



Tennessee Valley Authority, 1101 Market Street, Chattanooga, Tennessee 37402

May 25, 2012

10 CFR 50.4
10 CFR 50.55a

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Browns Ferry Nuclear Plant, Unit 2
Facility Operating License No. DPR-52
NRC Docket No. 50-260

Subject: American Society of Mechanical Engineers, Section XI Code, Inservice Inspection Program for the Unit 2 Third Ten-Year Inspection Interval, Request for Relief 2-ISI-29

Reference: Letter from the Tennessee Valley Authority to the Nuclear Regulatory Commission, "American Society of Mechanical Engineers Section XI, Inservice Inspection, System Pressure Test, Containment Inspection, and Repair and Replacement Programs – Owner's Activity Report for Cycle 16 Operation," dated July 6, 2011

In accordance with 10 CFR 50.55a(g)(5)(iii), the Tennessee Valley Authority (TVA) is requesting relief from weld examination coverage requirements specified in the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, 1995 Edition, 1996 Addenda as amended by 10 CFR 50.55a(b)(2)(xv)(A)(2), for three (3) full penetration austenitic stainless piping welds and one (1) full penetration dissimilar metal piping weld, due to access limitations caused by design. This relief is requested for the Browns Ferry Nuclear Plant (BFN) Unit 2 third Ten-Year Inspection Interval which began May 25, 2001 and ended May 24, 2011.

A047
NRR

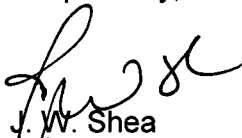
U.S. Nuclear Regulatory Commission
Page 2
May 25, 2012

Specifically, this request for relief addresses two Reactor Water Cleanup (RWCU) System full penetration piping welds, one Residual Heat Removal (RHR) System full penetration piping weld, and one Recirculation (RECIRC) System full penetration piping weld. The enclosure to this letter contains BFN Unit 2, Request for Relief 2-ISI-29, for NRC review and approval.

This request for relief is similar to, and consistent with the following BFN requests for relief: 1) Unit 3 request for relief 3-ISI-22 submitted by TVA letter dated August 24, 2007 and approved by NRC letter dated May 20, 2008; 2) Unit 2 request for relief 2-ISI-18 submitted by TVA letters dated June 2, and December 16, 2003, and approved by NRC letter dated April 12, 2004; and 3) Unit 3 request for relief 3-ISI-25 submitted by TVA letters dated January 21, July 18, and November 9, 2011, and approved by NRC letter dated January 20, 2012.

There are no new regulatory commitments contained in this letter. If you have any questions, please contact Tom Hess at (423) 751-3487.

Respectfully,



J. W. Shea
Manager, Corporate Nuclear Licensing

Enclosure: Browns Ferry Nuclear Plant, Unit 2, American Society of Mechanical Engineers, Section XI Code Inservice Inspection Program, third Ten-Year Inspection Interval, Request for Relief 2-ISI-29

cc (Enclosure):

NRC Regional Administrator - Region II
NRC Senior Resident Inspector - Browns Ferry Nuclear Plant

Enclosure

**Tennessee Valley Authority
Browns Ferry Nuclear Plant
Unit 2**

**American Society of Mechanical Engineers,
Section XI Code Inservice Inspection Program,
Third Ten-Year Inspection Interval**

Request for Relief 2-ISI-29

(See Attached)

Enclosure

Tennessee Valley Authority Browns Ferry Nuclear Plant Unit 2

American Society of Mechanical Engineers, Section XI Code Inservice Inspection Program, Third Ten-Year Inspection Interval

Request for Relief 2-ISI-29

Executive Summary: In accordance with 10 CFR 50.55a(g)(5)(iii), the Tennessee Valley Authority (TVA) is requesting relief from weld examination coverage requirements specified in the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, 1995 Edition, 1996 Addenda as amended by 10 CFR 50.55a(b)(2)(xv)(A)(2), for three (3) full penetration austenitic stainless piping welds and one (1) full penetration dissimilar metal piping weld, due to access limitations caused by design.

Ultrasonic examinations were performed on the subject welds to the maximum extent practical, within the limitations of design, geometry and materials of construction of the components; using the latest ultrasonic techniques, procedures, equipment, and personnel qualified to the requirements of the Performance Demonstration Initiative (PDI) Program in accordance with 10 CFR 50.55a(g)(4) and 10 CFR 50.55a(g)(6)(ii)(C). 10 CFR 50.55a(b)(2)(xv)(A)(2), states, "Where examination from both sides is not possible on austenitic or dissimilar metal welds, full coverage credit from a single side may be claimed only after completing a successful single sided Appendix VIII demonstration using flaw on the opposite side of the weld." There is currently no single sided Appendix VIII Program for austenitic stainless welds. However, a single sided program has been established for dissimilar metal welds. This information was considered during the determination of credit for the ultrasonic examination coverage of the components included in this request for relief. The coverage credit ranges from 50.0 percent to 85.5 percent, as detailed in this request.

This relief is requested for the Browns Ferry Nuclear Plant (BFN) Unit 2 third Ten-Year Inspection Interval which began May 25, 2001 and ended May 24, 2011

Unit: Browns Ferry Nuclear Plant, Unit 2

ASME Code Components Affected: Four (4) Full penetration Piping Welds

- (2) Reactor Water Cleanup (RWCU) System full penetration piping welds,
- (1) Residual Heat Removal (RHR) System full penetration piping weld, and
- (1) Recirculation (RECIRC) System full penetration piping weld.

ASME Code Class: ASME Code Class 1

Section XI Edition: 1995 Edition, 1996 Addenda. Additionally, for ultrasonic examinations, 2001 Edition of Section XI, Appendix VIII, "Performance Demonstration for Ultrasonic Examination System,"

Code Table: Code Case N-577, N-577-2500 Table 1 and IWB-2500-1

Code Examination Category: R-A, Risk-Informed Piping Examinations and B-J, Pressure Retaining Welds in Piping

Code Examination Item Number: R1.16, Elements Subject to Intergranular Stress Corrosion Cracking (IGSCC)

Code Requirement: Code Case N-577, N-577-2500, Table 1 Examination Category R1.16, requires volumetric examination of 100 percent of the weld and adjacent base material as depicted in Figure IWB-2500-8(c).

List of Components Associated with this Request for Relief:

- For RWCU System weld RWCU-2-003-070 (U2C16, Inservice Inspection), only 85.5 percent coverage can be claimed. The weld joint is configured as a Pipe to Weld-O-Let, which limits the access in a portion of the upstream inspection volume for the Clockwise and Counter-Clockwise (Circumferential) scanning directions.
- For RWCU System weld RCRD-2-50 (U2C16 Inservice Inspection), only 53.4 percent coverage can be claimed. The weld joint is configured as a carbon steel Elbow to forged stainless steel Valve (dissimilar metal weld). The weld width and joint configuration contributed to reduced coverage. Six inches of the weld in the elbow inner radius could not be scanned in the axial direction with the RL transducers due to bridging, though the shear wave transducers were not impeded by the elbow radius. Both the RL and shear wave transducers were limited in the circumferential scanning direction, due to the taper in the valve configuration.
- For RHR System weld DRHR-2-03 (U2C16 Inservice Inspection), only 50.0 percent coverage can be claimed. The reduced coverage is attributed to joint geometry and product form. The joint configuration is penetration Flued Head to cast Valve. The examination was conducted from two sides. However, the qualified portion of this examination was limited to a single side, due to the opposite side of the weld being a casting. The portion of the weld on the IGSCC susceptible side was interrogated with the qualified techniques. Since the opposite side of the weld was a casting, the techniques used to interrogate this portion of the weld were not qualified. Further, the techniques intended to aid the examination in this limited condition were not performed. Thus, the examination of this weld is considered incomplete (Reference PER 443133).
- For RECIRC System weld GR-2-09 (U2C16 Inservice Inspection), only 75 percent coverage can be claimed. The weld joint is configured as Pipe to Branch Connection (Tee). The joint geometry prevents using a bi-directional coverage technique in the axial direction, due to inside and outside diameter (ID/OD) non-parallel surfaces (reference: PDI-UT-2, Revision C, paragraph 1.8b). Clockwise and Counter-Clockwise (Circumferential) examinations were not impeded.

Reason for Request: The design configurations of the listed welds preclude a UT examination of essentially 100 percent of the required volume. In the case of RECIRC System weld GR-2-09, it is not possible to perform the volumetric ultrasonic examination from both sides of the weld, in the axial scan direction, due to the configuration of these components. 10 CFR 50.55a(b)(2)(xv)(A)(2) states, "Where examination from both sides is not possible on austenitic welds or dissimilar metal welds, full coverage credit from a single side may be claimed only after completing a successful single-sided Appendix VIII demonstration using flaws on the opposite side of the weld." The component design configuration limits UT examination coverage of the welds to the percentages shown in Table 1. Therefore, only the stated coverage ranging from 50.0 to 85.5 percent can be claimed for these welds.

Proposed Alternative and Basis for Use: None. In lieu of the ASME Section XI Code required essentially 100 percent volumetric ultrasonic examination, TVA proposes credit for ultrasonic examination of accessible areas to the maximum extent practical given the component design configuration of the aforementioned piping welds.

Basis For Relief:

The welds were examined with the latest ultrasonic techniques, procedures, equipment, and personnel qualified to the requirements of the Performance Demonstration Initiative (PDI) Program, in accordance with the requirements of the 1995 Edition, 1996 Addenda, as amended by 10CFR 50.55a(b)(2)(xv)(A) and 10 CFR 50.55a(b)(2)(xxiv), of ASME Section XI, Division 1, Appendix VIII as mandated by 10 CFR50.55a(g)(4). These examinations were of the accessible areas to the maximum extent practical due to the design configuration of the weld joints.

These examinations provided an acceptable level of quality and safety because the information and data obtained provides sufficient information to judge the overall integrity of the piping welds.

Therefore, pursuant to 10 CFR 50.55a(g)(5)(iii), TVA requests that relief be granted for the BFN Unit 2 third Ten-Year ISI inspection interval.

Implementation Schedule:

This request for relief is applicable to the BFN Unit 2 third Ten-Year ISI inspection interval which began May 25, 2001 and ended May 24, 2011. The welds described above are listed in the Table of this enclosure. The welds were examined during the third period (Cycle 16 - Spring 2011) of the third Ten-Year inspection interval.

Precedent:

This request for relief is similar to, and consistent with the following BFN requests for relief: 1) Unit 3 request for relief 3-ISI-22 submitted by TVA letter dated August 24, 2007 and approved by NRC letter dated May 20, 2008; 2) Unit 2 request for relief 2-ISI-18 submitted by TVA letters dated June 2, and December 16, 2003, and approved by NRC letter dated April 12, 2004; and 3) Unit 3 request for relief 3-ISI-25 submitted by TVA letters dated January 21, July 18, and November 9, 2011, and approved by NRC letter dated January 20, 2012.

Attachments:

Inservice Inspection Drawings (Attachment A):

2-ISI-0221-C-01

2-ISI-0270-C-01

2-ISI-0272-C-01

Weld Examination Data Reports (Attachment B):

Examination Report UT-11-019 - RWCU-2-003-070 (Cycle16)

Examination Report UT-11-043 - RCRD-2-50 (Cycle16)

Examination Report UT-11-032 - RHR System: DRHR-2-03 (Cycle16)

Examination Report UT-11-023 - RECIRC System: GR-2-09 (Cycle16)

Attachment A

Inservice Inspection Drawings

2-ISI-0221-C-01

2-ISI-0270-C-01

2-ISI-0272-C-01

Table

Weld Number / (System)	Nominal Pipe Size (NPS)	ISI Drawing Number	Examination Coverage Percent	Unit / Cycle Inspection Performed	Comments
RWCU-2-003-070 (Reactor Water Cleanup System)	6"	2-ISI-0272-C	85.5%	2 / 16 (Spring 2011)	Limitations due to component configuration, Weld-O-let to pipe, which limits the access in a portion of the upstream inspection volume for the Clockwise and Counter-Clockwise (Circumferential) scanning directions. Therefore, only 85.5% coverage can be claimed.
RCRD-2-50 (Reactor Water Cleanup System)	4"	2-ISI-0272-C	53.4%	2 / 16 (Spring 2011)	The weld joint is configured as a carbon steel Elbow to forged stainless steel Valve (dissimilar metal weld). The weld width and joint configuration contributed to reduced coverage. Six inches of the weld in the elbow inner radius could not be scanned in the axial direction with the RL transducers due to bridging, though the shear wave transducers were not impeded by the elbow radius. Both the RL and shear wave transducers were limited in the circumferential scanning direction, due to the taper in the valve configuration. Therefore, only 53.4% coverage can be claimed.

Table (cont.)

Weld Number / (System)	Nominal Pipe Size (NPS)	ISI Drawing Number	Examination Coverage Percent	Unit / Cycle	Comments
DRHR-2-03 (Residual Heat Removal System)	24"	2-ISI-0221-C-01	50.0%	2 / 16 (Spring 2011)	Limitations due to component configuration, flued head to cast valve. At this time there is no Appendix VIII Supplement for the examination of cast austenitic stainless steel. Therefore, the qualified portion of this examination was limited to a single side. The portion of the weld on the IGSCC susceptible side was interrogated with the qualified techniques. Since the opposite side of the weld was a casting, the techniques used to interrogate this portion of the weld were not qualified. Further, the techniques intended to aid the examination in this limited condition were not performed. Thus, the examination of this weld is considered incomplete (Reference PER 443133). Therefore, only 50.0% coverage of the code required volume can be claimed.
GR-2-09 (Recirculation System)	12"	2-ISI-0270-C	75%	2 / 16 (Spring 2011)	Limitations due to configuration, Pipe to Branch Connection. The requirement in 10 CFR 50.55a(b)(2)(xv)(A)(2), which requires UT of one side of austenitic welds to be qualified to Appendix VIII Program to claim full Code coverage. At the time of the examination, there was no Appendix VIII Program for single sided austenitic welds. Therefore, only 75% coverage can be claimed.

NOTE:

- PIPE SEGMENTS CONTAINING TWO LONGITUDINAL SEAMS WILL BE IDENTIFIED AS:

(BASE WELD NO.)-LS-1D (DOWNSTREAM)
 (BASE WELD NO.)-LS-2D (DOWNSTREAM)
 (BASE WELD NO.)-LS-1U (UPSTREAM)
 (BASE WELD NO.)-LS-2U (UPSTREAM)

THE -LS-1 SEAM WILL BE NUMERICALLY CLOSEST TO 0° ON THE PIPE, AND THE -LS-2 SEAM WILL BE NUMERICALLY FARTHERMOST FROM 0° ON THE PIPE. (e.g. -LS-1 AT 130°, AND -LS-2 AT 310°)

- PIPE SEGMENTS CONTAINING ONLY ONE LONGITUDINAL SEAM WILL BE IDENTIFIED AS:

(BASE WELD NO.)-LS-D (DOWNSTREAM)
 (BASE WELD NO.)-LS-U (UPSTREAM)

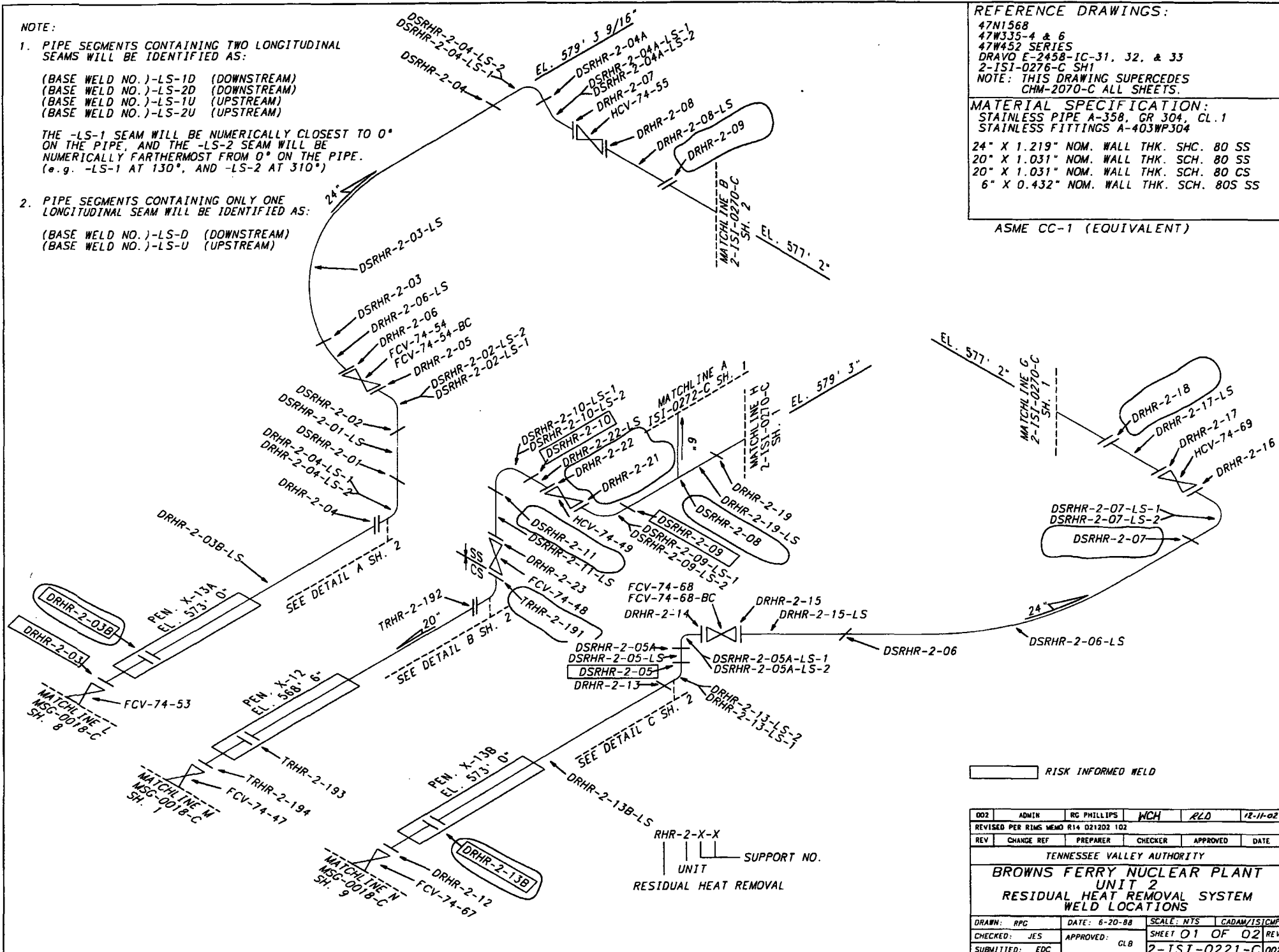
REFERENCE DRAWINGS:

47N1568
 47W335-4 & 6
 47W452 SERIES
 DRAVO E-2458-IC-31, 32, & 33
 2-ISI-0276-C SH1
 NOTE: THIS DRAWING SUPERCEDES
 CHM-2070-C ALL SHEETS.

MATERIAL SPECIFICATION:

STAINLESS PIPE A-358, GR 304, CL.1
 STAINLESS FITTINGS A-403WP304
 24" X 1.219" NOM. WALL THK. SCH. 80 SS
 20" X 1.031" NOM. WALL THK. SCH. 80 SS
 20" X 1.031" NOM. WALL THK. SCH. 80 CS
 6" X 0.432" NOM. WALL THK. SCH. 80S SS

ASME CC-1 (EQUIVALENT)



 RISK INFORMED WELD

002	ADMIN	RG PHILLIPS	WCH	RLD	12-11-02
REVISED PER RIMS MEMO R14 021202 102					
REV	CHANGE REF	PREPARER	CHECKER	APPROVED	DATE
TENNESSEE VALLEY AUTHORITY					
BROWNS FERRY NUCLEAR PLANT UNIT 2 RESIDUAL HEAT REMOVAL SYSTEM WELD LOCATIONS					
DRAWN: RPG	DATE: 6-20-88	SCALE: NTS	CADAM/ISTCMP		
CHECKED: JES	APPROVED: GLB	SHEET 01 OF 02	REV		
SUBMITTED: EDC		2-ISI-0221-C	002		

ALL A/D HISTORY RESEARCHED AT ROOD

CAD MAINTAINED DRAWING

CCD

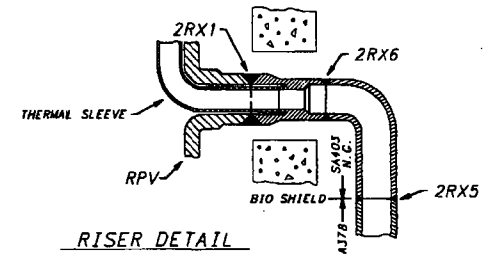
REFERENCE DRAWINGS:

2-47W2408-B,9 (S.E. REPLACEMENT)
 GE 769E963 (S.E. REPLACEMENT)
 TVA 47K1544-2
 GE 2-153F754
 KELLOGG BF 2-180
 NOTE: THIS DRAWING SUPERSEDES
 CHM-2068-C ALL SHEETS

MATERIAL SPECIFICATIONS:

A358, TP 304
 4" X 0.337" NOM WALL THK. (SS)
 12" X 0.569" NOM WALL THK. (SS)
 22" X 1.030" NOM WALL THK. (SS)
 28" X 1.138" NOM WALL THK. (SS) SUCTION
 28" X 1.322" NOM WALL THK. (SS) DISCHARGE
 2" SCH. 80 A-376, TP304
 2" FITTINGS A-182, F304
 SAFE END REPLACEMENT
 12" X 0.688 NOM WALL THK. (SS)
 SA 403 WP 316 N.G.

ASME CC-1 (EQUIVALENT)



RISER DETAIL

- NOTES:
1. WELDS 2RX1 ARE THE NOZZLE TO SAFE-END WELDS
 2. ALL 2" WELDS ARE SOCKET WELDED EXCEPT WHERE NOTED.
 3. PIPE SEGMENTS CONTAINING TWO LONGITUDINAL SEAMS WILL BE IDENTIFIED AS:

(BASE WELD NO.)-LS-1D (DOWNSTREAM)
 (BASE WELD NO.)-LS-2D (DOWNSTREAM)
 (BASE WELD NO.)-LS-1U (UPSTREAM)
 (BASE WELD NO.)-LS-2U (UPSTREAM)

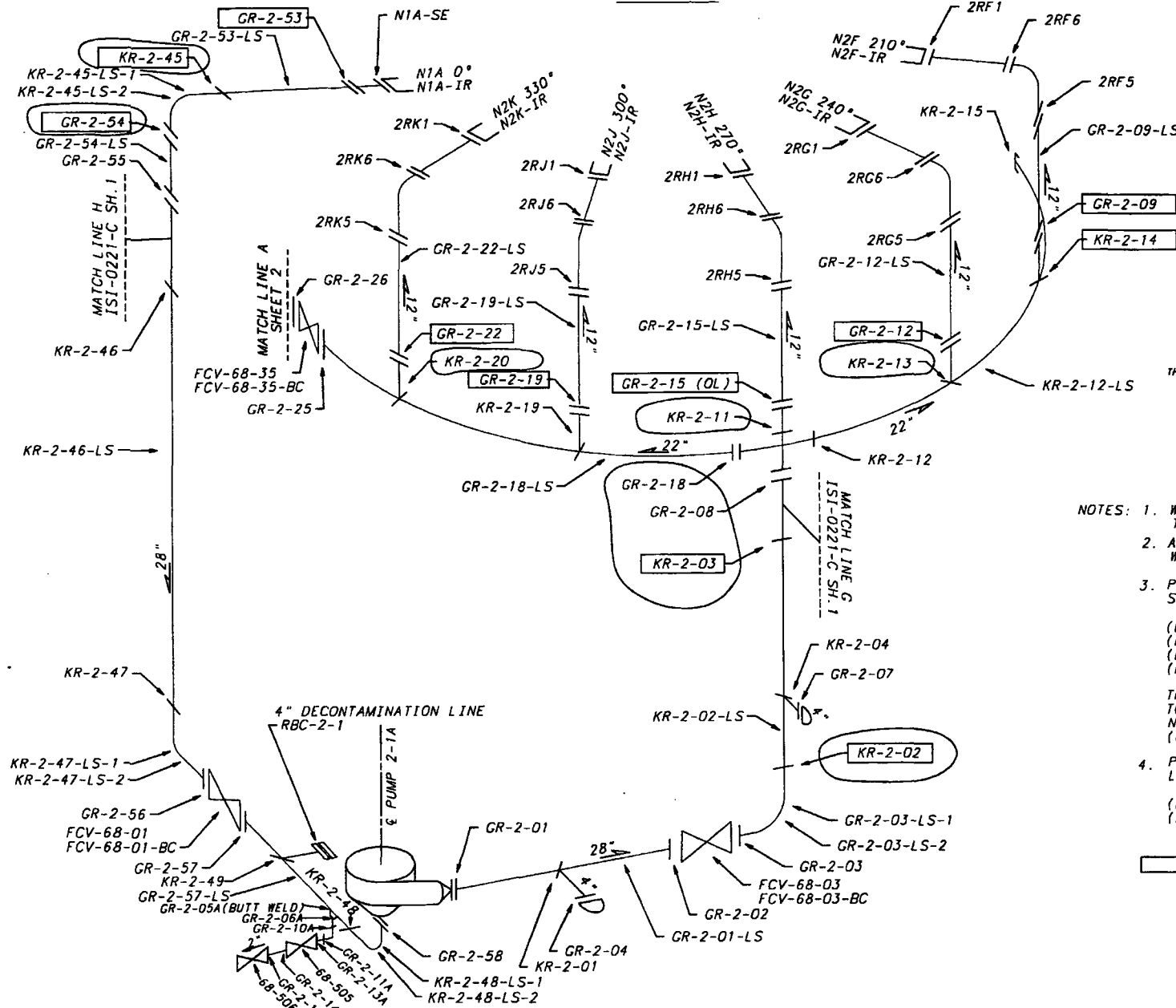
THE -LS-1 SEAM WILL BE NUMERICALLY CLOSEST TO 0° ON THE PIPE AND THE -LS-2 SEAM WILL BE NUMERICALLY FARTHERMOST FROM 0° ON THE PIPE. (e.g. -LS-1 AT 130°, AND -LS-2 AT 310°)

4. PIPE SEGMENTS CONTAINING ONLY ONE LONGITUDINAL SEAM WILL BE IDENTIFIED AS

(BASE WELD NO.)-LS-D (DOWNSTREAM)
 (BASE WELD NO.)-LS-U (UPSTREAM)

☐ RISK INFORMED WELDS

A - LOOP



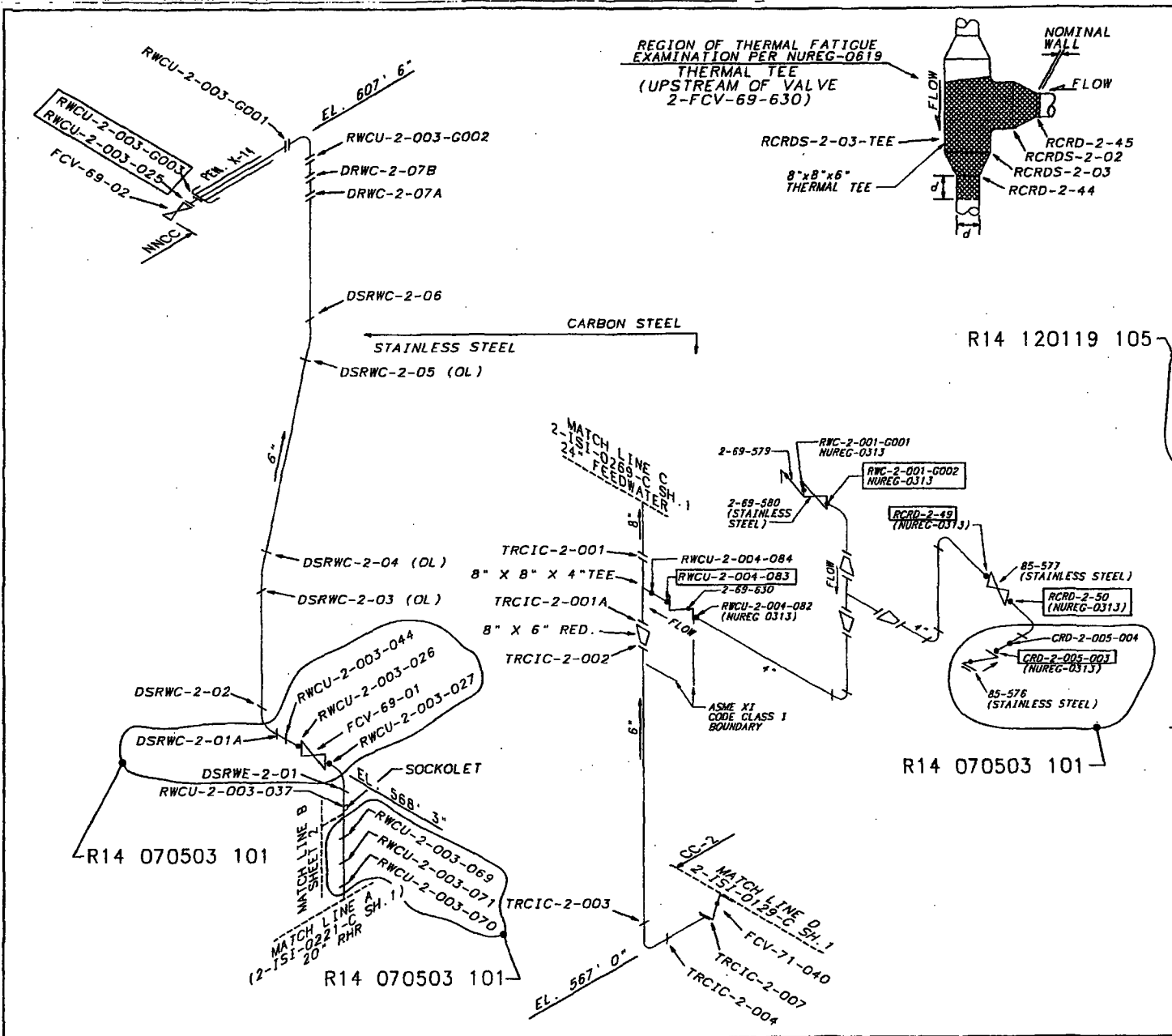
K = KELLOGG SHOP WELD
 G = GE FIELD WELD
 XR-N-N WELD NO.
 UNIT NO.
 SYSTEM
 2RXN WELD NO.
 UNIT NO.
 RISER LETTER

003	ADMIN	RD LOOSTER	WCH	RLD	12-11-02
REVISED PER RIMS MEMO R14 021202 102					
REV	CHANGE REF	PREPARER	CHECKER	APPROVED	DATE
TENNESSEE VALLEY AUTHORITY					
BROWNS FERRY NUCLEAR PLANT					
UNIT 2					
RECIRCULATION SYSTEM					
WELD LOCATIONS					
DRAWN: PBR	SUBMITTED	APPROVED	SCALE NIS		
DATE: 9-10-87	DATE: 6-14-88	DATE: 6-14-88	DATE: 6-14-88	SHEET 1 OF 2 SHEET(S)	
CHECKED: JES	EDC	GLB	DRAWING NO.	REV.	
DATE: 6-14-88			2-IST-0270-C	003	

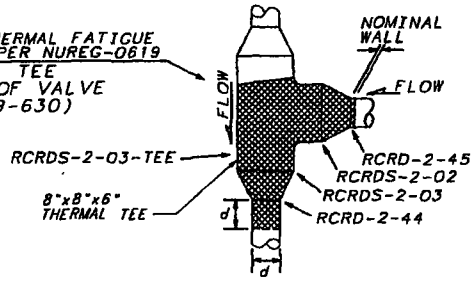
ALL A/D HISTORY RESEARCHED AT ROOD

CAD MAINTAINED DRAWING

CCD



REGION OF THERMAL FATIGUE EXAMINATION PER NUREG-0619
THERMAL TEE (UPSTREAM OF VALVE 2-FCV-69-630)



REFERENCE DRAWINGS
 CRD-2-005
 RCIC-2-004
 RWC-2-001
 2-W335-14, -17

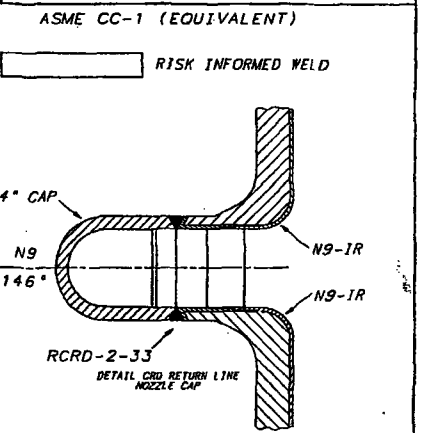
NOTE:
 THIS DRAWING SUPERSEDES CHM-2075-C AND CHM-2072-C (ALL SHEETS)

MATERIAL SPECIFICATIONS
STAINLESS STEEL
 FITTINGS
 6" SA403 WP316NG SCH. 80 SS
 PIPING
 6" SA376 TP316NG SCH. 80 SS
 6" A376GR TP304 SCH. 80 SS
 6" A312GR TP304 SCH. 80 SS

CARBON STEEL
 4" SCH. 80 A-333, GR1 (SEAMLESS) CS
 6" X 0.562" NOM WALL SCH. 120 CS
 8" X 0.593" NOM WALL SCH. 100 CS

VALVES
 2-69-630 SA351 CFBM SS
 2-69-580 A351 CFBM SS
 2-FCV-69-01 A351 CFBM SS
 2-FCV-69-02 A351 CFBM SS
 2-85-577 A182 F316 SS
 2-85-576 A182 F316 SS
 2-69-579 A182 F316 SS

CRD CAP
 4" X 0.674" NOM WALL SS



010	ADMIN	B CAMPBELL	J McFarland	DP	12/19/88	ASME/AS
REVISED PER RIMS MEMOS R14 070503 101 AND R14 120119 105 (REF: BPPR 443133)						
REV	CHANGE REF	PREPARER	CHECKER	APPROVED	DATE	
TENNESSEE VALLEY AUTHORITY						
BROWNS FERRY NUCLEAR PLANT						
UNIT 2						
REACTOR WATER CLEAN UP, RCIC, AND CRD WELD IDENTIFICATION						
DRAWN: PHB	DATE: 6-9-88	SCALE: NTS	CADAM/ISTCMP			
CHECKED: JES	APPROVED:	SHEET 01 OF 03		REV		
SUBMITTED: EDC	GLB	2-151-0272-C		010		

ALL A/D HISTORY RESEARCHED AT ROOD

CAD MAINTAINED DRAWING

CCD

Attachment B

Examination Report UT-11-019 - RWCU-2-003-070

Examination Report UT-11-043 - RCRD-2-50

Examination Report UT-11-032 - RHR System: DRHR-2-03

Examination Report UT-11-023 - RECIRC System: GR-2-09



UT Calibration Examination

Site/Unit: BFN / 2
 Summary No.: 01859-ISI-BFN2
 Workscope: ISI

Procedure: N-UT-64
 Procedure Rev.: 11
 Work Order No.: 2-SI-4.6.G

Outage No.: U2RF16
 Report No.: UT-11-019
 Page: 1 of 5

Code: Section XI 1995 Ed/1996 Add Cat./Item: R-A/R1.18D Location: Reactor Building - Drywell
 Drawing No.: 2-ISI-0272-C-01 Description: P - P
 System ID: 069 - Reactor Water Cleanup System
 Component ID: RWCU-2-003-070 Size/Length: N/A Thickness/Diameter: 0.432 / 6
 Limitations: Yes - See Coverage Plot Start Time: 1143 Finish Time: 1220

Instrument Settings
 Serial No.: E33689
 Manufacturer: KRAUTKRAMER
 Model: USN 60 Linearity: L-11-007
 Delay: 5.2097µ Range: 2.000
 M'd Cal/Vel: .1237 Energy: High
 Damping: 1000 Ω Reject: 0
 PRF Mode: Auto High SU Freq.: 2.25 MHz
 Disp. Start: IP Rectify: Full Wave
 Inst. Freq.: 2.25 MHz

Search Unit
 Serial No.: 0200M9
 Manufacturer: KBA
 Size: 0.375" Model: Comp G
 Freq.: 2.25 MHz Center Freq.: N/A
 Exam Angle: 45° Squint Angle: N/A
 Measured Angle: 43° Mode: Shear
 Exit Point: N/A # of Elements: 1
 Config.: Single Focus: N/A
 Shape: Round Contour: Flat
 Wedge Style: Non-Integral

Cal. Checks	Time	Date
Initial Cal.	0920	3/14/2011
Inter. Cal.	1145	3/14/2011
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	1224	3/14/2011

Ax. Gain (dB): 25.0 Circ. Gain (dB): 26.0
 1 Screen Div. = .20 in. of Sound Path

Search Unit Cable
 Type: RG-174 Length: 6' No. Conn.: 0

Calibration Block
 Cal. Block No.: WB-85
 Thickness: 0.5" Dia.: Flat
 Cal. Blk. Temp.: 69° Temp. Tool: 558274
 Comp. Temp.: 69° Temp. Tool: 558274

Scan Coverage
 Upstream Downstream Scan dB: 45
 CW CCW Scan dB: 45
 Exam Surface: OD
 Surface Condition: Ground

Couplant
 Cal. Batch: 10325
 Type: Ultragel II
 Mfg.: Sonotech
 Exam Batch: 10325
 Type: Ultragel II
 Mfg.: Sonotech

Reference Block
 Serial No.: 790396
 Type: Rompas

Axial Orientated Search Unit			
Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
0.5" Notch	80%	3.25	0.683"

Circumferential Orientated Search Unit			
Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
0.5" Notch	80%	3.25	0.683"

Reference/Simulator Block				
Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
36.0	SDH	60%	5.1	1.02"

Recordable Indication(s): Yes No (If Yes, Ref. Attached Ultrasonic Indication Report.)
 Results: NRI RI Info
 Percent Of Coverage Obtained > 90%: No Reviewed Previous Data: Yes

Comments: E33689 - Cal Due Date 9/18/2011
 558274 - Cal Due Date 1/29/2012
 85.5% Code Coverage

Examiner	Level	II(N)	Signature	Date	3/14/2011	Reviewer	Signature	Date	3/16/11
Kleinjan, Michael W.			<i>Michael Kleinjan</i>			MATT WELCH III	<i>Matt Welch</i>		
Examiner	Level	N/A	Signature	Date		Site Review	Signature	Date	
N/A									
Other	Level	N/A	Signature	Date		ANII Review	Signature	Date	
N/A						Jeremy Mayo	<i>Jeremy Mayo</i>		3/21/11

000371



UT Calibration Examination

Site/Unit: BFN / 2
 Summary No.: 01859-ISI-BFN2
 Workscope: ISI

Procedure: N-UT-84
 Procedure Rev.: 11
 Work Order No.: 2-SI-4.8.G

Outage No.: U2RF16
 Report No.: UT-11-019
 Page: 2 of 5

Code: Section XI 1995 Ed/1996 Add Cat./Item: R-AR1.16D Location: Reactor Building - Drywell
 Drawing No.: 2-ISI-0272-C-01 Description: P - P
 System ID: 069 - Reactor Water Cleanup System
 Component ID: RWCU-2-003-070 Size/Length: N/A Thickness/Diameter: 0.432 / 6
 Limitations: Yes - See Coverage Plot Start Time: 1143 Finish Time: 1155

Instrument Settings
 Serial No.: E33889
 Manufacturer: KRAUTKRAMER
 Model: USN 60 Linearity: L-11-007
 Delay: 10.8738μ Range: 5.000
 M'tl Cal/Vel: .1266 Energy: High
 Damping: 1000 Ω Reject: 0
 PRF Mode: Auto High SU Freq.: 1.5 MHz
 Disp. Start: IP Rectify: Full Wave
 Inst. Freq.: 2.25 MHz

Search Unit
 Serial No.: 01YRJX
 Manufacturer: KBA
 Size: 0.375" Model: Comp G
 Freq.: 1.5 MHz Center Freq.: N/A
 Exam Angle: 70° Squint Angle: N/A
 Measured Angle: 69° Mode: Shear
 Exit Point: N/A # of Elements: 1
 Config.: Single Focus: N/A
 Shape: Round Contour: Flat
 Wedge Style: Non-Integral

Cal. Checks	Time	Date
Initial Cal.	0935	3/14/2011
Inter. Cal.	1150	3/14/2011
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	1220	3/14/2011

Axial Orientated Search Unit			
Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1.0" Notch	80%	5.6	2.844"

Ax. Gain (dB): 82.1 Circ. Gain (dB): N/A
 1 Screen Div. = .50 in. of Sound Path

Search Unit Cable
 Type: RG-174 Length: 6' No. Conn.: 0

Couplant
 Cal. Batch: 10325
 Type: Ultragel II
 Mfg.: Sonotech
 Exam Batch: 10325
 Type: Ultragel II
 Mfg.: Sonotech

Circumferential Orientated Search Unit			
Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A	N/A	N/A	N/A

Calibration Block
 Cal. Block No.: WB-85
 Thickness: 1.0" Dia.: Flat
 Cal. Blk. Temp.: 69° Temp. Tool: 558274
 Comp. Temp.: 69° Temp. Tool: 558274

Scan Coverage
 Upstream Downstream Scan dB: 68
 CW CCW Scan dB: N/A
 Exam Surface: OD
 Surface Condition: Ground

Reference Block
 Serial No.: 790396
 Type: Rompas

Reference/Simulator Block				
Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
36.7	2.0" RAD	80%	4.0	1.98"

Recordable Indication(s): Yes No (If Yes, Ref. Attached Ultrasonic Indication Report.)

Results: NRI RI Info

Comments: E33889 - Cal Due Date 9/18/2011
 558274 - Cal Due Date 1/29/2012
 85.5% Code Coverage

Percent Of Coverage Obtained > 90%: No Reviewed Previous Data: Yes

Examiner	Level	II(N)	Signature	Date	Reviewer	Signature	Date
Kleinjan, Michael W.			<i>[Signature]</i>	3/14/2011	MATT WELCH III	<i>[Signature]</i>	3/16/11
Examiner	Level	N/A	Signature	Date	Site Review	Signature	Date
N/A							
Other	Level	N/A	Signature	Date	ANII Review	Signature	Date
N/A					Jeremy Mayo	<i>[Signature]</i>	3/16/11

000372



UT Calibration Examination

Site/Unit: BFN / 2
 Summary No.: 01859-ISI-BFN2
 Workscope: ISI

Procedure: N-UT-64
 Procedure Rev.: 11
 Work Order No.: 2-SI-4.6.G

Outage No.: U2RF16
 Report No.: UT-11-019
 Page: 3 of 5

Code: Section XI 1995 Ed/1996 Add Cat./Item: R-A/R1.18D Location: Reactor Building - Drywell
 Drawing No.: 2-ISI-0272-C-01 Description: P - P
 System ID: 069 - Reactor Water Cleanup System
 Component ID: RWCU-2-003-070 Size/Length: N/A Thickness/Diameter: 0.432 / 6
 Limitations: Yes - See Coverage Plot Start Time: 1140 Finish Time: 1220

Instrument Settings
 Serial No.: E33669
 Manufacturer: KRAUTKRAMER
 Model: USN 60 Linearity: L-11-007
 Delay: 6.3386µ Range: 2.000
 M'tl Cal/Vel: .1172 Energy: High
 Damping: 1000 Ω Reject: 0
 PRF Mode: Auto High SU Freq.: 2.25 MHz
 Disp. Start: IP Rectify: Full Wave
 Inst. Freq.: 2.25 MHz

Search Unit
 Serial No.: 00F8T9
 Manufacturer: KBA
 Size: 0.375" Model: Comp G
 Freq.: 2.25 MHz Center Freq.: N/A
 Exam Angle: 70° Squint Angle: N/A
 Measured Angle: 69° Mode: Shear
 Exit Point: N/A # of Elements: 1
 Config.: Single Focus: N/A
 Shape: Round Contour: Flat
 Wedge Style: Non-Integral

Cal. Checks	Time	Date
Initial Cal.	0940	3/14/2011
Inter. Cal.	1149	3/14/2011
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	1228	3/14/2011

Couplant
 Cal. Batch: 10325
 Type: Ultragel II
 Mfg.: Sonotech
 Exam Batch: 10325
 Type: Ultragel II
 Mfg.: Sonotech

Axial Orientated Search Unit			
Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
0.5" Notch	80%	6.9	1.37"

Circumferential Orientated Search Unit			
Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A	N/A	N/A	N/A

Reference Block
 Serial No.: 790396
 Type: Rompas

Reference/Simulator Block				
Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
28.9	1.0" RAD	80%	5.0	1.00"

Ax. Gain (dB): 52.8 Circ. Gain (dB): N/A
1 Screen Div. = .20 in. of Sound Path

Calibration Block
 Cal. Block No.: WB-85
 Thickness: 0.5" Dia.: Flat
 Cal. Bik. Temp.: 69° Temp. Tool: 558274
 Comp. Temp.: 69° Temp. Tool: 558274

Search Unit Cable
 Type: RG-174 Length: 6' No. Conn.: 0
 Upstream Downstream Scan dB: 60
 CW CCW Scan dB: N/A
 Exam Surface: OD
 Surface Condition: Ground

Recordable Indication(s): Yes No (If Yes, Ref. Attached Ultrasonic Indication Report.)

Results: NRI RI Info

Percent Of Coverage Obtained > 90%: No Reviewed Previous Data: Yes

Comments: E33669 - Cal Due Date 9/18/2011
 558274 - Cal Due Date 1/29/2012
 85.5% Code Coverage

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Kleinjan, Michael W.	II(N)	<i>Michael W. Kleinjan</i>	3/14/2011	MATT WELCH III	<i>Matt Welch III</i>	3/16/11
N/A	N/A			Site Review		
Other	Level	Signature	Date	ANII Review	Signature	Date
N/A	N/A			<i>Jeremy Mayo</i>	<i>Jeremy Mayo</i>	3/16/11

000373



Supplemental Report

000374

Report No.: UT-11-019

Page: 4 of 5

Summary No.: 01859-ISI-BFN2

Examiner: Kleinjan, Michael W. *Mike Kleinjan* Level: II(N)

Reviewer: MATT WELCH III *Matt Welch*

Date: 3/16/11

Examiner: N/A Level: N/A

Site Review: _____

Date: _____

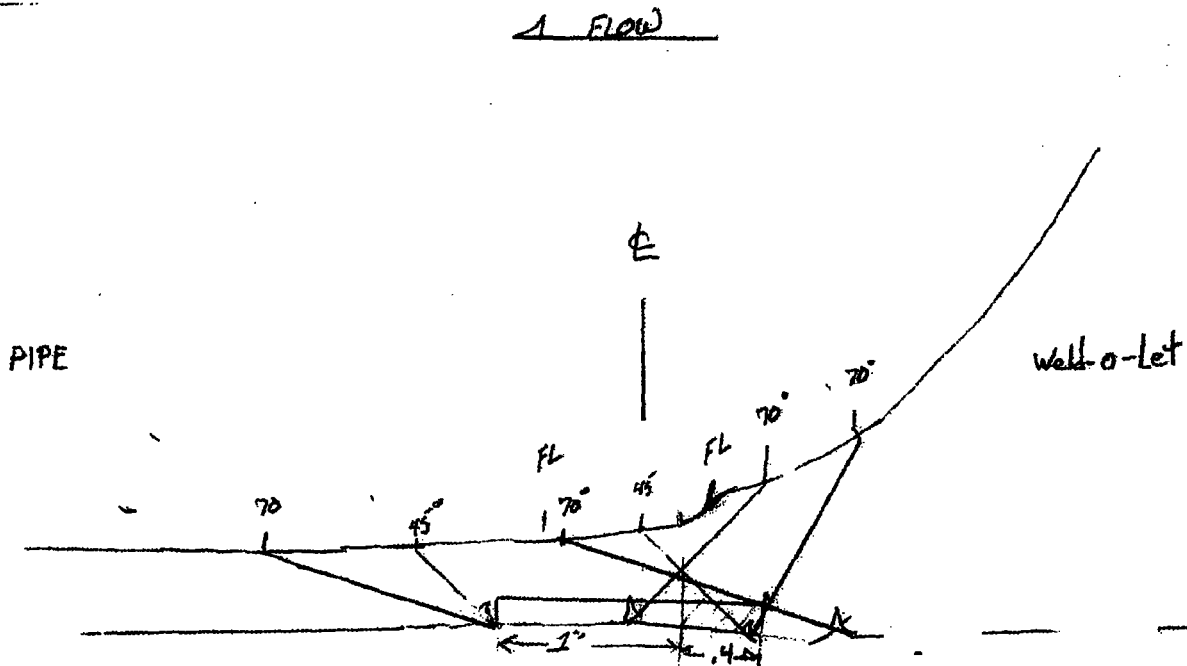
Other: N/A Level: N/A

ANII Review: *James Wayne Allyn*

Date: 3/16/11

Comments: None

Sketch or Photo: O:\Ideas_Server\Ideas_BFN\Documentation\U2R16 Scanned Data\RWCU-2-003-070 Coverage Plot.jpg



$$(H) .16 \times (W) 1.4 \times (L) 21 = 4.704 \text{ Total Volume}$$

$$\text{SCAN \# 3, 4, } 100\%$$

$$(H) .16 \times (W) 1 \times (L) 21 = 3.36 \text{ Volume 5/6 SCAN}$$

$$\text{* SCAN \# 5 } 71\%$$

$$100\% + 100\% + 71\% + 71\% \div 4 = 85.5\%$$

* EXAM LIMITED ON SCAN 5 AND 6 DUE TO THE PIPE TO WELD-O-LET CONFIGURATION



Supplemental Report

000375

Report No.: UT-11-019

Page: 5 of 5

Summary No.: 01859-ISI-BFN2

Examiner: Kleinjan, Michael W. *mkj* Level: II(N)

Reviewer: *Matt Welch*
MATT WELCH III

Date: 3/14/11

Examiner: N/A Level: N/A

Site Review:

Date:

Other: N/A Level: N/A

ANII Review: *Gregory Wayne Magee*

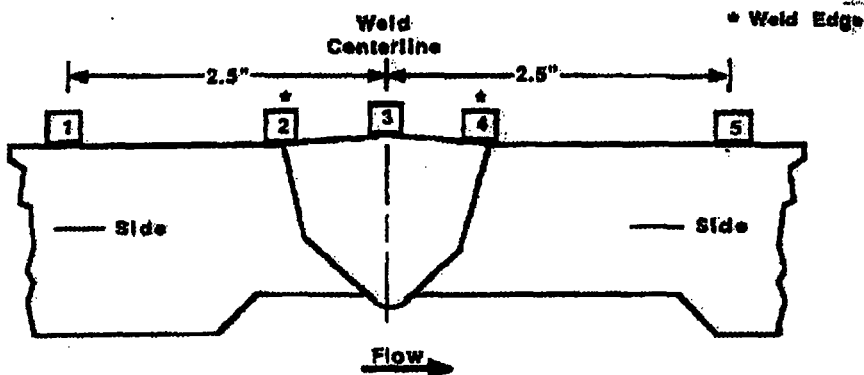
Date: 3/22/11

Comments: None

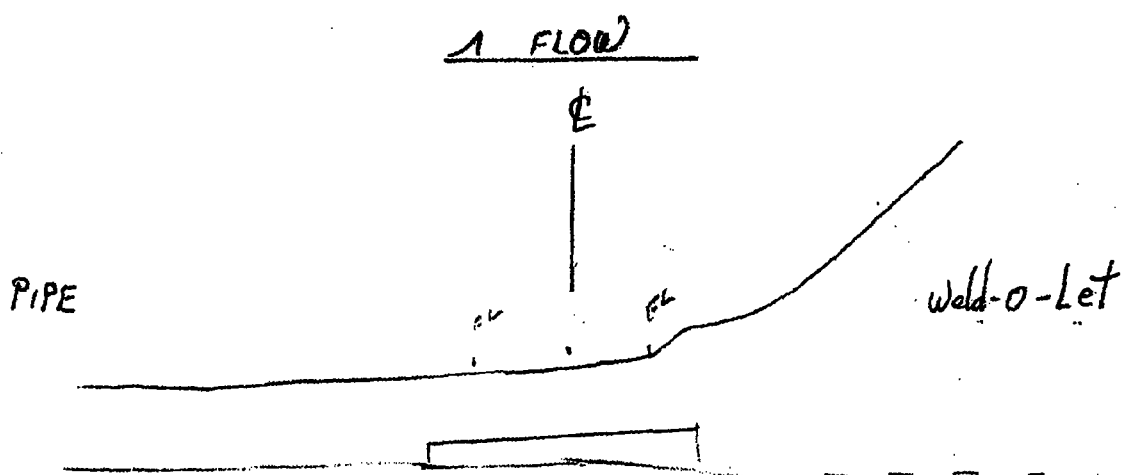
Sketch or Photo: O:\Ideal_Server\Ideal_BFN\Documentation\U2R16 Scanned Data\RWCU-2-003-070 T&C.jpg

Record Thickness Measurements As Indicated, including Weld Width, Edge-To-Edge At 0°

Position	0°	90°	180°	270°
1	N/A			
2	.185	N		
3	.149		A	
4	.142			
5	.142			



CROWN HEIGHT: FLUSH DIAMETER: 6
 CROWN WIDTH: 19 WELD LENGTH: 21





UT Calibrator Examination

Site/Unit: BFN / 2
 Summary No.: 05510-ISI-BFN2
 Workscope: ISI

Procedure: N-UT-82
 Procedure Rev.: 4
 Work Order No.: 2-SI-4.6.G

Outage No.: U2RF16
 Report No.: UT-11-043
 Page: 1 of 8

Code: Section XI 1995 Ed/1996 Add Cat./Item: R-A/R1.16D Location: Reactor Building, Main Steam Tunnel

Drawing No.: 2-SI-0272-C-01 Description: EL - VLV

System ID: 069 - Reactor Water Cleanup System

Component ID: RCRD-2-50 Size/Length: N/A Thickness/Diameter: 0.531 / 4"

Limitations: None Start Time: 2245 Finish Time: 2255

Instrument Settings
 Serial No.: E37888 Manufacturer: KRAUTKRAMER
 Model: USN 60 Linearity: L-11-002
 Delay: 6.5197µ Range: 2.000
 M'tl Cal/Vel: .2330 Energy: High
 Damping: 1000 Ω Reject: 0
 PRF Mode: Auto High SU Freq.: 2.0 MHz
 Disp. Start: IP Rectify: Full Wave
 Inst. Freq.: 2.0 MHz

Search Unit
 Serial No.: U0109 Manufacturer: Megasonics
 Size: 2 (10x18mm) Model: CSS
 Freq.: 2.0 MHz Center Freq.: N/A
 Exam Angle: 60° Squint Angle: N/A
 Measured Angle: 57° Mode: Long
 Exit Point: .4 / .68 # of Elements: 2
 Config.: D-SBS Focus: FS-17
 Shape: Rect Contour: 6" Ax
 Wedge Style: Integral

Cal. Checks	Time	Date
Initial Cal.	2100	3/16/2011
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	0027	3/17/2011

Couplant
 Cal. Batch: 06125
 Type: Ultragel II
 Mfg.: Sonotech
 Exam Batch: 06125
 Type: Ultragel II
 Mfg.: Sonotech

Ax. Gain (dB): 63.0 Circ. Gain (dB): N/A
 1 Screen Div. = .20 in. of Sound Path

Search Unit Cable
 Type: RG-174 Length: 6' No. Conn.: 0

Calibration Block
 Cal. Block No.: BF-131
 Thickness: 0.6" SDH Dia.: 4"
 Cal. Blk. Temp.: 70° Temp. Tool: 558272
 Comp. Temp.: 78° Temp. Tool: 558272

Scan Coverage
 Upstream Downstream Scan dB: 63
 CW CCW Scan dB: N/A
 Exam Surface: OD
 Surface Condition: Flush

Reference Block
 Serial No.: BF-131
 Type: Cal Block

Axial Orientated Search Unit			
Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
0.6 SDH	80%	5.3	1.05"

Circumferential Orientated Search Unit			
Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A	N/A	N/A	N/A

Reference/Simulator Block				
Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
63.0	0.6 SDH	80%	5.3	1.05"

Recordable Indication(s): Yes No (If Yes, Ref. Attached Ultrasonic Indication Report.)

Results: NRI RI Info

Percent Of Coverage Obtained > 90%: No Reviewed Previous Data: Yes

Comments: E37888 - Cal Due Date 10/5/2011
 558272 - Cal Due Date 1/29/2012
 63.4% Code Coverage

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Brown, Thomas D.	III(N)	<i>Thomas D. Brown</i>	3/17/2011	Matt Welch, LIII	<i>Matt Welch</i>	3/23/11
N/A	N/A			Site Review		
N/A	N/A			ANII Review	<i>Sanford</i>	4/3/11

000521



UT Calibration Examination

Site/Unit: BFN / 2
 Summary No.: 06510-ISI-BFN2
 Workscope: ISI

Procedure: N-UT-82
 Procedure Rev.: 4
 Work Order No.: 2-SI-4.6.G

Outage No.: U2RF16
 Report No.: UT-11-043
 Page: 2 of 8

Code: Section XI 1996 Ed/1998 Add Cat./Item: R-AR1.16D Location: Reactor Building, Main Steam Tunnel
 Drawing No.: 2-ISI-0272-C-01 Description: EL - VLV
 System ID: 069 - Reactor Water Cleanup System
 Component ID: RCRD-2-50 Size/Length: N/A Thickness/Diameter: 0.531 / 4"
 Limitations: None Start Time: 2235 Finish Time: 2245

Instrument Settings
 Serial No.: E37688
 Manufacturer: KRAUTKRAMER
 Model: USN 80 Linearity: L-11-002
 Delay: 8.3669µ Range: 2.000
 M'tl Cal/Vel: .2330 Energy: High
 Damping: 1000 Ω Reject: 0
 PRF Mode: Auto High SU Freq.: 2.0 MHz
 Disp. Start: IP Rectify: Full Wave
 Inst. Freq.: 2.0 MHz

Search Unit
 Serial No.: U0110
 Manufacturer: Megasonics
 Size: 2 (10x18mm) Model: CSS
 Freq.: 2.0 MHz Center Freq.: N/A
 Exam Angle: 70° Squint Angle: N/A
 Measured Angle: 70° Mode: Long
 Exit Point: .4 / .65 # of Elements: 2
 Config.: D-SBS Focus: FS-28
 Shape: Rect Contour: 6" Ax
 Wedge Style: Integral

Cal. Checks	Time	Date
Initial Cal.	2050	3/16/2011
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	0025	3/17/2011

Couplant
 Cal. Batch: 06125
 Type: Ultragel II
 Mfg.: Sonotech
 Exam Batch: 06125
 Type: Ultragel II
 Mfg.: Sonotech

Ax. Gain (dB): 70.0 Circ. Gain (dB): N/A
1 Screen Div. = .20 in. of Sound Path

Calibration Block
 Cal. Block No.: BF-131
 Thickness: 0.6" SDH Dia.: 4"
 Cal. Blk. Temp.: 70° Temp. Tool: 558272
 Comp. Temp.: 78° Temp. Tool: 558272

Search Unit Cable
 Type: RG-174 Length: 6' No. Conn.: 0
Scan Coverage
 Upstream Downstream Scan dB: 70
 CW CCW Scan dB: N/A
 Exam Surface: OD
 Surface Condition: Flush

Reference Block
 Serial No.: BF-131
 Type: Cal Block

Axial Orientated Search Unit			
Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
0.6 SDH	80%	5.6	1.118"

Circumferential Orientated Search Unit			
Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A	N/A	N/A	N/A

Reference/Simulator Block				
Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
70.0	0.6 SDH	80%	5.6	1.118"

Recordable Indication(s): Yes No (If Yes, Ref. Attached Ultrasonic Indication Report.)

Results: NRI RI Info

Percent Of Coverage Obtained > 90%: No Reviewed Previous Data: Yes

Comments: E37688 - Cal Due Date 10/5/2011
 558272 - Cal Due Date 1/29/2012
 53.4% Code Coverage

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Brown, Thomas D.	III(N)	<i>Thomas D. Brown</i>	3/17/2011	Matt Welch, LIII	<i>Matt Welch</i>	3/23/11
Examiner	Level	Signature	Date	Site Review	Signature	Date
N/A	N/A			N/A		
Other	Level	Signature	Date	ANII Review	Signature	Date
N/A	N/A				<i>[Signature]</i>	4/13/11

000522



UT Calibration Examination

Site/Unit: BFN / 2
 Summary No.: 05510-ISI-BFN2
 Workscope: ISI

Procedure: N-UT-82
 Procedure Rev.: 4
 Work Order No.: 2-SI-4.6.G

Outage No.: U2RF16
 Report No.: UT-11-043
 Page: 3 of 8

Code: Section XI 1995 Ed/1996 Add Cat./Item: R-A/R1.16D Location: Reactor Building, Main Steam Tunnel
 Drawing No.: 2-ISI-0272-C-01 Description: EL - VLV
 System ID: 069 - Reactor Water Cleanup System
 Component ID: RCRD-2-50 Size/Length: N/A Thickness/Diameter: 0.531 / 4"
 Limitations: None Start Time: 2326 Finish Time: 2336

Instrument Settings
 Serial No.: E37688
 Manufacturer: KRAUTKRAMER
 Model: USN 60 Linearity: L-11-002
 Delay: 9.0675µ Range: 1.000
 M'tl Cal/Vel: .2330 Energy: High
 Damping: 1000 Ω Reject: 0
 PRF Mode: Auto High SU Freq.: 2.0 MHz
 Disp. Start: IP Rectify: Full Wave
 Inst. Freq.: 2.0 MHz

Search Unit
 Serial No.: U0270
 Manufacturer: Megasonics
 Size: 2 (4x14mm) Model: CSS
 Freq.: 2.0 MHz Center Freq.: N/A
 Exam Angle: 42° Squint Angle: N/A
 Measured Angle: 42° Mode: Long
 Exit Point: .34 / .36 # of Elements: 2
 Config.: D-SBS Focus: FS-14
 Shape: Rect Contour: 6" Circ
 Wedge Style: Integral

Cal. Checks	Time	Date
Initial Cal.	2130	3/18/2011
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	0033	3/17/2011

Couplant
 Cal. Batch: 08125
 Type: Ultrage II
 Mfg.: Sonotech
 Exam Batch: 08125
 Type: Ultrage II
 Mfg.: Sonotech

Axial Orientated Search Unit			
Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A	N/A	N/A	N/A

Circumferential Orientated Search Unit			
Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
0.5 SDH	80%	6.7	.667"

Ax. Gain (dB): 56.5 Circ. Gain (dB): N/A
 1 Screen Div. = .10 in. of Sound Path

Search Unit Cable
 Type: RG-174 Length: 6' No. Conn.: 0

Calibration Block
 Cal. Block No.: BF-132
 Thickness: 0.5" SDH Dia.: 4"
 Cal. Blk. Temp.: 70° Temp. Tool: 558272
 Comp. Temp.: 78° Temp. Tool: 558272

Scan Coverage
 Upstream Downstream Scan dB: N/A
 CW CCW Scan dB: 59
 Exam Surface: OD
 Surface Condition: Flush

Reference Block
 Serial No.: BF-132
 Type: Cal Block

Reference/Simulator Block				
Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
56.5	0.5 SDH	80%	6.7	.667"

Recordable Indication(s): Yes No (If Yes, Ref. Attached Ultrasonic Indication Report.)
 Results: NRI RI Info
 Percent Of Coverage Obtained > 90%: No Reviewed Previous Data: Yes

Comments: E37688 - Cal Due Date 10/5/2011
 558272 - Cal Due Date 1/29/2012
 53.4% Code Coverage

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Brown, Thomas D.	III(N)	<i>Tom Brown</i>	3/17/2011	Matt Welch, LIII	<i>Matt Welch</i>	3/23/11
Examiner	Level	Signature	Date	Site Review	Signature	Date
N/A	N/A			N/A		
Other	Level	Signature	Date	ANII Review	Signature	Date
N/A	N/A				<i>[Signature]</i>	4/3/11

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UT Calibration Examination

Site/Unit: BFN / 2
 Summary No.: 05510-ISI-BFN2
 Workscope: ISI

Procedure: N-UT-82
 Procedure Rev.: 4
 Work Order No.: 2-SI-4.6.G

Outage No.: U2RF16
 Report No.: UT-11-043
 Page: 4 of 8

Code: Section XI 1995 Ed/1996 Add Cat./Item: R-AR1.16D Location: Reactor Building, Main Steam Tunnel
 Drawing No.: 2-ISI-0272-C-01 Description: EL - VLV
 System ID: 069 - Reactor Water Cleanup System
 Component ID: RCRD-2-50 Size/Length: N/A Thickness/Diameter: 0.531 / 4"
 Limitations: None Start Time: 2315 Finish Time: 2325

Instrument Settings
 Serial No.: E37888
 Manufacturer: KRAUTKRAMER
 Model: USN 60 Linearity: L-11-002
 Delay: 9.0675µ Range: 1.000
 M'tl Cal/Vel: .2330 Energy: High
 Damping: 1000 Ω Reject: 0
 PRF Mode: Auto High SU Freq.: 2.0 MHz
 Disp. Start: IP Rectify: Full Wave
 Inst. Freq.: 2.0 MHz

Search Unit
 Serial No.: U0271
 Manufacturer: Megasonics
 Size: 2 (4x14mm) Model: CSS
 Freq.: 2.0 MHz Center Freq.: N/A
 Exam Angle: 42° Squint Angle: N/A
 Measured Angle: 42° Mode: Long
 Exit Point: .32 / .38 # of Elements: 2
 Config.: D-SBS Focus: FS-14
 Shape: Rect Contour: 6" Circ
 Wedge Style: Integral

Cal. Checks	Time	Date
Initial Cal.	2120	3/16/2011
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	0031	3/17/2011

Couplant
 Cal. Batch: 06125
 Type: Ultragel II
 Mfg.: Sonotech
 Exam Batch: 06125
 Type: Ultragel II
 Mfg.: Sonotech

Ax. Gain (dB): 56.5 Circ. Gain (dB): N/A
 1 Screen Div. = .10 in. of Sound Path

Calibration Block
 Cal. Block No.: BF-132
 Thickness: 0.6" SDH Dia.: 4"
 Cal. Bk. Temp.: 70° Temp. Tool: 558272
 Comp. Temp.: 78° Temp. Tool: 558272

Search Unit Cable
 Type: RG-174 Length: 6' No. Conn.: 0
Scan Coverage
 Upstream Downstream Scan dB: N/A
 CW CCW Scan dB: 59
 Exam Surface: OD
 Surface Condition: Flush

Reference Block
 Serial No.: BF-132
 Type: Cal Block

Axial Orientated Search Unit				
Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path	
N/A	N/A	N/A	N/A	
Circumferential Orientated Search Unit				
Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path	
0.6 SDH	80%	8.0	.623"	
Reference/Simulator Block				
Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
56.5	0.6 SDH	80%	8.0	.623"

Recordable Indication(s): Yes No (If Yes, Ref. Attached Ultrasonic Indication Report.)
 Results: NRI RI Info
 Percent Of Coverage Obtained > 90%: No Reviewed Previous Data: Yes

Comments: E37888 - Cal Due Date 10/5/2011
 558272 - Cal Due Date 1/29/2012
 53.4% Code Coverage

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Brown, Thomas D.	III(N)	<i>Tom Brown</i>	3/17/2011	Matt Welch, LIII	<i>Matt Welch</i>	3/23/11
Examiner	Level	Signature	Date	Site Review	Signature	Date
N/A	N/A			N/A		
Other	Level	Signature	Date	ANII Review	Signature	Date
N/A	N/A				<i>Lawrence</i>	4/3/11

000024



UT Calibration Examination

Site/Unit: BFN / 2
 Summary No.: 05510-ISI-BFN2
 Workscope: ISI

Procedure: N-UT-82
 Procedure Rev.: 4
 Work Order No.: 2-SI-4.8.G

Outage No.: U2RF16
 Report No.: UT-11-043
 Page: 5 of 8

Code: Section XI 1895 Ed/1996 Add Cat./Item: R-A/R1.16D Location: Reactor Building, Main Steam Tunnel
 Drawing No.: 2-ISI-0272-C-01 Description: EL - VLV
 System ID: 069 - Reactor Water Cleanup System
 Component ID: RCRD-2-50 Size/Length: N/A Thickness/Diameter: 0.531 / 4"
 Limitations: None Start Time: 2328 Finish Time: 2336

Instrument Settings
 Serial No.: E37688
 Manufacturer: KRAUTKRAMER
 Model: USN 60 Linearity: L-11-002
 Delay: 4.136µ Range: 4.000
 M'tl Cal/Vel: .1217 Energy: High
 Damping: 1000 Ω Reject: 0
 PRF Mode: Auto High SU Freq.: 2.25 MHz
 Disp. Start: IP Rectify: Full Wave
 Inst. Freq.: 2.25 MHz
 Ax. Gain (dB): 28.0 Circ. Gain (dB): 28.0
10 Screen Div. = 4.0 in. of Sound Path

Search Unit
 Serial No.: SB0450
 Manufacturer: KBA
 Size: 0.250" Model: Comp G
 Freq.: 2.25 MHz Center Freq.: N/A
 Exam Angle: 45° Squint Angle: N/A
 Measured Angle: 45° Mode: Shear
 Exit Point: N/A # of Elements: 1
 Config.: Single Focus: N/A
 Shape: Round Contour: Flat
 Wedge Style: Non-Integral
 Search Unit Cable
 Type: RG-174 Length: 6' No. Conn.: 0

Calibration Block
 Cal. Block No.: SQ-123
 Thickness: 1.0" Dia.: Flat
 Cal. Blk. Temp.: 70° Temp. Tool: 558272
 Comp. Temp.: 78° Temp. Tool: 558272
 Recordable Indication(s): Yes No (If Yes, Ref. Attached Ultrasonic Indication Report.)
 Results: NRJ RI Info

Scan Coverage
 Upstream Downstream Scan dB: N/A
 CW CCW Scan dB: 38
 Exam Surface: OD
 Surface Condition: Flush

Percent Of Coverage Obtained > 90%: No Reviewed Previous Data: Yes

Cal. Checks	Time	Date
Initial Cal.	2140	3/16/2011
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	0042	3/17/2011

Couplant
 Cal. Batch: 06125
 Type: Ultragel II
 Mfg.: Sonotech
 Exam Batch: 06125
 Type: Ultragel II
 Mfg.: Sonotech

Reference Block
 Serial No.: SQ-123
 Type: Cal Block

Axial Orientated Search Unit			
Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1.0" Notch	80%	3.4	1.40"

Circumferential Orientated Search Unit			
Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1.0" Notch	80%	3.4	1.40"

Reference/Simulator Block				
Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
28.0	1.0" Notch	80%	3.4	1.40"

Comments: E37688 - Cal Due Date 10/5/2011
558272 - Cal Due Date 1/29/2012
53.4% Code Coverage

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Brown, Thomas D.	III(N)	<i>Thomas D. Brown</i>	3/17/2011	Matt Welch, LIII	<i>Matt Welch</i>	3/23/11
N/A	N/A			N/A		
N/A	N/A			ANII Review	<i>La Flan</i>	4/3/11

000625



UT Calibration Examination

Site/Unit: BFN / 2
 Summary No.: 05510-ISI-BFN2
 Workscope: ISI

Procedure: N-UT-82
 Procedure Rev.: 4
 Work Order No.: 2-SI-4.6.G

Outage No.: U2RF18
 Report No.: UT-11-043
 Page: 6 of 8

Code: Section XI 1995 Ed/1996 Add Cat./Item: R-A/R1.16D Location: Reactor Building, Main Steam Tunnel
 Drawing No.: 2-ISI-0272-C-01 Description: EL - VLV
 System ID: 069 - Reactor Water Cleanup System
 Component ID: RCRD-2-50 Size/Length: N/A Thickness/Diameter: 0.531 / 4"
 Limitations: None Start Time: 2338 Finish Time: 2344

Instrument Settings
 Serial No.: E37688
 Manufacturer: KRAUTKRAMER
 Model: USN 60 Linearity: L-11-002
 Delay: 4.885µ Range: 1.500
 M't Cal/Vel: .1273 Energy: High
 Damping: 1000 Ω Reject: 0
 PRF Mode: Auto High SU Freq.: 2.25 MHz
 Disp. Start: IP Rectify: Full Wave
 Inst. Freq.: 2.25 MHz
 Ax. Gain (dB): 45.0 Circ. Gain (dB): N/A
 1 Screen Div. = .16 in. of Sound Path
Calibration Block
 Cal. Block No.: SQ-123
 Thickness: 0.5" Dia.: Flat
 Cal. Blk. Temp.: 70° Temp. Tool: 558272
 Comp. Temp.: 76° Temp. Tool: 558272
 Recordable Indication(s): Yes No (If Yes, Ref. Attached Ultrasonic Indication Report.)
 Results: NRI RI Info
 Percent Of Coverage Obtained > 90%: No Reviewed Previous Data: Yes

Search Unit
 Serial No.: SB0450
 Manufacturer: KBA
 Size: 0.250" Model: Comp G
 Freq.: 2.25 MHz Center Freq.: N/A
 Exam Angle: 60° Squint Angle: N/A
 Measured Angle: 60° Mode: Shear
 Exit Point: N/A # of Elements: 1
 Config.: Single Focus: N/A
 Shape: Round Contour: Flat
 Wedge Style: Non-Integral
Search Unit Cable
 Type: RG-174 Length: 8' No. Conn.: 0
Scan Coverage
 Upstream Downstream Scan dB: 48
 CW CCW Scan dB: N/A
 Exam Surface: OD
 Surface Condition: Flush

Cal. Checks	Time	Date
Initial Cal.	2130	3/16/2011
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	0040	3/17/2011

Couplant
 Cal. Batch: 06125
 Type: Ultrage II
 Mfg.: Sonotech
 Exam Batch: 06125
 Type: Ultrage II
 Mfg.: Sonotech

Reference Block
 Serial No.: SQ-123
 Type: Cal Block

Axial Orientated Search Unit				
Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path	
0.5" Notch	80%	6.1	.915"	
Circumferential Orientated Search Unit				
Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path	
N/A	N/A	N/A	N/A	
Reference/Simulator Block				
Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
45.0	0.5" Notch	80%	6.1	.915"

Comments: E37688 - Cal Due Date 10/5/2011
 558272 - Cal Due Date 1/29/2012
 53.4% Code Coverage

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Brown, Thomas D.	III(N)	<i>Thomas D. Brown</i>	3/17/2011	Matt Welch, LIII	<i>Matt Welch</i>	3/23/11
N/A	N/A			Site Review		
N/A	N/A			ANII Review	<i>Tom Howard</i>	4/3/11

000526



Supplemental Report

000527

Report No.: UT-11-043

Page: 7 of 8

Summary No.: 05510-ISI-BFN2

Examiner: Brown, Thomas D Level: III(N)

Reviewer: Matt Welch, LIII

Date: 3/23/11

Examiner: N/A Level: N/A

Site Review: N/A

Date: _____

Other: N/A Level: N/A

ANII Review: [Signature]

Date: 4/3/11

Comments: None

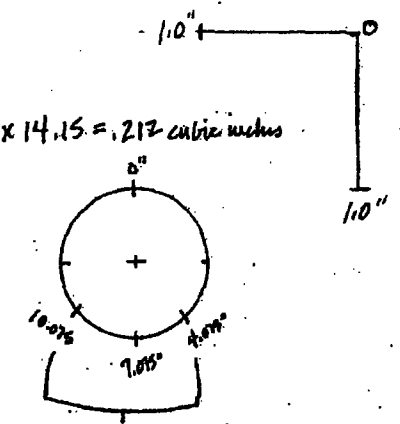
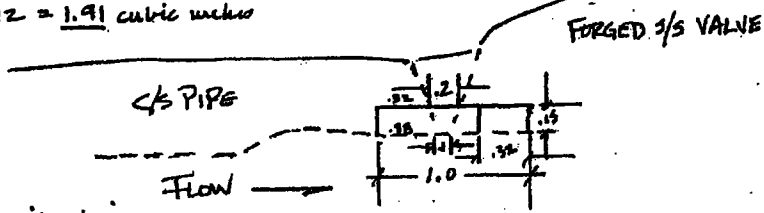
Sketch or Photo: O:\Ideas_Server\Ideas_BFN\Documentation\U2R16 Scanned Data\RCRD-2-50 Coverage Plot.jpg

REQUIRED EXAM VOLUME = $(15 \times 10) \times 14.15 = 2.12$ cubic inches

REQUIRED EXAM VOLUME (RL) = 2.12 cubic inches

REQUIRED EXAM VOLUME (SHEAR) = $[(.2 \times 10) \div 2] \times 15 = .015 \times 14.15 = .212$ cubic inches

* $2.12 - .212 = 1.91$ cubic inches



SCAN LIMITATION
DUE TO SLOW INTRODUCTION
RL TRANSDUCERS ONLY
4.075" - 10.075"

Scan limitations:

- RL = 6" of circ on elbow intradose for axial scan
- RL = O/S side of weld (valve body) for circ scan.

- Obtained exam volume R/L axial scan:
 $= 2.12 - [6 \times 15] = 1.22 \div 2.12 = .575 \times 100 = 57.5\%$

- Obtained exam volume R/L circ scans:
 $= 2.12 - [(.32 \times 15) \times 14.15] = 1.44 \div 2.12 = .679 \times 100 = 67.9\%$

- Obtained exam volume shear wave axial and circ scans:
 $[(.32 \times 15) + ((.06 \times 15) \div 2)] \times 14.15 = 1.743 \div 2.12 = .822 \times 100 = 82.2\%$

- Obtained exam volume = $57.5 + 67.9 + 35 = 160.4/3 = 53.4\%$



Supplemental Report

Report No.: UT-11-043

Page: 8 of 8

Summary No.: 05510-ISI-BFN2

Examiner: Brown, Thomas D Level: III(N)

Reviewer: Matt Welch, LIII

Date: 3/23/11

Examiner: N/A Level: N/A

Site Review: N/A

Date: _____

Other: N/A Level: N/A

ANII Review: _____

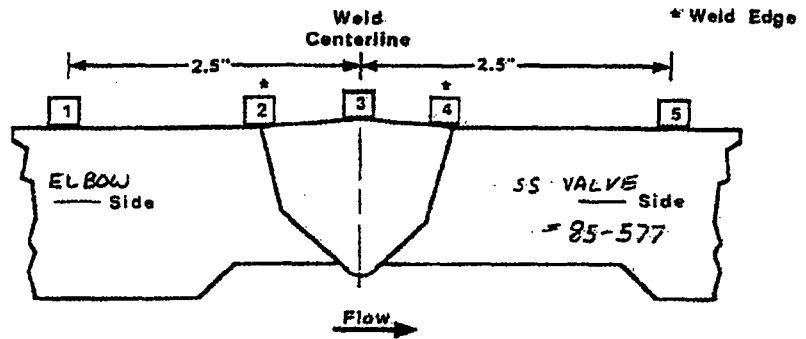
Date: 4/3/11

Comments: None

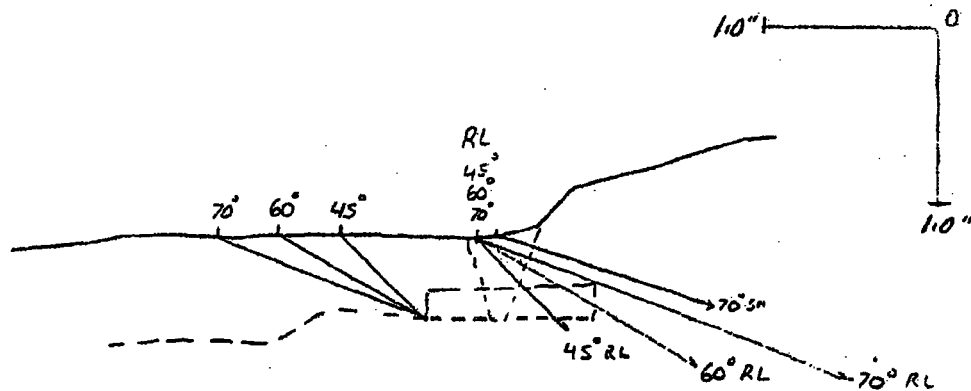
Sketch or Photo: O:\Ideas_Server\Ideas_BFN\Documentation\U2R16 Scanned Data\RCRD-2-50 T&C.jpg

Record Thickness Measurements As Indicated, Including Weld Width, Edge-To-Edge At 0°

Position	0°	90°	180°	270°
1	.58"			
2	.46"			
3	.48"			
4	N/A			
5	N/A			



CROWN HEIGHT: ISI PREP DIAMETER: 4.0"
 CROWN WIDTH: 0.4" WELD LENGTH: 14.15"



COULD NOT SCAN 6.0° OF WELD IN THE ELBOW INNER RADIUS WITH THE RL TRANSDUCERS DUE TO BRIDGING. THE SHEAR WAVE TRANSDUCERS WERE USED FOR THE ENTIRE CIRCUMFERENCE OF THE WELD.



UT Calibration Examination

Site/Unit: BFN / 2
 Summary No.: 05507-ISI-BFN2
 Workscope: ISI

Procedure: N-UT-64
 Procedure Rev.: 11
 Work Order No.: 2-SI-4.6.G

Outage No.: U2RF16
 Report No.: UT-11-032
 Page: 1 of 3

Code: Section XI 1995 Ed/1996 Add Cat./Item: R-AR1.16D Location: Reactor Building
 Drawing No.: 2-ISI-0221-C-01 Description: VLV - FH
 System ID: 074 - Residual Heat Removal System
 Component ID: DRHR-2-03 Size/Length: N/A Thickness/Diameter: 1.219 / 24"
 Limitations: See Coverage Plot Start Time: 1555 Finish Time: 1745

Instrument Settings
 Serial No.: E36305
 Manufacturer: KRAUTKRAMER
 Model: USN 60 Linearity: L-11-005
 Delay: 8.2275µ Range: 5.000
 M'tl Cal/Vel: .1221 Energy: High
 Damping: 1000 Ω Reject: 0
 PRF Mode: Auto High SU Freq.: 1.5 MHz
 Disp. Start: IP Rectify: Full Wave
 Inst. Freq.: 2.0 MHz

Search Unit
 Serial No.: 01FFWK
 Manufacturer: KBA
 Size: 0.5" Model: Comp G
 Freq.: 1.5 MHz Center Freq.: N/A
 Exam Angle: 45° Squint Angle: N/A
 Measured Angle: 45° Mode: Shear
 Exit Point: N/A # of Elements: 1
 Config.: Single Focus: N/A
 Shape: Round Contour: Flat
 Wedge Style: Non-Integral

Cal. Checks	Time	Date
Initial Cal.	1453	3/12/2011
Inter. Cal.	1551	3/12/2011
Inter. Cal.	1626	3/12/2011
Inter. Cal.	N/A	
Final Cal.	1755	3/12/2011

Couplant
 Cal. Batch: 10325
 Type: Ultragel II
 Mfg.: Sonotech
 Exam Batch: 10325
 Type: Ultragel II
 Mfg.: Sonotech

Reference Block
 Serial No.: 790398
 Type: Rompas

Axial Orientated Search Unit			
Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1.5" Notch	80%	4.2	2.14"

Circumferential Orientated Search Unit			
Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1.5" Notch	80%	4.2	2.14"

Reference/Simulator Block				
Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
33.0	SDH	50%	1.9	1.04"

Ax. Gain (dB): 23.0 Circ. Gain (dB): 23.0
1 Screen Div. = .60 in. of Sound Path

Calibration Block
 Cal. Block No.: WB-85
 Thickness: 1.5" Dia.: Flat
 Cal. Blk. Temp.: 70° Temp. Tool: 558274
 Comp. Temp.: 78° Temp. Tool: 558274

Search Unit Cable
 Type: RG-174 Length: 6' No. Conn.: 0
Scan Coverage
 Upstream Downstream Scan dB: 42
 CW CCW Scan dB: 42
 Exam Surface: OD
 Surface Condition: Ground

Recordable Indication(s): Yes No (If Yes, Ref. Attached Ultrasonic Indication Report.)
 Results: NRI RI Info
 Percent Of Coverage Obtained > 90%: No Reviewed Previous Data: Yes

Comments: E36305 - Cal Due Date 12/2/2011
 558274 - Cal Due Date 1/28/2012
 89.5% Code Coverage

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Kleinjan, Michael W.	II(N)	<i>[Signature]</i>	3/12/2011	Matt Welch, LIII	<i>[Signature]</i>	3/17/11
Examiner	Level	Signature	Date	Site Review	Signature	Date
N/A	N/A			N/A		
Other	Level	Signature	Date	ANII Review	Signature	Date
N/A	N/A			<i>[Signature]</i>	<i>[Signature]</i>	3/21/11

000484



Supplemental Report

000485

Report No.: UT-11-032

Page: 2 of 3

Summary No.: 05507-ISI-BFN2

Examiner: Kleinjan, Michael W. Level: II(N)

Reviewer: Matt Welch, LIII

Date: 3/17/11

Examiner: N/A Level: N/A

Site Review: N/A

Date: _____

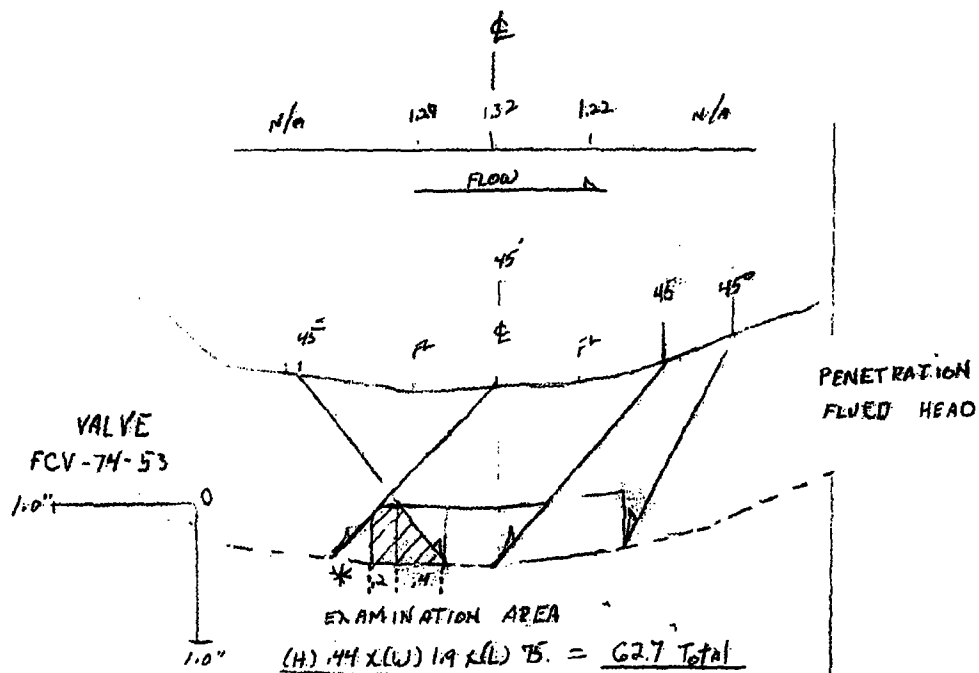
Other: N/A Level: N/A

ANII Review: [Signature]

Date: 3/17/11

Comments: None

Sketch or Photo: O:\Ideal_Server\Ideal_BFN\Documentation\U2R16 Scanned Data\DRHR-2-03 Coverage Plot.jpg



SCAN # 3 - *	18.15	58%
SCAN # 4 - .44 x .95 x .75	31.35	100%
SCAN # 5 - .44 x 1.9 x .75	62.7	100%
SCAN # 6 - .44 x 1.9 x .75	62.7	100%

COVERAGE OBTAINED 89.5%

EXAM LIMITED ON VALVE SIDE DUE TO VALVE CONFIGURATION.

* AREA of Limitation
 $.44 \times .2 \times 75' = 6.6$
 $.44 \times .4 \times 75' = 13.2$
 $\frac{13.2}{62.7} = 21\%$



Supplemental Report

000486

Report No.: UT-11-032

Page: 3 of 3

Summary No.: 05507-ISI-BFN2

Examiner: Kleinjan, Michael W. Level: II(N)

Reviewer: Matt Welch, LIII

Date: 3/17/11

Examiner: N/A Level: N/A

Site Review: N/A

Date: _____

Other: N/A Level: N/A

ANII Review: [Signature]

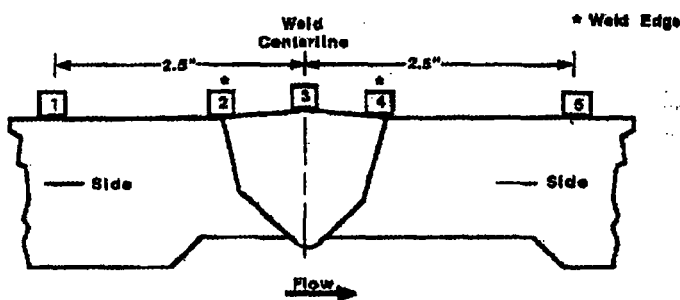
Date: 3/21/11

Comments: None

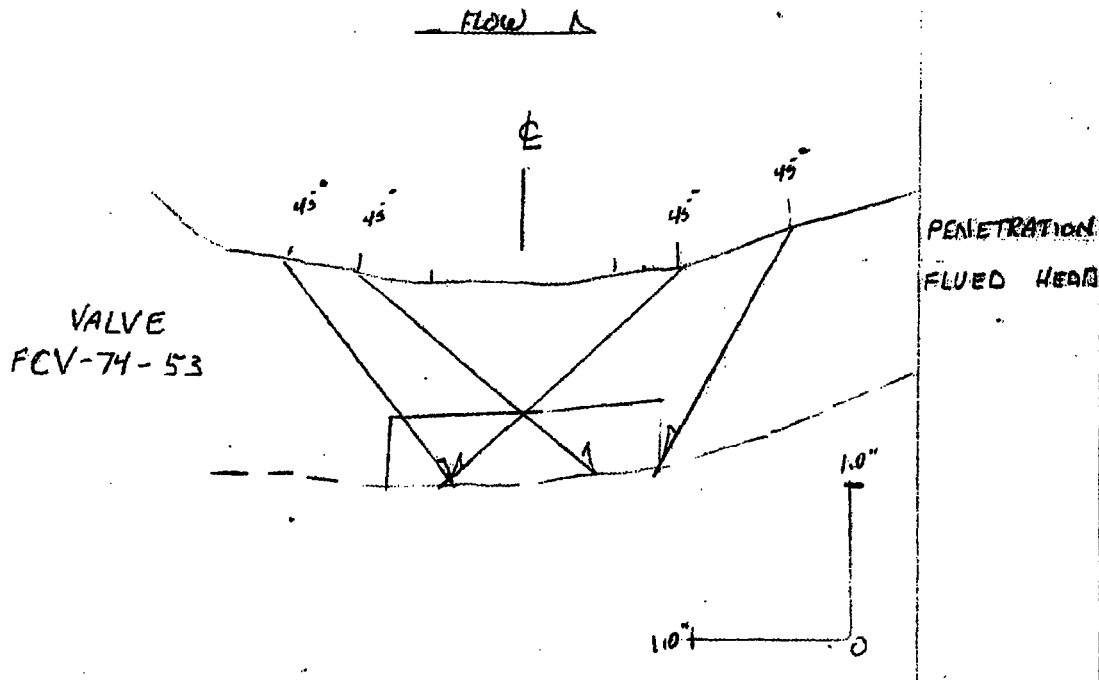
Sketch or Photo: O:\Ideal_Server\Ideal_BFN\Documentation\U2R16 Scanned Data\DRHR-2-03 T&C.jpg

Record Thickness Measurements As Indicated, Including Weld Width, Edge-To-Edge At 0°

Position	0°	90°	180°	270°
1	N			
2	1.27		N	
3	1.72			A
4	1.22			
5	N/A			



CROWN HEIGHT: FLUSH DIAMETER: 20
 CROWN WIDTH: 1.4 WELD LENGTH: 75"





UT Calibration Examination

Site/Unit: BFN / 2
 Summary No.: 05479-ISI-BFN2
 Workscope: ISI

Procedure: N-UT-84
 Procedure Rev.: 11
 Work Order No.: 2-SI-4.6.G

Outage No.: U2RF16
 Report No.: UT-11-023
 Page: 1 of 4

Code: Section XI 1995 Ed/1996 Add Cat./Item: R-A/R1.16C Location: Reactor Building - Drywell
 Drawing No.: 2-ISI-0270-C-01 Description: SDL - P
 System ID: 068 - Reactor Water Recirculating System
 Component ID: GR-2-09 Size/Length: N/A Thickness/Diameter: 0.569 / 12"
 Limitations: None Start Time: 1428 Finish Time: 1449

Instrument Settings
 Serial No.: E36302
 Manufacturer: KRAUTKRAMER
 Model: USN 60 Linearity: L-11-006
 Delay: 6.9697µ Range: 3.000
 M'tl Cal/Vel: .1251 Energy: High
 Damping: 1000 Ω Reject: 0
 PRF Mode: Auto High SU Freq.: 1.5 MHz
 Disp. Start: IP Rectify: Full Wave
 Inst. Freq.: 2.0 MHz

Search Unit
 Serial No.: 01FH9L
 Manufacturer: KBA
 Size: 0.5" Model: Comp G
 Freq.: 1.5 MHz Center Freq.: N/A
 Exam Angle: 45° Squint Angle: N/A
 Measured Angle: 45° Mode: Shear
 Exit Point: N/A # of Elements: 1
 Config.: Single Focus: N/A
 Shape: Round Contour: Flat
 Wedge Style: Non-Integral

Cal. Checks	Time	Date
Initial Cal.	0930	3/15/2011
Inter. Cal.	1427	3/15/2011
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	1555	3/15/2011

Couplant
 Cal. Batch: 10325
 Type: Ultragel II
 Mfg.: Sonotech
 Exam Batch: 10325
 Type: Ultragel II
 Mfg.: Sonotech

Reference Block
 Serial No.: 789631
 Type: Rompas

Axial Orientated Search Unit			
Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1.0" Notch	80%	4.7	1.40"

Circumferential Orientated Search Unit			
Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1.0" Notch	80%	4.7	1.40"

Reference/Simulator Block				
Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
21.4	FSDH	18%	3.5	1.02"

Ax. Gain (dB): 21.4 Circ. Gain (dB): 21.4
 1 Screen Div. = .30 in. of Sound Path

Calibration Block
 Cal. Block No.: SQ-123
 Thickness: 1.0" Dia.: Flat
 Cal. Bik. Temp.: 68° Temp. Tool: 531993
 Comp. Temp.: 77° Temp. Tool: 531993

Search Unit Cable
 Type: RG-174 Length: 6' No. Conn.: 0

Scan Coverage
 Upstream Downstream Scan dB: 35
 CW CCW Scan dB: 35
 Exam Surface: OD
 Surface Condition: Ground

Recordable Indication(s): Yes No (If Yes, Ref. Attached Ultrasonic Indication Report.)
 Results: NRI RI Info
 Percent Of Coverage Obtained > 90%: No Reviewed Previous Data: Yes

Comments: E36302 - Cal Due Date 9/18/2011.
 531993 - Cal Due Date 9/18/2011.
 75% Code Coverage

Examiner	Level	II(N)	Signature	Date	Reviewer	Signature	Date
Hilborn, Mark R.			<i>Mark Hilborn</i>	3/15/2011	Matt Welch, LIII	<i>Matt Welch</i>	3/16/11
Examiner	Level	N/A	Signature	Date	Site Review	Signature	Date
N/A					N/A		
Other	Level	N/A	Signature	Date	ANII Review	Signature	Date
N/A					<i>Jeremy Mayo</i>	<i>Jeremy Mayo</i>	3/21/11



UT Calibration Examination

Site/Unit: BFN / 2
 Summary No.: 05479-ISI-BFN2
 Workscope: ISI

Procedure: N-UT-64
 Procedure Rev.: 11
 Work Order No.: 2-SI-4.6.G

Outage No.: U2RF16
 Report No.: UT-11-023
 Page: 2 of 4

Code: Section XI 1995 Ed/1996 Add Cat./Item: R-A/R1.16C Location: Reactor Building - Drywell
 Drawing No.: 2-ISI-0270-C-01 Description: SDL - P
 System ID: 068 - Reactor Water Recirculating System
 Component ID: GR-2-09 Size/Length: N/A Thickness/Diameter: 0.569 / 12"
 Limitations: None Start Time: 1451 Finish Time: 1507

Instrument Settings
 Serial No.: E36302 Manufacturer: KRAUTKRAMER Model: USN 60 Linearity: L-11-006
 Delay: 10.2906µ Range: 3.500
 M'tl Cal/Vet: .2369 Energy: High
 Damping: 1000 Ω Reject: 0
 PRF Mode: Auto High SU Freq.: 2.0 MHz
 Disp. Start: IP Rectify: Full Wave
 Inst. Freq.: 2.0 MHz
 Ax. Gain (dB): 84.1 Circ. Gain (dB): N/A
1 Screen Div. = .35 in. of Sound Path

Search Unit
 Serial No.: 86-699 Manufacturer: RTD Model: TRL2-AUST
 Size: 2 (10x18mm) Freq.: 2.0 MHz Center Freq.: N/A
 Exam Angle: 60° Squint Angle: 9°
 Measured Angle: 60° Mode: LONG
 Exit Point: N/A # of Elements: 2
 Config.: D-SBS Focus: FS-30
 Shape: RECT Contour: Flat
 Wedge Style: Integral
 Search Unit Cable: Type: RG-174 Length: 6' No. Conn.: 0
 Scan Coverage: Upstream Downstream Scan dB: 84.1
 CW CCW Scan dB: N/A
 Exam Surface: OD
 Surface Condition: Ground

Cal. Block No.: SQ-123 Thickness: 1.0" Dia.: Flat
 Cal. Blk. Temp.: 68° Temp. Tool: 531993
 Comp. Temp.: 77° Temp. Tool: 531993
 Recordable Indication(s): Yes No (If Yes, Ref. Attached Ultrasonic Indication Report.)
 Results: NRI RI Info
 Percent Of Coverage Obtained > 90%: No Reviewed Previous Data: Yes

Cal. Checks	Time	Date
Initial Cal.	0937	3/15/2011
Inter. Cal.	1450	3/16/2011
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	1601	3/15/2011

Couplant
 Cal. Batch: 10326
 Type: Ultragel II
 Mfg.: Sonotech
 Exam Batch: 10326
 Type: Ultragel II
 Mfg.: Sonotech

Reference Block
 Serial No.: 789631
 Type: Rompas

Axial Orientated Search Unit				
Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path	
1.0" Notch	80%	5.5	1.90"	
Circumferential Orientated Search Unit				
Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path	
N/A	N/A	N/A	N/A	
Reference/Simulator Block				
Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
79.4	FSDH	80%	4.0	1.40"

Comments: E36302 - Cal Due Date 9/18/2011.
 531993 - Cal Due Date 9/18/2011.
 75% Code Coverage

Examiner	Level	II(N)	Signature	Date	Reviewer	Signature	Date
Hilborn, Mark R.			<i>Mark R. Hilborn</i>	3/15/2011	Matt Welch, LIII	<i>Matt Welch</i>	3/16/11
Examiner	Level	N/A	Signature	Date	Site Review	Signature	Date
N/A					N/A		
Other	Level	N/A	Signature	Date	ANII Review	Signature	Date
N/A					<i>Jeremy Mayo</i>	<i>Jeremy Mayo</i>	3/21/11

000382



Supplemental Report

000383

Report No.: UT-11-023

Page: 3 of 4

Summary No.: 05479-ISI-BFN2

Examiner: Hilborn, Mark R. *Mark RH* Level: II(N)

Reviewer: *Matt Welch*
Matt Welch, LIII Date: 3/16/11

Examiner: N/A Level: N/A

Site Review: N/A Date: _____

Other: N/A Level: N/A

ANII Review: *James G. ...* Date: 3/16/11

Comments: None

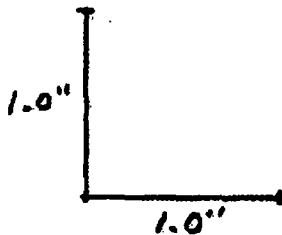
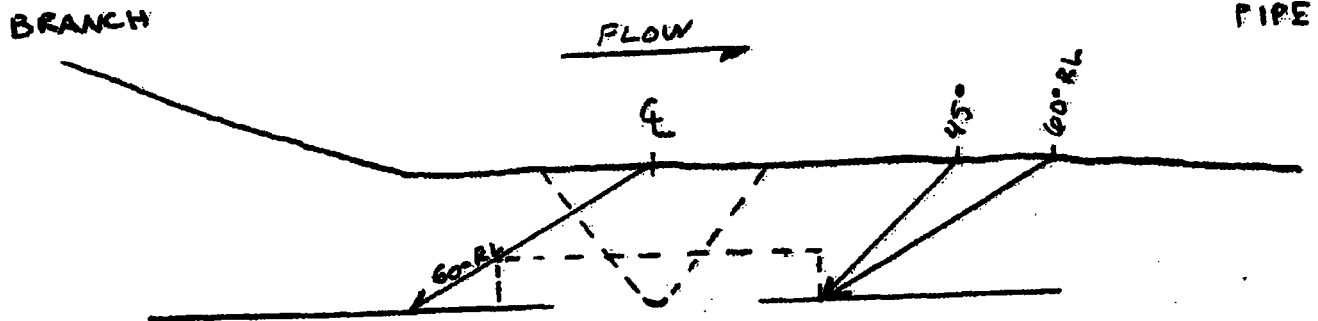
Sketch or Photo: O:\Ideal_Server\Ideal_BFN\Documentation\U2R16 Scanned Data\GR-2-09 Coverage Plot.jpg

$$CRV = \frac{H}{W} \times \frac{L}{L} = 0.25'' \times 1.7'' \times 37.7'' = 16.02 \text{ in}^3$$

$$\text{Achieved Vol scan 4, 5 + 6} = 0.25'' \times 1.7'' \times 37.7'' = 16.02 \text{ in}^3$$

$$\text{Achieved Vol scan 4, 5 + 6} \div CRV = 1.0 = 100\%$$

$$\text{Scan } * 3 + 4 + 5 + 6 = 300/4 = 75\% \text{ Achieved Vol.}$$





Supplemental Report

000384

Report No.: UT-11-023

Page: 4 of 4

Summary No.: 05479-ISI-BFN2

Examiner: Hilborn, Mark R. *M. Hill* Level: II(N)

Reviewer: *Matt Welch* Matt Welch, LIII

Date: 3/16/11

Examiner: N/A Level: N/A

Site Review: N/A

Date: _____

Other: N/A Level: N/A

ANII Review: *Gregory Wayne*

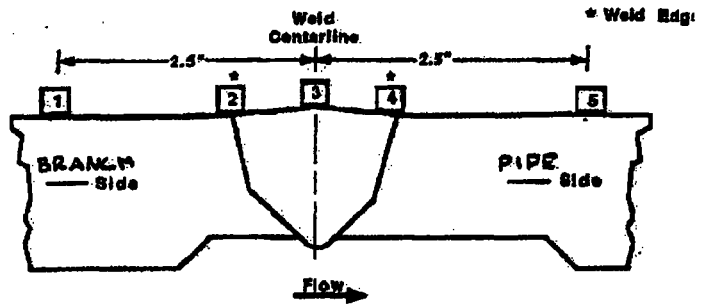
Date: 3/21/11

Comments: None

Sketch or Photo: O:\Ideal_Server\Ideal_BFN\Documentation\U2R16 Scanned Data\GR-2-09 T&C.jpg

Record Thickness Measurements As Indicated, Including Weld Width, Edge-To-Edge At 0°

Position	0°	90°	180°	270°
1	N/A			
2	.74"			
3	.75"	N/A		
4	.74"			
5	.59"			



CROWN HEIGHT: FLUSH DIAMETER: 12"
 CROWN WIDTH: 1.2" WELD LENGTH: 37.7"

