



IES Utilities Inc.
200 First Street S.E.
P.O. Box 351
Cedar Rapids, IA 52406-0351
Telephone 319 398 8162
Fax 319 398 8192

John F. Franz, Jr.
Vice President, Nuclear

September 15, 1995
NG-95-2236

Mr. William T. Russell, Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Station P1-37
Washington, DC 20555-0001

Subject: Duane Arnold Energy Center
Docket No: 50-331
Op. License No: DPR-49
Requests for Relief from ASME Section XI Requirements:
NDE-012 through NDE-018

References: 1) Letter from J. Franz (IES Utilities Inc.) to W. Russell (NRC),
NG-94-3888 dated November 4, 1994
2) Letter from G. Kelly (NRC) to L. Liu (IES) dated
November 30, 1994, Request for Additional Information
on Relief Request

File: A-100, A-286b, A-351

Dear Mr. Russell:

In Reference 1, IES Utilities Inc. submitted requests for relief from certain ASME Code requirements. Your Staff asked that we revise these requests using guidance provided in Reference 2. We have revised the previously submitted relief requests (NDE-012 through NDE-015) accordingly. In addition, we have identified the need for three new relief requests (NDE-016 through NDE-018). The relief requests and supporting information are included as an attachment.

We request approval of the reliefs by March 15, 1996 in order to support examination scheduling for our next refueling outage, currently planned to begin in October, 1996.

250032
9509250210 950915
PDR ADOCK 05000331
PDR

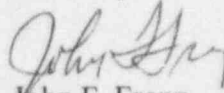
An IES Industries Company

A047.1

Mr. William T. Russell
September 15, 1995
NG-95-2236
Page 2

Should you have any questions regarding this matter, please contact this office.

Sincerely,



John F. Franz
Vice President, Nuclear

Attachment

JFF/CJR/snz

N:\Iowa\Licensing\NG-95\95-2236

cc: C. Rushworth
L. Liu (w/o)
L. Root (w/o)
B. Fisher (w/o)
G. Kelly (NRC-NRR)
H. Miller (Region III)
NRC Resident Office
Docu

DUANE ARNOLD ENERGY CENTER
2ND 10-YEAR INTERVAL
REQUEST FOR RELIEF NO. NDE-012

I SYSTEM/COMPONENT(S) FOR WHICH RELIEF IS REQUESTED

HEA-CC-08 (1 through 4) Residual Heat Removal (RHR) Heat Exchanger Integral Attachment Welds

EXAMINATION CATEGORY C-C, ITEM(S) C3.10

II CODE REQUIREMENT

Section XI (1980 W81 ADD), Table IWC-2500-1 Category C-C, Item C3.10 requires a surface examination of essentially 100% of weld length once during the ten year interval.

III CODE REQUIREMENT FROM WHICH RELIEF IS REQUESTED

Relief is requested from performing essentially 100% of the weld length for HEA-CC-08 (1 through 4).

IV BASIS FOR RELIEF

The design of the support does not allow access to the entire length of weld as required for the code examination. In order to perform the surface examination of the inaccessible portion of 14" on each support, the RHR heat exchanger would be required to be supported by alternate supports while the bolts were removed to allow access for the examination. The dose rates in this area are 50 to 70 mr/hr. Examining the 14" of weld for each support has only a small potential for increasing plant safety margins and a very disproportionate impact on expenditures of plant manpower and radiation exposure.

V ALTERNATE EXAMINATIONS

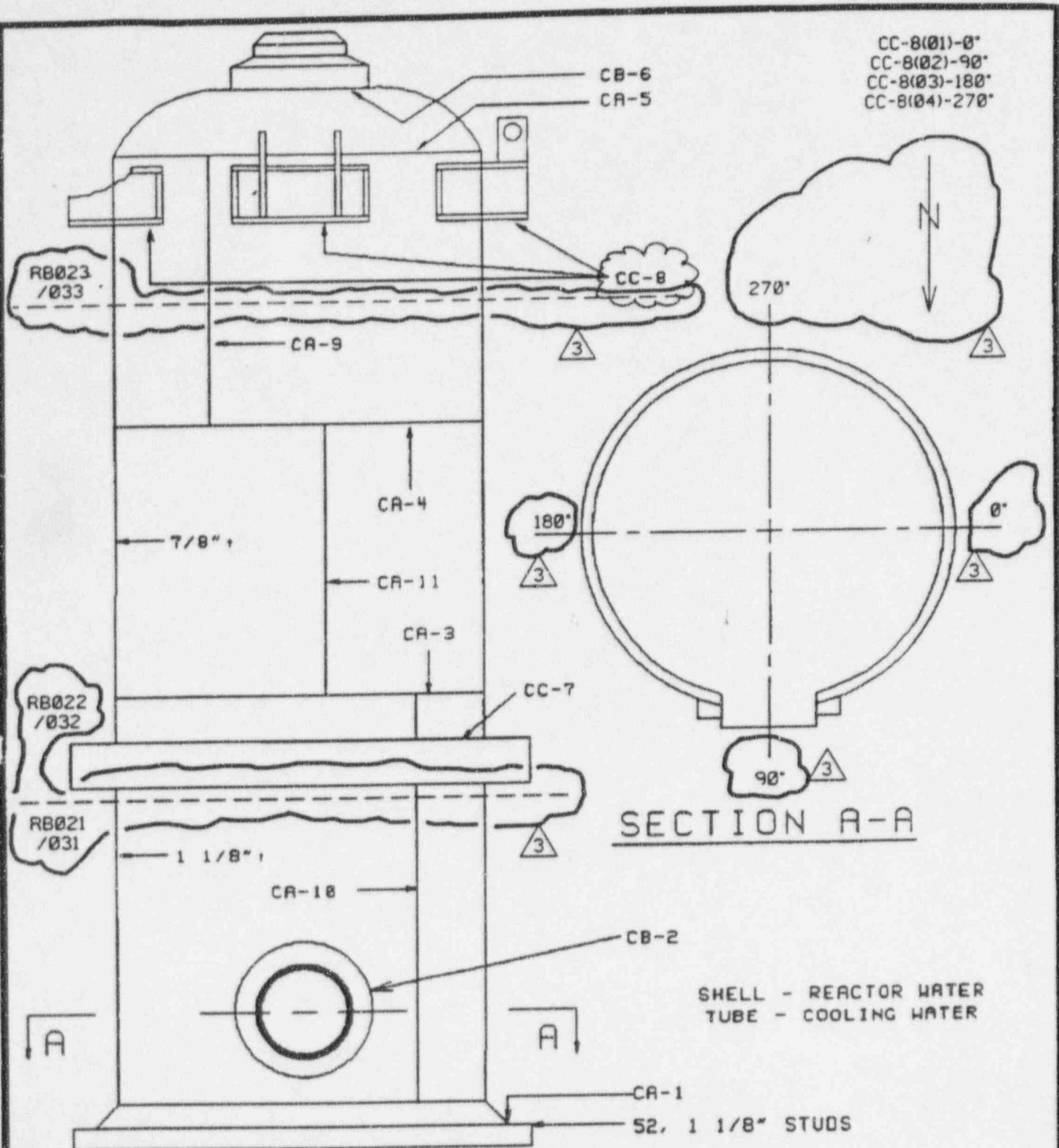
IES Utilities Inc. proposes to perform a surface examination of the accessible 82.5% of the weld length for each of the four welds (HEA-CC-08, 1 through 4). The examination coverage specified in Code Case N-460 will be utilized.

VI JUSTIFICATION FOR THE GRANTING OF RELIEF

To perform an examination of the inaccessible 14" of weld length, the RHR heat exchanger would be required to be supported by alternate supports while the bolts were removed to allow access for the examination. Performing this activity in order to examine the additional 14" results in only a small potential for increasing plant safety margins and a very disproportionate impact on expenditures of plant manpower and radiation exposure.

VII IMPLEMENTATION SCHEDULE

This relief request will be implemented during the 2nd Ten Year Interval.



RHR HEAT EXCH A & B
HEA-, HEB-
FIGURE NO. 2.1-01

DRAWING RELEASE RECORD

REV	DATE	PREPARED	REVIEWED	APPROVED	PURPOSE
1	4-26-86	SM	SM	RCM	ISO'S FOR 2nd 10 YEAR PLAN
2	9-18-90	DA	DA	RCM	ISO'S TO CAD FORMAT AS PER NC-89-0754
3	8/23/94	DA	RCM	RCM	REVISED PER ISI INSPECTION WALKDOWN

RECORD OF NONDESTRUCTIVE EXAMINATION
MAGNETIC PARTICLE - (DRY OR WET METHOD) MT-1

MAR NO NA MIF STEP NA DCP/PMF NO NA TRAVELER NO NA INDEX ITEM NA
GIR NO. NA ISI NO 91-308 309 310 311 MCR NO NA
COMPONENT OR SYSTEM HEA-CL-2 (1-1000) DWG. OR ISO NO 2.1-1
THICKNESS 1" PROCEDURE NO. 2162.4 REV 0 PCN NA ACCEPT STD 6.10.1
EQUIPMENT NO. ID 20-156 CAL DUE DATE 7-9-92 (AC) DC
DC CURRENT GUN NA CAL DUE DATE NA
YOKE/PROD SPACING 5-8" AMP NA DRY POWDER: RED NA BLACK NA
MX-WCP BATCH NO NA 9 CH RED BATCH NO NA 7 C-F BLACK BATCH NO 89KIBK

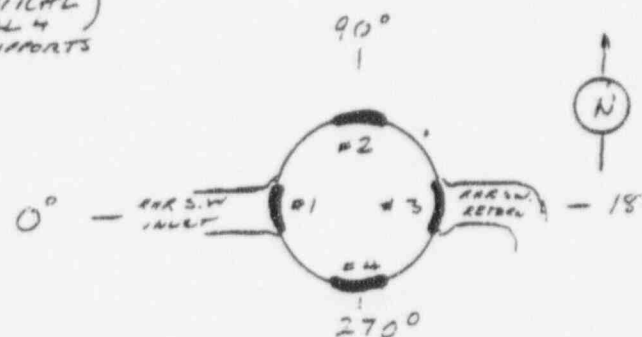
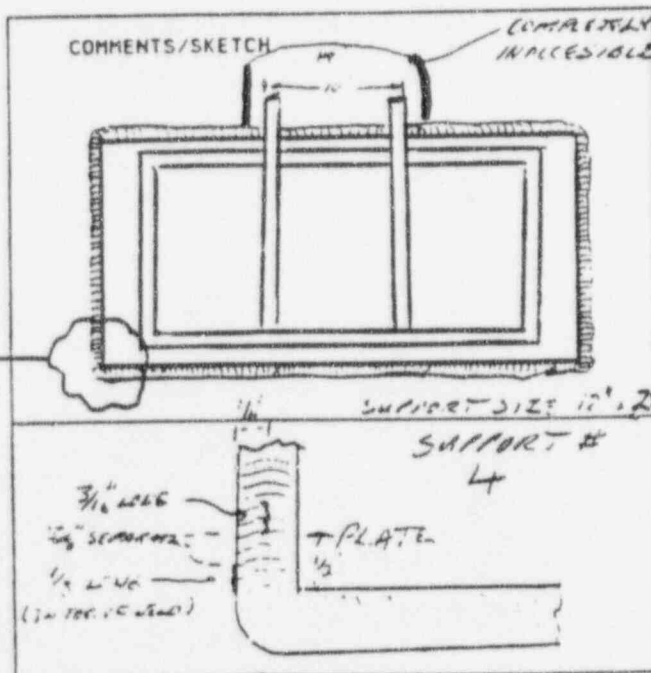
ITEM	INITIAL INSPECTION		DEFECT CODE#	INITIAL INSPECTION REMARKS (SIZE/LOCATION)	REINSPECTION		DEFECT CODE#	REINSPECTION REMARKS (SIZE/LOCATION)
	ACC	REJ			ACC	REJ		
91-308 #1 90° RE	✓		N/A					
91-309 #2 90° RE	✓		NA					
91-310 #3 180° RE	✓		NA					
91-311 #4 270° RE	✓	✗	LI	SEE BELOW				

DEFECT CODE

P - POROSITY, R - ROUNDED, LI - LINEAR INDICATION, LA - LAMINATION, O - OTHER

SEE Attached Evaluation

NOTE - CHECK CONTRAST PAINT USE



ORIENTATION

EXAMINER: Frank E. Schmen 1-14-92
SIGNATURE/LEVEL/DATE
REVIEWED BY: Frank E. Schmen 1-16-92
LEVEL III SIGNATURE/DATE
REVIEWED BY: William M. Hall 1-2-93
ANII SIGNATURE/DATE

DUANE ARNOLD ENERGY CENTER
2ND 10-YEAR INTERVAL
REQUEST FOR RELIEF NO. NDE-013

Attachment to
NG-95-2236
Page 4 of 52

I SYSTEM/COMPONENT(S) FOR WHICH RELIEF IS REQUESTED

RBA-J007 Recirculation Bypass weld

EXAMINATION CATEGORY B-J, ITEM(S) B9.11

II CODE REQUIREMENT

Section XI (1980 W81 ADD), Table IWB-2500-1 Category B-J, Item B9.11 requires a volumetric examination which includes essentially 100% of weld length once during the ten year interval.

III CODE REQUIREMENT FROM WHICH RELIEF IS REQUESTED

Relief is requested from performing essentially 100% of the weld length for Recirculation Bypass Weld RBA-J007.

IV BASIS FOR RELIEF

The weld is a tee-to-flange configuration which limits the volumetric (UT) examination to a one-sided exam from the tee side. In addition, the tee configuration limits the one-side examination to 85% of the weld length. In order to perform a radiograph of the weld, the recirculation system would be required to be drained, thus increasing exposure to personnel by a factor of 1.7 (50 mr/hr vs 29 mr/hr) for a total of 120 mr for the additional 15% coverage. This is the additional exposure for the examination, installation and removal of insulation and shielding; it does not include any additional exposure resulting from the time spent performing valve line-ups or system draining. Examining the additional 15% of weld length has only a small potential for increasing plant safety margins and a very disproportionate impact on expenditures of plant manpower and radiation exposure to perform the radiography.

V ALTERNATE EXAMINATIONS

IES Utilities Inc. proposes to perform volumetric examination of the accessible weld, obtaining a total of 85% coverage for this weld length. The examination coverage specified in Code Case N-460 will be utilized.

VI JUSTIFICATION FOR THE GRANTING OF RELIEF

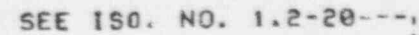
To perform the additional 15% of weld length the Recirculation System would be required to be drained, thus increasing exposure to personnel. Examining the additional 15% of weld length has only a small potential for increasing plant safety margins and a very disproportionate impact on expenditures of plant manpower and radiation exposure to perform the radiography.

VII IMPLEMENTATION SCHEDULE

This relief request will be implemented during the 2nd Ten Year Interval. This weld was included in the Refueling Outage (RFO) 8 Summary Report.

DRAWING RELEASE RECORD

• - NON INTEGRAL



4P
2-24-92



GE Nuclear Energy

WALL THICKNESS PROFILE SHEET

ISI NO. 89-186

SITE: DIANE ARNOLD UNIT: I'

PROJECT NO: CT 662

REPORT NO.

R-15B

POSITION	0°	90°	180°	270°
1			.52	
2			.44	
3	N/A		.40	N/A
4			N/A	
5			N/A	

SYSTEM ID RELIRC

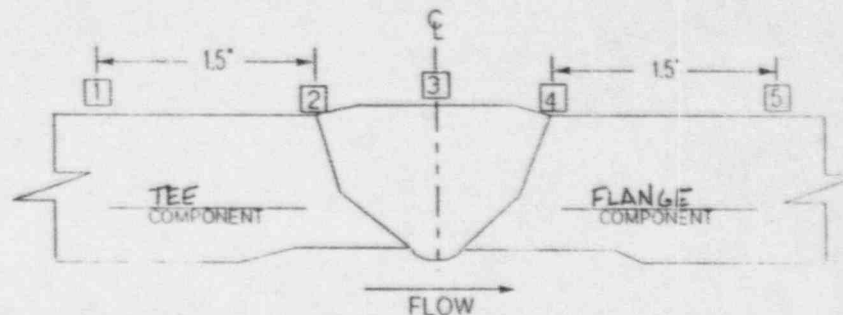
WELD ID NO. RBA-J007

CROWN HEIGHT: .05"

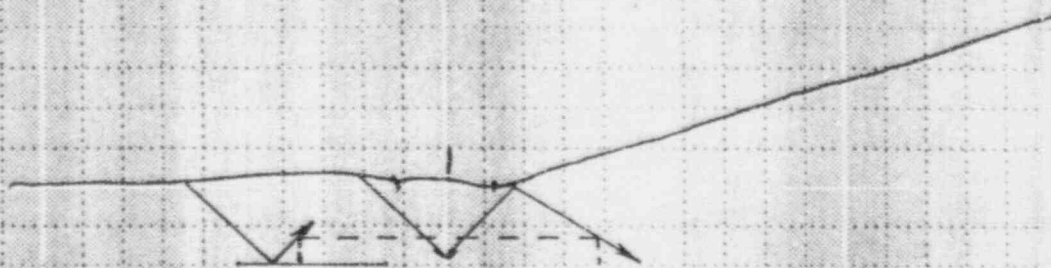
CROWN WIDTH: .5"

NOM. DIAMETER: 4.0"

WELD LENGTH: 14.5"



AP
7-24-90



PROPOSED COVERAGE PLOT

RECURRING COPY

[Signature]
Examiner

E 7-16-90
Level Date

[Signature]
Reviewed By

II 7-17-90
Level Date

[Signature]
Reviewed By

III 7-18-90
Title Date

Page 2 of 3

FORM 135 1-13-90





GE Nuclear Energy

ULTRASONIC CALIBRATION DATA SHEET

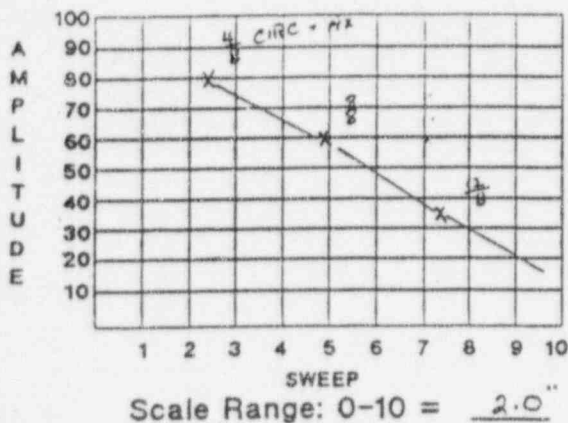
(MANUAL EXAMINATION)

SITE: DUANE ARNOLD UNIT: 1
PROJECT NO: CT-662

CALIBRATION SHEET NO. C-D97
LINEARITY SHEET NO. L-D05

Procedure No. GE-UT-102 Rev. 2 FRR No.: N/A
Instrument KRAUTKRAMER USK-75 31459-1548
Manufacturer Model Serial No.
Search Unit KBA .25" 2.25 MHz 45°/S K24938
Manufacturer Size Freq. Angle/Mode Serial No.
Cable RG-174 6' 2
Type Length Connectors
Calibration Standard IE-18 SS .35" 72°F
Serial No. Material Thickness Temp.
Couplant ULTRACEL II 8976 Thermometer 1956
Brand Batch No. Serial No.

DAC



INSTRUMENT SETTINGS

DAC Construction Sensitivity
Gain - Axial Scan 32 dB Gain - Axial Scan 32 dB
Gain - Circ. Scan 38 dB Gain - Circ. Scan 38 dB
Freq. Auto Rep Rate Fixed
Range 2.5 Resolution Fixed
Sweep 3.75 Damping Pos I
Delay 10.06 Reject OFF
Filter Fixed
Jack ☒ R ☐ T

FIELD SIMULATOR: N/A S/N: N/A

CALIBRATION VERIFICATION

REFLECTOR	INITIAL CALIBRATION TIME	VERIFICATION TIMES
MAX. AMP.	1030	1300
SWEEP	1510	N/A

WELDS EXAMINED	REPORT NO.
RBA-J001	R-153
RBA-J002	R-155
RBA-J003	R-156
RBA-J006	R-157
RBA-J007	R-158
RBA-J008	R-159
RBA-J009	R-160

COMMENTS: WELDS CONT.	REPORT NO.
RBA-J010	R-161

Aschelt II 7-16-90
Examiner Level Date
John A. [Signature] I 7-16-90
Examiner Level Date

[Signature] II 7-17-90
Reviewed Level Date
CB III 7-18-90
Reviewed Title Date

Page 1 of 1

LMT-UTX1 10/77

Lambert • MacGill • Thomas, Inc.



Testing • Engineering • Service • Training
515 Aldo Avenue
Santa Clara, CA 95050
408-980-9333

Location DAEC
Report No. 97-157
Cal. No. 3F-10 Time 154
Job No. TEL-03-
Date 3-31-87
Page 1 of 1

REPORT OF VISUAL AND ULTRASONIC EXAMINATION

ISI ID: RBA-RJ-7

I T E M	Description <u>TEE / PIPE</u> Size <u>4" SCH 80</u> Material <u>SS</u> S/N(s) <u>RD-N-A9-A-S-</u>								
	A LOOP								
	Location <u>DRY WELL</u> Preparation <u>AS WELDED</u> Temp <u>70°</u>	ISI ID: <u>RBA-RJ-7</u>							
S I G N	Examiner/Level <u>J. Flint / II</u> Examiner/Level <u>R.E. Coz II</u> Review/Level <u>J. Flint / II</u>								
	Authorized Inspector <u>J. Brent</u> 4-3-87 Customer <u>Kump, S. Smead</u> 4-3-87								
E Q U I P C O N T	Tester 1 <u>NOATEC 131-D</u> S/N <u>417</u> 2 <u>SLAVE</u> S/N <u>20</u>								
	Recorder 1 <u>N/A</u> S/N <u>N/A</u> 2 <u>N/A</u> S/N <u>N/A</u>								
	Transducer 1 <u>C3354, HARI SONIC, 5X5, 1.54MHz</u> 2 <u>N/A</u>								
	3 <u>N/A</u> 4 <u>N/A</u>								
	Couplant <u>LMT-GEL</u> Cable <u>COAX 6'</u> Marker <u>N/A</u> Photo <u>N/A</u>								
P R O C	Calibration Procedure <u>UT-41</u> Rev. <u>S, EC, 1, 2, 4, 3</u>								
	Examination Procedure <u>UT-41</u> Rev. <u>S, EC, 1, 2, 4, 3</u>								
	Recording Procedure <u>N/A</u> Rev. <u>N/A</u>								
C A L I B	PIPE SEC. Calib. Blk. <u>90359</u> Temp. <u>70°</u> Ref. <u>ID NOTCH</u> Amp. <u>80%</u> Sweep <u>2.0 DIV</u>								
	Ref. Gain <u>52/55</u> Damp. <u>OFF</u> Reject <u>OFF</u> Gate <u>1-10 DIV</u>								
	Alarm <u>N/A</u> Mag. Tape Count <u>N/A</u> Chart <u>N/A</u> Cal. Check Time <u>1540</u>								
E X A M I N A T I O N	Cal. Ref. Blk. <u>RAMPAS</u> Ref. Refl. <u>1" x 2" MP</u> Amp. <u>95%</u> Sweep Position <u>4.0 & 8.0 DIV</u>								
	Scan Gain <u>64/67</u> Ref. Dwg. <u>1.2-19</u> Reject Level <u>ASME XI</u> Report Level <u>ASME XI</u>								
	NAD = No Apparent Disc. L = Linear G = Geometry S = Spot M = Multiples								
	Scan	Type	Disp.	Scan	Type	Disp.	Scan	Type	Disp.
	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
	1	↓ FLOW	NAD	7	45° SKEW FLOW	N/A	13		
	2	↓ FLOW	N/A	8	45° SKEW FLOW	N/A	14		
	3	11 CW	NAD	9	N/A	N/A	15		
	4	11 CCW	NAD	10			16		
	5	45° SKEW FLOW	NAD	11			17		
6	45° SKEW FLOW	NAD	12			18			
			Scan Description of Indications 1 SCAN LIMITED TO ONE SIDE & LIMITED SCAN DUE TO CONFIGURATION (11 to 1 o'clock) 2, 7, 8 NO SCAN DUE TO CONFIGURATION.						

11114 Rev D Sketch

Lambert • MacGill • Thomas, Inc.

Testing • Engineering • Service • Training

515 Aldo Avenue
Santa Clara, CA 95050
408-980-9333

Location LA 5
Cal. No. GE-10 Time 4:48
Job No. 1EL-034
Date 3-31-87
Page 1 of 1

REPORT OF ULTRASONIC CALIBRATION

SIGN	Examiner/Level <u>J. Flint II</u>	Examiner/Level <u>D.E. Coz II</u>	Review/Level <u>J. Flint II</u>
	Authorized Inspector <u>J. Flint 4-3-87</u>		Customer <u>Kum-San 4-3-87</u>

EQUIPMENT	Instrument <u>NORTEC 131D</u>	S/N <u>417</u>	ReCal Due <u>5-20-87</u>	SU Cable <u>6' COAX</u>																					
	Instrument <u>SLAVE</u>	S/N <u>20</u>	ReCal Due <u>6-4-87</u>																						
	Recorder <u>N/A</u>	S/N <u>N/A</u>	ReCal Due <u>N/A</u>																						
	Recorder <u>N/A</u>	S/N <u>N/A</u>	ReCal Due <u>N/A</u>																						
	VERTICAL LINEARITY CHECK																								
	<table border="1" style="width:100%; border-collapse: collapse; text-align: center;"> <tr> <td>SIGNAL 1</td> <td>100</td> <td>90</td> <td>80</td> <td>70</td> <td>60</td> <td>50</td> <td>40</td> <td>30</td> <td>20</td> <td>10</td> </tr> <tr> <td>SIGNAL 2</td> <td>50</td> <td>45</td> <td>40</td> <td>35</td> <td>30</td> <td>25</td> <td>20</td> <td>15</td> <td>10</td> <td>5</td> </tr> </table> <p style="text-align: center;">Signal 2 shall equal 50% of Signal 1 within $\pm 5\%$ of full scale.</p>				SIGNAL 1	100	90	80	70	60	50	40	30	20	10	SIGNAL 2	50	45	40	35	30	25	20	15	10
SIGNAL 1	100	90	80	70	60	50	40	30	20	10															
SIGNAL 2	50	45	40	35	30	25	20	15	10	5															

PROC	Procedure <u>UT-4</u> Rev <u>5</u> Date <u>3-7-87</u> Field Change <u>4,2,3</u> Date <u>3-27-87 FC</u> <u>3-18-87 FC</u>			
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CALIBRATION	Cal. Block Type <u>PIPE SEGMENT</u>	S/N <u>80359</u>	Ref. Refl. <u>1.0</u>	Temp. <u>70°F</u>																														
	Verification/Ref. Blk. <u>ROMPAS</u>	S/N <u>LMT037</u>	Ref. Refl. <u>1", 2" MP</u>	Temp. <u>70°F</u>																														
	<table border="1" style="width:100%; border-collapse: collapse; text-align: center;"> <tr> <th colspan="3">INSTRUMENT SETTINGS</th> </tr> <tr> <th>0°</th> <th>Angle Beam</th> <th>Digital</th> </tr> <tr> <td>Gain</td> <td><u>N/A</u> <u>52/55</u></td> <td><u>1.0=1"</u></td> </tr> <tr> <td>Sweep</td> <td><u>1</u> <u>10/966</u></td> <td><u>4.0=4"</u></td> </tr> <tr> <td>Delay</td> <td><u>1/002</u></td> <td><u>5.0=5"</u></td> </tr> <tr> <td>Reject</td> <td><u>OFF</u></td> <td><u>N/A</u></td> </tr> <tr> <td>Damp.</td> <td><u>OFF</u></td> <td></td> </tr> <tr> <td>Freq.</td> <td><u>2.25MHz</u></td> <td></td> </tr> <tr> <td>Video/Filt.</td> <td><u>1+</u></td> <td></td> </tr> <tr> <td>Rep. Rate</td> <td><u>N/A</u> <u>1K</u></td> <td><u>N/A</u></td> </tr> </table>				INSTRUMENT SETTINGS			0°	Angle Beam	Digital	Gain	<u>N/A</u> <u>52/55</u>	<u>1.0=1"</u>	Sweep	<u>1</u> <u>10/966</u>	<u>4.0=4"</u>	Delay	<u>1/002</u>	<u>5.0=5"</u>	Reject	<u>OFF</u>	<u>N/A</u>	Damp.	<u>OFF</u>		Freq.	<u>2.25MHz</u>		Video/Filt.	<u>1+</u>		Rep. Rate	<u>N/A</u> <u>1K</u>	<u>N/A</u>
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	Gain	<u>N/A</u> <u>52/55</u>	<u>1.0=1"</u>																															
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<table border="1" style="width:100%; border-collapse: collapse; text-align: center;"> <tr> <th>IRD</th> <th>.4</th> <th>.75</th> <th>1.25</th> <th>1.7</th> <th>1.85</th> </tr> <tr> <th>MP</th> <td>.49</td> <td>1.08</td> <td>1.48</td> <td>2.08</td> <td>2.43</td> </tr> </table>				IRD	.4	.75	1.25	1.7	1.85	MP	.49	1.08	1.48	2.08	2.43																			
IRD	.4	.75	1.25	1.7	1.85																													
MP	.49	1.08	1.48	2.08	2.43																													
<table border="1" style="width:100%; border-collapse: collapse; text-align: center;"> <tr> <th colspan="2">CAL. CHECK TIME</th> </tr> <tr> <td>1457</td> <td></td> </tr> <tr> <td>1519</td> <td></td> </tr> <tr> <td>1522</td> <td></td> </tr> <tr> <td>1540</td> <td></td> </tr> <tr> <td>1547</td> <td></td> </tr> </table>				CAL. CHECK TIME		1457		1519		1522		1540		1547																				
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1457																																		
1519																																		
1522																																		
1540																																		
1547																																		

DUANE ARNOLD ENERGY CENTER
2ND 10-YEAR INTERVAL
REQUEST FOR RELIEF NO. NDE-014

Attachment to
NG-95-2236
Page 12 of 52

I SYSTEM/COMPONENT(S) FOR WHICH RELIEF IS REQUESTED

RBA-J012 Recirculation Bypass Weld

EXAMINATION CATEGORY B-J, ITEM(S) B9.11

II CODE REQUIREMENT

Section XI (1980 W81 ADD), Table IWB-2500-1 Category B-J, Item B9.11 requires a volumetric examination which includes essentially 100% of weld length once during the ten year interval.

III CODE REQUIREMENT FROM WHICH RELIEF IS REQUESTED

Relief is requested from performing essentially 100% of the weld length for Recirculation Bypass Weld RBA-J012.

IV BASIS FOR RELIEF

This weld is a valve-to-weldolet configuration which limits the volumetric examination coverage to 76% of the weld length. In order to perform a radiograph of the weld, the recirculation system would be required to be drained, thus increasing exposure to personnel by a factor of 1.7 (50 mr/hr vs 29 mr/hr) for a total of 435 mr for the additional 24% coverage. This is the additional exposure for the examination, installation and removal of insulation and shielding; it does not include any additional exposure resulting from the time spent performing valve line-ups or system draining. Examining the additional 24% of weld length has only a small potential for increasing plant safety margins and a very disproportionate impact on expenditures of plant manpower and radiation exposure to perform the radiography.

V ALTERNATE EXAMINATIONS

IES Utilities Inc. proposes to perform volumetric examination utilizing the required 45° shear supplemented with a 70° Refracted Longitudinal exam of the accessible weld, obtaining a total of 76% coverage for this weld. The alternative examination coverage specified in Code Case N-460 will be utilized.

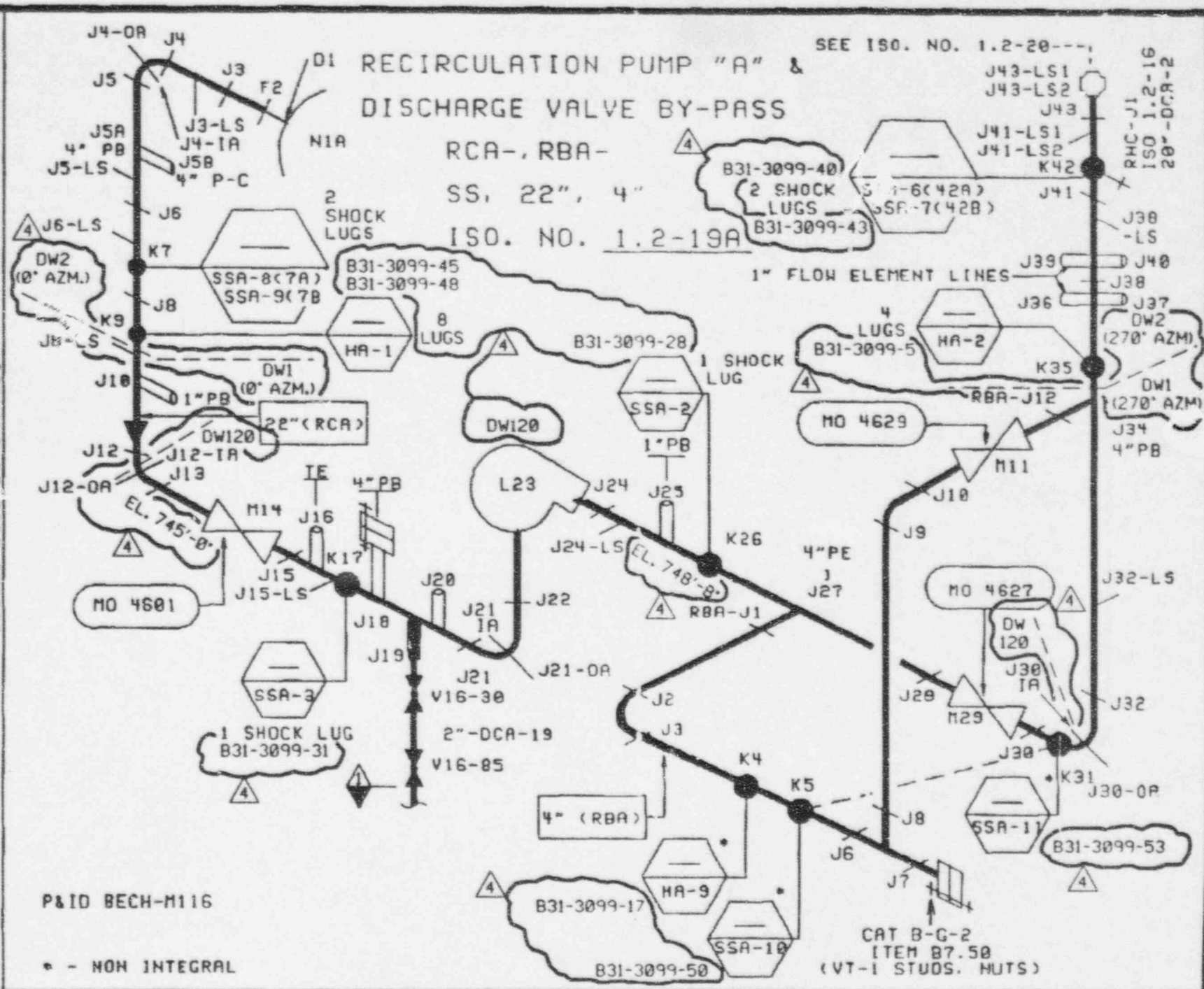
VI JUSTIFICATION FOR THE GRANTING OF RELIEF

Examining the additional 24% of weld length would require draining the Recirculation System which would result in increased exposure to personnel. This additional examination has only a small potential for increasing plant safety margins and a very disproportionate impact on expenditures of plant manpower and radiation exposure to perform the radiography.

VII IMPLEMENTATION SCHEDULE

This relief request will be implemented during the 2nd Ten Year Interval. RBA-J012 was included in the Refueling Outage (RFO) 8 Summary Report.


REV	DATE	PREPARED	REVIEWED	APPROVED	PURPOSE
1	8-13-86	STL	STL	RCH	ISO'S FOR 2nd 10 YEAR PLAN
2	9-24-90	DA	GP	KKH	ISO'S TO CNO FORMAT AS PER MC-85-8794
3	4-2-93	DA	GP	GP	ADDED FLANGE
4					REVISED PER ISI INSPECTION WALKDOWN



* - NON INTEGRAL

RHC-J1
ISO 1.2-16
20"-0.9-2

Attachment to
NG-95-2236
Page 13 of 52

 GE Nuclear Energy		RESOLUTION SHEET		REPORT NO.: <u>R-178</u>	
PROJECT: <u>DUANE ARNOLD</u>			PROCEDURE: <u>GE-UT-102</u>		
			REV. <u>2</u> FRR NO. <u>N/A</u>		
			N/A REV. <u>N/A</u> FRR NO. <u>N/A</u>		
			N/A REV. <u>N/A</u> FRR NO. <u>N/A</u>		
SYSTEM: <u>RECIRCULATION</u>			NDE METHOD: <input type="checkbox"/> MT <input type="checkbox"/> PT <input checked="" type="checkbox"/> UT <input type="checkbox"/> VT		
WELD NO.: <u>RBA-3012</u>			WELD TYPE: <input checked="" type="checkbox"/> CIRCUMFERENTIAL		
CONFIGURATION: <u>VALVE TO WELD-O-LET</u>			<input type="checkbox"/> LONGITUDINAL <input type="checkbox"/> OTHER <u>N/A</u>		
EXAMINER: <u>H. SCHLORTT</u> LEVEL <u>II</u>			CAL SHEET NO(S): <u>C-118, C-119</u>		
EXAMINER: <u>N/A</u> LEVEL <u>N/A</u>			REPORT NO. (S): <u>R-178 ISI No. 89-190</u>		
EXAMINER: <u>N/A</u> LEVEL <u>N/A</u>					

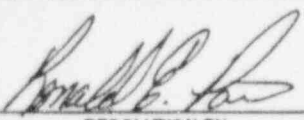
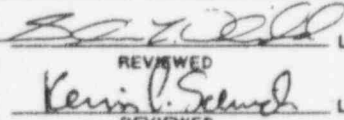
DURING THE MANUAL EXAMINATION OF THE ABOVE REFERENCED WELD, NO INDICATIONS ASSOCIATED WITH IGSCC WERE RECORDED UTILIZING A 45° SHEAR WAVE SEARCH UNIT.

A SUPPLEMENTAL EXAMINATION WAS PERFORMED UTILIZING A 70° REFRACTED LONGITUDINAL WAVE SEARCH UNIT RESULTING IN NO RECORDABLE INDICATIONS. THIS EXAMINATION WAS PERFORMED DUE TO THE CONFIGURATION OF THE VALVE AND WELD-O-LET.

DUE TO THE ABOVE MENTION CONFIGURATION THE 45° SHEAR WAVE EXAMINATION WAS LIMITED TO CIRCUMFERENTIAL SCANS ONLY. THE 70° R.L. WAS UTILIZED FOR THE AXIAL SCANS.

PREVIOUS DATA WAS REVIEWED PRIOR TO THIS RESOLUTION WITH NO SIGNIFICANT CHANGE NOTED.

RECORD COPY

 RESOLUTION BY		LEVEL <u>II</u> DATE <u>7-18-90</u>		 REVIEWED		LEVEL <u>III</u> DATE <u>7-20-90</u>		PAGE <u>1</u> OF <u>4</u>	
				REVIEWED				FORM 135 12-8-89	

ANII

7-31-90



GE Nuclear Energy

WALL THICKNESS PROFILE SHEET

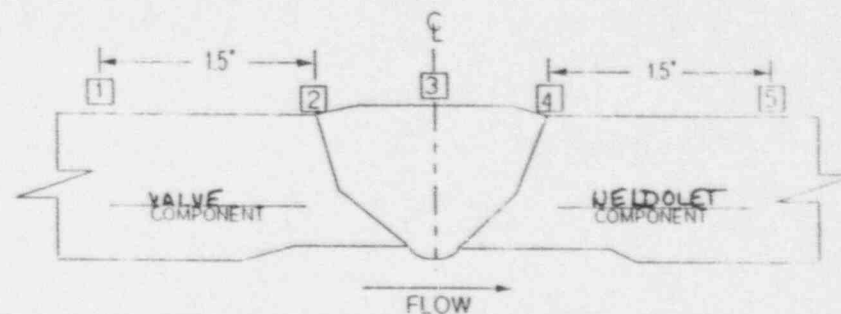
ISI No. 89-190

SITE: DUANE ARNOLD UNIT: I

REPORT NO.

PROJECT NO: CT-662R-178

POSITION	0°	90°	180°	270°
1	1.0			
2	.75			
3	.62		N/A	
4	N/A			
5	N/A			

SYSTEM ID RECIRCWELD ID NO. RBA-J012CROWN HEIGHT: .05CROWN WIDTH: .8NOM. DIAMETER: 4.0WELD LENGTH: 14.5

RECORD COPY



PROPOSED COVERAGE PLOT 45° SHEAR WAVE UTILIZED ON CIRCUMFERENTIAL SCANS
 70° R.L. SUPPLEMENTAL FOR AXIAL SCANS

[Signature]
 Examiner

I 7-14-90
 Level Date

[Signature]
 Reviewed By

II 7-18-90
 Level Date

[Signature]
 Reviewed By

III 7-20-90
 Title Date

Page 2 Of 4

FORM 1.18 1-13-90

Attachment to
 NG-95-2236
 Page 15 of 52



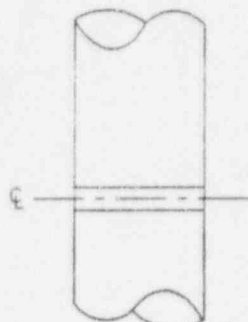
GE Nuclear Energy

ULTRASONIC EXAMINATION DATA SHEET (MANUAL PIPING)

 SITE: DUANE ARNOLD UNIT: 1
 PROJECT NO: CT-662

 REPORT NO. R-178
 CALIBRATION SHEET NO. C-118
PROCEDURE: GE-UT-102 REV 2 FRR N/ASYSTEM: RecircWELD ID: RBA-J012START TIME 0805FINISH TIME 0812MATERIAL TYPE: ☐ CS ☒ SS ☐ OTHER N/AEXAM SURFACE ☐ ID ☒ ODEXAM SURFACE TEMP 80 °FTHERMOMETER S/N 1802AXIAL SCAN SENSITIVITY 48 dBCIRC SCAN SENSITIVITY 58 dBL₀ REFERENCE Rule #1 TDCW₀ REFERENCE Weld Cr

1. WITH FLOW
2. AGAINST FLOW
3. CLOCKWISE
 - a. upstream b. downstream
4. COUNTER CLOCKWISE
 - a. upstream b. downstream
5. L-WAVE BASE METAL
6. OTHER N/A

F
L
O
WWeld-o-let
IDENTITYVALVE
IDENTITY

PERFORMED INDICATIONS

YES NO YES NO

1		✓		✓
2		✓		✓
3a	✓			✓
3b	✓			✓
4a	✓			✓
4b	✓			✓
5		✓		✓
6		✓		✓

INDICATION NO.	L (in) FROM REF			W (in) FROM REF			MAX AMP % DAC	SWEEP READING			EXAM 1 - 6	NOMINAL SCANNING ANGLE	
	L ₁	L _{MAX}	L ₂	W ₁	W _{MAX}	W ₂		SW ₁	SW _{MAX}	SW ₂			
NO RECORDABLE INDICATIONS												3-4	45°

 REMARKS NO EXAMS PERFORMED ON VALVE OR WELD-O-LET DUE TO COMPONENT CONFIGURATION
CIRC SCANS #3 & 4 PERFORMED ON WELD CROWN ONLY

 Examiner Hehlert Level II Date 7-18-90
 Examiner N/A Level Date

 Reviewed ICPS
 Reviewed

 Level II Date 7-18-90
 Title II Date 7-20-90
Page 3 of 4

FORM 143 10-18-89


 AP
 7-31-92

ISI NO. 89-190



GE Nuclear Energy

ULTRASONIC EXAMINATION DATA SHEET (MANUAL PIPING)

SITE: DUANE ARNOLD UNIT: 1
PROJECT NO: CT-662

REPORT NO. R-178
CALIBRATION SHEET NO. C-119

PROCEDURE: GE-UT-102 REV 2 FRR N/A

SYSTEM: RECIRC

WELD ID: RBA-J012

START TIME 0855

FINISH TIME 0910

MATERIAL TYPE: ☐ CS ☒ SS ☐ OTHER N/A

EXAM SURFACE ☐ ID ☒ OD

EXAM SURFACE TEMP 80 °F

THERMOMETER S/N 1802

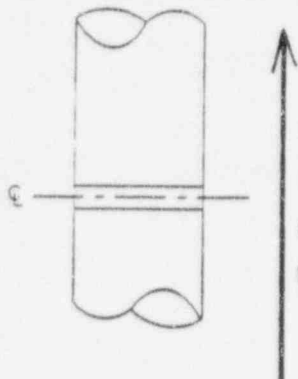
AXIAL SCAN SENSITIVITY 60 dB

CIRC SCAN SENSITIVITY 60 dB

L₀ REFERENCE Rule #1 TDC

W₀ REFERENCE Weld &

1. WITH FLOW
2. AGAINST FLOW
3. CLOCKWISE
 - a. upstream b. downstream
4. COUNTER CLOCKWISE
 - a. upstream b. downstream
5. L-WAVE BASE METAL
6. OTHER N/A



PERFORMED		INDICATIONS	
YES	NO	YES	NO
✓			✓
✓			✓
	✓		✓
	✓		✓
	✓		✓
	✓		✓
	✓		✓

INDICATION NO.	L (in) FROM REF			W (in) FROM REF			MAX AMP % DAC	SWEEP READING			EXAM 1 - 6	NOMINAL SCANNING ANGLE
	L ₁	L _{MAX}	L ₂	W ₁	W _{MAX}	W ₂		SW ₁	SW _{MAX}	SW ₂		
NO RECORDABLE INDICATIONS											1 - 2	70° RL

REMARKS SCANNED at Reference Sensitivity To maintain 30% noise level
SUPPLEMENTAL EXAM PERFORMED DUE TO COMPONENT CONFIGURATION

Wschlitz II 7-18-90
Examiner Level Date
N/A
Examiner Level Date

Benito II 7-18-90
Reviewed Level Date
CP5
Reviewed Title Date

Page 4 of 4

FORM 143 10-18-89



7-31-92



GE Nuclear Energy

ULTRASONIC CALIBRATION DATA SHEET

(MANUAL EXAMINATION)

SITE: DUANE ARNOLD UNIT: 1
PROJECT NO: CT-662

CALIBRATION SHEET NO. C-118
LINEARITY SHEET NO. L-005

Procedure No. GE-UT-102 Rev. 2 FRR No.: N/A

Instrument KRAUTHRAMER USK-75 31459-1548
Manufacturer Model Serial No.

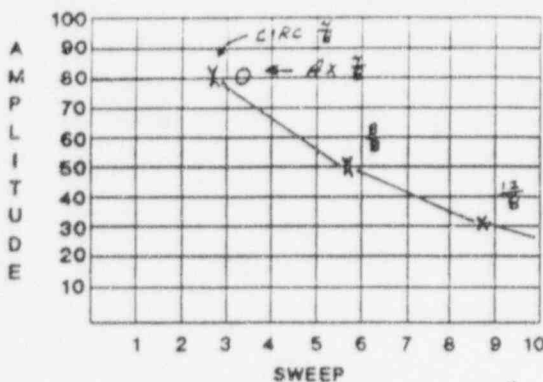
Search Unit KBA .25" 2.25 MHz 45°/S K24938
Manufacturer Size Freq. Angle/Mode Serial No.

Cable RG-174 6' 2
Type Length Connectors

Calibration Standard IE-17 SS .52" 78 °F
Serial No. Material Thickness Temp.

Couplant ULTRAGEL II 8976 Thermometer 1802
Brand Batch No. Serial No.

DAC



Scale Range: 0-10 = 2.5"

INSTRUMENT SETTINGS

DAC Construction Sensitivity
Gain - Axial Scan 34 dB Gain - Axial Scan 34 dB
Gain - Circ. Scan 44 dB Gain - Circ. Scan 44 dB
Freq. Auto Rep Rate FIXED
Range .5 Resolution FIXED
Sweep 989 Damping DOS. 1
Delay 10.0 Filter FIXED Reject OFF

Jack ☒ R ☐ T

FIELD SIMULATOR: N/A SIN: N/A

CALIBRATION VERIFICATION

REFLECTOR	INITIAL CALIBRATION TIME	VERIFICATION TIMES
<u>N/A</u>	<u>0735</u>	<u>N/A</u>
MAX. AMP.	FINAL VERIFICATION TIME	
<u>N/A</u>	<u>0840</u>	<u>N/A</u>
WELDS EXAMINED	REPORT NO.	
<u>RBA-J012</u>	<u>R-178</u>	

COMMENTS: NONE

[Handwritten signature]

Robert II 7-18-90
Examiner Level Date
N/A N/A N/A
Examiner Level Date

Robert II 7-18-90
Reviewed Level Date
KPS II 2-20-96
Reviewed Title Date

Page 1 of 1

FORM M2 9-18-89



AP
7-31-90



GE Nuclear Energy

ULTRASONIC CALIBRATION DATA SHEET

(MANUAL EXAMINATION)

SITE: DUANE ARNOLD UNIT: 1
PROJECT NO: CT-662

CALIBRATION SHEET NO. C-119
LINEARITY SHEET NO. L-005

Procedure No. GE-UT-102 Rev. 2 FRR No.: NIA

Instrument KRAUT KRAMER USK-75 31459-1548
Manufacturer Model Serial No.

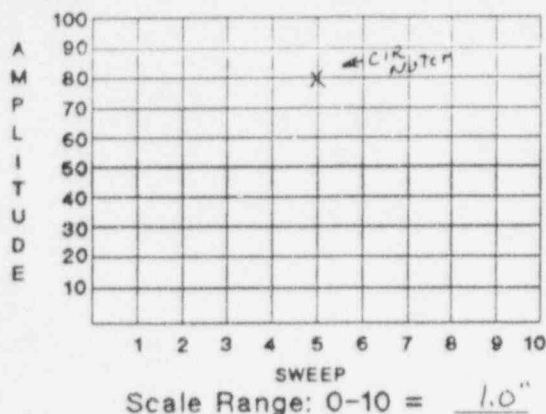
Search Unit HARISONIC 1/4 x 1/2 2.25 MHz 70°/R_L B10669
Manufacturer Size Freq. Angle/Mode Serial No.

Cable (2) RG-174 6' 1
Type Length Connectors

Calibration Standard IE-17 SS .52" 78°F
Serial No. Material Thickness Temp.

Couplant ULTRACAL II 8976 Thermometer 1802
Brand Batch No. Serial No.

DAC



INSTRUMENT SETTINGS

DAC Construction Sensitivity
Gain - Axial Scan 60 dB Gain - Axial Scan 60 dB
Gain - Circ. Scan 60 dB Gain - Circ. Scan 60 dB
Freq. Auto Rep Rate FIXED
Range .5 Resolution FIXED
Sweep 883 Damping DUAL
Delay 994 Reject OFF
Filter FIXED
Jack ☒ R ☒ T

FIELD SIMULATOR: NIA S/N: NIA

CALIBRATION VERIFICATION

REFLECTOR	INITIAL CALIBRATION TIME	VERIFICATION TIMES
MAX. AMP. <u>NIA</u>	<u>0850</u>	
SWEEP	FINAL VERIFICATION TIME <u>0955</u>	

WELDS EXAMINED RBA-J012 REPORT NO. R-178

COMMENTS: NONE

RECORDED
WLB

W. J. [Signature] II 7-18-90
Examiner Level Date
NIA NIA NIA
Examiner Level Date

[Signature] II 7-18-90
Reviewed Level Date
KPS II 7-20-90
Reviewed Title Date

Page 1 of 1

1-11-92

Lambert • MacGill • Thomas, Inc.

Testing • Engineering • Service • Training

515 Aldo Avenue
Santa Clara, CA 95050
408-980-9333Location DAECReport No. 87-431Cal. No. GE-11 Time 1203Job No. 1EL-034Date 4-1-87Page 1 of 1

REPORT OF VISUAL AND ULTRASONIC EXAMINATION

I T E M	Description <u>VALVE TO PIPE</u> Size <u>4"</u> Material <u>SS</u> S/N(s) <u>RD-NA10-A22-F</u>								
	ISI ID: <u>RBA-BJ-12 10/1987</u>								
	Location <u>DRY WELL</u> Preparation <u>AS WELDED</u> Temp. <u>72°F</u>								
S I G N	Examiner/Level <u>J. Flint</u> Examiner/Level <u>D.E. Coz II</u> Review/Level <u>OR MacGill II</u>								
	Authorized Inspector <u>J. Flint</u> 4-8-87 Customer <u>Kennel</u> 4-6-87								
E Q U I P M E N T	Tester 1 <u>NORTEC 131D</u> S/N <u>111</u> 2 <u>N/A</u> S/N <u>N/A</u>								
	Recorder 1 <u>N/A</u> S/N <u>N/A</u> 2 <u>N/A</u> S/N <u>N/A</u>								
	Transducer <u>57A082A</u> AUTOMATION <u>1.5 MHz</u> <u>N/A</u>								
	3 <u>285221</u> <u>N/A</u> 4 <u>N/A</u>								
	Couplant <u>LMT GEL</u> Cable <u>12' COAX</u> Marker <u>N/A</u> Photo <u>N/A</u>								
P R O C	Calibration Procedure <u>UT-41</u> Rev. <u>5, FC1-2-3</u>								
	Examination Procedure <u>UT-41</u> Rev. <u>5, FC1-2-3</u>								
	Recording Procedure <u>N/A</u> Rev. <u>N/A</u>								
C A L I B	Calib. Blk. <u>80359</u> Temp. <u>68°F</u> Ref. <u>1.0</u> <u>NOTCH</u> Amp. <u>80%</u> Sweep <u>2.0</u>								
	Ref. Gain <u>58/60</u> Damp. <u>OFF</u> Reject <u>OFF</u> Gate <u>1-10 DIV.</u>								
	Alarm <u>N/A</u> Mag. Tape Count <u>N/A</u> Chart <u>N/A</u> Cal. Check Time <u>1232</u>								
E X A M I N A T I O N	Cal. Ref. Blk. <u>LMT037</u> Ref. Refl. <u>1.2" MP</u> Amp. <u>75%</u> Sweep Position <u>4.0, 8.0</u>								
	Scan Gain <u>70/72</u> Ref. Dwg. <u>1.2-19</u> Reject Level <u>ASME XI</u> Report Level <u>ASME XI</u>								
	NAD = No Apparent Disc. L = Linear G = Geometry S = Spot M = Multiples								
E X A M I N A T I O N	Scan	Type	Disp.	Scan	Type	Disp.	Scan	Type	Disp.
	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
	<u>1</u>	<u>LW FLOW</u>	<u>N/A</u>	<u>7</u>	<u>45° KEW FLOW</u>	<u>N/A</u>	<u>13</u>		
	<u>2</u>	<u>LA FLOW</u>	<u>N/A</u>	<u>8</u>	<u>45° KEW FLOW</u>	<u>N/A</u>	<u>14</u>		
	<u>3</u>	<u>LL GW</u>	<u>NAD</u>	<u>9</u>	<u>N/A</u>	<u>N/A</u>	<u>15</u>		
	<u>4</u>	<u>LL GW</u>	<u>NAD</u>	<u>10</u>			<u>16</u>		
	<u>5</u>	<u>45° KEW FLOW</u>	<u>N/A</u>	<u>11</u>			<u>17</u>		
	<u>6</u>	<u>45° KEW FLOW</u>	<u>N/A</u>	<u>12</u>	<u>N/A</u>	<u>N/A</u>	<u>18</u>	<u>N/A</u>	<u>N/A</u>
				Description of Indications <u>1, 2, 5</u> <u>6, 7, 8</u> <u>NO SCAN DUE TO CONFIGURATION.</u>					

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515 Aldo Avenue
Santa Clara, CA 95050
408-980-9333

Location DHCL
Cal. No. GF-11 Time 1203
Job No. IEL-034
Date 4-1-87
Page 1 of 1

REPORT OF ULTRASONIC CALIBRATION

SIGN

Examiner/Level H. Flint/II Examiner/Level D.E. Coz II Review/Level D.E. Coz II
Authorized Inspector J. Coz 4-8-87 Customer San Jose 4-6-87

EQUIPMENT

Instrument NORTEC 131D S/N 111 ReCal Due 5-5-87 SU Cable 12' COAX
Instrument N/A S/N N/A ReCal Due N/A
Recorder N/A S/N N/A ReCal Due N/A
Recorder N/A S/N N/A ReCal Due N/A

VERTICAL LINEARITY CHECK

Check Completed by D.E. Coz

SIGNAL 1	100	90	80	70	60	50	40	30	20	10
SIGNAL 2	50	45	40	35	30	25	20	15	10	5

Signal 2 shall equal 50% of Signal 1 within $\pm 5\%$ of full scale.

AMPLITUDE CONTROL LINEARITY CHECK

Check Completed by D.E. Coz

SENSITIVITY	SET	-6	-12	SET	+12	SET	+6
ACCEPT RANGE	80%	32 to 48	16 to 24	20%	64 to 96	40%	64 to 96 %
ACTUAL VALUE	XXX	40	20	XXX	80	XXX	80

Signal amplitude must fall within listed values.

SEARCH UNITS

S/N 572089 Mfg. AUTONATION Type SW Size .375" x .375" Freq. 1.5 MHz Index 3 Angle 45°
S/N N/A Mfg. N/A Type N/A Size N/A Freq. N/A Index N/A Angle N/A

PROC

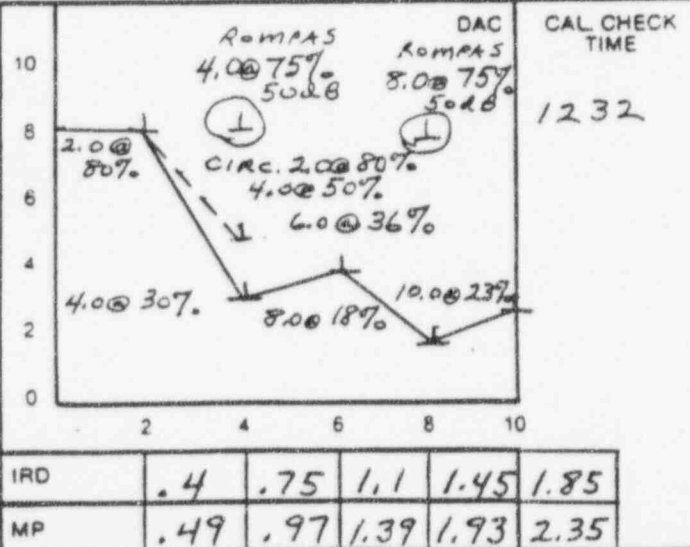
Procedure UT-41 Rev 5 Date 3-7-87 Field Change 1-2-3 Date 3-27-87 FCI
3-17-87 FCI, 3

CALIBRATION

Cal. Block Type PIPE SEGMENT S/N 80359 Ref. Refl. 1.0. NOTCH Temp. 68°F
Verification/Ref. Blk. ROMPAS S/N LMT037 Ref. Refl. 1", 2" MP Temp. 68°F

INSTRUMENT SETTINGS

	0°	Angle Beam	Digital
Gain	<u>N/A</u>	<u>58/60</u>	<u>1.0 = 1"</u>
Sweep	<u>1</u>	<u>5/400</u>	<u>4.0 = 4"</u>
Delay	<u>1</u>	<u>1/342</u>	<u>N/A</u>
Reject	<u>1</u>	<u>OFF</u>	<u>1</u>
Damp.	<u>1</u>	<u>OFF</u>	<u>1</u>
Freq.	<u>1</u>	<u>2.25 MHz</u>	<u>1</u>
Video/Filt.	<u>1</u>	<u>1+</u>	<u>1</u>
Rep. Rate	<u>N/A</u>	<u>1K</u>	<u>N/A</u>



DUANE ARNOLD ENERGY CENTER
2ND 10-YEAR INTERVAL
REQUEST FOR RELIEF NO. NDE-015

Attachment to
NG-95-2236
Page 22 of 52

I SYSTEM/COMPONENT(S) FOR WHICH RELIEF IS REQUESTED

CUB-F004 Reactor Water Cleanup (RWCU) Weld

EXAMINATION CATEGORY B-F, ITEM(S) B5.130

II CODE REQUIREMENT

Section XI (1980 W81 ADD), Table IWB-2500-1 Category B-F, Item B5.130 requires a volumetric examination which includes essentially 100% of weld length once during the ten year interval.

III CODE REQUIREMENT FROM WHICH RELIEF IS REQUESTED

Relief is requested from performing essentially 100% of the weld length for RWCU Weld CUB-F004.

IV BASIS FOR RELIEF

This weld is a elbow-to-valve configuration which limits the volumetric (UT) coverage to a one-sided exam. This results in approximately 70% coverage of the weld length. In order to perform a radiograph of the weld, the RWCU System would be required to be drained, which would result in an increase in exposure to personnel by a factor of 1.7 (17 mr/hr vs 10 mr/hr) for a total of 70 mr for the additional 30% coverage. This is the additional exposure for the examination, installation and removal of insulation and shielding; it does not include any additional exposure resulting from the time spent performing valve line-ups or system draining. Examining the additional 30% of weld length has only a small potential of increasing plant safety margins and a very disproportionate impact on expenditures of plant manpower and radiation exposure.

V ALTERNATE EXAMINATIONS

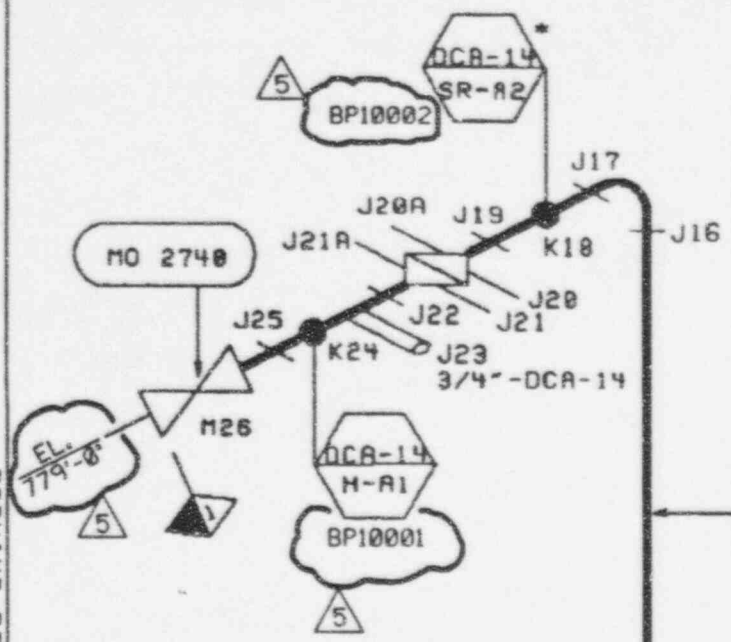
IES Utilities Inc. proposes to perform volumetric examination of the 70% weld length. The alternative examination coverage allowed by Code Case N-460 will also be used.

VI JUSTIFICATION FOR THE GRANTING OF RELIEF

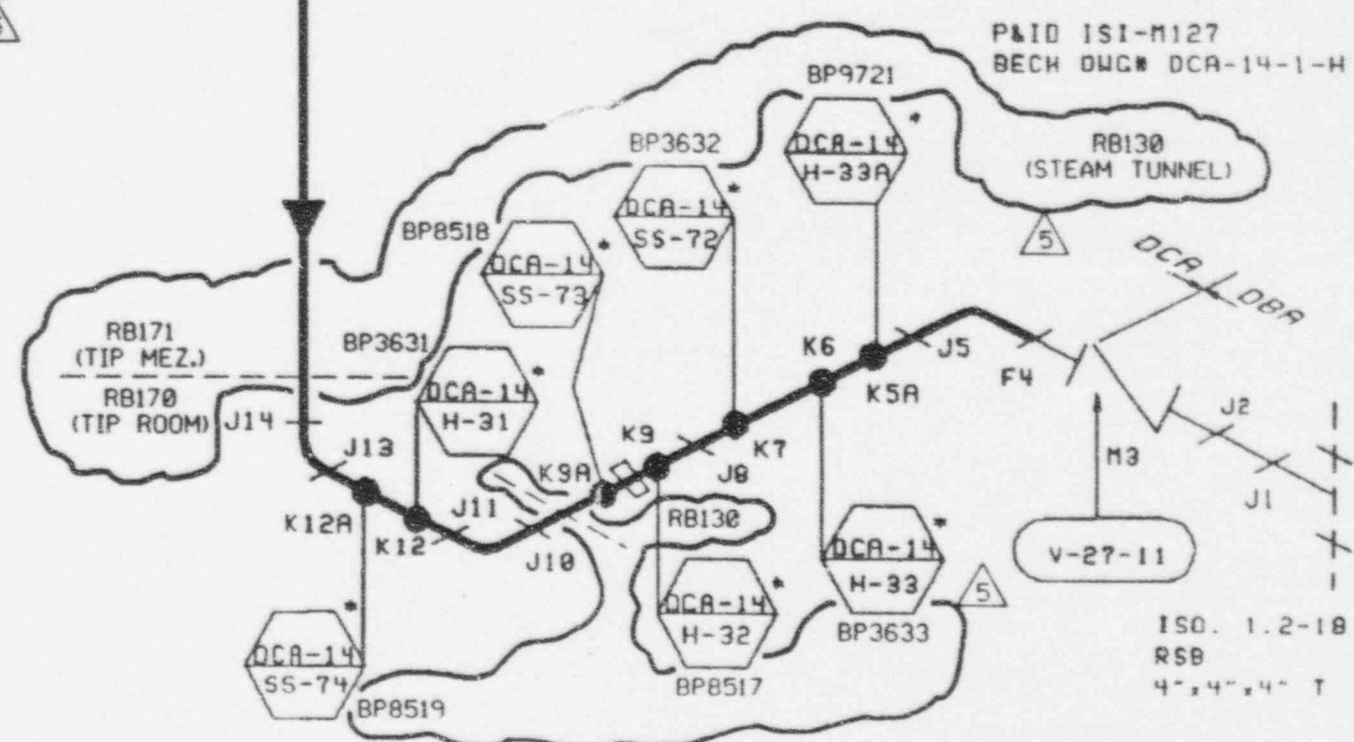
To perform an examination of the additional 30% of weld length, the Reactor Water Cleanup System would be required to be drained, thus increasing exposure to personnel. The benefit of examining the additional 30% has only a small potential of increasing plant safety margins and a very disproportionate impact on expenditures of plant manpower and radiation exposure to perform the radiography.

VII IMPLEMENTATION SCHEDULE

This relief request will be implemented during the 2nd Ten Year Interval. This weld was included in the Refueling Outage (RFO) 9 Summary Report.



REACTOR WATER CLEANUP
 - DISCHARGE (CLEAN)
 CUB-
 CS, SS, 4"
 ISO. NO. 1.2-118



* - NON INTEGRAL

REV	DATE	PREPARED	REVIEWED	APPROVED	PURPOSE
1	3-12-86	SNL	SNL	RCH	ISO'S FOR 2nd 10 YEAR PLAN
2	9-24-90	DA	GP	KKH	ISO'S TO CND FORHAT AS PER MC-89-0794
3	9-24-90	DA	GP	KKH	DCP 1464, RUCU NONCLASB REPLACEMENT
4	4-2-95	DA	GP	KKH	ADDED PENETRATON
5	7-24-97	DA	GP	KKH	REVISED PER ISI INSPECTION WALKDOWN

DRAWING RELEASE RECORD

P&ID ISI-M127
 BECH DWG# DCA-14-1-H

ISO. 1.2-18
 RSB
 4"x4"x4" T

Lambert • MacGill • Thomas, Inc.



Testing • Engineering • Service • Training
515 Aldo Avenue
Santa Clara, CA 95050
408-980-9333

Report No. 88-181
Cal. No. LR0009 Time 204
Job No. TEL-038
Date 10-8-88
Page 1 of 1

REPORT OF VISUAL AND ULTRASONIC EXAMINATION

I T E M	Description <u>FL/VALVE</u> Size <u>4"</u> Material <u>SS</u> S/N(s) <u>CUB-BF-4</u>															
	Location <u>STEAM TUNNEL</u> Preparation <u>AS FOUND</u> Temp <u>95°F</u>															
S I G N	Examiner/Level <u>LR DAVIS II</u> Examiner/Level <u>D.A. Ruffalo II</u> Review/Level <u>201/10-11-88</u>															
	Authorized Inspector <u>10-14-88</u> Customer <u>Kevin P. Schneider 10-12-88</u>															
E Q U I P M E N T	Tester 1 <u>NORTEC 131-D S/N 167</u> 2 <u>NA</u> S/N <u>NA</u>															
	Recorder 1 <u>NA</u> S/N <u>NA</u> 2 <u>NA</u> S/N <u>NA</u>															
	Transducer 1 <u>5" KBA 15MHz #H10142</u> 2 <u>NA</u>															
	3 <u>NA</u> 4 <u>NA</u>															
	Couplant <u>5488</u> Cable <u>6' RNC/MP</u> Marker <u>NA</u> Photo <u>NA</u>															
P R O C	Calibration Procedure <u>UT-41</u> Rev. <u>8 FC-2</u>															
	Examination Procedure <u>UT-41</u> Rev. <u>8 FC-2</u>															
	Recording Procedure <u>UT-41</u> Rev. <u>8 FC-2</u>															
C A L I B	Calib. Blk. <u>80359</u> Temp. <u>98°F</u> Ref. <u>INNOTCH</u> Amp. <u>80%</u> Sweep <u>2.0 div</u>															
	Ref. Gain <u>47dB</u> Damp. <u>OFF</u> Reject <u>OFF</u> Gate <u>1.5-10 div</u>															
E X A M I N A T I O N	Alarm <u>NA</u> Mag. Tape Count <u>NA</u> Chart <u>NA</u> Cal. Check Time <u>2059</u>															
	Cal. Ref. Blk. <u>80357</u> Ref. Refl. <u>INNOTCH</u> Amp. <u>80%</u> Sweep Position <u>2.0 div</u>															
Scan Gain <u>59dB</u> Ref. Dwg. <u>12-11B</u> Reject Level <u>NA</u> Report Level <u>PER PROC.</u>																
NAD = No Apparant Disc. L = Linear G = Geometry S = Spot M = Multiples																
Scan	Type	Disp.	Scan	Type	Disp.	Scan	Type	Disp.								
1	T WITH FLOW	NAD	7	NA	NA	13	NA	NA								
2	NA	NA	8			14										
3	II CW	NAD	9			15										
4	II CCW	NAD	10			16										
5	SCW CW 1/2 FLOW	IVAD	11			17										
6	SCW CCW 1/2 FLOW	NAD	12	V	V	18	V	V								
			<table border="1"> <tr> <th>Scan</th> <th>Description of Indications</th> </tr> <tr> <td>1</td> <td>IO GEO. LESS THAN 50% DAC</td> </tr> <tr> <td>2, 7, 8</td> <td>NO SCAN DUE TO VALVE CONFIG & C S</td> </tr> <tr> <td>3, 4</td> <td>LIMITED TO WELD AND UP SIDE ONLY</td> </tr> </table>						Scan	Description of Indications	1	IO GEO. LESS THAN 50% DAC	2, 7, 8	NO SCAN DUE TO VALVE CONFIG & C S	3, 4	LIMITED TO WELD AND UP SIDE ONLY
Scan	Description of Indications															
1	IO GEO. LESS THAN 50% DAC															
2, 7, 8	NO SCAN DUE TO VALVE CONFIG & C S															
3, 4	LIMITED TO WELD AND UP SIDE ONLY															

Lambert • MacGill • Thomas, Inc.

Testing • Engineering • Service • Training
515 Aldo Avenue
Santa Clara, CA 95054
408-980-9333

Location DAEC
Cal No 40009 Time 1955
Job No IEL-058
Date 10-9-88
Page 1 of 1

REPORT OF ULTRASONIC CALIBRATION

FOR:

SIGN

Examiner/Level LR Davis II Examiner/Level DAFFELDT II Review/Level DAFFELDT II
Authorized Inspector W. Ruggles 10-14-88 Customer Kevin P. Schneider 10-12-88

EQUIPMENT

Instrument NORTEC 131-D SIN 167 ReCal Due 12-1-88 SU Cable G. GNC/MD
Instrument NA SIN NA ReCal Due NA
Recorder NA SIN NA ReCal Due NA

VERTICAL LINEARITY CHECK

Check Completed by LRD

SIGNAL 1	100	90	80	70	60	50	40	30	20	10
SIGNAL 2	50	45	40	35	31	26	20	15	10	5

Signal 2 shall equal 50% of Signal 1 within $\pm 5\%$ of full scale

AMPLITUDE CONTROL LINEARITY CHECK

Check Completed by LRD

SENSITIVITY	SET	-8	-12	SET	+12	SET	+8
ACCEPT RANGE	80%	32 to 48	16 to 24	20%	64 to 96	40%	64 to 96
ACTUAL VALUE	XXX	40	20	XXX	80	XXX	80

Signal amplitude must fall within listed values.

SEARCH UNITS

SIN H10142 Mig KBA Type SW Size 1.5" Ø Freq 1.5 MHz Index ✓ Angle 45°
SIN NA Mig NA Type NA Size NA Freq NA Index NA Angle NA
Couplant LMT GEL Batch No. 5458

PROC

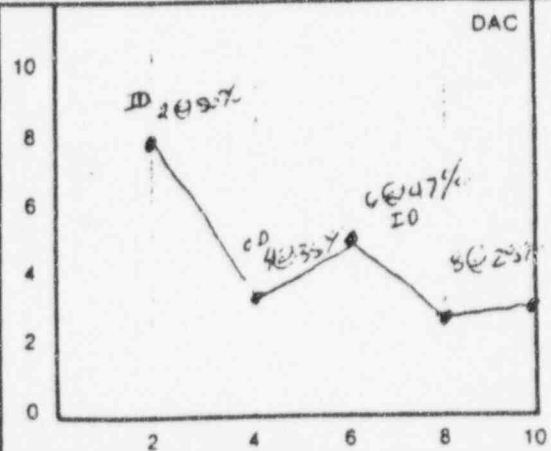
Procedure UT 41 Rev. 8 Date 8-9-88 Field Change FL 2 Date 10-6-88

CALIBRATION

Cal. Block Type PIPE SEG SIN 80359 Ref. Refl. ED NOTCH Temp. 90°F
Verification/Ref. Blk. ROMPAS SIN 050 Ref. Refl. DIG. ONLY Temp. 90°F

INSTRUMENT SETTINGS

	0°	Angle Beam	Digital
Gain	NA	47dB	NA
Sweep		25/588	
Delay		11436	
Reject		OFF	
Damp.		OFF	
Freq		WB	
Video/Filt.		+	
Rep. Rate		25K	



CAL CHECK TIME
2009
2038
2040
2054
FINAL
2133
2030%

IRD	35	.7	1.05	1.35	1.75
MP	48	.98	1.48	1.97	2.50

DUANE ARNOLD ENERGY CENTER
2ND 10-YEAR INTERVAL
REQUEST FOR RELIEF NO. NDE-016

I SYSTEM/COMPONENT(S) FOR WHICH RELIEF IS REQUESTED

RHB-J002 Residual Heat Removal (RHR) Weld

EXAMINATION CATEGORY B-J, ITEM(S) B9.31

II CODE REQUIREMENT

Section XI (1980 W81 ADD), Table IWB-2500-1 Category B-J, Item B9.31 requires a volumetric and surface examination which includes essentially 100% of weld length once during the ten year interval.

III CODE REQUIREMENT FROM WHICH RELIEF IS REQUESTED

Relief is requested from performing volumetric examination of essentially 100% of the weld length for RHR Weld RHB-J002.

IV BASIS FOR RELIEF

This weld is a branch connection-to-weldolet configuration which limits the volumetric (UT) coverage to a one-sided exam. This results in approximately 75% coverage of the weld length. Performing a radiograph of the weld would require the RHR System to be drained, which would increase exposure to personnel by a factor of 1.7 due simply to the pipe being empty (340 mr/hr vs 200 mr/hr) for a total of 140 mr for the additional 25% coverage. This is the additional exposure for the examination, installation and removal of insulation and shielding; it does not include any additional exposure resulting from the time spent performing valve line-ups or system draining. Examining the additional 25% of weld length has only a small potential for increasing plant safety margins and a very disproportionate impact on expenditures of plant manpower and radiation exposure.

V ALTERNATE EXAMINATIONS


IES Utilities Inc. proposes to perform volumetric examination of the 75% weld length. The alternative examination coverage allowed by Code Case N-460 will also be used.

VI JUSTIFICATION FOR THE GRANTING OF RELIEF

To perform an examination of the additional 25% of weld length, the RHR System would be required to be drained, thus increasing exposure to personnel. Examining the additional 25% of weld length has only a small potential of increasing plant safety margins and a very disproportionate impact on expenditures of plant manpower and radiation exposure to perform the radiography.

VII IMPLEMENTATION SCHEDULE

This relief request will be implemented during the 2nd Ten Year Interval. This weld was included in the Refueling Outage (RFO) 13 Summary Report.

 GE Nuclear Energy	EXAMINATION SUMMARY SHEET	REPORT NO.: 195039
PROJECT: DUANE ARNOLD 1DX36 Task: 1FJPV	PROCEDURE: UT-DAC-102V0 REV: 0 FRR: N/A N/A N/A	
SYSTEM: RHR	2162.1 REV: 2 FRR: N/A N/A N/A	
WELD NO.: RHB-J002	N/A REV: N/A FRR: N/A N/A N/A	
CONFIGURATION: PIPE TO BRANCH CONNECTION	<div style="display: flex; justify-content: space-around;"> <input type="checkbox"/> MT <input checked="" type="checkbox"/> PT <input checked="" type="checkbox"/> UT <input type="checkbox"/> VT </div>	
EXAMINER: D. HEBERT LEVEL: II	<input checked="" type="checkbox"/> CIRCUMFERENTIAL	
EXAMINER: H. KOMPENIEN LEVEL: II	WELD TYPE: <input type="checkbox"/> LONGITUDINAL <input type="checkbox"/> OTHER N/A	
EXAMINER: N/A LEVEL: N/A		
DATA SHEET NO.(S): DM-073 DM-074 PT-013	CAL SHEET NO.(S): CM-074 CM-075	

During the manual ultrasonic examination of RHB-J002, no recordable indications as per ASME Section XI or NUREG 0313 were detected utilizing a 45° shear wave search unit.

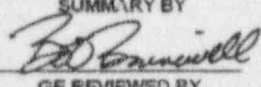
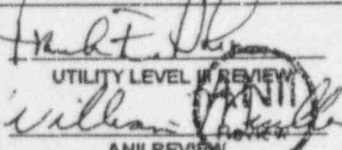
No examination was performed downstream due to the branch connection.

A supplemental 60° RL examination was performed, to increase required Code examination coverage, and resulted in no recordable indications.

A liquid penetrant examination was performed prior to the ultrasonic examination resulting in no recordable indications.

Examined 75% of the Code required volume.

<input type="checkbox"/> EXAM COMPLETE <input checked="" type="checkbox"/> PARTIALLY EXAMINED (EXPLAIN IN COMMENTS) <input type="checkbox"/> EXAM COMPLETE IN COMBINATION WITH DATA SHEETS BELOW		RWP NO.: 40213 TOTAL DOSE: .050 MAN REM
ADDITIONAL DATA SHEETS: N/A COMPARED TO: <input type="checkbox"/> PSI <input checked="" type="checkbox"/> ISI REPORT NO.(S): 93-209 <input checked="" type="checkbox"/> NO CHANGE		
EXAMINATION RESULTS: <input checked="" type="checkbox"/> ACCEPTABLE <input type="checkbox"/> UNACCEPTABLE		NO. OF RECORDABLE INDICATIONS: 0 NO. OF REPORTABLE INDICATIONS: 0

10-2444 SUMMARY BY  GE REVIEWED BY	II 3-30-95 LEVEL DATE III 3/30/95 LEVEL DATE	 UTILITY LEVEL IN REVIEW ANII REVIEW 3-30-95 3-31-95 DATE DATE
--	---	---

PAGE: 1 OF: 8

FORM UT-20 REV 4



GE Nuclear Energy

WALL THICKNESS PROFILE SHEET

SITE: DUANE ARNOLD UNIT: 1

REPORT NO.: 195039

PROJECT: 1DX36 TASK: IFJPV

SYSTEM: RHR

COMPONENT ID NO.: RHB-J002

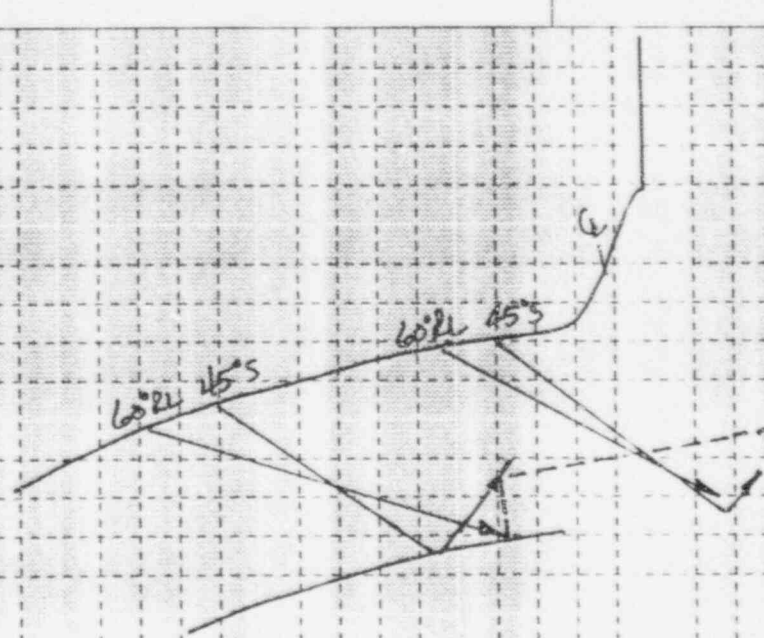
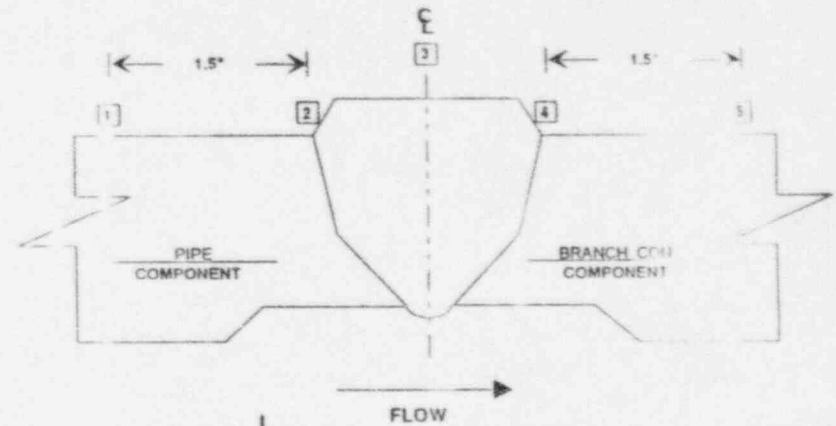
POSITION	0°	90°	180°	270°
1	1.04"	N/A	N/A	N/A
2	1.04"	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A
4	.96"	N/A	N/A	N/A
5	.96"	N/A	N/A	N/A

CROWN HEIGHT: FLUSH

CROWN WIDTH: .70"

NOM DIAMETER: 4.0"

WELD LENGTH: 19.50"



D-2/HM
DRAWN BY
Ed Barnwell
GE REVIEWED BY
II 3-25-95
LEVEL DATE
III 3/30/95
LEVEL DATE

Frank DeLeon
UTILITY LEVEL III REVIEW
3-30-95
DATE

William M. Mittle
ANII REVIEW
3-31-95
DATE

PAGE: 2 OF: 8



GE Nuclear Energy

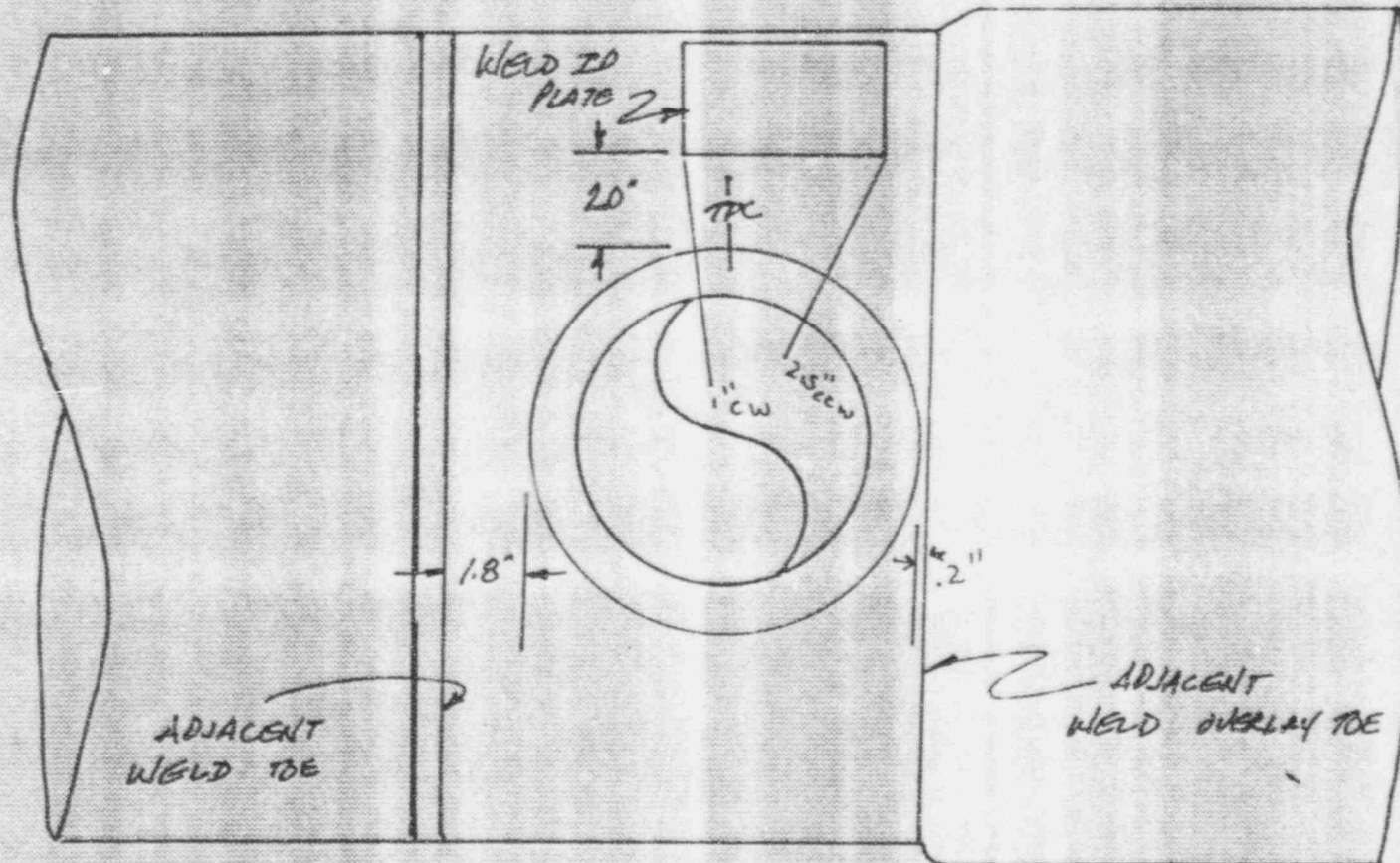
EXAM PLAN

SITE: DUANE ARNOLD UNIT: 1

REPORT NO.:

PROJECT: 1DX36 TASK: 1FJPV

195019



TAKEN FROM PREVIOUS DATA

D-2444
DRAWN BY
Bob Kinnaird
GE REVIEWED BY

II 3-25-95
LEVEL DATE
III 3-30-95
LEVEL DATE

Frank Dolan
UTILITY LEVEL III REVIEW

3-30-95
DATE

William M. Miller
ANII REVIEW

3-31-95
DATE

PAGE OF 8



GE Nuclear Energy

ULTRASONIC EXAMINATION DATA SHEET (MANUAL PIPING)

SITE: DUANE ARNOLD UNIT: 1

REPORT NO.: 195039

CALIBRATION SHEET NO.: CM-074

PROJECT NO.: 1DX36 TASK: 1FJPV

DATA SHEET NO.: DM-073

PROCEDURE NO.: UT-DAC-102V0 REVISION: 0 FRR: N/A

SYSTEM: RHR EXAM SURFACE TEMP: 74 °F COUPLANT: HUMEX EXAM START: 10:50

WELD ID: RHB-J002 THERMOMETER S/N: 145795 BATCH NO.: 94165 EXAM END: 11:03

SEARCH UNIT: 45° / SHR EXAMINATION SURFACE: ☐ ID ☒ OD MATERIAL TYPE: ☐ CS ☒ SS OTHER: N/A

Lo REFERENCE: TOP DEAD CENTER AXIAL SCAN SENSITIVITY (dB) 56.0

Wo REFERENCE: WELD CENTERLINE CIRC SCAN SENSITIVITY (dB) 63.0

AXIAL:

- 1 WITH FLOW
- 2 AGAINST FLOW

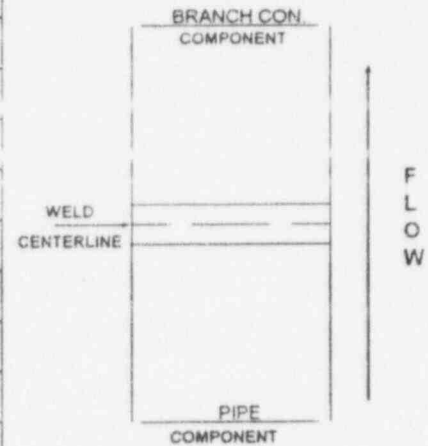
CIRC CW:

- 3 UPSTREAM
- 4 DOWNSTREAM

CIRC CCW:

- 5 UPSTREAM
- 6 DOWNSTREAM
- 7 L-WAVE BASE METAL
- 8 OTHER N/A

PERFORMED		INDICATIONS	
YES	NO	YES	NO
X			X
	X		
X			X
	X		
X			X
	X		
	X		
	X		



INDICATION NO.	L (in) FROM REF			W (in) FROM REF			SWEEP READING			MAX AMP % DAC	EXAMINATION (1-8)
	L-1	L-MAX	L-2	W-1	W-MAX	W-2	SW-1	SW-MAX	SW-2		
NRI											
N/A											

REMARKS:

Scans performed at gain level below required scanning sensitivity in order to maintain a 10-30% average ID noise level.

No examination was performed downstream due to the branch configuration.

The upstream examination was limited to "L" = 2.4" to 7.2" due to adjacent circumferential weld, overlay, and weld ID plate. (Refer to Exam plan.)

D-244 II 3-25-95
EXAMINER LEVEL DATE
GE REVIEWED BY III 3-20-95
LEVEL DATE

Utility Level III Review 3-30-95
DATE
Willie III 3-31-95
DATE
ANII REVIEW

PAGE: 4 OF: 8



GE Nuclear Energy

ULTRASONIC EXAMINATION DATA SHEET (MANUAL PIPING)

SITE: DUANE ARNOLD UNIT: 1

REPORT NO.: I95039

CALIBRATION SHEET NO.: CM-075

PROJECT NO.: 1DX36 TASK: 1FJPV

DATA SHEET NO.: DM-074

PROCEDURE NO.: UT-DAC-102V0 REVISION: 0 FRR: N/A

SYSTEM: RHR EXAM SURFACE TEMP: 74 °F COUPLANT: HUMEX EXAM START: 11:05

WELD ID: RHB-J002 THERMOMETER S/N: 145795 BATCH NO.: 94165 EXAM END: 11:10

SEARCH UNIT: 60° / RL EXAMINATION SURFACE: ☐ ID ☒ OD MATERIAL TYPE: ☐ CS ☒ SS OTHER: N/A

Lo REFERENCE: TOP DEAD CENTER AXIAL SCAN SENSITIVITY (dB) 77.4

Wo REFERENCE: WELD CENTERLINE CIRC SCAN SENSITIVITY (dB) N/A

AXIAL:

- 1 WITH FLOW
- 2 AGAINST FLOW

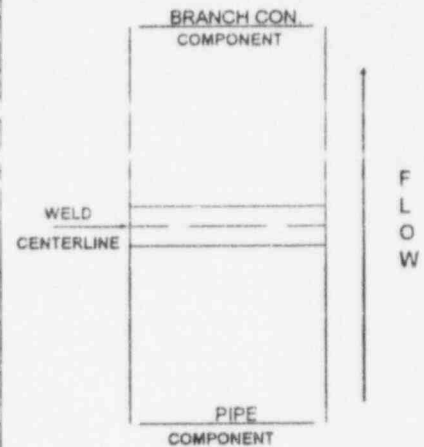
CIRC CW:

- 3 UPSTREAM
- 4 DOWNSTREAM

CIRC CCW:

- 5 UPSTREAM
- 6 DOWNSTREAM
- 7 L-WAVE BASE METAL
- 8 OTHER N/A

PERFORMED		INDICATIONS	
YES	NO	YES	NO
X			X
	X		
	X		
	X		
	X		
	X		
	X		



INDICATION NO.	L (in) FROM REF			W (in) FROM REF			SWEEP READING			MAX AMP % DAC	EXAMINATION (1-8)
	L-1	L-MAX	L-2	W-1	W-MAX	W-2	SW-1	SW-MAX	SW-2		
NRI											
N/A											

REMARKS:

Scans performed at gain level below required scanning sensitivity in order to maintain a 10-30% average ID noise level.

No examination was performed downstream due to the branch configuration.

The upstream examination was limited to "L" = 2.4" to 7.2" due to adjacent circumferential weld, overlay, and weld ID plate. (Refer to Exam plan.)

10-2444
EXAMINER
3-25-95
LEVEL DATE
3-30-95
LEVEL DATE

Frank John
UTILITY LEVEL III REVIEW
3-30-95
DATE
Willie
ANII REVIEW
3-31-95
DATE

PAGE: 5 OF: 8

RECORD OF NONDESTRUCTIVE EXAMINATION
LIQUID PENETRANT PT-1

CMAR NO N/A MIF STEP N/A DCP/PMP NO N/A TRAVELER NO N/A INDEX ITEM N/A
GIR NO N/A ISI NO I95039 AR NO N/A Temp. 70 ° F
COMPONENT OR SYSTEM RHB-3002 DWG. OR ISO NO 1.2-14
THICKNESS .960" PROCEDURE NO 2162.1 REV 2 ACCEPT STD 6.7.4.7 Feb 4/21/95
LIGHT METER ID/DUE DATE N/A BLACK LIGHT INTENSITY ($\mu\text{W}/\text{cm}^2$) N/A

ITEM	INITIAL INSPECTION		DEFECT CODE*	INITIAL INSPECTION REMARKS (SIZE/LOCATION)	REINSPECTION		DEFECT CODE*	REINSPECTION REMARKS (SIZE/LOCATION)
	ACC	REJ			ACC	REJ		
RHB J002	<input checked="" type="checkbox"/>			No RECOADABLE INDICATIONS				
				N				

*DEFECT CODE

P - POROSITY, R - ROUNDED, LI - LINEAR INDICATION, LA - LAMINATION, O - OTHER
(IDENTIFY)

100% 99% BB 3/2/95

COMMENTS/SKETCH

100% Weld Examined

Previous Inspection Data Reviewed ☒ Yes ☐ No ☐ NA AK
Init.

PENETRANT MATERIALS: Magnaflux

MATERIAL	TYPE	BATCH
CLEANER	<u>SKC-S</u>	<u>94L07K</u>
PENETRANT	<u>SKL-HF/S</u>	<u>88L003</u>
DEVELOPER	<u>SKD-NF</u>	<u>90F07P</u>

EXAMINER:

Harvey Kompelin / II / 3-24-95
SIGNATURE/LEVEL/DATE

REVIEWED BY:

Frank Doherty 3-30-95
LEVEL III SIGNATURE/DATE

REVIEWED BY:

William M. 3-31-95 W.O.M.
ANII SIGNATURE/DATE 4-27-95



GE Nuclear Energy

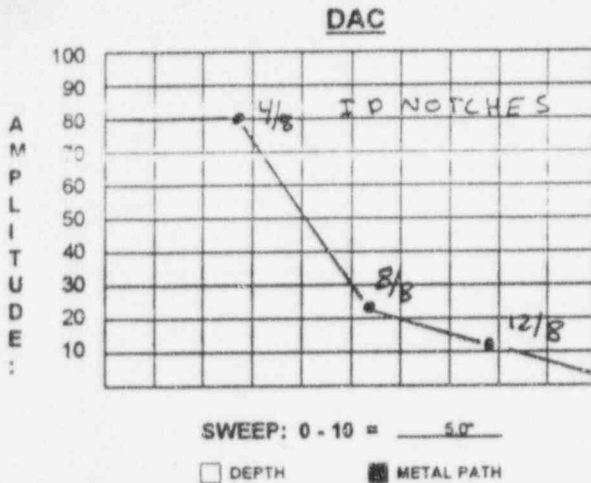
ULTRASONIC CALIBRATION DATA SHEET (MANUAL EXAMINATION)

SITE: DUANE ARNOLD UNIT: 1 CALIBRATION SHEET NO.: CM-074

PROJECT NO.: 1DX36 TASK: 1FJPV LINEARITY SHEET NO.: L-015

PROCEDURE NO.: UT-DAC-102V0 REVISION: 0 FRR: N/A

Instrument STAVELEY SONIC 136 7661
Manufacturer Model No. Serial No.
Search Unit KBA K10900 50" 1.50 MHz 45° / SHR 40"
Manufacturer Serial No. Size Freq. Angle/Mode incident to wedge front
Cable RG-174 6' 2
Type Length No. of Connectors
Calibration Standard IE-54 SS 960" 70 °F
Serial No. Material Thickness Temp.
Couplant HUMEX 94165 Thermometer 145795
Type Batch No. Serial No.



INSTRUMENT SETTINGS

<u>DAC Construction</u>	<u>Sensitivity</u>
Gain - Axial Scan <u>49.0</u>	Gain - Axial Scan <u>49.0</u>
Gain - Circ. Scan <u>56.2</u>	Gain - Circ. Scan <u>56.2</u>
Pulse <u>222 ns</u>	Range <u>5.00"</u>
Damping <u>500 ohms</u>	Delay <u>400"</u>
Rep Rate <u>4.0 KHz</u>	Velocity <u>126 in/us</u>
Filter <u>2</u>	Sweep <u>N/A</u>
Frequency <u>2.25 MHz</u>	Resolution <u>N/A</u>
Reject <u>OFF</u>	Jack <input type="checkbox"/> R <input checked="" type="checkbox"/> T

Field Simulator: ROMPUS S/N: CAL-RHOM-021

CALIBRATION VERIFICATION

REFLECTOR:	NEAR SDH	FAR SDH	INITIAL CALIBRATION TIME	08:38	VERIFICATION TIMES
MAX AMPLITUDE:	58%	50%			
SWEEP:	1.45"	1.10"	FINAL VERIFICATION TIME	13:01	N/A N/A
GAIN:	49.0	49.0			N/A N/A

WELDS EXAMINED

REPORT NO.

COMMENTS:

RHB-J002

195039

N/A

D-2-HH II 3-25-95
EXAMINER LEVEL DATE
William J. HAN III 3/30/95
GE REVIEWED BY LEVEL DATE

Frank D. HAN 3-30-95
UTILITY LEVEL III REVIEW DATE
William J. HAN 3-31-95
ANII REVIEW DATE



GE Nuclear Energy

ULTRASONIC CALIBRATION DATA SHEET

(MANUAL EXAMINATION)

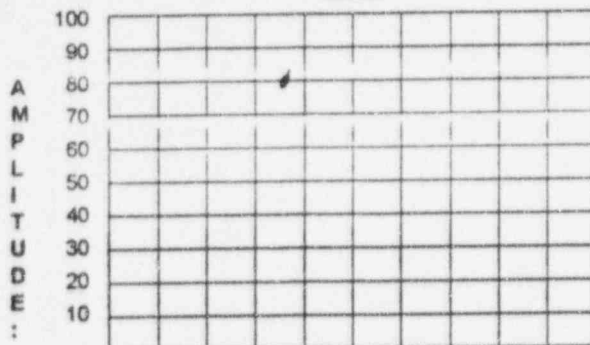
SITE: DUANE ARNOLD UNIT: 1 CALIBRATION SHEET NO.: CM-075

PROJECT NO.: 1DX36 TASK: 1FJPV LINEARITY SHEET NO.: L-015

PROCEDURE NO.: UT-DAC-102V0 REVISION: 0 FRR: N/A

Instrument STAVELEY SONIC 136 7661
Manufacturer Model No. Serial No.
Search Unit HARISONIC H4029 2(.25x.50)in 3.50 60° / RL 60°
Manufacturer Serial No. Size Freq. Angle/Mode Incident to wedge front
Cable 2(RG-174) 2(6') 4
Type Length No. of Connectors
Calibration Standard IE-54 SS 960" 70 "F
Serial No. Material Thickness Temp.
Couplant HUMEX 94165 Thermometer 145795
Type Batch No. Serial No.

DAC



SWEEP: 0 - 10 = 5.0"

☐ DEPTH ☒ METAL PATH

INSTRUMENT SETTINGS

DAC Construction Sensitivity
Gain - Axial Scan 77.4 Gain - Axial Scan 77.4
Gain - Circ. Scan N/A Gain - Circ. Scan N/A
Pulse 100 ns Range 5.00"
Damping 500 ohms Delay .602"
Rep Rate 2.0 KHz Velocity .232 in/us
Filter 1 Sweep N/A
Frequency 5.00 MHz Resolution N/A
Reject OFF Jack ☒ R ☒ T

Field Simulator: ROMPUS S/N: CAL-RHOM-021

CALIBRATION VERIFICATION

REFLECTOR:	N/A	FAR SDH	INITIAL CALIBRATION TIME	09:15	VERIFICATION TIMES
MAX AMPLITUDE:	N/A	80%			
SWEEP:	N/A	1.5"	FINAL VERIFICATION TIME	13:03	11:04 N/A
GAIN:	N/A	77.4			N/A N/A

WELDS EXAMINED REPORT NO. COMMENTS:

RHB-J002 195039 N/A

D-2144 II 3-25-95 Frank D. King 3-30-95
EXAMINER LEVEL DATE UTILITY LEVEL III REVIEW DATE
Bob Smicell III 3/30/95 Willie ANII REVIEW 3-31-95
GE REVIEWED BY LEVEL DATE

DUANE ARNOLD ENERGY CENTER
2ND 10-YEAR INTERVAL
REQUEST FOR RELIEF NO. NDE-017

I SYSTEM/COMPONENT(S) FOR WHICH RELIEF IS REQUESTED

RBB-J006 Recirculation Bypass Weld

EXAMINATION CATEGORY B-J, ITEM(S) B9.11

II CODE REQUIREMENT

Section XI (1980 W81 ADD), Table IWB-2500-1 Category B-J, Item B9.11 requires a volumetric and surface examination which includes essentially 100% of weld length once during the ten year interval.

III CODE REQUIREMENT FROM WHICH RELIEF IS REQUESTED

Relief is requested from performing volumetric examination of essentially 100% of the weld length for Recirculation Bypass Weld RBB-J006.

IV BASIS FOR RELIEF

This weld is a pipe-to-tee configuration which limits the volumetric (UT) coverage to a one-sided exam. This results in approximately 84% coverage of the weld length. Performing a radiograph of the weld would require the Recirculation System to be drained, which would increase exposure to personnel by a factor of 1.7 due simply to the pipe being empty (170 mr/hr vs 100 mr/hr) for a total of 140 mr for the additional 16% coverage. This is the additional exposure for the examination, insulation and removal of insulation and shielding; it does not include any additional exposure resulting from the time spent performing valve line-ups or system draining. Examining the additional 16% of weld length has only a small potential for increasing plant safety margins and a very disproportionate impact on expenditures of plant manpower and radiation exposure.

V ALTERNATE EXAMINATIONS

IES Utilities Inc. proposes to perform volumetric examination of the 84% weld length. The alternative examination coverage allowed by Code Case N-460 will also be used.

VI JUSTIFICATION FOR THE GRANTING OF RELIEF

To perform an examination of the additional 16% of weld length, the Recirculation System would be required to be drained, thus increasing exposure to personnel. Examining the additional 25% of weld length has only a small potential for increasing plant safety margins and a very disproportionate impact on expenditures of plant manpower and radiation exposure to perform the radiography.

VII IMPLEMENTATION SCHEDULE

This relief request will be implemented during the 2nd Ten Year Interval. This weld was included in the Refueling Outage (RFO) 13 Summary Report.



GE Nuclear Energy

EXAMINATION SUMMARY SHEET

REPORT NO.:
195043

PROJECT: DUANE ARNOLD
1DX36 Task: 1EJPV

PROCEDURE: UT-DAC-102V0 REV: 0 FRR: N/A
N/A
N/A

SYSTEM: RECIRCULATION

2162.1 REV: 2 FRR: N/A
N/A
N/A

WELD NO.: RBB-J006

CONFIGURATION: PIPE TO TEE

N/A REV: N/A FRR: N/A
N/A
N/A

EXAMINER: D. HEBERT LEVEL: II

☐ MT ☒ PT ☒ UT ☐ VT

EXAMINER: J. SHEA LEVEL: II

☒ CIRCUMFERENTIAL

EXAMINER: N/A LEVEL: N/A

WELD TYPE: ☐ LONGITUDINAL ☐ OTHER N/A

DATA SHEET NO.(S): DM-051
DM-052
PT-006

CAL SHEET NO.(S): CM-052
CM-053

During the manual ultrasonic examination of RBB-J006, no recordable indications as per ASME Section XI and NUREG 0313 were detected utilizing a 45° shear wave search unit.

No examination was performed downstream due to the Tee configuration


A supplemental 60° PL examination was performed, to increase required Code examination coverage, and resulted in no recordable indications

A liquid penetrant examination was performed prior to the ultrasonic examination resulting in no recordable indications.

~~Examined 63% of the Code required volume.~~ BB 4/1/95

Examined 84% of the Code required volume. Refer to Attachment 1, EPRI Raytrace Coverage Plot.

<input checked="" type="checkbox"/> EXAM COMPLETE		<input type="checkbox"/> PARTIALLY EXAMINED (EXPLAIN IN COMMENTS)		<input type="checkbox"/> EXAM COMPLETE IN COMBINATION WITH DATA SHEETS BELOW		RWP NO.: 40213	
ADDITIONAL DATA SHEETS: N/A				NO. OF RECORDABLE INDICATIONS: 0		TOTAL DOSE	
COMPARED TO: <input type="checkbox"/> PSI <input checked="" type="checkbox"/> ISI REPORT NO.(S): 91-238 <input checked="" type="checkbox"/> NO CHANGE				NO. OF REPORTABLE INDICATIONS: 0		026 MAN REM	
EXAMINATION RESULTS: <input checked="" type="checkbox"/> ACCEPTABLE <input type="checkbox"/> UNACCEPTABLE							
P-244		II 3-27-95		Frank E. [Signature]		4-3-95	
SUMMARY BY		LEVEL		UTILITY LEVEL III REVIEW		DATE	
[Signature]		III 3/28/95		William [Signature]		4-4-95	
GE REVIEWED BY		LEVEL		ANII REVIEW		DATE	

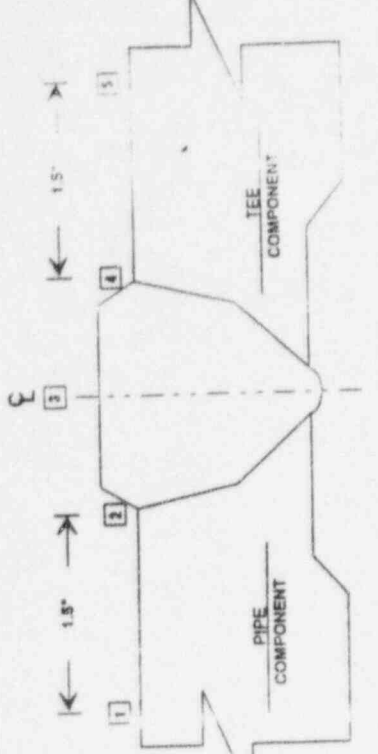
	WALL THICKNESS PROFILE SHEET	SITE: DUANE ARNOLD UNIT: 1 PROJECT: 1DX36 TASK: IFJPV	REPORT NO.: IV-043
SYSTEM: RECIRCULATION		COMPONENT ID NO.: RBB-1006	
POSITION	0°	90°	180°
1	N/A	N/A	270°
2	N/A	N/A	N/A
3	N/A	N/A	N/A
4	N/A	N/A	N/A
5	N/A	N/A	N/A

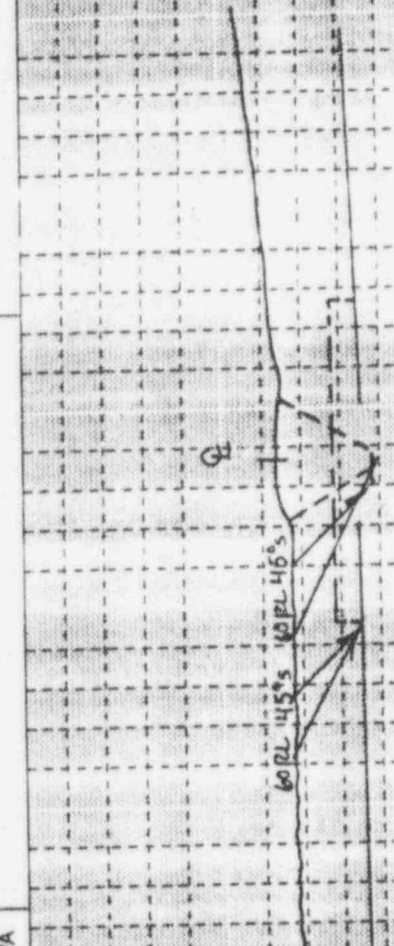
CROWN HEIGHT: .05"

CROWN WIDTH: .60"

NOM DIAMETER: 4.00"

WELD LENGTH: 14.50"





DATE: 3-20-95

LEVEL: II

DATE: 3-28-95

LEVEL: III

DATE: 4-3-95

LEVEL: III

DATE: 4-4-95

LEVEL: III

DATE: 4-4-95

LEVEL: III

DATE: 4-4-95

LEVEL: III

GE REVIEWED BY: *[Signature]*

DATE: 3-28-95

UTILITY LEVEL III REVIEW: *[Signature]*

DATE: 4-3-95

ANALYSIS REVIEW: *[Signature]*

DATE: 4-4-95



GE Nuclear Energy

ULTRASONIC EXAMINATION DATA SHEET (MANUAL PIPING)

SITE: DUANE ARNOLD UNIT: 1

REPORT NO.: 195043

PROJECT NO.: 1DX36 TASK:1FJPV

CALIBRATION SHEET NO.: CM-052

DATA SHEET NO.: DM-051

PROCEDURE NO.: UT-DAC-102V0

REVISION: 0

FRR: N/A

SYSTEM: RECIRCULATION

EXAM SURFACE TEMP: 72 °F

COUPLANT: HUMEX

EXAM START: 16:26

WELD ID: RDB-J006

THERMOMETER S/N: 145795

BATCH NO.: 94165

EXAM END: 16:30

SEARCH UNIT: 45° / SHR EXAMINATION SURFACE: ☐ ID ☒ OD MATERIAL TYPE: ☐ CS ☒ SS OTHER: N/A

Lo REFERENCE: TOP DEAD CENTER

AXIAL SCAN SENSITIVITY (dB) 47.0

Wo REFERENCE: WELD CENTERLINE

CIRC SCAN SENSITIVITY (dB) 57.0

AXIAL:

- 1 WITH FLOW
- 2 AGAINST FLOW

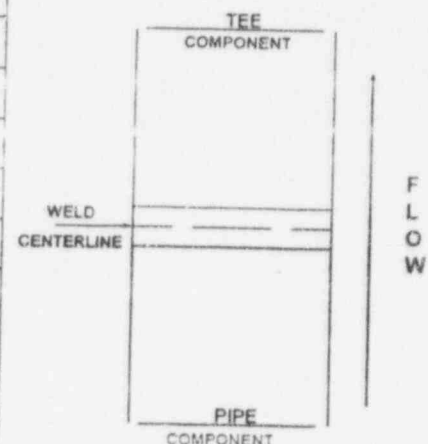
CIRC CW:

- 3 UPSTREAM
- 4 DOWNSTREAM

CIRC CCW:

- 5 UPSTREAM
- 6 DOWNSTREAM
- 7 L-WAVE BASE METAL
- 8 OTHER N/A

PERFORMED		INDICATIONS	
YES	NO	YES	NO
X			X
	X		
X			X
	X		
X			X
	X		
	X		
	X		



INDICATION NO.	L (in) FROM REF			W (in) FROM REF			SWEEP READING			MAX AMP % DAC	EXAMINATION (1-8)
	L-1	L-MAX	L-2	W-1	W-MAX	W-2	SW-1	SW-MAX	SW-2		
NRI											
N/A											

REMARKS:

No examination was performed downstream due to the Tee configuration.

Scans performed at gain level below required scanning sensitivity in order to maintain a 10-30% average ID noise level.

D-2H/A
EXAMINER
W. D. Smith
GE REVIEWED BY

II 3-20-95
LEVEL DATE
III 3/23/95
LEVEL DATE

Frank E. Adams
UTILITY LEVEL III REVIEW
William H. Smith
ANII REVIEW

4-3-95
DATE
4-4-95
DATE

PAGE: 3 OF: 7



GE Nuclear Energy

ULTRASONIC EXAMINATION DATA SHEET (MANUAL PIPING)

SITE: DUANE ARNOLD UNIT: 1 REPORT NO.: 195043
PROJECT NO.: 1DX36 TASK: 1FJPV CALIBRATION SHEET NO.: CM-053
DATA SHEET NO.: DM-052

PROCEDURE NO.: UT-DAC-102V0 REVISION: 0 FRR: N/A

SYSTEM: RECIRCULATION EXAM SURFACE TEMP: 72 °F COUPLANT: HUMEX EXAM START: 16:46
WELD ID: RBB-J005 THERMOMETER S/N: 145795 BATCH NO.: 94165 EXAM END: 16:50

SEARCH UNIT: 60° / RL EXAMINATION SURFACE: ☐ ID ☒ OD MATERIAL TYPE: ☐ CS ☒ SS OTHER: N/A
Lo REFERENCE: TOP DEAD CENTER AXIAL SCAN SENSITIVITY (dB) 78.8
Vto REFERENCE: WELD CENTERLINE CIRC SCAN SENSITIVITY (dB) N/A

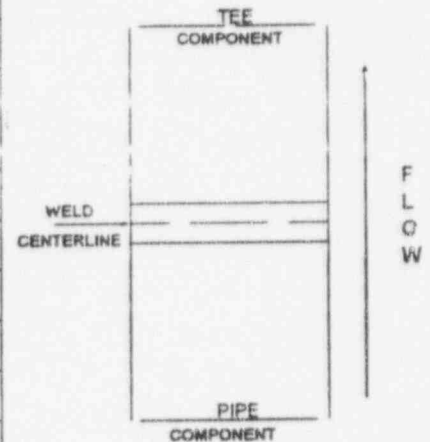
AXIAL:

CIRC CW:

CIRC CCW:

- 1 WITH FLOW
- 2 AGAINST FLOW
- 3 UPSTREAM
- 4 DOWNSTREAM
- 5 UPSTREAM
- 6 DOWNSTREAM
- 7 L-WAVE BASE METAL
- 8 OTHER N/A

PERFORMED		INDICATIONS	
YES	NO	YES	NO
X			X
	X		
	X		
	X		
	X		
	X		
	X		



INDICATION NO.	L (in) FROM REF			W (in) FROM REF			SWEEP READING			MAX AMP % DAC	EXAMINATION (1-8)
	L-1	L-MAX	L-2	W-1	W-MAX	W-2	SW-1	SW-MAX	SW-2		
NRI											
N/A											

REMARKS:

Supplemental 60° RL examination was performed to increase examination coverage.
No examination was performed downstream due to the Tee configuration.

D-2H
EXAMINER
Blanchard
GE REVIEWED BY
II 3/20/95
LEVEL DATE
III 3/28/95
LEVEL DATE

Frank E. [Signature]
UTILITY LEVEL III REVIEW
William [Signature]
ANII REVIEW
4-3-95
DATE
4-4-95
DATE

RECORD OF NONDESTRUCTIVE EXAMINATION
LIQUID PENETRANT PT-1

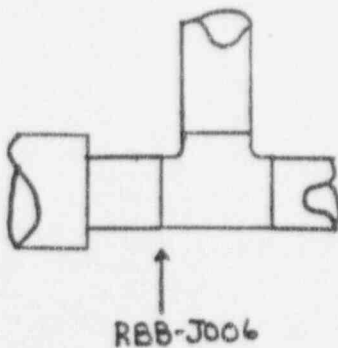
CMAR NO N/A MIF STEP N/A DCP/PMP NO N/A TRAVELER NO N/A INDEX ITEM N/A
GIR NO N/A ISI NO 195043 AR NO N/A Temp. 62 ° F
COMPONENT OR SYSTEM RBB-J006 DWG. OR ISC NO 1.2-21A
THICKNESS .337 PROCEDURE NO 2162.1 REV 2 ACCEPT STD 6.7.67 ^{AS 4/27/95}
LIGHT METER ID/DUE DATE N/A PLACK LIGHT INTENSITY, (µW/cm²) N/A

ITEM	INITIAL INSPECTION		DEFECT CODE*	INITIAL INSPECTION REMARKS (SIZE/LOCATION)	REINSPECTION		DEFECT CODE*	REINSPECTION REMARKS (SIZE/LOCATION)
	ACC	REJ			ACC	REJ		
RBB J006	X	N/A	N/A	NO RECORDABLE INDICATIONS	N/A	N/A	N/A	N/A
				N/A				

DEFECT CODE

P - POROSITY, R - ROUNDED, LI - LINEAR INDICATION, LA - LAMINATION, O - OTHER
(IDENTIFY)

COMMENTS/SKETCH



100 % Weld Examined

Previous Inspection Data Reviewed ☒ Yes ☐ No ☐ N/A ^{NA}
Init.

PENETRANT MATERIALS: Magnaflux

MATERIAL	TYPE	BATCH
CLEANER	<u>SKL-NF</u>	<u>93K01K</u>
PENETRANT	<u>SKL-HF/S</u>	<u>88L003</u>
DEVELOPER	<u>SKD-NF</u>	<u>90E07P</u>

EXAMINER:

John Chen 4/11 3-19-95
SIGNATURE/LEVEL/DATE

REVIEWED BY:

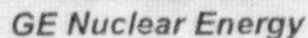
Frank E. Dorman 4/3/95
LEVEL III SIGNATURE/DATE

REVIEWED BY:

William Miller 4-4-95
ANTI SIGNATURE/DATE

W.O.M.
4-30-95

3/28/95



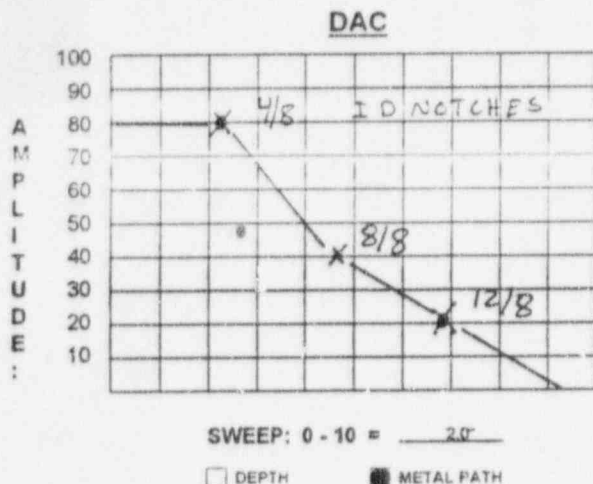
(MANUAL EXAMINATION)

CALIBRATION SHEET NO.: CM-052

LINEARITY SHEET NO.: L-015

PROCEDURE NO.: UT-DAC-102V0 REVISION: 0 FRR: N/A

Instrument	STAVELEY	SONIC 136	7661
Manufacturer		Model No.	Serial No.
Search Unit	KBA	D19642	25"
Manufacturer		Serial No.	Size
			2.25 MHz
			45° / SHR
			25"
			incident to wedge front
Cable	RG-174	5'	2
Type		Length	No. of Connectors
Calibration Standard	IE-57	SS	337"
Serial No.		Material	Thickness
			68 °F
Couplant	HUMEX	94165	Thermometer
Type		Batch No.	145795
			Serial No.



INSTRUMENT SETTINGS

<u>DAC Construction</u>	<u>Sensitivity</u>
Gain - Axial Scan <u>40.6</u>	Gain - Axial Scan <u>40.6</u>
Gain - Circ. Scan <u>50.0</u>	Gain - Circ. Scan <u>50.0</u>
Pulse <u>222 ns</u>	Range <u>2.00"</u>
Damping <u>500 ohms</u>	Delay <u>227"</u>
Rep Rate <u>4.0 KHz</u>	Velocity <u>.124 in/μs</u>
Filter <u>2</u>	Sweep <u>N/A</u>
Frequency <u>2.25 MHz</u>	Resolution <u>N/A</u>
Reject <u>OFF</u>	Jack <input type="checkbox"/> R <input checked="" type="checkbox"/>

CALIBRATION VERIFICATION

INITIAL CALIBRATION TIME	08:55	VERIFICATION TIMES	
FINAL VERIFICATION TIME	18:25	15:47	N/A
		N/A	N/A

WELDS EXAMINED	REPORT NO.	COMMENTS:
----------------	------------	-----------

RBB-J006	195043	N/A
----------	--------	-----

<u>D-2HH</u>	<u>II</u>	<u>3-20-95</u>
EXAMINER	LEVEL	DATE
<u>Ed Russell</u>	<u>II</u>	<u>3/28/95</u>
GE REVIEWED BY	LEVEL	DATE

Frank D. [Signature]
UTILITY LEVEL III REVIEW
William M. [Signature]
ANII REVIEW

4-3 95
DATE
445
DATE

PAGE: 6 OF: 7



GE Nuclear Energy

ULTRASONIC CALIBRATION DATA SHEET

(MANUAL EXAMINATION)

SITE: DUANE ARNOLD UNIT: 1

CALIBRATION SHEET NO.: CM-053

PROJECT NO.: 1DX36 TASK: 1FJPV

LINEARITY SHEET NO.: L-015

PROCEDURE NO.: UT-DAC-102V0

REVISION: 0

FRR: N/A

Instrument STAVELEY
Manufacturer

SONIC 136
Model No.

7661
Serial No.

Search Unit HARISONIC
Manufacturer

H4029
Serial No.

2(25x.50)in
Size

3.50 MHz
Freq

60° / RL
Angle/Mode

60°
incident to wedge front

Cable 2(RG-174)
Type

2(6')
Length

4
No. of Connectors

Calibration Standard IE-57
Serial No.

SS
Material

.337"
Thickness

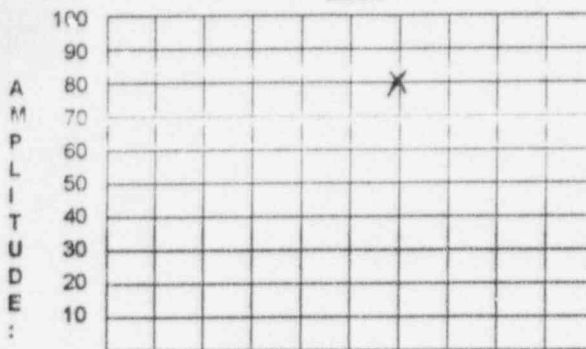
68 °F
Temp.

Couplant HUMEX
Type

94165
Batch No.

Thermometer 145795
Serial No.

DAC



SWEEP: 0 - 10 = 1.0"

☐ DEPTH

☒ METAL PATH

INSTRUMENT SETTINGS

DAC Construction

Sensitivity

Gain - Axial Scan 78.8 Gain - Axial Scan 78.8

Gain - Circ. Scan N/A Gain - Circ. Scan N/A

Pulse 100 ns Range 1.00"

Damping 500 ohms Delay .728"

Rep Rate 2.0 KHz Velocity .232 in/us

Filter 1 Sweep N/A

Frequency 5.00 MHz Resolution N/A

Reject OFF Jack ☒ R ☒ T

Field Simulator: ROMPUS S/N: CAL-RHOM-021

CALIBRATION VERIFICATION

REFLECTOR:	NEAR SDH	N/A
MAX AMPLITUDE:	80%	N/A
SWEEP:	.60"	N/A
GAIN:	64.4	N/A

INITIAL CALIBRATION TIME	09:22	VERIFICATION TIMES	
FINAL VERIFICATION TIME	18:20	16:45	N/A
		N/A	N/A

WELDS EXAMINED

REPORT NO.

COMMENTS:

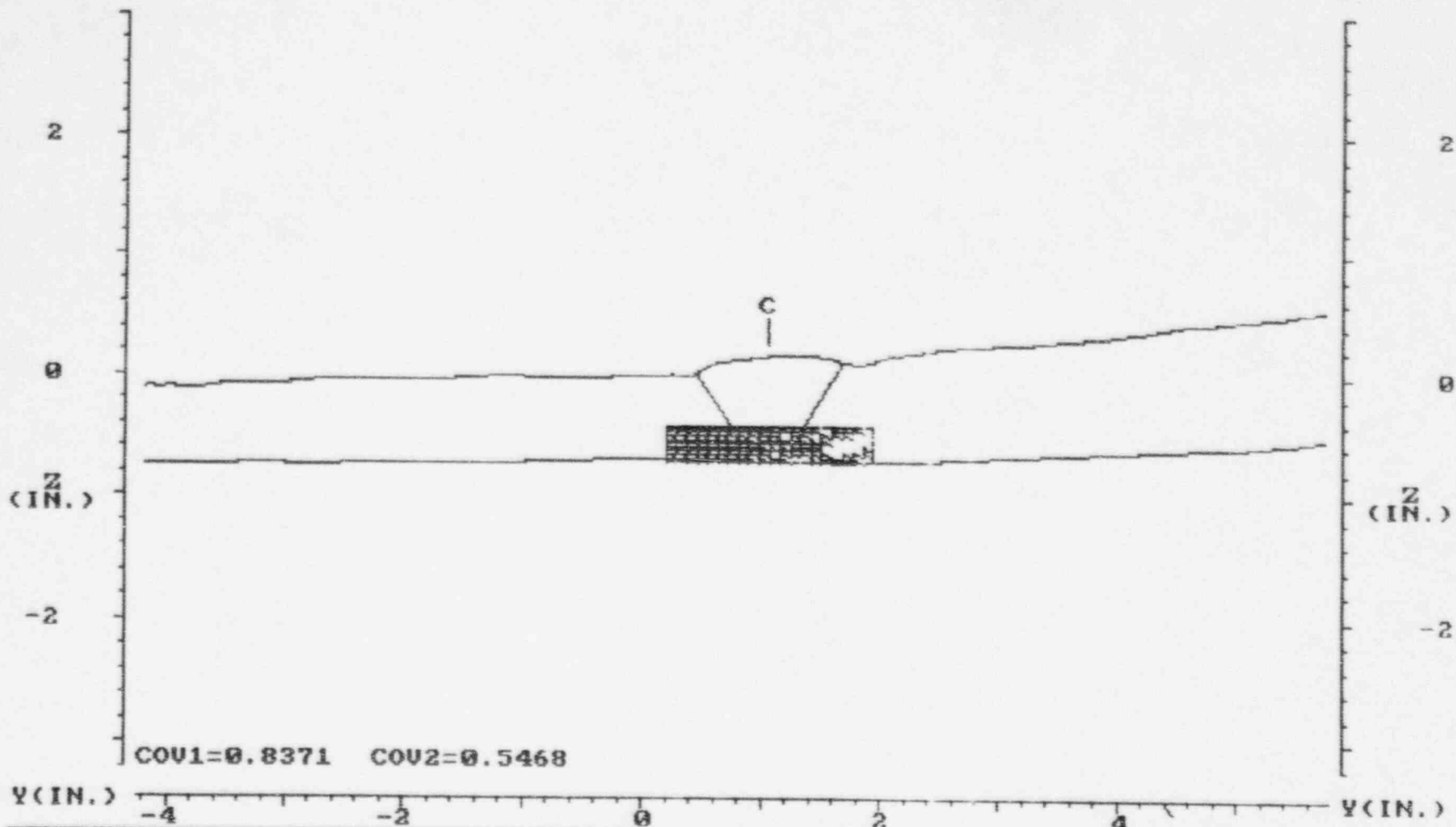
RBB-J006	195043	N/A

<u>D-244</u> EXAMINER <u>3/28/95</u> GE REVIEWED BY	<u>II</u> LEVEL <u>3/28/95</u> DATE	<u>3/20/95</u> DATE UTILITY LEVEL II REVIEW <u>4-3-95</u> DATE ANII REVIEW	<u>4-4-95</u> DATE	PAGE: <u>7</u> OF: <u>7</u> <small>FORM UT-DH REV 1</small>
--	--	---	-----------------------	--

PIPE

FLOW →

TEE



SET							SET
DEP							DEP
MP							MP
TOF							TOF
FAN							FAN
GATE							GATE
STEP							STEP
EXIT							EXIT
<div> <div>MAKERAY</div> <div>UTILITY</div> <div>LEFT</div> <div>RIGHT</div> <div>TOP</div> <div>PRINT</div> <div>EXIT</div> </div>							
<div> <div>PLANT: DAEC</div> <div>4/1/95</div> <div>GIRC. POS:</div> </div>							
<div> <div>SYSTEM: RECIRCULATION</div> <div>14:43</div> <div>ANALYST:</div> </div>							
<div> <div>COMPONENT: RBB-J006</div> <div></div> <div>CAL. SHEET:</div> </div>							

DUANE ARNOLD ENERGY CENTER
2ND 10-YEAR INTERVAL
REQUEST FOR RELIEF NO. NDE-018

Attachment to
NG-95-2236
Page 44 of 52

I SYSTEM/COMPONENT(S) FOR WHICH RELIEF IS REQUESTED

HEA-CB-2 Residual Heat Removal (RHR) Heat Exchanger Nozzle Weld

EXAMINATION CATEGORY C-B, ITEM(S) C2.21

II CODE REQUIREMENT

Section XI (1980 W81 ADD), Table IWC-2500-1 Category C-B, Item C2.21 requires a volumetric and surface examination which includes essentially 100% of weld length once during the ten year interval.

III CODE REQUIREMENT FROM WHICH RELIEF IS REQUESTED

Relief is requested from performing volumetric and surface examination of essentially 100% of the weld length for RHR heat exchanger weld HEA-CB-2.

IV BASIS FOR RELIEF

This weld is a nozzle-to-shell configuration which limits the volumetric (UT) coverage to a one-sided exam. The nozzle is located next to the tube sheet flange which further limits the volumetric examination coverage, resulting in approximately 71 % UT coverage of the weld length. Performing a radiograph of the weld requires draining the RHR System and removing the pipe or opening the tube sheet to provide access to the inside diameter. (Removal of the tube sheet is not an option because several tubes would be required to be removed along with the tube sheet.) Draining the pipe increases the dose rates in the area by a factor of 1.7 (20 mr/hr vs 12 mr/hr). This results in additional personnel exposure of 50 mr to obtain the radiograph, including the installation and removal of insulation and shielding. In addition, removing the pipe from the nozzle would require the pipe to be cut in two places and then rewelded which would take about 102 hours. Additional examinations would then be needed for the welds that reattach the pipe to the system. The total dose for the project would be approximately 2 R. The additional 29 % coverage would provide only a small potential for increasing plant safety while greatly increasing expenditures of plant manpower and radiation exposure.

V ALTERNATE EXAMINATIONS

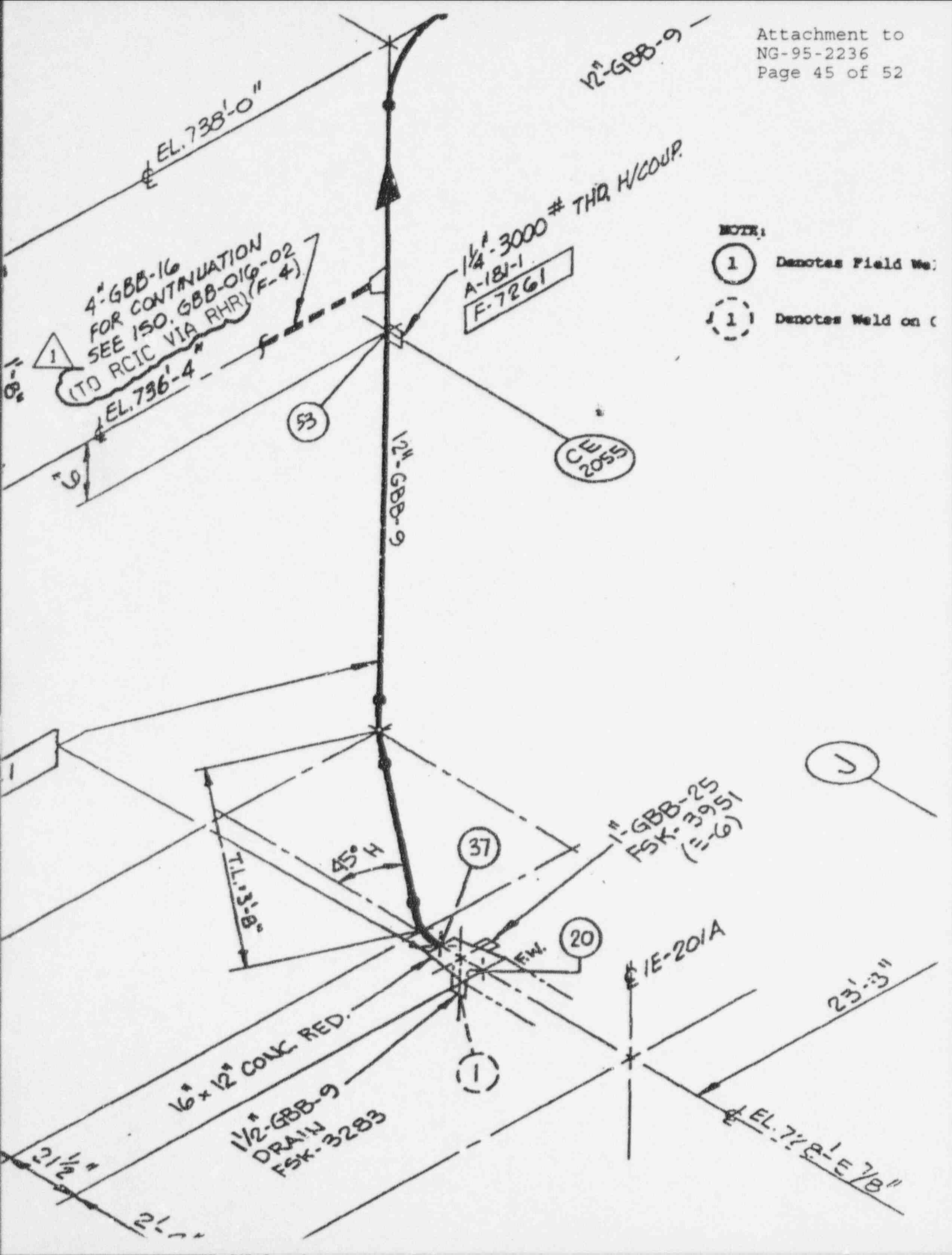
IES Utilities Inc. proposes to perform volumetric examination of the 71% weld length. The alternative examination coverage allowed by Code Case N-460 will also be used.

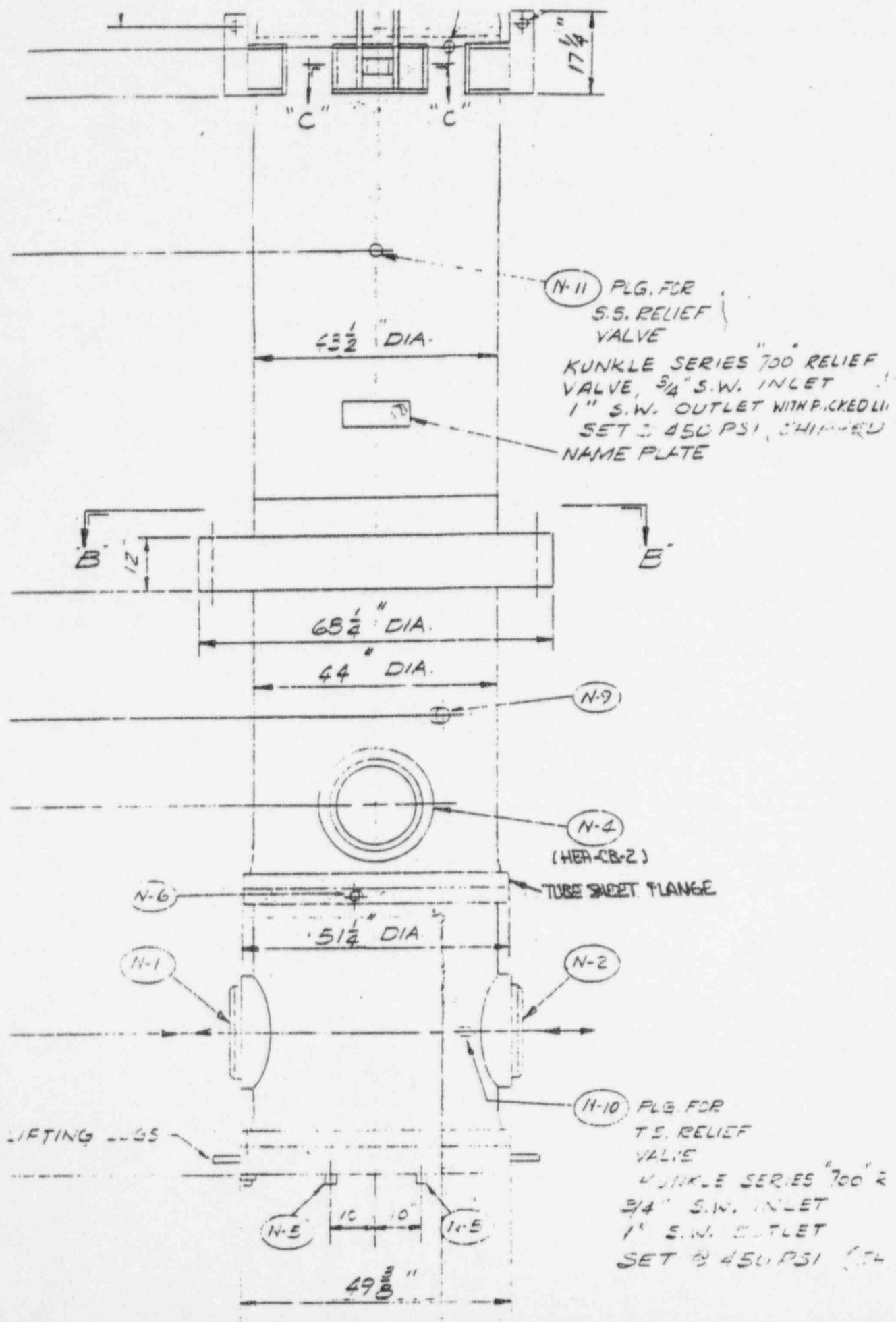
VI JUSTIFICATION FOR THE GRANTING OF RELIEF

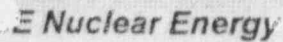
Examining the additional 29% of weld length would require draining the RHR System and removing the pipe. This would greatly increase personnel radiation exposure while providing only a small potential for increasing plant safety.

VII IMPLEMENTATION SCHEDULE

This relief request will be implemented during the 2nd Ten Year Interval. This weld was included in the Refueling Outage (RFO) 13 Summary Report.







195094


100

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☐ VT

☒ OTHER NOZZLE-SHELL

FORM LT-20 (REV. 4)

 <p>GE Nuclear Energy</p>	<p align="center">INDICATION PLOT SHEET</p>		<p>SITE: DUANE ARNOLD UNIT: 1</p> <p>PROJECT: 1DX36</p> <p>REPORT NO.: 195094</p>
<p>SYSTEM: HEATEXCHANGER A</p>	<p>COMPONENT ID NO.: HEA-CB-2</p>	<p>CONFIGURATION: NOZZLE</p> <p>FLOW</p> <p>SHELL</p>	

Heat Exchanger "A"

HEA-CB-2

<p>DRAWN BY <i>Paul W. Nickerson</i></p>	<p>DATE 3-4-95</p>	<p>LEVEL II</p>	<p>DATE 3-12-95</p>	<p>LEVEL II</p>	<p>DATE 3-17-95</p>	<p>LEVEL III</p>	<p>DATE 3-18-95</p>	<p>REVIEW <i>William J. McNeill</i></p>
---	---------------------------------	------------------------------	----------------------------------	------------------------------	----------------------------------	-------------------------------	----------------------------------	--



GE Nuclear Energy

INDICATION PLOT SHEET

SITE: DUANE ARNOLD UNIT: 1

REPORT NO.:

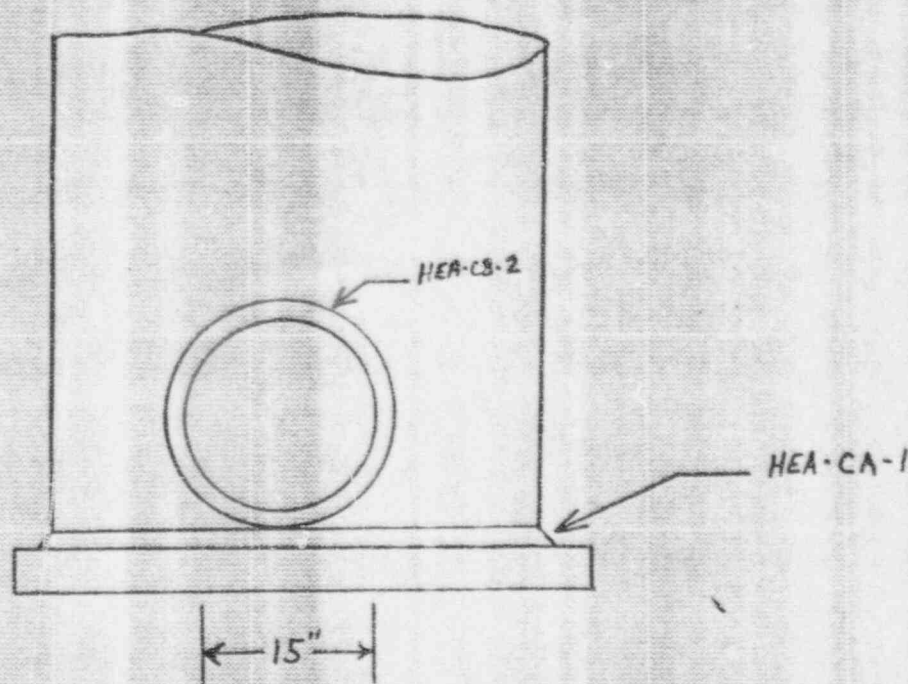
PROJECT: 1DX36

195094

SYSTEM: HEAT EXCHANGER A

COMPONENT ID NO.: HEA-CB-2

CONFIGURATION: NOZZLE FLOW SHELL



Paul W. Michelson

DRAWN BY

II 3-4-95
LEVEL DATE

B. J. Donnell

GE REVIEWED BY

II 2-17-95
LEVEL DATE

Hank E. N...

UTILITY LEVEL III REVIEW

3-17-95
DATE

William H. ...

ANII REVIEW

3-18-95
DATE

PAGE 5 OF 8

Attachment to
NG-95-2236
Page 49 of 52



GE Nuclear Energy

ULTRASONIC EXAMINATION DATA SHEET

(MANUAL RPV VESSEL WELDS)

SITE: DUANE ARNOLD

PROCEDURE NO.: UT-DAC-301V0

REPORT NO.: 195094

UNIT: 1

REVISION NO.: 0

DATA SHEET NO.: DM-003

PROJECT NO.: 1DX36

FRR NO.: N/A

CALIBRATION SHEET NO.: 0° N/A

45° CM-003 60° N/A

SYSTEM: HEAT EXCHANGER A EXAM SURFACE TEMP: 79 °F COUPLANT: HUMEX EXAM START: 12:10

WELD ID: HEA-CB-2 THERMOMETER S/N: 145989 BATCH NO.: 93765 EXAM END: 12:30

BEAM ANGLE: ☐ 0° ☒ 45° ☐ 60° ☐ OTHER N/A

SURFACE CONDITION: ☐ SMOOTH ☒ GROUND ☐ OTHER N/A

MATERIAL TYPE: ☒ CS ☐ SS ☐ OTHER N/A

EXAM SURFACE: ☐ ID ☒ OD

L₀ REFERENCE: TOP DEAD CENTER OF NOZZLE

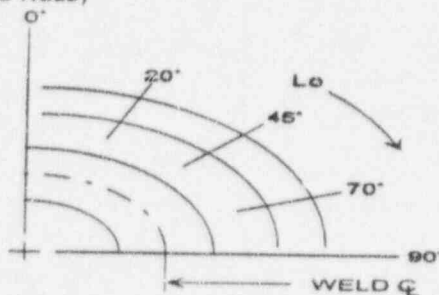
0° SCAN SENSITIVITY N/A dB

W₀ REFERENCE: WELD CENTERLINE

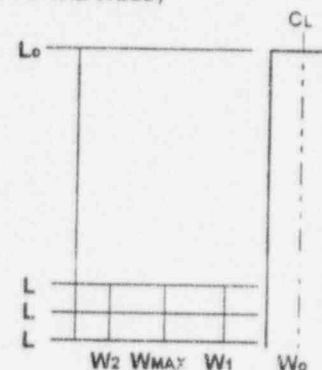
45° SCAN SENSITIVITY 52.0 dB

60° SCAN SENSITIVITY N/A dB

NOZZLE WELD REFERENCE SYSTEM (L₀ AND W₀ ARE INTERCHANGED WHEN SCANNING FOR REFLECTORS TRANSVERSE TO THE WELD)



WELD REFERENCE SYSTEM (L₀ AND W₀ ARE INTERCHANGED WHEN SCANNING FOR REFLECTORS TRANSVERSE TO THE WELD)



L/R	% DAC (MAX)	W1 20% DAC	WF1 50% DAC	WM MAX DAC	WF2 50% DAC	W2 20% DAC	MP1 20% DAC	MPF1 50% DAC	MP MAX DAC	MPF2 50% DAC	MP2 20% DAC	CONTINUOUS (C) OR SPOT (S) TRANSVERSE (T) OR PARALLEL (P)	CW/CCW TOP OR BOTTOM
NRI													

REMARKS: One sided exam performed from the shell side due to the nozzle to shell configuration. The examination was limited from 19.0" to 24.0" and from 29.0" to 34.0" to a "W" dimension of less than 2.0" due to the proximity of HEA-CA-1. No examination was performed from 24.0" to 29.0" due to the proximity of HEA-CA-1 weld.

Paul W. Michelson

II 3-4-95

Frank T. Lerner

3-17-95

EXAMINED BY

LEVEL

DATE

UTILITY LEVEL III REVIEW

DATE

Ed. Bonnell

II 3-17-95

William M. Mulla

3-18-95

GE REVIEWED BY

LEVEL

DATE

ANII REVIEW

DATE

PAGE: 4 OF: 6

RECORD OF NONDESTRUCTIVE EXAMINATION
MAGNETIC PARTICLE- (DRY OR WET METHOD) MT-1

CHAR NO. N/A MIF STEP N/A DCP/PHP NO. N/A TRAVELER NO. N/A INDEX ITEM N/A
GIR NO. N/A ISI NO. I95094 AR NO. N/A
COMPONENT OR SYSTEM HEAT EXCHANGER A DWG. OR ISO NO. 2.1-01
THICKNESS .875 PROCEDURE NO. 2162.4 REV 1 ACCEPT STD 6.10.6
EQUIPMENT NO. ID 90015A CAL. DUE DATE 5-10-95 (AC) DC
D.C. CURRENT GUN N/A CAL. DUE DATE N/A
YOKE/PROD SPACING 4"-5" AMP N/A DRY POWDER: RED N/A BLACK N/A
MX-MCP BATCH NO. 89F02K 9 CM RED BATCH NO. 89L05K 7 C-F BLACK BATCH NO. N/A

ITEM	INITIAL INSPECTION		DEFECT CODE*	INITIAL INSPECTION REMARKS (SIZE/LOCATION)	REINSPECTION		DEFECT CODE*	REINSPECTION REMARKS (SIZE/LOCATION)
	ACC	REJ			ACC	REJ		
HEA-CB-2	X		N/A	NRI				
				N/A				

*DEFECT CODE

☐ PREVIOUS INSPECTION DATA REVIEWED

P - POROSITY, R - ROUNDED, LI - LINEAR INDICATION, LA - LAMINATION, O - OTHER
(IDENTIFY)

COMMENTS/SKETCH

HEA-CB-2

EXAM RESTRICTED TO .3" FROM WELD TOE AT 24" TO 29.3"
DUE TO CONFIGURATION OF NOZZLE. EXAMINED 95% OF THE CODE REQ'D AREA

Examiner Shawn P. Mink II 3-4-95 Reviewed By Paul E. Johnson 3/11/95
Signature/Level/Date Level III Signature/Date ANII Signature/Date



GE Nuclear Energy

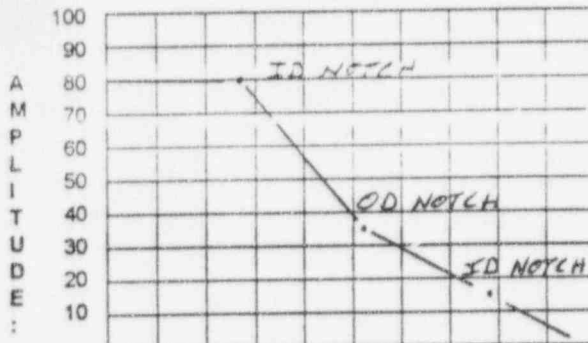
ULTRASONIC CALIBRATION DATA SHEET (VESSEL CALIBRATION)

SITE: DUANE ARNOLD UNIT: 1 CALIBRATION SHEET NO.: CM-003
PROJECT NO.: IDX36 LINEARITY SHEET NO.: L-002

PROCEDURE NO.: UT-DAC-301V0 REVISION: 0 FRR: N/A

Instrument STAVELEY SONIC 136 707H
Manufacturer Model No. Serial No.
Search Unit KBA C28420 50" 2.25 MHz 45° / SHR 40"
Manufacturer Serial No. Size Freq Angle/Mode Incident to wedge front
Cable RG-174 6' 2
Type Length No. of Connectors
Calibration Standard IE-12 CS 1.50" 68 °F
Serial No. Material Thickness Temp.
Couplant HUMEX 94165 Thermometer 145989
Type Batch No. Serial No.

DAC



SWEEP: 0 - 10 = 8.0"

☐ DEPTH ☒ METAL PATH

INSTRUMENT SETTINGS

DAC Construction		Sensitivity	
Gain - Axial Scan	<u>38.0</u>	Gain - Axial Scan	<u>38.0</u>
Gain - Circ. Scan	<u>38.0</u>	Gain - Circ. Scan	<u>38.0</u>
Pulse	<u>222 ns</u>	Range	<u>8.0"</u>
Damping	<u>500 ohms</u>	Delay	<u>299"</u>
Rep Rate	<u>2 KHz</u>	Velocity	<u>129 in/u</u>
Filter	<u>1</u>	Sweep	<u>N/A</u>
Frequency	<u>2.25 MHz</u>	Resolution	<u>N/A</u>
Reject	<u>OFF</u>	Jack	<input type="checkbox"/> R <input checked="" type="checkbox"/> T

NOTE: N/A dB DIFFERENCE BETWEEN 3/8 VEE AND 5/8 VEE

HOLE DEPTH T"	INCHES	GAIN @ 1X	MAX. AMP.	"W" INCHES	"MP" INCHES	SDH OR FBH
1/4	N/A	1X	N/A	N/A	N/A	N/A
1/2	N/A	1X	N/A	N/A	N/A	N/A
3/4	N/A	1X	N/A	N/A	N/A	N/A
NOTCH	1.50"	1X	80%	1.80"	2.24"	N/A

Field Simulator: N/A S/N: N/A
REFLECTOR: N/A N/A
MAX AMPLITUDE: N/A N/A
SWEEP: N/A N/A
GAIN: N/A N/A

WELDS EXAMINED

REPORT NO.

HEA-CB-2
N/A

195094

CALIBRATION VERIFICATION

INITIAL CALIBRATION TIME	11:30	VERIFICATION TIMES	
FINAL VERIFICATION TIME	13:40	N/A	N/A
		N/A	N/A

BEAM SPREAD

TRAILING RAY				MAXIMUM AMP.		LEADING RAY			
20% DAC		50% DAC		100% DAC		50% DAC		20% DAC	
W	MP	W	MP	W	MP	W	MP	W	MP
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Paul W. Mickelson II 3-4-95
EXAMINER LEVEL DATE
Bob Bennett III 3-17-95
GE REVIEWED BY LEVEL DATE

Frank E. Lohman 3-17-95
UTILITY LEVEL III REVIEW DATE
William M. Miller 3-18-95
ANII REVIEW DATE

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