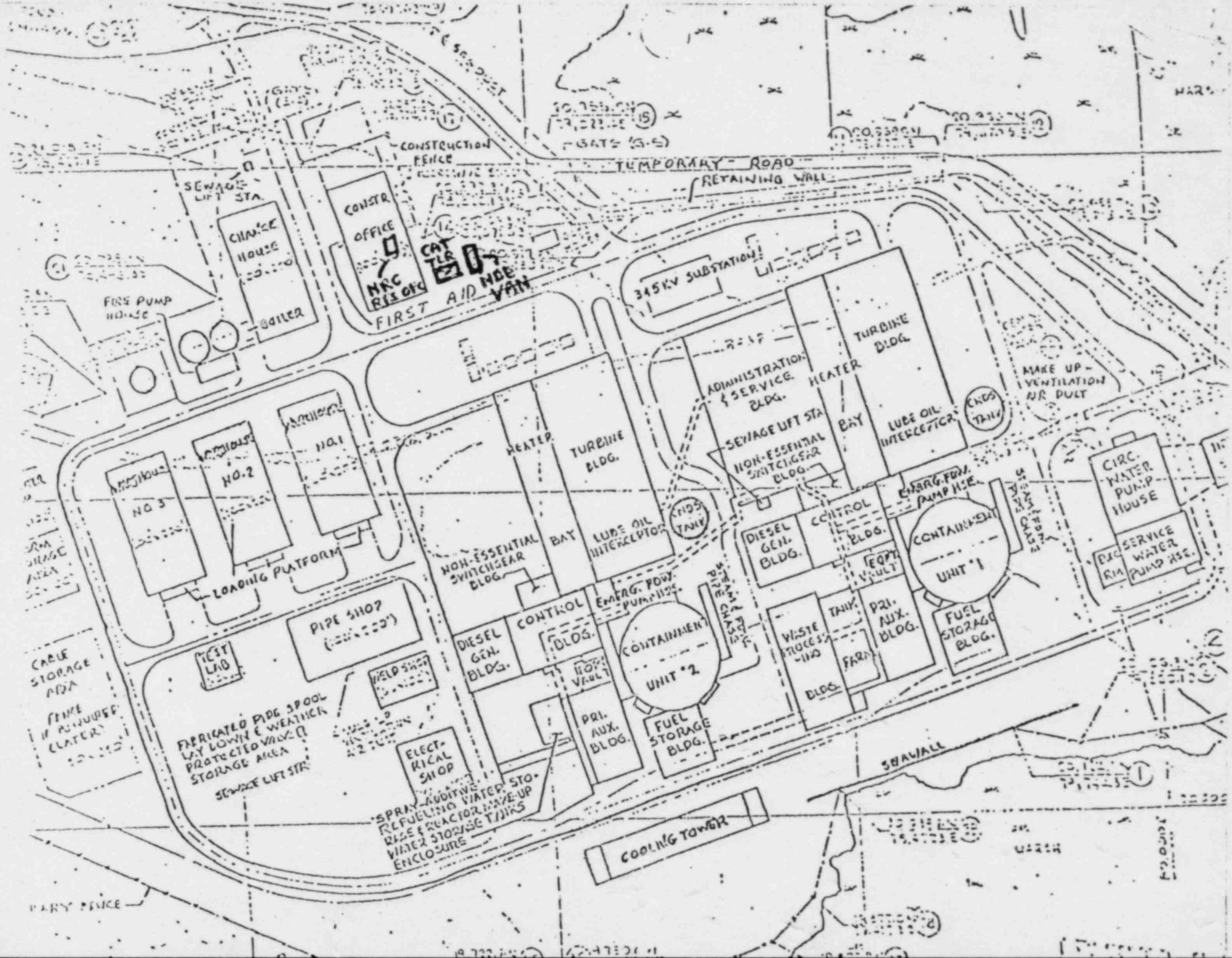


CONCEPT No 2

PLOT PLAN

SCALE: 1" = 150'

PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE SEABROOK STATION Preliminary Safety Analysis Report	PLOT PLAN FIG. 1.2-1


TEMPORARY ROAD
RETAINING WALL
CONSTRUCTION FENCE
SEWAGE LIFT STA.
CHANGE HOUSE
BOILER
FIRE PUMP HOUSE
CONSTR. OFFICE
NRC RES OFC
CAT TLR
FIRST AID
NDE VAN
345 KV SUBSTATION
ADMINISTRATION & SERVICE BLDG.
SEWAGE LIFT STA
NON-ESSENTIAL SWITCHGEAR BLDG.
HEATER BAY
TURBINE BLDG.
LUBE OIL INTERCEPTOR
MAKE UP VENTILATION AIR DUCT
CIRC. WATER PUMP HOUSE
SERVICE WATER PUMP HSE.
NO. 1
NO. 2
NO. 3
LOADING PLATFORM
PIPE SHOP
WELD SHOP
TEST LAB
CABLE STORAGE AREA
FENCE (CHAIN LINK)
FABRICATED PIPE SPOOL LAY DOWN & WEATHER PROTECTED VALVE STORAGE AREA
SEWAGE LIFT STA
ELECTRICAL SHOP
SPRAY ADDITIVE REFUELING WATER STO. RELEASE & REACTOR MAKE-UP WATER STORAGE TANKS ENCLOSURE
DIESEL GEN. BLDG.
CONTROL BLDG.
EMERG. POW. PUMPING
CONTAINMENT UNIT #2
FUEL STORAGE BLDG.
PRI. AUX. BLDG.
WASTE PROCESS BLDG.
TANK FARM
EQPT VAULT
CONTAINMENT UNIT #1
ENERG. POW. PUMP HSE.
SEAWALL
COOLING TOWER
PARK FENCE

from 9763-006-248-51 Rev 6 3/5/80

13
SR

2.0 APPLICABLE SPECIFICATIONS, CODES, STANDARDS AND DOCUMENTS

The latest issue of the documents contained below including all supplements, revisions and addenda in effect on the date of award of the purchase order, form a part of this specification to the extent specified herein, except that the following issues of the ASME Boiler and Pressure Vessel Code are applicable:

a. For design, use the 1971 Code, Section III, with addenda up to and including Winter, 1972.

b. For fabrication, use the 1977 Code, Section III, with addenda up to and including Winter, 1977.

c. For Inservice Inspection, use the 1974 Code, Section XI, with addenda up to and including Summer, 1975 for Unit 1; use the 1977 Code, Section XI with addenda up to and including Summer, 1978 for Unit 2.

2.1 SPECIFICATIONS

a. United Engineers Constructors, Inc. (UE&C)
30 South 17th Street
Philadelphia, Pa. 19101

9763-006-44-1	Mechanical Services for Fire Pump House
9763-006-44-2	Embedded and Underbuilding Piping
9763-006-44-5	Yard Mechanical Work
9763-006-44-8	Yard Sanitary Drainage System
9763-006-45-10	Administration and Services Building - Mechanical Work
9763-006-67-1	Sanitary Lift Stations
9763-006-238-12	Potable Water Pumping Station
9763-006-238-14	Fire Pumps and Controllers
9763-006-18-17	Installation of Concrete Expansion Anchors

9763-006-246-7	Fire Protection Tanks
9763-006-248-1	Shop Fabricated Piping
9763-006-248-2	Specification for Fabrication of Cement Lined Pipe and Nonferrous Pipe
9763-006-248-20	Yard Fire Protection and Yard Potable Water Piping Installation
9763-006-248-43	Design Specification for Nuclear Power Plant Piping Systems
9763-006-263-1	Major NSSS Equipment Final Setting
9763-006-263-2	Specification for Mechanical Equipment Erection
9763-MPS-1	Materials and Processing Requirements (Nuclear)
9763-MPS-2	Materials and Processing Requirements (Non-Nuclear)
9763-MPS-3	Materials & Processing Requirements For Bending of Welded Studs, Reinforcing Bars and Anchor Bolts
9763-[illegible]-3	Plumbing Fixtures and Plumbing Specialties
9763-006-45-7	Unit Heaters and Heating Accessories
9763-WS-1	Welding and Nondestructive Examination for Nuclear Pressure Components and Nuclear Power Piping
9763-WS-1-NF	Requirement for Welding and Nondestructive Examination for Nuclear Component Supports

9763-WS-2	Welding and Nondestructive Examination for Non-Nuclear Pressure Components and Non-Nuclear Piping
9763-WS-3	Requirements for Welding and Non-destructive Examination for Structural Steel
9763-WS-5	Brazing
9763-QAS-1	Administrative and System Requirements (Nuclear)
9763-QAS-2	Administrative and System Requirements (Non-Nuclear)

b. American Water Works Association (AWWA)
2 Park Avenue
New York, New York 10016

C-203	Exterior Coating
C-205	Cement Lining

c. American Society for Testing and Materials (ASTM)
1916 Race Street
Philadelphia, Pa. 19103

E515-74	Vacuum Box Leak Test

Materials Specifications

d. Steel Structures Painting Council (SSPC)
4400 Fifth Avenue
Pittsburgh, Pa. 15013

SP-6 Commercial Blast Cleaning

2.2 CODES AND STANDARDS

2.2.1 Codes

a. American Society of Mechanical Engineers (ASME)
United Engineering Center
345 East 47th Street
New York, New York 10017

Pullman Document

SECTION XII

Applies to XII

6-12-80

Doc. Desc.	Rev.	Rev. Date
Carbon Steel		
GWS-III → GWS-III	02	6-25-79
IT1-III-1-KI-12	03	1-15-80
IT8-III-1-BR-2	04	8-01-79
IT10-III-1-OB-1	02	8-01-79
IT11-III-1-OB-2	02	8-01-79
IT12-III-1-OB-12	02	8-01-79
PQR 016-A	00	4-14-78
PQR 016-B	00	4-14-78
PQR 017-A	00	4-14-78
PQR 017-B	00	4-14-78
PQR 019-A	00	4-14-78
PQR 019-B	00	4-14-78
PQR 020-A	00	4-14-78
PQR 020-B	00	4-14-78
PQR 021-A	00	4-14-78
PQR 021-B	00	4-14-78
PQR 028-A	00	4-14-78
PQR 028-B	00	4-28-78
PQR 029-A 029-B	00	4-28-78
		9-8-78
Stainless Steel		
24-III-8-KI-12	02	1-19-79
26-III-8-OB-2	01	6-05-79
27-III-8-OB-12	02	1-19-79
29-III-8-OB-1	03	6-21-79
Carpenter		
408-III-CARP20-OB-1	01	6-25-79
409-III-34-OB-1	00	6-18-79
PQR-106	01	2-08-79
PQR-109	00	4-06-79
PQR-110	01	2-08-79
PQR-121	00	6-14-79
PQR-508	00	2-06-79
PQR-509	00	5-09-79
Dissimilar Metal		
77-III-8/1-KI-12	01	1-19-79
79-III-8/1-OB-1	01	1-19-79
81-III-8/1-OB-12	01	1-19-79
84-III-8/1-K-12-F43	02	7-25-79
PQR-308	01	12-7-78
PQR-309	00	4-06-78
PQR-310	00	4-06-78
PQR-311	00	4-06-78
PQR-313	00	4-06-78
Cement Lined		
GWS-CS-CL	02	9-10-79
CL1-1-BR-2	00	8-14-78
PQR-013A	00	3-27-78
CL2-1-OB-2	00	8-14-78
PQR-010	00	3-27-78
AWS-I-1	03	1-07-80

14

15

DOC. NO.	REV. NO.	REV. DATE	TITLE
II-2	02	1-4-80	NDE PERSONNEL CONTROL AND ADMIN. EXAMINATION, QUALS. AND CERTIFICATION.
II-3	02	1-7-80	CONTROL AND ADMIN. OF EXAMINATION, QUAL. AND CERTIFICATION OF NDE LEVEL III PERSONNEL.
II-4	03	5-22-80	INSPEC. AND TESTING PERSONNEL CONTROL AND ADMIN. TRAINING EXAM. QUAL. AND CERTIFICATION. *
II-5	04	8-4-80	QA ENGINEERING PERSONNEL CONTROL AND ADMIN. OF TRAINING EXAM QUAL. AND CERTIFICATION. *
II-8	02	10-29-79	WELDER PERFORMANCE QUALIFICATION. *
III-4	08	7-1-80	DRAWING AND DESIGN CONTROL.
III-5	01	12-1-78	FIELD INSTALLATION ISO. PREPARATION.
III-6	00	1-30-79	FIELD INSTALLATION PIPE SUPPORT DWG. PREP.
IV-14	02	1-30-79	CENTRAL PURCHASING. *
IV-501	03	9-17-79	LOW ALLOY COVERED ARC WELDING ELECTRODES
IV-502	01	9-22-78	CORROSION RESISTING AND CHROMIUM NICKEL STEEL COVERED ARC WELDING ELECTRODES.
IV-504	02	8-10-79	MILD STEEL WELDING WIRE, ROD, OR CONSUMABLE INSERT.
IV-507	02	7-17-79	BARE CORROSION CHROMIUM NICKEL STEEL, FILLER WIRE AND INSERT MATERIAL FOR GAS TUNGSTEN ARC WELDING.
IV-509	03	9-17-79	BARE WELDING RODS OR CONSUMABLE INSERT OF SPECIAL CHEMICAL COMPOSITION.
V-2	01	7-17-80	SAFETY TAGGING OF EQUIPMENT.
VI-1	03	7-1-80	DOCUMENT CONTROL.
VI-4	01	4-19-79	PIPE SUPPORT DWG. & DOC. CONTROL. *
VI-5	04	10-29-79	CONTROL OF PROCESS SHEETS AND WELD STORES REQ.
VI-8	00	11-2-79	USE OF DSR.
VII-1	03	1-15-80	VENDOR QUALIFICATIONS.
VIII-1	04	7-11-80	IDENTIFICATION OF MATERIALS, PARTS, COMPONENTS.
VIII-2	03	3-13-80	MATERIAL AND SUB-ASSEMBLY WITHDRAWAL PROC.
JS-VIII-3	07	6-24-80	CONTROL OF WELD MATERIAL.

DOC. NO.	REV. NO.	REV. DATE	TITLE
IX-1	02	9-13-79	INSTALLATION AND INSPECTION OF CONCRETE EXPANSION ANCHORS AND WEDGE ANCHORS.
IX-3	01	9-22-78	FABRICATION AND FIELD INSTALLATION SPECS. FOR NUCLEAR POWER PLANT COMPONENTS, PIPING SYS. AND APPURTENANCES ASME SECTION III.
IX-5	03	3-28-80	INSTALLATION AND INSPECTION OF ASME III AND ANSI B31.1 THREADED FASTENERS FOR MECH. FLANGED JOINTS.
IX-6	02	4-11-79	INSTALLATION OF PIPE HANGERS.
JS-IX-14	02	6-9-79	DEFECT REMOVAL AND REPAIR BY WELDING.
IX-16	01	12-14-78	FIELD BENDING OF 2" AND SMALLER, NUCLEAR AND B31.1 PIPE.
IX-27	03	5-21-80	COAL TAR PROTECTIVE COATING AND LININGS FOR STEEL WATER PIPE LINES ENAMEL AND TAPE.
IX-29	05	4-10-80	SPECIFICATIONS FOR PURGE DAMS.
IX-30	02	7-10-79	CEMENT LINING REPAIR AND GROUTING.
IX-31	00	8-3-78	APPLICATION OF X-PANDO TO PIPE JOINTS.
IX-39	00	5-3-79	HANDLING, INSTALLATION, TESTING AND INSPECTION SAFETY RELATED EQUIPMENT.
IX-43	00	5-9-80	PREHEAT, INTERPASS AND POST WELD HEAT TREAT.
IX-47	00	2-28-80	PROCEDURE FOR CORE DRILLING.
IX-49	00	6-6-80	HORNFLEX SEALANT OF JOINTS.
X-4	03	5-7-80	FINAL INSPECTION PROC. (FIELD)
X-5	03	8-26-80	FIELD RECEIVING INSPECTION PROCEDURE.
X-9	04	8-9-79	IN-PROCESS FIELD INSPECTION PROC.
X-10	04	8-26-80	WELD MONITORING.
X-11	00	7-13-78	VISUAL EXAMINATION (GENERAL).
XI-1	04	2-4-80	FIELD LEAK TESTING, HYDRO AND PNEUMATIC.
XII-2	04	5-15-79	CALIBRATION OF TOOLS, MEASUREMENT AND TEST EQ
XIII-4	03	7-21-80	CLEANING PROCEDURE. (FIELD)
XIII-5	02	1-18-80	FIELD STORAGE PROCEDURE.

DOC. NO.	REV. NO.	REV. DATE	TITLE
XIII-9	05	7-17-80	FIELD HANDLING OF MATERIALS AND EQUIPMENT.
XIII-11	00	7-13-78	STANDARD METHOD OF PROTECTING ENDS OF FABRICATED PIPE FOR NUCLEAR SERVICE.
JS-XIII-16	01	5-20-80	SAND BLAST CLEANING OF CARBON STEEL PIPE.
XV-2	06	2-8-80	HANDLING OF NONCONFORMANCES (FIELD).
XV-3	02	1-24-80	REPORTING OF DEFECTS AND NON-COMPLIANCE TO NCR 10CFR Part 21.
XV-4	03	6-24-80	HOLD TAG USAGE.
XVI-2	02	3-26-80	CORRECTIVE ACTION.
XVII-3	06	11-4-79	RECORDS MANAGEMENT.
XVIII-1	01	3-1-79	INTERNAL AUDITING PROC. OF FIELD QA PROGRAM BY THE QEG.
IX-RT-1-W77	03	6-8-79	RADIOGRAPHIC PROC. IR-192 BUTT WELDING PIPE WINTER ADDENDA 1977.
PQR-RT-1	00	8-29-78	NDE PROC. QUAL. RECORD BUTT/WELD PIPE IR-192.
IX-RT-3-W77	03	6-18-80	NOZZLE WELDS WINTER ADDENDA 1977.
PQR-RT-3	00	8-30-78	NOZZLE WELDS WINTER ADDENDA 1977.
IX-PT-1-W77	02	10-24-79	LIQUID PENETRANT EXAM TO ASME SECTION III.
PQR-PT-1	00	9-6-78	PROC. QUAL. FOR LIQUID PENETRANT EXAM TO ASME SECTION III.
IX-MT-1-W77	03	12-18-79	MAG. PARTICLE DRY POWDER CONTINUOUS PROD. MET
PQR-MT-1	00	9-6-78	PROC. QUAL. FOR MAG. PARTICLE DRY POWDER CONT PROD. METHOD.
IX-UT-1-W77	01	10-24-79	ULTRASONIC EXAM OF WELDMENT.
PQR-UT-1	00	9-7-78	PROC. QUAL. FOR ULTRASONIC EXAM OF WELDMENT.
IX-UT-2-W77	01	10-24-79	ULTRASONIC EXAM OF WELDMENT OF SEAMLESS AND WELD TUBULAR MATERIAL WINTER ADDENDA 1977.
PQR-UT-2	00	9-7-78	PROC. QUAL. FOR ABOVE UT-2 TITLE.
IX-UT-3-W77	00	7-18-78	ULTRA THICKNESS MEASUREMENT WINTER ADDENDA
PQR-UT-3	00	9-7-78	PROC. QUAL. ULTRA THICKNESS MEASUREMENT WINTER ADDENDA 1977.

PULLMAN-HIGGINS

SEABROOK, NEW HAMPSHIRE

JOB# 7035

UE&C NO.	EMPLOYEE NO.	NAME	JOB TITLE
6511	25048	Agresta, Peter W.	Construction Eng.
6516	25005	Corcoran, John J.	Administrative Assistant
6502	16875	Davis, Richard G.	Q.A. Manager
6515	25019	Hughes, Cecil H.	Field Eng. I
6510	25035	Levan, Bruce A.	Draftsman II
65(		Jones, David R.	Q.A. Controller I
6503	10761	Nicholson, William T.	Welding Supv.
6501	10538	Puzo, Louis P.	Construction Supt.
6513	25049	Romania, Frank L.	Field Eng. I
6508	60439	Rowley, James P.	Res. Const. Manager
6504	18443	Sinclair, Harold M.	Chief Field Eng.
6514		Toole, Curtis F.	Construction Eng.
6506	24992	Waldman, Emil E.J.	Draftsman II
6505	25022	Walsh, Stephen	Field Eng. I
6509	01508	Yearick, Marvin J.	Field Admin. Manager
6517	25079	Butler, James N.	Craft Supervisor I

SEABROOK 1 - MODULE STATUS

48061	Saf Rel Struc - Std + Sup - Proced	78-09 (80%)	78-16 (100%)	79-06 (100%)			C
48063	Saf Rel Struc - Std + Sup Obs Work	78-16 (10%)					
48065	Saf Rel Struc - Std + Sup - Records	0					
48064	SR Struc - Std + Sup II Obs Work	0					
48066	SR Struc - Std + Sup II - Records	0					
49051	Reac Cool. Press Piping - QA Proced	78-13 (25%)	78-14 (80%)	78-15 (70%)			IP 2e remains to be done.
49053	Reac Cool Press Piping I - Obs Work	0					
49055	Reac Cool Press Piping I - Records	0					
49054	Reac Cool Press Piping II - Obs Work	0					
49056	Reac Cool Press Piping II - Records	0					
49061	Saf. Rel Piping - QA Proc	78-01 (20%)	78-13 (25%)	78-14 (80%)	78-15 (70%)		IP 2e remaining to be done
49063	Saf Rel Piping - Obs Work	78-01 (10%)	78-04 (20%)	78-15 (20%)	79-06 (30%)	2 out of 10 done (welder of sew water + pipe coatings)	
49065	Saf Rel Piping - Records	0					
50051	RPV Install - QA Proced Cage/McBrearty	77-04 (10%)	79-01 (20%)	79-03 (30%)		Par 2 a + b complete	
50053	RPV Install - Obs Work, McBrearty	77-04 (10%)	77-05 (10%)			taken only - start all over.	
50055	RPV Install - Records	0					
50061	RPV Internals - QA Proc.	0	79-07 (10%)	79-10 (20%)			
50063	RPV Internals - Obs Work	0	79-07 (10%)	79-10 (20%)			
50065	RPV Internals - Records	0	79-07 (10%)				

SEABROOK 1 - MODULE STATUS

55071	Reactor Bound Pipe Weld QA Proced	79-04 (100%)						C
55073	Reactor Bound Pip Weld = Obs Work	79-04 (100%)						C
55075	RCB Pipe Weld - II Records	79-04 (100%)						C
55074	RCB Pipe Weld - III, Obs Work	79-04 (100%)						C
55076	RCB Pipe Weld III, Records	79-04 (100%)						C
								C
55081	Saf Rel Pip. Weld - QA Proc.	78-14 (80%)				can be closed out as 100%		O
55083	Saf Rel Pip Weld - Obs Work	79-04 (100%)						C
55085	Saf Rel Pip Weld - Records.	79-04 (100%)						C
55171	RCPB Weld Specs							
55172	" Mat'l Control							
55173	" Obs. of Welding							
55175	" Exam. of Welds							
55176	" Ht Treat							
55177	" Welder Qual							
55178	" Spec. Weld. Appl.							
55181	Safe Rel. Specs	80-03 (50%)	80-04 (80%)					
55182	" " Mat'l Control	80-03 (80%)						
55183	" " Obs of Welding	80-04 (50%)						
55185	" " Exam. of Welds							
55186	" " Ht. Treat							
55187	" " Welder Qual							
55188	" " Spec Weld Appl.							

SEABROOK 2 MODULE STATUS

48061	Safety Related Struc Steel + Supports	Procedures	78-16 (100%)					C
48063		I Observ. Work	78-16 (10%)					
48065		I Records	0					
48064		II Observ Work	0					
48066		II Records	0					
49051	Reactor Coolant Pres. Boundary Piping	Procedures	78-14 (80%)	78-15 (70%)				TP 2e remains
49053		I Observ Work	0					
49055		I Records	0					
49054		II Observ. Work	0					
49056		II Records	0					
49061	Safety Rel Piping	Procedures	78-14 (80%)	78-15 (70%)				TP 2e remains
49063		Observation Work	0					
49065		Records	0					
50051	RPV Install	Procedures	79-01 (20%)	79-03 (30%)	79-10 (20%)			Par. 2 a + b completed
50053		Observation Work	79-04 (10%)	79-10 (20%)				Par 1 a, c + d completed.
50055		Records	0					
50061	RPV Internals	Procedures	0	79-10 (20%)				
50063		Observation Work	0					
50065		Records	0					

SEABROOK 2 MODULE STATUS

50071	Safety Related Components	Procedures	78-05 (50%)	78-15 (70%)	80-01 (100%)				C
50073		I Observation Work	77-03 (1H)	78-15 (50%)	80-01 (60%)				
50075		I Records	0						
50074		II Observation Work	0						
50076		II Records	0						
50090		Safety Rel. Pipe Supports + Restraints	0						
51051	Electrical Components + Systems	Procedures	79-03 (10%)	79-10 (20%)				Token start - do whole module	
51053		I Observation Work	0						
51055		I Records	0						
51054		II Observation Work	0						
51056		II Records	0						
51061	Electrical Cables and Terminations	Procedures	0	79-10 (20%)					
51063		I Observation Work	0						
51065		I Records	0						
51064		II Observation Work	0						
51066		II Records	0						
55051		Cont Struc Steel - QA Procs	78-01 (100%)	78-03 (100%)					C
55081		Saf. Rel Pipe Weld - QA Proc.	78-14 (80%)						

			55075	79-04 (100%)	C	
55071	55071	79-04 (100%) C	55076	79-04 (100%)	C	# NOT REQ'D TO BE CLOSED OUT
55073	55073	79-04 (100%) C	55081	79-04 (100%)	C	
55074	55074	79-04 (100%) C	55083	79-04 100%	C	
			55085	79-04 100%	C	

Seabrook 1 and 2

I. ASME III - W 77 (Fabrication)
ASME III - W 72 (Design)

II Specifications

UE EC

9763-006-248-5-1, Revision 3 Specification for Assembly and Erection of Piping and Mechanical Equipment

248-1 Shop Fabricated Piping (Fraco)
-2 Spec for Fabrication of Cement lined and Nonferrous Piping
-43 Design Spec for Nuclear Power Plant Piping Systems
263-2 Spec for Mechanical Equipment Erection
9763-MPS-1 Materials and Processing Requirements
WS-1 Welding and NDE for Nuclear Pressure Components and Nuclear Power Piping
Dwg M-804999 Weld Surface Preparation for TSI
" 5000-F-1382 Standard Weld End Preparation Details for Pipe

Pullman Power Products

SOCKET OR FILLET WELDS
Welders qualified for gr[illegible] welds are also qu[illegible]ed to make fillet welds of any size on all thickness and pipe diameters within the welding variables.

		CARBON AND LOW ALLOY													STAINLESS AND DISS.								
		O.B.		O.B.		O.B.			KI			B.R.			O.B.		O.B.			KI		
		SMAW		GTAW		GTAW-SMAW			GTAW-SMAW			SMAW			GTAW		GTAW-SMAW			GTAW-SMAW		
		CL1-1-OB-2 IT11-III-1-OB-2		10-I-1-OB-1 73-I-4/1-OB-1 IT10-III-1-OB-1		61-1-5-OB-12 12-I-1-OB-12 IT12-III-1-OB-12			I-1-1-KI-12 74-1-5/1-KI-12 IT1-III-1-KI-12 71-I-4/1-KI-12 44-I-4-KI-12 48-I-5-KI-12			8-I-1-BR-2 50-I-5-BR-2 59-I-4-BR-2 IT8-III-1-BR-2 CL1-1-BR-2			79-1-8/1-OB-1 79-III-8/1-OB-1 29-III-8-OB-1		27-I-8-OB-12 81-I-8/1-OB-12 81-III-8/1-OB-12 27-III-8-OB-12 39-I-8-BR-2			24-I-8-KI-12 77-I-8/1-KI-12 77-III-8/1-KI-12 24-III-8-KI-12 39-I-8-BR-2		
WELDER	STEN	L	S	XL	L	L	S	H	L	S	H	L	S	H	XL	L	L	S	H	L	S	H
L.A. BROCHU	B4					X+	X*		X+	X*		X+	X*					X*		X+	X*	
W.O. CHANDLER	CO									X*			X*								X*	
J.R. BOLDUC	D7									X*			X*				Note 4	Note 1		X+	X*	
G.R. CURTIS	F6									X*			X*									
R.G. ROBERTS B/M	G3												Note 2					Note 3				
E.F. DONAHUE B/M	H4												X					Note 3				
B. FOSTER	H7									X*			X*								X*	
S. GALLEY	H8									X*	Note 5		X*	Note 5								
G. [illegible]ORIDINO	J1								X+	X*		X+	X*								X*	
R. HEMOND	J5									X*			X*								X*	
J. LOBIKIS	J7									X*			X*					X*			X*	
D.P. GUAY	K3					X+	X*			X*			X*					X*			X*	
M. GOULET	K5									X*			X*					X*			X*	
G. BELL	K6									X*			X*								X*	
J.F. SILVA	K7									X*			X*								X*	
R.J. TANGUAY	K8									X*	Note 5		X*	Note 5								
D. SEIPEL	L3									X*			X*									
M. SOUTRA	L6									X*			X*									

XL = FROM ½" NPS TO MAX. DIA., 1/16" to 294" WALL

L = FROM 3/4" NPS 1/16" - .436" WALL

S = FROM 2½" NPS to MAX DIA., 1/16" to .864" WALL

H = FROM 2½" NPS to MAX DIA., 3/16" to MAX WALL

NOTE 1: For 408-1-Carp-20-OB-1; 408-III-Carp-20-OB-1 only to .560" WALL

NOTE 2: Plate only: Limited to .750" WALL

NOTE 3: For 39-I-8-BR-2 only

NOTE 4: For 408-I-Carp-20-OB-1; 408-III-Carp-20-OB-1 to .308" wall only

NOTE 5: Qualified for following thickness: GTAW 1/16" to .176" Max. SMAW 3/16" to Max to be welded

X = COMBINATION TESTS QUALIFY FOR THE FOLLOWING: GTAW; .176" WALL, SMAW; .688" WALL

\+ = COMBINATION TESTS QUALIFY FOR THE FOLLOWING: GTAW; .176" WALL, SMAW; .260" WALL

OCKET OR FILLET WELDS
elders qualified for
roov- elds are also
ual l to make fillet
elds .. any size on all
hickness and pipe
iameters within the
elding variables.

		O.B.		O.B.		O.B.			KI			B.R.			O.B.		O.B.			KI		
		SMAW		GTAW		GTAW-SMAW			GTAW-SMAW			SMAW			GTAW		GTAW-SMAW			GTAW-SMAW		
		CL1-1-OB-2 IT11-III-1-OB-2		10-I-1-OB-1 73-I-4/1-OB-1 IT10-III-1-OB-1		61-1-5-OB-12 12-I-1-OB-12 IT12-III-1-OB-12			1-I-I-KI-12 74-1-5/1-KI-12 IT1-III-1-KI-12 71-I-4/1-KI-12 44-I-4-KI-12 48-I-5-KI-12			8-I-1-BR-2 50-I-5-BR-2 59-I-4-BR-2 IT8-III-1-BR-2 CL1-1-BR-2			79-1-8/1-OB-1 79-III-8/1-OB-1 29-III-8-OB-1		27-I-8-OB-12 81-I-8/1-OB-12 81-III-8/1/-OB-12 27-III-8-OB-12 39-I-8-BR-2			24-I-8-KI-12 77-I-8/1-KI-12 77-III-8/1-KI-12 24-III-8-KI-12 39-I-8-BR-2		
WELDER	STEN	L	S	XL	L	L	S	H	L	S	H	L	S	H	XL	L	L	S	H	L	S	H
J. COCHRANE	LO									X*	Note 5		X*	Note 5			X+				X*	
B. QUINLAN	M1									X*			X*									
D. SCHAEFER	N1									X*			X*								X*	
R. DESJARDINS	N2									X*			X*					X*			X*	
J. CHASSE	N7									X*			X*							X+	X*	
L.D. MORSE	P2									X*	Note 5		X*	Note 5								
W.H. NEWMAN	P3									X*			X*								X*	Note 5
T.S. AHERN	P6					X+				X*			X*								X*	
R.F. CROCK	P7									X*			X*									
J.W. CORMIER	S4									X*			X*								X*	
W. DEVEREAUX S/F	T4						X*						X									
W.E. MILDON	T8									X*			X*									
W.M. PRUNIER	TO					X+	X*			X*			X*				X+				X*	
R.E. BLANCHETTE	X2									X*			X*									
E.G. DABRIEO	X7									X*			X*									
P.H. IVERY	Y4									X*			X*									
R.P. LAFLAMME	YO									X*			X*									
E.R. JOHNSON	Z2									X*			X*									

CL = FROM ½" NPS TO MAX. DIA., 1/16" to 294" WALL

. = FROM 3/4" NPS 1/16" - .436" WALL

; = FROM 2½" NPS to MAX DIA., 1/16" to .864" WALL

= FROM 2½" NPS to MAX DIA., 3/16" to MAX WALL

NOTE 1: For 408-1-Carp-20-OB-1; 408-III-Carp-20-OB-1 only to .560" WALL

NOTE 2: Plate only: Limited to .750" WALL

NOTE For 39-I-8-BR-2 only

NOTE For 408-I-Carp-20-OB-1; 408-III-Carp-20-OB-1 to .308" wall only

NOTE 5: Qualified for following thickness: GTAW 1/16" to .176" Max. SMAW 3/16" to Max to be wel

* = COMBINATION TESTS QUALIFY FOR THE FOLLOWING: GTAW; .176" WALL, SMAW; .688" WALL

- = COMBINATION TESTS QUALIFY FOR THE FOLLOWING: GTAW; .176" WALL, SMAW; .260" WALL

OCKET OR FILLET WELDS elders qualified for roove welds are also ual[illegible]d to make fillet eld any size on all hickness and pipe iameters within the elding variables.

	O.B.	O.B.	O.B.	KI	B.R.	O.B.	O.B.	KI
	SMAW	GTAW	GTAW-SMAW	GTAW-SMAW	SMAW	GTAW	GTAW-SMAW	GTAW-SMAW
	CL1-1-OB-2 IT11-III-1-OB-2	10-I-1-OB-1 73-I-4/1-OB-1 IT10-III-1-OB-1	61-1-5-OB-12 12-I-1-OB-12 IT12-III-1-OB-12	1-I-1-KI-12 74-1-5/1-KI-12 IT1-III-1-KI-12 71-I-4/1-KI-12 44-I-4-KI-12 48-I-5-KI-12	8-I-1-BR-2 50-T-5-BR-2 59-I-4-BR-2 IT8-III-1-BR-2 CL1-1-BR-2	79-1-8/1-OB-1 79-III-8/1-OB-1 29-III-8-OB-1	27-I-8-OB-12 81-I-8/1-OB-12 81-III-8/1-OB-12 27-III-8-OB-12 39-I-8-BR-2	24-I-8-KI-12 77-I-8/1-KI-12 77-III-8/1-KI-12 24-III-8-KI-12 39-I-8-BR-2

WELDER	STEN	L	S	XL	L	L	S	H	L	S	H	L	S	H	XL	L	L	S	H	L	S	H
R.J. DORIN	Z3									X*			X*									
J.F. BEAUPRE B/M	Z5												X									
W. HUTCHINSON	Z6									X*			X*									
A. MALLEY	Z7									X*			X*									
D. REILLY	Z8									X*			X*									
V.L. EBERSOLE S/F	AB						X*						X									
W.B. YORK	AC									X*			X*									
E. GREGG	AE									X*			X*									
W. [illegible]ERTZ	AG									X*			X*									
J.G. [illegible]NOZA	AH									X*			X*									
H.O. ALERS	AL									X*			X*									
R.P. ALLEN	AM									X*			X*									
F.W. SYKES S/F	AN												X									
T.J. COYER	AP									X*			X*					X*			X*	Note 5
L.J. THAXTON	AS									X*			X*									
R.A. SHUFFLETON	AT									X*			X*									
O.W. DUPONT S/F	AV												X									

XL = FROM ½" NPS TO MAX. DIA., 1/16" to 294" WALL

L = FROM 3/4" NPS 1/16" - .436" WALL

S = FROM 2½" NPS to MAX DIA., 1/16" to .864" WALL

H = FROM 2½" NPS to MAX DIA., 3/16" to MAX WALL

NOTE 1: For 408-1-Carp-20-OB-1; 408-III-Carp-20-OB-1 only to .560" WALL

NOTE 2: Plate only: Limited to .750" WALL

NOTE [illegible] For 39-I-8-BR-2 only

NOTE [illegible] For 408-I-Carp-20-OB-1; 408-III-Carp-20-OB-1 to .308" wall only

NOTE [illegible] Qualified for following thickness: GTAW 1/16" to .176" Max. SMAW 3/16" to Max to be we

* = COMBINATION TESTS QUALIFY FOR THE FOLLOWING: GTAW; .176" WALL, SMAW; .688" WALL

+ = COMBINATION TESTS QUALIFY FOR THE FOLLOWING: GTAW; .176" WALL, SMAW; .260" WALL

SOCKET OR FILLET WELDS
Welders qualified for groove welds are also qualified to make fillet welds any size on all thickness and pipe diameters within the welding variables.

		O.B.		O.B.		O.B.			K1			B.R.			O.B.		O.B.			K1		
		SMAW		GTAW		GTAW-SMAW			GTAW-SMAW			SMAW			GTAW		GTAW-SMAW			GTAW-SMAW		
		CL1-1-OB-2 IT11-III-1-OB-2		10-I-1-OB-1 73-I-4/1-OB-1 IT10-III-1-OB-1		61-1-5-OB-12 12-I-1-OB-12 IT12-III-1-OB-12			1-I-1-KI-12 74-1-5/1-KI-12 IT1-III-1-KI-12 71-I-4/1-KI-12 44-I-4-KI-12 48-I-5-KI-12			8-I-1-BR-2 50-I-5-BR-2 59-I-4-BR-2 IT8-III-1-BR-2 CL1-1-BR-2			79-1-8/1-OB-1 79-III-8/1-OB-1 29-III-8-OB-1		27-I-8-OB-12 81-I-8/1-OB-12 81-III-8/1-OB-12 27-III-8-OB-12 39-I-8-BR-2			24-I-8-KI-12 77-I-8/1-KI-12 77-III-8/1-KI-12 24-III-8-KI-12 39-I-8-BR-2		
WELDER	STEN	L	S	XL	L	L	S	H	L	S	H	L	S	H	XL	L	L	S	H	L	S	H
D. SMITH M/W	AY												Note 2									
R.A. McGANN	BA									X*			X*									
R.J. CORRADINO	BB									X*			X*									
G.W. TRAVIS	BC									X*			X*									
E.J. ARSENAULT	BD									X*			X*									
J.E. DUMONT	BE									X*			X*									
J.P. KELLEY	BF									X*			X*									
E.A. COULSTRING S/F	BG												X									
J.A. ALLENBERG B/M	BK												X					Note 3				
R.L. POWERS B/M	BL												X									
M.J. LEBLANC	BN									X*			X*									
T.M. JONES	BP									X*			X*									
R. CARVER	BR									X*			X*									
E. PURINGTON	BS									X*			X*									
P.A. LACOPOLIS	BT									X*			X*									
J.M. KNIGHT	BV									X*			X*									

CL = FROM ⅛" NPS TO MAX. DIA., 1/16" to 294" WALL

L = FROM 3/4" NPS 1/16" - .436" WALL

S = FROM 2½" NPS to MAX DIA., 1/16" to .864" WALL

H = FROM 2½" NPS to MAX DIA., 3/16" to MAX WALL

NOTE 1: For 408-1-Carp-20-OB-1; 408-III-Carp-20-OB-1 only to .560" WALL

NOTE 2: Plate only: Limited to .750" WALL

NOTE 3: For 39-I-8-BR-2 only

NOTE 4: For 408-I-Carp-20-OB-1; 408-III-Carp-20-OB-1 to .308" wall only

NOTE 5: Qualified for following thickness: GTAW 1/16" to .176" Max. SMAW 3/16" to Max to be we

* = COMBINATION TESTS QUALIFY FOR THE FOLLOWING: GTAW; .176" WALL, SMAW; .688" WALL

- = COMBINATION TESTS QUALIFY FOR THE FOLLOWING: GTAW; .176" WALL, SMAW; .260" WALL

FILLET AND SOCKET
Weld Only

		CARB. & CHEM.		S/S & DISS.	
WELDER	STEN.	GTAW	SMAW	GTAW	SMAW
L.A. BROCHU	B4	X	X	X	X
W. CHANDLER	CO	X	X	X	X
J.R. BOLDUC	D7	X	X	X	X
G.R. CURTIS	F6	X	X		
R.G. ROBERTS B/M	G3		X		X
E.F. DONAHUE	H4		X		X
B. FOSTER	H7	X	X	X	X
S. GALLEY	H8	X	X		
G. FLORIDINO	J1	X	X	X	X
R. HEMOND	J5	X	X	X	X
G. LOBIKIS	J7	X	X	X	X
D.P. GUAY	K3	X	X	X	X
M. GOULET	K5	X	X	X	X
G. BELL	K6	X	X	X	X
J.F. SILVA	K7	X	X	X	X
R.J. TANGUAY	K8	X	X		
D. SEIPEL	L3	X	X		
M. SOUTRA	L6	X	X		
G. COCHRANE	LO	X	X	X	X
B. QUINLAN	M1	X	X		
D.E. SCHAEFER	N1	X	X	X	X
R. DESJARDINS	N2	X	X	X	X
J. CHASSE	N7	X	X	X	X
L.D. MORSE	P2	X	X		
W.H. NEWMAN	P3	X	X	X	X
T. AHERN	P6	X	X	X	X
R. ALTROCK	P7	X	X		
J. CORMIER	S4	X	X	X	X
W. DEVEREAUX S/F	T4	X	X		
W. MILDON	T8	X	X		

Weld Only

		CARB. & CHROM.		S/S & DISS.	
WELDER	STEN.	GTAW	SMAW	GTAW	SMAW
W. PRUNIER	TO	X	X	X	X
R. BLANCHETTE	X2	X	X		
E. DABRIEO	X7	X	X		
P. IVERY	Y4	X	X		
R. LAFLAMME	YO	X	X		
E. JOHNSON	Z2	X	X		
R. DORIN	Z3	X	X		
W. HUTCHINSON	Z6	X	X		
A. MALLEY	Z7	X	X		
D. REILLY	Z8	X	X		
V. EBERSOLE S/F	AB	X	X		
W. YORK	AC	X	X		
E. GREGG	AE	X	X		
W. MANNERTZ	AG	X	X		
J. GNOZA	AH	X	X		
H. ALERS	AL	X	X		
R. ALLEN	AM	X	X		
F. SYKES S/F	AN		X		
T. COYER	AP	X	X	X	X
L. THAXTON	AS	X	X		
R. SHUFFLETON	AT	X	X		
O. DUPONT S/F	AV		X		
D. SMITH M/W	AY		X		
R. McGANN	BA	X	X		
R. CORRADINO	BB	X	X		
G. TRAVIS	BC	X	X		
E. ARSENAULT	BD	X	X		
J. DUMONT	BE	X	X		
J. KELLEY	BF	X	X		

FILLET AND SOCKET
Weld Only

		CARB. & CHRM		S/S & DISS.	
WELDER	STEN.	GTAW	SMAW	GTAW	SMAW
E. COULSTRING S/F	BG		X		
J. KALLENBERG B/M	BK		X		X
R. POWERS B/M	BL		X		
M. LEBLANC	BN	X	X		
T. JONES	BP	X	X		
R. CARVER	BR	X	X		
E. PURINGTON	BS	X	X		
P. LACOPOLIS	BT	X	X		
J. KNIGHT	BV	X	X		

• NED
• Primary Equipment Engineering
• Reactor Vessels and Piping

TRIP FILE NO. • PE-RVP-3507

DATE PREPARED 8/8/80

TRIP TO	LOCATION	DATE(S) OF TRIP
Seabrook Site	Seabrook, New Hampshire	July 28-29, 1980

PURPOSE • Inspection of Seabrook Unit No. 2 reactor vessel outlet nozzle safe ends to determine if sufficient length of stainless steel is present at the O.D. to facilitate field welding.

P.O. NEGOTIATION CONTRACT NO. •

S.O. BUDGET NO. • NCHH-105

SUMMARY ACTION •

Each of the four (4) Unit 2 reactor vessel primary outlet nozzles were visually examined. Etching was not necessary since the stainless steel and inconel were distinguishable on the machined surfaces of the safe end due to the contrast in colors in light. The inconel appeared duller than the stainless when light struck the safe end from an appropriate angle. The length of the stainless steel on the O.D. of each of the four (4) outlet nozzle safe ends was measured. The minimum length of stainless steel was found to be 19/32 inches (resulting length dimensions at the approximate locations on the nozzles are shown on the attached sheet). Therefore, all of the safe ends were longer than the required one-half inch (1/2") minimum length and are considered to be of sufficient lengths to facilitate satisfactory field welds if normal welding precautions are taken.

Several Non-conformance Report (NCR) items were also inspected. FDR's will be required on the damaged safe end weld prep land and the pitted support pad on the "down" outlet nozzle. The flange cover was not removed so that the gouge in the vessel mating surface could be examined, but an FDR was also requested for that deficiency. Location and size of gouge should be available from inspection reports.

ID on 00

PERSONS PRESENT (NAME/TITLE/ORG./DIV./DEPT./GROUP)•

S. L. Abbott/Reactor Vessels and Piping/Westinghouse NED
C. Walker/Westinghouse Seabrook Site Start-up Engineer/Westinghouse NSD
J. W. Rogers, Jr./Project Engineer/Combustion Engineering, Inc.

NOTHING IN THIS REPORT SHALL BE CONSTRUED TO CHANGE ANY TERMS, CONDITIONS, REQUIREMENTS, SPECIFICATIONS, OR PRICE IN A WRITTEN AGREEMENT.

AUTHOR SIGNATURE S. L. Abbott 8/14/80
S. L. Abbott, Engineer
(NAME & TITLE)

DATE 8/8/80

DISTRIBUTION•

R. W. Beer/MNC-466
H. A. Sepp/MNC-352B
R. E. Tome/MNC-358
C. L. Gotshall/MNC-470
N. T. Dressel/PC#2, 222
F. B. Davis/PC#2, 225
T. R. Mayer/FH A, 300
E. H. Williams/FH A, 300
W. E. Wright/MNC-522
W. G. Jordan/MNC-522
C. Walker/Seabrook

17

Combustion Engineering reported by letter on 3/6/80 that the required one-half inch (1/2") minimum length of stainless steel could not be guaranteed on the 4-loop reactor vessel outlet nozzles fabricated after a design change in 1970. Due to tolerance stack-ups, the length of the stainless steel on the outlet nozzle safe end O.D. could be significantly less than one-half inch (1/2"). The NCH vessel, as well as SAP, TCX, GAE, GBE, DDP, PBJ, NAH and NEU vessels have the outlet nozzle design in question. The SAP, TCX, GAE, GBE, DDP, PBJ and NCH vessels have now been inspected at their respective sites to determine the location of the interface between the stainless steel safe end forging and the inconel transition weld. Plans have been made to inspect the NAH and NEU vessels during the week of August 18-22.

The Seabrook site was visited on July 28, 1980 in order to inspect the Unit No. 2 (NCH) safe ends. The Unit No. 1 vessel is presently in storage at Braden Point in Massachusetts and was not available for inspection at this time.

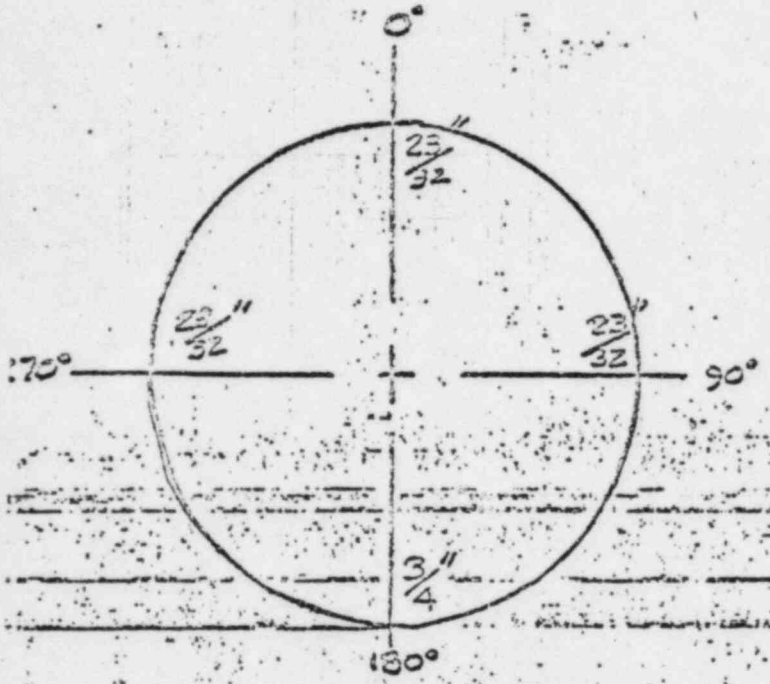
After removal of the nozzle covers and the coating of Tectyl 506 in the areas to be examined, the four (4) outlet nozzle safe ends were visually examined. Etching was not necessary since the stainless steel and inconel were distinguishable on the machined O.D. surface of the safe ends due to the contrast in the appearance of the two materials when light struck the nozzles at an appropriate angle. The inconel appeared duller than the stainless steel on these machined surfaces. This phenomena had been seen previously on the Georgia Power Company Vogtle Unit No. 1 vessel where in each case the etch line appeared at the locations where the color change occurred. Since the use of acid on the NCH safe ends could be avoided while obtaining the desired dimensions, the requirement to etch was waived. The lengths of the stainless steel from the color change to the end of the safe end on the O.D. were measured and recorded using a metallic rule. The recorded results are attached. All of the lengths have been reviewed by W and CE, and are considered to be of sufficient length to facilitate a satisfactory field weld with normal welding precautions.

The safe ends were subsequently to be recoated with Tectyl 506, and the nozzle covers were to be replaced.

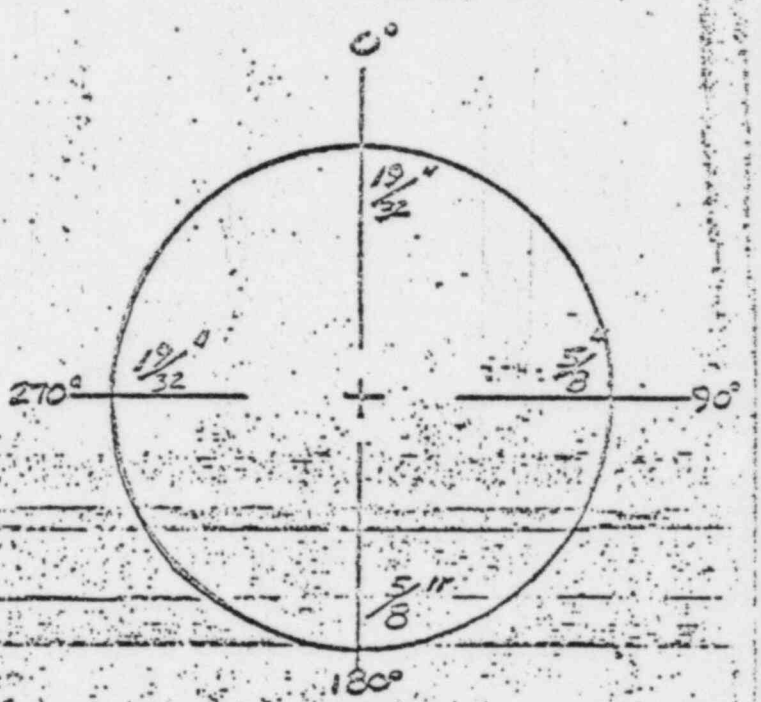
While at the site, W and CE personnel also inspected two items which had been reported on Non-conformance Reports (NCR's). The land on the safe end weld prep of the "down" outlet nozzle (as the vessel is oriented in storage on the shipping skid) had apparently been damaged prior to shipment and will require a repair. The land is bent inward in an irregular pattern and appears to have been hammered upon. One of the upper outlet nozzles has several notches cut into the I.D. surface of its weld prep land in a sawtooth pattern. This condition was not reported on an NCR, but this land could be "cleaned up" at the same time that the other one is repaired.

The second deficiency noted on an NCR which was inspected was pitting on the

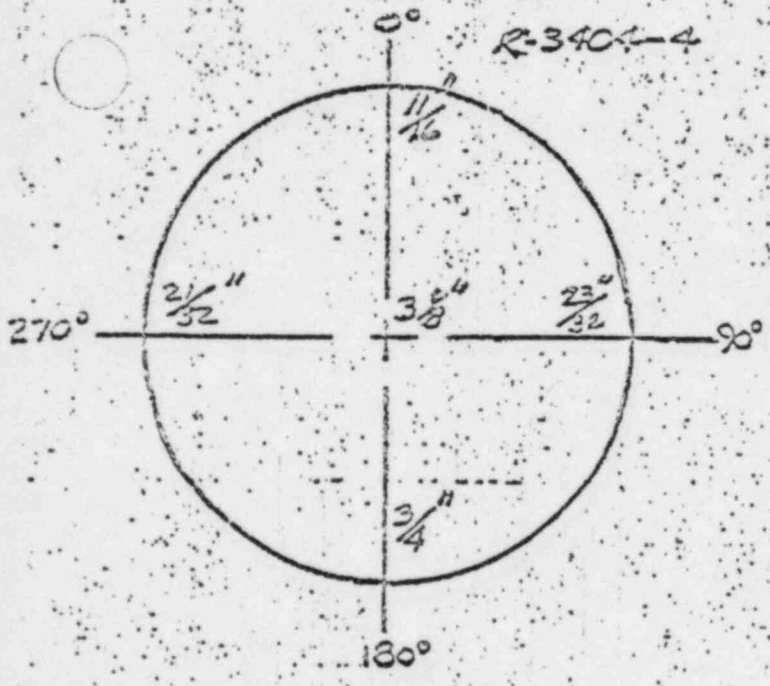
R-3404-3



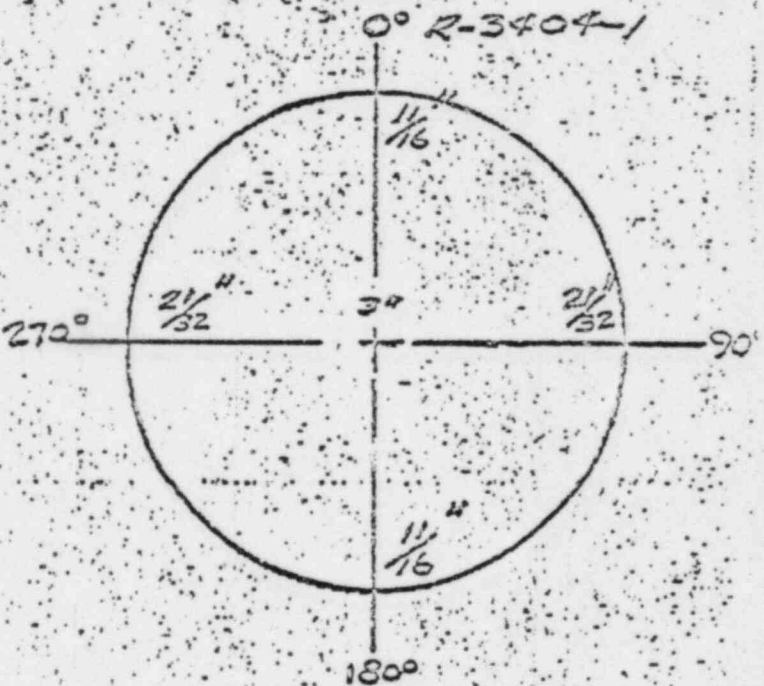
R-3404-2



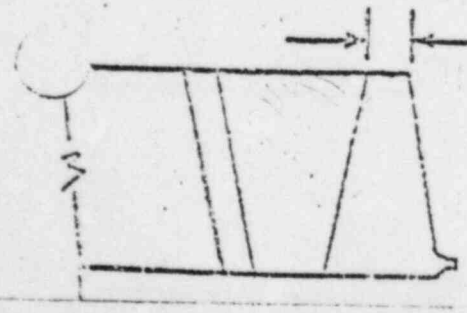
R-3404-4



R-3404-1



0° IS TOWARD THE VESSEL FLANGE. AXES ARE C.W. LOOKING FROM VESSEL O.D.



Seabrook

1. limit electrode size + bead width for S/S
2. $\bar{W}$ specs employed in supply for S/S
3. heat input

The austenitic stainless steel welding materials used for forming applications are described in Section 5.2.3.1 of RESAR 3. All fabricated or coated welding material conforms to ASME weld metal analysis A-7, type 308 for all applications except type 308L weld metal analysis may be substituted for consumable inserts when used for weld root closures. Bare weld filler metal, including consumable inserts, used in inert gas welding processes conform to ASME SFA-5.9 and are procured to contain not less than 5 percent delta ferrite. Weld filler metal materials used in flux shielded welding processes conform to ASME SFA-5.4 or SFA-5.9 and are procured in a wire-flux combination to be capable of providing not less than 5 percent delta ferrite in the deposit.

As a part of the architect engineer's scope of supply, the following comments pertain to the program of delta ferrite control.

For any welding procedure that utilizes either a consumable insert or more than one welding process, it will be impossible to comply with Regulatory Position C.4 which requires individual welds to be completed with a single heat and lot of filler material. It is not possible to obtain filler materials in different product forms which are from the same heat of weld metal. Thus, the regulatory position in this matter is difficult to comply with. In order to fulfill the intent of position C.4, we will institute an alternate program which specifies that a weld pad be required as part of receiving inspection or purchase specifications to be non-destructively examined with a magnetic ferrite measuring device. The pad will be controlled in such a manner to produce reliable results with use of MIL-E-0022200/2B (SHIPS) or WRC Bulletin 132 to provide this control. These measures will be in addition to those already required by NB-2430, which require that each heat and lot of covered electrodes and each heat of bare rod and consumable insert be subjected to chemical analysis in accordance with NB-2432, mechanical tests in accordance with NB-2431, and delta-ferrite determinations in accordance with NB-2433. This additional test would verify by means other than by constitution diagram that the weld metal actually has greater than 5 percent delta-ferrite in the undiluted as-deposited condition. 5

(1) In regard to speed of travel in welding and consequently heat of input, it is our intention to control heat input through procedure and welder qualification by limiting electrode size and weld bead width. Smaller electrodes will reduce the required amperage and voltage and limited weaving will control the speed of travel sufficiently to produce a realistic and workable solution. A procedure will be qualified in a manner to limit the heat of welding and welders will be trained to limit weaving and will be qualified in this technique. These means can adequately be controlled through present quality assurance procedures.

The quality control program for production weld delta-ferrite measurement both in the shop and in the field will be established prior to the fabrication of stainless steel piping and primary system components. It will be based on the results of the ongoing ANSI and Welding Research Council Task Force technical research programs in this field and will comply with the intent of Regulatory Guide 1.31.

Question 5.6

For all austenitic stainless steel used for components that are part of:

(1) systems required for reactor shutdown,

(2) systems required for emergency core cooling,

(3) reactor vessel internals relied on to permit adequate core cooling for any mode of normal operation or under postulated accident conditions.

Provide the following information:

5.6.1 Describe the procedures that will be used to assure that the material is suitably cleaned and protected against contaminants capable of causing stress corrosion cracking throughout the fabrication, shipment, storage, construction, testing, and operation of componnets and systems.

5.6.2 Provide a description of materials, process, inspections, and tests that will be used to assure freedom from increased susceptibility to intergranular stress corrosion caused by sensitization. This should include the following:

5.6.2.1 If special processing or fabrication methods are used that subject the material to temperatures between 800 and 1500°F, or involve slow cooling from temperatures over 1500°F, provide justification that such treatments will not cause increased susceptibility to intergranular stress corrosion.

5.6.2.2 Indicate special requirements on chemical analysis for any materials that during normal operation will be exposed to water environments containing over 0.10 ppm dissolved oxygen when a temperatures over 200°F.

5.6.2.3 If the presence of delta ferrite is relied upon to prevent sensitization of welds or castings, describe the methods that will be used to ensure the presence of at least 5% delta ferrite.

5.6.3 Describe the procedures and requirements that will be employed to avoid hot cracking of austenitic stainless steel pertaining to filler metal compositions, welding procedure qualifications, and methods for ensuring adequate delta ferrite content of production welds.

Answer 5.6

a. Cleaning and Contamination Protection Procedures

It is required that all austenitic stainless steel materials used in the fabrication, installation and testing of nuclear steam supply components and systems be handled, protected, stored and cleaned according to recognized and

accepted methods and techniques. The rules covering these controls are stipulated in the Westinghouse Electric Corporation process specifications. These process specifications supplement the equipment specification and purchase order requirements of every individual austenitic stainless steel component or system which Westinghouse procures for a nuclear steam supply system, regardless of the ASME Code Classification. They are also given to the architect and to the owner of the power plant for use within their scope of supply and activity to assure compliance with the ANSI 45 committee specifications.

To assure that manufacturers and installers adhere to the rules in these specifications, surveillance of operations by Westinghouse personnel is conducted either in residence at the manufacturer's plant and the installer's construction site or, when residency is not practical, during periodic engineering and quality assurance visitations and audits at these locations.

The discovery of any deviation from these rules, whether it be during the "act" or as the result of a subsequent "material-reaction" requires corrective measures to eliminate the condition or replacement of the material and/or component.

The process specifications which establish these rules and which are in compliance with The American National Standards Institute N-45 Committee specifications are as follows:

Process Specification Numbers

&2560HM	Requirements for Pressure Sensitive Tapes for use on Austenitic Stainless Steels.
83336K	Requirements for Thermal Insulation Used on Austenitic Stainless Steel Piping and Equipment.
83860LA	Requirements for Marking of Reactor Plant Components and Piping.
84350HA	Site Receiving Inspection and Storage Requirements for Systems, Material and Equipment.
84351NL	Determination of Surface Chloride and Fluoride on Austenitic Stainless Steel Materials.
85310QA	Packaging and Preparing Nuclear Components for Shipment and Storage.
292722	Cleaning and Packaging Requirements of Equipment for Use in the NSSS.
597756	Pressurized Water Reactor Auxiliary Tanks Cleaning Procedures.
97760	Cleanliness Requirements During Storage Construction, Erection and Start-up Activities of Nuclear Power Systems.

b. Austenitic Stainless Steel

The unstabilized austenitic stainless steel material specifications used for the (1) reactor coolant pressure boundary, (2) systems required for reactor shutdown, and (3) systems required for emergency core cooling are listed in Supplement Tables 5.3-1 and 5.3-2 in the response to questions 5.3 and 5.4.

The unstabilized austenitic stainless steel material for the reactor vessel internals which are required for emergency core cooling for any mode of normal operation or under postulated accident conditions, and for core structural load bearing members are listed in Supplement Table 5.6-1.

All of the above tabulated materials are procured in accordance with the specification requirements and include supplemental requirements of the ASME Code Rules in the 1971 Section III, plus Addendas and Code Cases, as are applicable to meet Appendix B of 10CFR50 in the Federal Register, Vol. 35, No. 125.

1. Solution Heat Treatment Requirements

All of the austenitic stainless steels listed in Supplement Tables 5.3-1, 5.3-2 and 5.6-1 are procured from raw material produced in the final heat treated condition required by the respective ASME Code Section II material specificaton for the particular type or grade of alloy.

2. Material Inspection Program

All of the wrought austenitic stainless steel alloy materials are corrosion tested in the final heat treated condition. These tests are performed in accordance with ASTM A 262 as amended by Westinghouse Process Specification 84201MW.

3. Unstabilized Austenitic Stainless Steels

The unstabilized austenitic stainless steels used in the reactor coolant boundary and components are listed in Supplement Table 5.3-1 and 5.3-2.

All of the austenitic stainless steel and nickel-chromium-iron alloy base materials with primary pressure retaining applications are used in the solution anneal heat treat condition. These heat treatments are as required by the material specifications. During subsequent fabrication, these materials are not heated above 800°F other than instantaneously and locally by welding operations. The solution annealed surge line material is subsequently formed by hot bending followed by a re-solution annealing heat treatment. Corrosion tests are performed in accordance with ASTM A 262 Practice E as amended by Westinghouse PS 84201 MW. All other pipe bending is outside of Westinghouse PWR Scope.

4. Avoidance of Sensitization

All of the unstabilized austenitic stainless steels used for core structural load bearing members and component parts of the reactor coolant

pressure boundary are processed and fabricated using the established methods and techniques to avoid partial or local severe sensitization. After the material has been heat treated, the material is not heated above 800°F during subsequent fabrication, except as mentioned previously in paragraph b.3.

Methods and material techniques that are used to avoid partial or local severe sensitization are as follows:

1. Nozzle Safe Ends

   a. Weld deposit with Ni-Cr-Fe Weld Metal F-Number 43 (safe end after final post weld heat treatment).

   b. Use of a stainless steel weld metal analysis A-7 containing less than 0.02 percent carbon or more than 5 percent ferrite, or both.

   c. Use of Ni-Cr-Fe Alloy safe ends on small (less than 4 inch ID and/or wall thickness not greater than 0.531 inch) nozzles.

2. All welding is conducted using those procedures that have been approved by the ASME Code Rules of Section III and IX.

3. All welding procedures have been qualified by non-destructive and destructive testing according to the ASME Code Rules of Section III and IX.

   When these welding procedure tests are being performed on test welds that are made from base metal and weld metal materials which are from the same lot(s) of materials used in the fabrication of components, additional testing is frequently required to determine the metallurgical, chemical, physical, corrosion, etc. characteristics of the weldment. The additional tests that are conducted on a technical case basis are as follows: light and electron microscopy, elevated temperature mechanical properties, chemical check analysis, fatigue tests, intergranular corrosion tests or A373, or static and dynamic corrosion tests within reactor water chemistry limitations.

4. (3) The following welding methods have been tested individually and in multi-process combinations as outlined in (3) above using the following energy input ranges for the respective method as calculated by the following formula.

$$H = \frac{(E)\ (I)\ (60)}{S}$$

Where: H = Joules/in.
E = Volts
I = Amperes
S = Travel Speed in in./min.

WELDING PROCESS METHOD	ENERGY INPUT RANGE (Kilojoules/inch)
Manual Shielded Tungsten Arc	20 to 50
Manual Shielded Metallic Arc	15 to 120
Semi-Automatic Gas Shielded Metal Arc	40 to 60
Automatic Gas Shielded Tungsten Arc-Hot Wire	10 to 50
Automatic Submerged Arc	60 to 140
Automatic Electron Beam-Soft Vacuum	10 to 30

5. The interpass temperature of all welding methods is limited to 350°F maximum.

6. All full penetration welds require inspection in accordance with Article NB5000 of the ASME Section III Code rules. Welding materials are required to conform and are controlled in accordance with Subarticle NB2400 of the ASME Section III Code rules.

7. Hardsurfacing, when required, is performed using controlled temperatures to prevent severs sensitization of the base materials. Where feasible, separate seat rings are used in valve design to preclude any degree of sensitization of the pressure boundary wall. All hardsurfacing is performed using preheat temperatures not exceeding 350°F and the interpass temperature is limited at 500°F maximum. Components are not subjected to temperatures above 800°F after hardsurfacing has been completed.

Retesting Unstabilized Austenitic Stainless Steels Exposed to Sensitizing Temperatures

The unstabilized austenitic stainless steels are not exposed to the sensitization range of 800 - 1500°F during fabrication into components, except as described previously.

In general, it is not feasible to remove samples from fabricated production components to prepare specimens for retest to determine the susceptibility to inter-granular attack using the methods prescribed in ASTM Specification A262, Practice E. These types of tests are only performed on test welds when meaningful results would predicate production material performance and are as described above.

Special Requirements for Chemical Analysis of Materials Subjected to High Oxygen and Temperature Levels

During normal operation, the oxygen concentration shall not exceed 0.1 ppm, as stated in the Technical Specifications.

Therefore, there are no special requirements on chemical analysis for any materials.

Control of Delta Ferrite

The austenitic stainless steel welding material used for joining applications is described in response to Comment 5.3.

The welding material conforms to ASME Weld Metal Analysis A-7, Type 308 for all applications. As an option Type 308L weld filler metal analysis may be substituted for consumable inserts when this technique is used for weld root closures. Bare weld filler metal materials, including consumable inserts used in inert gas welding processes, conform to ASME SFA-5.9 and are procured to contain not less than 5 percent delta ferrite. All weld filler metal materials used in flux shielded welding processes conform to ASME SFA-5.4 or SFA-5.9 and are procured in a wire-flux combination to be capable of providing not less than 5 percent delta ferrite in the deposit.

All welding materials are tested by the fabricator using the specific process(es) and the maximum welding energy inputs to be employed in production welding. These tests are in accordance with the requirements of ASME Section III, NB-2430 and in addition, include delta ferrite determinations. The delta ferrite determinations are made by calculation using the "Schaeffler or Modified Schaeffler Constitution Diagram for Stainless Steel Weld Metal".

When subsequent in-process delta ferrite determinations are required and since the welding material conformance is proved by the initial material testing described above, any of the recognized methods for measurement of delta ferrite are acceptable by mutual agreement. In these instances, sound welds (as determined by visual, penetrant and volumetric examinations) which display more than 1% average delta ferrite content are considered to be unquestionably acceptable. All other sound welds are considered acceptable also, providing there is no evidence of deviation from qualified procedure parameters or use of malpractices. If evidence of the latter prevails, sampling for chemical and metallurgical analysis is required to determine the integrity and acceptability of the weld(s). The sample size is required to be 10%, of the welds, but not less than 1 weld, in the particular component or system. If any of these weld samples are defective, that is; fail to pass bend tests as prescribed by ASME Section IX or the chemical analysis deviates from the material specification, then all remaining welds are sampled and all defective welds are removed and replaced.

The qualification of welding procedures is discussed under the discussion of Avoidence of Sensitization.

Question 5.7

Describe the design of the equipment to maintain and monitor the chemical analysis of the secondary water to provide assurance that the water chemistry control is adequate to prevent stress corrosion cracking of tubes under all conditions of steam generator operation.

SEABROOK 1 & 2

PREFIX	DESCRIPTION	P. & I. D.
AAH	ADMIN/SERV BLDG. AIR HNDLG...SD 59	
AB	AUX. BOILER (EXC. FO)...SD 03	202098,099,100
AR	CONDENSER AIR EVACUATION...SD 02	202093
AS	AUX. STEAM...SD 03	805032
ASC	AUX. STEAM CONDENSATE...SD 03	805032
ASH	AUX. STEAM HEATING...SD 03	
BRS	BORON RECOVERY SYS...SD 31	805614 SHT. 1
		805615 SHT. 2
		805616 SHT. 3
		805623 SHT. 4
		805624 SHT. 5
		805618 PDT DEGAS
		805626 P.DR TANKS
CAH	CONTAINMENT AIR HANDLING... SD 48	604128
CAP	CONTAINMENT AIR PURGE...SD 48	
CBA	CONTROL BLDG. AIR HANDLING...SD 41	604091
CBS	CONTAINMENT BLDG SPRAY... SD 20	805023
CC	COMP COOLING WATER-PRIMARY...SD 23	805018 SHT. 1
		805016 SHT. 1
		805028 SHT. 2
		805029 SHT. 2
CD	CARBON DIOXIDE (ALL PLANT)...SD 52	
CD	CARBON DIOXIDE (ALL PLANT)...SD	
CGC	COMBUSTIBLE GAS CONTROL...SD 29	805022
CO	CONDENSATE...SD 01	202077 & 202078
CP	ROD CONTROL & POSITION... SD 47	
CS	CHEMICAL & VOLUME CONTROL... SD	805011 PURIFICATION
		805012 CHARGING
		805013 THERMAL REGEN.
		805014 BORIC ACID
		805037 LETDOWN DEGAS.
CT	CHEMICAL TREATMENT...SD 03	
CW	CIRCULATING WATER...SD 07	202481
CWA	CW PUMP HOUSE AIR HNDLG...SD 50	604453
CG	COMPR. GASES (EX H2,N2, CO2)...SD 36	
CCW	CHILLED CONDENSATE...SD 59	
DG	DIESEL GEN. SYSTEMS... SD 10	202101,102, 103
DGA	DIESEL GEN 1A (EQUIP PKG)...SD 10	
DGB	DIESEL GEN 1B (EQUIP PKG)...SD 10	
DAH	DIESEL GEN AIR HANDLING... SD 47	202101, 604096
DF	DRAINS FLOOR...SD 25	604063, TURB BLDG.
		604064, OIL-WTR, SEP.
DM	DEMINERALIZED WATER... SD 28	805030
DR	DRAINS ROOF...SD 57	
DS	DRAINS SANITARY...SD 58	
EAH	CONTAINMENT ENCL. AIR HNDLG... SD 53	604108, 116
ED	ELECTRICAL DISTRIBUTION...SD 70	
EDE	ELEC. DISTRIBUTION EMERGEN...SD 70	
EHC	TURB ELECTRO HYDRAULIC SYS... SD 09	
EPA	WATER FW P HSE AIR HNDLG... SD 61	
ES	ELECTRICAL SYSTEMS...SD	
EX	EXTRACTION STEAM... SD 01	202030

PREFIX	DESCRIPTION	P. & I. D.
FAH	FUEL STOR. BLDG AIR HNDLG... SD 46	604108, 116
FH	FUEL HANDLING REACTOR... SD	
FO	FUEL OIL (ALL SYSTEMS)...SD 10	
FP	FIRE PROTECTION... SD 52	604070 TURB BLDG 604068 YARD 604069 YARD & F.P.H.
FPA	FIRE PUMP HOUSE AIR HNDLG... SD 52	604059
FW	FEEDWATER (INC FC)...SD 01	202079
GSC	GENERATOR STATOR COOLANT...SD 09	
HD	HEATER DRAINS...SD 01	202082, 083
HF	HYDRAULIC FLUID FOR F.HC... SD 09	
HG	HYDROGEN GAS...SD 09	805038
HWR	HOT WATER HEATING RETURN... SD 43	604093 D.G. BLDG 604117 PAB & FSB
HWS	HOT WATER HEATING SUPPLY...SD 43	604103 D.G. BLDG 604117 PAB & FSB 805034
IA	INSTRUMENT AIR...SD 04	
IC	INCORE INSTRUMENTATION... SD	202104
LO	LUBE OIL (ALL APPLICATIONS)...SD 06	
LD	LEAK DETECTION SYSTEM...SD 91	202081 & 202096
MD	MOIST SEP & REHEATER DRAINS...SD 01	
MM	MISC EQUIP (NOT SYS ORIENTED)	202074, 075
MS	MN STM (INC TURB BYPASS STM)...SD 03	202086, 087
MSD	MAIN STEAM DRAINS...SD 03	805627
MSS	MECH. SEAL	202084, 085
MVD	MISC VENTS & DRAINS...SD 03	805020
NG	NITROGEN GAS...SD 36	
NI	NUCLEAR INSTRUMENTATION...SD	604108 & 116
PAH	PAR AIR HANDLING...SD 43	604076
PW	POTABLE WATER CITY WATER...SD 56	805002 REACTOR VESSEL
RC	REACTOR COOLANT...SD	805003 LOOP NO. 1 805004 LOOP NO. 2 805005 LOOP NO. 3 805006 LOOP NO. 4 805007 PRESSURIZER 805008
RH	RESIDUAL HEAT REMOVAL...SD	805021
RM	RADIATION MONITORING...SD 90	805613
RMW	REACTOR MAKE-UP WATER...SD 26	805034, 202105, THRU 10
RS	RESIN SLUICING...SD 35	
SA	SERVICE AIR SYSTEMS...SD 04	
SAA	SERVICE AIR C-4A (EQUIP PK)...SD 04	
SAB	SERVICE AIR C-4B (EQUIP PK)...SD 04	
SAC	SERVICE AIR C-1A (EQUIP PK)...SD 04	
SAD	SERVICE AIR C-1B (EQUIP PK)...SD 04	
SAE	SERVICE AIR C-1C (EQUIP PK)...SD 04	
SAN	SANITARY SEWER...SD 58	
SB	STEAM GENERATOR BLOWDOWN...SD 21	805024 STEAM GENERATOR 805039 EVAPORATOR PACKA
SCC	SECONDARY COMPONENT CLG WTR...SD 05	202094, 095
SCW	SCREEN WASH WATER...SD 24	202482
SF	SPENT FUEL POOL COOLING...SD 27	805017
SGA	NON-ESSNT. SUGR AIR HNDLG...SD 62	
SI	SAFETY INJECTION...SD	805009 ACCUMULATORS 805010 HIGH HEAD

PREFIX	DESCRIPTION	P. & I. D.
SO	SEAL OIL GENERATOR...SD 09	
SM	SEISMIC MONITORING SYSTEM... SD 92	
SS	SAMPLING SYSTEM...SD 30	805025
SSS	TURB STM SEAL SYSTEM...SD 09	
STO	STORM SEWER...SD 57	
SW	SERVICE WATER...SD 24	805019 SERVICE WATER S 805033 SERVICE WATER S 604453
SWA	SW PMP HSE AIR HNDLG...SD 51	
SY	SWITCHYARD...SD 81	
TAH	TURB BLDG AIR HANDLING...SD 45	
TDA	SGFP TURB DRIVE -A (BOFT PK)...SD 01	604080
TDB	SGFP TURB DRIVE-B (BOFT PK)...SD 01	
TR	BORON THERMAL REGENERATION...SD 31	
TSI	TURB SUPERVISORY INSTRMTN...SD 09	
WAH	WASTE PROCESSING AIR HNDLG...SD 44	
VC	VENTS...SD 34	805622 EQUIP VENT SYST 805635 HYDROGENATED 805636 AERATED
WG	WASTE PROCESSING GASEOUS...SD 33	805611, RADIOACTIVE GAS WASTE S SHT. 1 805612, RADIOACTIVE GAS WASTE S SHT. 2
WL	WP LIQUID...SD 32	805619 LIQUID WASTE SH 805620 LIQUID WASTE SH 805621 LIQUID WASTE SHT
WLD	WP-LIQUID DRNS (ALL TYPES)...SD 32	804992 PAB FLR. DRAIN, SUMP "A & "B". 804993 FLR. DRN GRAVITY 804994 CONT. BLDG. FHR & FS BLDG. SUMPS 804995 RCA WALKWAY TURN 805040 RCDT 805617 FLR. & EQUIP., DRAIN W. P. BLDG. 805633 FLR EQUIP. DRAIN, WP BLDG
WS	WP-SOLID...SD 22	805632 MISC. CHEMICAL DR 805630 WASTE SOLIDIFICAT SYS. SHT. 1 805631 WASTE SOLIDIFICAT SYS. SHT. 2
WT	WATER TREATMENT...SD 08	
XI	PROCESS INSTRUMENTATION...SD 90	
VB	VIBRTN MONTR SYS (EMC TSI)...SD 93	

1.	For each onsite organization with QA (including QC) responsibilities relative to reactor coolant pressure boundary piping (except welding), ascertain whether quality assurance plans, instructions, procedures, and schedules have been established, and whether they conform to the facility QA program as described in Chapter 17 of the SAR. Accomplish this by completing the inspection requirements of Procedure No. 35100B relative to reactor coolant pressure boundary piping.		
2.	Determine whether appropriate and adequate procedures are include or referenced in the QA manual to assure that the following specific activities are controlled and performed according to NRC requirements and SAR commitments:		
	a. Procedures which require that the purchase documents identify the appropriate material specifications and any special requirements, and that these documents require material test reports/certification of the following:		
	(1) Chemical composition		
	(2) Physical characteristics		
	(3) Nondestructive examination results		
	(4) Heat treatment history (if applicabe)		
	b. Inspection procedures which cover receiving inspections and contain provisions for the following:		
	(1) Piping material in conformance with purchase specification		
	(2) Marking and identification		
	(3) Cleanliness at time of receipt		
	(4) Surface protection, closures and packaging		
	c. Inspection (QC) procedures which cover storage and issue of the piping and related appurtenances and materials, and contain requirements to verify the following:		
	(1) Segregation of sizes and materials		
	(2) Storage identification		
	(3) Storage conditions/protection		
	(4) Confirmation of issue of specified material		
	(5) Storage and issuance records		

PROCEDURE: 49051B PLANT:

• Procedures which cover handling of the piping and related appurtenances and materials, and contain provisions to assure protection from physical damage or contamination while handling during receipt, storage, issue to the field, and installation.		
• Inspection and/or work performance procedures which cover installation of the piping and related appurtenances and materials, and contain provisions for the following: (1) Location		
(2) Clearances		
(3) Type, size, location and adjustment of hangers, bellows, restraints, snubbers		
(4) Type and thickness of insulation and covering		
(5) Nondestructive examination and inspections (where applicable)		
(6) Hydrostatic testing		
(7) Cold spring		
(8) Installation records generated during work performance		
Inspection and/or work performance procedures for post-installation cleaning of the reactor coolant pressure boundary piping systems which cover the following activities, and contain provisions for the following: (1) Cleaning materials - conformance to specifications		
(2) Cleanliness criteria and measurement methods		
(3) Use of cleaning materials - concentration and temperature		
(4) Record keeping requirements.		

PROCEDURE: 49061B PLANT:

. For each onsite organization with QA (including QC) responsibilities relative to safety related piping activities outside the reactor boundary (except welding), ascertain whether quality assurance instructions, and procedures have been established, and whether they conform to the QA program as described in Chapter 17 of the facility SAR. Accomplish this by completing the inspection requirements of Procedure No. 35100 B relative to this piping.		
. Determine whether appropriate and adequate procedures are included or referenced in the QA manual assure that the following specific activities are controlled and performed according to NRC requirements and SAR commitments: a. Inspection (QC) and work procedures which identify the items, including hold points, where witnessing or inspection is required		
b. Receiving inspections which contain provisions for assuring that: (1) Piping material in conformance with purchase specifications including any special requirements		
(2) Marking and identification as specified		
(3) As-received cleanliness and protection meets requirements		
(4) Receiving inspection reports generated as required		
c. Inspection (QC) procedures which cover storage and issue of the piping and related appurtenances include: (1) Segregation of sizes and types of material		
(2) Storage identification		
) Storage conditions/protection		
(4) Confirmation of issue of specified material		
(5) Storage and issuance records generated as specified		
d. Procedures which cover handling of the piping and related appurtenances include provisions to assure protection from physical damage or contamination while handling during receipt, storage, issue to the field, and installation		
e. Procedures which cover installation of the piping and related appurtenances and materials contain provisions to verify that the following meeting applicable requirements: (1) Location		
(2) Clearances		
(3) Type, size, location and adjustment of hangers, bellows, restraints, snubbers		
(4) Type and thickness of insulation and covering		
(5) Nondestructive examination and inspections		
(6) Hydrostatic testing		
(7) Cold spring		
(8) Installation records generated during work performance		
f pection (QC) and/or work performance procedures which er post-installation clearing of safety related piping stems, including the following: (1) Types of cleaning materials and use of these materials		
(2) Cleanliness criteria established and adhered to		
(3) Record keeping requirements adhered to.		

4905-1-61 $\frac{30}{74}$ = 70% Seabrook 1 and 2

			UE&C	PPP
1.	35-100	1. organization	78-15	78-14
		2. Audits		Welton
		3. Quality Requirements	78-15	
		4. Work and quality Inspection		
		5. Control of Materials	78-15	
		6. Control of Processes	78-15	
		7. Corrective Actions	78-15	
		8. Document Control	78-15	
		9. Control of test	78-15	
		10. Quality Records	78-15	

	PPP	4905-1	UE&C	PPP	4906-1	UE&C
2. a. (1)		78-14	78-15			
(2)		↓	↓			
(3)						
(4)						
b. (1)		78-14	78-15	78-14		78-15
(2)		↓	↓	↓		↓
(3)						
(4)						
c. (1)			78-15			78-15
(2)			↓			↓
(3)						
(4)						
(5)						
d.			78-15			78-15
e. (1)						
(2)						
(3)						
(4)						
(5)						
(6)			78-15			78-15
(7)		78-15	UE&C Spec.	78-14		78-15
f. (1)			78-15			78-15
↓			↓			↓
(21)						

PROCEDURE: 49053 PLANT: 21

1. In two systems listed in Section III of this procedure, observe five different piping activities such as: welding; protection; installation of pipe spools, fittings, bellows, hangers, snubbers and restraints; nondestructive examinations; and quality related inspections.		
2. Ascertain whether the following activities and/or requirements, for the activities selected above, meet applicable requirements and established procedures:		
a. Inspection (QC) and/or work performance procedures, including specified frequency of inspections		
b. Record keeping requirements		
c. Construction/installation specification requirements		
d. Issuance and use of specified materials		
e. Utilization of qualified inspection personnel		
3. If NDE activities are performed on piping and related components in the two systems selected above, ascertain whether the following requirements are met:		
a. Performance of prescribed NDE activities		
b. Calibration and use of proper measuring and test equipment		
c. Qualifications of NDE personnel		
4. For two locations or "runs" between major components within the reactor coolant pressure boundary, where piping installation has been completed or essentially completed, ascertain whether the runs are installed as specified.		

PROCEDURE: 49054 PLANT:

1. Observe five different piping activities in two piping systems listed in Section III of Procedure No. 49053B, such as: handling, protection, installation of pipe spools, fittings, bellows, hangers, snubbers and restraints; nondestructive examinations; quality related inspections. Ascertain whether the following requirements, as applicable, are met: a. Inspection (QC) and/or work performance procedures, including specified frequency of inspections			
b. Record keeping requirements			
c. Construction/installation testing specification requirements			
d. Issuance and use of specified materials			
e. Utilization of qualified inspection personnel.			
2. For two locations or "runs" between major components within the reactor coolant pressure boundary, determine whether piping runs are installed as required by applicable specifications.			
3. If NDE activities are performed on piping and related components in the two systems selected above, ascertain whether following requires are met: a. Performance of prescribed NDE activities			
b. Calibration and use of proper measuring and test equipment			
c. Qualifications of NDE personnel.			

PROCEDURE: 49055B PLANT:

1.	Review the pertinent quality related records of five components (e.g., pipe spools, fittings, bellows, hangers, snubbers, restraints) in the reactor coolant pressure boundary piping system - no more than three components of any one size and including at least two of the systems listed in Section III of Procedure No. 49053B. Ascertain whether the records are inconformance with established procedures and whether the records reflect material/component characteristics consistent with applicable requirements in the following areas:		
	a. Material Test Reports/Certification Records		
	(1) Chemical composition		
	(2) Physical characteristics		
	(3) Nondestructive examination (NDE)		
	b. Vendor Shop Manufacturing and NDE Records and Certifications		
	c. NSSS Manufacturer's Quality Release Forms		
	d. Vendor Inspection/Receiving Inspection Reports		
	(1) Physical condition - damage, cleanliness, surface protection, closures, packaging		
	(2) Conformance to requirements		
	e. Nonconformance/Deviation Reports		
	(1) Established procedures followed		
	(2) Records are legible, complete, reviewed/approved and controlled		
	(3) Records identify specific component, material or activity involved		
2.	Selectively review the storage inspection records relative to reactor coolant pressure boundary piping and ascertain whether:		
	a. Inspection of stored piping made at required frequency		
	b. Records confirm that storage requirements were maintained		
3.	Review in detail the installation inspection records of five pipe spools and ascertain whether:		
	a. Required scope of inspection was performed and recorded		
	b. Records confirm that specifications and installation procedures, including cleanliness requirements, were met		
4.	Review the records of two recent QA audits associated with reactor coolant pressure boundary piping and ascertain whether applicable requirements were met in the following areas:		
	a. Records confirm that the audits performed were of the scope and frequency specified		
	b. Deficiencies identified during the audits were corrected (or being corrected in a timely manner) and documented. Ascertain, also, whether corrective action was such that repetition of the deficiency, or similar deficiencies, would be precluded.		

PROCEDURE: 49056B PLANT:

1. Select six components (e.g., pipe spools, fittings, bellows, hangers, snubbers, restraints) in the reactor coolant pressure boundary piping system - no more than three components of any one size and including piping in two of the systems listed in Section III of Procedure No. 49053B. Review the following records for each component selected and ascertain whether applicable quality requirements were met:			
a. Material Test Reports/Certification Records			
(1) Chemical composition			
(2) Physical characteristics			
(3) Nondestructive examination			
b. Vendor Shop Manufacturing and NDE Records and Certifications			
c. NSSS Manufacturer's Quality Release Forms			
d. Vendor Inspection/Receiving Inspection Reports			
(1) Physical condition - damage, cleanliness, surface protection, closures, packaging			
(2) Conformance to requirements			
e. Records of Disposition of Nonconforming Material			
(1) Nonconformance reports			
(2) Tag log			
(3) Repair/return to vendor documentation			
f. Storage Inspection Records			
(1) Inspections made at required frequency			
(2) Records confirm that storage requirements were met			
g. Installation Records			
(1) Installation checklists			
(2) Alignment			
(3) Cleanliness			

PROCEDURE: 49063B PLANT:

1. Observe ten piping activities relative to safety related piping varying by system and type of work performed, such as: handling, protection and installation of pipe spools, fittings, bellows, hangers, snubbers and restraints; nondestructive examinations; hydrostatic testing; quality related inspections.		
2. Ascertain whether the following requirements, as applicable, are met for the ten piping activities selected: a. Conformance with inspection (QC) and work performance procedures		
b. Conformance with record keeping requirements		
c. Conformance with construction/installation specifications		
d. Issuance and use of materials as specified		
e. Performance of prescribed inspections		
f. Performance of prescribed NDE activities		
g. Calibration and use of proper measuring and test equipment		
h. Utilization of qualified inspection (QC) and NDE personnel		
3. For one location (or run) in each of two safety related piping systems outside the reactor coolant pressure boundary, determine whether piping runs are (or being) installed as required by applicable specifications, field drawings and procedures.		

49063 $\frac{2}{12} = 20$ Seabrook 1

2 a	HYDRO	PIPE COATING										
b	78-15"	78-15"										
c	SERVICE	SERVICE										
d	WATER	WATER										
e												
f												
g												
h												

3.

PROCEDURE: 49065 PLANT:

1. Select ten components (e.g., pipe spools, fittings, bellows, ers, snubbers, restraints) in safety related piping systems — ore than three components of any one size and including at least two of the systems listed in Section III of Procedure No. 49063B.		
2. Review the following records for each component selected to ascertain whether these records meet established procedures and whether these records reflect work accomplishment consistent with NRC requirements and SAR commitments in the following areas:		
a. Material test reports/certification records No initial to go - N/A		
(1) Chemical composition		
(2) Physical characteristics		
(3) Nondestructive examination (NDE)		
b. Vendor manufacturing, inspection and NDE records and certifications		
c. NSSS manufacturer's quality release forms		
d. Receiving inspection reports		
(1) Physical condition - damage, cleanliness, protection, closures, packaging		
(2) Conformance to requirements		
e. Records of disposition of nonconforming material		
(1) Nonconformance reports		
(2) Identification and records		
(3) Repair/return to vendor documentation		
f. Installation records		
(1) Installation checklists, isometrics, etc., which document that piping was installed in conformance with applicable requirements		
(2) Nondestructive examinations and inspections (where applicable)		
(3) Hydrostatic testing (where applicable)		
(4) Cleanliness		
(5) Qualifications of inspection (QC) personnel.		

Procedure No.: 55071B PLANT:

1. ( ) each onsite organization with QA (including QC) responsibilities relative to welding of reactor coolant pressure boundary piping, ascertain whether quality assurance plans, instructions and procedures have been established, and whether they conform to the QA program as described in Chapter 17 of the facility SAR. Accomplish this by completing the inspection requirements of Procedure No. 35100B relative to this welding.		
2. For each welding contractor and/or other organizations responsible for the subject welding activities, selectively examine quality related procedure that cover applicable welding, NDE, and inspection (QC) activities. Review these selected procedures in detail to determine whether required and adequate procedures are included or referenced in the QA manual. Specific areas to be reviewed include: a. Procedures relative to welding activities which identify the items, including mandatory hold points, in the applicable codes, standards, construction specifications and site procedures, where witnessing or inspection is required		
b. Provisions to assure that welding procedures are properly qualified in accordance with applicable requirements		
c. Provisions to assure that welding personnel are properly qualified		
d. Provisions to assure that nondestructive examination techniques conform to applicable codes and standards, and have been qualified		
e. Provisions to assure that nondestructive examination personnel are qualified to applicable standards		
f. Provisions to assure that equipment being used (welding, NDE, etc) is of the proper and specified type, within current calibration, and that periodic checks assure that the equipment is properly maintained and used as required		
g. Provisions to assure control of contaminants in NDE equipment (UT couplants, PT solvents, etc.)		
h. Provisions to assure control and documentation of the following:		
(1) Weld location - system, weld number		
( ) Welder(s) name or identification		
(3) Weld procedure(s) used, including repair procedures		

Procedure No.: 550718		
(4) Weld filler material used and traceability where applicable		
(5) Nondestructive examination (NDE)		
(6) NDE technician's name or identification		
(7) NDE results		
(8) Inspection requirements		
i. Inspection (QC) and/or work performance procedures which cover the following heat treatment activities, where required:		
(1) Preheat		
(2) Interpass temperature		
(3) Post weld controlled cooling		
(4) Stress relief		
j. Inspection (QC) and/or work performance procedures which cover the following NDE activities, where required:		
(1) Evaluation of weld quality by the use of specified NDE procedures		
(2) Evaluation of radiograph quality		
k. Inspection (QC) and/or work performance procedures which cover defect repair, where necessary:		
(1) Defect removal technique(s)		
(2) Defect removal verification		
(3) Stress relief of repair		
(4) Acceptance of repair		
l. Inspection (QC) and/or work performance procedures which provide control/surveillance/inspection of welding material (welding rod, flux, electrode, consumable inserts and gas):		
(1) Receipt verification of identity and conformance with specifications		
(2) Control of pre-issue storage conditions - all locations used for this welding		
(3) Storage identification and issue control - so that only acceptable material is issued and used		
(4) Post-issue control regarding identification, temperature and moisture		

Procedure No.: 55073B PLANT:

Observe field welding on reactor coolant pressure boundary pi[illegible] at various stages of weld completion. Determine whether th[illegible]quirements of applicable specifications, codes, standards, work performance procedures and inspection (QC) procedures are being met, as follows:		
1. Select one weld in each of three pipe sizes, where joint preparation and alignment are complete, and welding has not started. Determine whether the following meet applicable specifications and procedures: a. Weld identification/location		
b. Joint preparation and alignment		
c. Evidence of QC verification		
2. Select two welds in each of two pipe sizes, where the root pass (only) has been completed. Determine whether the following meet applicable specifications and procedures: a. Weld identification/location		
b. Specified weld procedure used in root pass		
Physical appearance of weld		
d. Welder identification and qualification		
e. Evidence of QC verification of root pass		
3. From two reactor coolant pressure boundary piping sizes over 8", select for detailed observation one pipe to pipe and one pipe to fitting weld where welding beyond the root pass stage is in progress. Ascertain whether the following meet applicable specifications and procedures: a. Weld identification/location		
b. Use of applicable weld procedure		
c. Welder performing the welding currently qualified for positions being welded		
d. Interpass temperature		
e. Use of specified weld material		
f. Use of specified purge (if applicable)		
Starts, stops and undercuts ground		
h. Procedures used to remove and repair defects (if applicable)		
i. Physical appearance of the weld		

Procedure No.: 55073B		
c. Periodic checks made to assure that welding variables are within specified limits		
4. Select one weld in each of two pipe sizes where the welding and surface preparation are complete, and testing is in progress. Ascertain whether: a. Surface suitable as required by applicable code, including merge angle, surface condition for NDE, etc.		
b. Proper NDE being performed - and at proper state of fabrication		
5. Select one weld in each of two pipe sizes where welding is completed and heat treatment is in progress. Ascertain whether heat treatment is within the specified range for the weld and adjacent base metal.		
6. At each welding material issuing location for this welding, observe the following for conformance with the requirements of applicable procedures: a. Storage of materials - identification, segregation, cleanliness and storage temperature		
b. Issue records - approval, amount withdrawn, identity of withdrawer, dates, identification with weld location		
c. Handling of returned materials		
7. During observation of welding activities, determine whether any unused (uncontrolled) filler material is present in welding areas.		
8. During observation of welding activities, determine whether a sufficient number of adequately qualified QA and inspection (QC) personnel are present at the work site--commensurate with the work in progress.		

Procedure No.: 55074B PLANT:

Observe field welding on reactor coolant pressure boundary pi[illegible] at various stages of weld completion. Ascertain wh[illegible] the requirements of applicable specifications, codes, standards, work performance procedures and inspection (QC) procedures are being met, as follows:		
1. Select one weld in each of three pipe sizes, where joint preparation and alignment are complete, and welding has not started. Determine:		
a. Weld identification/location		
b. Joint preparation and alignment		
c. Evidence of QC verification		
2. Select two welds in each of two pipe sizes, where the root pass (only) has been completed. Determine:		
a. Weld identification/location		
b. Specified weld procedure used in root pass		
c. Physical appearance of weld		
d. Welder identification and qualification		
e. Evidence of QC verification of root pass		
3. From two reactor coolant pressure boundary piping sizes over 8", select for detailed observation one pipe to pipe and one pipe to fitting weld where welding beyond the root pass stage is in progress. Ascertain whether the following meet applicable specifications and established procedures:		
a. Weld identification/location		
b. Use of applicable weld procedure		
c. Welder performing the welding currently qualified for positions being welded		
d. Interpass temperature		
e. Use of specified weld material		
f. Use of specified purge (if applicable)		
g. Starts, stops and undercuts ground		
h. Procedures used to remove and repair defects (if applicable)		
i. Physical appearance of the weld		
j. Periodic checks made to assure that welding variables are within specified limits.		

Procedure No.: 55074B		
4. Select one weld in each of two pipe sizes where the welding and surface preparation are complete, and examination is in progress. Ascertain whether: a. The surface is suitable as required by applicable code, including merge angle, surface condition for NDE, etc.		
b. Proper NDE is being performed - and at proper state of fabrication		
5. Select one weld in each of two pipe sizes where welding is completed and heat treatment is in progress. Ascertain whether heat treatment is within the specified range for the weld and adjacent base metal.		
6. At each welding material issuing location associated with this welding, observe the following for conformance with the requirements of applicable codes and procedures: a. Storage of materials - identification, segregation, cleanliness and storage temperature		
b. Issue records - approval, amount withdrawn, identity of withdrawer, dates, identification with weld location.		
c. Handling of returned materials		
7. During observation of welding activities, determine whether any unused (uncontrolled) filler material is present in welding areas.		

Procedure No.: 55075B

1. Select five field piping welds within the reactor coolant pressure boundary - no more than two welds in any one pipe size - where welding, NDE and inspection activities have been completed.		
2. Review the following records for each weld selected to ascertain whether the records are in conformance with established procedures and whether the records reflect work accomplishment consistent with applicable requirements in the following areas: a. Inspection records covering visual and dimensional inspections		
b. Weld history records		
c. Heat treatment records covering preheat and interpass temperature, post weld control, stress relief and total time at temperature, as applicable		
d. NDE records covering evaluation of quality of welds (by RT, MT, etc.), including correlation of records to specific weld		
e. Weld repair records covering defect removal technique used, defect removal verification, nondestructive examinations, heat treatment, and final acceptance of repairs, as appropriate		
Welding material (welding rod, flux, electrode and gas) control records covering: (1) Receipt verification of identity and conformance with specifications		
(2) Control of pre-issue storage conditions		
(3) Storage identification and issue control		
(4) Post-issue control regarding identification, temperature and moisture		
(5) Disposition of issued but unused materials		
g. Welder qualification records		
h. Inspector qualification records relative to welding inspection		
3. In the area of welding of reactor coolant pressure boundary piping, selectively review records of audits by QA personnel and records of management review of these records. In particular, select one deviation identified during audit in the above area and determine whether proper, timely and adequate corrective action was taken.		
4. Review in detail 10%, but not to exceed eight, deviation (nonconformance or deficiency) reports. Determine whether the records are complete, legible, retrievable and properly closed out.		

Procedure No.: 55076B

PLANT:

1. Select six field piping welds within the reactor coolant pressure boundary - no more than two welds in any one pipe size - where welding, NDE and inspection activities have been completed.

2. Review the following records for each weld selected to ascertain whether the records are in conformance with established procedures and whether the records reflect work accomplishment consistent with applicable requirements in the following areas:

   a. Inspection records covering visual and dimensional inspections

   b. Weld history records

   c. Heat treatment records covering preheat and interpass temperature, post weld control, stress relief and total time at temperature, as applicable

   d. NDE records covering evaluation of quality of welds (by RT, MT, etc.), including correlation of records to specific weld

   e. Weld repair records covering defect removal technique used, defect removal verification, nondestructive examinations, heat treatment, and final acceptance of repairs, as appropriate

   f. Welding material (welding rod, flux, electrode, and gas) control records covering:

      (1) Receipt verification of identity and conformance with specifications

      (2) Control of pre-issue storage conditions

      (3) Storage identification and issue control

      (4) Post-issue control regarding identification, temperature and moisture

      (5) Disposition of issued but unused materials

   g. Welder qualification records

   h. Inspector qualification records relative to welding inspection

3. Review in detail the six most recent nonconformance (deviation or deficiency) reports relative to reactor coolant pipe welding activities. Determine whether the nonconforming activity or component is specifically identified or described and whether the records are complete, legible, retrievable, and (if applicable) properly closed out.

Procedure No.: 55081B

PLANT:

1. For each onsite organization with QA (including QC) responsi-ties relative to field welding of safety related piping ...ide the reactor coolant boundary, ascertain whether quality assurance plans, instructions and procedures have been established, and whether they conform to the QA program as described in Chapter 17 of facility SAR. Accomplish this by completing the inspect n requirements of Procedure No. 35100B relative to this welding.		
2. For each welding contractor and other organizations responsible for the subject welding activities, selectively examine quality related procedures that cover applicable welding, NDE and inspection (QC) activities. Review these selected procedures in detail to determine whether required and adequate procedures are included or referenced in the QA manual. Specific areas to be reviewed are: a. Performance procedures relative to welding activities which identify the items, including mandatory hold points, in the applicable codes, standards, construction specifications and procedures where witnessing or inspection is required		
b. Provisions to assure that welding procedures are properly qualified in accordance with applicable requirements.		
Provisions to assure that welding personnel are properly qualified		
d. Provisions to assure that nondestructive examination techniques conform to applicable codes and standards, and have been qualified		
e. Provisions to assure that nondestructive examination personnel are qualified to applicable requirements		
f. Provisions to assure that equipment being used (for welding NDE, etc.) is of the proper and specified type, within current calibration, and that periodic checks assure that the equipment is properly maintained and used as specified		
g. Provisions to assure control of contaminants in NDE equipment and materials (UT couplants, PT solvents, etc.)		
h. Provisions to assure that the following activities and records meet requirements: (1) Weld location - system, weld number		
(2) Welder's name and identification		
(3) Weld procedure(s) used, including repair procedures		
(4) Weld filler material used and traceability where applicable		
(5) Nondestructive examination (NDE)		

53081 $\frac{7}{13} = 50\%$ Seabrook 1 and 2

1. 78-14, 78-15

2. a. 78-14
b.
c.
d.
e.
f. 78-14
g.
h. (1)
↓
(8)
i.
j.
k.
l.

Procedure No.: 55081B

(6) NDE technician's name or identification		
(7) NDE results		
(8) Inspection requirements		
i. Inspection procedures which cover the following heat treatment activities, where required: (1) Preheat		
(2) Interpass temperature		
(3) Post weld controlled cooling		
(4) Stress relief		
j. Inspection (QC) and/or work performance procedures which cover the following NDE activities, where required: (1) Evaluation of weld quality by the use of specified NDE procedures		
(2) Evaluation of weld quality by visual examination		
(3) Evaluation of radiograph quality		
k. Inspection (QC) and/or work performance procedures which provide control/surveillance/inspection of welding material (welding rod, flux, electrode, consumable inserts and gas): (1) Receipt verification of identity and conformance with specifications		
(2) Control of pre-issue storage conditions - all locations used for this welding		
(3) Storage identification and issue control - so that only acceptable material is issued and used		
(4) Post-issue control regarding identification, temperature and moisture		
(5) Disposition of issued but unused material		
l. Inspection (QC) and/or work performance procedures which cover defect repair where necessary: (1) Defect removal technique(s)		
(2) Defect removal verification		
(3) Stress relief of repair		
(4) Acceptance of repair.		

Procedure No.: 55083B

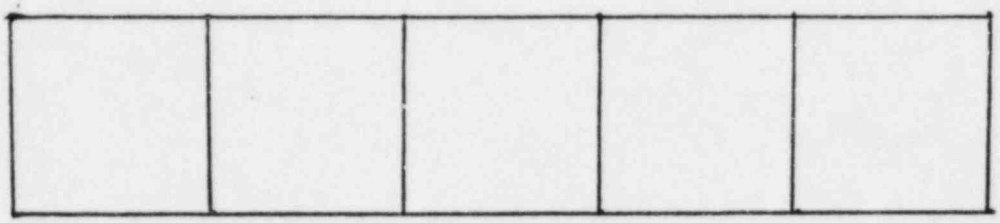
PLANT:

Observe field welding of safety related piping outside the reactor containment pressure boundary at various stages of weld completion. Determine whether the requirements of applicable specifications, codes, standards, work performance procedures and inspection (QC) procedures are being met, as follows:		
1. Select one weld in each of five safety related piping systems where joint preparation and alignment are complete and welding has not started. Determine whether the following meet applicable specifications and procedures:		
a. Weld identification/location		
b. Joint preparation and alignment		
c. Evidence of QC verification		
2. Select one weld in each of five safety related systems where root pass (only) has been completed. Determine whether the following meet applicable specifications and procedures:		
a. Weld identification/location		
b. Specified weld procedure used in root pass		
Physical appearance of weld		
d. Welder identification and qualification		
e. Evidence of QC verification of root pass		
3. Select one pipe to pipe and one pipe to fitting weld where welding is beyond the root pass stage in three safety related piping systems. For each of these six welds, ascertain whether the following meet applicable specifications and procedures:		
a. Weld identification/location		
b. Use of specified weld procedure		
c. Welder performing the welding currently qualified for positions being welded		
d. Specified pre-heat, interpass temperature and post-weld heat treatment requirements met (where applicable)		
e. Use of specified weld material		
f. Use of specified purge (if applicable)		
Starts, stops and undercuts ground		
h. Procedures used to remove and repair defects and fit-ups clips (if applicable)		

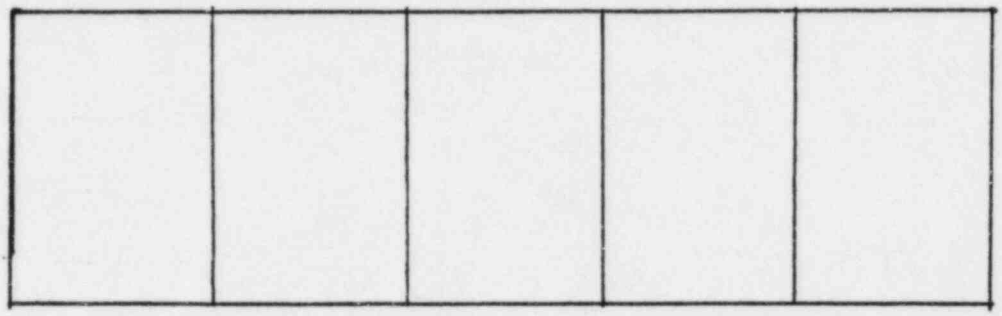
i. Physical appearance of the weld (e.g., under cutting, surface imperfections)	
j. Periodic checks made to assure that welding variables are within specified limits	
4. Select one weld in each of two safety related piping systems where the welding and surface preparation are complete, and testing is in progress. Ascertain whether: a. Surface suitable as required by applicable code, including merge angle, surface condition for NDE, etc.	
b. Proper NDE being performed - and at proper state of fabrication	
5. At each welding material issuing location used for this welding, observe the following for conformance with the requirements of applicable codes and procedures: a. Storage of materials - identification, segregation, cleanliness and storage temperature	
b. Issue records - approval, amount withdrawn, identity of withdrawer, dates, identification with weld location	
c. Handling of return materials	
6. During observation of welding activities, determine whether any unused (uncontrolled) filler material is present in welding areas.	

5-5-83 $\frac{1}{20} = <10\%$ Seabrook 1

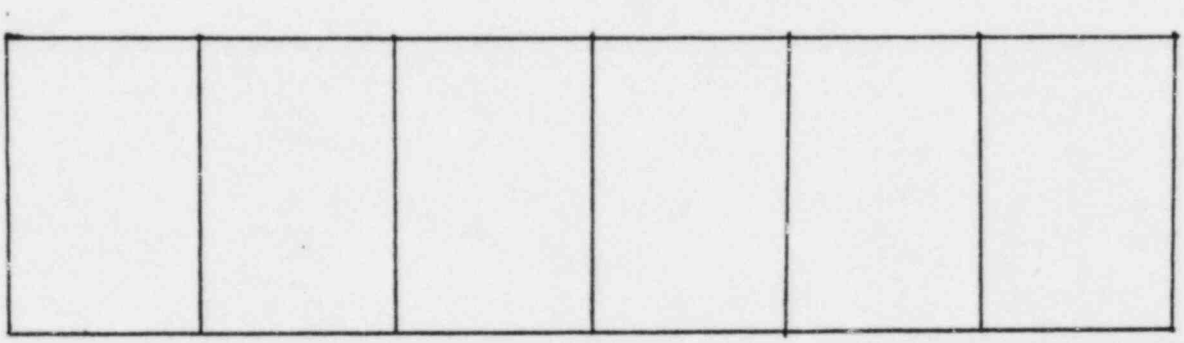
1 a
b
c



2. a
b
c.
d
e.



3. a



4.

78-15	
1801-02 SERVICE WATER MAGNETIC PARTICLE	

5. a
b
c

6.

Procedure No.: 55085B

PLANT:

Se ten field welds in safety related piping systems outside the re coolant pressure boundary (no more than two welds in any one system) where welding, NDE and inspection activities have been completed. Review the following records for each weld selected to ascertain whether these records meet established procedures and whether these records reflect work accomplishment consistent with NRC requirements and SAR commitments in the following areas:		
1. Inspection records covering visual and dimensional inspections		
2. Weld history records		
3. Heat treatment records covering preheat and interpass temperature, post weld control, stress relief and total time at temperature, as applicable		
4. NDE records covering evaluation of quality of welds (by RT, MT, etc.) including correlation of records to specific weld		
5. Weld repair records covering defect removal technique used defect removal verification, nondestructive examinations, heat treatment, and final acceptance of repairs, as appropriate		
6. Welding material (welding rod, flux, electrode and gas) control records covering:		
a. Receipt verification of identity and conformance with specifications		
b. Control of pre-issue storage conditions		
c. Storage identification and issue control		
d. Post-issue control regarding identification, temperature and moisture		
e. Disposition of issued but unused materials		
7. Welder qualifcation records		
8. Inspector qualification records relative to welding inspection.		

PULLMAN POWER PRODUCTS
SEABROOK STATION
FIELD WELD ACCESS SHEET

lo. 7035 Cust. Public Service Co. NH
LINE/ISO No.
No.
P8 CodeASME III Class 1
Thk. Insert NA
lo. 251-III-8-BR-A1
Wire ER308 Electrode
eat Range °F Min. 60°
pass Temp °F Max. 350°
Temp °F NA
Time Hrs. NA
Rate °F/hr. NA
Rate °F/hr. NA
of Joint: Circumgroove
of Purge Dam: NA
ED ACCESS WELD YES NO ✓
r:

ared By: Date:
pproved: Date:
Review: Date:

WELD RECORD
er(s) Symbol - Root Final
rt/Backing Ring HT. No.
trode Lot No(s)
Chart No.

Final Check
Date:

inator Code PX-52
rd Type 41-S-03-006
Index Number

TION:

Sheet 1 of 3

Opr. No.	OPERATION	N/A	Proc. No.	HOLD ANI	HOLD P.P.	Oper.	P.F.P. Ins. & Date	ANI Ins. & Date
	Material Description TO							
1	PC. MARK OR HT. NO. TO							
2	VISUAL INSPECTION		REV X-9		H			
3	Clean & prepare end preps for LP examination		REV FI-132					
4	LP examine end preps		REV IX-PT-1-W77		H			
5	Fit for baseline Radiograph		REV FI-132					
6	Visual inspect		REV X-9		H			
7	Base Line Radiograph (For info only)		REV IX-RT-1-W77		H			
8	Complete the fit-up		REV 251-III-8-BR-A1					
9	Preheat		REV 27-III-8-OB-12		H			
10	Install & tack backing ring & blocks (FI 132)		REV 27-III-8-OB-12					
11	Mark & initial measure for weld shrinkage		REV FI-132		H			
12	Visual inspect		REV X-9		H			
13	~~Install~~ track ~~& verify~~ weld head placement		REV FI-126					
14	Pre heat		REV 251-III-8-BR-A1		H			
15	Partial root pass weld around blocks		REV 251-III-8-BR-A1					
16	Visual inspect		REV X-9		H			
17	Partial hot pass weld around blocks		REV 251-III-8-BR-A1					
18	Visual inspect		REV X-9		H			

PULLMAN POWER PRODUCTS
SEABROOK STATION
FIELD W[illegible] PROCESS SHEET

No. 7035 [illegible], Public Service Co. NH

[illegible]-LINE/ISO No.
[illegible]d No.
[illegible]'1 P8 Code ASME III Class 1

[illegible]s No. 251-III-8-BR-A1
[illegible]e Wire ER 308 Electrode
[illegible]eheat Range °F Min. 60°
[illegible]terpass Temp °F Max. 350°
[illegible]T Temp °F NA

[illegible]her:

[illegible]epared By: Date:
Approved: Date:
[illegible]I Review: Date:

WELD RECORD
[illegible]lder(s) Symbol - Root Final
[illegible]sert/Backing Ring HT. No.
[illegible]ectrode Lot No(s)

[illegible]at Chart No.

Final Check
Date:

[illegible]iginator Code PX-52
[illegible]ecord Type 41-S-03-006
[illegible]S Index Number

[illegible]OCATION:

Opr. No.	OPERATI[illegible]	N/A	Proc. No.	HOLD ANI	HOLD P.P.P.	Oper.	P.P.P. Ins. and D[illegible]	ANI Ins. & Date
19	Remove blocks		REV FI-132					
20	Prep removal area for LP examination		REV IX-PT-1-W77					
21	LP examine removal area		REV IX-PT-1-W77		H			
22	Prepare stops & starts for continuance of welding		REV FI-132					
23	Visual inspect		REV X-9		H			
24	Complete root pass weld		REV 251-III-8-BR-A1					
25	Visual inspect		REV X-9		H			
26	Complete hot pass weld		REV 251-III-8-BR-A1					
27	Measure for weld shrinkage		REV FI-132		H			
28	Visual inspect		REV X-9		H			
29	Complete (5) layers approx. 5/16" to 3/8"		REV 251-III-8-BR-A1					
30	Measure for weld shrinkage		REV FI-132		H			
31	Continue welding until end of 20 hr. shift		REV 251-III-8-BR-A1					
32	Visual inspect		REV X-9		H			
33	Radiograph (info only)		REV IX-RT-1-W77		H			
34	Complete approx. ½ weld thickness		REV 251-III-8-BR-A1					
35	Measure for weld shrinkage		REV FI-132		H			
36	Continue welding until end of 20 hr. shift		REV 251-III-8-BR-A1					
37	Visual inspect		REV X-9		H			

PULLMAN POWER PRODUCTS
SEABROOK STATION
FIELD W[illegible] PROCESS SHEET

No. 7035 C[illegible] Public Service Co. NH

-LINE/ISO No.

d No.

'1 P8 Code ASME III Class 1

No. 251-III-8-BR-A1

e Wire ER308 Electrode ———

heat Range °F Min. 60°

erpass Temp °F Max. 350°

IT Temp °F NA

ıer:

epared By: Date:

Approved: Date:

I Review: Date:

WELD RECORD

lder(s) Symbol - Root Final

sert/Backing Ring HT. No.

ectrode Lot No(s)

at Chart No.

Final Check

Date:

iginator Code PX-52

cord Type 41-S-03-006

S Index Number

CATION:

Opr. No.	OPERATI[illegible]	N/A	Proc. No.	HOLD ANI	HOLD P.P.P.	Oper.	P.P.P. Ins. and D[illegible]	ISI Ins. & Date
38	Radiograph (info only)		REV IX-RT-1-W77		H			
39	Complete approx. 3/4 weld thickness		REV 251-III-8-BR-A1					
40	Measure for weld shrinkage		REV FI-132		H			
41	Continue welding until end of 20 hr. shift		REV 251-III-8-BR-A1					
42	Visual inspect		REV X-9		H			
43	Radiograph (info only)		REV IX-RT-1-W77		H			
44	Complete weld		REV 251-III-8-BR-A1					
45	Measure for weld shrinkage		REV FI-132		H			
46	Interpass temp		REV 251-III-8-BR-A1					
47	Prepare surface for ISI examination		REV EPS-1					
48	Visual inspect final weld O.D.		REV X-9		H			
49	Remove backing ring		REV FI-132					
50	Prep removal area for LP examination		REV IX-PT-1-W77					
51	Visual inspect final weld I.D.		REV X-9		H			
52	LP examine removal area		REV IX-PT-1-W77		H			
53	LP examine final weld OD		REV IX-PT-1-W77		H			
54	Radiograph final weld (required for ASME III)		REV IX-RT-1-W77		H			

2

To:

JOHN CARR, CHIEF
FREEDOM OF INFORMATION AND
PRIVACY ACT BRANCH

FOIA 524

Redacted Pursuant
Reside F25

Redacted

Transmittal No. (FQAP-46)

Binder No. 25

Public Service Co. of New Hampshire
Seabrook Station
Index of UE&C Field Quality Assurance Procedures

March 22, 1982

(2)

TAB NO.	DOCUMENT NUMBER	TITLE		
		Management Statement		
	*	QA/QC Glossary		June 23, 1975
1	QCP-2	Quality Assurance Program	4	Jan. 26, 1981
2	QCP-4	Procurement Document Control	0	Feb. 16, 1982
3	QCP-7	Control of Purchased Material, Vendor Evaluation and Selection	0	Feb. 24, 1982
4	*** QCP-7-1	Receiving Inspection for UE&C Purchased Items	6	Jan. 16, 1981
5	** QCP-7-2	Receiving Inspection of Westinghouse NSSS Items	2	March 2, 1981
6	*** QCP-7-3	Receiving Inspection of UE&C Purchased Non-Safety Items	0	March 2, 1981
7	**** QCP-8	Material Control	4	Sept. 28, 1979
8	QCP-10-1	Site Surveillance	4	Jan. 30, 1981
9	QCP-10-2	Surveillance of Blasting Operations	1	Sept. 5, 1979
10	** QCP-10-3	Fire Protection Surveillance	1	May 26, 1980
11	QCP-12	Surveillance of UE&C Gauge Facility	1	Jan. 16, 1981
12	** QCP-13	Handling and Storage Control	11	March 9, 1981
13	* QCP-17-1	Records Review	3	Oct. 20, 1980
14	* QCP-17-2	Quality Assurance Records	4	Oct. 20, 1980

The Quality Assurance Program for site activities associated with Criteria 1 through 6, 9, 11, 12, 14, 15, 16 and 18 of Appendix B to 10CFR50 is covered in the corresponding Seabrook Station Quality Assurance Procedures Manual

* ACN-38 dated 5/31/81 supplements Rev. 11 of QCP-13
* ACN-39 dated 7/9/81 supplements Rev. 11 of QCP-13
* ACN-40 dated 7/9/81 supplements Rev. 4 of QCP-17-2
* ACN-41 dated 7/9/81 supplements Rev. 3 of QCP-17-1
* ACN-42 dated 7/9/81 supplements Rev. 0 of QCP-7-3

(Continued. . . .)

Transmittal No. (FQAP-46)

Binder No. 25

* ACN-43 dated 7/9/81 supplements Rev. 6 of QCP-7-1
* ACN-44 dated 7/9/81 supplements Rev. 2 of QCP-7-2
* ACN-45 dated 7/9/81 supplements Rev. 4 of QCP-8
** ACN-48 dated 8/11/81 supplements Rev. 0 of QCP-7-3
** ACN-49 dated 8/25/81 supplements Rev. 6 of QCP-7-1
* ACN-50 dated 10/7/81 supplements Rev. 0 of QCP Glossary
** ACN-51 dated 9/2/81 supplements Rev. 4 of QCP-8
*** ACN-52 dated 9/21/81 supplements Rev. 6 of QCP-7-1
** ACN-53 dated 9/21/81 supplements Rev. 2 of QCP-7-2
*** ACN-54 dated 9/21/81 supplements Rev. 0 of QCP-7-3
*** ACN-56 dated 9/24/81 supplements Rev. 4 of QCP-8
**** ACN-58 dated 12/22/81 supplements Rev. 4 of QCP-8
* ACN-61 dated 1/15/82 supplements Rev. 1 of QCP-10-3
** ACN-64 dated 2/1/82 supplements Rev. 1 of QCP-10-3

UNITED ENGINEERS & CONSTRUCTORS INC.

MANAGEMENT STATEMENT

The entire United Engineers & Constructors (UE&C) organization is committed to the UE&C Quality Assurance Program to assure that the Seabrook Station Project is designed, engineered, procured, manufactured, fabricated, installed, erected and constructed in a safe, reliable and efficient manner.

It is the policy of United Engineers & Constructors Inc. to ensure the highest degree of functional integrity and reliability of piping systems, materials, components and structures of the Seabrook Station in strict accordance with the requirements of the ASME Code, engineering specifications and AEC Regulatory Guide requirements.

The total responsibility for UE&C's activities on the Seabrook Project rests with the Project Manager who reports to the Vice President of Power Engineering. Responsibility for Construction activities rests with the Construction Manager who reports to the Vice President-Construction. The Manager of Reliability and Quality Assurance is responsible to the Project Manager for all Quality Assurance activities on the project. The Manager of Reliability and Quality Assurance reports directly to the Vice President, Administration and is responsible for planning and implementing management-approved QA policies and procedures.

It is incumbent on all concerned to support and adhere to the provisions of this Procedures Manual in an objective and cooperative manner.

J. B. Silverwood, Manager
Reliability and Quality Assurance

J. R. Dmytryk
Construction Manager

G. F. Cole
Project Manager

united engineers & constructors inc

FORM 4543-9763

QA/QC PROCEDURE ADVANCE CHANGE NOTICE

PUBLIC SERVICE CO. OF NEW HAMPSHIRE - SEABROOK STATION

CHG. NO. 50
EFFECTIVE DATE 10/7/81
QA Glossary
QCP Glossary
REV. See Below
DATE See Below

PROCEDURE TITLE Quality Assurance/Quality Control Glossary

PREPARED BY D. E. O'Connor DATE 9/28/81

CHANGE

(1) QA Procedure Glossary (Rev. 1 8/31/76, Page 1 of 29)

2nd Item: Accept As-Is

Present: A nonconformance review board disposition indicating material discrepancies do not substantially affect safety performance and maintainability; and that the material can be used for its intended purpose.

Change 1st sentence to read: A disposition by the responsible engineer indicating material discrepancies do not substantially affect safety performance and maintainability; and that the material can be used for its intended purpose.

RECEIVED U. E. & C. INC.
NOV 30 1981
SEABROOK STATION

(2) QC Procedure Glossary (Rev. 0 6/23/75, Page 1 of 26)

2nd Item: Accept As-Is

Present: A nonconformance review board dispositon indicating material discrepancies do not substantially affect safety performance and maintainability; and that the material can be used for its intended purpose.

Change 1st sentence to read: A disposition by the responsible engineer indicating material discrepancies do not substantially affect safety performance and maintainability; and that the material can be used for its intended purpose.

INFORMATION ONLY

REASON FOR CHANGE To delete NRB action for items "Accept As-Is" and to be compatible with the site NQAM.

REVIEWED BY FSQA	DATE	REVIEWED BY PROJECT QAE	DATE	APPROVED PM	DATE	APPROVED MGR. R & QA	DATE	APPROVED	DATE
D Lambert	10/1/81	RC Greenfield	10/6/81	[signature]	10/7/81	J B Silverman	10/7/81	N/A	10/7/81