



Duquesne Light

Beaver Valley No. 2 Unit Project Organization
S.E.G. Building
P.O. Box 328
Shippingport, PA 15077

(412) 643-5200
Telecopy (412) 643-5200 Ext. 160

United States Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

SUBJECT: Beaver Valley Power Station Unit No. 2
Docket No. 50-412
PSI Relief Requests 1 and 2

REFERENCE: 1) 2NRC-7-048, dated March 12, 1987
2) 2NRC-7-068, dated April 6, 1987
3) 2NRC-7-008, dated January 13, 1987
4) 2NRC-5-154, dated December 26, 1985

Gentlemen:

This submittal is in compliance with reference letter 1 by providing relief requests, numbers 1-1, 1-2 and 1-3 on the reactor vessel and additional relief requests on the pressurizer, numbers 2-11, 2-11I, 2-12 and 2-13. Relief requests 2-1 through 2-10 on the pressurizer were provided by reference letter 2. A relief request provided earlier on the reactor vessel was withdrawn by reference letter 3.

Attachment 1 gives the applicable code years and addenda, applicable welds, type of examination, basis for relief and the alternative examination(s). Attachment 2 contains the applicable DLC-UPO Vessel Drawings. Attachment 3 lists the original ASME III Fabrication NDE Requirements.

It should be noted that the inspection reports and sketches attached to Relief Requests 2-11 and 2-11I are not in sequential page order. The removed pages are irrelevant to the requested reliefs.

The format of these relief requests follows the guidance provided by your staff.

Your expeditious review and approval of these relief requests would be greatly appreciated.

DUQUESNE LIGHT COMPANY

J. S. Carey
Senior Vice President

8708040189 870727
PDR ADDCK 05000412
P PDR

A047
1/1

United States Nuclear Regulatory Commission
PSI Relief Request 1 and 2
Page 2

cc: Mr. G. Johnson, NRR - w/attachments
Mr. P. Tam, Project Manager - w/attachments
Mr. J. Beall, NRC Sr. Resident Inspector - w/attachments
Mr. L. Prividy, NRC Resident Inspector - w/attachments
INPO Records Center - w/attachments

Attachment 1

DUQUESNE LIGHT COMPANY

Relief Request No. I-1

Beaver Valley Unit No. 2

RELIEF REQUEST

SECTION XI EDITION: 1980 thru Winter 1980 Addenda

COMPONENT: Reactor Vessel 2RCS-REV21

2DLC-UPO-1001, Sheet 1, Closure Head Weld W1 (Att. 2)

TABLE: IWB-2500-1

CODE CLASS: 1

ITEM NO.: B1.40

CATEGORY: B-A

EXAMINATION REQUIREMENT: Volumetric and Surface Exam of 100% of Code Required Area.

BASIS FOR RELIEF: Volumetric and Surface Exam of 100% of Code Required Area is restricted by three (3) welded lifting lugs 6 1/2 in. x 20 in. In addition, closure heads curvatur at flange does not allow full exams in 2 directions. For volumetric exam 3% not examined utilizing 0°, 30% not examined utilizing 45° and 40% not examined utilizing 60°. Reference sketches UT-W147-008 and MT-201-136.

ALTERNATIVE EXAMINATION: Perform Volumetric and Surface Exam on 100% of Code required accessible area.

ORIGINAL ASME III FABRICATION NDE: The required ASME III NDE was performed in accordance with E Spec. 676413, Rev. 3, (Att. 3) and the requirements of ASME III, 1971, Summer 1972 Addenda.

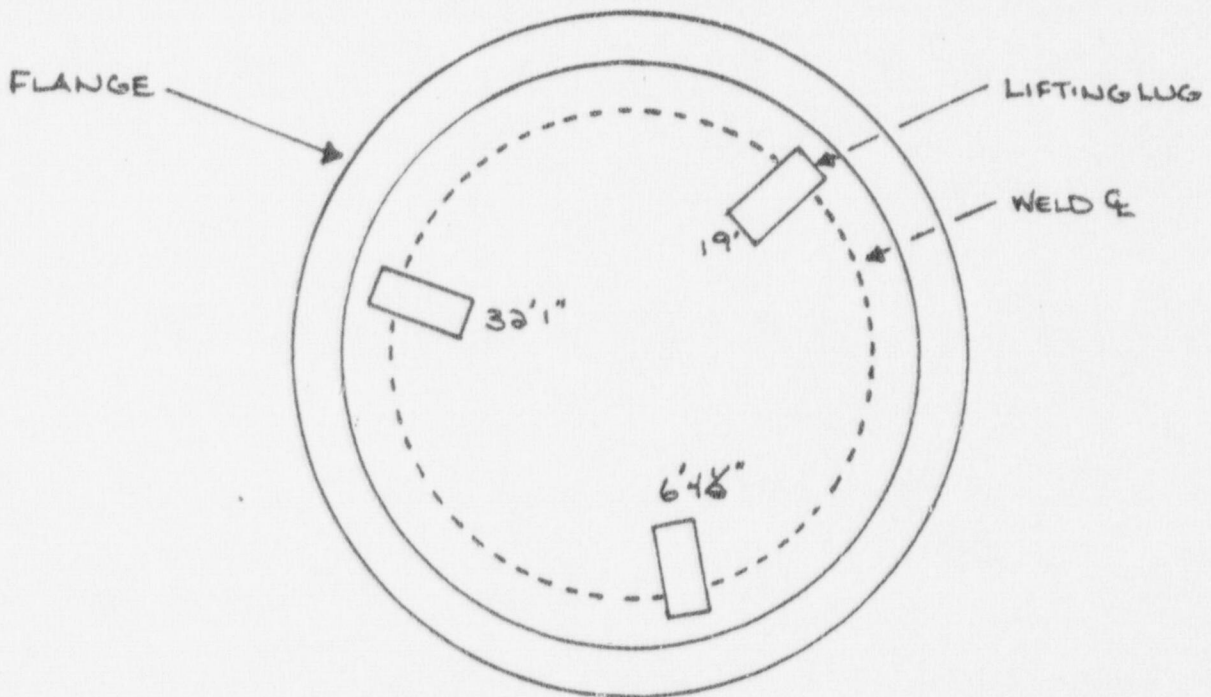
WESTINGHOUSE NUCLEAR SERVICE DIVISION
INSPECTION SERVICES

LIMITATION TO EXAMINATION

PLANT BEAVER VALLEY UNIT II SKETCH DMW-1-1300
SYST/COMP. REACTOR VESSEL CLOSURE HEAD PROCEDURE 131-147 REV. 0 F.C.-1
EXAMINER Robert H. Clinton LEVEL II DATE 3/2/87
Arnold P. Blythe II

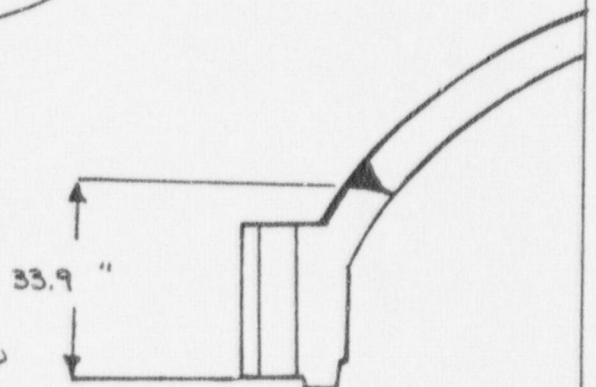
RELATED TO: U/T P/T _____ M/T _____ V/T _____ ITEM(S): 1

PROVIDE GENERAL INFORMATION TO DESCRIBE APPROXIMATE SIZE, LOCATION AND TYPE OF LIMITATION.



LIFTING LUG DIMENSIONS $6\frac{1}{2}'' \times 20''$ (TYPICAL)

FLANGE INTERFERED WITH EXAM IN 2 DIRECTION

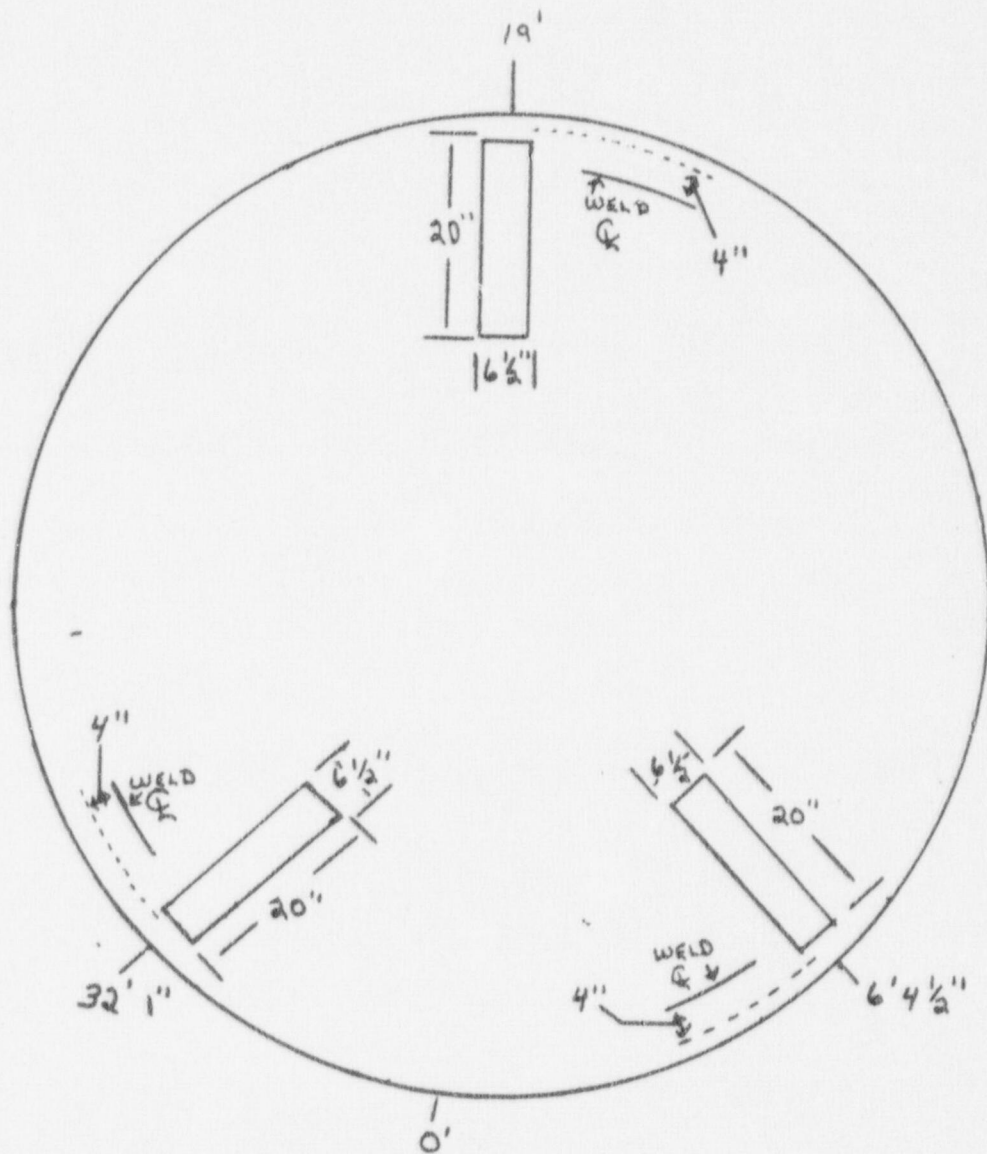


DMW-1-1300

REACTOR VESSEL CLOSURE HEAD FLANGE WELD # 1

MT LIMITATIONS

3 LIFTING LUGS



Kevin J. Kostelny II
3-2-87

FORM 48-648

DUQUESNE LIGHT COMPANY

Relief Request No. 1-2

Beaver Valley Unit No. 2

RELIEF REQUEST

SECTION XI EDITION: 1980 thru Winter 1980 Addenda

TABLE: IWB-2500-1
CODE CLASS: 1
ITEM NO.: B3-100
CATEGORY: B-D

COMPONENT: Reactor Vessel 2RCS*REV21 Nozzle Inside Radius
Section 17IR, 18IR, 19IR, 20IR, 21IR and 22IR
2DLC-UPO-1001 (Att. 2)

EXAMINATION REQUIREMENT: Volumetric

BASIS FOR RELIEF: The configuration of the nozzle to Reactor Vessel at the inner radius suction is such that 100% interrogation by ultrasonic techniques is not possible. 30% not examined utilizing 70°.

Reference sketches UT-W155-001, Page 3 and UT-W155-002, Page 3.

ALTERNATIVE EXAMINATION: Conduct ultrasonic examinations of the nozzle inner radius sections from the outside of the Reactor Vessel to the maximum extent practical. Specialized ultrasonic techniques were used when necessary to enhance the examination.

ORIGINAL ASME III FABRICATION NDE: ASME III NDE was performed in accordance with E Specifications G-676440, G-679077 (Att. 3) and the requirements of ASME III 1971, Summer 72 Addenda.

WESTINGHOUSE NUCLEAR SERVICE DIVISION
INSPECTION SERVICES

WELD ULTRASONIC EXAMINATION
PRESERVICE

PLANT
BEAVER VALLEY

UNIT
II

SYST/COMP
REACTOR VESSEL NOZZLE INSIDE RADIUS

PROCEDURE
151-155 Rev. 0 F.C. 1

EXAMINER (LEVEL II)
Burt J. Kostelny II

EXAMINER (LEVEL II)
William A. Hall II

DATE
2-27-87

CALIBRATION CHECK

EQUIPMENT	TRANSDUCER	STRAIGHT BEAM SCAN DIRECTION 0				CIRCUMFERENTIAL SCANS DIRECTIONS 7 & 8				INITIAL TIME
		SIGNAL AMPLITUDE	SWEEP POSITION	SIGNAL AMPLITUDE	SWEEP POSITION	PEAK	50% DAC LOCATIONS	PEAK	50% DAC LOCATIONS	
INST. S/N SONIC MARK I S/N 06209E		NA	NA	NA	NA	NA	NA	NA	NA	0830
REP RATE 3k		NA	NA	NA	NA	NA	NA	NA	NA	
REJECT OFF		NA	NA	NA	NA	NA	NA	NA	NA	
DAMPING MIN.		NA	NA	NA	NA	NA	NA	NA	NA	
FILTER OFF		NA	NA	NA	NA	NA	NA	NA	NA	
LIN CHECK SAT.		NA	NA	NA	NA	NA	NA	NA	NA	
SU CABLE 6 DUAL		NA	NA	NA	NA	NA	NA	NA	NA	
COUPLANT 10 SONOCORP SUSP. # BS-8		NA	NA	NA	NA	NA	NA	NA	NA	

WELD NUMBER	TEMP	SCAN DIRECTION			CAL GAIN	EXAMINATION LIMITATIONS AND REQUIRED VOLUME NOT EXAMINABLE (ESTIMATED %)	CROWN CONFIGURATION	RESULTS			REMARKS
		2	5	7/8				NI	NRI	RI	
18IR	±0.010	NA	NA	YES	20% NOT EXAMINED DUE TO RADIUS CONFIGURATION AND SURFACE CONDITION.	NA	NA	NA	NA	NA	GROUND CLAD SURFACE
19IR	±0.010	NA	NA	YES	20% NOT EXAMINED DUE TO RADIUS CONFIGURATION AND SURFACE CONDITION.	NA	NA	NA	NA	NA	GROUND CLAD SURFACE
20IR	±0.010	NA	NA	YES	20% NOT EXAMINED DUE TO RADIUS CONFIGURATION AND SURFACE CONDITION.	NA	NA	NA	NA	NA	GROUND CLAD SURFACE SEE ATTACHED INDICATION SHEET PG. 2

CAL BLOCK UC-1
THICKNESS 2.3"
TEMP 64° 0.3535

51db

WESTINGHOUSE NUCLEAR SERVICE DIVISION
INSPECTION SERVICES

PLANT
BEAVER VALLEY

UNIT
II

SKETCH
DMW-1-1100

PROCEDURE

REACTOR VESSEL NOZZLE INSIDE RADIUS
EXAMINER (LEVEL II)

151-155 KEY-O F.C.-1

ULTRASONIC INDICATION DATA

Linearity and Cal. Check
Karl Kortkamp II / William G. Hollen II

DATE
2-27-87

CAL. BLOCK THICKNESS
2.3"

WELD NUMBER	INDICATION LENGTH		MIN 50%		MIN 100%		PEAK		MAX 100%		MAX 50%		BEAM		THICKNESS		REMARKS	
	FROM	TO	SWP.	IN TO REF.	SWP.	IN TO REF.	SWP.	IN TO REF.	SWP.	IN TO REF.	SWP.	IN TO REF.	ANGLE	DIR.	SURF. 2	WELD		SURF. 5
201R	* 1 1/16"	NA	NA	NA	NA	NA	** 73 1/8"	3.8	NA	NA	NA	NA	70°L	7	NA	NA	NA	NA
201R	* 1 3/4"	NA	NA	NA	NA	NA	** 42"	3.7	NA	NA	NA	NA	70°L	7	NA	NA	NA	NA
	* INSIDE NOZZLE - DISTANCE FROM EDGE OF NOZZLE TO TRANSDUCER.																	
	** MEASURED FROM I.D. CLOCKWISE WITH 0° AT TOP OF NOZZLE																	

WESTINGHOUSE NUCLEAR SERVICE DIVISION
INSPECTION SERVICES

LIMITATION TO EXAMINATION

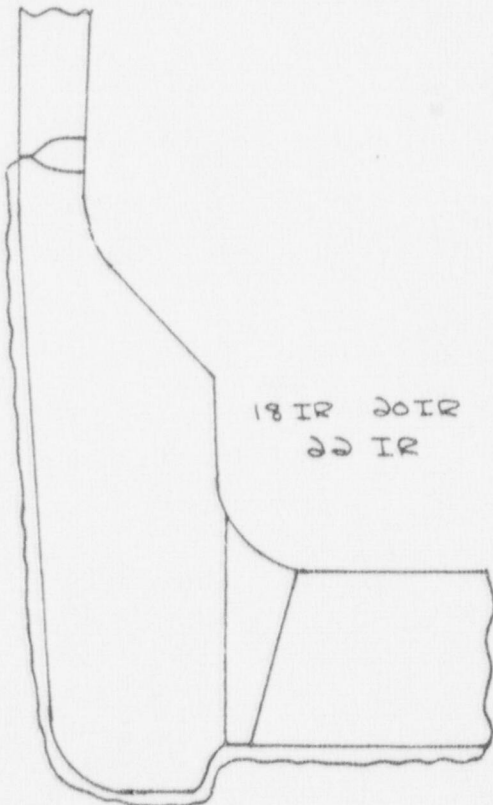
PLANT BEAVER VALLEY UNIT II SKETCH DMN-1-1100

SYST/COMP REACTOR VESSEL NOZZLE INSIDE RADII'S PROCEDURE 151-155 REV.0, F.C.-1

EXAMINER Robert H. Clune II Kevin J. Kostelny II DATE 2/27/87
LEVEL II

RELATED TO: U/T P/T _____ M/T _____ V/T _____ ITEM(S) 17 IR, 18 IR, 19 IR, 20 IR, 21 IR, 22 IR

PROVIDE GENERAL INFORMATION TO DESCRIBE APPROXIMATE SIZE, LOCATION AND TYPE OF LIMITATION.



18 IR 20 IR
22 IR

LIMITED EXAM DUE TO INSIDE
RADIUS OF NOZZLE AND SURFACE
CLADDING



17 IR 19 IR
21 IR

LIMITED EXAM DUE TO INSIDE
RADIUS OF NOZZLE AND SURFACE
CLADDING

WESTINGHOUSE NUCLEAR SERVICE DIVISION INSPECTION SERVICES		PLANT BEAVER VALLEY		UNIT II		SKETCH DMW-1-1100	
WELD ULTRASONIC EXAMINATION PRESERVICE		SYST/COMP. REACTOR VESSEL NOZZLE INSIDE RADIUS		PROCEDURE 151-155 REV.0 F.C.-1		DATE 2/27/87	
EQUIPMENT		TRANSUCER		STRAIGHT BEAM SCAN DIRECTION 0		CIRCUMFERENTIAL SCANS DIRECTIONS 7 & 8	
INST. S/N SONIC MK I 11226E		S/N N/A		N/A		V1068	
REP. RATE 3K		SIZE N/A		N/A		.5" x .5" DUAL	
REJECT OFF		FREQ. N/A		N/A		2.25 MHZ	
DAMPING MIN		ANGLE N/A		N/A		70° L	
FILTER HI		CALIBRATION REFLECTOR LOCATION A		SIGNAL AMPLITUDE		SWEEP POSITION	
LIN CHECK SAT.		B		35%		1.5	
SU CABLE 6' DUAL		C		70%		3.0	
COUPLANT SONOPLAST 40		CAL. GAIN		80%		4.5	
8558				69 db			
WELD NUMBER		BASE METAL SCAN		EXAMINATION LIMITATIONS AND REQUIRED VOLUME NOT EXAMINABLE (ESTIMATED %)		RESULTS	
21 IR		N/A		30% NOT EXAMINED DUE TO RADIUS CONFIGURATION & SURFACE CONDITION		NI NRI RI	
22 IR		N/A		30% NOT EXAMINED DUE TO RADIUS CONFIGURATION & SURFACE CONDITION		X N/A N/A	
17 IR		N/A		30% NOT EXAMINED DUE TO RADIUS CONFIGURATION & SURFACE CONDITION		X N/A N/A	
TEMP. DIF.		SCAN DIRECTION		CROWN CONFIGURATION		REMARKS	
+0°F		2 5 7/8 0		N/A		GROUND CLAD SURFACE	
+0°F		N/A YES YES YES		N/A		GROUND CLAD SURFACE	
+0°F		N/A YES YES YES		N/A		GROUND CLAD SURFACE	
CAL BLOCK UC-1							
THICKNESS 2.3"							
TEMP. 64°F 03835							
FINAL TIME 11:24							
INITIAL TIME 08:40							
CALIBRATION CHECK							

PLANT: BEAVER VALLEY UNIT: II SKETCH: DMW-1-1100
 SYST/COMP: REACTOR VESSEL NOZZLE INSIDE RADIUS PROCEDURE: 151-155 REV. 0 F.C.-1
 EXAMINER (LEVEL III): Robert H. Cline II DATE: 2/27/87

LINEARITY AND CAL. CHECK: SAT. CAL. BLOCK THICKNESS: 2.3

WELD NUMBER	INDICATION LENGTH		MIN 50%		MIN 100%		PEAK			MAX 100%		MAX 50%		BEAM		THICKNESS		REMARKS	
	FROM	TO	SWP.	IN. TO REF.	SWP.	IN. TO REF.	SWP.	IN. TO REF.	DAC AMPL.	SWP.	IN. TO REF.	SWP.	IN. TO REF.	ANGLE	DIR.	SURF. 2	WELD		SURF. 5
* 221R	1 3/4"	N/A	N/A	N/A	N/A	N/A	3.0	52"	60%	N/A	N/A	N/A	N/A	70°L	8	N/A	N/A	N/A	N/A
* INSIDE NOZZLE - DISTANCE FROM EDGE OF NOZZLE TO TRANSDUCER																			
** MEASURED FROM ID CLOCKWISE WITH 0° AT TOP OF NOZZLE																			
/																			

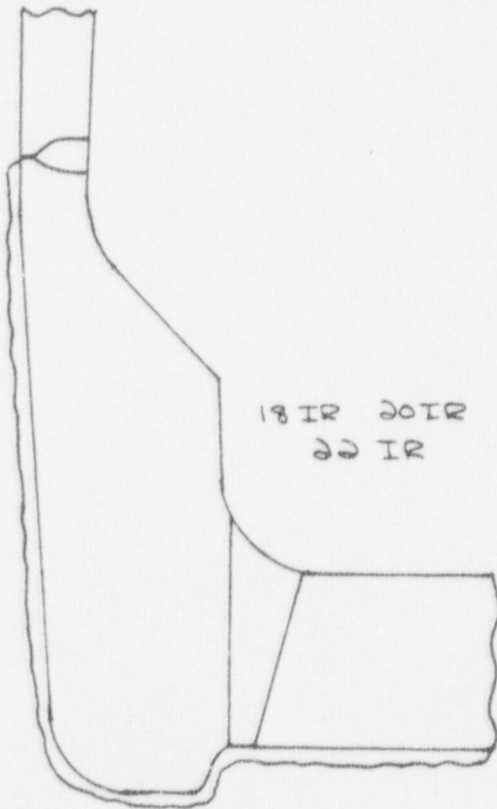
WESTINGHOUSE NUCLEAR SERVICE DIVISION
INSPECTION SERVICES

LIMITATION TO EXAMINATION

PLANT BEAVER VALLEY UNIT II SKETCH DMW-1-1100
SYST/COMP REACTOR VESSEL NOZZLE INSIDE RADIUS PROCEDURE 151-155 REV.0, F.C.-1
EXAMINER Robert H. Clune II Kenneth J. Koutsky II DATE 2/27/87
LEVEL II

RELATED TO: U/T P/T _____ M/T _____ V/T _____ ITEM(S): 17 IR, 18 IR, 19 IR, 20 IR, 21 IR, 22 IR

PROVIDE GENERAL INFORMATION TO DESCRIBE APPROXIMATE SIZE, LOCATION AND TYPE OF LIMITATION.



LIMITED EXAM DUE TO INSIDE
RADIUS OF NOZZLE AND SURFACE
CLADDING



LIMITED EXAM DUE TO INSIDE
RADIUS OF NOZZLE AND SURFACE
CLADDING

DUQUESNE LIGHT COMPANY

Relief Request No. 1-3

Beaver Valley Unit No. 2

RELIEF REQUEST

SECTION XI EDITION: 1980 thru Winter 1980 Addenda

COMPONENT: Reactor Vessel 2RCS-REV21
Shell Circumferential Weld 4
2DLC-UPO-1001 Sheet 3 (Att. 2)

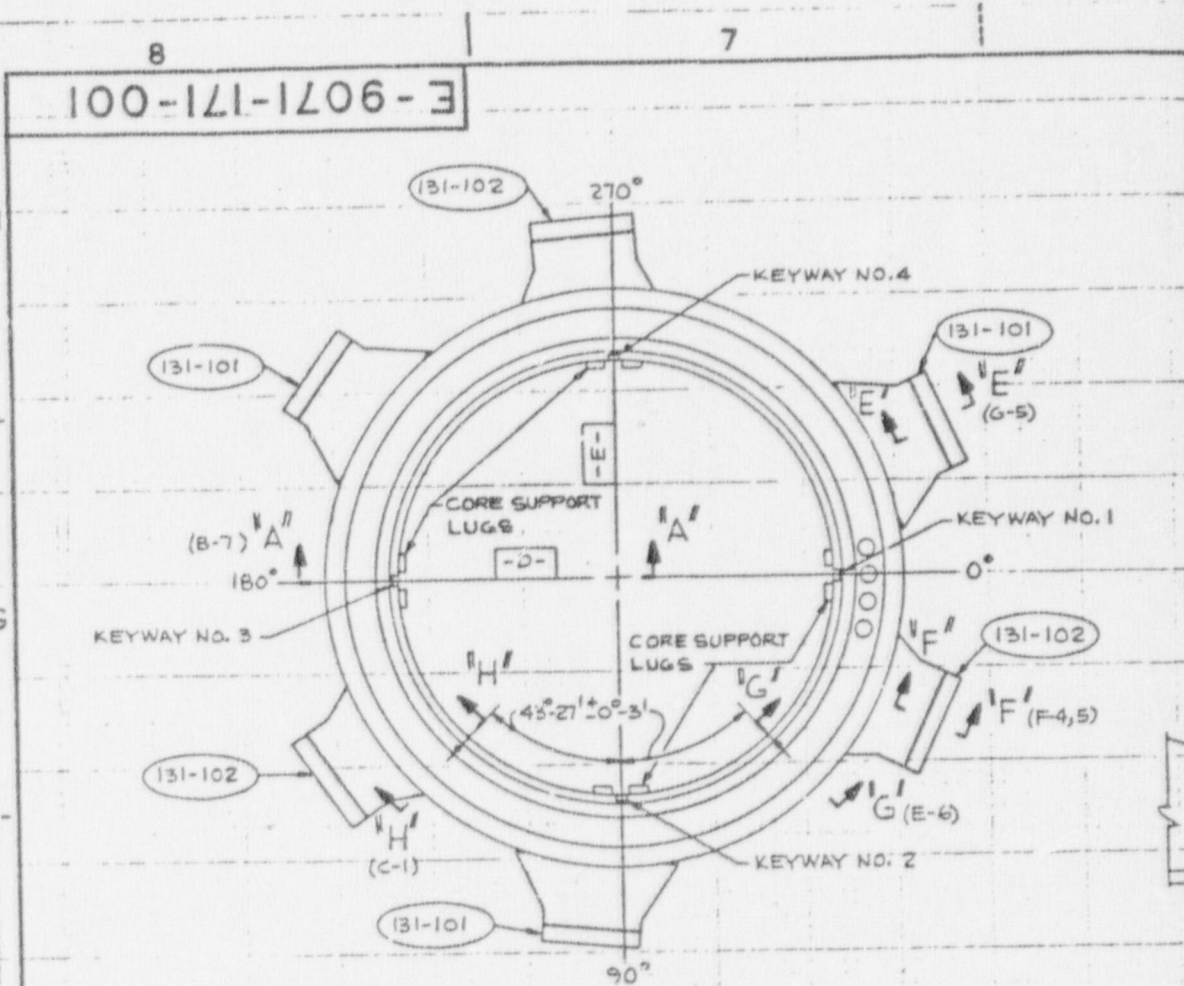
TABLE: IWB-2500-1
CODE CLASS: 1
ITEM NO.: B1.11
CATEGORY: B-A

EXAMINATION REQUIREMENT: Volumetric Exam of 100% of Code Required Area.

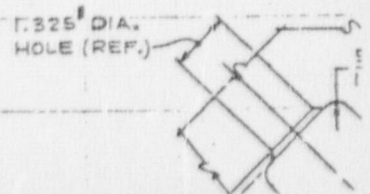
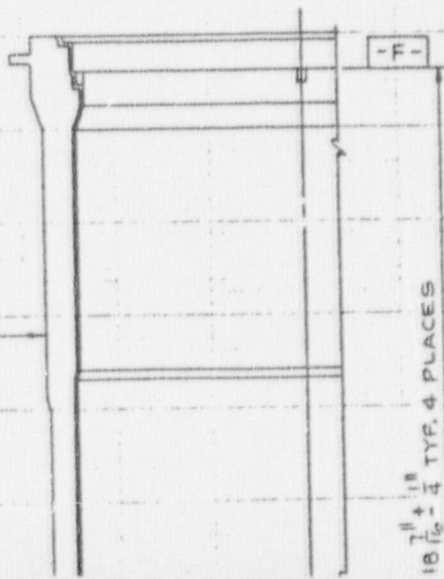
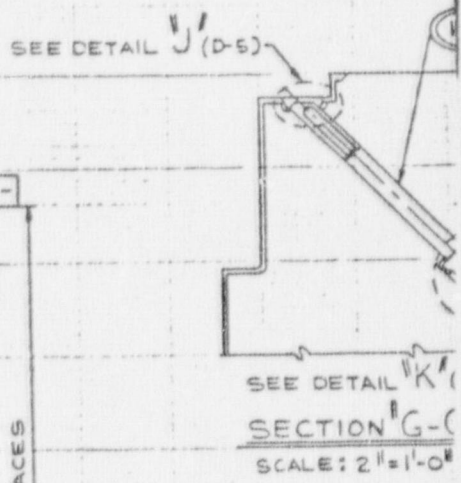
BASIS FOR RELIEF: Axial or downward directed angle beam examinations of weld 4 were limited lower shell side due to 4 radial core support lugs located at 0°, 90°, 180° and 270° vessel axis. The total obstruction from the shell side scan direction is estimated at 26° or 7%. Reference Drawing E-9071-171-001, Section 1 and 2.

ALTERNATIVE EXAMINATION: Perform Volumetric Exam on 100% of Code required accessible area.

ORIGINAL ASME III FABRICATION NDE: The required ASME III NDE was performed in accordance with E Spec. 676413, Rev. 3, (Att. 3) and the requirements of ASME III, 1971, Summer 1972 Addenda.



(171-101) VESSEL ASSEMBLY
 SCALE: $\frac{3}{8}'' = 1'-0''$



E-9071-171-001

Section # 1

SEE DETAIL 'K'
SECTION 'G'-
SCALE: 2" = 1'-0"

(121-101)

3/16" ± 1/16" TYP. 4 PLACES

1.325" DIA.
HOLE (REF.)

0.01" X 45° CHAMFER

SEE DETAIL 'C' (B-6)

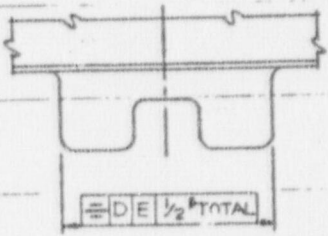
(141-101)

'B' (A-B)

CORE SUPPORT LUG

'D' (B-A)

SECTION 'A-A' (G-B)
SCALE: 3/8" = 1'-0"



SECTION 'B-B' (C-T)
TYPICAL 4 PLACES
SCALE: 1/2" = 1'-0"

GEN
1. ALL WELDS, WHEN HAVING THE SAME WITH SUFFIX A, B, AND GOING CLOCK

Section # 2

Kofak

8

7

DUQUESNE LIGHT COMPANY

Relief Request No. 2-11

Beaver Valley Unit No. 2

RELIEF REQUEST

SECTION VI EDITION: 1980 thru Winter 1980 Addenda

COMPONENT: Pressurizer 2RCS-PRE21
Weld 9
2DLC-UPO-1002 (Att. 2)

TABLE: IWB-2500-1
CODE CLASS: 1
ITEM NO.: B3.110
CATEGORY: B-D

EXAMINATION REQUIREMENT: Volumetric Examination of 100% of Code Required Area.

BASIS FOR RELIEF: Volumetric Examination of 100% of Code Required Area is limited due to Nozzle to Pressurizer Configuration. 35% not examined utilizing 0°, 65% not examined utilizing 45° and 70% not examined utilizing 60°. Reference sketches UT-306-064 Page 2, UT-306-065 Page 8 and 9, and UT-306-066 Page 4 and 5.

ALTERNATIVE EXAMINATION: Perform Volumetric Examination on 100% Code Required Accessible Area.

ORIGINAL ASME III FABRICATION NDE: ASME III NDE was performed in accordance with E Specifications G-67644u, G-679077 (Att. 3) and the requirements of ASME III 1971, Summer 72 Addenda.

Plant/Unit BVPS / II
 Comp/System PRESSURIZER
 ISO DMW-2100 Loop N/A

CALIBRATION DATA SHEET

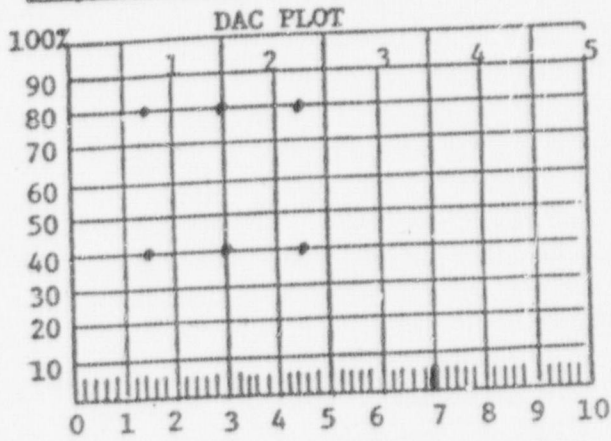
Page 1 of 4
 Data Sheet No. UT-306-064
 Procedure No. UT-306
 Subject: UT-VESSELS
 Rev/Change No. 1
 Calibration Block No. PR-2
 Fabrication No. N/A
 Surface O.D.
 Block Temp 66° 03919 °F
 Comp. Temp 82° 03919 °F
 Thickness 2.820" STAMPED
 CRT Calibrated in DEPTH 4.5"
 Each Maj. Screen Div = .45"

INSTRUMENT SETTINGS	
Mfg/Model No.:	<u>Sonic MKI</u>
Serial No.:	<u>07964E</u>
Sweep Length:	<u>3.84</u>
Sweep Delay:	<u>0.76</u>
Pulse Length/Damping:	<u>N/A</u>
Freq.:	<u>2MHz Rep. Rate: 3K</u>
Filter:	<u>OFF Video: ^{DOEM} Jack: R</u>
DEC/Gate Switch:	<u>OFF Range: 2</u>
Mode Select:	<u>N&M Reject: OFF</u>
Gain (coarse):	<u>30 (fine): 5</u>
Scan Sensitivity:	<u>41db</u>

SEARCH UNIT	
Scan Angle:	<u>0° Mode: LONG</u>
Fixturing (if any):	<u>NONE</u>
Style or Type No.:	<u>GAMMA</u>
Size & Shape:	<u>1.0" DIA.</u>
Frequency:	<u>2.25 MHz</u>
Serial No/Brand:	<u>AEROTECH H04305</u>
Measured Angle:	<u>0°</u>
Cable Type & Length:	<u>12' BNC-BNC</u>
Couplant Brand:	<u>SANDTRAC 40</u>
Couplant Batch:	<u>855A</u>

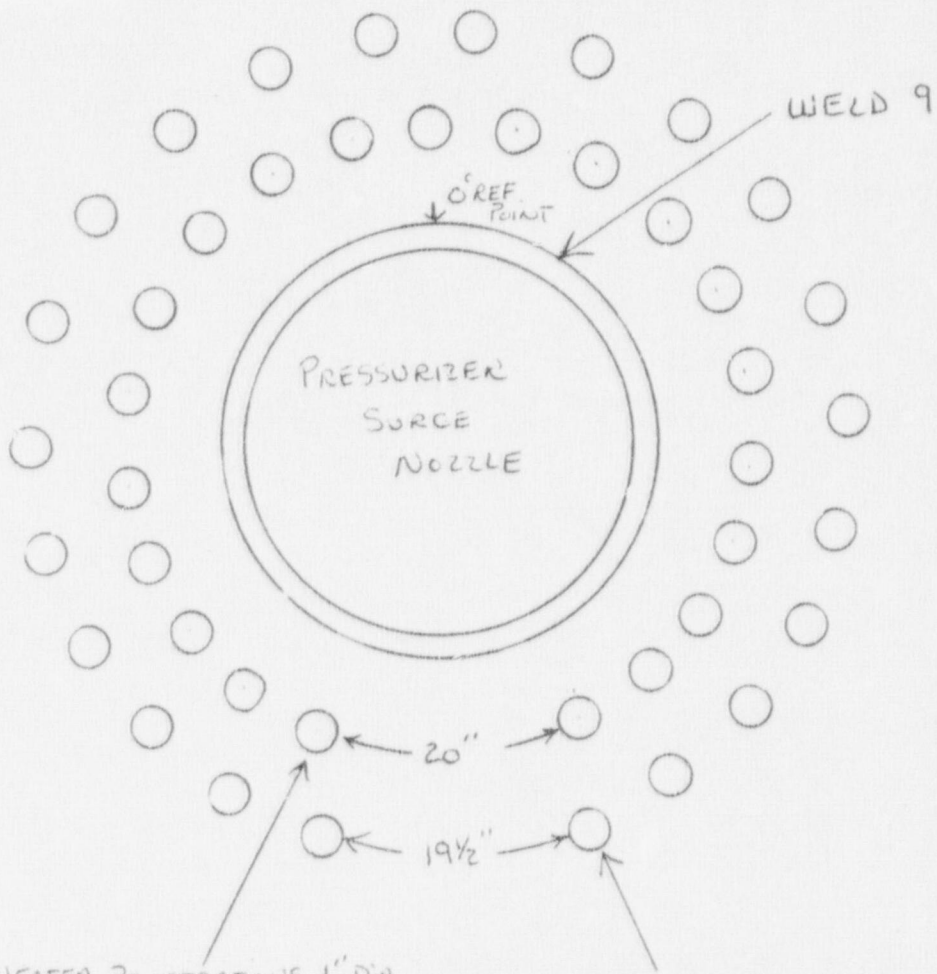
SCAN AREA	
0° WRV	<input checked="" type="checkbox"/>
0° Mat'l	<input checked="" type="checkbox"/>
≡ To Weld	<u>N/A</u>
⊥ To Weld	<u>N/A</u>
Calibration	
Axial	<u>N/A</u>
Circ	<u>N/A</u>

CALIBRATION CHECKS	TIME
Initial Cal.	<u>1220</u>
Intermediate	<u>N/A</u>
Intermediate	<u>N/A</u>
Intermediate	<u>N/A</u>
Final Cal.	<u>1345</u>



EXAMINATION WELD/AREA	Recordable Indications			COMMENTS/REASON FOR INCOMPLETED SCAN (S)
	Yes	No	Geom	
<u>9</u>	<u>N/A</u>	<input checked="" type="checkbox"/>	<u>N/A</u>	<u>SEE ATTACHED LIMITATION SKETCH, 35% NOT EXAMINED</u>
<u>9IR</u>	<u>N/A</u>	<input checked="" type="checkbox"/>	<u>N/A</u>	<u>SEE ATTACHED LIMITATION SKETCH, 100% NOT EXAMINED</u>

EXAMINERS 1 Joseph D. Furnish Date 2/27/87 Level II
 2 Annal A. Bellina Date 2/27/87 Level II
 REVIEWERS 1 Phillip C. Bakes Date 2-28-87
 2 Annal A. Bellina Date 3-7-87
 3 Mark R. ... Date 3/23/87 MAST



Row 1 HEATER PENETRATIONS 1" DIA.,
4" FROM WELD 9 & SPACED
4 1/2" APART

Row 2 HEATER PENETRATIONS,
1" DIA, 9 1/2" FROM WELD 9 &,
SPACED 4 1/2" APART

ISO: DMW-1-2100
WELD 9 LIMITATIONS
0° + 45°, 60°

Mme A. Boly II 2/27/87
Joseph D. Finyak II 2-27-87

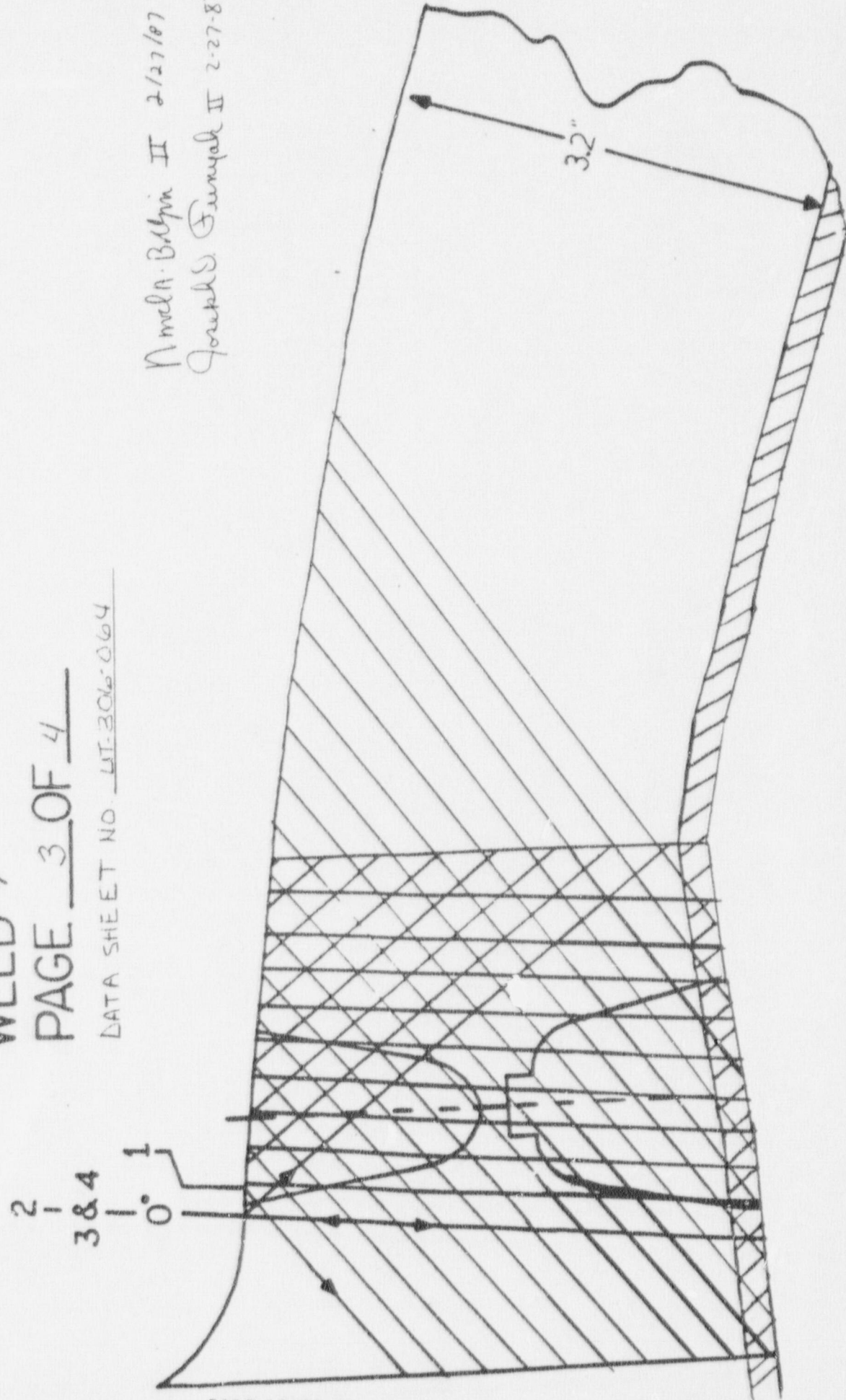
SCAN LIMITATIONS, 0° & 45°.

WELD 9

PAGE 3 OF 4

DATA SHEET NO. LT-306-064

Amel A. Balpin II 2/27/87
Joseph S. Fumyah II 2-27-87



Plant/Unit BVPS / II
 Comp/System PRESSURIZER
 ISO DMW-1-2100 Loop N/A

CALIBRATION DATA SHEET

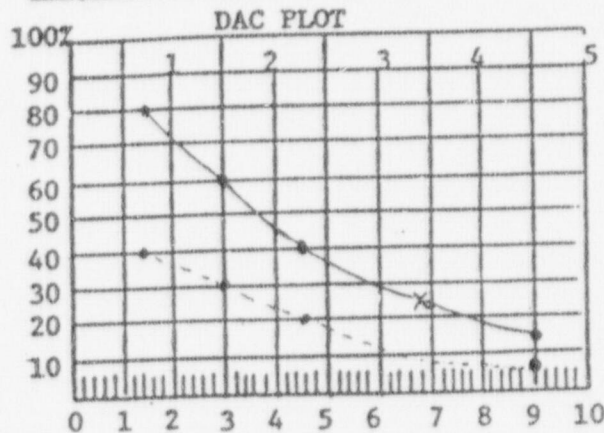
Page 1 of 10
 Data Sheet No. UT-306-065
 Procedure No. UT-306
 Subject: UT-VESSELS
 Rev/Change No. 1
 Calibration
 Block No. PR-2
 Fabrication No. N/A
 Surface O.D.
 Block Temp 66° 03919 °F
 Comp. Temp 82° 03919 °F
 Thickness 2.820" STAMPED
 CRT Calibrated in
DEPTH 4.5"
 Each Maj. Screen Div = .45"

INSTRUMENT SETTINGS	
Mfg/Model No.:	<u>Sonic MKI</u>
Serial No. :	<u>07964E</u>
Sweep Length :	<u>4.04</u>
Sweep Delay :	<u>0.93</u>
Pulse Length/Damping:	<u>M/W</u>
Freq.:	<u>2MHz Rep. Rate: 3K</u>
Filter:	<u>OFF Video: NORM Jack: R</u>
DEC/Gate Switch:	<u>OFF Range: 5</u>
Mode Select:	<u>NORM Reject: OFF</u>
Gain (coarse):	<u>40 (fine): 5</u>
Scan Sensitivity:	<u>51db</u>

SEARCH UNIT	
Scan Angle:	<u>45° Mode: SHEAR</u>
Fixturing (if any):	<u>LUCITE</u>
Style or Type No. :	<u>GAMMA</u>
Size & Shape:	<u>0.5" DIA</u>
Frequency :	<u>2.25 MHz</u>
Serial No/Brand:	<u>AEROTECH 40953</u>
Measured Angle :	<u>45°</u>
Cable Type & Length:	<u>12' BWC-MCD</u>
Couplant Brand:	<u>SANDTRACE 40</u>
Couplant Batch:	<u>8558</u>

SCAN AREA	
0° WRV	<u>N/A</u>
0° Mar'l	<u>N/A</u>
∞ To Weld	<input checked="" type="checkbox"/>
⊥ To Weld	<input checked="" type="checkbox"/>
Calibration	<input checked="" type="checkbox"/>
Axial	<input checked="" type="checkbox"/>
Circ	<input checked="" type="checkbox"/>

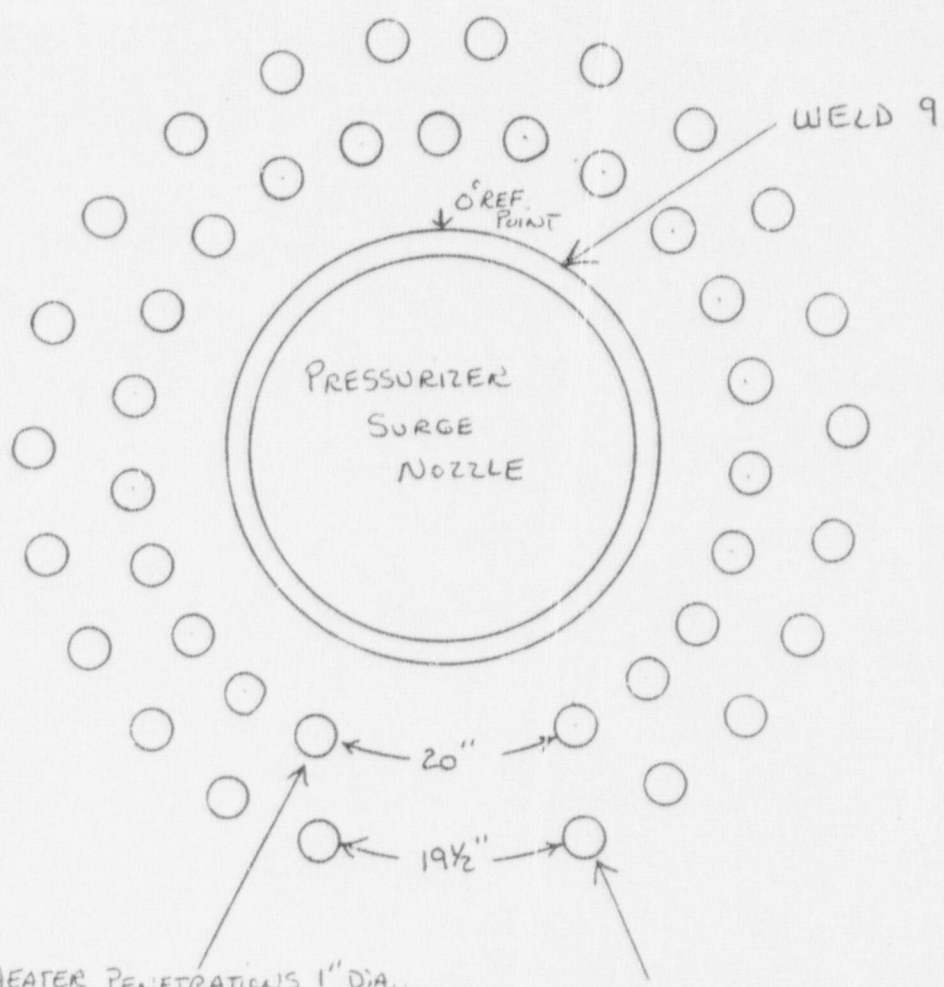
CALIBRATION CHECKS	TIME
Initial Cal.	<u>1445</u>
Intermediate	<u>1635</u>
Intermediate	<u>N/A</u>
Intermediate	<u>N/A</u>
Final Cal.	<u>1915</u>



EXAMINATION WELD/AREA	Recordable Indications			COMMENTS/REASON FOR INCOMPLETED SCAN (S)
	Yes	No	Geom	
<u>9</u>	<input checked="" type="checkbox"/>	<u>N/A</u>	<u>N/A</u>	<u>SEE ATTACHED LIMITATION AND INDICATION SKETCHES. 65% NOT EXAMINED</u>
<u>9 IR</u>	<u>N/A</u>	<input checked="" type="checkbox"/>	<u>N/A</u>	<u>SEE ATTACHED LIMITATION SKETCH. 98% NOT EXAMINED *</u>
				<u>* SCANNED IN ONE DIRECTION ONLY, DUE TO NOZZLE CONFIGURATION.</u>

EXAMINERS 1 Joseph D. Ferryak Date 2/27/87 Level II
 2 Arnold A. Blynn Date 2/27/87 Level II
 REVIEWERS 1 Phillip C. Bucas Date 2-28-87
 2 Timothy C. Samuel Date 3-7-87
 3 Walter R. S. Date 3/28/87 ANEI

FORM 4844B



Row 1 HEATER PENETRATIONS 1" DIA.,
 4" FROM WELD 9 & SPACED
 4 1/2" APART

Row 2 HEATER PENETRATIONS,
 1" DIA, 9 1/2" FROM WELD 9 &,
 SPACED 4 1/2" APART

ISO: DMW-1-2100
 WELD 9 LIMITATIONS
 0° + 45°, 60°

Muel A. Bolger II 2/27/87
 Joseph D. Finyak II 2-27-87

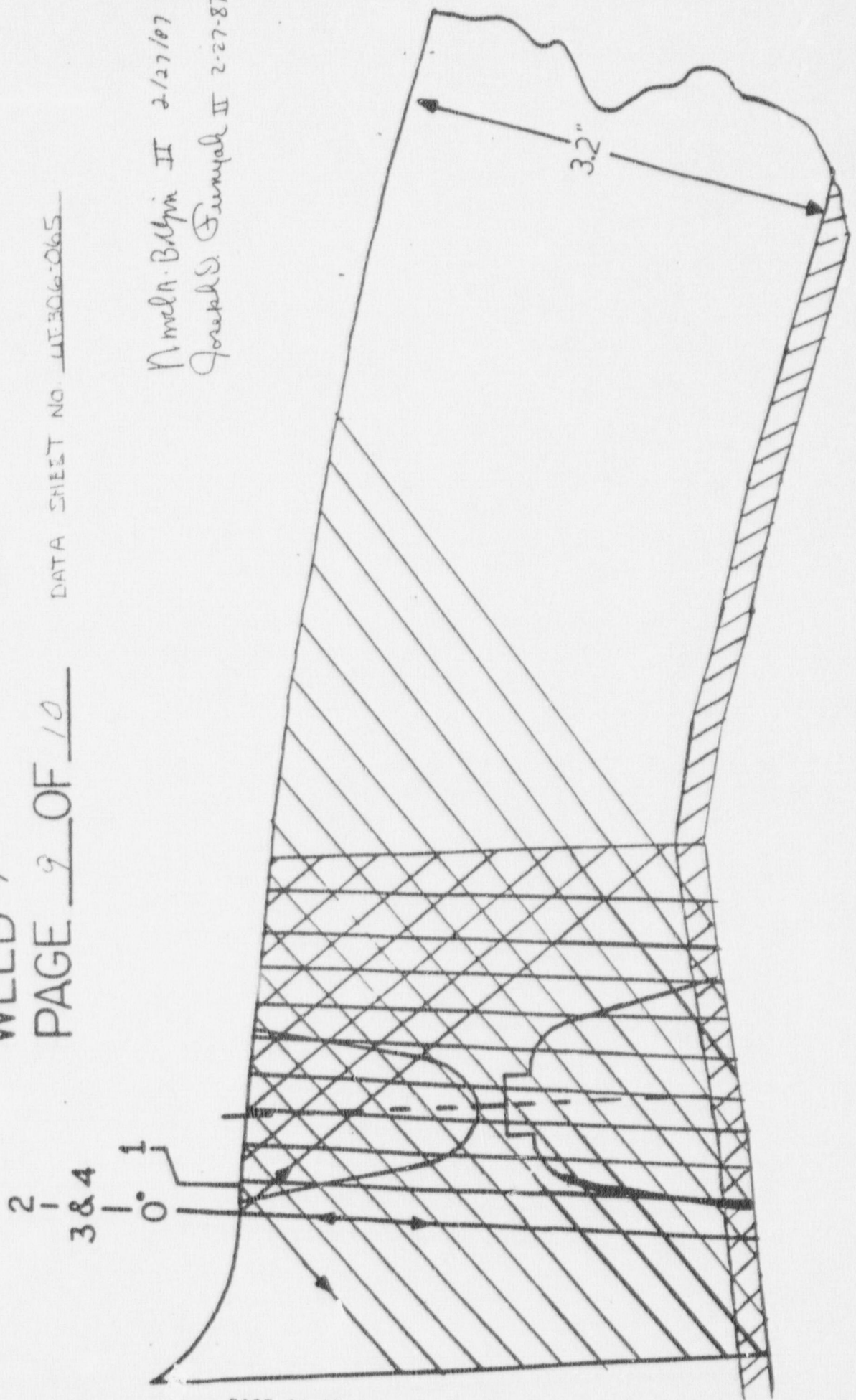
SCAN LIMITATIONS, 0° & 45°

WELD 9

PAGE 9 OF 10

DATA SHEET NO. UEE306-065

Amel N. Balpin II 2/27/87
Joseph S. Finnyak II 2-27-87



Plant/Unit BVPS / II
 Comp/System PRESSURIZER
 ISO DMW-1-2100 Loop N/A

CALIBRATION DATA SHEET

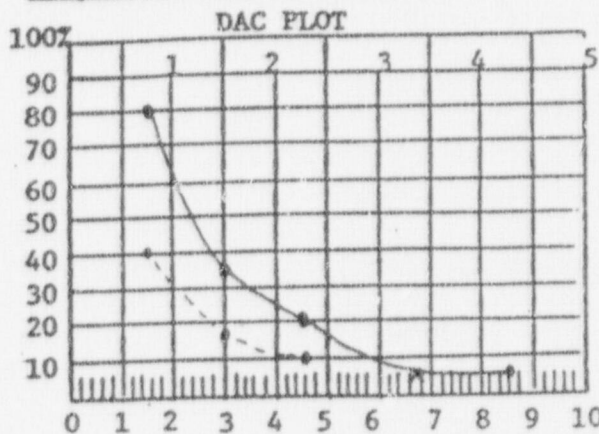
Page 1 of 6
 Data Sheet No. UT-306-066
 Procedure No. UT-306
 Subject: UT-VESSELS
 Rev/Change No. 1
 Calibration
 Block No. PR-2
 Fabrication No. N/A
 Surface O.D.
 Block Temp 66° 03919 °F
 Comp. Temp 82° 03919 °F
 Thickness 1.5" - 2.8" STAMPED
 CRT Calibrated in DEPTH 4.5"
 Each Maj. Screen Div .45"

INSTRUMENT SETTINGS	
Mfg/Model No.:	Sonic MKT
Serial No.:	07853E
Sweep Length:	6.30
Sweep Delay:	0.73
Pulse Length/Damping:	M/A
Freq.:	2MHz Rep. Rate: 3K
Filter:	OFF Video: ^{Norm} Jack: R
DEC/Gate Switch:	OFF Range: 5
Mode Select:	Norm Reject: OFF
Gain (coarse):	30 (fine): 10
Scan Sensitivity:	46 db

SEARCH INIT	
Scan Angle:	60° Mode: SHEAR
Fixturing (if any):	LUCITE
Style or Type No.:	GAMMA
Size & Shape:	0.5" DIA
Frequency:	2.25 MHz
Serial No/Brand:	AEROTECH 40959
Measured Angle:	60°
Cable Type & Length:	12' BNC-MCD
Couplant Brand:	SOUNDTRACE 40
Couplant Batch:	8558

SCAN AREA	
0° WRV	N/A
0° Max'l	N/A
∞ To Weld	<input checked="" type="checkbox"/>
⊥ To Weld	<input checked="" type="checkbox"/>
Calibration	<input checked="" type="checkbox"/>
Axial	<input checked="" type="checkbox"/>
Circ	<input checked="" type="checkbox"/>

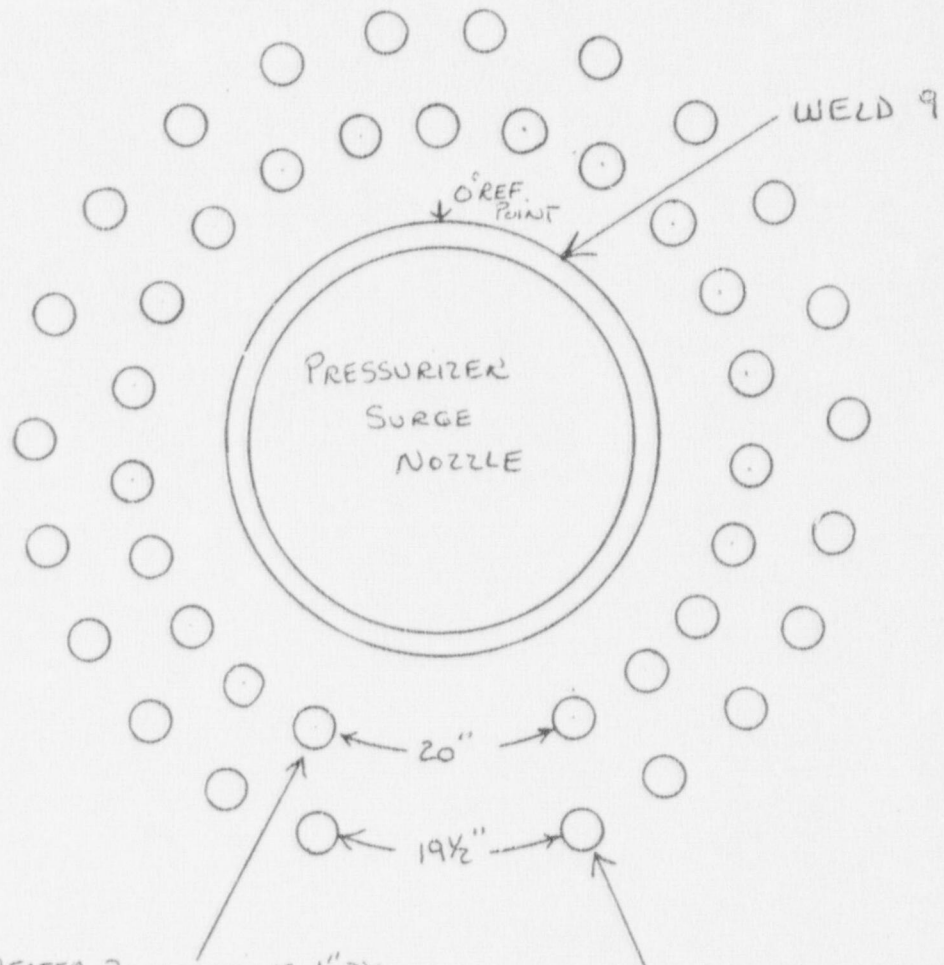
CALIBRATION CHECKS	TIME
Initial Cal.	1630
Intermediate	N/A
Intermediate	N/A
Intermediate	N/A
Final Cal.	1920



EXAMINATION WELD/AREA	Recordable Indications			COMMENTS/REASON FOR INCOMPLETED SCAN (S)
	Yes	No	Geom	
9	N/A	<input checked="" type="checkbox"/>	N/A	SEE ATTACHED LIMITATION SKETCH. 70 % NOT EXAMINED
9 IR	<input checked="" type="checkbox"/>	N/A	N/A	SEE ATTACHED LIMITATION AND INDICATION SKETCHES. 85 % NOT EXAMINED*
* SCANNED IN ONE DIRECTION ONLY, DUE TO NOZZLE CONFIGURATION				

EXAMINERS 1 Joseph D. Ferry Date 2/27/87 Level II
 2 Amel A. Bulgin Date 2/27/87 Level II
 REVIEWERS 1 Phillip C. Burke Date 2-28-87
 2 Donathy P. Lunn Date 3-7-87
 3 Malcolm Date 3/23/87 ANR

FORM 40440



Row 1 HEATER PENETRATIONS 1" DIA.,
 4" FROM WELD 9 & SPACED
 4 1/2" APART

Row 2 HEATER PENETRATIONS,
 1" DIA, 9 1/2" FROM WELD 9 &
 SPACED 4 1/2" APART

ISO: Dmw-1-2100
 WELD 9 LIMITATIONS
 0° + 45°, 60°

Norman A. Bolger II 2/27/87
Joseph D. Dunyak II 2-27-87

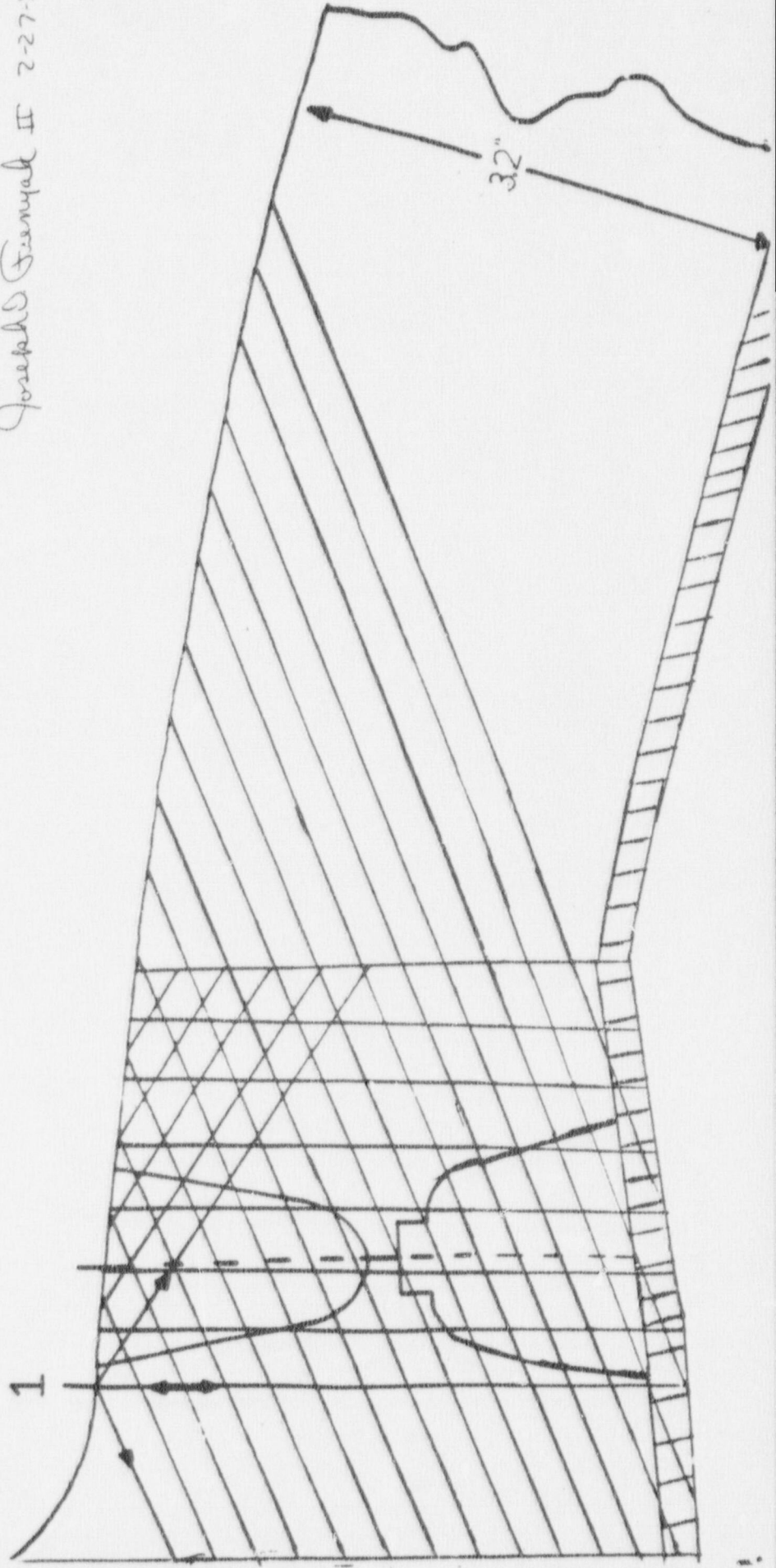
SCAN LIMITATIONS, 60°
WELD 9

PAGE 5 OF 6

DATA SHEET NO. WT-306-066

3&4
1 2 1

Amela Bolypm II 2/27/87
Joseph D. Franquet II 2-27-87



DUQUESNE LIGHT COMPANY

Relief Request No. 2-111

Beaver Valley Unit No. 2

RELIEF REQUEST

SECTION XI EDITION: 1980 thru Winter 1980

COMPONENT: Pressurizer 2RCS-PRE21 - Nozzle Inside Radius
Section 9IR
2DLC-UPO-1002 (Att. 2)

TABLE: IWB-2500-1
CODE CLASS: 1
ITEM NO.: B3.120
CATEGORY: B-D

EXAMINATION REQUIREMENT: Volumetric

BASIS FOR RELIEF: The configuration of the nozzle to pressurizer at the inner radius suction is such that 100% interrogation by ultrasonic techniques is not possible. 100% not examined utilizing 0°, 98% not examined utilizing 45°, 85% not examined utilizing 60°. Reference sketches UT-306-064 Page 4, UT-306-065 Page 10, and UT-306-066 Page 6.

ALTERNATIVE EXAMINATION: Conduct ultrasonic examinations of the nozzle inner radius sections from the outside of the Pressurizer to the maximum extent practical. Specialized ultrasonic techniques will be used when necessary to enhance the examination.

ORIGINAL ASME III FABRICATION NDE: ASME III NDE was performed in accordance with E Specifications G-676440, G-679077 (Att. 3) and the requirements of ASME III 1971, Summer 72 Addenda.

Plant/Unit BVPS / II
 Comp/System PRESSURIZER
 ISO DMW-1-2100 Loop N/A

CALIBRATION DATA SHEET

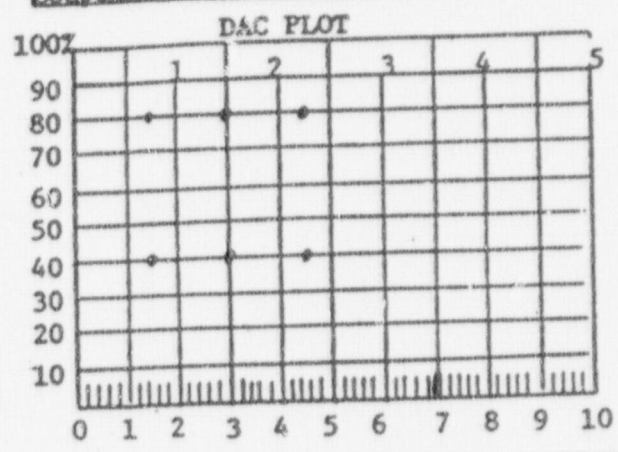
Page 1 of 4
 Data Sheet No. UT-306-164
 Procedure No. UT-306
 Subject: UT-VESSELS
 Rev/Change No. 1
 Calibration
 Block No. PR-2
 Fabrication No. N/A
 Surface O.D.
 Block Temp 66° 03919 °F
 Comp. Temp 82° 03919 °F
 Thickness 2.820" STAMPED
 CRT Calibrated in DEPTH 4.5"
 Each Maj. Screen Div = .45"

INSTRUMENT SETTINGS	
Mfg/Model No.:	<u>SONIC MKI</u>
Serial No.:	<u>07964E</u>
Sweep Length:	<u>3.84</u>
Sweep Delay:	<u>0.76</u>
Pulse Length/Damping:	<u>N/A</u>
Freq.:	<u>2MHZ Rep. Rate: 3K</u>
Filter:	<u>OFF Video: ^{N/A} Jack: R</u>
DEC/Gate Switch:	<u>OFF Range: 2</u>
Mode Select:	<u>N/A Reject: OFF</u>
Gain (coarse):	<u>30 (fine): 5</u>
Scan Sensitivity:	<u>41db</u>

SEARCH UNIT	
Scan Angle:	<u>0° Mode: LONG</u>
Fixturing (if any):	<u>NONE</u>
Style or Type No.:	<u>GAMMA</u>
Size & Shape:	<u>1.0" DIA.</u>
Frequency:	<u>2.25MHZ</u>
Serial No./Brand:	<u>AEROTECH H04305</u>
Measured Angle:	<u>0°</u>
Cable Type & Length:	<u>12BNC-BNC</u>
Complant Brand:	<u>SONOTRACK 40</u>
Complant Batch:	<u>855A</u>

SCAN AREA	
0° WRV	<input checked="" type="checkbox"/>
0° Mar'l	<input checked="" type="checkbox"/>
== To Weld	<u>N/A</u>
⊥ To Weld	<u>N/A</u>
Calibration	
Axial	<u>N/A</u>
Circ	<u>N/A</u>

CALIBRATION CHECKS TIME	
Initial Cal.	<u>1220</u>
Intermediate	<u>N/A</u>
Intermediate	<u>N/A</u>
Intermediate	<u>N/A</u>
Final Cal.	<u>1345</u>



EXAMINATION WELD/AREA	Recordable Indications			COMMENTS/REASON FOR INCOMPLETED SCAN (S)
	Yes	No	Geom	
<u>9</u>	<u>N/A</u>	<input checked="" type="checkbox"/>	<u>N/A</u>	<u>SEE ATTACHED LIMITATION SKETCH, 35% NOT EXAMINED</u>
<u>9IR</u>	<u>N/A</u>	<input checked="" type="checkbox"/>	<u>N/A</u>	<u>SEE ATTACHED LIMITATION SKETCH, 100% NOT EXAMINED</u>

EXAMINERS 1 Joseph O. Fumyk Date 2/27/87 Level II
 2 Amel A. Belgis Date 2/27/87 Level II
 REVIEWERS 1 Phillip C. Bukes Date 2-28-87
 2 Matthew P. A. ... Date 3-7-87
 3 ... Date 3/23/87 ...

Plant/Unit BVPS / II
 Comp/System PRESSURIZER
 ISO DMW-1-2100 Loop N/A

CALIBRATION DATA SHEET

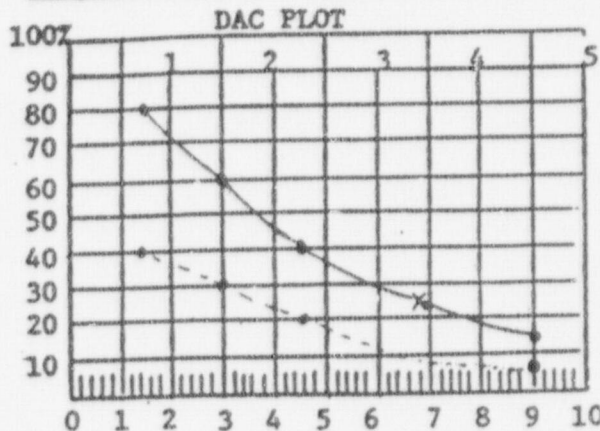
Page 1 of 10
 Data Sheet No. UT-306-065
 Procedure No. UT-306
 Subject: UT-VESSELS
 Rev/Change No. 1
 Calibration
 Block No. PR-2
 Fabrication No. N/A
 Surface O.D.
 Block Temp 66° 03919 °F
 Comp. Temp 82° 03919 °F
 Thickness 2.820" STAMPED
 CRT Calibrated in
DEPTH 4.5"
 Each Maj. Screen Div = .45"

INSTRUMENT SETTINGS	
Mfg/Model No.:	<u>Sonic MKI</u>
Serial No.:	<u>07964E</u>
Sweep Length:	<u>4.04</u>
Sweep Delay:	<u>0.93</u>
Pulse Length/Damping:	<u>MM</u>
Freq.:	<u>2MHz</u> Rep. Rate: <u>3K</u>
Filter:	<u>OFF</u> Video: <u>NORM</u> Jack: <u>R</u>
DEC/Gate Switch:	<u>OFF</u> Range: <u>5</u>
Mode Select:	<u>NORM</u> Reject: <u>OFF</u>
Gain (coarse):	<u>40</u> (fine): <u>5</u>
Scan Sensitivity:	<u>51db</u>

SEARCH INIT	
Scan Angle:	<u>45°</u> Mode: <u>SHEAR</u>
Fixturing (if any):	<u>LUCITE</u>
Style or Type No.:	<u>GAMMA</u>
Size & Shape:	<u>0.5" DIA</u>
Frequency:	<u>2.25 MHz</u>
Serial No./Brand:	<u>AEROTECH 40953</u>
Measured Angle:	<u>45°</u>
Cable Type & Length:	<u>12 BNC-MCD</u>
Complant Brand:	<u>SOUNDTRACE 40</u>
Complant Batch:	<u>8558</u>

SCAN AREA	
0° WRV	<u>N/A</u>
0° Mat'l	<u>N/A</u>
== To Weld	<input checked="" type="checkbox"/>
⊥ To Weld	<input checked="" type="checkbox"/>
Calibration	<input checked="" type="checkbox"/>
Arial	<input checked="" type="checkbox"/>
Circ	<input checked="" type="checkbox"/>

CALIBRATION CHECKS TIME	
Initial Cal.	<u>1445</u>
Intermediate	<u>1635</u>
Intermediate	<u>N/A</u>
Intermediate	<u>N/A</u>
Final Cal.	<u>1915</u>



EXAMINATION WELD/AREA	Recordable Indications			COMMENTS/REASON FOR INCOMPLETED SCAN (S)
	Yes	No	Geom	
<u>9</u>	<input checked="" type="checkbox"/>	<u>N/A</u>	<u>N/A</u>	<u>SEE ATTACHED LIMITATION AND INDICATION SKETCHES. 65% NOT EXAMINED</u>
<u>9 IR</u>	<u>N/A</u>	<input checked="" type="checkbox"/>	<u>N/A</u>	<u>SEE ATTACHED LIMITATION SKETCH. 98% NOT EXAMINED *</u>
				<u>* SCANNED IN ONE DIRECTION ONLY, DUE TO NOZZLE CONFIGURATION.</u>

EXAMINERS 1 Joseph D. Farnsworth Date 2/27/87 Level II
 2 Arnold A. Bellini Date 2/27/87 Level II
 REVIEWERS 1 Philip C. Baska Date 2-28-87
 2 Timothy C. Samuel Date 3-7-87
 3 Walt R. S. Date 3/23/87 ANE

SCAN LIMITATIONS, 45° & 0°

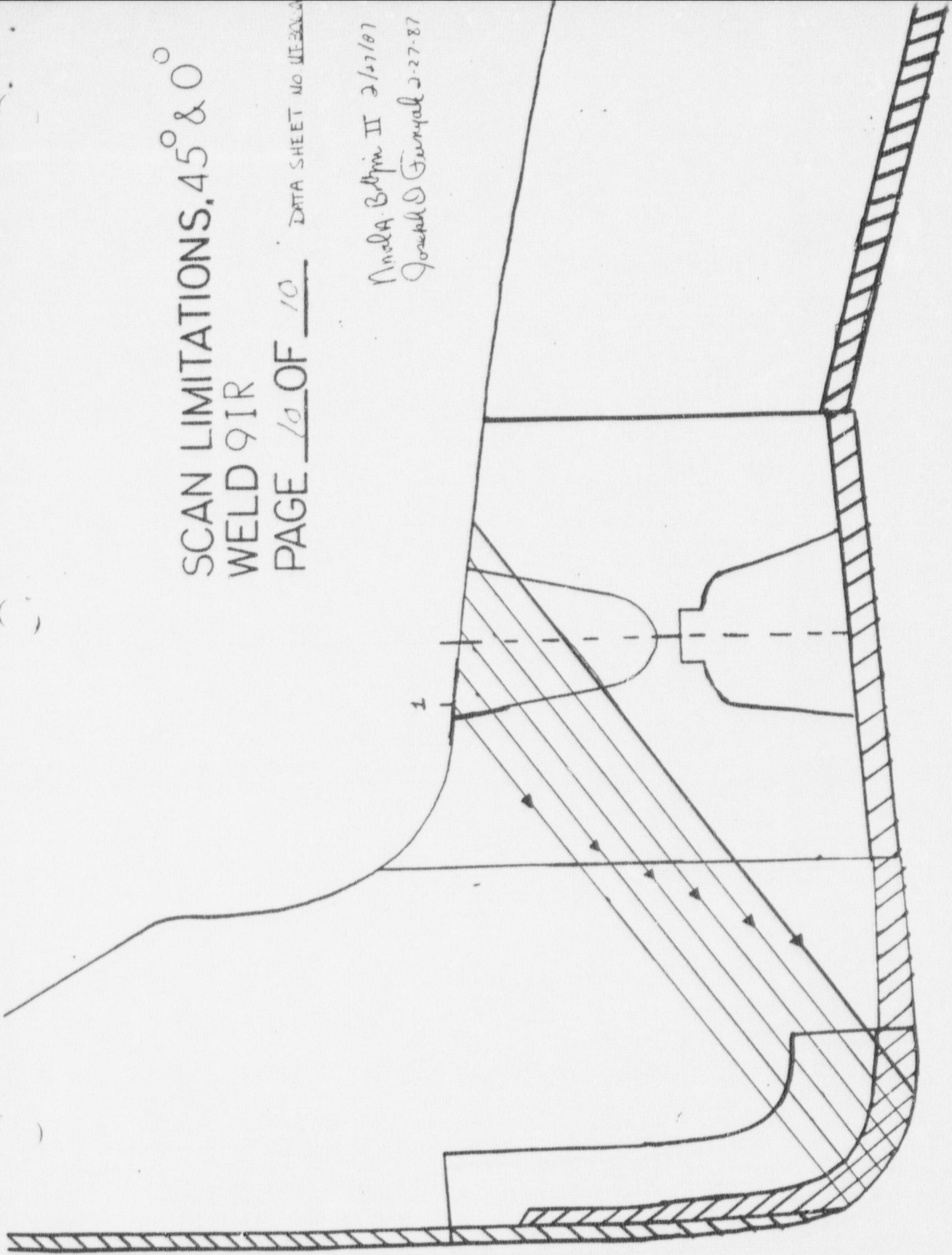
WELD 91R

PAGE 10 OF 10

DATA SHEET NO. UE-28A.0

Andra Bilypin II 2/27/87

Joseph D. Fennell 2-27-87



Plant/Unit BVPS / II
 Comp/System PRESSURIZER
 ISO DMW-1-2100 Loop N/A

CALIBRATION DATA SHEET

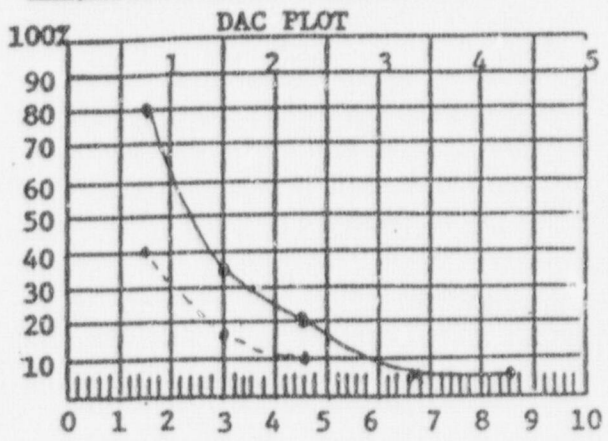
Page 1 of 6
 Data Sheet No. UT-306-D16
 Procedure No. UT-306
 Subject: UT-VESSELS
 Rev/Change No. 1
 Calibration
 Block No. PR-2
 Fabrication No. N/A
 Surface O.D.
 Block Temp 66° 03919 °F
 Comp. Temp 82° 03919 °F
 Thickness 0.750 " STAMPED
 CRT Calibrated in
DEPTH 4.5"
 Each Maj. Screen Div = .45"

INSTRUMENT SETTINGS	
Mfg/Model No.:	Sonic MKT
Serial No.:	07853E
Sweep Length:	6.30
Sweep Delay:	0.73
Pulse Length/Damping:	M/A
Freq.:	2MHz Rep. Rate: 3K
Filter:	OFF Video: <u>Norm</u> Jack: R
DEC Gate Switch:	off Range: 5
Mode Select:	Norm Reject: OFF
Gain (coarse):	30 (fine): 10
Scan Sensitivity:	46db

SEARCH INIT	
Scan Angle:	60° Mode: SHEAR
Fixturing (if any):	LUCITE
Style or Type No.:	GAMMA
Size & Shape:	0.5" DIA
Frequency:	2.25 MHz
Serial No./Brand:	AEROTECH 40959
Measured Angle:	60°
Cable Type & Length:	12' BNC-MCD
Complant Brand:	SONOTRACE 40
Complant Batch:	8558

SCAN AREA	
0° WRV	N/A
0° Mar'l	N/A
≡ To Weld	<input checked="" type="checkbox"/>
⊥ To Weld	<input checked="" type="checkbox"/>
Calibration	<input checked="" type="checkbox"/>
Axial	<input checked="" type="checkbox"/>
Circ	<input checked="" type="checkbox"/>

CALIBRATION CHECKS	TIME
Initial Cal.	1630
Intermediate	N/A
Intermediate	N/A
Intermediate	N/A
Final Cal.	1920



EXAMINATION WELD/AREA	Recordable Indications			COMMENTS/REASON FOR INCOMPLETED SCAN (S)
	Yes	No	Geom	
9	N/A	<input checked="" type="checkbox"/>	N/A	SEE ATTACHED LIMITATION SKETCH. 70 % NOT EXAMINED
9IR	<input checked="" type="checkbox"/>	N/A	N/A	SEE ATTACHED LIMITATION AND INDICATION SKETCHES. 85 % NOT EXAMINED*
* SCANNED IN ONE DIRECTION ONLY, DUE TO NOZZLE CONFIGURATION				

EXAMINERS 1 Joseph D. Ferry Date 2/27/87 Level II
 2 Arnold A. Bullyn Date 2/27/87 Level II
 REVIEWERS 1 Phillip C. Burke Date 2-28-87
 2 Donnelly P. Lunn Date 3-7-87
 3 Malcolm Date 3/23/87 ANT

SCAN LIMITATIONS, 60°
WELD 91R

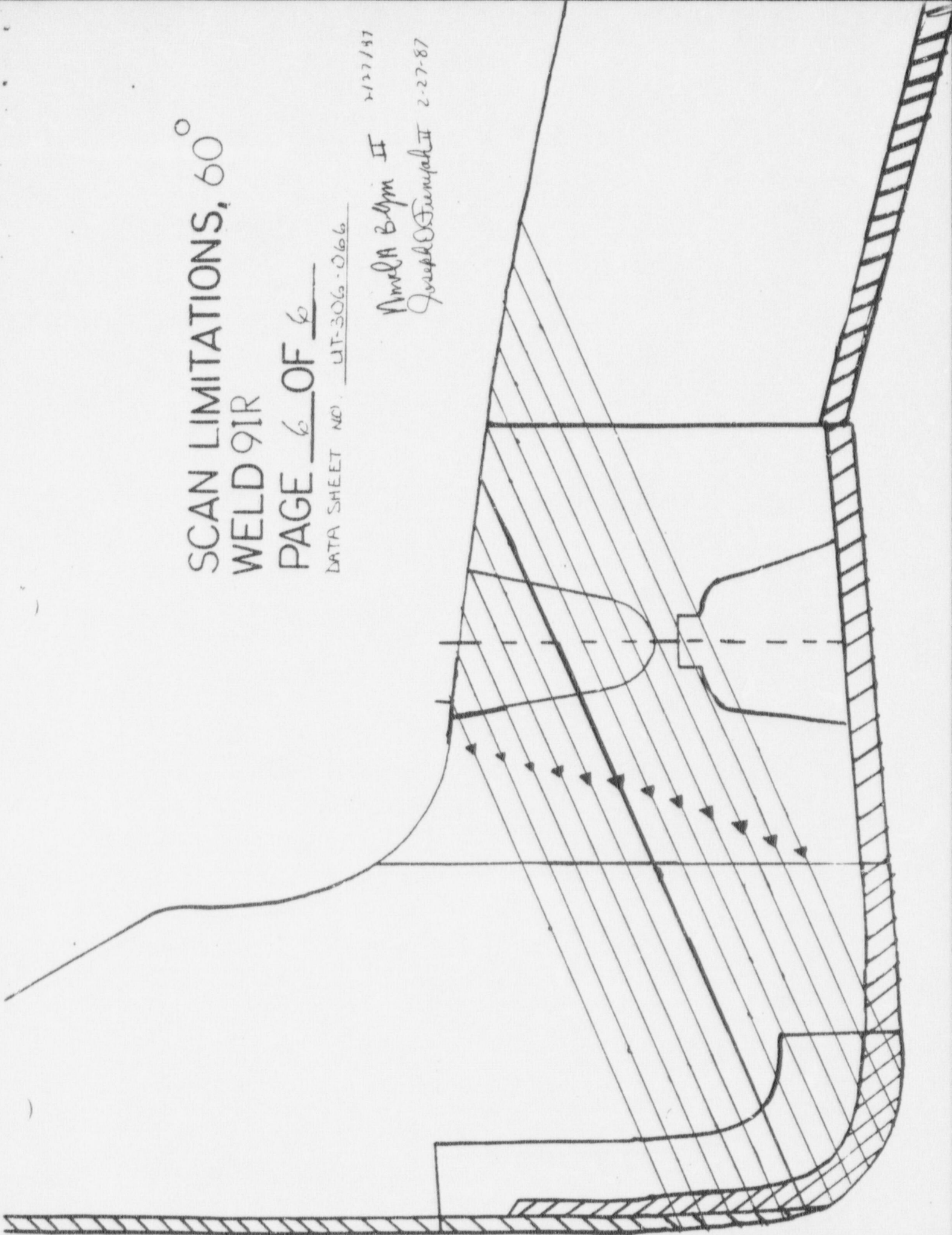
PAGE 6 OF 6

DATA SHEET NO. UT-306-066

2/27/87

Amela Babin II

Joseph O'Connell II 2-27-87



DUQUESNE LIGHT COMPANY

Relief Request No. 2-12

Beaver Valley Unit No. 2

RELIEF REQUEST

SECTION XI EDITION: 1980 thru Winter 1980 Addenda

COMPONENT: Pressurizer 2RCS-PRE21
Surge Nozzle Safe End
2DLC-UPO-1002, Sheet 3, Weld 2RCS-84Z (Att. 2)

TABLE: IWB-2500-1
CODE CLASS: I
ITEM NO.: B5.20
CATEGORY: B-F

EXAMINATION REQUIREMENT: Volumetric Examination of 100% Code Required Area.

BASIS FOR RELIEF: Volumetric Examination of 100% of Code Required Area is restricted by four (4) welded insulation lugs 3/8 inch x 1 1/2 inch. Approximately .5% not examined utilizing 0°. Sketch UT-303-919.

ALTERNATIVE EXAMINATION: Perform Volumetric Exam on 100% of Code Required Accessible Area.

ORIGINAL ASME III FABRICATION NDE: ASME III NDE was performed in accordance with E Specification G-676440, G-679077 (Att. 3) and the requirements of ASME III 1971, Summer 1972 Addenda.



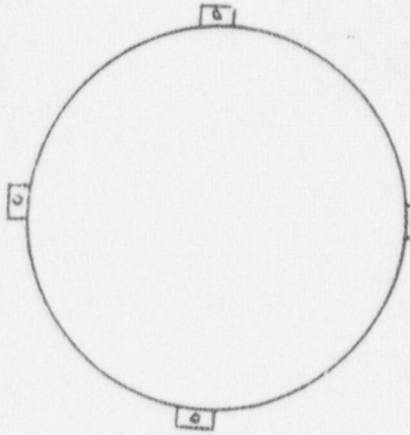
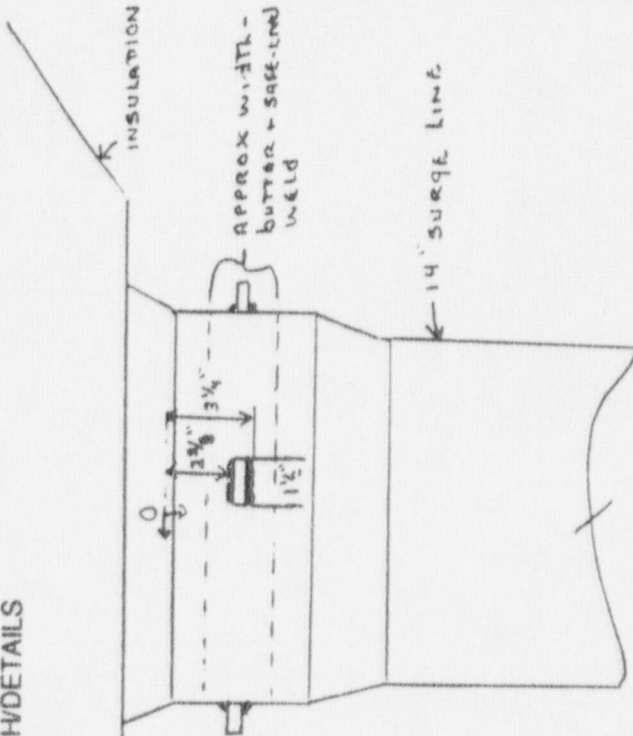
Duquesne Light

FORM D37-8184

REMARKS/SKETCH/DETAILS

APPLICABLE TO: 0° / 45° I / 45° = EXAMS

Surge Nozzle Safe End - Weld Exam Limitations -



N.D.E. EXAMINATION SUPPLEMENTARY RECORD

COMPONENT:
PRESSURIZER

LINE: N/A

DWG./ISO: N/A

EXAM CAT: B-F

Ref. Report No.: UT-303-911

Page: 2 of 2

ITEM NO.: B5.20

EXAMINER REVIEWED <i>Anthony Arund III</i>	DATE: 4-28-87	REVIEWED BY:	DATE:
EXAMINER REVIEWED <i>George Buck</i>	DATE: 4-28-87	REVIEWED BY:	DATE:

page

DUQUESNE LIGHT COMPANY

Relief Request No. 2-13

Beaver Valley Unit No. 2

RELIEF REQUEST

SECTION XI EDITION: 1980 thru Winter 1980 Addenda

COMPONENT: Pressurizer 2RCS-PRE21
Safety and Relief Nozzle Safe Ends
2DLC-UPO-1002, Sheet 3, Welds 2RCS-101A, 2RCS-102B,
2RCS-103C and 2RCS-107Z (Att. 2)

TABLE: IWB-2500-I
CODE CLASS: I
ITEM NO.: B5.20
CATEGORY: B-F

EXAMINATION REQUIREMENT: Volumetric Examination of 100% Code Required Area.

BASIS FOR RELIEF: Volumetric Examination of 100% of Code Required Area is restricted by loss of contact due to nozzle/safe-end configuration. Approximately 10% not examined utilizing 45° Reference Drawing 2DLC-UPO-1002, Sheet 3 (Att. 2).

ALTERNATIVE EXAMINATION: Perform Volumetric Examination on 100% of Code Required Accessible Area.

ORIGINAL ASME III FABRICATION NDE: ASME III NDE was performed in accordance with E Specification G-676440, G-679077 (Att. 3) and the requirements of ASME III 1971, Summer 1972 Addenda.

Plant/Unit II BVPS
 Comp/System Press SAFE-ENDS CALIBRATION DATA SHEET
 ISO N/A Loop N/A

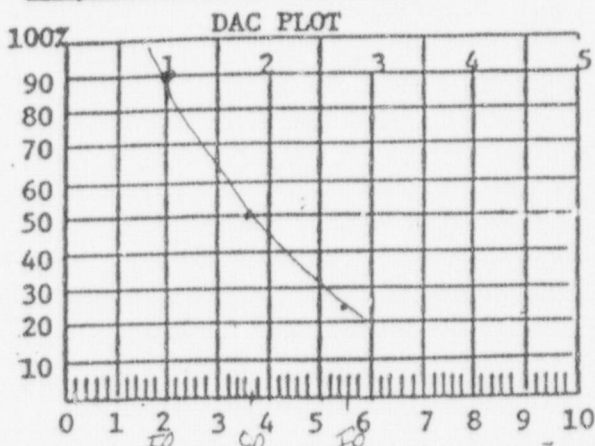
Page 1 of 1
 Data Sheet No. UT-303-905
 Procedure No. UT-303
 Subject: UT-AUSTENITIC PIPE
 Rev/Change No. 4
 Calibration
 Block No. PP-7 / ROMPUS 795339
 Fabrication No. N/A
 Surface OD
 Block Temp 80° °F
 Comp. Temp 79° °F
 Thickness SEE PROFILE SHEET
 CRT Calibrated in SEMI AUTO

INSTRUMENT SETTINGS	
Mfg/Model No.:	<u>Krautkramer USM 2</u>
Serial No.:	<u>2400-6405</u>
Sweep Length:	<u>5.88</u>
Sweep Delay:	<u>6.80</u>
Pulse Length/Damping:	<u>Uj</u>
Freq.:	<u>N/A</u> Rep. Rate: <u>N/A</u>
Filter:	<u>N/A</u> Video: <u>N/A</u> Jack: <u>R</u>
DEC/Gate Switch:	Range: <u>25</u>
Mode Select:	<u>Ac</u> Reflect: <u>OFF</u>
Gain (coarse):	<u>0</u> (fine): <u>15</u>
Scan Sensitivity:	<u>30</u>

SEARCH UNIT	
Scan Angle:	<u>45°</u> Mode: <u>Shear</u>
Fixturing (if any):	<u>Lucite wedge</u>
Style or Type No.:	<u>KBA/K-12</u>
Size & Shape:	<u>.375" φ</u>
Frequency:	<u>2.25</u>
Serial No/Brand:	<u>3036/KBA</u>
Measured Angle:	<u>45°</u>
Cable Type & Length:	<u>Bladen 20K-6'</u>
Complant Brand:	<u>Ultragel</u>
Complant Batch:	<u>85584</u>

Each Maj. Screen Div. = .5"
 Pyrometer B17-1759
 due 9-2-87

CALIBRATION CHECKS	TIME
Initial Cal.	<u>10:40</u>
Intermediate	
Intermediate	
Intermediate	
Final Cal.	<u>11:25</u>



SCAN AREA	
0° WRV	<u>N/A</u>
0° Mar'l	<u>N/A</u>
∥ To Weld	<u>N/A</u>
⊥ To Weld	<u>✓</u>
Calibration	
Axial	<u>✓</u>
Circ	<u>N/A</u>

EXAMINATION WELD/AREA	Recordable Indications			COMMENTS/REASON FOR INCOMPLETED SCAN (S)
	Yes	No	Geom	
2-RCS-101A	<u>N/A</u>	<u>✓</u>	<u>N/A</u>	<u>Limited examination due to life off condition -</u>
2-RCS-102B	<u>N/A</u>	<u>✓</u>	<u>N/A</u>	<u>SOME LOSS OF CONTACT OCCURS WHEN</u>
2-RCS-103C	<u>N/A</u>	<u>✓</u>	<u>N/A</u>	<u>SEARCH UNIT RIDES OVER UNDULATIONS ON</u>
2-RCS-107E	<u>N/A</u>	<u>✓</u>	<u>N/A</u>	<u>FLAPPED SURFACE. APPROX. 10% NOT EXAMINED</u>
				<u>DUE TO LOSS OF CONTACT (EACH WELD)</u>

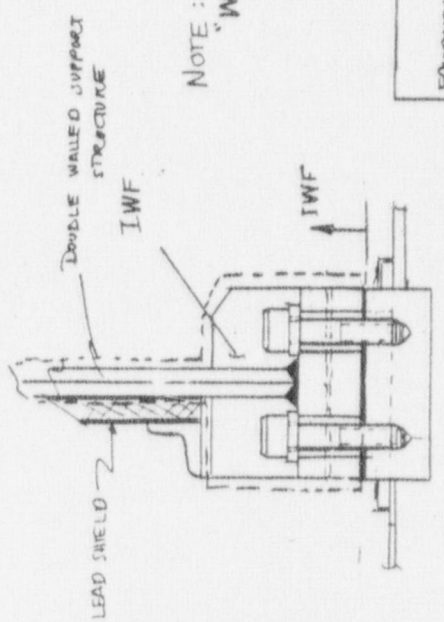
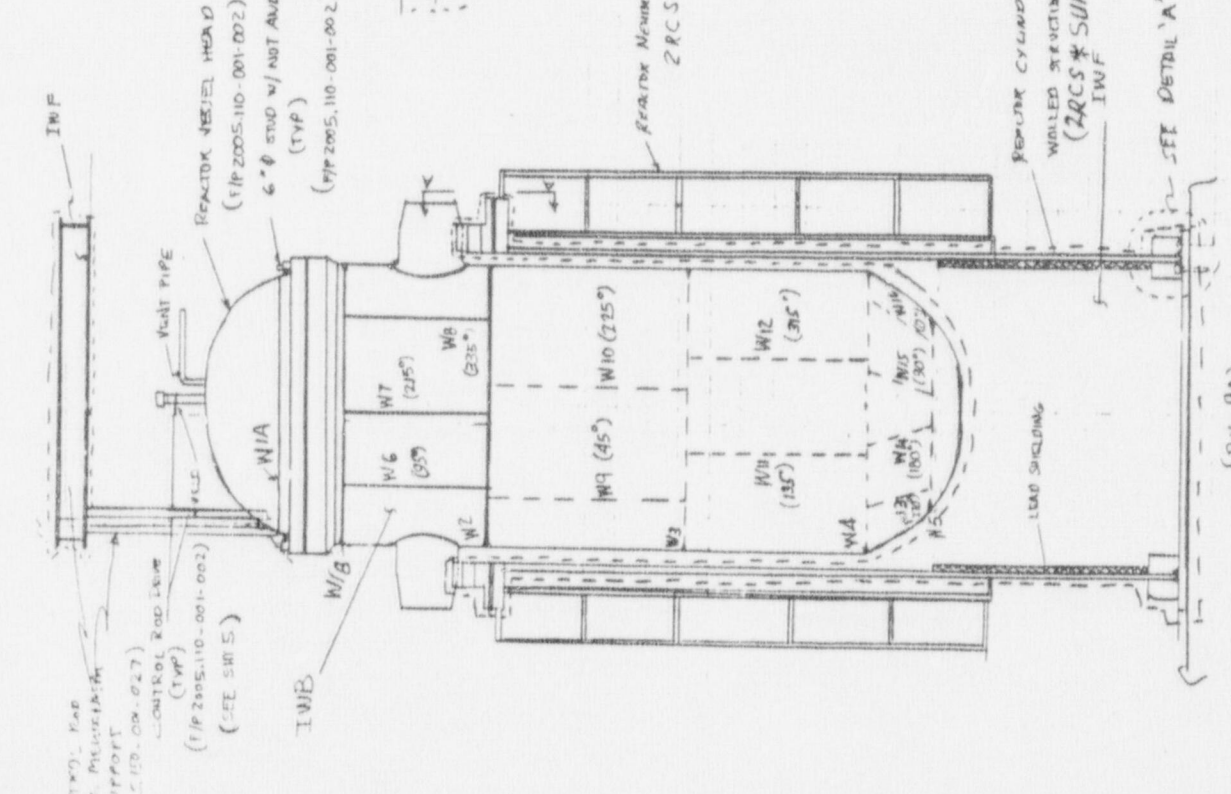
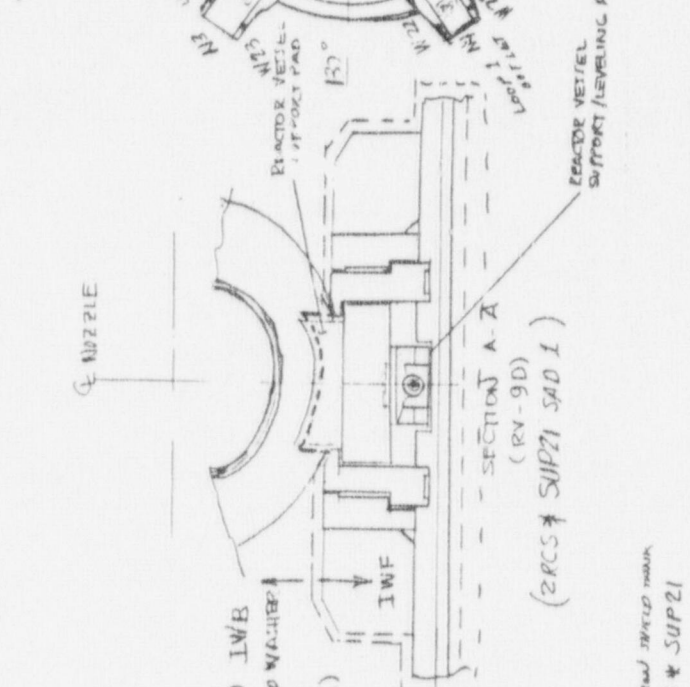
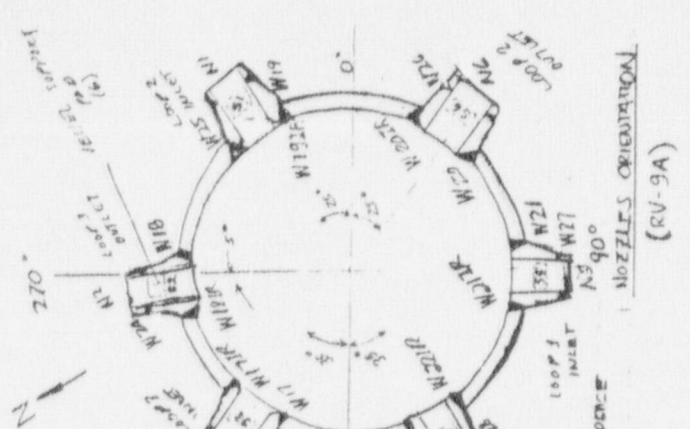
EXAMINERS 1 Timothy C. Hurd Date 4-25-87 Level III
 2 George Buck Date 4-25-87 Level N/A

REVIEWERS 1 A. F. Mosso III Date 6/11/87
 2 M. B. S. Date 6/30/87 AWT
 3 _____ Date _____

NOTCH REFLECTOR Amplitude + SWEEP POSITIONS

I.D.	90% FSH	2.0 SWEEP
O.D.	50% FSH	3.7 SWEEP
I.D.	25% FSH	5.6 SWEEP

Attachment 2



DETAIL 'A'
(RV-9E)

NOTE: "W" PRECEDING THE NUMBER STANDS FOR WELD

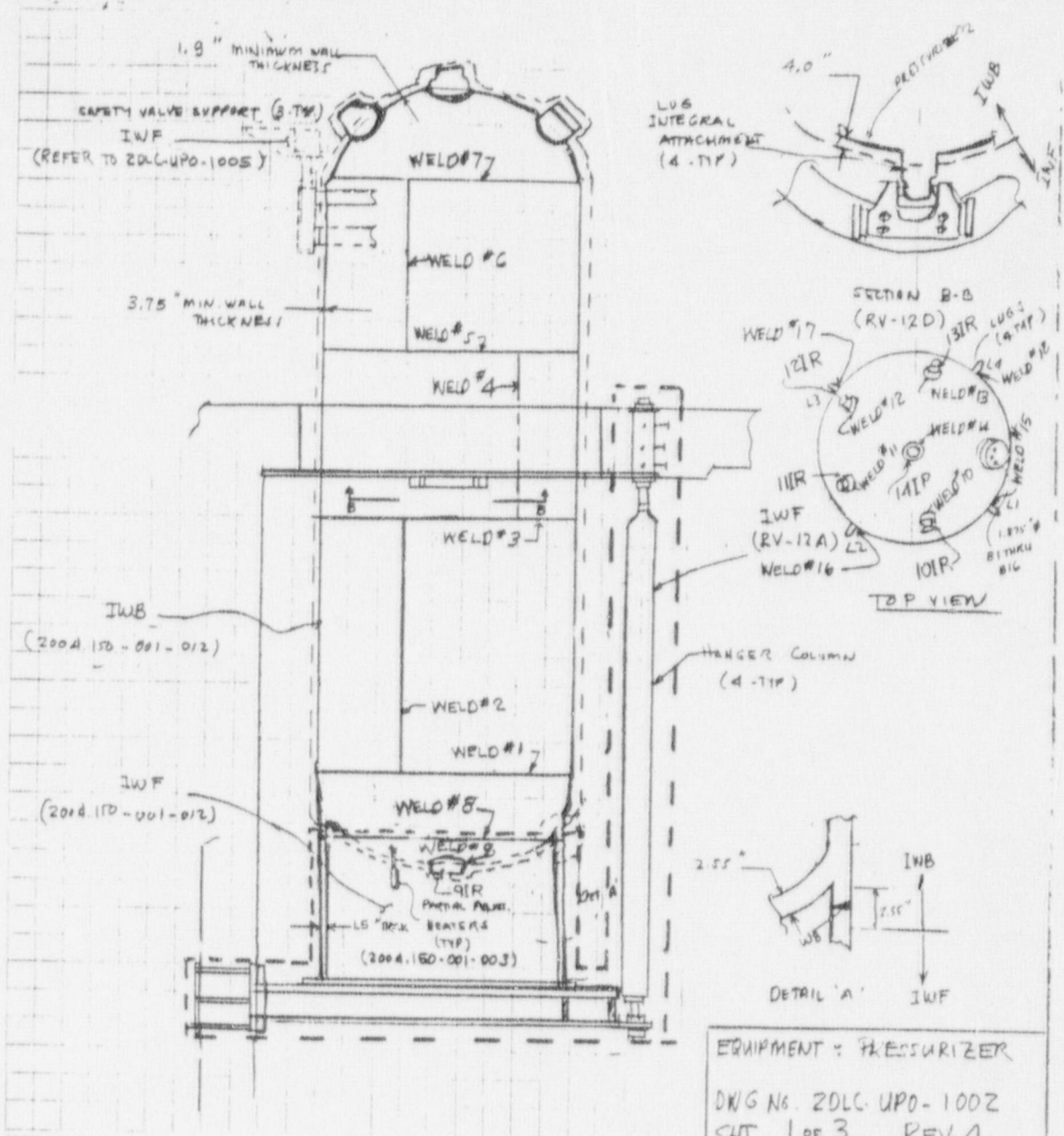
EQUIPMENT: REACTOR VESSEL
DWG. No.: 201C UPD-1001
SHEET 1 of 5 REV. 4

APPLICABILITY

EQUIPMENT MARK NO. : 2RCS * REV 21
 ASME CODE : W80
 CLASS : 1
 PROCEDURE : 2.13.3 AND 2.13.7

EQUIPMENT MARK NO. : 2RCS * REV 21
 DWG NO. : WDC-UPD-1071
 SHEET 2 of 5 REV. 4

ASME XI EXAM CAT.	EXAM CAT. ITEM NO.	PART CANDIDATE FOR EXAMINATION	PART SELECTED FOR EXAMINATION	METHOD OF EXAMINATION	COMMENT			
B-A	B1.11	SHELL CIRCUMFERENTIAL WELD #2	X	VOLUMETRIC	↓			
		" #3	X					
		" #4	X					
	B1.12	SHELL LONGITUDINAL WELD #6	X					
		" #7	X					
		" #8	X					
		" #9	X					
		" #10	X					
	B1.21	SHELL HEAD CIRCUMFERENTIAL WELD #5	X					
		B1.22 MERIDIONAL WELD #13	X					
		" #14	X					
		" #15	X					
	B1.30	SHELL TO-FLANGE WELD #1B	X					
		B1.40 HEAD TO-FLANGE WELD #1A	X					
	B-D	B3.30	NOZZLE TO VESSEL WELD #17			Y	VOLUMETRIC	↓
			" #18			Y		
" #19			Y					
" #20			Y					
" #21			Y					
" #22			Y					
B3.150		NOZZLE IN-PIPE FERRULE #17JK	P					
		#18JK	P					
		#19JK	P					
		#20JK	P					
		#21JK	P					
		#22JK	P					
B-F	B5.10	NOZZLE TO SAFE-END #23	X	VOLUMETRIC & SURF.	↓			
		#24	X					
		#25	X					
		#26	X					
		#27	X					
		#28	X					
B-G-1	B6.10	CLOSURE HEAD NUTS	Y	4	SURFACE			
	B6.20	CLOSURE STUD, IN PLACE	NA For PSI See B6.30			VOLUMETRIC	58-6" STUDS	
	B6.30	CLOSURE STUD, WHEN REMOVED	ALL			VOLUMETRIC AND SURFACE	58-6" STUDS	
	B6.40	LIGAMENTS IN FLANGE (HEAD & SHELL)	ALL			VOLUMETRIC	"	
	B6.50	CLOSURE BUSHINGS & WASHERS	Y			4	VISUAL, VT-1	
	B-G-2	B7.80	CONOSEAL BOLTING ASSY. (47, 49, 51, 53)			Y	4	VISUAL, VT-1



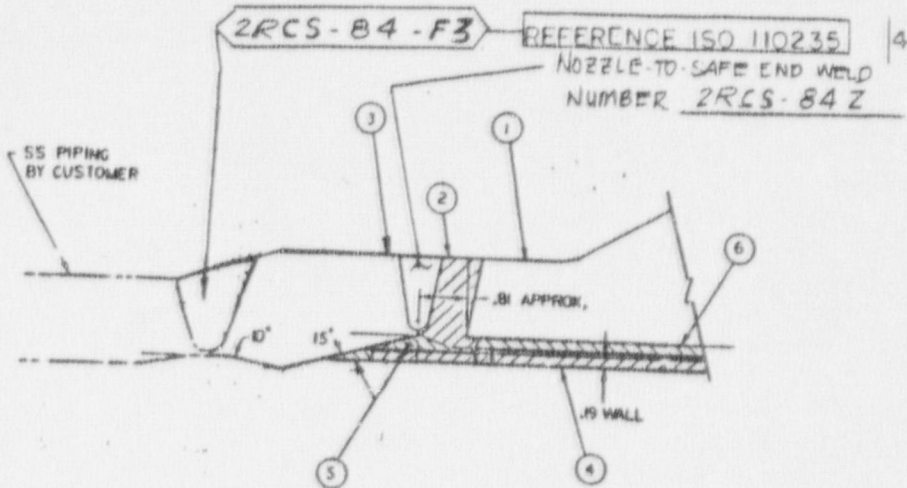
ASME XI EXAM. CAT.	EXAM. CAT. ITEM NO.	PART: CANDIDATE FOR EXAMINATION	PART: DIRECTED FOR EXAMINATION	METHOD OF EXAMINATION	COMMENTS
B-B	B2.11	CIRCUMFERENTIAL WELD #1 ↓ 3 5 7	P Y Y Y Y Y	RR.2-1 VOLUMETRIC ↓ RR.2-5 RR.2-7 RR.2-2 VOLUMETRIC ↓	
	B2.12	LONGITUDINAL WELD #2 ↓ 4 6	P Y Y		
B-D (PROG. B)	B3.10	NOZZLE-TO-VESSEL WELD #9 ↓ 10 11 12 13 14	4 P P P P P P P P P	VOLUMETRIC ↓ RR.2-10 RR.2-10 RR.2-10 RR.2-10 RR.2-10 ↓ VOLUMETRIC ↓ RR.2-101 RR.2-101 RR.2-101 RR.2-101 RR.2-101	14" φ NOZZLE 6" φ " 6" φ " 6" φ " 6" φ " 4" φ " 14" φ " 6" φ " 6" φ " 6" φ " 6" φ " 4" φ "
	B3.120	NOZZLE INSIDE RADIUS 9LK 10IR 11IR 12IR 13IR 14IR	P P P P P P P P P P		
B-F	B5.20	NOZZLE-TO-SAFE END ZRCS-84Z NOZZLE-TO-SAFE END ZRCS-101A ZRCS-102B ZRCS-103C ZRCS-107Z ZRCS-202Z	P P P P P P P	VOLUMETRIC & SURFACE ↓	14" φ SURGE LINE 6" φ SAFETY VALVE 6" φ " " 6" φ " " 6" φ TO ICE BREAK VALVE 4" φ SPRAYS
B-G-2	B7.20	MANWAY BOLT B1 THRU B16	4 Y	VISUAL, VT-1	1.875" φ BOLT
B-H	B8.20	SKIRT CIRC WELD #8 INTEG. ATTACH LUG ↓ L1 (WELD #15) L2 (WELD #16) L3 (WELD #17) L4 (WELD #18)	P Y Y Y Y	RR.2-8 VOLUMETRIC OR SURFACE ↓ VOLUMETRIC OR SURFACE ↓	6.4" x 3.5" x 6.0" ↓
F-A	F1.10, F1.30	SEE SHEET 1	X	VISUAL, VT-3	SKIRT SUPPORT
F-B	F2.10, F2.30	" "	X	VISUAL, VT-3	STRUCTURAL SUPPORT

EQUIPMENT MARK NUMBER : ZRCS * PRE 21
 ASME XI CODE : W 80
 CLASS : 1
 PROCEDURE(S) : 2.13.3 AND 2.13.7

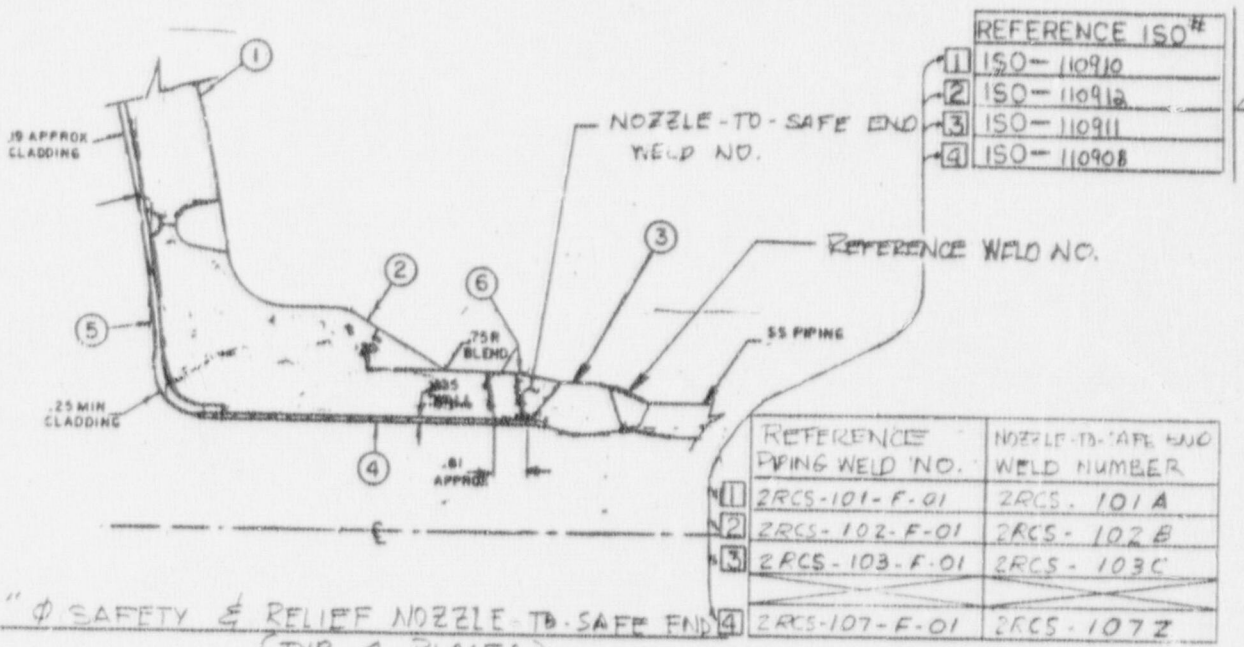
EQUIPMENT : PRESSURIZED
 DWG. No : ZOLC-UPD-1002
 SHEET : 2 of 3 REV. 4

(REFERENCE PIPE WELD)

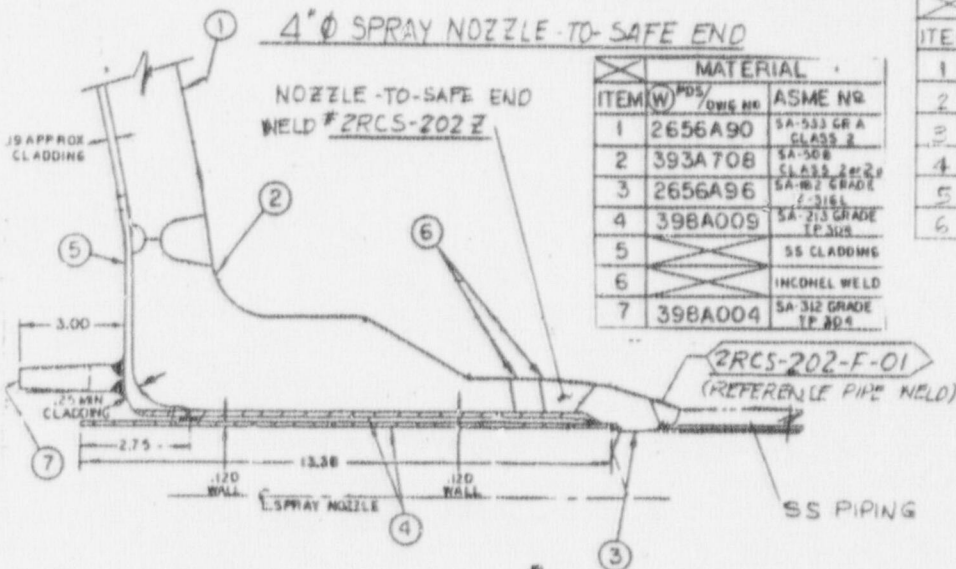
ITEM	(W) PDS / DWG NO.	ASME NR
1	393A708	SA 508 CLASS 2 or 2A
2		INCONEL WELD BUILD UP
3	2656A96	SA 182 GRADE F 316L
4	398A003	SA - 240
5		INCONEL WELD
6		SS CLADDING



14" Ø SURGE NOZZLE-TO-SAFE END



6" Ø SAFETY & RELIEF NOZZLE-TO-SAFE END (TYP. 4-PLACES)



ITEM	(W) PDS / DWG NO.	ASME NO.
1	2656A90	SA-533 GR A CLASS 2
2	393A708	SA-508 CLASS 2 or 2A
3	2656A96	SA-182 GRADE F 316L
4	398A003	SA-213 GRADE TP 316S
5		SS CLADDING
6		INCONEL WELD

EQUIPMENT: PRESSURIZER
 DWG. NO: ZDLC-UP0-1002
 SHEET 3 of 3 Rev. 4

Attachment 3

5.3 Cleaning

The reactor vessel surfaces shall be cleaned in accordance with the requirements of Westinghouse PS - 292722. (See Para. 2.1.7)

The following additional requirements apply:

- 5.3.1 Degreasing solvents containing chlorinated compounds shall not be used.
- 5.3.2 The final water contacting reactor vessel and head internal surfaces shall meet the following requirements:
- | | |
|-------------------------|--------------------------|
| Total dissolved solids | 10 ppm maximum |
| Chlorides and fluorides | 1 ppm maximum |
| Conductivity | 20 micro-mhos/cm maximum |

6.0 EXAMINATION REQUIREMENTS6.1 Ultrasonic Examination

The ultrasonic examination requirements below are in addition to the ultrasonic examination requirements in Para. NB - 2500 of Section III.

6.1.1 General Requirements

- 6.1.1.1 The [REDACTED] ultrasonic examination procedure shall be used. [REDACTED] examination including equipment calibration and documentation standards. The following parameters shall be detailed in the procedure.

- The stage(s) of fabrication at which the examinations(s) will be conducted.
- The degree of surface preparation, the type(s) of couplant(s) which will be used.
- The direction in which the waves are introduced.

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6.1.1.2 Examinations shall be performed at 2.25 Mhz or higher frequencies. When this is not possible, examinations shall be performed at 1.00 Mhz referenced to an approved calibration standard, specifically, approximately 75° included angle vee notch or side drilled hole.

6.1.2 Plate Material - All plate material that is pressure containing shall be examined using angle beam techniques. The examination shall be performed from two directions perpendicular to each other. The 4.0 Mhz or higher frequency transducer search unit shall be capable of producing a shear wave mode sound beam in the material at an angle in the 45-65 degree range. The acceptance examinations (longitudinal and shear) shall be performed after forming and final austenitizing heat treatment or final austenitizing heat treatment and forming whichever method is used by the manufacturer.

The calibration standard shall be approximately 75° included angle vee-notch with a depth equal to three (3) percent of the nominal section thickness (or 3/8 inch maximum) and a length of approximately one (1) inch.

Indications whose amplitude equals or exceeds the calibration standard shall be rejected.

6.1.3 Cladding

6.1.3.1

[REDACTED] A flat bottom hole drilled from the base metal of a reference block to the cladding interface shall be used for tuning. The examination shall be performed from the prepared clad surface. Unbonded areas exceeding 1/4" x 3/4" shall be rejected.

6.1.3.2

[REDACTED] A 1/8" (3.18mm) diameter flat bottom reference hole shall be used. The acceptance standards shall be as follows: Indications whose amplitude equals or exceeds that from the reference hole shall be rejected. Cladding or weld metal buildup for safe ends on primary coolant nozzles, core support block attachment pads and weld buildup repairs shall be examined 100% for bond and defects. The inspection shall be performed on machined surfaces prior to joint geometry preparation. Three 1/8" diameter F.B.H. drilled from the base metal side of the approved calibration block to the base metal-weld buildup interface and to 1/3T and 2/3T (where T equals the thickness of the buildup) of the calibration block weld metal buildup.

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6.1.4 Reactor Vessel and Closure Head

6.1.4.1 Examination Schedule

The ultrasonic examination shall be performed after the hydrostatic test. Preparation of the clad surfaces may be done at any time during the fabrication sequence.

6.1.4.2 Areas to be Examined

An ultrasonic examination of the following areas of the reactor vessel and closure head shall be performed in accordance with the ASME CODE for Inservice Inspection of Nuclear Reactor Coolant Systems. (See Para. 2.2.2)

- a. All longitudinal shell and transition ring welds and one (1) wall thickness of adjacent base metal on both sides of the weld.
- b. All circumferential shell, flange and transition ring welds and one (1) wall thickness of adjacent base metal on both sides of the weld.
- c. All primary and safety injection nozzle to shell welds and all integral nozzle extensions inside the vessel.
- d. All primary and safety injection nozzle to safe end welds.
- e. Closure studs and nuts.
- f. Ligaments between threaded closure stud holes.

6.1.4.3 Surface Finish Requirements

The ultrasonic examination shall be performed through the I.D. clad surface for all vessel areas to be examined and through the outside surface for all closure head and bottom head areas to be examined.

The clad surface shall be prepared to the extent possible so that a meaningful ultrasonic examination can be performed for a distance equal to $2T$ (T =wall thickness) on both sides of the welds to be examined to assure a $1T$ examination throughout the thickness of the wall. The crown of the weld overlay beads shall be flattened to the extent that visually discernible "valleys" are left between the beads. The adequacy of clad surface preparation for meaningful UT shall be evaluated in the following manner:

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Place longitudinal mode, 2.0 (minimum) Mhz, search unit, either wheel type or contact type properly coupled on representative area of clad surface (ID) at a point $1/4T$ minimum ($T =$ wall thickness) from centerline of weld and mark spot for reference purposes. With sound beam directed radially toward OD surface, set reflection from OD surface (back reflection, BR) to 90-100% of full linear screen (Cathode Ray Tube screen, CRT) height. Scan in normal fashion, starting at the marked reference spot and moving the search unit a distance equal to at least $1T$ away from, i.e. at 90° , the weld. Scan again in the same manner a distance equal to at least $1T$ at 45° to the weld and then again, parallel to the weld, returning each time to the reference point to check the amplitude of the BR, and to start the required scan. In each of the three scans, note the maximum reduction in BR amplitude in increments of 10%. Surface conditions causing 50% and greater reductions in the calibration BR amplitude shall be considered inadequate for meaningful UT.

6.1.4.4 Examination Requirements

Longitudinal wave testing based on discontinuity indication amplitude and depth (Distance - Amplitude - Correction) shall be performed on all areas defined in Para. 6.1.4.2. Discontinuity indication amplitudes shall be based on side drilled holes, as specified in Appendix IX Para. 3400, "Ultrasonic Examination of Welds", in Section III of ASME Boiler and Pressure Vessel Code. Calibration blocks (by Supplier, Ref. Para. 1.1.17) shall be in the representative condition of vessel; that is, similar construction, configuration, surface finish, materials (clad, base and weld metal) and heat treat. Compatibility, within 25%, with respect to the attenuation, of reference block material and material to be tested shall be demonstrated.

Longitudinal wave testing for area 6.1.4.2c will consist of two (2) perpendicular wave testing scans (from the inside surface of nozzle and from the clad surface of the weld).

Shear wave testing based on discontinuity indication amplitude shall be performed for all areas indicated in Paragraph 6.1.4.2, except for area 6.1.4.2c. Discontinuity indication amplitude, including DAC, calibration shall be established using appropriate side drilled reference holes and basic procedure set forth in Appendix IX to Section III of the ASME Boiler and Pressure Vessel Code. A three (3) percent 75° included angle vee notch reference point ($1/2$ node) shall be included in the calibration for evaluation purposes if needed.

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6.1.5 Reportable Indications

✓ The Supplier shall submit ultrasonic examination reports showing "reportable" indications. The locations of the "reportable" indications shall be shown on a chart or plan drawing of the material. For the reactor vessel examination (Paragraph 6.1.4), the "reportable" indications shall be located relative to vessel assembly reference surfaces and axes. Information relative to the magnitude and depth of the "reportable" indications shall be included. The definition of the "reportable" indications is given below.

6.1.5.1 Plate Material

6.1.5.1a ✓ Longitudinal Wave Examination

- ✓ 1. Laminer defects "LT" which are defined as defects which cause a total loss of initial back reflection and which provide a reflection.
- ✓ 2. Laminer defects "LP" which are defined as defects which lower the initial back reflection by more than fifty percent (50%), but less than one hundred percent (100%) and which provide a reflection.
3. Inclusion type defects "IT" which are defined as defects which cause a total loss of initial back reflection, but which do not provide a reflection.
4. Discontinuities which cause traveling indications. These shall be described with explanatory notes.

6.1.5.1b Shear Wave Examination

Indications whose amplitude equals or exceeds fifty percent (50%) of the calibration standard. (Ref. Para. 6.1.2)

6.1.5.2 Forgings

The indications in Article NB - 2000 of Section III and ASTM A-388, Section 7, (See Para. 2.2.3) as "Reported for Information" and "Recording" respectively.

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6.1.5.3 Cladding

Lack of bond areas outside the 2T zones defined in 6.1.4.3 that equal or exceed 0.2 square inch (1/2 inch diameter).

6.1.5.4 Reactor Vessel or Reactor Vessel Sub-Assemblies. The following reportable indications are applicable to the examination referenced in Para. 6.1.4.

6.1.5.4a Longitudinal Wave Testing (Back Reflection)

When the back reflection is reduced to fifty percent (50%) or less of the initial calibrated back reflection due to the presence of discontinuity indications. The amplitude of the discontinuity indication as a percent of the initial calibrated back reflection shall be recorded in ten percent (10%) increments.

6.1.5.4b Longitudinal Wave Testing (Discontinuity Indication)

When the discontinuity indication equals or exceeds that from the reference discontinuity indication on the Distance Amplitude Curve.

6.1.5.4c Shear Wave Testing

Discontinuity indications whose amplitude equals or exceeds one hundred percent (100%) of the calibration standard. The amplitude of the discontinuity indication as a percentage of the established calibration amplitude shall be recorded in ten percent (10%) increments.

6.2

[REDACTED]

6.2.1

[REDACTED]

6.2.1.1

[REDACTED]

6.2.1.1a

[REDACTED]

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6.2.1.1b [redacted] (Weld surfaces are defined to include base metal surfaces within 1" of the weld surface) [redacted] are subject to mechanical or thermal straining operations and shall be magnetically examined (or magnetic particles applied) [redacted] immediately after the operation.

6.2.1.2 Weld Examinations

6.2.1.2a Dye penetrant examination of the weld between the instrumentation tubes and the bottom head after each layer of weld metal is deposited.

6.2.1.2b Dye penetrant examination of the welds between the control rod drive mechanism housings and the closure head and between the vent pipe and the pressure head after the first layer of weld metal is deposited, after each 1/4" of weld metal is deposited and the final coating.

6.2.1.2c Dye penetrant examination of the welds between the inner and outer support pipes and the pressure head after the first layer of weld metal is deposited. Grinding is performed on the pressure head. All areas shall also be dye penetrant inspected.

6.3 Magnetic Particle Examination

The magnetic particle examination requirements below are in addition to the magnetic particle examination requirements of Section III.

6.3.1 The direct method using electrical contact electrodes (prods) shall be used for the examination of welds, cut edges and weld joint groove preparations.

6.3.2 The indirect method using the electro-magnetic yoke shall be used after final stress relief.

6.3.3 The magnetic particle examination of all exterior surfaces shall be in accordance with Section III.

6.3.3.1 Surface Examination

6.3.3.1a Magnetic particle examination of all exterior vessel and head surfaces shall be performed after stress relief.

6.3.3.1b Magnetic particle examination of all exterior closure stud surfaces shall be performed. Continuous circular and longitudinal magnetization shall be used.

6.3.3.1c Magnetic particle examine all I.D. surfaces of carbon and low alloy steel products that have their properties enhanced by accelerated cooling. This inspection to be performed after forming and prior to cladding.

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6.3.3.2

[REDACTED]

6.3.3.2a All pressure boundary welds shall be examined after any back chipping or back grinding operation.

6.4 Dimensional Inspections

The Supplier shall inspect and record reactor vessel and closure head as-built dimensions in accordance with the document referenced in Paragraph 2.1.6 and 5.1.4.5. This shall not relieve the Supplier of inspecting the dimensions of reactor vessel, closure head and associated equipment to assure compliance with the Supplier drawing and Section III.

6.5 Ⓢ NES Inspections

The following lists of fabrication procedures, tests and inspections are defined as "witness points" which require witnessing by a Ⓢ NES representative.

6.5.1 OPTIONAL WITNESS POINTS

Ⓢ NES requests adequate notification of the following witness points:

- a. All Supplier ultrasonic examinations of base metal, welds and cladding.
- b. In-process dye penetrant examinations of CRDM housing to closure head welds and instrument tube to bottom head welds.
- c. In-process dye penetrant examinations of vessel and closure head flange machined areas.
- d. In-process magnetic particle examinations of areas on vessel and closure head where temporary attachments have been removed.
- e. Preparation and fit up of major assemblies for welding.
- f. Optical alignment of vessel, closure head and major attachments.

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6.5.2 MANDATORY WITNESS POINTS

① NES requires a minimum of seventy-two (72) hours (3 working days) advance notice of the following witness points.

- a. All sub-vendor ultrasonic examinations of pressure boundary plates, forgings, tubes and bars.
- b. Dye penetrant and magnetic particle examinations of the vessel and closure head after final stress relief.
- c. As-built dimensional surveys of the vessel and closure head including CRDM penetrations and installed CRDM housings.
- d. Instrumentation tube rod and ball test.
- e. Hydrostatic test.
- f. Post-hydro dye penetrant examinations of the vessel and closure head interior including flange surfaces.
- g. Post-hydro magnetic particle examinations of the vessel and closure head exterior surfaces.
- h. Post-hydro ultrasonic examination of base metal and welds.
- i. Post-hydro dye penetrant examination of non-ferrous welds on the vessel and closure head.
- j. Final cleanliness inspection of the vessel and closure head.
- k. Installation of main vessel and closure head shipping covers.

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- 4.3.2.1 Fracture Toughness Tests
- 4.3.2.2 Charpy V-notch (C_v) tests and drop weight tests are required.
- 4.3.2.3 Orientation of test specimens shall be as described in the ASME Code, Section III, except that the material is not considered to be subjected to high neutron irradiation.
- 4.3.2.4 An $E_{1/4T}$ of 60°F (15.6°C), or less, is required of all pressure retaining base material (except bolting materials) and heat affected zone and weld metal from the weld procedure qualification tests and weld metal tests.

4.3.3 Non-Pressure Boundary Materials

The materials for non-pressure containing parts shall be in accordance with applicable ASTM or ASME specifications.

4.4 Unacceptable Materials

Sulphur, lead, low melting point metals, their alloys, and their compounds shall be prohibited from use in fabrication, testing, shipping or erection.

Where a satisfactory substitute material free of such contaminants cannot be found, the use of such substances for processing and fabricating metals at room temperature is permissible providing all surfaces, crevices, blind holes, etc., are thoroughly cleaned by the supplier to remove all of the contaminant prior to any operation involving elevated temperatures.

4.4.1 The use of severely sensitized austenitic stainless steel in the pressure boundary is eliminated by not post weld heat treating the wrought stainless safe ends.

Austenitic stainless steel which passes ASTM A-262, Practice E, shall not be considered sensitized.

Sensitized austenitic stainless steel cladding used for corrosion resistant linings is acceptable.

5.0 TESTS AND INSPECTIONS

The equipment to be furnished by the Supplier shall be tested and inspected in accordance with the ASME Boiler and Pressure Vessel Code, Section III, Rules for Construction of Nuclear Vessels and all applicable Code Cases and Addenda for Class 1 vessels in effect at the date of the purchase order. Code Cases, Addenda or later editions of Section III may be used if agreed upon by PWR-SD and the Supplier. Tampa Quality Control System shall be in compliance with Appendix IX of ASME Code, Section III.

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5.2.1.2 Inspection Program

The Inspection Program required by ASME Boiler and Pressure Vessel Code, Section III, Appendix IX, shall be submitted for review.

5.2.1.3 Quality Audits

Provisions shall be made for periodic FWR-SD audits of the Tampa Quality Assurance Program.

5.2.1.4 Documentation

One (1) copy of Quality Assurance Documentation shall be submitted to FWR-SD to provide for customer record audit.

5.2.1.5 Deviations

Tampa deviations that affect installation, maintenance or operation shall be sent promptly to FWR-SD for AE/customer information. Tampa shall obtain FWR-SD concurrence on deviations that may affect performance or installation.

5.2.1.6

Vessel surfaces, not including the support skirt, shall be magnetic and/or dye penetrant inspected as required by Section III of the ASME Boiler & Pressure Vessel Code and in addition the following tests to the same. Section III standards shall be performed.

- a. Dye penetrant inspection of cladding after post-weld heat treatment.
- b. Magnetic particle inspection of all unclad ferritic surfaces of the completed pressurizer vessel.

5.3 Heater Tests and Inspections

5.3.1 Heater Tubing

The following inspections and tests shall be performed on all tubing prior to fabrication into heater sheaths.

- 5.3.1.1 Ultrasonic inspection - Tubing shall be ultrasonically examined to a procedure capable of detecting all surface and internal discontinuities. Tubing shall be free of all indications in excess of those produced by the reference notches which shall not exceed 1/2 inch long and .004 inch deep.

- *5.1.2 The vessel shall be hydrostatically tested at a temperature established by the supplier to be safe from brittle fracture. It is recommended that the test be made at a temperature not less than $RT_{MDT} + 60^{\circ}F$. The pressurizer must be capable of a subsequent field hydrotest at a temperature range between 120° and $250^{\circ}F$.
- *5.2.1.3 WTD Quality Control System shall be in compliance with ASME Code Section III and Appendix B of NRC 10CFR50.
- *5.2.1.6b Magnetic particle inspection of all external pressure boundary welds of the completed pressurizer vessel.
- 6.2.1 Fifty (50) copies of the final issue of the Technical Manuals are required.
- 7.2 Information on the nameplate shall be in English.

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