

Division of Pullman Incorporated

PQP No. - 311
DOCUMENT NO.

PREPARED BY: R. L. Foye

APPROVED BY: E. L. Richards *[Signature]*

DATE: 4/6/78

PROCEDURE QUALIFICATION RECORD

TO BE USED
ONLY ON JOB #

7035

PAGE
NO. 1 of 3

U.S. GOV.
CODE

00

PROCEDURE QUALIFICATION RECORD

311-8/1-OB-2

AS WELDED

FOR INFORMATION ONLY

PREPARED BY

PULLMAN POWER PRODUCTS

DIVISION OF PULLMAN INCORPORATED

HEADQUARTERS AT

WILLIAMSPORT, PENNSYLVANIA

[illegible]

Pullman Power Products

Division of Pullman Incorporated

PQR No. - 311

DOCUMENT NO.

PREPARED BY: R.J. ROYCE

APPROVED BY: E.J. Richards

DATE: 4/6/78

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WPS NO. 80-3/1-QB-2

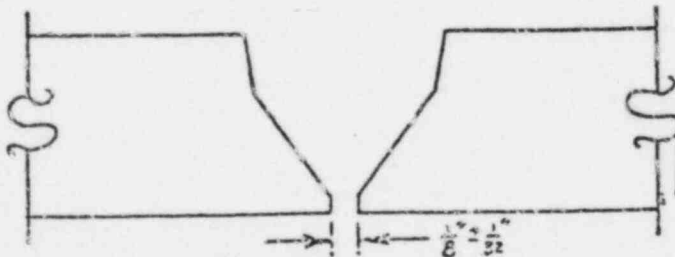
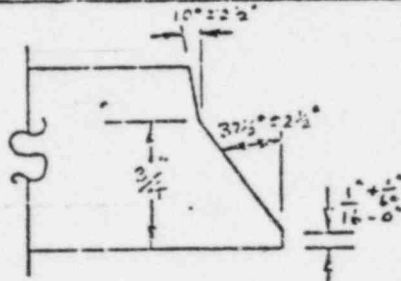
WPS DATE 6/22/71

WELDING PROCESS (ES) SMAW

TYPES Manual

Updated reprint WPS of PM-PI-QB-GTAW-SMAW-GG.

(MANUAL, AUTOMATIC, SEMI-AUTIC)



GROOVE DESIGN USED

BASE METAL (CW-403)

MATERIAL SPEC. A312 to A106

TYPE OR GRADE T304 to B

OF P NO. 8 TO P NO. 1

THICKNESS (IF PIPE, DIAMETER AND WALL
THICKNESS) 14" x 2.0" M/W

POSITION (CW-405)

POSITION OF GROOVE Inclined angle 45° (6G)

WELD PROGRESSION Uphill

(UPHILL - DOWNHILL)

PREHEAT (CW-406)

PREHEAT TEMP. 60° F. Min.

INTERPASS TEMP. 300° F. Min.

OTHER

FOR INFORMATION ONLY

GAS (CW-408)

TYPE OF GAS OR GASES None

COMPOSITION OF GAS MIXTURE N/A

OTHER

TECHNIQUE PROCEDURES (CW-410)

STRING OR WEAVE BEAD Stringer

OSCILLATION N/A

MULTIPASS OR SINGLE PASS Multipass
(PER SIDE)

SINGLE OR MULTIPLE ELECTRODES Single

FILLER METALS (CW-404)

WELD METAL ANALYSIS A NO. 8 FILLER METAL F NO. 5

S.F.A. SPEC. 5.4 AWS CLASS E309-16

POSTWELD HEAT TREATMENT (CW-407)

TEMPERATURE None

TIME N/A

OTHER

ELECTRICAL CHARACTERISTICS (CW-409)

WELDING PROCESS	ELECTRODE DIA.	BARE FILLER WIRE DIA.	CURRENT (AMPS)	VOLTS	AC/DC POLARITY	Min. TRAVEL SPEED	COMMENTS
SMAW	3/32	-	55-65	22-24	DC Reverse	2.0 IPM	
SMAW	1/8	-	80-90	23-25	DC Reverse	2.5 IPM	
SMAW	5/32	-	110-130	23-25	DC Reverse	3.5 IPM	

Pullman Power Products

Division of Pullman Incorporated

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PREPARED BY: R.J. Boyer

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TENSILE TEST (QW-150)

SPECIMEN NO.	WIDTH	THICKNESS	AREA	ULTIMATE TOTAL LOAD LB.	ULTIMATE UNIT STRESS PSI	CHARACTER OF FAILURE & LOCATION
79-2-1	.750	.776	.582	42,900	73,700	Broke in C/S Base Metal
79-2-1A	.751	.823	.618	45,900	74,300	Same as Above
79-2-2	.752	.781	.587	43,800	74,600	Same as Above
79-2-2A	.750	.801	.601	45,100	75,000	Same as Above

GUIDED BEND TESTS (QW-160)

TYPE AND FIGURE NO.	RESULTS	TYPE AND FIGURE NO.	RESULTS
SB-1	Bent 180° Passed		
SB-2	Bent 180° Passed		
SB-3	Bent 180° Passed		
SB-4	Bent 180° Passed		

TOUGHNESS TESTS (QW-170)

SPECIMEN NO.	NOTCH LOCATION	NOTCH TYPE	TEST TEMP.	IMPACT VALUES	LATERAL EXP.		
					% SHEAR	MILS	

Welder's Name H. Fuller 119 Clock No. 258 Stamp No. CQ
C. Loden Laboratory Test No. CL
 Test Conducted by: Pullman Power Products Per: Frank J. Richards

We certify that the statements in this record are correct and that the test welds were prepared, welded and tested in accordance with the requirements of Section IX of the ASME Code.

Signed Pullman Power Products

Date April 6, 1978

By Robert J. Boyer
R.J. Boyer

$$\begin{array}{r} 6.3 \\ 1.5 \\ \hline 5.0 \end{array}$$

$$\begin{array}{r} 1430 \\ 520 \\ \hline 9:10 \end{array} \quad \begin{array}{r} 870 \\ 150 \\ \hline 7:20 \end{array}$$

1.51

Time for Sealbrook Trip 7/13 - 7/16

① Left Rayensford 0520 7/13
 went to office
 drove to Sealbrook
 arrived Sealbrook 1430
 inspection 1430-1645

breakfast time 1 1/2 hrs
 lunch time includes meals
 0700 - 1430

7.3 hrs
 5.8 hrs RT
 1.5 OT
 2.25 hrs

② Tues. 0800 - 1730
 no lunch 9.5 hrs

③ Wed 0800 - 1645
 1/2 hr lunch 8.25 hrs

④ Thurs 0800 - 1345

Seabrook

W 0515	—	0700	=	Co1	1.75 hrs	OT	
0700	—	1340	=	Co1	6.75 hrs	RT	
1340	—	1430				lunch	
1430	—	1545		PP1	1.25 hrs	RT	(3)
1545	—	1645		PP1	1.0 hr	OT	

T 0800	—	1730		PP1	8 hrs	RT	(5)
		no lunch		PP1	1.5 hr	OT	

W 0800	—	1645		PP1	8 hr	RT	(8)
		1/2 lunch		PP1	0.25 h	OT	

Th 0800	—	1345		PP1	5.75 hr	RT	(8)
1345	—	1645		Co1	2.25	RT	
1645	—	2235		Co1	5.5 hr	OT	

Summer

Co1	9.	RT
Co1	7.25	OT

PP1	23	RT ✓
PP1	2.75	OT

NRC Questions

References: (W) Equip Spec G-678853
- UE+C Dwg D805000

1) (W) Spec requires valve hardsurfacing material to be AWS 5.13, Type R CoCr-A. Certs for Unit 1 Valve (SI-V-36) indicate hardsurfacing powder was used. What criteria (AWS classification) governs the acceptability of this powder?

2) ASME Section III, Subsection NB requires the forged material of valve SI-V-36 to be given LPT + UT. Certs provide UT Reports, but only a C of C for all LPT. What specifically identifies that LPT was accomplished on the valve bonnet + disc?

3) UE+C Dwg D805000 identifies certain pipe end prep configurations to match (W) equipment. Recognizing that the bevel angle is not an essential variable of ASME Section IX, what is impact of Dravo pipe end preps not meeting angular requirements of D805000? (Example: 3" pipe (E2936-1297) welded to Valve (RC-V-45) has 20° bevel angle where UE+C Dwg requires 30° angle)

AEQA 1403
Revision 4
11/77

WESTINGHOUSE ELECTRIC CORPORATION
ELECTRO-MECHANICAL DIVISION

WELD SHOP ORDER 1H042

PART NAME Swing Check Valve

VALVE
IDENTIFICATION 10001-S990000000000S740016

CERTIFICATION OF NONDESTRUCTIVE EXAMINATION

Examination Method: Liquid Penetrant WELD Procedure: AE-80165-2, Rev. V

We certify that the referenced component and all applicable parts thereof were examined using the referenced Nondestructive Examination Procedure designed in accordance with the requirements of ASME Boiler & Pressure Vessel Code, Section III, and found acceptable to criteria specified or as modified by purchase order requirements. We further certify that all personnel performing these tests were qualified in accordance with the requirements of SNT-TC-1A, Supplements and Appendices, as applicable, for the technique and method used.

CERTIFICATION OF: 1) ORIGIN OF MANUFACTURE; 2) CLEANING; AND 3) PAINTING

We certify that (where noted as applicable):

Applicable?

- YES ☒ NO ☐ 1. The referenced component/equipment and all applicable parts thereof were manufactured from materials and services of United States origin.
- YES ☒ NO ☐ 2. The referenced component and applicable parts were cleaned per Specification 83311PM, Revision C.
- YES ☐ NO ☒ 3. Paint applied to the Torque Arm, Yoke, and Operator meets the requirements of WELD Procedure 7407SCQ3, Revision .

Substantiating data on file at Westinghouse EMD,
Cheswick, Pennsylvania, U.S.A.

Q.A. Engineer

7-26-79
Date

VDP-PAGE 4 OF

AEQA 1539
Revision 6
8/25/78

Customer P/O No. 546-NCJ-214151-BN

Item 016

W P/O BS-72305-AR6-ARI

W S/O 1H042

Ship Date AUG 3 1979

Site SEABROOK NO. 1

Project NAN

Valve Identity 1,000,155,990,000,000,005,740,016

Contents

Customer Data Package
for
Check Valve ($\geq 6"$)

National Board No. W20023

Valve ID 10C88

Valve Location No. N/A

Tag No. 11A

Documentation

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5.	MPV-1 (Manufacturer's Code Data Report)	5 & 5a
6.	WTD No. 3 (Valve Test Report)	6
7.	As Built Dimension Body 1527B69/1533B91	7
8.	As Built Dimension Bonnet 1527B5C	8
9A.	Material Test Report - Body	9, 10
9B.	UT Report - Body	11
9C.	PT Report - Body	12
10A.	Material Test Report - Bonnet	13, 14
10B.	UT Report - Bonnet	15
11A.	Material Test Report - Disc	16
11B.	UT Report - Disc	17
12.	Material Test Report - Main Flange Studs	18-22
13.	Material Test Report - Main Flange Nuts	23-25
14A.	Hardfacing & Welding - S/W Identification--AEQA 1404C	26
14B.	*Material Test Report - Weld Filler Material	27, 28
14C.	*Material Test Report - Hardfacing Powder	29, 30
15A.	Other (Specify) _____	_____
15B.	Other (Specify) _____	_____

* As applicable for this valve.

Final Verification for Completeness of Data, As Itemized, by:

WEDD QA Records T. J. Hanco

Date 7-30-79

THIS SECTION TO BE COMPLETED WHEN MICROFILMED

Customer P/O	END S/O	Project	Cust S/O	QA Number	Valve Ident/Serisi No.	Fische Rev
<u>214151</u>	<u>1H042</u>	<u>NAN</u>	<u>220</u>	<u>30181</u>	<u>10C88/0016</u>	<u>0</u>

QA Records T. J. Hanco

Date 7-30-79

Mr. J. J. Hanco

AEQA 1405C
Revision 3
12/5/77

CLASS I CHECK VALVE TRACEABILITY TABLE AND DATA PACKAGE REQUIREMENTS

WESTINGHOUSE ELECTRIC CORPORATION
ELECTRO-MECHANICAL DIVISION (EMD)
CHESWICK, PA 15024

EMD S/O 1H042 Valve Identity 1.0.0.0.1.C.S.9.9.0.0.0.0.0.0.0.S.7.4.0.0.1.6
Valve Location No. N/A Valve ID 10C88 Tag No. N/A

	Body	Bonnet	Disc	Main Flange		
				Code	Studs	Nuts
Serial Number	<u>6179</u>	<u>6088</u>	<u>5226</u>	<u>CJ21</u>		<u>54225</u>
Heat Number	<u>8654620-14</u>	<u>67281-1B</u>	<u>636065</u>	<u>22810</u>		<u>20018</u>

Documentation	Valve Assembly Body	Bonnet	Disc	Flange-Bolts-Stud	Flange-Retaining	Field Rd Hardfacing	Body or Rd	Remarks
A. MATERIALS & PROCESS COMPLIANCE								
1. Material Test Reports	X	X	X	Y	X	X		
2. PT Reports (As Forged Condition)	X							
3. Certification of NDE (Final Machined Condition)	X	X	X			X		AEQA 1403
4. UT Reports	X	X	X					
5. NDE Report (Final Machined Condition)				X				1. Only on bolts, bolts, & studs >= 1"
6. As-Built Dimension Reports	X	X	X					2. Dwg 152TB69/1533891
7. Barfacing & Welding - Serial No. Ident.	X	X		X	X			3. Dwg 152TB50
8. RT Reader Sheets (Major Weld Repairs Only)								AEQA 1404
9. Weld Repair Map (Major Repairs Only)								
B. TEST DATA								
Valve Test Report - VID No. 3	X							
C. PQ COMPLIANCE								
1. W Quality Release (QR)	X							
2. Approved IN's (Listed on QR)								
3. ASME Code Data Form NPV-1	X							
4. Dimensional Compliance:	X							
Weld Prep Configuration								
Maximum Envelope								
End-to-End Dimensions								

This is to certify that:

1. All processing and materials used in the manufacture of subject assembly conform to the specifications, drawings, and/or other descriptions set forth in the applicable purchase order;
2. The parts are of acceptable materials and workmanship;
3. All necessary records including chemical and physical, seat leakage, hydrostatic and final test reports are included in this data package.

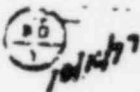
Additional information will be made available on request.

WELD QA Engineer

C. C. C. C.

Date 7-26-79

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APPROVED
P.05418Y99,58.0.4.777
CO. Yun Xue Lin
DATE 10-10-79 24089

metallurgical international inc.

1 COLDSTREAM WAY • NEW SHREWSBURY, NEW JERSEY • 07736
(801) 846-0000 CABLE ADDRESS "MINT"

CERTIFICATE OF ANALYSIS

LAB NUMBER: A-77783

CUSTOMER: WESTINGHOUSE
ELECTRO-MECHANICAL DIV.

SAMPLE OF: S-156

P.A. No. 541-8-8985

SPEC. No. 908A772 - H01 - REV. 06

PERCENT	
Al	Na
Al	Ni <u>0.48</u>
B	O
C <u>1.57</u>	P
Ca	Pb
Co	S
Co <u>8.41</u>	Si <u>1.83</u>
Cr <u>29.92</u>	Sn
Cu <u>1.12</u>	Ta
Fe <u>0.39</u>	Ti
H	V
Mg	W <u>4.28</u>
Mn <u>0.18</u>	Zn
Mo <u>1.10</u>	Zr
N	

Screen Size (-60 + 825)	Percent
+ 50	<u>2.8</u>
+ 60	<u>0.2</u>
+ 80	<u>13.2</u>
+ 100	<u>17.2</u>
+ 270	<u>62.7</u>
+ 325	<u>2.9</u>
- 325	<u>1.9</u>
Fisher SSS - Micron	
Scott Density - gm/in ³	
H ₂ Loss - Percent	
Apparent Density - gm/cc	<u>4.48</u>
Hall - Flow - Sec/50 g	<u>15.4</u>

- Less Than
+ Greater Than

MARKS: NET WT 4,990 lbs.

900
10/11/77

METALLURGICAL INTERNATIONAL INC.

VDP-PAGE 30 OF 30

Leo A. Adams
TECH. DIR. 9-12-77

WELDING QUALIFICATION RECORD ELECTRO-MECHANICAL DIVISION HARDFACING PROCEDURE QUALIFICATION RECORD

THUMPER

42013

Applicable Specification 1974 ASME Section III and IX

Test Assembly Drawing Number 9340238

Welding Process PAW-AU

Procedure No. 82142PU518 Added: 11/18/75

Base Material: 304 SST

Filler Metal: VERTX CO-156 POWDER

No. P-8

Re. NA

Specification: ASTM A240

Size: -60 +325 MESH

Classification: AWS A6.13 Type CoCr-A

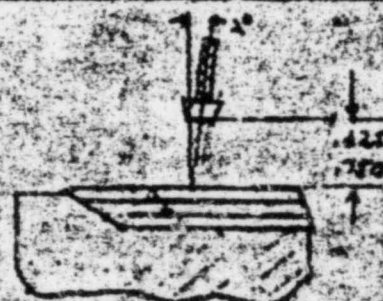
Heat Number: 346276-2

Heat Number: AC 74040

Joint Description:



Setup:



Parameter:	1st Lyr.	Subseq.	Parameter:	1st Lyr.	Subseq.
Torch Type	PT-9 HEAVY DUTY		Preheat Method	NOTE 2	
Shielding Gas Flow	1.75 g.p.m.		Preheat Temp.	200°	
Orifice Diameter	.187		Luternose Temp.	310°	
Electrode Type	EWth-2		Method of Measuring	CONTACT PYROMETER	
Electrode Dia.	.125		Shield Gas Type	ARGON	
Electrode Setback	.156		Shield Gas Flow	50 CFH	
Torch To Work Dis.	.625 TO .75		Center Gas Type	ARGON	
Torch Land Angle	0		Center Gas Flow	9 CFH	
Torch Tilt Angle	20		Powder Gas Type	HELIUM	
Offset Distance	NA		Powder Gas Flow	20 CFH	
Position	FLAT		Filler Feed Rate	30-3/4 GR/MIN	
Travel Speed	1.06 i.p.m.		Flame Character.	DCSP	
Oscillation Prog.	20 o.p.m.		Time Arc Amper.	190 A	
Oscillation Width	1.6 TO 1.76		Time Arc Voltage	29 V	
O.D./Dwell	1/4 SEC		Voltage Control	MANUAL	
I.D./Dwell	1 SEC		Pilot Arc Polarity	DCSP	
Layers	3		Pilot Arc Current	65 A	
Preheating	NA		Arc Initiation	HI FREQ.	
Inducing	NA		Decay	NOTE 3	
Overlap	NA		Fixturing	VAR. SPEED POSITIONER	
Cleaning	NOTE 1		Postheat Method	SLOW COOL	

REMARKS: NOTE 1: Wipe joint area with acetone dampened cloth, wire brush, or grind between layers to remove oxide scale and excess buildup.

NOTE 2: Furnace or neutral torch preheat.

NOTE 3: Decay to pilot arc in approximately 30 seconds.

WELDING PROCEDURE QUALIFICATION RECORD

Number
42013

ALL tests shall be performed and tested in accordance with the provisions of Part 110 of the Welding Engineering Manual

Non-Destructive Tests

TEST	REMARKS	COMMENTS
VT	ACC	
PT	ACC	
WT	NA	

Metallographic Examination

SPECIFIC NO.	RESULTS
1-4	Acceptable Per J. D. Allen

Hardness Tests

TEST #	RESULT Rc
1	63
2	47
3	
4	

Chemical Analysis

Element	C	Mn	Si	Cr	Ni	Mo	Co	N	Mo	A
Result	1.39	.20	1.15	26.14	3.14	5.88	58.22	3.87	.03	

Analysis performed by: Pittsburgh Testing Lab No. 755314

Remarks:

Tested by J. A. Rosepink

No. 14

Weld Record No. 34556

Date 5/20/75

SDA Representative: E. F. Pleva

Approved by customer/government NA

Date

We certify that the statements and data in this record are correct and that the tests were performed, welded and tested in accordance with the requirements of the Applicable Document(s) shown above.

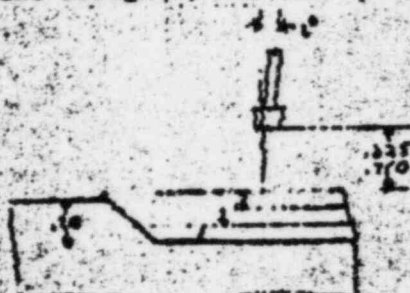
WESTINGHOUSE ELECTRIC CORPORATION

Signal

John A. Rosepink 7/1/75

Title:

6" to 14" High Pressure Gate Discs
Typical Joint Design(s) and Set-Up:



Filler Metal Type: Stellite 156 or equiv.
Specification: AWS A5.13 Type CoCr-A(MDP)
Filler Metal Size: -60 + 325 mesh
Filler Feed Rate: 30-34 G.P.M.

Base Material Type: P-B (316 557)
Specification: ASME SA-182, F316

Position(s): Flat

Preheat Method: Furnace or neutral torch
Preheat Temperature: 225 + 25°F
Interpass Temperature: 350°F maximum
Method of Measuring: Contact Pyrometer

Post Weld Heat Treatment: Slow cool in
vermiculite or equivalent material

Shielding Gas: Type: ARCON 90-92
Flow: 50-55 C.F.H.
Center Gas: Type: ARCON 90-92
Flow: 6-10 C.F.H.
Powder Gas: Type: Helium (Commercial)
Flow: 19-21 C.F.H.

Hardfacing Design Thickness: .100 in. min.
Hardness Range: 38 Rc Min.
Chemical Analysis (Deposit):

Element	C	Mn	Si	Cr	Ni	Fe	Co	W	Mo
	.5	1.0	2.0	20.0	4.0	10.0	BAL	3.0	0
Range	2.0	MAX	MAX	30.0	MAX	MAX	BAL	6.0	MAX

All welding and inspection shall meet the requirements of 1974 ASME SEC III and II

Nondestructive testing shall be performed in accordance with the requirements of the manufacturing drawing.

This procedure may be used for repair welding provided that: the area has been machined or blended to an acceptable condition; the repair area is clean; and the surrounding areas are protected as required.

Procedure Qual Recorder

42013

Procedure No. Rev

82142PU578

B

Process: PAW-AU
Torch Type: PT-9 Heavy Duty
Cooling Water Flow Rate: 1.75 G.P.M. (Approx.)
Orifice Diameter: .187"
Electrode Diameter: .156"
Electrode Type: EWH-2
Electrode Setback: .156"
Torch to Work Distance: .625" to .750"
Torch Lead Angle: 0°
Torch Tilt Angle: 2° from I.D.
Offset Distance: NA
Number of Layers: 2 minimum
Overlap: NA
Progression: NA
Indexing: NA
Oscillation: Frequency: 18-22 OPH
Width: .06 from outer gc. edge
O.D./I.D.: Dwell: 4 SEC
I.D./I.D.: Dwell: 1 SEC
Positioning: Variable speed positioner with fixtures
Initial Cleaning: Wipe joint area with Acetone-dampened cloth
In Process Cleaning: Grind or wire brush to remove excess buildup and oxides
Electrode Configuration:



Electrical Characteristics: DCSP
Transferred Arc: Adept 190° 18A
Voltage: 27 - 31 V

Pilot Arc Current: 65 A. DCSP
Arc Initiation: High Frequency
Travel Speed: 1.06 ± 0.1 I.P.M.
Delay: Manual or automatic delay from welding current to pilot arc in approximately 30 seconds

Weld	Weld	Weld
Weld	Weld	Weld
Weld	Weld	Weld
Weld	Weld	Weld

The process utilized was a transferred arc Plasma surfacing process. The base metal dilution for this process requires that a higher carbon content powder material be utilized to produce the proper carbon content in the overlay for maintenance of minimum hardness requirements. The powder (filler material) meets AWS A5.13 Type RCOCr-A chemistry except for carbon content which is 0.14 to 1.8. The Plasma surfacing process has been qualified to meet ASME Section II requirements.

BLUE SHEET

SEABROOK STATION

REQUEST FOR FOLLOW-UP ACTION NRC INSPECTIONS

Tony Cerne

IMS # - B 4.2.7

FORM - 001

PAGE 1 OF 2

NO. 030

TO: UE&C/YAEC Framingham

DATE: 5/29/81

Inspection Item Description: W Interface

UNIT: 1 & 2

Please provide response to attached NRC specific questions.

Corrective Action Required: As indicated above.

Date Required: 6/12/81

Approved By: J. W. Singelton

Requested By:

YAEC FOAE

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

NRC Questions

References: (W) Equip Spec G-678853
UE+C Dwg D805000

- ⇒ 1) (W) Spec requires valve hardsurfacing material to be AWS 5.13, Type R CoCr-A. Certs for Unit 1 Valve (SI-V-36) indicate hardsurfacing powder was used. What criteria (AWS classification) governs the acceptability of this powder?
- 2) ASME Section III, Subsection NB requires the forged material of valve SI-V-36 to be given LPT & UT. Certs provide UT Reports, but only a C of C for all LPT. What specifically identifies that LPT was accomplished on the valve bonnet & disc?
- ⇒ 3) UE+C Dwg D805000 identifies certain pipe end prep configurations to match (W) equipment. Recognizing that the bevel angle is not an essential variable of ASME Section IX, what is impact of Dravo pipe end preps not meeting angular requirements of D805000? (Example: 3" pipe (E2936-1297) welded to Valve (RC-V-45) has 20° bevel angle where UE+C Dwg requires 30° angle)

Sea brook —

Arne FTS 834-7011

603-474-3580

G-678853

para 4.1.1.2

W values —

"G" Spec requirements

hard surfacing

Stellite #6

5.13 Type RCoCr-A

powder not electrodes

Met. International

New Schenbury, N.J.

156

C	1.57%
Ni	0.88
Mo —	0.1
Cr	29.08
✓ Cu —	0.1
Fe	0.75
Mn	0.1
Mg	0.1
Si	1.83
W	4.28
Co	balance

PAW transferred
arc with
He fed
powder

Jim Ellis
(W) UNF
at site
(Seabrook)

Monley

"E" Spec with G designation

G 678853 — Rev 2 for Sea brook

Equip Spec for valves

Rev 1 — para 4.1.1.2 (ACCEPTABLE HTCS) contact

for Stellite 6 per AWS 5.13

Type R CoCr-A or a material

approved prior to mfg by UNES

Rev 2 — no last part of

sentence

A 5.13 — no powder in
Spec even in 1980
Rev.

Wamy Spec — MIL-R-1713 (B)
Rev B permits
powders

Shop practice — Use Alloy 156
Haynes (Cahat) Stellite

Use Stellite 6 Comp with
two acceptances Fe & C
(lower Fe) (0.75%) (Carbon — 1.4 to 1.8)
Hardness, ~~values~~ 38 MINIMUM

Stellite #6
or modified PAW (powder) chemistry

Need carbon for hardness - dilution
lowers carbon

Fe just an indicator of
dilution

USNRC - INSPECTION & ENFORCEMENT STATISTICAL DATA

(NOTE: % COMPLETE AND STATUS;
LEAVE BLANK FOR MC 92, 93 & 94
PROCEDURES AND 30 702, 30 703 &
30 800)

(NOTE: STATUS CODING;
BLANK - TO REMAIN OPEN
C - CLOSED
L - REOPEN & LEAVE OPEN
P - REOPEN THIS TRANSACTION
ONLY)

(NOTE: MODULE REQUIRING
FOLLOWUP;
USE ONLY WHEN MODULE
INSPECTED IS 92 701B.)

MODULE TRACKING INFORMATION										NONCOMPLIANCE															
MODULE NO. INSP.						DIRECT INSP EFFORT MAN HRS EXPEND. THIS INSP.	% COM- PLETE TO DATE	STATUS	MODULE REQ. FOLLOWUP					N/C		N/C		N/C		N/C		N/C		LINE REPLACEMENT CODE #	
PHASE	MANUAL	CHAP.	PROC.	NO.	LEVEL				PHASE	MANUAL	CHAP.	PROC.	NO.	LEVEL	CODE	SEV	CODE	SEV	CODE	SEV	CODE	SEV	CODE		SEV
B	0	2	3	0	7	0	3	B	1	0															
B	1	2	9	2	7	0	6	B	1	0															
B	2	2	4	8	0	6	1	B	0	6															
B	3	2	4	8	0	6	2	B	0	8															
B	4	2	4	9	0	5	1	B	8																
B	5	2	4	9	0	5	2	B	1	2															
B	6																								
B	7																								
B	8																								
B	9																								

LINE COLUMN NUMBER SHOWN IN BOTTOM LINE.

☐ CONTINUES ON SUBSEQUENT SHEET

MODULE	C	A	L	A	d	
49051 (QA Impl. Procd)	70	78-14 78-15				CP+6 Mo, >10%
49053 (Obs. QA+NDE)						710%, 720%, 25%
49054 (Obs of V. B. Hist)						750%, 760%, 75%
49055 (Review QA Records)						720%, 725%, 30%
49056 (Review V. B. Hist)						750%, 765%, Compl+2 Mos
49061 (QA Impl. Rev)	70	78-14 78-15				Pre-pipe instal, before work starts
49063 (Obs. QA+NDE)	20	78-15				
49065 (Rev QA Records)						
55071	50 (CL)	78-14 78-15				
55073	CL					
55075	CL					
55076	CL					
55081	50 (CL)	78-14 78-15				
55083	CL					
55085	CL					
						CODE CL-Closed CP-Complete

MODULE	C	a	b	c	d
55171 (WPS/GAP)	1 2 3				
55172 (Weld H-H Control)	1 2 3 4				
55173 (Obs. Weld Act)	1 2 3				
55175 (Visual exam)	1 2 3				
55176 (PWHT)	1 2				
55177 (Welder Qual)	1 2 3 4				
55178 (Special Weld Act)	1 2				
55181 (WPS/GAP)	1 2 3				
55182 (Weld H-H Control)	1 2 3 4				
55183 (Obs. Weld Act)	1 2 3				
55185 (Visual Exam)	1 2 3				
55187 (Welder Qual)	1 2 3 4				
55188 (Special Weld Act)	1 2				

MODULE		c	2	L	A	d	
49051	(QA Impl. Process)	70	78-14 78-15				CP+6110, >10%
49053	(Obs. QA & INDE)						>10%, >20%, 25%
49054	(Obs of Weld Met)						750%, 760%, 75%
49055	(Review QA Records)						>20%, >25%, 30%
49056	(Review Weld QA Rec)						750%, >65%, Compl+214
49061	(QA Impl Rv)	70	78-14 78-15				Pre-pipe instal, Before work
49063	(Obs QA & INDE)						
49065	(Rev QA Records)						
55071		50 (CL)	78-14 78-15				
55073		CL					
55075		CL					
55076		CL					
55081		50 CL	78-14 78-15				
55083		CL					
55085		CL					
							CODE CL-Closed CP-Complete

MODULE	c	2	1	A	d
55171 (VPS/GAP)	1 2 3				
55172 (Weld HH Control)	1 2 3 4				
55173 (Obs. Weld Act)	1 2 3				
55175 (Visual Exam)	1 2 3				
55176 (PWHT)	1 2				
55177 (Welder Qual)	1 2 3 4				
55178 (Special Weld Act)	1 2				
55181 (VPS/GAP)	1 2 3				
55182 (Weld HH Control)	1 2 3 4				
55183 (Obs. Weld Act)	1 2 3				
55185 (Visual Exam)	1 2 3				
55187 (Welder Qual)	1 2 3 4				
55188 (Special Weld Act)	1 2				

(18)

REVIEW OF AUTOMATIC ORBITING GTAW BUTT WELDING

The Licensee intends to utilize ~~the~~ machine orbiting pulsing gas tungsten arc welding (ME-GTAW-P) procedures for some Q and non-Q pipe welds. The power source, controls, and welding device will be the same ^{type} as has been used at other construction sites for specific welds, i.e., field RV safe end modification. The NRC inspector reviewed specific WPS, PQR, WPQ, welding technique sheets and witnessed welding setups for training purposes in the welder training area. The Licensee will use ^{the Dimetrics Gold Track} ~~the~~ DIMETRICS GOLD-TRACK 2 automatic equipment and intends to weld both P1 and P8 piping. The following Pullman Power Products WPS-documents which will be used in conjunction with GWS-I and III ^{were} ~~was~~ reviewed and commented on:

- a. 150-I-~~1~~-1-KI-A1
- b. 150-I-1-BR-A1
- c. 150-I-8-KI-A1
- d. 150-I-8-BR-A1
- e. 150-III-1-KI-A1
- f. 150-III-1-BR-A1
- g. 150-III-8-KI-A1
- h. 150-III-8-BR-A1

The welding operators for the machine welding will be qualified by welding 8" schedule 80 carbon steel pipe with austenitic filler metals (including an SFA 5.30 Class 3 ("K" type) Group C austenitic consumable insert) to Pullman Power Products SWT #25 S-25 (5/1/81) standard welding test (WPC). The WPC documents for two qualified operators were reviewed.

The applicable PQR documents are Q47A (no PWHT) and Q47B (PWHT) for P1 to P1 joints and 126 for P8 to P8.

The PQR documents currently limit the procedure utilization to P1 joints where ^{there are no HAZ} toughness requirements ~~are not required~~.

The welding operators will utilize the General Welding Specifications GWS-I ^{and GWS-III} and the aforementioned WPS documents for approved welding parameter ranges. In addition, they will receive more explicit additional information on pendant settings from Welding Technique Sheets.

INSPECTION OF UNIT 2 REACTOR VESSEL NOZZLE
WELD JOINT PREPARATIONS

Following a report from the Licensee of damaged weld joint preparations on the subject RV nozzles, the NRC inspectors visually inspected the nozzles on the RV in a temporary storage ~~xxx~~ building at the job site.

The weld joint preparation is coated with a corrosion inhibitor and covered with sheet metal type pipe cap which is taped to the nozzle prior to shipment by the RV fabricator. The covers for the nozzles are removed for a semi-annual surveillance inspection by the licensee of the RV ID. The covers were removed in November 1980 to metallurgically inspect the weld joint preparations for sufficient amount of Ni-Cr-Fe "buttering" as indicated in Westinghouse Electric Corporation Inspection Report PE-RPV-3507. At this time, four areas of the weld preparation on nozzle ~~stenciled~~ ^(Loop 4-hot leg) 301-121B were inspected by the NRC inspector as reported in Combined Inspection Report 50-443/80-12 and 50-444/80-12 paragraph 6.

Viewed from the top end of the RV, the nozzles are oriented (in the storage area) as follows:

<u>Nozzle (1)</u>	<u>O'Clock location</u>	<u>Loop</u>	<u>Leg</u>
a	1200	2	hot
b	130	3	hot
c	300	3	cold
d	430	4	cold
e	600	4	hot
f	730	1	hot
g	900	1	cold
h	1030	2	cold

(1) NRC identification for report purposes only.

The results of a cursory visual inspection are as follows:

Nozzle (a) - Minimal mechanical damage marks noted in root face area.

Nozzle (b) - Considerable mechanical damage by indentations and plastically deformation (bending) to root face area. No weld beads noted in root face area.

Nozzle (c) - Clamp or round hammer mark noted at 035° in weld joint bevel. Damage to root face area for a length of approximately 10 inches at 270°.

Nozzle (d) - Area 10" long appears to be ground below tolerance for consumable insert root pass welding.

Nozzle (e) - Plastically deformed area of root face approximately 6 inches long. Apparent weld bead (spot) noted. This is the nozzle inspected at four locations in November 1980 by an NRC Inspector. The damage to the root face area was not noted at the November inspection.

Nozzle (f) - Apparent weld bead noted on root face area. Mechanical damage to root face area.

Nozzle (g) - No apparent damage.

Nozzle (h) - No Apparent damage.

The mechanical damage noted was for the most part in the root face area and consisted of mechanical indentations made by a blunt instrument (not like a welder's scaling hammer sharp indentation) and plastically deformed (bent) root face nose. The damage to the root face areas would render the joint unweldable by consumable insert techniques.

INSPECTION OF OUTSIDE STORAGE OF STAINLESS STEEL
PIPING

The NRC inspectors visually examined stainless steel pipe spools in the West Tract and South Tract Lay Down areas for pipe cap installation and for visual examination of the surface condition of welds for future liquid dye penetrant (PT) examination. All spools observed had pipe caps installed and the weld surface condition appeared to be acceptable for PT examination.

REVIEW OF WELDING DOCUMENTATION

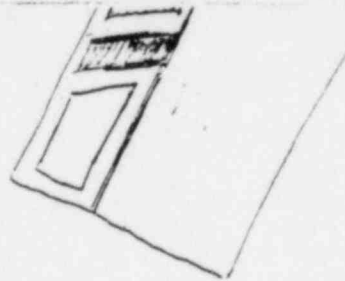
The NRC inspector reviewed the documentation for the following welds:

- a. CO-4059-04 F0402: 36"OD x 0.750, P1 to P1 welded to 150-I-1-KI-A1 with a 1/16" x 3/16" E705-3 "K" type insert and 0.035" E705-3 filler.

Results of radiography indicated areas of side wall lack of fusion. The areas were ground out to a good contour for manual repair. This weld was accomplished with the DIMETRICS equipment and was not a safety related weld. This weld was also visually inspected.

- b. SI-250-01-Rev0, F0101, F0102, and F0103 Class 2 (Safety Injection Line) 4" OD x 0.337 austenitic stainless steel pipe welded to 24-III-8-KI-12.
- c. CBS-1214-05-Rev9, F0501 Class 2 (Containment Spray) 8" OD x 0.332" austenitic stainless steel pipe welded to 24-III-8-KI-12 for joining spools E2936-1351 to E2936-1352.

The filler metal and consumable inserts for the above stainless steel welds were reviewed. The WPS documentation permits the use of regular and low carbon grades of filler metal.



Leave

Harsh.

Harsh.

Q.A.M.C.R.

ASTM A 588 GR B 79 MIN 4d 50 KS1

4" x 77 x 153 Phoenix Steel

.13 C .07 mo .44 cr.

MT Root } Blasted Surface included
Final }

Diablo Canyon



Conte

Deviation C

DAVE Cowper. —
Q.A. E-26 717 948-8615

201 263-6500

265-5000

Cerne - A588

Fingertel -

ASME CODE MEETING: SC TR

DATE OF MEETING: _____

DESIGNATED NRC STAFF MEMBER: SD REYNOLDS JR

MEETING ATTENDED AND REPORTED BY: _____

ITEM NUMBER

TITLE

$$CE = C + \frac{Mn}{4} + \frac{Ni}{20} + \frac{Cr}{10} + \frac{Cu}{40} - \frac{Mo}{50} - \frac{V}{10}$$
$$0.2 + \frac{1.25}{4} + \frac{1.5}{20} + \frac{0.7}{10} + \frac{0.4}{40} - \frac{0.1}{50} - \frac{0.1}{10} = 0.61$$

C 0.12 MAX

Mn 0.75-1.25

P 0.4

S 0.5

Si 0.15-0.30

Ni 0.5 MAX

Cr 0.4-0.7

Cu 0.2-0.4

V 0.01-0.1

Call Fingro
Call Carne
for exact chemistry

TO: S. D. Reynolds, EIB
FROM: A.C. Cerna, Seabrook

Page 1 of 3 Pages

A-588 Chemical Certs

Follow: - one from Phoenix Steel
- one from Alan Wood Steel

CE \angle 0.51

0.51 in 2"

CE 4" \angle 0.48

PIECE 901A
+ 909A
+ 907A

September 11, 1980 B. L.

SPECIFICATION (NUCLEAR) ASTM A 588 GR B, LATEST REV., MIN YIELD 50 KSI
High Strength Low Alloy Struc Steel

CUSTOMER ORDER NO. 1634-6687

SOLD TO Cives Steel Co.
Northern Div.
#8 Church St.
Gouverneur, N.Y. 13642

MILL ORDER NO. 30422-68

CAR NO. TRUCK

Size

HEAT NO.	SLAB NO.	CHEMICAL ANALYSIS										YIELD STRENGTH P.S.I.	TENSILE STRENGTH P.S.I.	% ELONG.	
		C	MN	P	S	SI	CU	NI	CR	VO	2"			8"	
80960-68		.13	.98	.010	.016	.25	.31	.25	.44	.07	0.43	52000	75500	31.0	
"												"	"	"	
81018-68		.15	1.05	.012	.012	.19	.31	.15	.53	.06	0.47	60000	81000	25.0	
81055-68		.15	1.17	.011	.015	.23	.29	.15	.62	.07	0.51	57500	95000	22.0	

SUBSCRIBED AND SWORN TO BEFORE ME

THIS 15 DAY OF Sept 1998
Plaintiff D. Jones

I CERTIFY THAT
CONTAINED



PIECE: 901A + 909A + 907A
ALAN WOOD STEEL COMPANY
TESTING LABORATORY

BUYER'S ORDER 3315

SHIPPED 7-10-77

TEST RECORD OF 55435 55085 30179 3/8 X 74 X 73-0
SPEC

A.W.S. CO'S. ORDER NO. P-1317

FURNISHED 5677-211

CONSIGNOR, PA. 10 AUGUST 75

SHIPMENT NUMBER 5677-211 CAR 110717TH TRK

HEAT NO.	CHEMICAL ANALYSIS					CR	V	YIELD PER SQ. IN. POUNDS	T.S. PER SQ. IN. POUNDS	S. ELONG. 1"	BEND TESTS	REPRESENTS
	CARBON	MANGANESE	PHOSPHORUS	SULFUR	SI							
55435	.13	1.10	.012	.018	.247	.55		51100	75900	20.0	OK	30179 3/8 X 74 X 73-0
55085	.14	1.16	.007	.022	.265	.50		54700	72200	17.0	OK	101" 1 1/2 X 74 X 260
Spec 1 1/4 x 84 x 77												
A 40 10 20												
CIVIL STEEL COMPANY												
QUALITY CONTROL DEPARTMENT												
Note Approved 10/12/78												
GRADE CV												
NO												
PVE-Pressure Vessel-Nuclear Steels, Inc REF # 2374												
Cives Steel P3W38												
Sworn to and subscribed before me this 10th day of August 1976												
Notary Public, Plymouth Township												
My Commission Expires JAN 2 1978												

DOCUMENT REVIEWED
DEC 10 1980
BY: S. C. LINDLEY
U. S. & C.

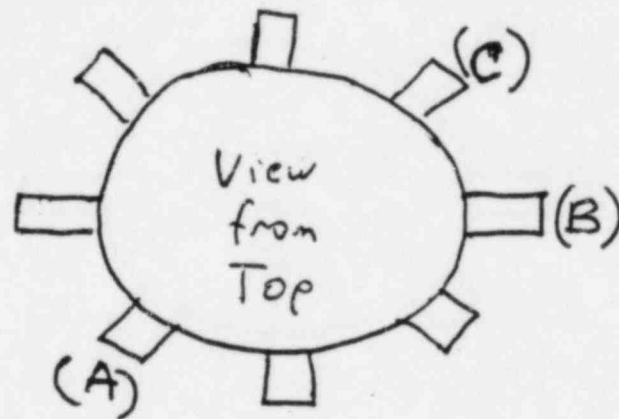
BECHTEL
280

CIVES CORP.
MILL TEST CERTIFICATES
8-12-78
Spec Order # 1103 (107)
Report # 22 13

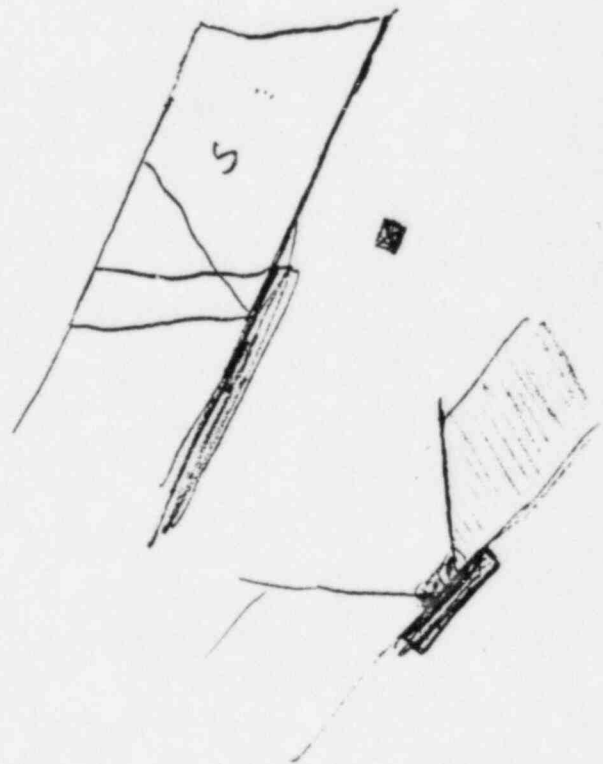
James W. Verbeke
James W. Verbeke
METALLURGICAL DEPARTMENT

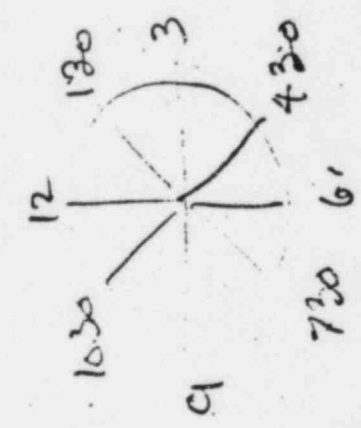
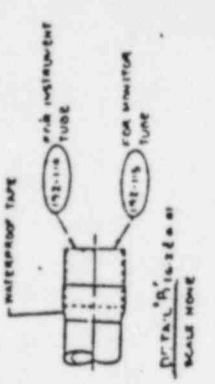
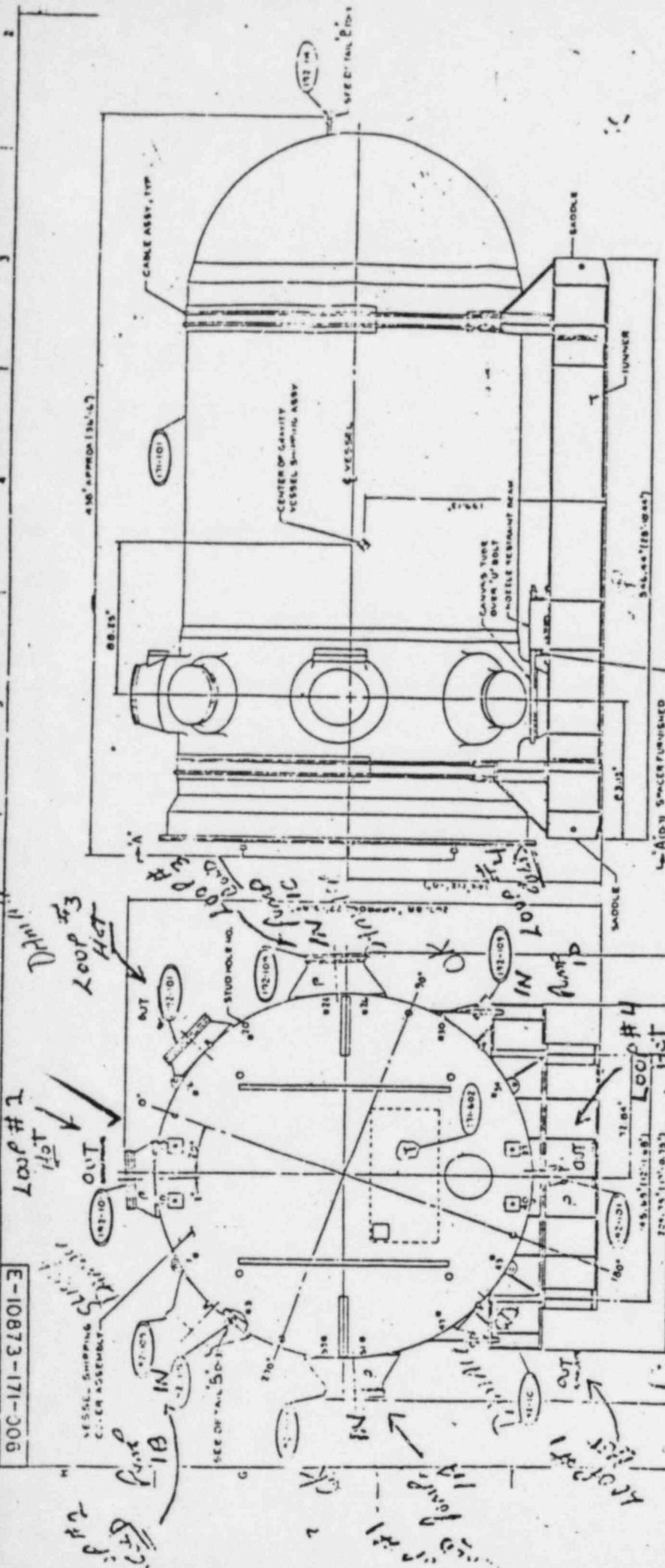
I HEREBY CERTIFY THAT THE ABOVE FIGURES ARE CORRECT AS CONTAINED IN THE RECORDS OF THE COMPANY

RPV Damage — 5 of 8 nozzles have hammer
(Unit 2) blow damage on end preps



Pictures of some of the damaged nozzles: (A) (B) (C)





DATE

BY

REVISION

1	171-101	171-102	171-103	171-104	171-105	171-106	171-107	171-108	171-109	171-110	171-111	171-112	171-113	171-114	171-115	171-116	171-117	171-118	171-119	171-120	171-121	171-122	171-123	171-124	171-125	171-126	171-127	171-128	171-129	171-130	171-131	171-132	171-133	171-134	171-135	171-136	171-137	171-138	171-139	171-140	171-141	171-142	171-143	171-144	171-145	171-146	171-147	171-148	171-149	171-150	171-151	171-152	171-153	171-154	171-155	171-156	171-157	171-158	171-159	171-160	171-161	171-162	171-163	171-164	171-165	171-166	171-167	171-168	171-169	171-170	171-171	171-172	171-173	171-174	171-175	171-176	171-177	171-178	171-179	171-180	171-181	171-182	171-183	171-184	171-185	171-186	171-187	171-188	171-189	171-190	171-191	171-192	171-193	171-194	171-195	171-196	171-197	171-198	171-199	171-200
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E-10873-171-206

yield, ...
type defects, it would appear to be prudent to fully
comply with the requirements of ASQC 9763-WS-3
for a weld metal butter layer applied to the Reel, magnetic
Particle examine (MT). Complete ^{the buttering} the weld joint and perform
MT on final weld surfaces. The inspector noted that
the ^{listed} procedure provided an option for combining the
buttering and welding which would eliminate the
MT examinations of the assembly.

- The

Grades A & B

Cross over Pipe Supports

A mutual inspection was made in the primary containment of the installation and put up of the various weldments that comprise the full network of supports. The weldments, fabricated from heavy plate, SA 588 Grade B were made in sections by a contractor off site and will be joined by welding. Reviews were made of the Pulman-Higgins Weld Procedure AWS-1-2, the General Welding Standard U.S. and the Performance Qualification Test AWS-1-2. It was noted that the Proqualified Weld Joints Fig. 2.9.1, TC-49a and TC-49b selected from AWS D1.1 Structural Welding Code did not provide complete coverage for all of the weld joint configurations that will be used. A commitment was made prior to the completion of the inspection to revise AWS-1-2 by the addition of Fig 2.9.1, TC-49c. This item was considered to be unresolved pending a subsequent review of the revised procedure.

Additional concerns were identified, relative to the welding of heavy plate 3/4" thick and the joining of the prefabricated weldments by welding without a post weld heat treatment as a heat soak after welding or by a stress relief.

- Considering the characteristics of SA 588 Grade B, heat treated, low alloy structural steel with 50,000 psi minimum

PURCHASE ORDER		FOREIGN PRINT NO.		VENDOR DRAWING OR DOCUMENT NO.		REV. NO.		S. I. M. N.		O. R. I. G. I. N. A. L.		P. R. I. N. T. I. N. G.		M. O. D. E. L.	
JOB NO.		COMM. SEQ. (SUBT NO.)		19 20 21 22 23 24 25 26		42 43 44 45 46 47 48 49 50		72 73 74 75 76 77 78 79 80							
197630112480051461080111P		150-I-1-KI-A1				00219									
DESCRIPTION										VENDOR'S NAME					
LINE 1										LINE 2					
AUTOMATIC GTAW										WELDING					
P-H															
LETTER TO UE&C		UE&C LOG-IN DATE		CLIENT'S REVIEW TO CLIENT		UE&C REVIEW FROM CLIENT		TO VENDOR		FINAL DISTRIBUTION DATE		A. S. M. E. Q. U. A. L. I. T. Y. S. T. A. N. D. A. R. D. S.		CHECK *	
24		29 30		35 36		41 42		47 48		53 54 55 56		61 79 80		3	
35-283032581PP5035TF1213SF42240															
UNITED ENGINEERS & CONSTRUCTORS INC. Reviewed only for general arrangement and overall dimensions as set forth in purchase order or contract. This review does not constitute acceptance of any design, material, component or equipment not fulfilling all contract specification and drawing requirements.										<input checked="" type="checkbox"/> PROCEED AS PER P.O. OR CONTRACT <input type="checkbox"/> SUBMIT REVISED DRAWINGS FOR REVIEW <input type="checkbox"/> SEND CORRECTED DRAWINGS FOR RECORD DATE 4-21-81					
FORM 5041 REV 7/74															

? No indication of gas flow rate on backing gas

? Interpass cleaning method

SEE COPY