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

IES UTILITIES

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.

A047.1

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

Sincerely,

John F. Franz
Vice President, Nuclear

Attachment

JFF/CJR/smz
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

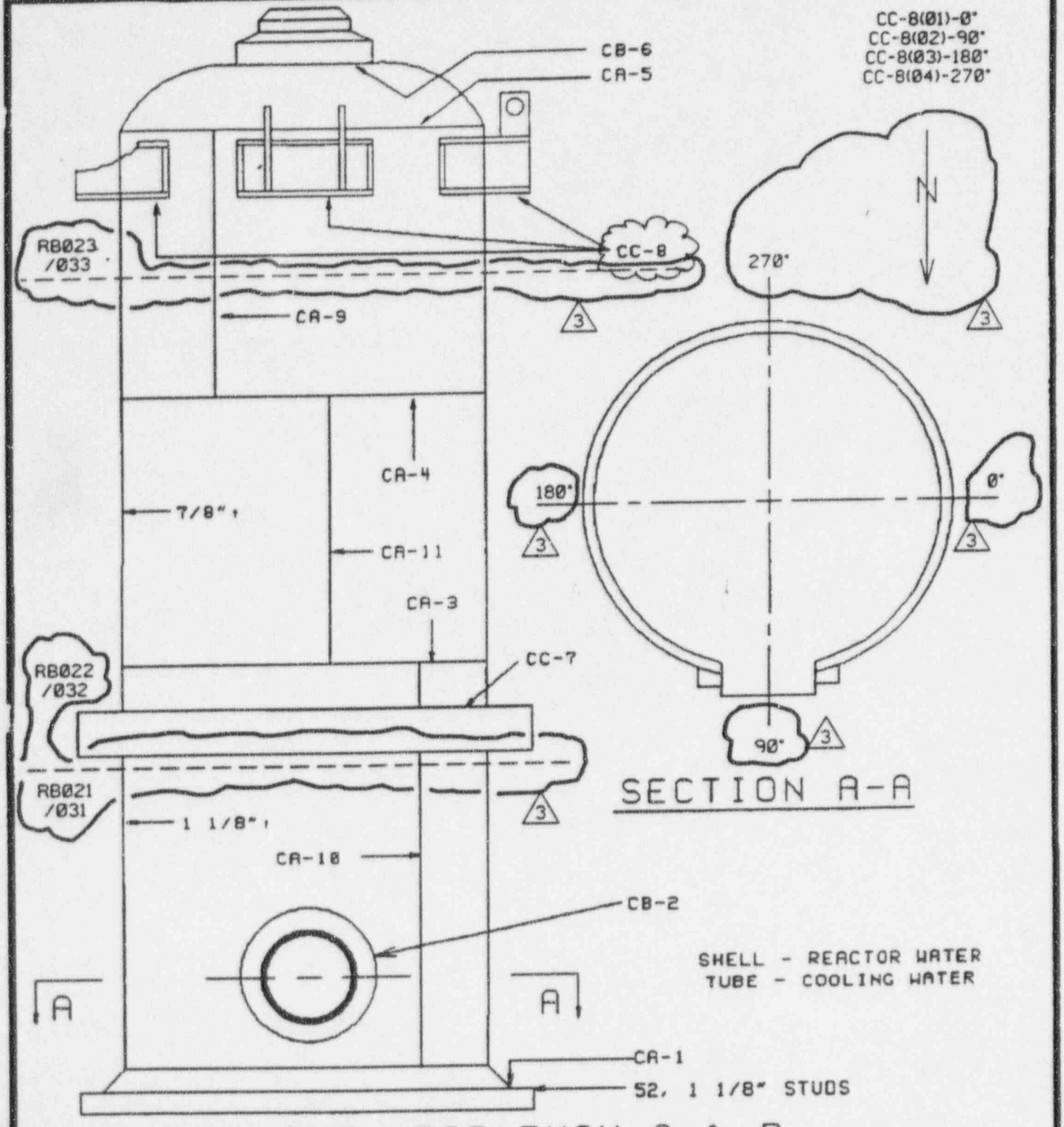
IES Utilities Inc. proposes to perform a surface examination of the accessible 82.5% of the weld length for each of the four welds (HEA-CC-08, 1 through 4). The examination coverage specified in Code Case N-460 will be utilized.

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	SML	SML	RCM	ISO'S FOR 2nd 10 YEAR PLAN
2	9-18-90				ISO'S TO CAD FORMAT AS PER NC-89-0794
3	8/23/94	DA	FED 8/23/94		REVISED PER ISI INSPECTION WALKDOWN

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

MAR 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. 91-303 309 310 311 NCR NO N/A

COMPONENT OR SYSTEM AUXILIARY FEEDWATER PIPING WELD SUPPORTS (1" THICK) DWG. OR ISO NO ~~M-1-SE~~ 2.1-1

THICKNESS 1" PROCEDURE NO. 2162.4 REV 0 PCN N/A ACCEPT STD 6.10.1

EQUIPMENT NO. ID 20-156 CAL DUE DATE 7-4-93 (AC) DC

DC CURRENT GUN N/A CAL DUE DATE N/A

YOKE/PROD SPACING 7"-9" AMP N/A DRY POWDER: RED N/A BLACK N/A

MX-WCP BATCH NO N/A 9 CM RED BATCH NO N/A 7 C-F BLACK BATCH NO 9KLBK

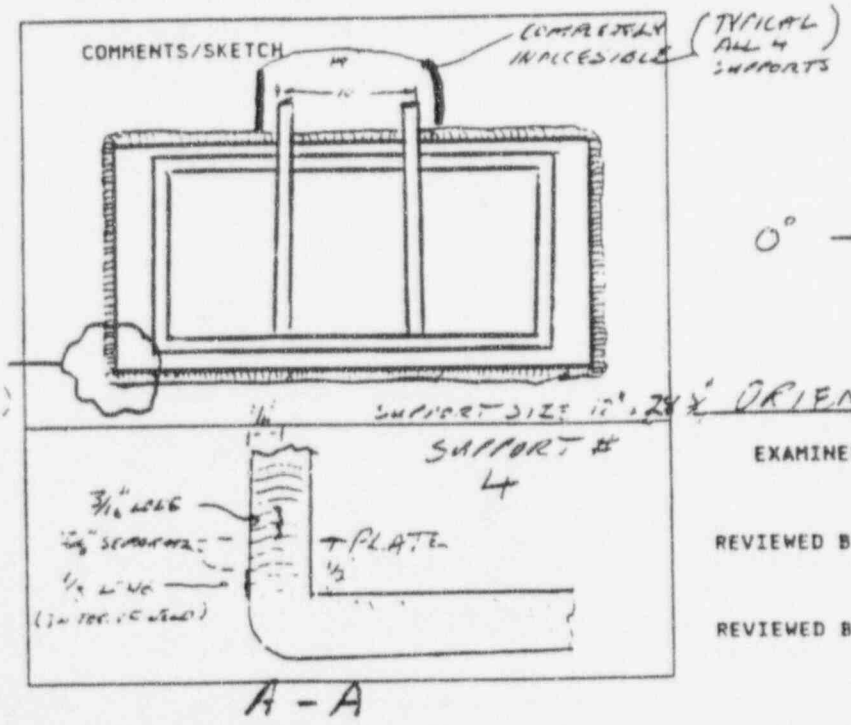
ITEM	INITIAL INSPECTION ACC	INITIAL INSPECTION REJ	DEFECT CODE*	INITIAL INSPECTION REMARKS (SIZE/LOCATION)	REINSPECTION ACC	REINSPECTION REJ	DEFECT CODE*	REINSPECTION REMARKS (SIZE/LOCATIO
91-304 #1 0° EE	✓		N/A					
91-305 #2 90° NE	✓		N/A					
91-310 #3 270° NE	✓		N/A					
91-311 #4 270° SE	✓	X Rej	LI	SEE BELOW				

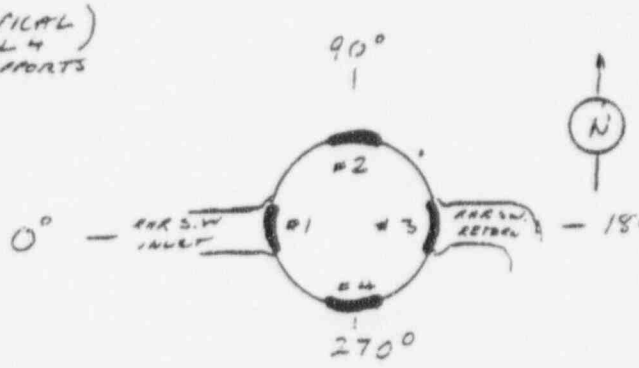
SEE Attached Evaluation

NOTE - COLOR CONTRAST PAINT USE

*DEFECT CODE

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





EXAMINER: [signature] II 1-14-93
SIGNATURE/LEVEL/DATE

REVIEWED BY: Frank E. Adamson 1-16-93
LEVEL III SIGNATURE/DATE

REVIEWED BY: [signature] 1-21-93
ANII SIGNATURE/DATE

RECORD COPY

1 of 2

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

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

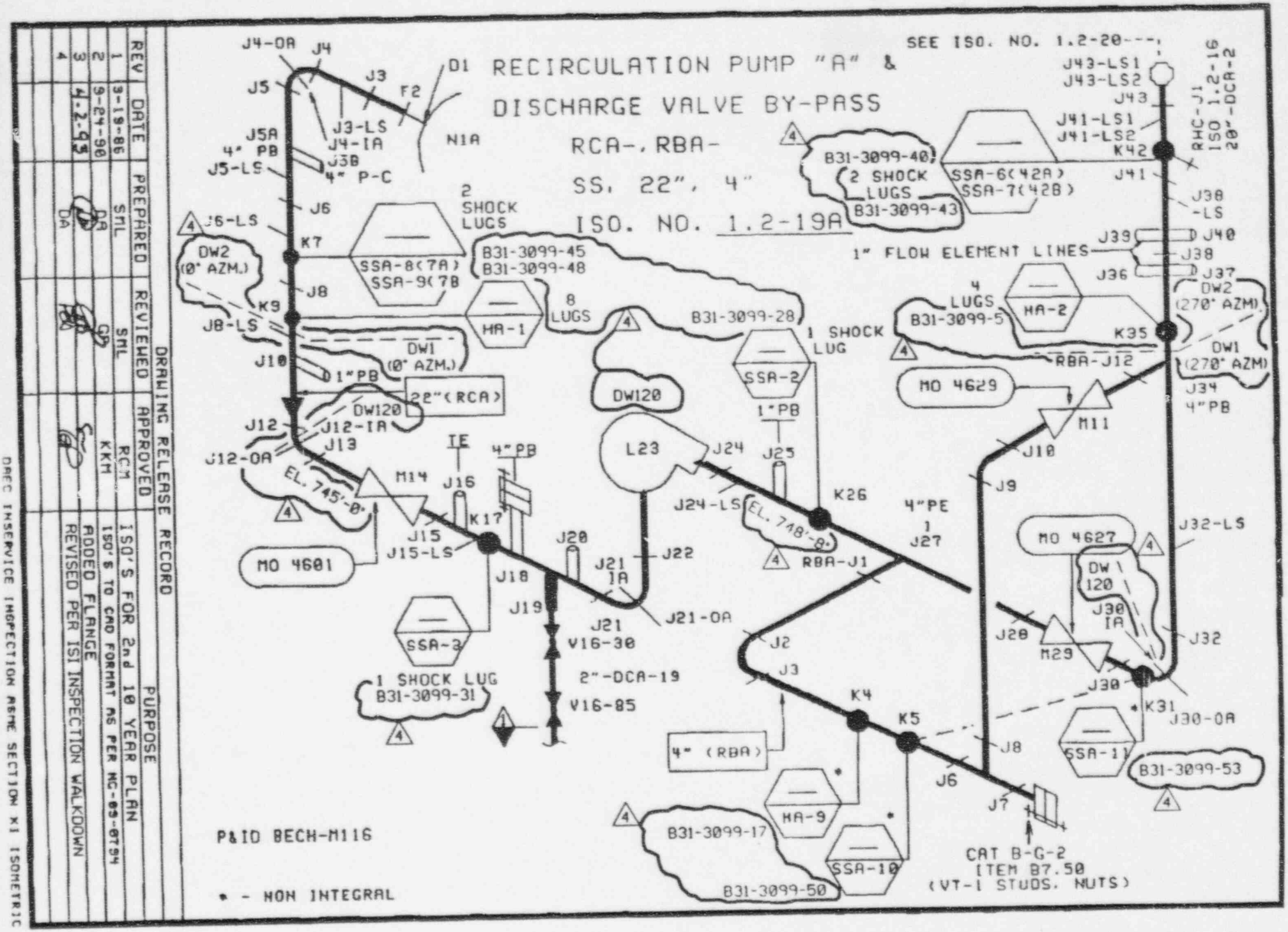
IES Utilities Inc. proposes to perform volumetric examination of the accessible weld, obtaining a total of 85% coverage for this weld length. The examination coverage specified in Code Case N-460 will be utilized.

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.



Attachment to
NG-95-2236
Page 5 of 52

GE Nuclear Energy

RESOLUTION SHEET

REPORT NO.: R-158

PROJECT: DUANE ARNOLD

PROCEDURE: GE-UT-102 REV. 2 FRR NO. N/A
N/A REV. N/A FRR NO. N/A
N/A REV. N/A FRR NO. N/A

SYSTEM: RECIRCULATION
WELD NO.: RBA-J007
CONFIGURATION: TEE TO FLANGE
EXAMINER: H. SCHLORTT LEVEL II
EXAMINER: N/A LEVEL N/A
EXAMINER: N/A LEVEL N/A

NDE METHOD: ☐ MT ☐ PT ☒ UT ☐ VT

WELD TYPE: ☒ CIRCUMFERENTIAL ☐ LONGITUDINAL ☐ OTHER N/A

CAL SHEET NO.(S): C-097

REPORT NO.(S): R-158 ISI No. 89-186

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

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

1 of 4

Ronald C. Law LEVEL II DATE 7-17-90
RESOLUTION BY

REVIEWED LEVEL III DATE 7-17-90

Kevin L. Schmidt LEVEL III DATE 7-18-90
REVIEWED

1 of
7-24-92

ISI NO. 89-186

GE Nuclear Energy

WALL THICKNESS PROFILE SHEET

SITE: DUANE ARNOLD UNIT: I

PROJECT NO: CT 662

REPORT NO. R-158

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

SYSTEM ID RECIRC

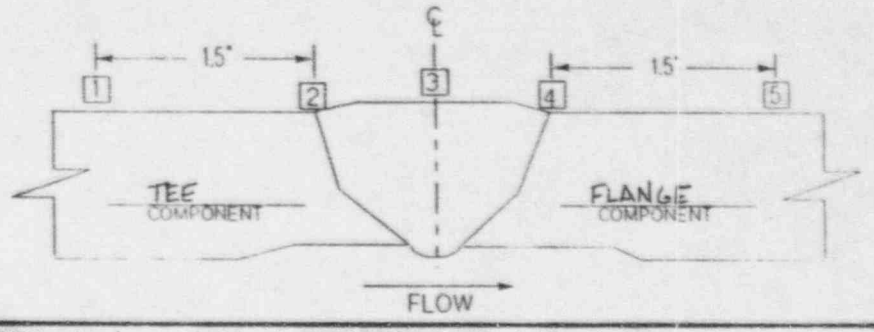
WELD ID NO. RBA-J007

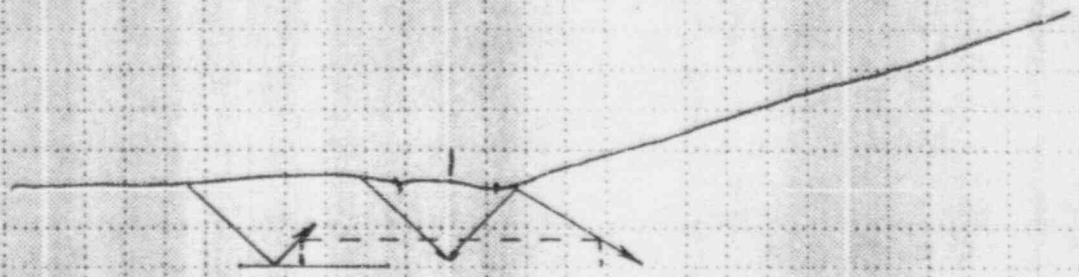
CROWN HEIGHT: .05"

CROWN WIDTH: .5"

NOM. DIAMETER: 4.0"

WELD LENGTH: 14.5"





PROPOSED COVERAGE PLOT

ANII Review 7-24-90

RECORD COPY

Examiner	Level	Date	Reviewed By	Level	Date	Reviewed By	Title	Date
	I	7.16.90		II	7.17.90	KB	III	7-18-90

Page 2 of 3

FORM 138 1-13-90

Attachment to
NG-95-2236
Page 7 of 52

ISI NO. 89-186

GE Nuclear Energy

ULTRASONIC EXAMINATION DATA SHEET
(MANUAL PIPING)

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

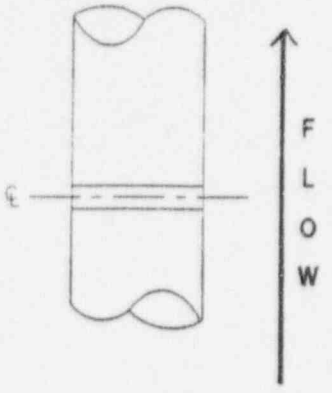
REPORT NO. R-158
CALIBRATION SHEET NO. C-097

PROCEDURE: GE-UT-102 REV 2 FRR N/A
SYSTEM: RECIRC
WELD ID: RBA-J007
START TIME 1136
FINISH TIME 1144

MATERIAL TYPE: ☐ CS ☒ SS ☐ OTHER N/A
EXAM SURFACE ☐ ID ☒ OD
EXAM SURFACE TEMP 80 °F
THERMOMETER S/N 1956
AXIAL SCAN SENSITIVITY 46 dB
CIRC SCAN SENSITIVITY 52 dB

L_o REFERENCE RULE # 1 TDC
W_o REFERENCE WELD E

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



FLANGE IDENTITY
TEE 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									1, 3a, 4a	45°

REMARKS EXAMS 1, 3a, 4a LIMITED TO A "W" OF .65" FOR 1" CW + CCW OF L_o DUE TO CONFIGURATION OF TEE.
NO EXAM PERFORMED DOWNSTREAM DUE TO CONFIGURATION OF FLANGE.
ID AND OD GEOMETRY OBSERVED AT LESS THAN RECORDABLE LEVELS.

Examiner	II Level	7-16-90 Date	Reviewed	II Level	7-17-90 Date	Page 3 of 3
Examiner	I Level	7-16-90 Date	Reviewed	Title	7-18-90 Date	

FORM 143 10-18-89

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 (Manufacturer) USK-7S (Model) 31459-1548 (Serial No.)

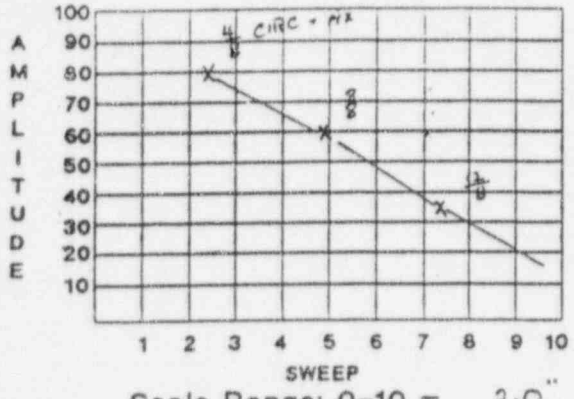
Search Unit: KBA (Manufacturer) .25" (Size) 2.25 MHZ (Freq.) 45°/S (Angle/Mode) K24938 (Serial No.)

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

Calibration Standard: IE-18 (Serial No.) SS (Material) .35" (Thickness) 72 °F (Temp.)

Couplant: ULTRAGEL II (Brand) 8976 (Batch No.) Thermometer: 1956 (Serial No.)

DAC



Scale Range: 0-10 = 2.0"

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		
Delay	10.06	Damping	POS I
Filter	FIXED	Reject	OFF

Jack ☒R ☐T

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

REFLECTOR		
MAX. AMP.	N/A	
SWEEP		

CALIBRATION VERIFICATION

		VERIFICATION TIMES	
INITIAL CALIBRATION TIME	1030	1300	
FINAL VERIFICATION TIME	1510	N/A	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

	Level	Date
Examiner	II	7-16-90
Examiner	I	7-16-90
Reviewed	II	7.17.90
Reviewed	III	7-18-90

Page 1 of 1

FORM M2 9-18-89

LMT-UTX1 10/73

Lambert • MacGill • Thomas, Inc.

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

Location DAEC
Report No. 87-157
Cal.No. HF-10 Time 1521
Job No. IEL-03-
Date 3-31-87
Page 1 of 1

REPORT OF VISUAL AND ULTRASONIC EXAMINATION

ISI ID: RBA-RJ-7 4-3-87

ITEM

Description TEE/PIPE Size 4" SCH 80 Material SS S/N(s) RD-N-A9-A-S4-
A LOOP ISI ID: RBA-RJ-7 4-3-87 2054 4-1-87
Location DRYWELL Preparation AS WELDED Temp 70°

SIGN

Examiner/Level J. Flint A/II Examiner/Level D.E. Cox II Review/Level 4-1-87 [illegible] 4-2-87 II
Authorized Inspector J Brunt 4-3 87 Customer Kurt Schmeder 4-3-87

EQUIPMENT

Tester 1 NoRTEC 131-D S/N 417 2 SLAVE S/N 20
Recorder 1 N/A S/N N/A 2 N/A S/N N/A
Transducer 1 C3354, HARISON C, 5X5", 1.5MHZ 2 N/A
3 N/A 4 N/A
Couplant LMT-GEL 102186 Cable COAX 6' Marker N/A Photo N/A

PROC

Calibration Procedure UT-41 Rev. 5, FC. 1,2,3
Examination Procedure UT-41 Rev. 5, FC. 1,2,3
Recording Procedure N/A Rev. N/A

CALIB

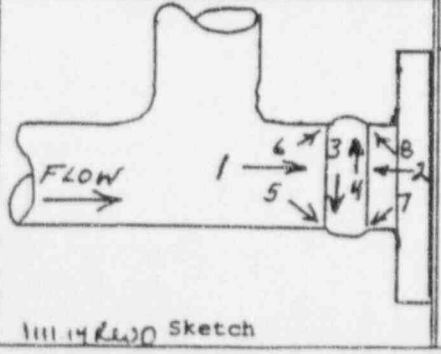
Calib. Blk. PIPE SEG. 80359 Temp. 70° Ref. ID NOTCH Amp. 80% Sweep 2.0 DIV
Ref. Gain 52/55 Damp. OFF Reject OFF Gate 1-10 DIV
Alarm N/A Mag. Tape Count N/A Chart N/A Cal. Check Time 1540

EXAMINATION

Cal. Ref. Blk. LMT-037 RAMPAS Ref. Refl. 1"+2"MP Amp. 95%+80% Sweep Position 4.0+8.0 DIV
Scan Gain 64/67 Ref. Dwg. 1.2-19 Reject Level ASME XI Report Level ASME XI

NAD = No Apparant Disc. L = Linear G = Geometry S = Spot M = Multiples

Scan	Type	Disp.	Scan	Type	Disp.	Scan	Type	Disp.
N/A	N/A	N/A	N/A	N/A	N/A	N/A		
1	⊥ W FLOW	NAD	7	45° SKEW A FLOW	N/A	13		
2	⊥ A FLOW	N/A	8	45° SKEW W FLOW	N/A	14		
3	∥ CW	NAD	9	N/A	N/A	15		
4	∥ CCW	NAD	10			16		
5	45° SKEW W FLOW	NAD	11			17		
6	45° SKEW W FLOW	NAD	12			18		



111.14 Rev.0 Sketch

Scan	Description of Indications
1	SCAN LIMITED TO ONE SIDE & LIMITED SCAN (11 TO 1 O'CLOCK) DUE TO CONFIGURATION
2, 7, 8	NO SCAN DUE TO CONFIGURATION.

Lambert • MacGill • Thomas, Inc.
Testing • Engineering • Service • Training
515 Aldo Avenue
Santa Clara, CA 95050
408-980-9333

Location LAES
Cal. No GE-1D Time 448
Job No 1EL-034
Date 3-31-87
Page 1 of 1

REPORT OF ULTRASONIC CALIBRATION

SIGN

Examiner/Level J. Flint II Examiner/Level D.E. Cox II Review/Level [illegible] 4-1-87

Authorized Inspector J. Flint 4-3-87 Customer Kenneth Swenson 4-3-87

EQUIPMENT

Instrument	NORTEC 131D	S/N	417	ReCal Due	5-20-87	SU Cable 6' COAX
Instrument	SLAVE	S/N	20	ReCal Due	6-4-87	
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 J. Flint II

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 ± 5% of full scale.

AMPLITUDE CONTROL LINEARITY CHECK — Check Completed by J. Flint II

SENSITIVITY	SET	−6	−12	SET	−12	SET	−6
ACCEPT RANGE	80%	32 to 48	18 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 C3354 Mfg HARISONIC Type S/W Size 5"x.5" Freq. 1.5MHz Index .35 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-4 Rev 5 Date 3-7-87 Field Change 1, 2, 3 Date 3-27-87 FC
3-18-87 FC 1,

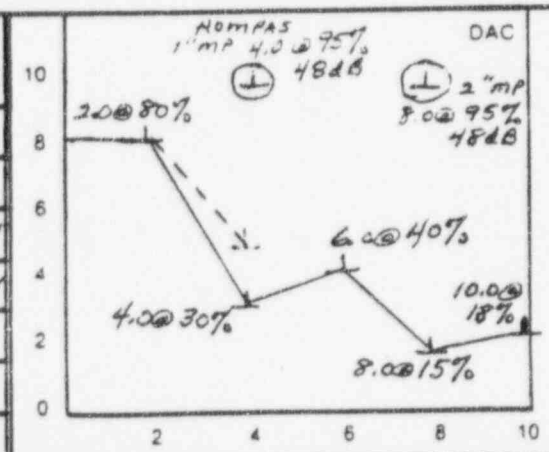
CALIBRATION

Cal. Block Type PIPE SEGMENT S/N 80359 Ref. Refl. I.D. NOTCH Temp. 70°F

Verification/Ref. Blk. ROMPAS S/N LMT037 Ref. Refl. 1", 2" MP Temp. 70°F

INSTRUMENT SETTINGS

	0°	Angle Beam	Digital
Gain	N/A	52/55	1.0=1"
Sweep		10/966	4.0=4"
Delay		1/002	5.0=5"
Reject		OFF	N/A
Damp.		OFF	
Freq.		2.25MHz	
Video/Filt.		1+	
Rep. Rate	N/A	1K	N/A



CAL. CHECK TIME
1457
1519
1522
1540
1547

IRD	.4	.75	1.25	1.7	1.85
MP	.49	1.08	1.48	2.08	2.43

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

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

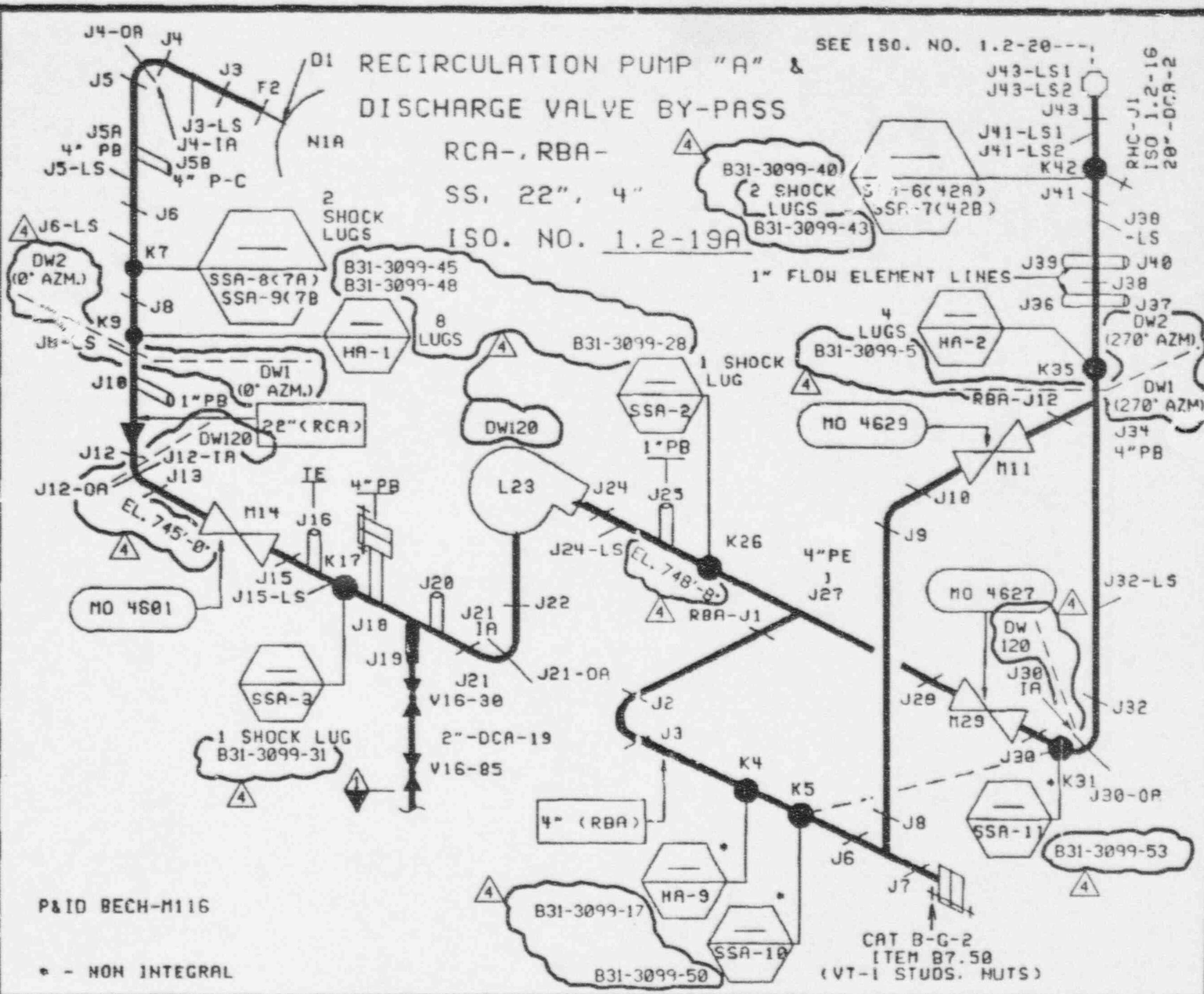
IES Utilities Inc. proposes to perform volumetric examination utilizing the required 45° shear supplemented with a 70° Refracted Longitudinal exam of the accessible weld, obtaining a total of 76% coverage for this weld. The alternative examination coverage specified in Code Case N-460 will be utilized.

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.



DRAWING RELEASE RECORD

REV	DATE	PREPARED	REVIEWED	APPROVED	PURPOSE
1	6-19-86	SML	SML	RCM	ISO'S FOR 2nd 10 YEAR PLAN
2	9-24-90	CA	CA	KKM	ISO'S TO CAD FORMAT AS PER NC-89-0794
3	4-2-93	DA			ADDED FLANGE
4					REVISED PER ISI INSPECTION WALKDOWN

GE Nuclear Energy

RESOLUTION SHEET

REPORT NO.: R-178

PROJECT: DUANE ARNOLD

PROCEDURE: GE-UT-102 REV. 2 FRR NO. N/A
N/A REV. N/A FRR NO. N/A
N/A REV. N/A FRR NO. N/A

SYSTEM: RECIRCULATION
WELD NO.: RBA-J012
CONFIGURATION: VALVE TO WELD-O-LET
EXAMINER: H. SCHLORTT LEVEL II
EXAMINER: N/A LEVEL N/A
EXAMINER: N/A LEVEL N/A

NDE METHOD: ☐ MT ☐ PT ☒ UT ☐ VT

WELD TYPE: ☒ CIRCUMFERENTIAL ☐ LONGITUDINAL ☐ OTHER N/A

CAL SHEET NO.(S) C-118, C-119

REPORT NO.(S) R-178 ISI No. 89-190

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

Ronald E. Lau LEVEL II DATE 7-18-90
RESOLUTION BY

REVIEWED LEVEL III DATE 7-18-90

Kevin L. Schmidt LEVEL III DATE 7-20-90
REVIEWED

ANII 7-31-90

ISI NO. 89-190

GE Nuclear Energy

WALL THICKNESS PROFILE SHEET

SITE: DUANE ARNOLD UNIT: I

PROJECT NO: CT-662

REPORT NO. R-178

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

SYSTEM ID RECIRC

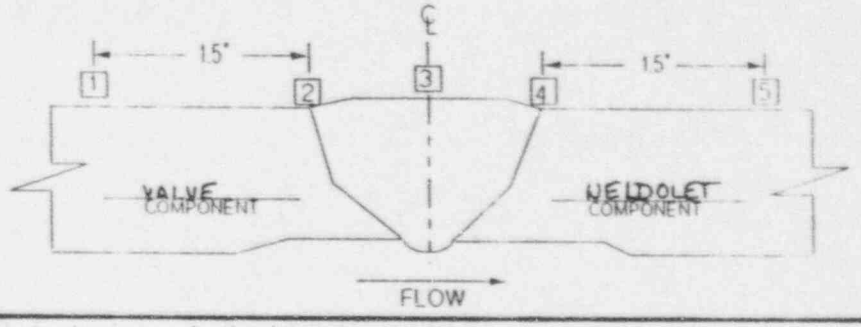
WELD ID NO. RBA-J012

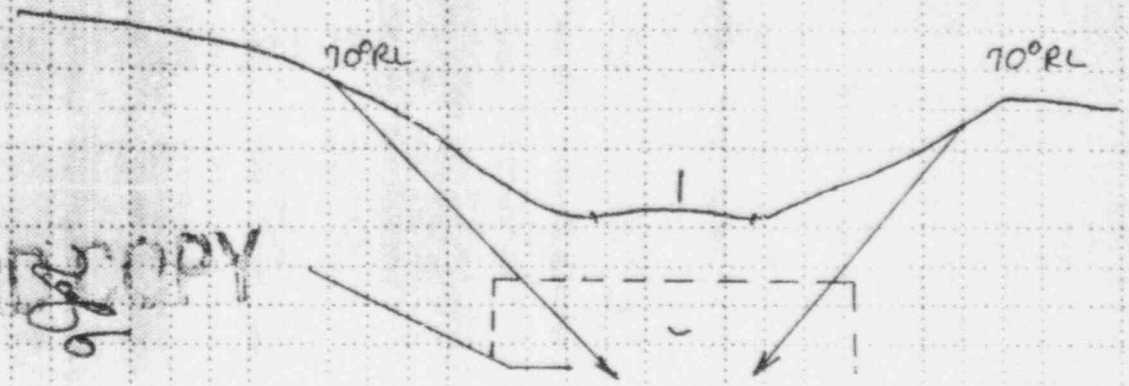
CROWN HEIGHT: .05

CROWN WIDTH: .8

NOM. DIAMETER: 40

WELD LENGTH: 14.5





RECORD COPY

ANII Review 7-31-90

PROPOSED COVERAGE PLOT 45° SHEAR WAVE UTILIZED ON CIRCUMFERENTIAL SCANS

70° R.L. SUPPLEMENTAL FOR AXIAL SCANS

Examiner	Level	Date	Reviewed By	Level	Date	Reviewed By	Title	Date
	I	7-14-90		II	7-18-90	KB	III	7-20-90

FORM 1.18 1-13-90

ISI No. 89-190

GE Nuclear Energy

ULTRASONIC EXAMINATION DATA SHEET
(MANUAL PIPING)

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

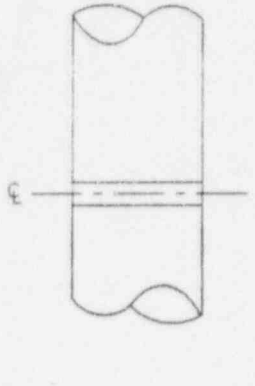
REPORT NO. R-178
CALIBRATION SHEET NO. C-118

PROCEDURE: GE-UT-102 REV 2 FRR N/A
SYSTEM: Recirc
WELD ID: RBA-J012
START TIME 0805
FINISH TIME 0812

MATERIAL TYPE: ☐ CS ☒ SS ☐ OTHER N/A
EXAM SURFACE ☐ ID ☒ OD
EXAM SURFACE TEMP 80 °F
THERMOMETER S/N 1802
AXIAL SCAN SENSITIVITY 48 dB
CIRC SCAN SENSITIVITY 58 dB

L_o REFERENCE Rule #1 TDC
W_o REFERENCE Weld Ctr

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



Weld-o-let IDENTITY
VALVE 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	Level	Date	Reviewed	Level	Date
Rehbat	II	7-18-90		II	7-18-90
N/A			ICIS	III	7-20-90
Examiner	Level	Date	Reviewed	Title	Date

FORM 143 10-18-89

ANII Review 7-31-90

ISI NO. 89-190

GE Nuclear Energy

ULTRASONIC EXAMINATION DATA SHEET
(MANUAL PIPING)

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

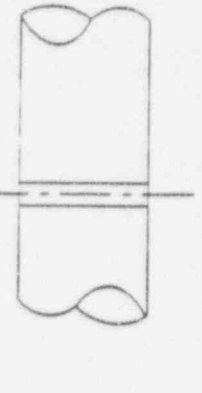
REPORT NO. R-178
CALIBRATION SHEET NO. C-119

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

L_o REFERENCE Rule #1 TDC
W_o 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
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											1 - 2	70° RL

REMARKS SCANNED at Reference Sensitivity To maintain 30% noise level
Supplemental exam performed due to component configuration

W Schlentz	II	7-18-90	Ronald C. Gasser	II	7-18-90
Examiner	Level	Date	Reviewed	Level	Date
N/A			[illegible]	[illegible]	7-20-90
Examiner	Level	Date	Reviewed	Title	Date

Page 4 of 4

FORM 143 10-18-89

ANII Review 1-31-92

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: KRAUTKRAMER (Manufacturer) USK-7S (Model) 31459-1548 (Serial No.)

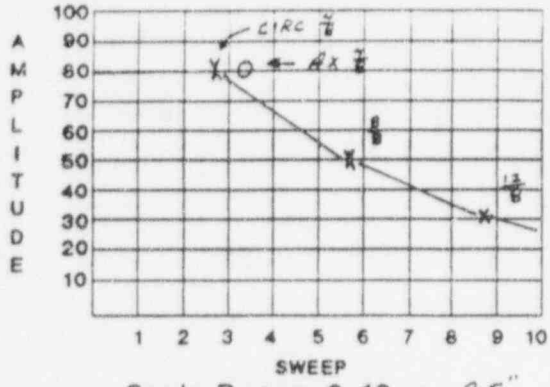
Search Unit: KBA (Manufacturer) .25" (Size) 2.25 mHz (Freq.) 45°/S (Angle/Mode) K24938 (Serial No.)

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

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

Couplant: ULTRAGEL II (Brand) 8976 (Batch No.) Thermometer: 1802 (Serial No.)

DAC



Scale Range: 0-10 = 2.5"

INSTRUMENT SETTINGS

	DAC Construction	Sensitivity
Gain - Axial Scan	34 dB	34 dB
Gain - Circ. Scan	44 dB	44 dB

Freq.	Auto	Rep Rate	FIXED
Range	.5	Resolution	FIXED
Sweep	989	Damping	POS. 1
Delay	10.0	Reject	OFF
Filter	FIXED		

Jack ☒R ☐T

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

REFLECTOR		
MAX. AMP.	N	A
SWEEP		

CALIBRATION VERIFICATION

		VERIFICATION TIMES	
INITIAL CALIBRATION TIME	0735		
FINAL VERIFICATION TIME	0840	N	A

WELDS EXAMINED	REPORT NO.
RBA-J012	R-178

COMMENTS: NONE

Examiner	Level	Date	Reviewed	Level	Date
N/A	N/A	N/A			
Examiner	Level	Date	Reviewed	Title	Date
				III	2-20-96

Page 1 of 1

FORM M2 9-18-89

ANII RO-13W 2-31-90

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.: N/A

Instrument: KRAUT KRAMER (Manufacturer) USK-7S (Model) 31459-1548 (Serial No.)

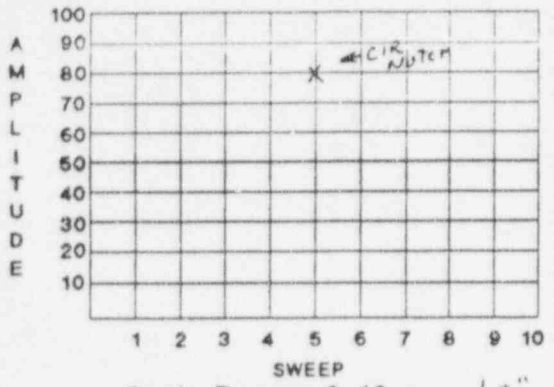
Search Unit: HARISONIC (Manufacturer) ¼" x ½" (Size) 2.25MHZ (Freq.) 70°/RL (Angle/Mode) B10669 (Serial No.)

Cable: (2) RG-174 (Type) 6' (Length) 4 (Connectors)

Calibration Standard: IF-17 (Serial No.) SS (Material) .52" (Thickness) 78 °F (Temp.)

Couplant: ULTRAGEL II (Brand) 8976 (Batch No.) Thermometer: 1802 (Serial No.)

DAC



Scale Range: 0-10 = 1.0"

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: N/A S/N: N/A

REFLECTOR		
MAX. AMP.	N	A
SWEEP		

CALIBRATION VERIFICATION

		VERIFICATION TIMES	
INITIAL CALIBRATION TIME	0850		
FINAL VERIFICATION TIME	0955	N	A

WELDS EXAMINED	REPORT NO.
RBA-J012	R-178

COMMENTS: NONE

Examiner	Level	Date	Reviewed	Level	Date
N/A Examiner	N/A Level	N/A Date	Reviewed	Title	7-20-90 Date

Page 1 of 1

FORM 142 9-18-89

7-21-90

LMT-UTX2 10/79

Lambert • MacGill • Thomas, Inc.

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

Location DAEC
Report No. 87-431
Cal.No. GE-11 Time 1203
Job No. IEL-034
Date 4-1-87
Page 1 of 1

REPORT OF VISUAL AND ULTRASONIC EXAMINATION

ITEM

Description VALVE TO PIPE Size 4" Material SS S/N(s) RD-N-A10-A22-F
ISI ID: RBA-BJ-1R 4-7-87
A LOOP
Location DRYWELL Preparation AS WELDED Temp 72°F

SIGN

Examiner/Level W. Flint II Examiner/Level D.E. Cox II Review/Level [illegible] 4-2-87
Authorized Inspector J. Grant 4-8-87 Customer [illegible] 4-6-87

EQUIPMENT

Tester 1 NORTEC 131D S/N 111 2 N/A S/N N/A
Recorder 1 N/A S/N N/A 2 N/A S/N N/A
Transducer 1 ~~[illegible]~~ 285221, AUTOMATION, .375"X.375" 1.5MHz 2 N/A
3 N/A 4 N/A
Couplant LMT GEL 102186 Cable 12' COAX Marker N/A Photo N/A

PROC

Calibration Procedure UT-41 Rev. 5, EC 1-2-3
Examination Procedure UT-41 Rev. 5, EC 1-2-3
Recording Procedure N/A Rev. N/A

CALIB

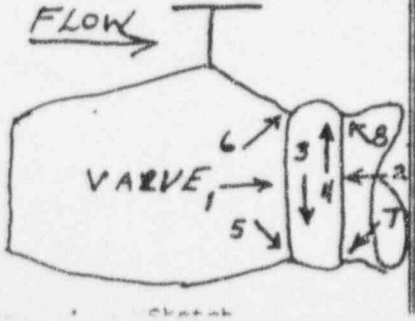
Calib. Blk. 80359 Temp. 68°F Ref. I.D. NOTCH Amp. 80% Sweep 2.0
Ref. Gain 58/60 Damp. OFF Reject OFF Gate 1-10 DIV.
Alarm N/A Mag. Tape Count N/A Chart N/A Cal. Check Time 1232

EXAMINATION

Cal. Ref. Blk ROMPAS LMT037 Ref. Refl. 1, 2" mP Amp. 75% Sweep Position 4.0, 8.0
Scan Gain 70/72 Ref. Dwg. 1.2-19 Reject Level ASME XI Report Level ASME XI

NAD = No Apparant Disc. L = Linear G = Geometry S = Spot M = Multiples

Scan	Type	Disp.	Scan	Type	Disp.	Scan	Type	Disp.
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1	1W FLOW	N/A	7	45° SKEW FLOW	N/A	13		
2	1A 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	N/A	11			17		
6	45° SKEW FLOW	N/A	12	N/A	N/A	18	N/A	N/A



Sketch

Scan	Description of Indications
1, 2, 5 6, 7, 8	NO SCAN DUE TO CONFIGURATION.

Lambert • MacGill • Thomas, Inc.
Testing • Engineering • Service • Training
515 Aldo Avenue
Santa Clara, CA 95050
408-980-9333

Location DAEC
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 M. Flint / II Examiner/Level D.E. Cox II Review/Level [signature] 4-2-87
Authorized Inspector J. Brent 4-8-87 Customer [signature] 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. Cox

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 ± 5% of full scale.

AMPLITUDE CONTROL LINEARITY CHECK — Check Completed by D.E. Cox

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 ~~57A0872~~ 85226 (DBM 4-3-87) Mfg. AUTOMATION 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 FC2, 3-17-87 FC1,3

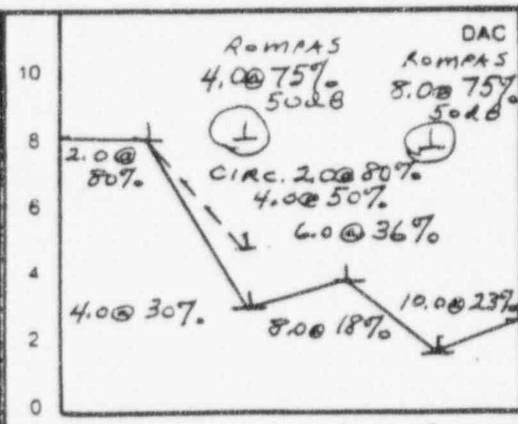
CALIBRATION

Cal. Block Type PIPE SEGMENT S/N 80359 Ref. Refl. I.D. 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	N/A	58/60	1.0 = 1"
Sweep	|	5/400	4.0 = 4"
Delay	|	1/342	N/A
Reject	|	OFF	|
Damp.	|	OFF	|
Freq.	|	2.25 MHz	|
Video/Filt.	|	1+	|
Rep. Rate	N/A	1K	N/A

DAC



CAL. CHECK TIME
1232

IRD	.4	.75	1.1	1.45	1.85
MP	.49	.97	1.39	1.93	2.35

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

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

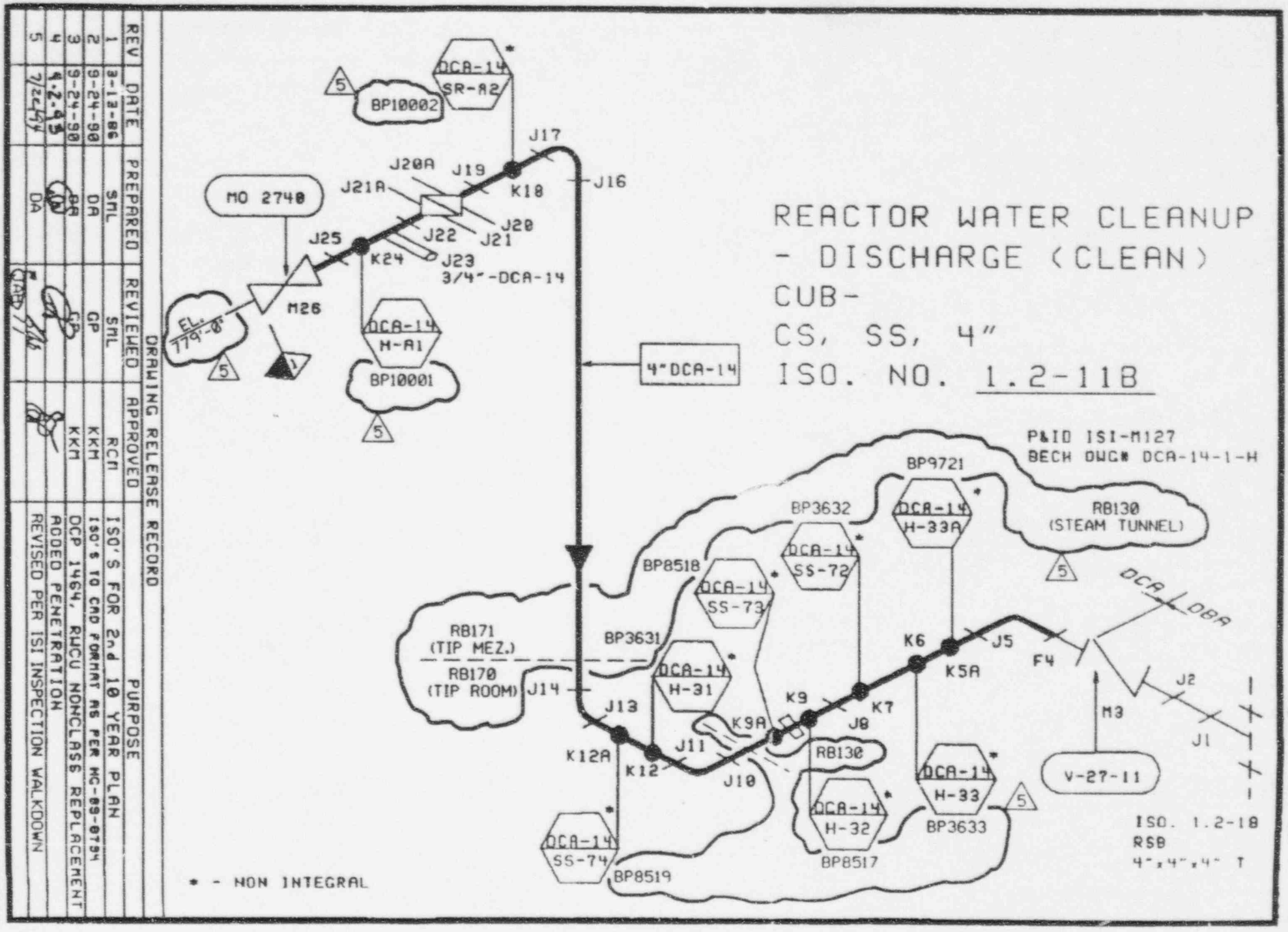
IES Utilities Inc. proposes to perform volumetric examination of the 70% weld length. The alternative examination coverage allowed by Code Case N-460 will also be used.

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.



REV	DATE	PREPARED	REVIEWED	APPROVED	PURPOSE
1	3-12-86	SNL	SNL	RCN	ISO'S FOR 2nd 10 YEAR PLAN
2	9-24-90	DA	GP	KKM	ISO'S TO CAD FORMAT AS PER NG-89-0794
3	9-24-90	DA	GP	KKM	DCP 1464, RWCU NONCLASS REPLACEMENT
4	4.2.95	DA			ADDED PENETRATION
5	7/24/95	DA			REVISED PER ISI INSPECTION WALKDOWN

DRAWING RELEASE RECORD

ONEC INSERVICE INSPECTION RSTR SECTION XI ISOMETRIC

Lambert • MacGill • Thomas, Inc.
Testing • Engineering • Service • Training
515 Aldo Avenue
Santa Clara, CA 95050
408-980-9333

Location DEAC
Report No. 88-181
Cal.No. LRDOC9 Time 204
Job No. IEL-039
Date 10-8-88
Page 1 of 1

REPORT OF VISUAL AND ULTRASONIC EXAMINATION

ITEM

Description FL/VALVE Size 4" Material SS S/N(s) CUB-BF-4

Location STEAM TUNNEL Preparation AS FOUND Temp 95°F

SIGN

Examiner/Level LR Davis II LR DAVIS A Examiner/Level D.A. Affeldt II Review/Level ~~[illegible]~~ 10-11-88

Authorized Inspector [signature] 10-14-88 Customer Kevin P. Schneider 10-12-88

EQUIPMENT

Tester 1 NORTEC 131-D S/N 167 2 NA S/N NA

Recorder 1 NA S/N NA 2 NA S/N NA

Transducer 1 .5" ϕ KBA 15 MHz # H10142 2 NA

3 NA 4 NA

Couplant 5488 Cable 6' BNC/MB Marker NA Photo NA

PROC

Calibration Procedure UT-41 Rev. 8 FC-2

Examination Procedure UT-41 Rev. 8 FC-2

Recording Procedure UT-41 Rev. 8 FC-2

CALIB

Calib. Blk. 80359 Temp. 98°F Ref. ID NOTCH Amp. 80% Sweep 2.0 div

Ref. Gain 47 dB Damp. OFF Reject OFF Gate 1.5-10 div

Alarm NA Mag. Tape Count NA Chart NA Cal. Check Time 2059

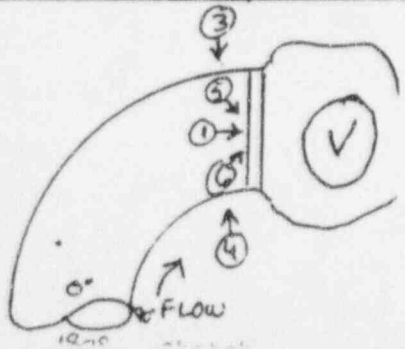
EXAMINATION

Cal. Ref. Blk. 80359 Ref. Refl. ID NOTCH Amp. 80% Sweep Position 2.0 div

Scan Gain 59 dB Ref. Dwg. 12-118 Reject Level NA Report Level PER PROC.

NAD = No Apparant Disc. L = Linear G = Geometry S = Spot M = Multiples

Scan	Type	Disp.	Scan	Type	Disp.	Scan	Type	Disp.
1	⊢ WITH FLOW	NAD	7	NA	NA	13	NA	NA
2	NA	NA	8			14		
3	⊓ CW	NAD	9			15		
4	⊓ CCW	NAD	10			16		
5	SKEW CW W/FLOW	NAD	11			17		
6	SKEW CCW W/FLOW	NAD	12	↓	↓	18	↓	↓



Scan	Description of Indications
1	I.D. GEO. LESS THAN 50% DAC
2, 7 & 8	NO SCAN ODLE TO VALVE CONFIG & C S
3 & 4	LIMITED TO WELD AND UP SIDE ONLY

LMT UTC 1 88

Lambert • MacGill • Thomas, Inc.

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

Location DAEC
Cal No 4KD-009 Time 1955
Job No IEL -058
Date 10-9-88
Page 1 of 1

REPORT OF ULTRASONIC CALIBRATION

FOR:

SIGN

Examiner/Level ERDavis II Examiner/Level DAAffeldt II Review/Level [illegible] 10-11-88

Authorized Inspector WDouglas 10-14-88 Customer Kevin P. Schneider 10-12-88

EQUIPMENT

Instrument NORTEC 131-D S/N 167 ReCal Due 12-1-88 SU Cable GBNC/MD
Instrument NA S/N NA ReCal Due NA
Recorder NA S/N NA ReCal Due NA

VERTICAL LINEARITY CHECK Check Completed by ERD

SIGNAL 1	100	90	80	70	60	50	40	30	20	10
SIGNAL 2	56	45	40	35	31	26	20	15	10	5

Signal 2 shall equal 50% of Signal 1 within ±5% of full scale

AMPLITUDE CONTROL LINEARITY CHECK Check Completed by ERD

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 H10142 Mfg. KBA Type SW Size .5"Ø Freq. 2.5MHZ Index ✓ Angle 45°
S/N NA Mfg. NA Type NA Size NA Freq. NA Index NA Angle NA
Couplant LMT GEL Batch No. 5455

PROC

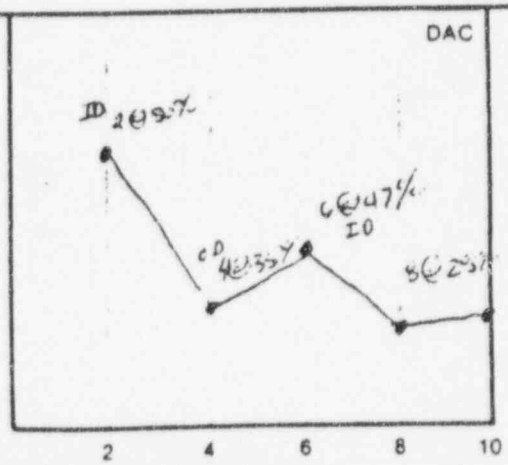
Procedure UT 41 Rev. 8 Date 8-9-88 Field Change FC 2 Date 10-6-88

CALIBRATION

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

INSTRUMENT SETTINGS

	0°	Angle Beam	Digital
Gain	NA	47dB	NA
Sweep		25/588	
Delay		11432	
Reject		OFF	
Damp.		OFF	
Freq.		WB	
Video/Filt.		+	
Rep. Rate		2.5K	



CAL. CHECK TIME
2009
2038
2040
2054
FINAL
2133
@ 30%

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.: I95039

PROJECT: DUANE ARNOLD
1DX36 Task: 1FJPV

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

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

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

SYSTEM: RHR

WELD NO.: RHB-J002

CONFIGURATION: PIPE TO BRANCH CONNECTION

EXAMINER: D. HEBERT LEVEL: II

EXAMINER: H. KOMPELIEN LEVEL: II

EXAMINER: N/A LEVEL: N/A

☐ MT ■ PT ■ UT ☐ VT

WELD TYPE: ■ CIRCUMFERENTIAL ☐ LONGITUDINAL ☐ OTHER 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.

☐ EXAM COMPLETE ■ PARTIALLY EXAMINED (EXPLAIN IN COMMENTS) ☐ EXAM COMPLETE IN COMBINATION WITH DATA SHEETS BELOW

RWP NO.: 40213

ADDITIONAL DATA SHEETS: N/A

COMPARED TO: ☐ PSI ■ ISI REPORT NO.(S): 93-209 ■ NO CHANGE

NO. OF RECORDABLE INDICATIONS: 0

EXAMINATION RESULTS: ■ ACCEPTABLE ☐ UNACCEPTABLE

NO. OF REPORTABLE INDICATIONS: 0

TOTAL DOSE 050 MAN REM

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

PAGE: 1 OF: 8

FORM UT-69 REV. 4

GE Nuclear Energy

WALL THICKNESS PROFILE SHEET

SITE: DUANE ARNOLD UNIT: 1

PROJECT: 1DX36 TASK: IEJPV

REPORT NO.: 195039

SYSTEM: RHR

COMPONENT ID NO.: RHB-J002

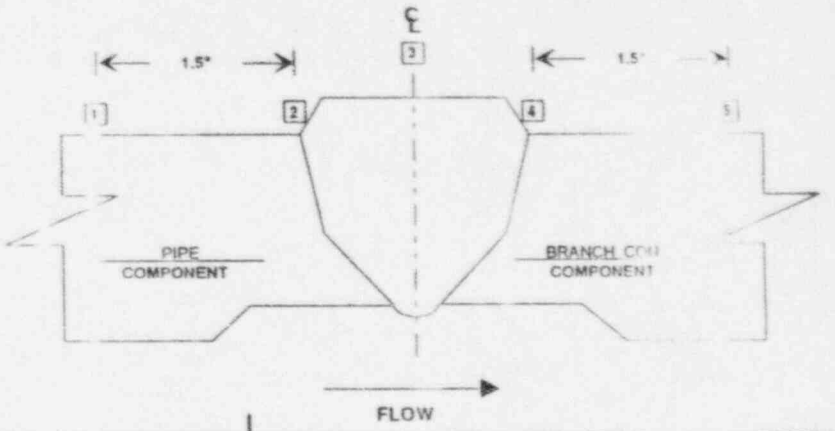
POSITION	0°	90°	180°	270°
1	1.04"	N/A	N/A	N/A
2	1.04"	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A
4	.96"	N/A	N/A	N/A
5	.96"	N/A	N/A	N/A

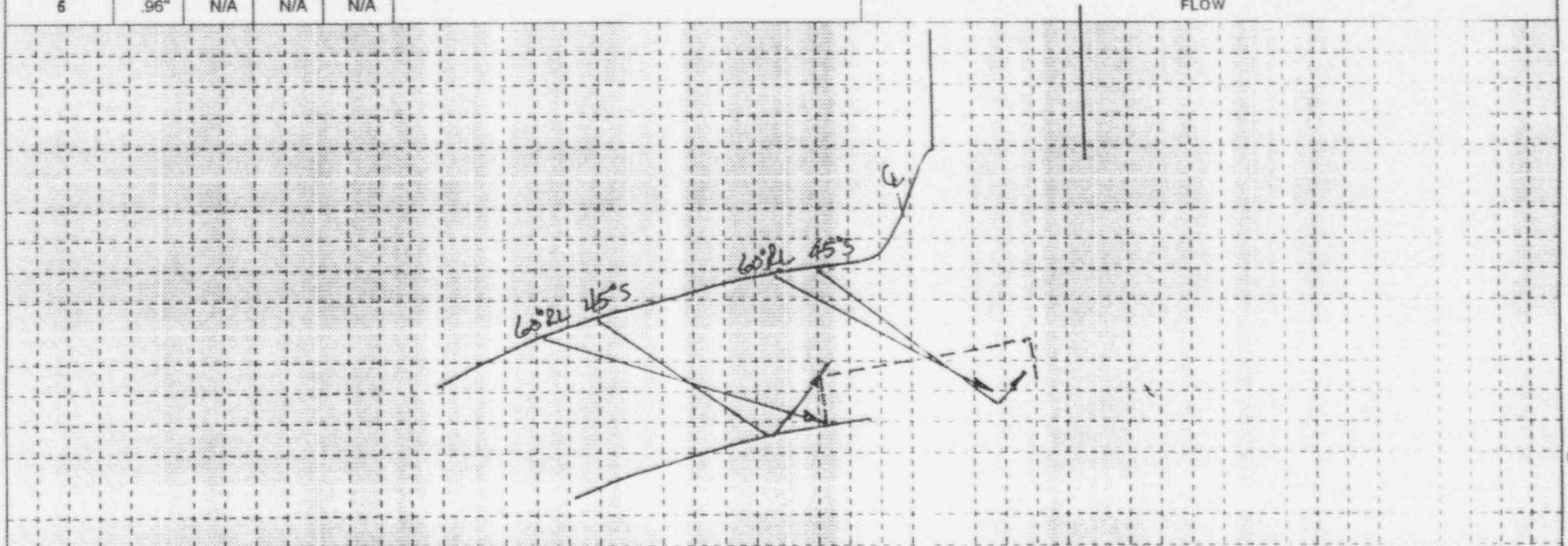
CROWN HEIGHT: FLUSH

CROWN WIDTH: .70"

NOM DIAMETER: 4.0"

WELD LENGTH: 19.50"





D-2 HH — DRAWN BY — II LEVEL — 3-25-95 DATE

K.D. Bramwell — GE REVIEWED BY — III LEVEL — 3/30/95 DATE

Frank D. Lyman — UTILITY LEVEL III REVIEW — 3-30-95 DATE

William M. Smith — ANII REVIEW — 3-31-95 DATE

PAGE 2 OF 8

Attachment to NG-95-2236 Page 38 of 52

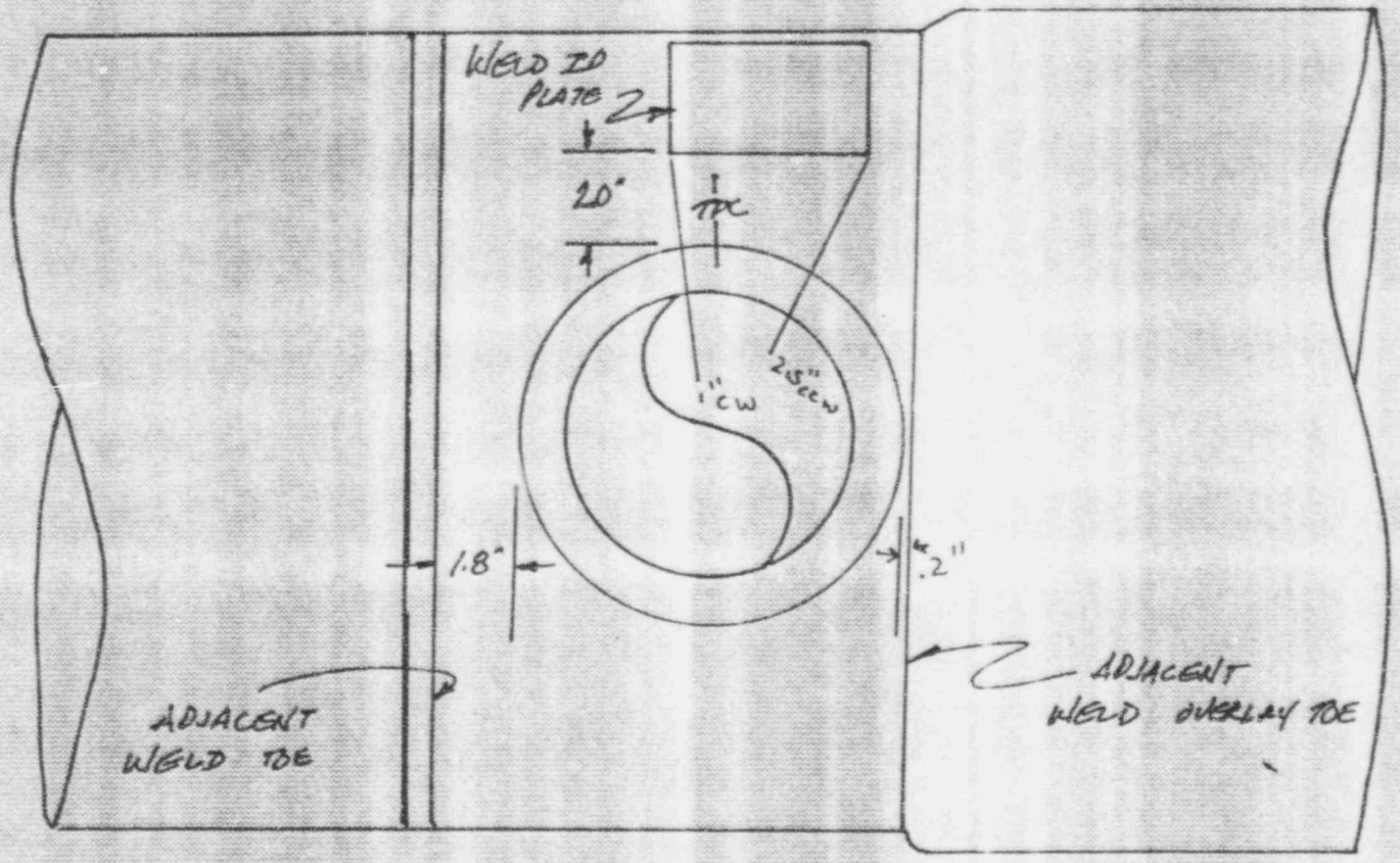
GE Nuclear Energy

EXAM PLAN

SITE: DUANE ARNOLD UNIT: 1

PROJECT: 1DX36 TASK: 1FJPV

REPORT NO.: 950119



TAKEN FROM PREVIOUS DATA

P-2 HH DRAWN BY	II LEVEL	3-25-95 DATE	
GE REVIEWED BY	III LEVEL	3/30/95 DATE	
UTILITY LEVEL III REVIEW		3-30-95 DATE	
ANII REVIEW		3.31.95 DATE	PAGE OF 8

Attachment to
NG-95-2236
Page 29 of 52

GE Nuclear Energy

ULTRASONIC EXAMINATION DATA SHEET
(MANUAL PIPING)

SITE: DUANE ARNOLD UNIT: 1

PROJECT NO.: 1DX36 TASK:1FJPV

REPORT NO.: 195039

CALIBRATION SHEET NO.: CM-074

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

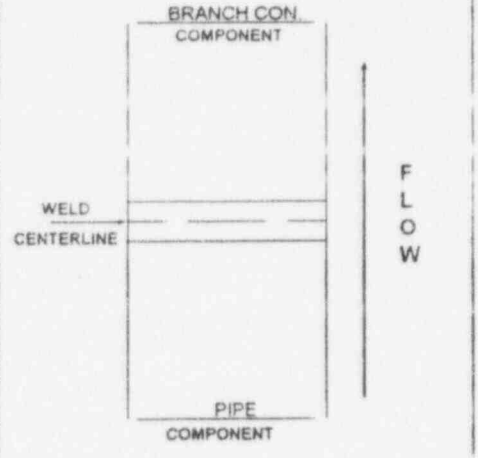
WELD ID: RHB-J002 THERMOMETER S/N: 145795 BATCH NO.: 94165 EXAM END: 11:03

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

		PERFORMED		INDICATIONS	
		YES	NO	YES	NO
AXIAL:	1 WITH FLOW	X			X
	2 AGAINST FLOW		X		
CIRC CW:	3 UPSTREAM	X			X
	4 DOWNSTREAM		X		
CIRC CCW:	5 UPSTREAM	X			X
	6 DOWNSTREAM		X		
	7 L-WAVE BASE METAL		X		
	8 OTHER N/A		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.)

EXAMINER	LEVEL II	DATE 3-25-95	UTILITY LEVEL III REVIEW	DATE 3-30-95	
GE REVIEWED BY	LEVEL III	DATE 3-20-95	ANII REVIEW	DATE 3-31-95	PAGE: 4 OF: 8

FORM LR-95 REV. 3

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

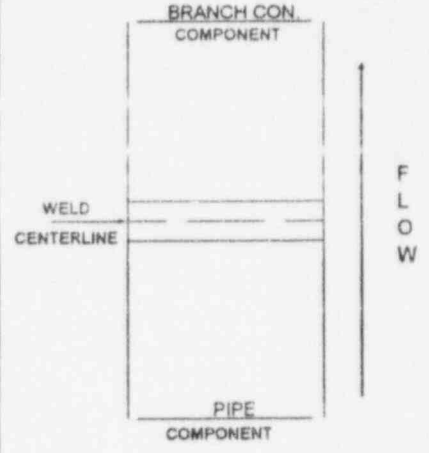
WELD ID: RHB-J002 THERMOMETER S/N: 145795 BATCH NO.: 94165 EXAM END: 11:10

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

		PERFORMED		INDICATIONS	
		YES	NO	YES	NO
AXIAL:	1 WITH FLOW	X			X
	2 AGAINST FLOW		X		
CIRC CW:	3 UPSTREAM		X		
	4 DOWNSTREAM		X		
CIRC CCW:	5 UPSTREAM		X		
	6 DOWNSTREAM		X		
	7 L-WAVE BASE METAL		X		
	8 OTHER N/A		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-2HH	II	3-25-95	Frank Dolan	3-30-95	
EXAMINER	LEVEL	DATE	UTILITY LEVEL III REVIEW	DATE	
GE REVIEWED BY	III	3-30-95	ANII REVIEW	3-31-95	PAGE: 5 OF: 8
	LEVEL	DATE		DATE	

FORM UT-05 REV. 3

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-J002 DWG. OR ISO NO 1.2-14

THICKNESS .960" PROCEDURE NO 2162.1 REV 2 ACCEPT STD 6.7.1.7 Fee 4/21/95

LIGHT METER ID/DUE DATE N/A BLACK LIGHT INTENSITY (μW/cm²) N/A

ITEM	INITIAL INSPECTION		DEFECT CODE*	INITIAL INSPECTION REMARKS	REINSPECTION		DEFECT CODE*	REINSPECTION REMARKS
	ACC	REJ		(SIZE/LOCATION)	ACC	REJ		(SIZE/LOCATION)
RHB J002	X			No Recordable Indications				
				N	A			

*DEFECT CODE

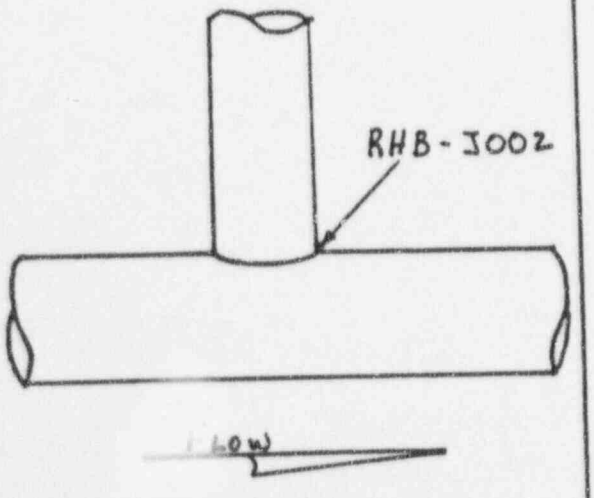
P - POROSITY, R - ROUNDED, LI - LINEAR INDICATION, LA - LAMINATION, O - OTHER (IDENTIFY)

100% ~~99%~~ BB 3/24/95

100 % Weld Examined

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

COMMENTS/SKETCH



PENETRANT MATERIALS: Magnaflux

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

EXAMINER: Harvey Kompelien / II / 3-24-95
SIGNATURE / LEVEL / DATE

REVIEWED BY: Hal Dolmen 3-30-95
LEVEL III SIGNATURE/DATE

REVIEWED BY: William Mahl 3-31-95 W.O.M. 4-3-95
ANII SIGNATURE/DATE

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 (Manufacturer) SONIC 136 (Model No.) 7661 (Serial No.)

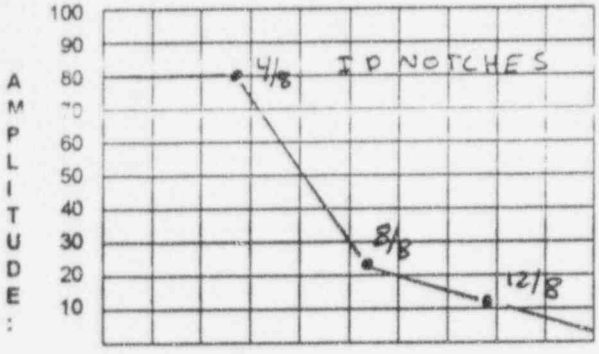
Search Unit: KBA (Manufacturer) K10900 (Serial No.) .50" (Size) 1.50 MHz (Freq) 45° / SHR (Angle/Mode) .40" (Incident to wedge front)

Cable: RG-174 (Type) 6' (Length) 2 (No. of Connectors)

Calibration Standard: IE-54 (Serial No.) SS (Material) .960" (Thickness) 70 °F (Temp.)

Couplant: HUMEX (Type) 94165 (Batch No.) Thermometer: 145795 (Serial No.)

DAC



SWEEP: 0 - 10 = 5.0"

☐ DEPTH ■ METAL PATH

INSTRUMENT SETTINGS

DAC Construction		Sensitivity	
Gain - Axial Scan	49.0	Gain - Axial Scan	49.0
Gain - Circ. Scan	56.2	Gain - Circ. Scan	56.2

Pulse	222 ns	Range	5.00"
Damping	500 ohms	Delay	.400"
Rep Rate	4.0 KHz	Velocity	.126 in/us
Filter	2	Sweep	N/A
Frequency	2.25 MHz	Resolution	N/A
Reject	OFF	Jack	☐ R ■ T

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

REFLECTOR:	NEAR SDH	FAR SDH
MAX AMPLITUDE:	58%	50%
SWEEP:	1.45"	1.10"
GAIN:	49.0	49.0

CALIBRATION VERIFICATION

INITIAL CALIBRATION TIME	08:38	VERIFICATION TIMES	
FINAL VERIFICATION TIME	13:01	N/A	N/A
		N/A	N/A

WELDS EXAMINED	REPORT NO.
RHB-J002	195039

COMMENTS: N/A

D-2 [illegible]	II	3-25-95	[signature]		3-30-95
EXAMINER	LEVEL	DATE	UTILITY LEVEL III REVIEW		DATE
[signature]	III	3/30/95	[signature] ANII REVIEW		3-31-95
GE REVIEWED BY	LEVEL	DATE			DATE

FORM UT-04 REV. 3

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 (Manufacturer) | SONIC 136 (Model No.) | 7661 (Serial No.)

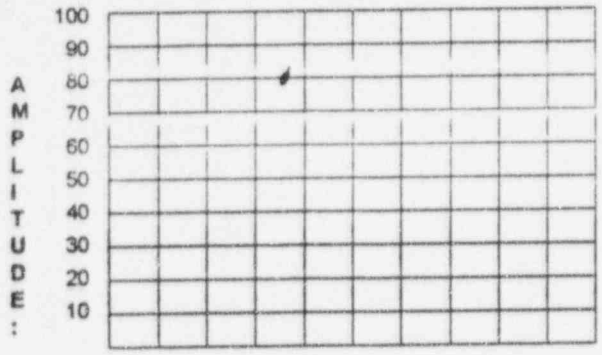
Search Unit: HARISONIC (Manufacturer) | H4029 (Serial No.) | 2(.25x.50)in (Size) | 3.50 MHz (Freq.) | 60° / RL (Angle/Mode) | .60" (Incident to wedge front)

Cable: 2(RG-174) (Type) | 2(6') (Length) | 4 (No. of Connectors)

Calibration Standard: IE-54 (Serial No.) | SS (Material) | .960" (Thickness) | 70 °F (Temp.)

Couplant: HUMEX (Type) | 94165 (Batch No.) | Thermometer: 145795 (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/µs
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

REFLECTOR:	N/A	FAR SDH
MAX AMPLITUDE:	N/A	80%
SWEEP:	N/A	1.5"
GAIN:	N/A	77.4

CALIBRATION VERIFICATION

		VERIFICATION TIMES	
INITIAL CALIBRATION TIME	09:15		
FINAL VERIFICATION TIME	13:03	11:04	N/A
		N/A	N/A

WELDS EXAMINED	REPORT NO.
RHB-J002	195039

COMMENTS: N/A

D-2 HH	II	3-25-95		3-30-95	
EXAMINER	LEVEL	DATE	UTILITY LEVEL III REVIEW	DATE	
GE REVIEWED BY	III	3/30/95	ANII REVIEW	3-31-95	PAGE: 8 OF: 8
	LEVEL	DATE		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, ins tion and removal of insulation and shielding; it does not include any additional exposure resulting fr.. 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

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

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

SYSTEM: RECIRCULATION

WELD NO.: RBB-J006

CONFIGURATION: PIPE TO TEE

EXAMINER: D. HEBERT LEVEL: II

EXAMINER: J. SHEA LEVEL: II

EXAMINER: N/A LEVEL: N/A

☐ MT ■ PT ■ UT ☐ VT

WELD TYPE: ■ CIRCUMFERENTIAL ☐ 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 53% of the Code required volume.~~ BB 4/1/95

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

■ EXAM COMPLETE ☐ PARTIALLY EXAMINED (EXPLAIN IN COMMENTS) ☐ EXAM COMPLETE IN COMBINATION WITH DATA SHEETS BELOW

RWP NO.: 40213

ADDITIONAL DATA SHEETS: N/A

COMPARED TO: ☐ PSI ■ ISI REPORT NO.(S): 91-238 ■ NO CHANGE

NO. OF RECORDABLE INDICATIONS: 0

EXAMINATION RESULTS: ■ ACCEPTABLE ☐ UNACCEPTABLE

NO. OF REPORTABLE INDICATIONS: 0

TOTAL DOSE 026 MAN REM

D-Hebert	II	3-27-95	Frank E. Stevens		4-3-95
SUMMARY BY	LEVEL	DATE	UTILITY LEVEL III REVIEW		DATE
GE REVIEWED BY	III	3/28/95	ANII REVIEW		4-4-95
	LEVEL	DATE			DATE

PAGE: 1 OF: 7

FORM UT-09 REV. 1

GE Nuclear Energy

WALL THICKNESS PROFILE SHEET

SITE: DUANE ARNOLD UNIT: 1

PROJECT: 1DX36 TASK: IEJPV

REPORT NO.: [illegible]043

SYSTEM: RECIRCULATION

COMPONENT ID NO.: RBB-J006

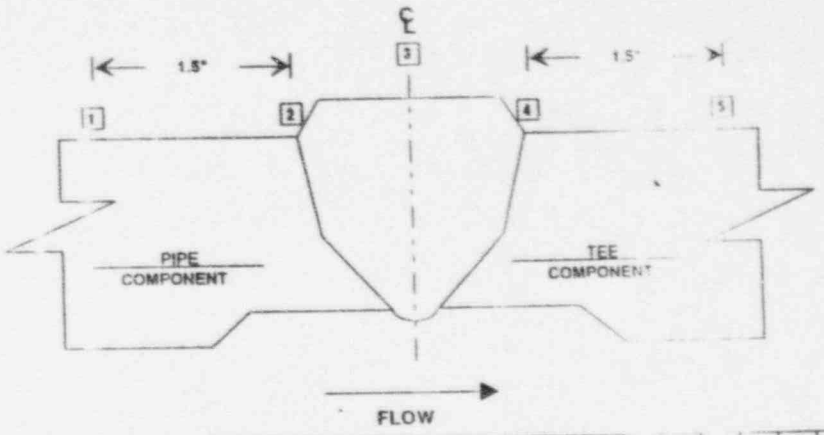
POSITION	0°	90°	180°	270°
1	N/A	N/A	.35"	N/A
2	N/A	N/A	.36"	N/A
3	N/A	N/A	.48"	N/A
4	N/A	N/A	.40"	N/A
5	N/A	N/A	.49"	N/A

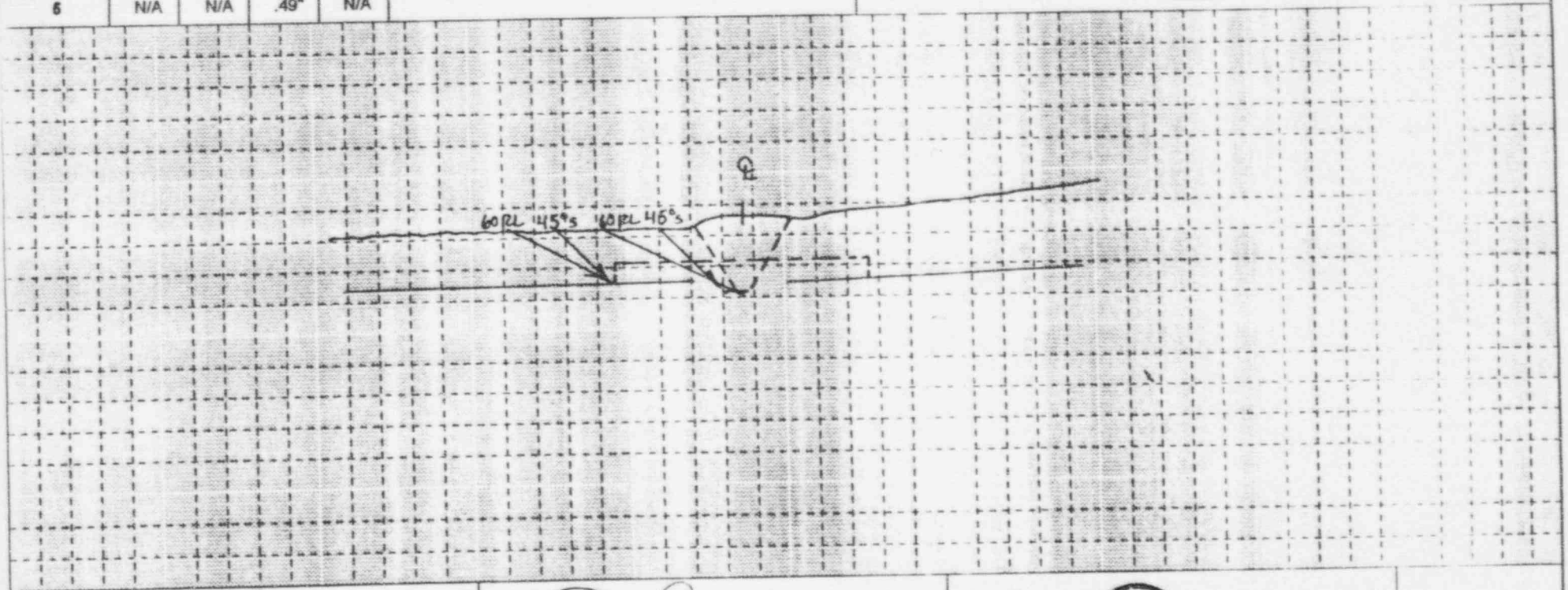
CROWN HEIGHT: .05"

CROWN WIDTH: .60"

NOM DIAMETER: 4.00"

WELD LENGTH: 14.50"





B-2 HW
DRAWN BY

II
LEVEL

3-20-95
DATE

GE REVIEWED BY

III
LEVEL

3/28/95
DATE

UTILITY LEVEL III REVIEW

4-3-95
DATE

ANII REVIEW

4-4-95
DATE

PAGE: 2 OF: 7

Attachment to
NG-95-2236
Page 37 of 52

GE Nuclear Energy

ULTRASONIC EXAMINATION DATA SHEET
(MANUAL PIPING)

SITE: DUANE ARNOLD UNIT: 1 REPORT NO.: I95043

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

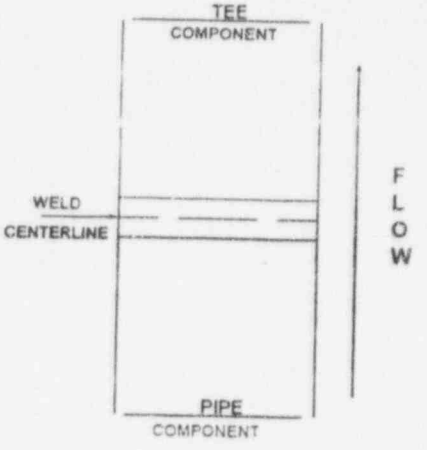
WELD ID: RDB-J006 THERMOMETER S/N: 145795 BATCH NO.: 94165 EXAM END: 16:30

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

		PERFORMED		INDICATIONS	
		YES	NO	YES	NO
AXIAL:	1 WITH FLOW	X			X
	2 AGAINST FLOW		X		
CIRC CW:	3 UPSTREAM	X			X
	4 DOWNSTREAM		X		
CIRC CCW:	5 UPSTREAM	X			X
	6 DOWNSTREAM		X		
	7 L-WAVE BASE METAL		X		
	8 OTHER N/A		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-2HH	II	3-20-95	Frank E. [illegible]	4-3-95	
EXAMINER	LEVEL	DATE	UTILITY LEVEL III REVIEW	DATE	
[illegible]	III	3/28/95	William H. [illegible]	4-4-95	PAGE: 3 OF: 7
GE REVIEWED BY	LEVEL	DATE	ANII REVIEW	DATE	

FORM UT-05 REV. 1

GE Nuclear Energy

ULTRASONIC EXAMINATION DATA SHEET
(MANUAL PIPING)

SITE: DUANE ARNOLD UNIT: 1

REPORT NO.: 195043

CALIBRATION SHEET NO.: CM-053

PROJECT NO.: 1DX36 TASK: 1FJPV

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

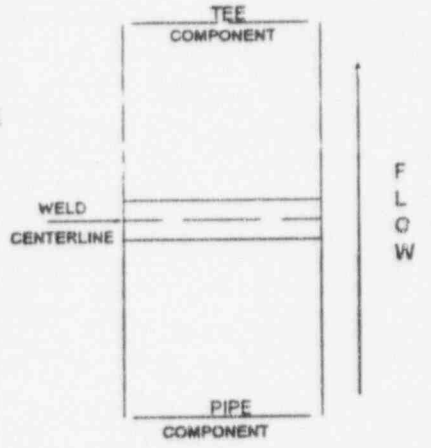
WELD ID: RBB-J006 THERMOMETER S/N: 145795 BATCH NO.: 94165 EXAM END: 16:50

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

Lo REFERENCE: TOP DEAD CENTER AXIAL SCAN SENSITIVITY (dB) 76.8

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

		PERFORMED		INDICATIONS	
		YES	NO	YES	NO
AXIAL:	1 WITH FLOW	X			X
	2 AGAINST FLOW		X		
CIRC CW:	3 UPSTREAM		X		
	4 DOWNSTREAM		X		
CIRC CCW:	5 UPSTREAM		X		
	6 DOWNSTREAM		X		
	7 L-WAVE BASE METAL		X		
	8 OTHER N/A		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.

EXAMINER	LEVEL II	DATE 3-20-95	UTILITY LEVEL III REVIEW	DATE 4-3-95
GE REVIEWED BY	LEVEL III	DATE 3/28/95	ANII REVIEW	DATE 4-4-95

PAGE: 4 OF: 7

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 ISO NO 1.2-21A

THICKNESS .337 PROCEDURE NO 2162.1 REV 2 ACCEPT STD 6.7.6 4/27/95

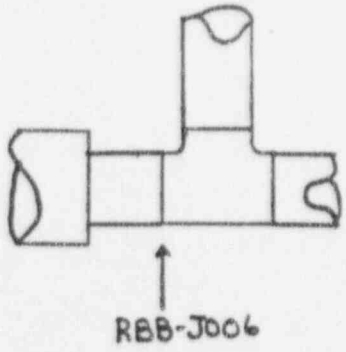
LIGHT METER ID/DUE DATE N/A PLACK LIGHT INTENSITY, (μW/cm²) N/A

ITEM	INITIAL INSPECTION		DEFECT CODE*	INITIAL INSPECTION REMARKS	REINSPECTION		DEFECT CODE*	REINSPECTION REMARKS
	ACC	REJ		(SIZE/LOCATION)	ACC	REJ		(SIZE/LOCATION)
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 ☐ NA Init.

PENETRANT MATERIALS: Magnaflux

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

EXAMINER: John Shea LVII 3-19-95
SIGNATURE/LEVEL/DATE

REVIEWED BY: Frank E. Dohmen 4/3/95
LEVEL III SIGNATURE/DATE

REVIEWED BY: William Mueller 4.4.95 W.O.m 4-27-95
ANII SIGNATURE/DATE

BB 2/28/95

GE Nuclear Energy

ULTRASONIC CALIBRATION DATA SHEET

(MANUAL EXAMINATION)

SITE: DUANE ARNOLD UNIT: 1 CALIBRATION SHEET NO.: CM-052

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.)

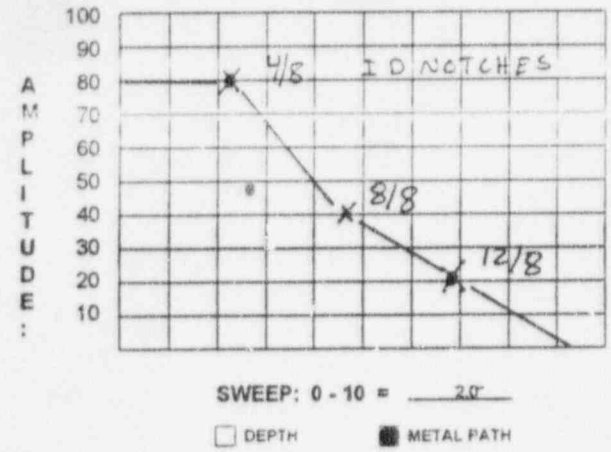
Search Unit: KBA (Manufacturer) D19642 (Serial No.) .25" (Size) 2.25 MHz (Freq.) 45° / SHR (Angle/Mode) .25" (Incident to wedge front)

Cable: RG-174 (Type) 6' (Length) 2 (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 = 2.0"

☐ DEPTH ■ METAL PATH

INSTRUMENT SETTINGS

DAC Construction		Sensitivity	
Gain - Axial Scan	40.6	Gain - Axial Scan	40.6
Gain - Circ. Scan	50.0	Gain - Circ. Scan	50.0

Pulse	222 ns	Range	2.00"
Damping	500 ohms	Delay	.227"
Rep Rate	4.0 KHz	Velocity	.124 in/µs
Filter	2	Sweep	N/A
Frequency	2.25 MHz	Resolution	N/A
Reject	OFF	Jack	☐ R ■ T

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

REFLECTOR:	NEAR SDH	FAR SDH
MAX AMPLITUDE:	24%	10%
SWEEP:	.48"	1.08"
GAIN:	40.6	40.6

CALIBRATION VERIFICATION

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

WELDS EXAMINED	REPORT NO.
RBB-J006	I95043

COMMENTS: N/A

D-2HH	II	3-20-95		4-3 95	
EXAMINER	LEVEL	DATE	UTILITY LEVEL III REVIEW	DATE	
GE REVIEWED BY	III	3/28/95	ANII REVIEW	4/5/95	
	LEVEL	DATE		DATE	

PAGE: 6 OF: 7

FORM UT-04 REV. 3

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.)

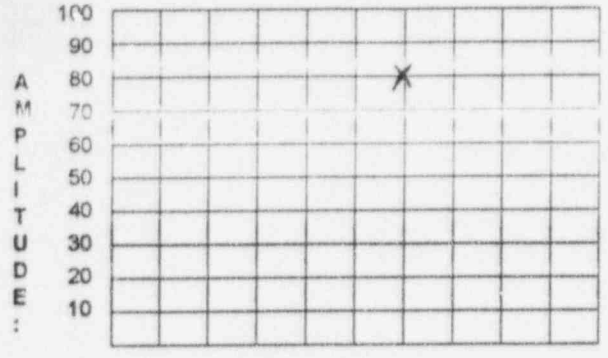
Search Unit: HARISONIC (Manufacturer) H4029 (Serial No.) 2(.25x.50)in (Size) 3.50 MHz (Freq) 60° / RL (Angle/Mode) 60" (Incident to wedge front)

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/µs
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

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

CALIBRATION VERIFICATION

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

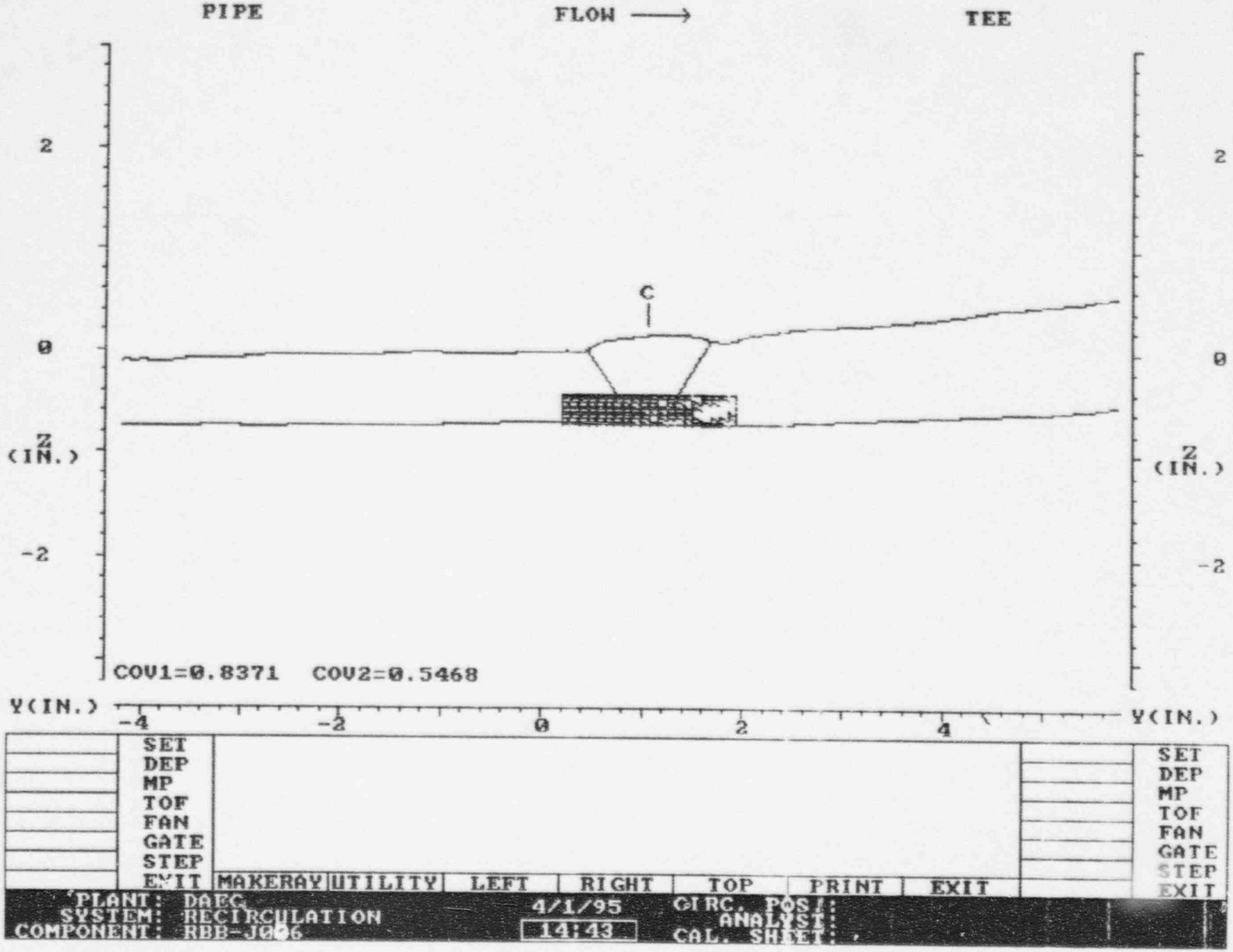
WELDS EXAMINED	REPORT NO.
RBB-J006	I95043

COMMENTS: N/A

D-2HH	II	3-20-95			
EXAMINER	LEVEL	DATE	UTILITY LEVEL II REVIEW	4-3-95	DATE
GE REVIEWED BY	III	3/28/95	ANII REVIEW	4-4-95	DATE
	LEVEL	DATE			

PAGE: 7 OF: 7

FORM UT-04 REV. 3


PIPE
FLOW ⟶
TEE
2
0
-2
Z (IN.)
C
COV1=0.8371 COV2=0.5468
Y(IN.)
-4
-2
0
2
4
SET
DEP
MP
TOF
FAN
GATE
STEP
EXIT
MAKERAY
UTILITY
LEFT
RIGHT
TOP
PRINT
EXIT
PLANT: DAEC
SYSTEM: RECIRCULATION
COMPONENT: RBB-J006
4/1/95
14:43
CIRC. POS.:
ANALYST:
CAL. SHEET:

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

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

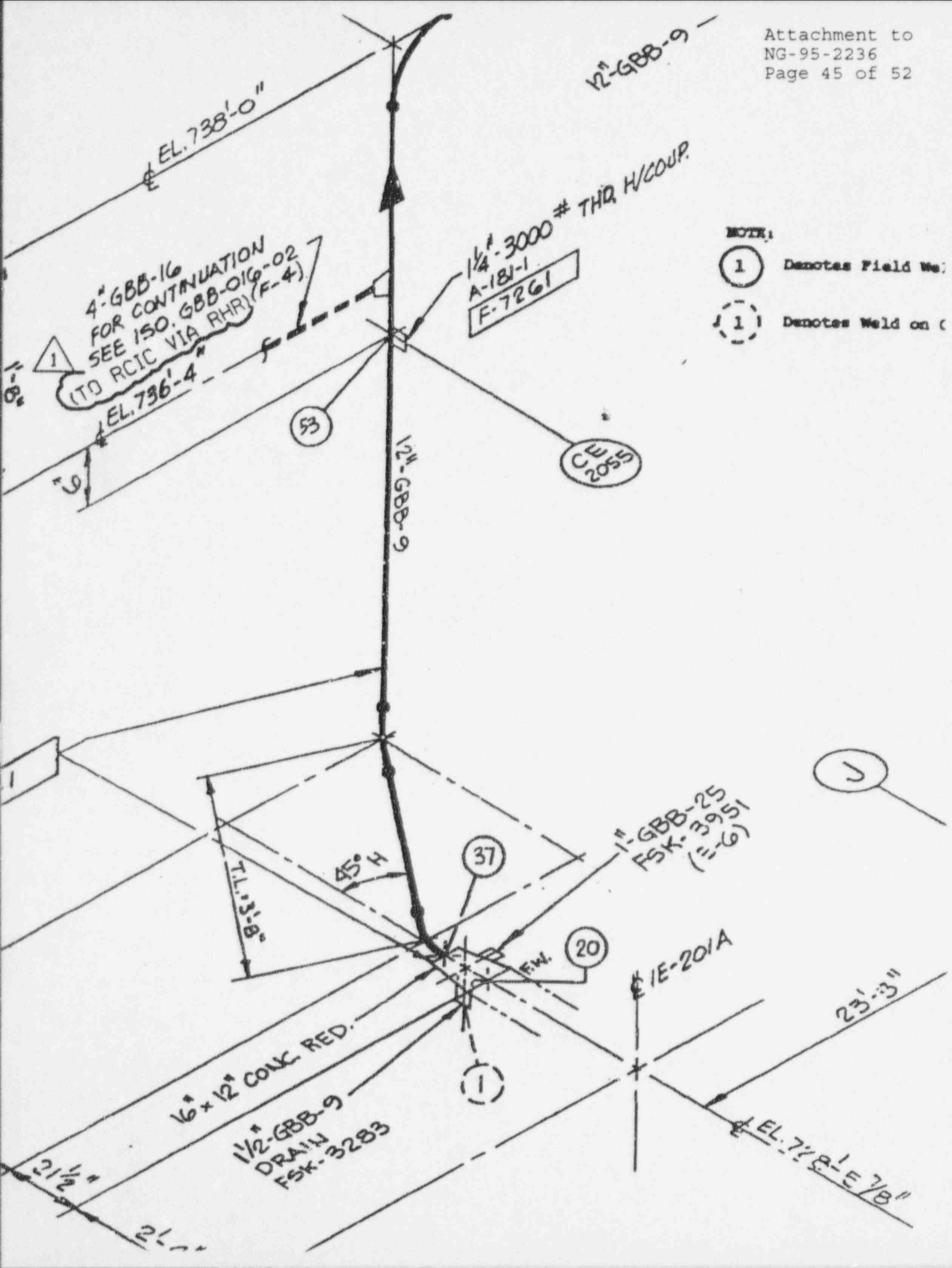
IES Utilities Inc. proposes to perform volumetric examination of the 71% weld length. The alternative examination coverage allowed by Code Case N-460 will also be used.

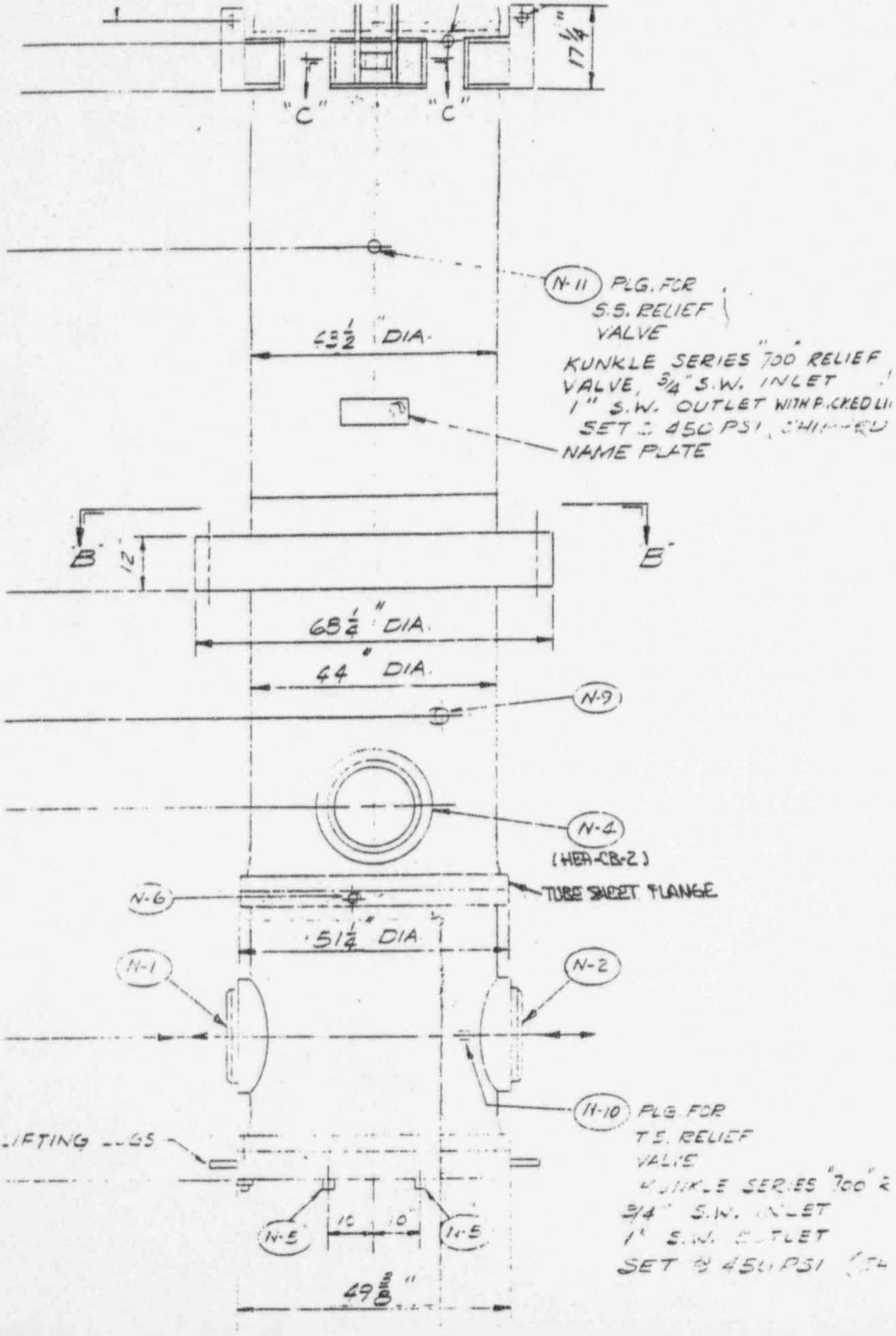
VI JUSTIFICATION FOR THE GRANTING OF RELIEF

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.


12"-GBB-9
℄ EL. 738'-0"
4"-GBB-16
FOR CONTINUATION
SEE ISO. GBB-016-02
(TO RCIC VIA RHR) (F-4)
1¼"-3000# THRD H/COUP.
A-181-1
F-7261
1
℄ EL. 736'-4"
53
12"-GBB-9
CE 2055
NOTE:
1 Denotes Field We
1 Denotes Weld on
1"-GBB-25
FSK-3951
(=-6)
J
45° H
37
T.L. 3'-8"
20
E.W.
℄ 1E-201A
23'-3"
16" × 12" CONC. RED.
1½"-GBB-9
DRAIN
FSK-3283
℄ EL. 7'-8 1/8" E 7/8"
2'-2½"
2'-


17¼"
"C"
"C"
N-11 PLG. FOR S.S. RELIEF VALVE
43½" DIA.
KUNKLE SERIES "700" RELIEF VALVE, ¾" S.W. INLET
1" S.W. OUTLET WITH P.CKED LI
SET @ 450 PSI SHIP-ED
NAME PLATE
B
12"
B
68½" DIA.
44" DIA.
N-9
N-4
(HEA-CB-2)
N-6
TUBE SHEET FLANGE
51½" DIA.
N-1
N-2
N-10 PLG. FOR T.S. RELIEF VALVE
KUNKLE SERIES "700" R
¾" S.W. INLET
1" S.W. OUTLET
SET @ 450 PSI
LIFTING LUGS
N-5
10"
10"
N-5
49⅜"

GE Nuclear Energy

EXAMINATION SUMMARY SHEET

REPORT NO.: I95094

PROJECT: DUANE ARNOLD
1DX36

PROCEDURE: UT-DAC-301V0 REV: 0 FRR: N/A
N/A
N/A

SYSTEM: HEAT EXCHANGER A

2162.4 REV: 1 FRR: N/A
N/A
N/A

WELD NO.: HEA-CB-2

CONFIGURATION: NOZZLE - SHELL

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

EXAMINER: E. MAZYCK LEVEL: II

EXAMINER: P. MICHELSON LEVEL: II

EXAMINER: N/A LEVEL: N/A

■ MT ☐ PT ■ UT ☐ VT

WELD TYPE: ☐ CIRCUMFERENTIAL ☐ LONGITUDINAL ■ OTHER NOZZLE-SHELL

DATA SHEET NO.(S): DM-003
MT-002

CAL SHEET NO.(S): CM-003

During the manual ultrasonic examination of HEA-CB-2, no reportable indications as per ASME Section XI were detected utilizing a 45° shear wave search unit.

This examination was performed from the shell side of the weld only due to the nozzle to shell configuration. The ultrasonic examination was restricted in the proximity of the adjacent flange weld.

A magnetic particle examination was performed resulting in no reportable indications. The magnetic particle examination was restricted to .30" from the weld toe from L = 24.0" to L = 29.3" due to the proximity of the flange weld.

Composite ultrasonic examination coverage of HEA-CB-2 is 71% of the Code required volume.

☐ EXAM COMPLETE ■ PARTIALLY EXAMINED (EXPLAIN IN COMMENTS) ☐ EXAM COMPLETE IN COMBINATION WITH DATA SHEETS BELOW

ADDITIONAL DATA SHEETS: N/A

COMPARED TO: ☐ PSI ■ ISI REPORT NO.(S): 82-049,054 ■ NO CHANGE

NO. OF RECORDABLE INDICATIONS: 0

EXAMINATION RESULTS: ■ ACCEPTABLE ☐ UNACCEPTABLE

NO. OF REPORTABLE INDICATIONS: 0

RWP NO.: 1021204

TOTAL DOSE .010 MAN REM

Paul W. Michelson	II	3-4-95	Frank E. Rottman	3-17-95
SUMMARY BY	LEVEL	DATE	UTILITY LEVEL III REVIEW	DATE
E. Mazyck	III	3-17-95	William J. Bowlby	3-18-95
GE REVIEWED BY	LEVEL	DATE	ANII REVIEW	DATE

PAGE: 1 OF: 6

FORM UT-09 REV. 4

GE Nuclear Energy

INDICATION PLOT SHEET

SITE: DUANE ARNOLD UNIT: 1

PROJECT: 1DX36

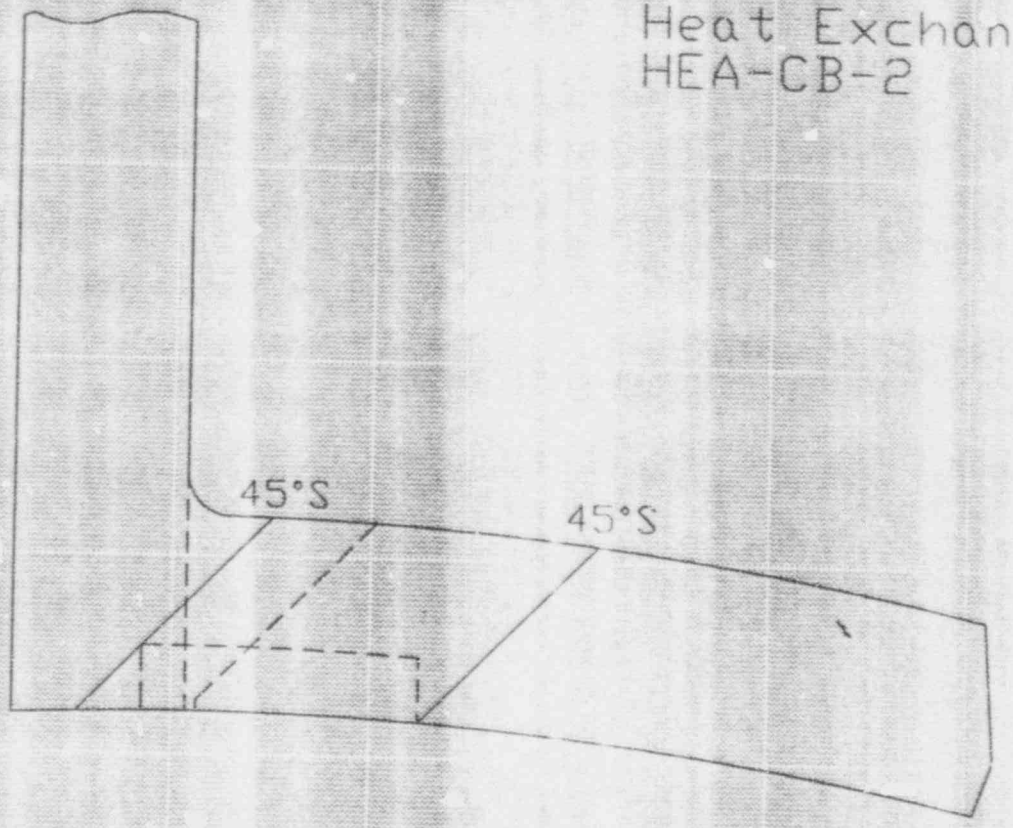
REPORT NO.: I95094

SYSTEM: HEAT EXCHANGER A

COMPONENT ID NO.: HEA-CB-2

CONFIGURATION: NOZZLE FLOW SHELL

Heat Exchanger "A"
HEA-CB-2



Paul W. Michelson	II	3-4-95	DRAWN BY / LEVEL / DATE
B. Brunsvold	III	3-17-95	GE REVIEWED BY / LEVEL / DATE
Harold E. Dahlman		3-17-95	UTILITY LEVEL III REVIEW / DATE
Willard Mueller		3-18-95	ANII REVIEW / DATE

PAGE 2 OF 6

Attachment to
NG-95-2236
Page 48 of 52

GE Nuclear Energy

INDICATION PLOT SHEET

SITE: DUANE ARNOLD UNIT: 1

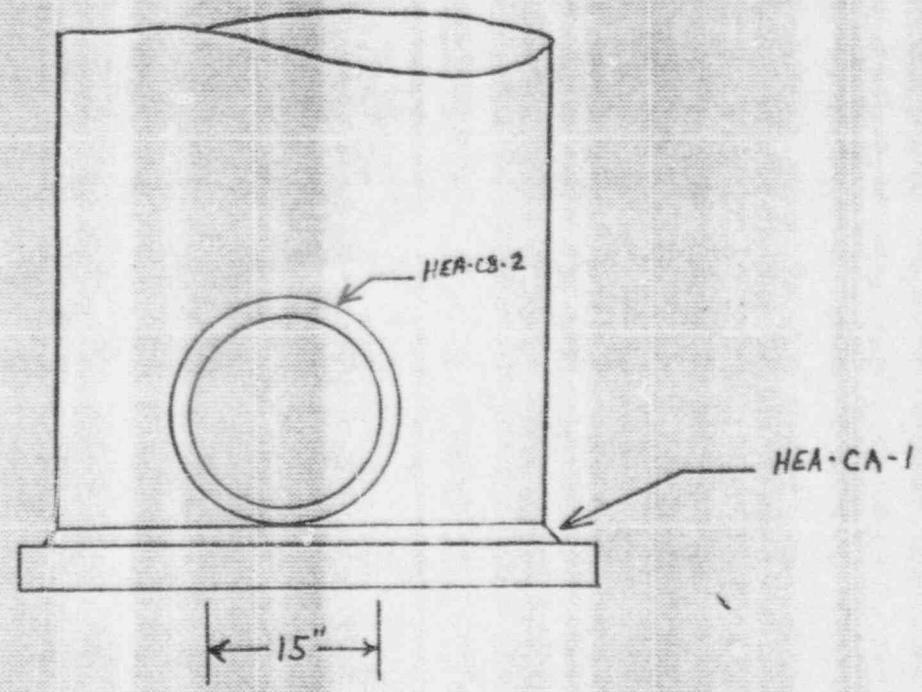
PROJECT: 1DX36

REPORT NO.: I95004

SYSTEM: HEAT EXCHANGER A

COMPONENT ID NO.: HEA-CB-2

CONFIGURATION: NOZZLE FLOW SHELL



Paul W. Nickelson	II	3-4-95	Hank K. Nelson	3-17-95	William M. Neille 3/18/95
DRAWN BY	LEVEL	DATE	UTILITY LEVEL III REVIEW	DATE	ANII REVIEW DATE
R. Brunnwell	III	3-17-95			
GE REVIEWED BY	LEVEL	DATE			

PAGE 1 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.: I95094

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

Lo REFERENCE: TOP DEAD CENTER OF NOZZLE

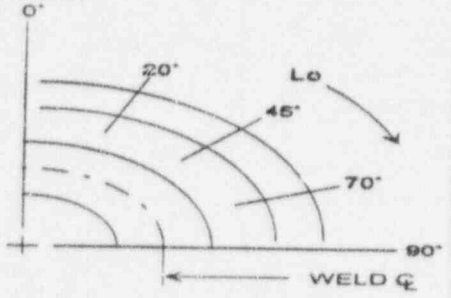
Wo REFERENCE: WELD CENTERLINE

0° SCAN SENSITIVITY N/A dB

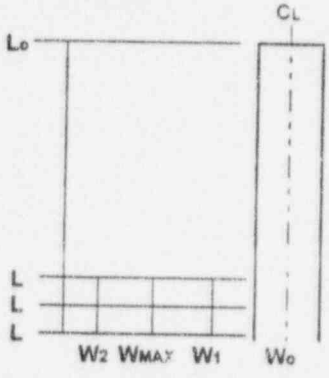
45° SCAN SENSITIVITY 52.0 dB

60° SCAN SENSITIVITY N/A dB

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



WELD REFERENCE SYSTEM (Lo AND Wo 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 Nicholson — II — 3-4-95 — EXAMINED BY / LEVEL / DATE

Frank E. Dolmen — 3/7-95 — UTILITY LEVEL III REVIEW / DATE

[signature] — II — 3-17-95 — GE REVIEWED BY / LEVEL / DATE

William Mundle — 3.18.95 — ANII REVIEW / DATE

PAGE: 4 OF: 6

FORM UT-14 REV. 8

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

CHAR 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 I45094 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 QQ0156 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-WCP BATCH NO. 89F02K 9 CM RED BATCH NO. 89L05K 7 C-F BLACK BATCH NO. N/A

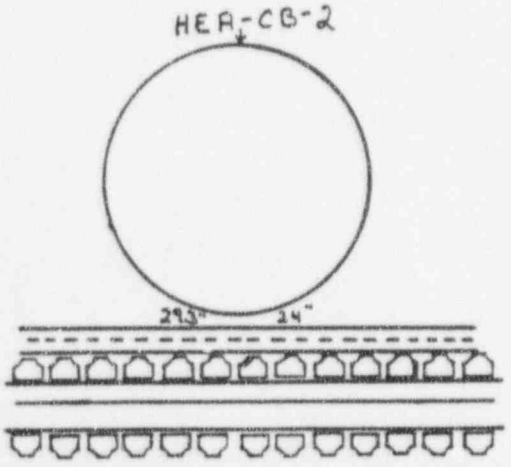
ITEM	INITIAL INSPECTION ACC	INITIAL INSPECTION REJ	DEFECT CODE*	INITIAL INSPECTION REMARKS (SIZE/LOCATION)	REINSPECTION ACC	REINSPECTION REJ	DEFECT CODE*	REINSPECTION REMARKS (SIZE/LOCATION)
HEA-CB-2	X		N/A	NRI				
				N/A				

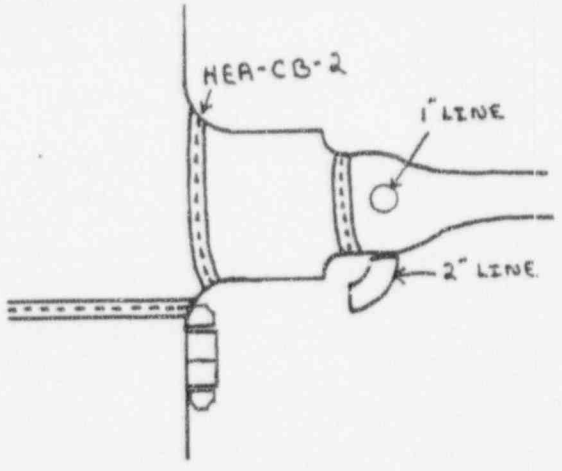
*DEFECT CODE

☐ PREVIOUS INSPECTION DATA REVIEWED ____

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

COMMENTS/SKETCH





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 Signature/Level/Date 3-4-95 II Reviewed By Level III Signature/Date 3/18/95 Reviewed By ANII Signature/Date 3/9

Q.A. Form 2162.4-1 (Oct. '94) 3/9/95

GE Nuclear Energy

ULTRASONIC CALIBRATION DATA SHEET
(VESSEL CALIBRATION)

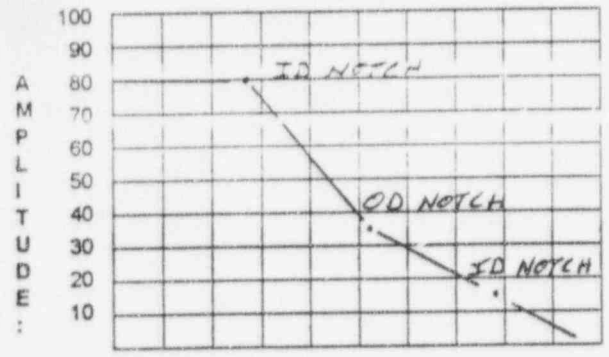
SITE: DUANE ARNOLD UNIT: 1 CALIBRATION SHEET NO.: CM-003

PROJECT NO.: IDX36 LINEARITY SHEET NO.: L-002

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

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

DAC



SWEEP: 0 - 10 = 6.0"

☐ DEPTH ■ METAL PATH

INSTRUMENT SETTINGS

DAC Construction		Sensitivity	
Gain - Axial Scan	38.0	Gain - Axial Scan	38.0
Gain - Circ. Scan	38.0	Gain - Circ. Scan	38.0
Pulse	222 ns	Range	8.0"
Damping	500 ohms	Delay	.299"
Rep Rate	2 KHz	Velocity	.129 in/μ
Filter	1	Sweep	N/A
Frequency	2.25 MHz	Resolution	N/A
Reject	OFF	Jack	☐ R ■ 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	195094
N/A	

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 Nickelson (EXAMINER)	II (LEVEL)	3-4-95 (DATE)	Frank L Adams (UTILITY LEVEL III REVIEW)	3-17-95 (DATE)	
B Bennett (GE REVIEWED BY)	III (LEVEL)	3/17/95 (DATE)	William F Miller (ANII REVIEW)	3-18-95 (DATE)	PAGE: 6 OF: 6

FORM UT-16 REV. 5