10 CFR 50.55a

VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

September 21, 2011

United States Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Serial No. 11-472
NLOS/ETS R0
Docket No. 50-339
License No. NPF-7

VIRGINIA ELECTRIC AND POWER COMPANY (DOMINION)
NORTH ANNA POWER STATION UNIT 2
ASME SECTION XI INSERVICE INSPECTION PROGRAM
RELIEF REQUEST N2-I3-PRT-002 - LIMITED COVERAGE EXAMINATIONS PERFORMED IN THE THIRD TEN-YEAR INSPECTION INTERVAL

Dominion performed inservice inspection (ISI) examinations at North Anna Power Station Unit 2 during the third ten-year ISI interval to the requirements of the 1995 Edition of ASME Section XI up to 1996 Addenda. Certain examination coverage was limited, i.e., less than 90% weld coverage achieved, due to physical interferences that prohibited attaining full weld coverage.

Pursuant to 10 CFR 50.55a(g)(5)(iii), relief is requested from certain requirements of the ASME Section XI Code associated with examinations where only limited weld coverage was obtained. Relief Request N2-I3-PRT-002 is included in the attachment to this letter, and provides the basis for this request. The Facility Safety Review Committee has reviewed and approved the relief request.

If you have any questions or require additional information regarding the attached relief request, please contact Mr. Thomas Shaub at (804) 273-2763.

Very truly yours,

J. Alan Price
Vice President – Nuclear Engineering

Attachment

Commitments made in this letter: None

A047
NRR

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ATTACHMENT

N2-I3-PRT-002
UNIT 2 THIRD INTERVAL LIMITED EXAMS

VIRGINIA ELECTRIC AND POWER COMPANY (DOMINION).
NORTH ANNA POWER STATION UNIT 2

N2-I3-PRT-002
UNIT 2 THIRD INTERVAL LIMITED EXAMS

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N2-I3-PRT-002
UNIT 2 THIRD INTERVAL LIMITED EXAMS

Relief Request in Accordance with 10 CFR 50.55a(g)(5)(iii)
-- Inservice Inspection Impracticality --

1.0 ASME CODE COMPONENT(S) AFFECTED

Refer to Table 1, Columns 1 and 2.

2.0 APPLICABLE CODE EDITION AND ADDENDA

North Anna Power Station Unit 2 (NAPS 2) applicable Code for the third 10-year inservice inspection (ISI) interval and the ISI program is in accordance with the 1995 Edition of Section XI up to the 1996 Addenda (Reference 1). NAPS 2 third interval end date was December 13, 2010.

3.0 APPLICABLE CODE REQUIREMENT

Refer to Table 1, Column 3.

Components identified in this request require examination of essentially 100 percent of the weld length. "Essentially 100 percent" as clarified by ASME Code Case N-460, Alternative Examination Coverage for Class 1 and Class 2 Welds, is greater than 90 percent coverage of the examination volume, or surface area, as applicable.

Table 1 (Page 1 of 2)

Repetitive/Duplicative Reliefs

REQUEST NUMBER	1. ASME CODE COMPONENT	2. COMPONENT ID NO.	3. APPLICABLE CODE REQUIREMENT	4. IMPRACTICALITY OF COMPLIANCE	5. BURDEN CAUSED BY COMPLIANCE	6. PROPOSED ALTERNATIVE AND BASIS	7. DURATION OF PROPOSED ALTERNATIVE
A1	Lower Shell to Bottom Head Spherical Ring		Exam Category B-A Item No. B1.11	See Paragraph 4 A1	See Paragraph 5 A1	See Paragraph 6 A1	See Paragraph 7
		12050-WMKS-RC-R-1.1 / 4		76% Length and Volume Coverage			
A2	Bottom Head Spherical Ring to Bottom Head Cap		Exam Category B-A Item No. B1.21	See Paragraph 4 A2	See Paragraph 5.A2	See Paragraph 6.A2	See Paragraph 7
		12050-WMKS-RC-R-1 1 / 8		75% Length and Volume Coverage			
A3	Mendional at 0°		Exam Category B-A Item No. B1 22	See Paragraph 4.A3	See Paragraph 5.A3	See Paragraph 6 A3	See Paragraph 7
		12050-WMKS-RC-R-1.1 / 5		79% Volume Coverage			
A4	Reactor Vessel Nozzle-To-Vessel Welds		Exam Category B-D Item No. B3 90	See Paragraph 4.A4	See Paragraph 5 A4	See Paragraph 6.A4	See Paragraph 7
		12050-WMKS-RC-R-1.1 / 10		81% Volumetric Coverage			
		12050-WMKS-RC-R-1.1 / 12		81% Volumetric Coverage			
		12050-WMKS-RC-R-1.1 / 14		81% Volumetric Coverage			
A5	Pressurizer Nozzle-To-Vessel Welds		Exam Category B-D Item No. B3.110	See Paragraph 4.A5	See Paragraph 5 A5	See Paragraph 6 A5	See Paragraph 7
		12050-WMKS-RC-E-2 / 10		56.6% Volumetric Coverage			
		12050-WMKS-RC-E-2 / 11		81% Volumetric Coverage			
		12050-WMKS-RC-E-2 / 12		81% Volumetric Coverage			
		12050-WMKS-RC-E-2 / 13		81% Volumetric Coverage			
		12050-WMKS-RC-E-2 / 14		56.7% Volumetric Coverage			
B1	Nozzles Without Reinforcing Plate in Vessels > 1/2 in Nominal Thickness - Nozzle-to-Shell Welds		Exam Category C-B Item No. C2.21	See Paragraph 4.B1	See Paragraph 5.B1	See Paragraph 6.B1	See Paragraph 7
		12050-WMKS-SI-TK-2 / 3		30.5% Volume Coverage			
B2	Pressure Vessels - Integrally Welded Attachments		Exam Category C-C Item No. C3 10	See Paragraph 4 B2	See Paragraph 5.B2	See Paragraph 6.B2	See Paragraph 7
		12050-WMKS-RH-E-1B / WS-1		81% Surface Coverage			
		12050-WMKS-RH-E-1B / WS-2		76% Surface Coverage			
		12050-WMKS-SI-TK-2 / WS-3		80% Surface Coverage			
B3	Piping - Integrally Welded Attachments		Exam Category C-C Item No. C3 20	See Paragraph 4 B3	See Paragraph 5 B3	See Paragraph 6 B3	See Paragraph 7
		12050-WMKS-0101A-1 / 32-SHP-401 / SW-92		66% Surface Coverage			
		12050-WMKS-0102A / 16-WFPD-424 / 45H		50% Surface Coverage			
		12050-WMKS-0102A / 16-WFPD-424 / 46H		50% Surface Coverage			
		12050-WMKS-0107D / 8-QS-403 / 52H		85.2% Surface Coverage			
		12050-WMKS-0111DC / 3-SI-456 / 66H		81% Surface Coverage			
B4	Pumps - Integrally Welded Attachments		Exam Category C-C Item No. C3 30	See Paragraph 4 B4	See Paragraph 5.B4	See Paragraph 6 B4	See Paragraph 7
		12050-WMKS-CH-P-1B / WS-01		76% Surface Coverage			
		12050-WMKS-CH-P-1B / WS-02		78% Surface Coverage			
		12050-WMKS-CH-P-1B / WS-03		78% Surface Coverage			
		12050-WMKS-CH-P-1B / WS-04		78% Surface Coverage			

Table 1 (Page 2 of 2)

Repetitive/Duplicative Reliefs

REQUEST NUMBER	1. ASME CODE COMPONENT	2. COMPONENT ID NO.	3. APPLICABLE CODE REQUIREMENT	4. IMPRACTICALITY OF COMPLIANCE	5. BURDEN CAUSED BY COMPLIANCE	6. PROPOSED ALTERNATIVE AND BASIS	7. DURATION OF PROPOSED ALTERNATIVE
B5	Circumferential Piping Welds ≥ 3/8 in. Nominal Wall Thickness for Piping > NPS 4		Exam Category C-F-1 Item No. C5.11	See Paragraph 4 B5	See Paragraph 5 B5	See Paragraph 6 B5	See Paragraph 7
		12050-WMKS-0104DA / 12-RS-407 / 6A		42.5% Volume Coverage			
		12050-WMKS-0104DA / 12-RS-408 / 4A		88% Volume Coverage			
		12050-WMKS-0104L / 10-RS-410 / 66		50% Volume Coverage			
		12050-WMKS-0107B / 16-SI-407 / 2		48% Volume Coverage			
		12050-WMKS-0111AAG / 6-SI-570 / SW-55		60.5% Volume Coverage			
		12050-WMKS-0111AAJ / 6-SI-570 / SW-73		54.5% Volume Coverage			
		12050-WMKS-0111AG / 8-CH-605 / 14		50% Volume Coverage			
		12050-WMKS-0111AJ / 8-SI-440 / 1		49.5% Volume Coverage			
		12050-WMKS-0113C-2 / 10-RH-413 / 1		50% Volume Coverage			
		12050-WMKS-0113C-2 / 6-RH-417 / SW-56		88% Volume Coverage			
B6	Circumferential Piping Welds > 1/5 in. Nominal Wall Thickness for Piping ≥ NPS 2 and ≤ NPS 4		Exam Category C-F-1 Item No. C5.21	See Paragraph 4 B6	See Paragraph 5 B6	See Paragraph 6 B6	See Paragraph 7
		12050-WMKS-0111AAC / 3-CH-402 / SW-49W		47% Volume Coverage			
		12050-WMKS-0111AAC / 3-CH-403 / 2A		63% Volume Coverage			
		12050-WMKS-0111AAG / 3-SI-424 / SW-64		50% Volume Coverage			
		12050-WMKS-0111AAJ / 3-SI-423 / 23A		47% Volume Coverage			
		12050-WMKS-0111AAJ / 3-SI-536 / 7A		50% Volume Coverage			
		12050-WMKS-0111AAJ / 3-SI-571 / 24A		50% Volume Coverage			
		12050-WMKS-0111AAJ / 3-SI-571 / 26		50% Volume Coverage			
		12050-WMKS-0111AAN / 2-CH-422 / SW-39W		88% Volume Coverage			
R1	Piping Welds		Exam Category R-A Item No. R1.11	See Paragraph 4 R1	See Paragraph 5 R1	See Paragraph 6 R1	See Paragraph 7
		12050-WMKS-0103AH / 6-RC-421 / 2		89% Volume Coverage			
		12050-WMKS-0103BD-2 / 3-SI-417 / 20		53% Volume Coverage			
		12050-WMKS-0103BE / 6-RC-417 / 1		50% Volume Coverage			
		12050-WMKS-0103BE / 6-RC-417 / 2		88% Volume Coverage			
		12050-WMKS-0103BN / 6-RC-420 / 1		50% Volume Coverage			
		12050-WMKS-0103BN / 6-RC-420 / 2B		50% Volume Coverage			
		12050-WMKS-0103BP / 6-RC-419 / 80		50% Volume Coverage			
		12050-WMKS-0109D / 14-RC-410 / SW-5		75% Volume Coverage			
		12050-WMKS-0109E-1 / 27 1/2-RC-403 / 9		49.9% Volume Coverage			
		12050-WMKS-0109E-2 / 27 1/2-RC-403 / SW-43		36% Volume Coverage			
		12050-WMKS-0109F-1 / 27 1/2-RC-406 / 21		50% Volume Coverage			
		12050-WMKS-0109G-1 / 27 1/2-RC-409 / 33		75% Volume Coverage			
		12050-WMKS-0109G-2 / 27 1/2-RC-409 / SW-49		35% Volume Coverage			
		12050-WMKS-0109G-2 / 29-RC-407 / SW-36		52% Volume Coverage			
		12050-WMKS-0110A-1 / 6-RC-438 / SW-9		63% Volume Coverage			
		12050-WMKS-0110A-1 / 6-RC-439 / SW-17		53% Volume Coverage			
		12050-WMKS-RC-E-1A.2 / 29-RC-401 / N-SE29 IN.		80% Volume Coverage			
		12050-WMKS-RC-E-1A.2 / 31-RC-402 / N-SE31 IN.		80% Volume Coverage			
		12050-WMKS-0109F-1 / 27 1/2-RC-406 / 22		50% Volume Coverage			

A1. Lower Shell to Bottom Head Spherical Ring Volumetric Examination

4.A1 IMPRACTICALITY OF COMPLIANCE

In accordance with 10CFR50.55a(g)(5)(iii), relief is requested from the "essentially 100 percent" volumetric examination coverage requirement for the identified Lower Shell to Bottom Head Spherical Ring weld W04. This requirement is considered impractical due to the configuration of the reactor vessel core support pads.

Ultrasonic examination of weld W04 is limited to 76% coverage due to the core support pads at four locations along the path of the weld as shown in Enclosure A1-1. Examination was performed to the extent possible using qualified equipment, and no further coverage is possible with existing technology.

5.A1 BURDEN CAUSED BY COMPLIANCE

Destruction of the component would be necessary to perform 100% of the Code required examination as written in the 1995 ASME Section XI Code with 1996 Addenda and is contrary to the intent of the Code.

6.A1 PROPOSED ALTERNATIVE AND BASIS

It is proposed that the examinations already completed at the reduced coverage be counted as meeting the Code requirements. The limited volumetric examination and vessel internal visual examination should detect any general patterns of degradation that may occur in the areas covered, therefore providing reasonable assurance of the continued structural integrity of the subject weld.

As part of the examination of the reactor vessel internal surfaces, complete electronic visual examination (EVT) was performed at each of these weld locations as well. Two other examinations were performed on Category B-A, Item B1.11 components in the third ISI inspection interval, welds W02 and W03, obtaining "essentially 100 percent" volumetric examination coverage.

The examination was performed using the Trans-World Services Reactor Vessel Inspection System (TWS) examination tool. TWS is a computer controlled, remotely operated manipulator. TWS, when lowered into the reactor vessel, can be positioned to provide inspection coverage of all accessible areas of the vessel. Six degrees of freedom allow the inspection head to examine vessel circumferential and longitudinal welds, bottom head welds, nozzle to vessel welds from the vessel and the nozzle bore, nozzle to pipe, elbow, and safe-end welds.

The examinations were performed in accordance with detailed scan plans developed to maximize coverage of the examination volume based on vessel configuration and manipulator search unit head layout. The examination procedures are based on advanced ASME Section XI, Appendix VIII demonstrated techniques. Based on access and physical limitations of the vessel, alternative or other advanced technologies would not provide complete coverage of the examination volume.

Detailed scan plans for the vessel examinations with limited coverage are included in Enclosure A1-1. Included in Enclosure A1-1 is the detailed vessel layout and

configuration, scanning tool head configurations, dimensions and configuration details that resulted in the accessibility limitations for the subject vessel welds. Obstructions include the Core Support Pads as identified.

All Examination Category B-A examinations for the welds included in this request were conducted in accordance with the performance demonstration requirements described in ASME Code, Section XI, Appendix VIII.

Enclosure A1-1 includes the weld report for the Lower Shell to Bottom Head Spherical Ring weld W04. Included in Enclosure A1-1 are details of the equipment setup and search unit head configurations which include the wave modality and insonification angles used for the UT examinations. Enclosure A1-1 also includes the detailed scan plans with cross sectional views of the examination volume with the extent of area scanned to maximize examination coverage. There were no recordable indications identified for the examination of weld #4 (W04).

The examination of the Lower Shell to Bottom Head Spherical Ring weld W04 was performed from the inside surface of the vessel. Access to the required scan areas on the outside surface of the vessel is not possible for increasing examination coverage.

Any decrease in examination coverage from the second interval is based on differences in examination techniques between the two examinations. The third inspection interval examination technique is based on Appendix VIII demonstrations versus the standard Section V, Article 4 examination techniques used for the second interval inspections, including differences in search unit size and different methods required for determining coverage.

ENCLOSURE A1-1

AREVA

Dominion

TWS Weld Number: W04

Summary No.:	**N2.B1.11.003**
Component ID:	12050-WMKS-RC-R-1.1/4
Item Number:	B1.11
Description:	Lower Shell to Bottom Head Spherical Ring
Examination Procedure:	54-ISI-801-02 (including SDCN # 30-9106855-000)
Calibration Block:	FTI RPV-95001
Calibration Setup No.:	4
UT Head No.:	3
Results:	No Recordable Indications
Status:	Acceptable
Data Analysts:	H. Bezlaj, UT Level III M. Cvitanovic, UT Level III C. E. Martin, UT Level II

ENCLOSURE A1-1

AREVA

Dominion

Data Acquisition Log

Weld Acquisition Data - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://ndeserv3/cgi-bin/showWeldSet.cgi

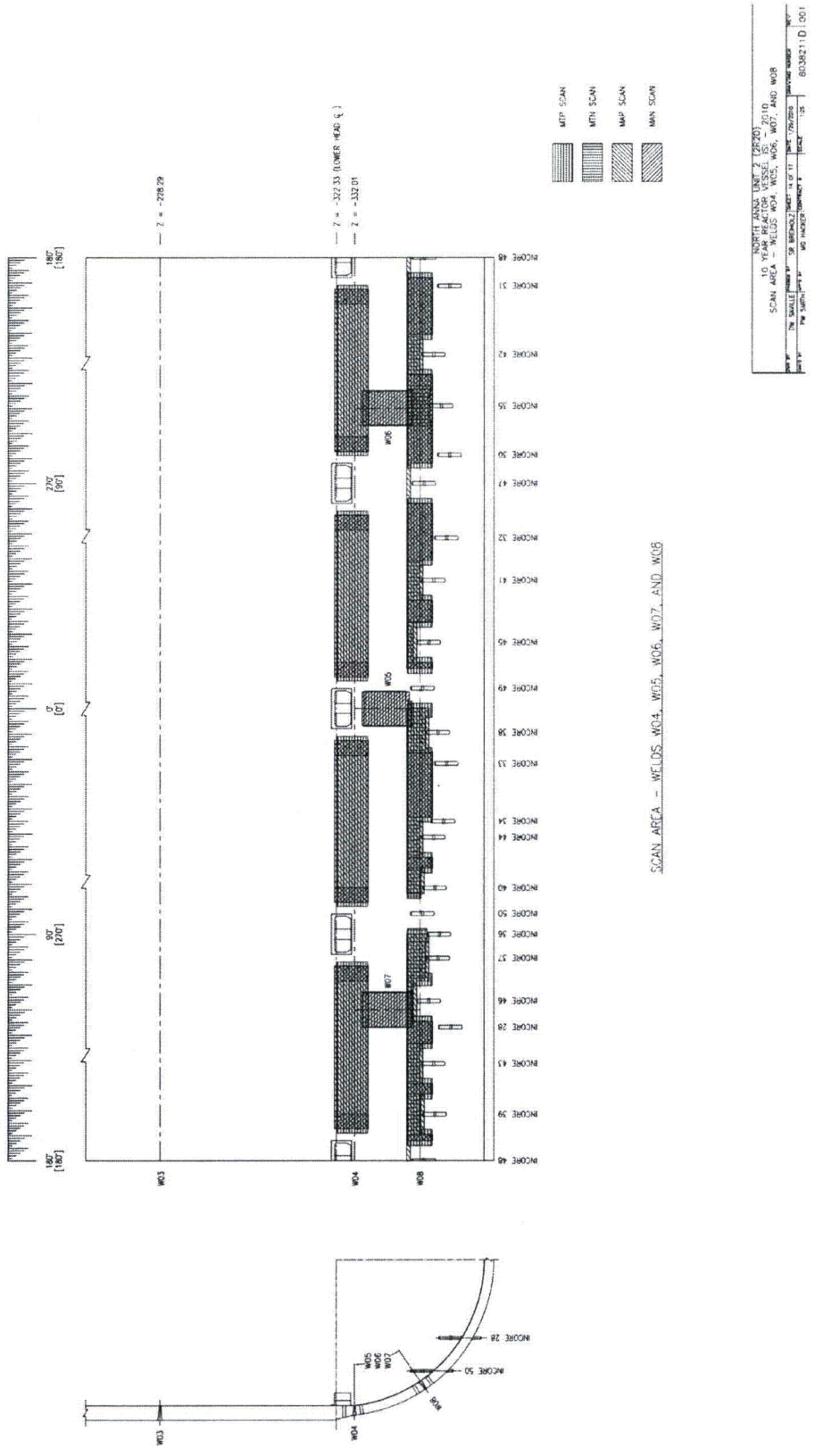
Red Hat, Inc. Red Hat Network Support Shop Products Training

Weld	Sin	IndxIncr	Start(%)	Stop(%)	Channels	Result	Analyst	Select
04	W04_0001.MTP3	0.5	90.3(0)	102.0(99)	1 2 3 4 5 6	Data acceptable	MCvitanv	Select B0096_12.07.50
04	W04_0002.MTP3	0.5	90.3(0)	102.0(99)	1 2 3 4 5 6	Data acceptable	MCvitanv	Select B0096_12.48.17
04	W04_0003.MTP3	0.5	90.3(0)	102.0(99)	1 2 3 4 5 6	Data acceptable	CMartin	Select B0097_03.19.01
04	W04_0004.MTP3	0.5	90.3(0)	102.0(99)	1 2 3 4 5 6	Data acceptable	MCvitanv	Select B0096_10.29.01
04	W04_0004.MTP3	0.5	90.3(0)	0.0(-760)	1 2 3 4 5 6	No valid data	MCvitanv	Select B0096_10.25.56
04	W04_0006.MAP3	0.5	282.6(0)	346.7(99)	1 2 3 4 5 6	Data acceptable	MCvitanv	Select B0096_11.23.13
04	W04_0006.MAP3	0.5	282.6(0)	0.0(-436)	1 2 3 4 5 6	No valid data	MCvitanv	Select B0096_11.04.18
04	W04_0007.MAP3	0.5	257.4(100)	193.3(1)	1 2 3 4 5 6	Data acceptable	MCvitanv	Select B0096_12.28.19
04	W04_0008.MAP3	0.5	167.4(100)	103.3(1)	1 2 3 4 5 6	Data acceptable	CMartin	Select B0097_03.02.54
04	W04_0008.MAP3	0.5	167.4(100)	103.3(1)	1 2 3 4 5 6	No valid data	MCvitanv	Select B0096_14.26.39
04	W04_0008.MAP3	0.5	167.4(100)	108.5(9)	1 2 3 4 5 6	No valid data	MCvitanv	Select B0096_14.21.53
04	W04_0008.MAP3	0.5	167.4(100)	0.0(-158)	1 2 3 4 5 6	No valid data	MCvitanv	Select B0096_14.20.10
04	W04_0009.MAP3	0.5	77.4(100)	13.3(0)	1 2 3 4 5 6	Data acceptable	MCvitanv	Select B0096_09.42.27
04	W04_0011.MAN3	0.5	288.6(100)	282.7(0)	1 2 3 4 5 6	Data acceptable	MCvitanv	Select B0096_11.19.14
04	W04_0012.MAN3	0.5	257.4(100)	251.4(0)	1 2 3 4 5 6	Data acceptable	MCvitanv	Select B0096_12.24.25
04	W04_0013.MAN3	0.5	198.6(100)	192.7(0)	1 2 3 4 5 6	Data acceptable	MCvitanv	Select B0096_12.44.00
04	W04_0014.MAN3	0.5	167.4(100)	161.4(0)	1 2 3 4 5 6	Data acceptable	HBezlaj	Select B0097_03.33.04
04	W04_0014.MAN3	0.5	167.4(100)	161.4(0)	1 2 3 4 5 6	No valid data	MCvitanv	Select B0096_14.43.48
04	W04_0015.MAN3	0.5	108.6(100)	102.7(0)	1 2 3 4 5 6	Data acceptable	CMartin	Select B0097_03.30.14
04	W04_0015.MAN3	0.5	108.6(100)	102.8(3)	1 2 3 4 5 6	No valid data	MCvitanv	Select B0096_15.18.15
04	W04_0015.MAN3	0.5	108.6(100)	102.8(3)	1 2 3 4 5 6	No valid data	MCvitanv	Select B0096_15.01.54
04	W04_0015.MAN3	0.5	108.6(100)	0.0(-1710)	1 2 3 4 5 6	No valid data	MCvitanv	Select B0096_14.55.38
04	W04_0015.MAN3	0.5	108.6(100)	102.7(0)	1 2 3 4 5 6	No valid data	MCvitanv	Select B0096_14.47.48
04	W04_0015.MAN3	0.5	108.6(100)	102.7(0)	1 2 3 4 5 6	No valid data	MCvitanv	Select B0096_14.41.16
04	W04_0016.MAN3	0.5	77.4(100)	71.4(0)	1 2 3 4 5 6	Data acceptable	MCvitanv	Select B0096_09.37.38
04	W04_0016.MAN3	0.5	77.4(100)	71.4(0)	1 2 3 4 5 6	No valid data	MCvitanv	Select B0096_09.35.04
04	W04_0017.MAN3	0.5	18.6(100)	12.7(0)	1 2 3 4 5 6	Data acceptable	MCvitanv	Select B0096_10.05.10
04	W04_0017.MAN3	0.5	18.6(100)	0.0(-210)	1 2 3 4 5 6	No valid data	MCvitanv	Select B0096_09.59.23
04	W04_0018.MAN3	0.5	347.4(100)	341.4(1)	1 2 3 4 5 6	Data acceptable	MCvitanv	Select B0096_11.01.43

77.4(100) 71.4(0) 1 2 3 4 5 6 No valid data MCvitanv Select B0096_09.35.04

ENCLOSURE A1-1

ENCLOSURE A1-1



A2. Bottom Head Spherical Ring to Bottom Head Cap

4.A2 IMPRACTICALITY OF COMPLIANCE

In accordance with 10CFR50.55a(g)(5)(iii), relief is requested from the "essentially 100 percent" volumetric examination coverage requirement for the identified Bottom Head Spherical Ring to Bottom Head Cap weld W08. This requirement is considered impractical due to the configuration of the reactor vessel incore instrumentation nozzles.

Ultrasonic examination of weld W08 is limited to 75% coverage due to the incore instrumentation nozzles along the path of the weld as shown in Enclosure A2-1. Examination was performed to the extent possible using qualified equipment, and no further coverage is possible with existing technology.

5.A2 BURDEN CAUSED BY COMPLIANCE

Destruction of the component would be necessary to perform 100% of the Code required examination as written in the 1995 ASME Section XI Code with 1996 Addenda and is contrary to the intent of the Code.

6.A2 PROPOSED ALTERNATIVE AND BASIS

It is proposed that the examinations already completed at the reduced coverage be counted as meeting the Code requirements. The limited volumetric examination and vessel internal and external visual examinations should detect any general patterns of degradation that may occur in the areas covered, therefore providing reasonable assurance of the continued structural integrity of the subject weld.

As part of the examination of the reactor vessel internal surfaces, complete electronic visual examination (EVT) was performed at this weld location as well.

The examination was performed using the Trans-World Services Reactor Vessel Inspection System (TWS) examination tool. TWS is a computer controlled, remotely operated manipulator. TWS, when lowered into the reactor vessel, can be positioned to provide inspection coverage of all accessible areas of the vessel. Six degrees of freedom allow the inspection head to examine vessel circumferential and longitudinal welds, bottom head welds, nozzle to vessel welds from the vessel and the nozzle bore, nozzle to pipe, elbow, and safe-end welds.

The examinations were performed in accordance with detailed scan plans developed to maximize coverage of the examination volume based on vessel configuration and manipulator search unit head layout. The examination procedures are based on advanced ASME Section XI, Appendix VIII demonstrated techniques. Based on access and physical limitations of the vessel, alternative or other advanced technologies would not provide complete coverage of the examination volume.

Detailed scan plans for the vessel examinations with limited coverage are included in Enclosure A2-1. Included in Enclosure A2-1 is the detailed vessel layout and configuration, scanning tool head configurations, dimensions and configuration details that resulted in the accessibility limitations for the subject vessel welds. Obstructions include the Instrumentation Nozzles as identified.

All Examination Category B-A examinations for the welds included in this request were conducted in accordance with the performance demonstration requirements described in ASME Code, Section XI, Appendix VIII.

Enclosure A2-1 includes the weld report for the Bottom Head Spherical Ring to Bottom Head Cap weld W08. Included in Enclosure A2-1 are details of the equipment setup and search unit head configurations which include the wave modality and insonification angles used for the UT examinations. Enclosure A2-1 also includes the detailed scan plans with cross sectional views of the examination volume with the extent of area scanned to maximize examination coverage. There were nine recordable indications identified for the examination of weld #8 (W08), all evaluated as acceptable subsurface indications located within the weld and indicative of fabrication anomalies. The Flaw Evaluation Summary Sheets are enclosed.

The examination of the Bottom Head Spherical Ring to Bottom Head Cap weld W08 was performed from the inside surface of the vessel. Access to the required scan areas on the outside surface of the vessel is not possible for increasing examination coverage.

Any decrease in examination coverage from the second interval is based on differences in examination techniques between the two examinations. The third inspection interval examination technique is based on Appendix VIII demonstrations versus the standard Section V, Article 4 examination techniques used for the second interval inspections, including differences in search unit size and different methods required for determining coverage.

ENCLOSURE A2-1

AREVA

Dominion

TWS Weld Number: W08

Summary No.:	**N2.B1.21.001**
Component ID:	12050-WMKS-RC-R-1.1/8
Item Number:	B1.21
Description:	Bottom Head Spherical Ring to Bottom Head Cap
Examination Procedure:	54-ISI-801-02 (including SDCN # 30-9106855-000)
Calibration Block:	FTI RPV-95001
Calibration Setup No.:	5
UT Head No.:	3
Results:	9 Recordable Indications
Status:	Acceptable
Data Analysts:	H. Bezlaj, UT Level III M. Cvitanovic, UT Level III C. E. Martin, UT Level II

ENCLOSURE A2-1

AREVA

Dominion

Flaw Evaluation Summary Sheet

Customer:	Dominion	**Plant:**	North Anna	**Unit:**	2
Weld:	W08	**Flaw No.:** 1		**Outage:** N2R20	
Detection Files:	B0097_07.53.44				
Sizing Files:	B0097_07.53.44				

Transducer Angle/Mode	Beam Dir.	Flaw Length (theta)			Flaw Depth		
		Min. (deg.)	Max. (deg.)	Total (deg.)	Min. (in.)	Max. (in)	Total (in.)
45°- L	Alpha -	157.2	157.7	0.4	2.08	2.36	0.3

Estimate of Flaw Length. (Calculate the average of all length values which are considered credible)

Length: 0.640 in. 0.440 deg.

Estimate of Flaw Depth: (Calculate the average of all depth values which are considered credible)

Depth (flaw height):		0.280 in.	
Radius of Curvature @ Indication:		81.19 in.	
Depth of Flaw at Max. Amp.:		2.10 in.	
Max. Amp.:		21 %	
Max. Location:	X=	124.81 deg.	Y= 157.49 deg.
Nominal Wall Thickness:		5.20 in.	
Nominal Clad Thickness:		0.16 in.	

Evaluation:		
	S =	1.92
	2a =	0.28
	a =	0.14
	Y =	1.00
	L=	0.64
	a/L=	0.22
	a/t =	2.8 %
Maximum Allowable a/t.		3.5 %

Interpolation		
	a/L	a/t %
min.	0.20	3.30
max.	0.25	3.80

Acceptance Standard. IWB-3510-1

Disposition: SUBSURFACE FLAW ACCEPTABLE

Comments:

This indication was not recorded during the previous examination

This scan is perpendicular to the weld on the vessel shell.

This indication is located within the weld and is indicative of a fabrication anomaly.

Performed by:	Michael G Hacker	Level:	III	Date:	04/07/10
Reviewed by:	Vladimir Zado	Level:	III	Date:	04/07/10

ENCLOSURE A2-1

AREVA

Dominion

Flaw Evaluation Summary Sheet

Customer:	Dominion	**Plant:**	North Anna	**Unit:**	2
Weld:	W08	**Flaw No.:** 2		**Outage:**	N2R20
Detection Files:	B0097_07.20.52				
Sizing Files:	B0097_07.20.52				

Transducer	*Beam*	*Flaw Length (alpha)*			*Flaw Depth*		
Angle/Mode	*Dir.*	*Min. (deg.)*	*Max. (deg.)*	*Total (deg.)*	*Min. (in.)*	*Max. (in)*	*Total (in.)*
45°- L	Theta -	124.0	124.4	0.4	1.80	1.86	0.1

Estimate of Flaw Length: (Calculate the average of all length values which are considered credible)

Length: 0.635 in. 0.440 deg.

Estimate of Flaw Depth: (Calculate the average of all depth values which are considered credible)

Depth (flaw height):	0.060 in.		
Radius of Curvature @ Indication	80.89 in.		
Depth of Flaw at Max. Amp.:	1.80 in.		
Max. Amp.:	14 %		
Max. Location:	X= 149.01 deg	Y=	124.28 deg.
Nominal Wall Thickness:	5.20 in.		
Nominal Clad Thickness:	0.16 in.		

Evaluation:

S =	1.64
2a =	0.06
a =	0.03
Y =	1.00
L=	0.64
a/L=	0.05
a/t =	0.6 %

Interpolation		
	a/L	*a/t %*
min.	0.00	2.00
max.	0.05	2.20

Maximum Allowable a/t: 2.2 %

Acceptance Standard: IWB-3510-1

Disposition: SUBSURFACE FLAW ACCEPTABLE

Comments:

This indication was not recorded during the previous examination

This scan is parallel to the weld on the vessel shell.

This indication is located within the weld and is indicative of a fabrication anomaly.

Performed by:	Michael G Hacker	Level:	III	Date:	04/07/10
Reviewed by:	Vladimir Zado	Level:	III	Date:	04/08/10

ENCLOSURE A2-1

AREVA

Dominion

Flaw Evaluation Summary Sheet

Customer:	Dominion	**Plant:**	North Anna	**Unit:**	2
Weld:	W08	**Flaw No.:**	3	**Outage:**	N2R20
Detection Files:	B0097_05.52.41				
Sizing Files:	B0097_05.52.41				

Transducer	*Beam*	*Flaw Length (theta)*			*Flaw Depth*		
Angle/Mode	*Dir.*	*Min. (deg.)*	*Max. (deg.)*	*Total (deg.)*	*Min. (in.)*	*Max. (in)*	*Total (in.)*
45° - S	Alpha -	116.9	117.0	0.1	2.38	2.50	0.1

Estimate of Flaw Length (Calculate the average of all length values which are considered credible)

Length: 0.191 in 0.130 deg.

Estimate of Flaw Depth (Calculate the average of all depth values which are considered credible)

Depth (flaw height):	0.120 in		
Radius of Curvature @ Indication:	81.53 in		
Depth of Flaw at Max. Amp.:	2.44 in		
Max. Amp.:	24 %		
Max. Location:	X= 116.87 deg.	Y=	120.28 deg.
Nominal Wall Thickness:	5.20 in.		
Nominal Clad Thickness:	0.16 in.		

Evaluation.		
	S =	2.22
	2a =	0.12
	a =	0.06
	Y =	1.00
	L=	0.19
	a/L=	0.31
	a/t =	1.2 %
Maximum Allowable a/t:		4.6 %

Interpolation		
	a/L	*a/t %*
min.	0.30	4.40
max.	0.35	5.10

Acceptance Standard: IWB-3510-1

Disposition: SUBSURFACE FLAW ACCEPTABLE

Comments:

This indication was not recorded during the previous examination

This scan is perpendicular to the weld on the vessel shell.

This indication is located within the weld and is indicative of a fabrication anomaly.

Performed by:	Michael G Hacker	Level:	III	Date:	04/07/10
Reviewed by:	Vladimir Zado	Level:	III	Date:	04/08/10

ENCLOSURE A2-1

AREVA

Dominion

Flaw Evaluation Summary Sheet

Customer:	Dominion	**Plant:**	North Anna	**Unit:**	2
Weld:	W08	**Flaw No.:** 4		**Outage:**	N2R20
Detection Files:	B0097_07.53.44				
Sizing Files:	B0097_07.53.44				

Transducer	*Beam*	*Flaw Length (theta)*			*Flaw Depth*		
Angle/Mode	*Dir.*	*Min. (deg.)*	*Max. (deg.)*	*Total (deg.)*	*Min. (in.)*	*Max. (in)*	*Total (in.)*
45°- L	Alpha -	159.4	159.8	0.4	2.71	2.78	0.1

Estimate of Flaw Length (Calculate the average of all length values which are considered credible)

Length: 0.620 in. 0.420 deg.

Estimate of Flaw Depth: (Calculate the average of all depth values which are considered credible)

Depth (flaw height):		0.070 in.		
Radius of Curvature @ Indication:		81.83 in.		
Depth of Flaw at Max. Amp		2.74 in.		
Max. Amp.:		19 %		
Max. Location:	X=	123.97 deg.	Y=	159.68 deg.
Nominal Wall Thickness:		5.20 in.		
Nominal Clad Thickness:		0.16 in.		

Evaluation:	S =	2.42
	2a =	0.07
	a =	0.03
	Y =	1.00
	L=	0.62
	a:L=	0.06
	a:t =	0.7 %
Maximum Allowable a:t:		2.2 %

Interpolation		
	a/L	*a/t %*
min.	0.05	2.20
max.	0.10	2.50

Acceptance Standard: IWB-3510-1

Disposition: SUBSURFACE FLAW ACCEPTABLE

Comments:

This indication was not recorded during the previous examination

This scan is perpendicular to the weld on the vessel shell

This indication is located within the weld and is indicative of a fabrication anomaly.

Performed by:	Michael G Hacker	Level:	III	Date:	04/07/10
Reviewed by:	Vladimir Zado	Level:	III	Date:	04/08/10

ENCLOSURE A2-1

AREVA

Dominion

Flaw Evaluation Summary Sheet

Customer:	Dominion	**Plant:**	North Anna	**Unit:**	2
Weld:	W08	**Flaw No.:** 5		**Outage:** N2R20	
Detection Files:	B0097_10.17.19, B0097_10.44.50				
Sizing Files:	B0097_10.17.19, B0097_10.44.50				

Transducer	*Beam*	*Flaw Length (alpha)*			*Flaw Depth*		
Angle/Mode	*Dir.*	*Min. (deg.)*	*Max. (deg.)*	*Total (deg.)*	*Min. (in.)*	*Max. (in)*	*Total (in.)*
45°- L	Theta +	120.3	120.7	0.3	1.82	1.90	0.1
45°- S	Theta +	120.2	120.9	0.7	1.99	2.10	0.1

Estimate of Flaw Length: (Calculate the average of all length values which are considered credible)

Length: 0.732 in. 0.505 deg.

Estimate of Flaw Depth: (Calculate the average of all depth values which are considered credible)

Depth (flaw height):	0.095 in.		
Radius of Curvature @ Indication:	81.08 in.		
Depth of Flaw at Max. Amp.	1.99 in.		
Max. Amp..	37 %		
Max. Location:	X= 239.08 deg.	Y=	120.65 deg.
Nominal Wall Thickness:	5.20 in.		
Nominal Clad Thickness:	0.16 in.		

Evaluation:	S =	1.66
	2a =	0.10
	a =	0.05
	Y =	1.00
	L=	0.73
	a/L=	0.06
	a/t =	0.9 %
Maximum Allowable a/t:		2.3 %
Acceptance Standard:		IWB-3510-1
Disposition:		SUBSURFACE FLAW ACCEPTABLE

Interpolation		
	a/L	*a/t %*
min.	0.05	2.20
max.	0.10	2.50

Comments:

This indication was not recorded during the previous examination

This scan is parallel to the weld on the vessel shell.

This indication is located within the weld and is indicative of a fabrication anomaly.

Performed by:	Michael G Hacker	Level:	III	Date:	04/07/10
Reviewed by:	Vladimir Zado	Level:	III	Date:	04/08/10

ENCLOSURE A2-1

AREVA

Dominion

Flaw Evaluation Summary Sheet

Customer:	Dominion	**Plant:**	North Anna	**Unit:**	2
Weld:	W08	**Flaw No.:**	6	**Outage:**	N2R20
Detection Files:	B0097_13.04.06				
Sizing Files:	B0097_13.04.06				

Transducer	*Beam*	*Flaw Length (Theta)*			*Flaw Depth*		
Angle/Mode	*Dir.*	*Min. (deg.)*	*Max. (deg.)*	*Total (deg.)*	*Min. (in.)*	*Max. (in)*	*Total (in.)*
45°- L	Alpha +	292.5	292.8	0.3	2.46	2.53	0.1

Estimate of Flaw Length: (Calculate the average of all length values which are considered credible)

Length: 0.425 in. 0.290 deg.

Estimate of Flaw Depth: (Calculate the average of all depth values which are considered credible)

Depth (flaw height):		0.070 in	
Radius of Curvature @ Indication		81.55 in	
Depth of Flaw at Max. Amp.:		2.46 in.	
Max. Amp.:		20 %	
Max. Location:	X=	123.03 deg.	Y= 292.49 deg.
Nominal Wall Thickness:		5.20 in.	
Nominal Clad Thickness:		0.16 in.	

Evaluation:		
	S =	2.30
	2a =	0.07
	a =	0.03
	Y =	1.00
	L=	0.43
	a/L=	0.08
	a/t =	0.7 %
Maximum Allowable a/t:		2.4 %

Interpolation		
	a/L	*a/t %*
min.	0.05	2.20
max.	0.10	2.50

Acceptance Standard: IWB-3510-1

Disposition: SUBSURFACE FLAW ACCEPTABLE

Comments:

This indication was not recorded during the previous examination

This scan is parallel to the weld on the vessel shell.

This indication is located within the weld and is indicative of a fabrication anomaly.

Performed by:	Michael G Hacker	Level:	III	Date:	04/07/10
Reviewed by:	Vladimir Zado	Level:	III	Date:	04/08/10

ENCLOSURE A2-1

AREVA

Dominion

Flaw Evaluation Summary Sheet

Customer:	Dominion	**Plant:**	North Anna	**Unit:**	2
Weld:	W08	**Flaw No.:** 7		**Outage:**	N2R20
Detection Files:	B0097_13.04.06				
Sizing Files:	B0097_13.04.06				

Transducer	*Beam*	*Flaw Length (Theta)*			*Flaw Depth*		
Angle/Mode	*Dir.*	*Min. (deg.)*	*Max. (deg.)*	*Total (deg.)*	*Min. (in.)*	*Max. (in)*	*Total (in.)*
45 - L	Alpha +	286.1	286.3	0.1	2.25	2.32	0.1

Estimate of Flaw Length (Calculate the average of all length values which are considered credible)

Length: 0.219 in. 0.150 deg.

Estimate of Flaw Depth (Calculate the average of all depth values which are considered credible)

Depth (flaw height):	0.060 in.		
Radius of Curvature @ Indication:	81.32 in.		
Depth of Flaw at Max. Amp.:	2.23 in.		
Max. Amp.	14 %		
Max. Location.	X= 123.16 deg.	Y=	286.11 deg.
Nominal Wall Thickness:	5.20 in.		
Nominal Clad Thickness:	0.16 in.		

Evaluation:	S =	2.10
	2a =	0.06
	a =	0.03
	Y =	1.00
	L=	0.22
	a/L=	0.14
	a/t =	0.6 %
Maximum Allowable a/t:		2.8 %

Interpolation		
	a/L	*a/t %*
min.	0.10	2.50
max.	0.15	2.90

Acceptance Standard: IWB-3510-1

Disposition: SUBSURFACE FLAW ACCEPTABLE

Comments:

This indication was not recorded during the previous examination

This scan is perpendicular to the weld on the vessel shell.

This indication is located within the weld and is indicative of a fabrication anomaly.

Performed by:	Michael G Hacker	Level:	III	Date:	04/07/10
Reviewed by:	Vladimir Zado	Level:	III	Date:	04/08/10

ENCLOSURE A2-1

AREVA

Dominion

Flaw Evaluation Summary Sheet

Customer:	Dominion	**Plant:**	North Anna	**Unit:**	2
Weld:	W08	**Flaw No.:** 8		**Outage:**	N2R20
Detection Files:	B0097_15.38.29				
Sizing Files:	B0097_15.38.29				

Transducer	*Beam*	*Flaw Length (Theta)*			*Flaw Depth*		
Angle/Mode	*Dir.*	*Min. (deg.)*	*Max. (deg.)*	*Total (deg.)*	*Min. (in.)*	*Max. (in)*	*Total (in.)*
45°- L	Alpha +	49.3	50.2	0.9	1.19	1.27	0.1
45°- S	Alpha +	48.3	49.0	0.7	1.39	1.46	0.1
70°- L	Alpha +	48.7	49.5	0.8	1.10	1.17	0.1

Estimate of Flaw Length: (Calculate the average of all length values which are considered credible)

Length 1.109 in 0.780 deg

Estimate of Flaw Depth: (Calculate the average of all depth values which are considered credible)

Depth (flaw height):		0.073 in.	
Radius of Curvature @ Indication:		80.28 in.	
Depth of Flaw at Max. Amp.:		1.19 in.	
Max. Amp.		50 %	
Max. Location:	X=	49.59 deg.	Y= 124.39 deg.
Nominal Wall Thickness:		5.20 in.	
Nominal Clad Thickness.		0.16 in.	

Evaluation	S =	0.94
	2a =	0.07
	a =	0.04
	Y =	1.00
	L=	1.11
	a/L=	0.03
	a/t =	0.7 %
Maximum Allowable a/t:		2.1 %

Interpolation		
	a/L	*a/t %*
min.	0.00	2.00
max.	0.05	2.20

Acceptance Standard: IWB-3510-1

Disposition: SUBSURFACE FLAW ACCEPTABLE

Comments:

This indication was not recorded during the previous examination

This scan is perpendicular to the weld on the vessel shell.

This indication is located within the weld and is indicative of a fabrication anomaly.

Performed by:	Michael G Hacker	Level:	III	Date:	04/07/10
Reviewed by:	Vladimir Zado	Level:	III	Date:	04/08/10

ENCLOSURE A2-1

AREVA

Dominion

Flaw Evaluation Summary Sheet

Customer:	Dominion	**Plant:**	North Anna	**Unit:**	2
Weld:	W08	**Flaw No.:** 9		**Outage:**	N2R20
Detection Files:	B0097_16.37 44				
Sizing Files:	B0097_16.37.44				

Transducer	*Beam*	*Flaw Length (Theta)*			*Flaw Depth*		
Angle/Mode	*Dir.*	*Min. (deg.)*	*Max. (deg.)*	*Total (deg.)*	*Min. (in.)*	*Max. (in)*	*Total (in.)*
45° - L	Alpha +	48.4	49.2	0 7	1 13	1.22	0 1

Estimate of Flaw Length: (Calculate the average of all length values which are considered credible)

Length: 1 024 in. 0 720 deg.

Estimate of Flaw Depth: (Calculate the average of all depth values which are considered credible)

Depth (flaw height):		0.090 in.	
Radius of Curvature @ Indication:		60 28 in.	
Depth of Flaw at Max. Amp.:		1 19 in.	
Max. Amp.:		59 %	
Max. Location:	X=	124.61 deg.	Y= 48 58 deg.
Nominal Wall Thickness:		5 20 in.	
Nominal Clad Thickness:		0 16 in.	

Evaluation:	S =	0 97
	2a =	0 09
	a =	0.05
	Y =	1.00
	L=	1 02
	a/L=	0.04
	a/t =	0 9 %
Maximum Allowable a/t:		2.2 %

Interpolation		
	a/L	*a/t %*
min.	0.00	2.00
max.	0.05	2.20

Acceptance Standard: IWB-3510-1

Disposition: SUBSURFACE FLAW ACCEPTABLE

Comments:

This indication was not recorded during the previous examination

This scan is perpendicular to the weld on the vessel shell.

This indication is located within the weld and is indicative of a fabrication anomaly.

Performed by:	Michael G Hacker	Level:	III	Date:	04/07/10
Reviewed by:	Vladimir Zado	Level:	III	Date:	04/08/10

ENCLOSURE A2-1

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Dominion

Data Acquisition Log

Weld Acquitision Data - Mozilla Firefox

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http://ndeserv3/cgi-bin/showWeldSet.cgi

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Weld Acquitision Data

Site	Select	Weld	Count	Valid only	Search
northannan2r20	Set Site	08	100		Get Weld Data

Weld	Sin	IndxIncr	Start(%)	Stop(%)	Channels	Result	Analyst	Select
08	W08_0001.MTP3	0.2	118.6(0)	130.0(99)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_11.30.58
08	W08_0002.MTP3	0.2	118.6(0)	130.0(99)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_10.24.18
08	W08_0003.MTP3	0.2	118.6(0)	129.0(99)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_10.17.19
08	W08_0004.MTP3	0.2	118.6(0)	130.0(99)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_10.12.27
08	W08_0005.MTP3	0.2	118.6(0)	124.0(99)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_10.02.42
08	W08_0006.MTP3	0.2	118.6(0)	130.0(99)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_09.09.20
08	W08_0007.MTP3	0.2	118.6(0)	130.0(99)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_08.05.11
08	W08_0008.MTP3	0.2	118.6(0)	124.7(99)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_07.30.20
08	W08_0009.MTP3	0.2	118.6(0)	130.0(99)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_07.20.52
08	W08_0010.MTP3	0.2	118.6(0)	124.0(99)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_07.04.06
08	W08_0011.MTP3	0.2	118.6(0)	130.0(99)	1 2 3 4 5 6	Data acceptable	CMartin	Select B0097_05.57.40
08	W08_0012.MTP3	0.2	118.6(0)	121.2(98)	1 2 3 4 5 6	Data acceptable	HBezlaj	Select B0097_05.52.41
08	W08_0013.MTP3	0.2	118.6(0)	130.0(99)	1 2 3 4 5 6	Data acceptable	HBezlaj	Select B0097_03.43.29
08	W08_0014.MTP3	0.2	118.6(0)	0.0(-1430)	1 2 3 4 5 6	No valid data	HBezlaj	Select B0097_04.48.42
08	W08_0014.MTP3	0.2	118.6(0)	126.8(99)	1 2 3 4 5 6	Data acceptable	CMartin	Select B0097_04.49.25
08	W08_0015.MTP3	0.2	118.6(0)	127.5(99)	1 2 3 4 5 6	Data acceptable	CMartin	Select B0097_05.25.44
08	W08_0016.MTP3	0.2	118.6(0)	124.7(99)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_16.32.00
08	W08_0016.MTP3	0.2	118.6(0)	0.0(-1938)	1 3 4 5 6 7	No valid data	MCvitanv	Select B0097_16.31.19
08	W08_0017.MTP3	0.2	118.6(0)	130.0(99)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_16.11.30
08	W08_0018.MTP3	0.2	118.6(0)	124.0(99)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_15.49.20
08	W08_0018.MTP3	0.2	118.6(0)	0.0(-2188)	1 3 4 5 6 7	No valid data	MCvitanv	Select B0097_15.48.34
08	W08_0019.MTP3	0.2	118.6(0)	130.0(99)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_14.38.09

Done

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08	W08_0020.MTP3	0.2	118.6(0)	126.8(99)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_14.32.26
08	W08_0021.MTP3	0.2	118.6(0)	130.0(99)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_14.28.34
08	W08_0022.MTP3	0.2	118.6(0)	130.0(99)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_14.16.36
08	W08_0023.MTP3	0.2	118.6(0)	121.2(98)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_14.14.04
08	W08_0024.MTP3	0.2	118.6(0)	130.0(99)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_12.09.20
08	W08_0025.MTP3	0.2	118.6(0)	124.0(99)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_12.05.08
08	W08_0026.MTN3	0.2	118.6(0)	129.0(99)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_10.44.50
08	W08_0027.MTN3	0.2	118.6(0)	124.0(99)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_10.07.02
08	W08_0028.MTN3	0.2	118.6(0)	124.7(99)	1 3 4 5 6 10	Data acceptable	HBezlaj	Select B0098_01.18.18
08	W08_0029.MTN3	0.2	118.6(0)	124.0(99)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_07.10.14
08	W08_0030.MTN3	0.2	118.6(0)	121.2(98)	1 2 3 4 5 6	Data acceptable	C Martin	Select B0097_05.54.45
08	W08_0031.MTN3	0.2	118.6(0)	126.8(99)	1 2 3 4 5 6	Data acceptable	HBezlaj	Select B0097_04.56.17
08	W08_0032.MTN3	0.2	118.6(0)	127.5(99)	1 2 3 4 5 6	Data acceptable	C Martin	Select B0097_05.18.12
08	W08_0033.MTN3	0.2	118.6(0)	124.7(99)	1 3 4 5 6 10	Data acceptable	C Martin	Select B0097_23.35.20
08	W08_0033.MTN3	0.2	118.6(0)	124.7(99)	1 3 4 5 6 10	Request rescan	MCvitanv	Select B0097_16.57.52
08	W08_0034.MTN3	0.2	118.6(0)	124.0(99)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_16.18.06
08	W08_0035.MTN3	0.2	118.6(0)	126.8(99)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_14.51.43
08	W08_0036.MTN3	0.2	118.6(0)	121.2(98)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_14.21.55
08	W08_0037.MTN3	0.2	118.6(0)	124.0(99)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_12.16.51
08	W08_0038.MAP3	0.5	300.7(100)	278.2(0)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_11.10.41
08	W08_0039.MAP3	0.2	280.0(100)	260.2(1)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_11.05.35
08	W08_0040.MAP3	0.5	262.0(100)	227.0(0)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_10.34.06
08	W08_0041.MAP3	0.2	228.7(100)	208.9(0)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_09.41.15
08	W08_0042.MAP3	0.5	210.7(100)	188.2(0)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_09.26.54
08	W08_0043.MAP3	0.2	190.0(100)	170.2(0)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_08.21.11
08	W08_0044.MAP3	0.5	172.0(100)	169.6(2)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_08.11.11
08	W08_0044.MAP3	0.5	172.0(100)	0.0(-6949)	1 3 4 5 6 7	No valid data	MCvitanv	Select B0097_08.09.22
08	W08_0045.MAP3	0.2	171.6(100)	151.8(0)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_07.37.16
08	W08_0045.MAP3	0.2	171.6(100)	0.0(-757)	1 3 4 5 6 7	No valid data	MCvitanv	Select B0097_07.29.22

Done

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08	W08_0046.MAP3	0.5	153.6(100)	149.4(1)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_07.48.29
08	W08_0047.MAP3	0.2	151.3(100)	131.5(0)	1 2 3 4 5 6	Data acceptable	MCvitanv	Select B0097_06.38.37
08	W08_0047.MAP3	0.2	151.3(100)	0.0(-656)	1 2 3 4 5 6	No valid data	MCvitanv	Select B0097_06.37.25
08	W08_0047.MAP3	0.2	151.3(100)	0.0(-656)	1 2 3 4 5 6	No valid data	MCvitanv	Select B0097_06.32.44
08	W08_0048.MAP3	0.5	133.3(111)	124.6(-178)	1 3 4 5 6 7	Data accept, req. sizing	C Martin	Select B0097_06.06.20
08	W08_0049.MAP3	0.2	126.6(100)	106.8(1)	1 2 3 4 5 6	Data acceptable	C Martin	Select B0097_05.32.39
08	W08_0050.MAP3	0.2	108.6(100)	90.1(0)	1 2 3 4 5 6	Data acceptable	C Martin	Select B0097_04.20.24
08	W08_0051.MAP3	0.2	73.9(100)	61.7(1)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_16.24.41
08	W08_0052.MAP3	0.5	63.6(100)	59.4(2)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_16.16.22
08	W08_0053.MAP3	0.2	61.3(100)	41.5(1)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_15.38.29
08	W08_0054.MAP3	0.5	43.3(100)	17.7(1)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_15.10.35
08	W08_0055.MAP3	0.2	19.5(100)	0.1(1)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_14.58.04
08	W08_0056.MAP3	0.5	343.9(100)	341.5(1)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_14.24.23
08	W08_0056.MAP3	0.5	343.9(100)	0.0(-14051)	1 3 4 5 6 7	No valid data	MCvitanv	Select B0097_14.20.59
08	W08_0057.MAP3	0.2	343.4(100)	323.6(1)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_13.18.51
08	W08_0058.MAP3	0.5	325.4(100)	316.7(0)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_12.38.22
08	W08_0059.MAP3	0.2	318.7(100)	298.9(0)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_11.44.07
08	W08_0060.MAN3	0.5	300.7(116)	278.2(-23)	1 3 4 5 6 7	Data accept, req. sizing	MCvitanv	Select B0097_11.24.06
08	W08_0061.MAN3	0.5	262.0(100)	227.0(0)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_10.54.26
08	W08_0062.MAN3	0.5	210.7(100)	188.2(0)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_09.33.51
08	W08_0063.MAN3	0.5	172.0(100)	169.6(2)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_08.13.32
08	W08_0064.MAN3	0.5	153.6(100)	149.4(1)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_07.51.09
08	W08_0065.MAN3	0.5	133.3(100)	124.6(0)	1 2 3 4 5 6	Data acceptable	HBezlaj	Select B0097_06.10.42
08	W08_0066.MAN3	0.2	108.6(100)	90.1(0)	1 2 3 4 5 6	Data acceptable	HBezlaj	Select B0097_04.35.02
08	W08_0067.MAN3	0.2	73.9(100)	61.7(1)	1 3 4 5 6 10	Data acceptable	HBezlaj	Select B0097_23.39.52
08	W08_0068.MAN3	0.5	63.6(100)	59.4(2)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_16.22.22
08	W08_0069.MAN3	0.5	43.3(100)	17.7(1)	1 3 4 5 6 7	Data accept, req. sizing	C Martin	Select B0097_23.10.04
08	W08_0069.MAN3	0.5	43.3(100)	17.7(1)	1 3 4 5 6 7	Request rescan	MCvitanv	Select B0097_17.25.53
08	W08_0069.MAN3	0.5	43.3(100)	17.7(1)	1 3 4 5 6 7	Request rescan	MCvitanv	Select B0097_15.54.09

Done

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Weld Acquisition Data - Mozilla Firefox

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http://ndeserv3/cgi-bin/showWeldSet.cgi

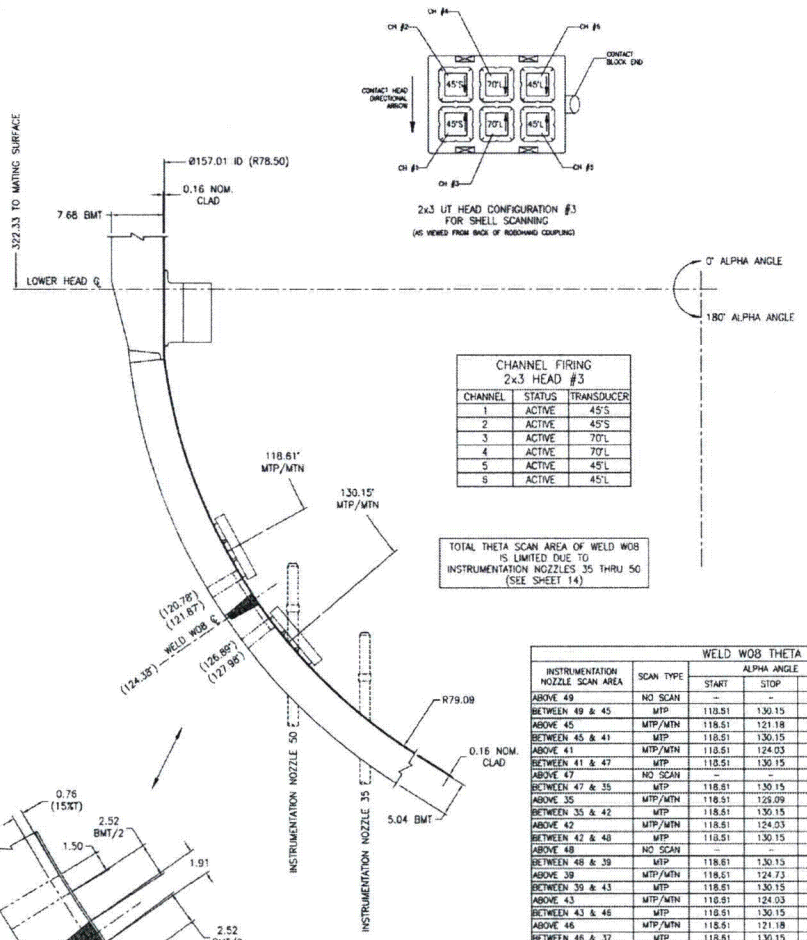
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08	W08_0069.MAN3	0.5	43.3(100)	17.7(1)	1 3 4 5 6 7	Request rescan	MCvitanv	Select B0097_16.47.58
08	W08_0069.MAN3	0.5	43.3(100)	17.7(1)	1 3 4 5 6 7	Request rescan	MCvitanv	Select B0097_15.30.39
08	W08_0070.MAN3	0.2	19.5(100)	0.1(1)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_15.18.23
08	W08_0071.MAN3	0.5	343.9(100)	341.5(1)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_14.26.24
08	W08_0072.MAN3	0.5	325.4(100)	0.0(-3606)	1 3 4 5 6 7	No valid data	MCvitanv	Select B0097_12.42.28
08	W08_0072.MAN3	0.5	325.4(100)	316.7(0)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_12.43.43
08	W08_0073.MAN3	0.2	343.4(100)	323.6(1)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_13.27.23
08	W08_0074.MAN3	0.2	318.7(100)	298.9(0)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_11.54.26
08	W08_0075.MAN3	0.2	280.0(100)	260.2(1)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_11.17.57
08	W08_0076.MAN3	0.2	228.7(100)	208.9(0)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_09.52.27
08	W08_0077.MAN3	0.2	190.0(100)	170.2(0)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_08.27.49
08	W08_0078.MAN3	0.2	171.6(100)	151.8(0)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_07.53.44
08	W08_0079.MAN3	0.2	151.3(100)	131.5(0)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_06.52.46
08	W08_0080.MAN3	0.2	126.6(100)	106.8(1)	1 2 3 4 5 6	Data acceptable	HBezlaj	Select B0097_05.44.30
08	W08_0081.MAN3	0.2	61.3(100)	41.5(1)	1 3 4 5 6 10	Data acceptable	MCvitanv	Select B0097_16.37.44
08	W08_0081.MAN3	0.2	61.3(100)	41.5(1)	1 3 4 5 6 10	Request rescan	MCvitanv	Select B0097_16.01.32
08	W08_S148.MAP3	0.2	133.3(111)	130.4(12)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_07.16.15
08	W08_S160.MAN3	0.2	298.0(100)	282.2(1)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_13.04.06
08	W08_S169.MAN3	0.2	29.0(100)	19.1(1)	1 3 4 5 6 10	Data acceptable	CMartin	Select B0098_01.27.59

Exam Results Home

Done

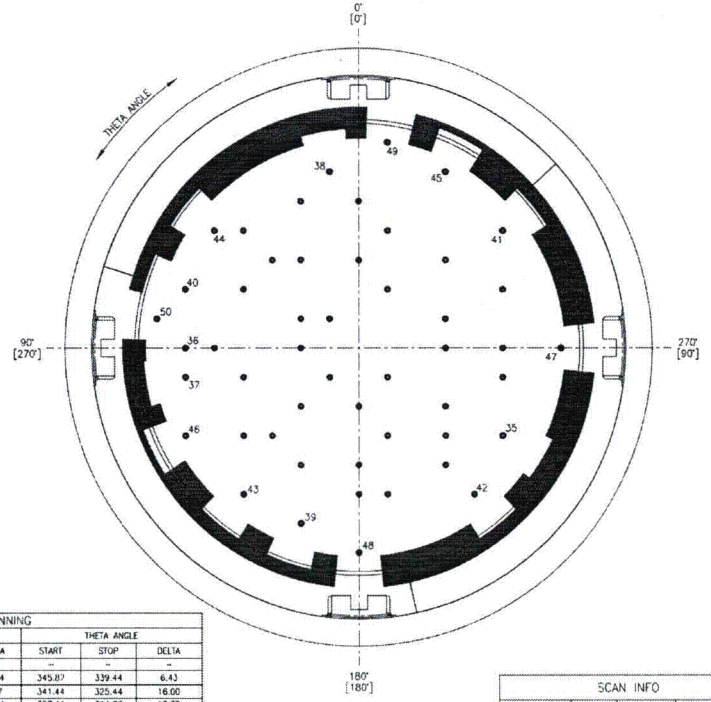
ENCLOSURE A2-1



2x3 UT HEAD CONFIGURATION #3
FOR SHELL SCANNING
(AS VIEWED FROM BACK OF ROBOHAND COUPLING)

CHANNEL FIRING 2x3 HEAD #3		
CHANNEL	STATUS	TRANSDUCER
1	ACTIVE	45°S
2	ACTIVE	45°S
3	ACTIVE	70°L
4	ACTIVE	70°L
5	ACTIVE	45°L
6	ACTIVE	45°L

TOTAL THETA SCAN AREA OF WELD W08 IS LIMITED DUE TO INSTRUMENTATION NOZZLES 35 THRU 50 (SEE SHEET 14)



WELD W08 THETA SCANNING							
INSTRUMENTATION NOZZLE SCAN AREA	SCAN TYPE	ALPHA ANGLE			THETA ANGLE		
		START	STOP	DELTA	START	STOP	DELTA
ABOVE 49	NO SCAN	–	–	–	–	–	–
BETWEEN 49 & 45	MTP	118.61	130.15	11.54	345.87	339.44	6.43
ABOVE 45	MTP/MTN	118.61	121.18	2.57	341.44	325.44	16.00
BETWEEN 45 & 41	MTP	118.61	130.15	11.54	327.44	314.66	12.78
ABOVE 41	MTP/MTN	118.61	124.03	5.42	315.66	300.56	16.00
BETWEEN 41 & 47	MTP	118.61	130.15	11.54	302.66	276.00	26.66
ABOVE 47	NO SCAN	–	–	–	–	–	–
BETWEEN 47 & 35	MTP	118.61	130.15	11.54	264.00	245.04	18.96
ABOVE 35	MTP/MTN	118.61	129.09	10.48	247.04	231.04	16.00
BETWEEN 35 & 42	MTP	118.61	130.15	11.54	233.04	224.66	8.38
ABOVE 42	MTP/MTN	118.61	124.03	5.42	225.66	210.66	16.00
BETWEEN 42 & 48	MTP	118.61	130.15	11.54	212.66	186.00	26.66
ABOVE 48	NO SCAN	–	–	–	–	–	–
BETWEEN 48 & 39	MTP	118.61	130.15	11.54	174.00	167.56	6.44
ABOVE 39	MTP/MTN	118.61	124.73	6.12	169.56	153.56	16.00
BETWEEN 39 & 43	MTP	118.61	130.15	11.54	155.56	147.34	8.22
ABOVE 43	MTP/MTN	118.61	124.03	5.42	149.34	133.34	16.00
BETWEEN 43 & 46	MTP	118.61	130.15	11.54	135.34	122.56	12.78
ABOVE 46	MTP/MTN	118.61	121.18	2.57	124.56	108.56	16.00
BETWEEN 46 & 37	MTP	118.61	130.15	11.54	110.55	105.46	5.10
ABOVE 37	MTP/MTN	118.61	125.90	8.29	107.46	91.46	16.00
BETWEEN 37 & 36	NO SCAN	–	–	–	–	–	–
ABOVE 36	MTP/MTN	118.61	127.53	9.02	93.46	87.87	5.59
BETWEEN 36 & 50	NO SCAN	–	–	–	–	–	–
ABOVE 50	NO SCAN	–	–	–	–	–	–
BETWEEN 50 & 40	NO SCAN	–	–	–	–	–	–
ABOVE 40	MTP/MTN	118.61	124.73	6.12	75.87	63.56	12.31
BETWEEN 40 & 44	MTP	118.61	130.15	11.54	65.56	57.34	8.22
ABOVE 44	MTP/MTN	118.61	124.03	5.42	59.34	43.34	16.00
BETWEEN 44 & 38	MTP	118.61	130.15	11.54	45.34	15.46	29.88
ABOVE 38	MTP/MTN	118.61	126.90	8.29	17.46	1.46	16.00
BETWEEN 38 & 49	MTP	118.61	130.15	11.54	3.46	357.87	5.59

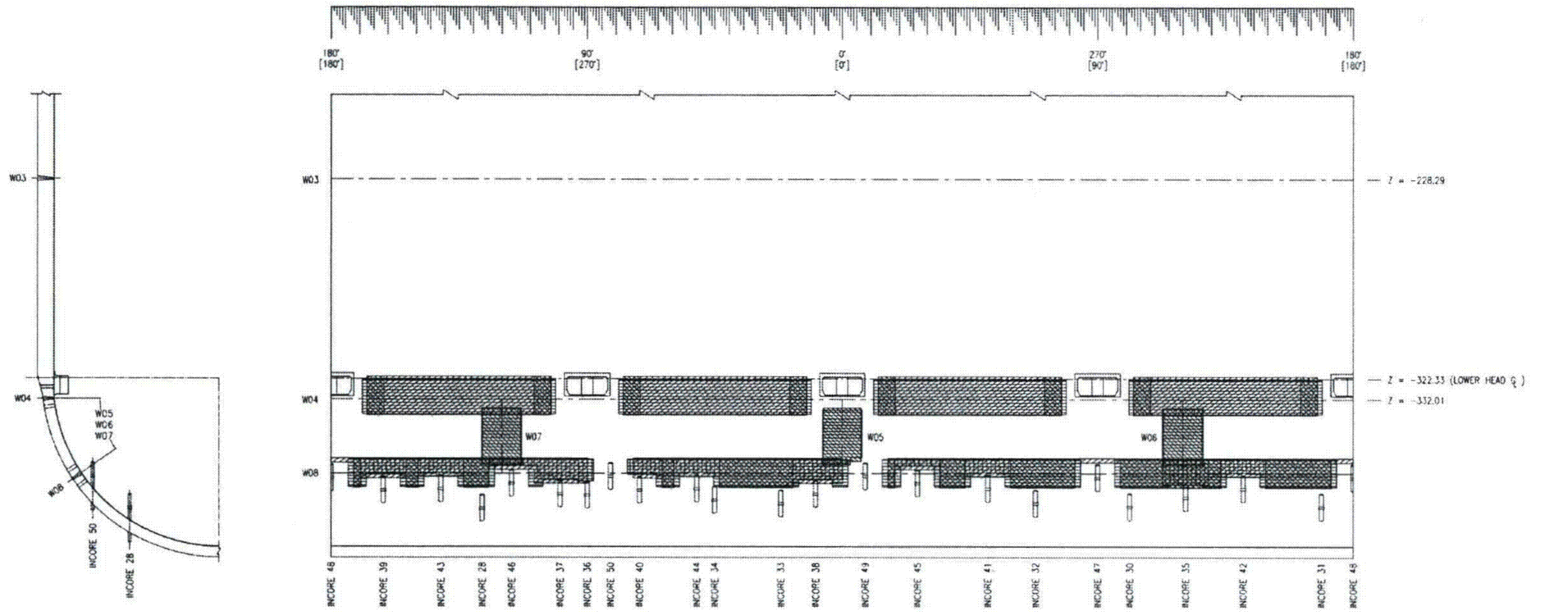
SCAN INFO			
	INDEX	INTERVAL	SPEED
MTP	0.20" 0.14"	0.08"	12 IPS MAX
MTN	0.20" 0.14"	0.08"	12 IPS MAX

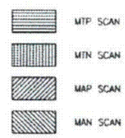
TWS ID: W08
COMPONENT ID: 12050-WMKS-RC-R-1.1/8
ASME ITEM NO.: B1.21
ASME CATEGORY: B-A
FIGURE: IWB-2500-3

REFERENCE DRAWINGS: SEE SHEET 1

NORTH ANNA UNIT 2 (2R20)
10 YEAR REACTOR VESSEL ISI – 2010
WELD W08 – BOTTOM HEAD SPHERICAL RING TO BOTTOM HEAD CAP
THETA SCANNING

DRAWN BY	CHECKED BY	SHEET	DATE	DRAWING NUMBER	REV
DW SAVILLE	SR BREHOLT	11 OF 17	1/26/2010	8038211D	001
QA'S BY	QA'S BY	CONTRACT #	SCALE		
PW SMITH	MC HACKER		1:6		





SCAN AREA – WELDS W04, W05, W06, W07, AND W08

NORTH ANNA UNIT 2 (2R20)
10 YEAR REACTOR VESSEL ISI – 2010
SCAN AREA – WELDS W04, W05, W06, W07, AND W08

DW SAVILLE	SR BREIHOLZ	SHEET 14 OF 17	DATE 1/28/2010	8038211D	001
PW SMITH	MG HACKER	CONTRACT #	SCALE 1:25		

A3. Meridional at 0°

4.A3 IMPRACTICALITY OF COMPLIANCE

In accordance with 10CFR50.55a(g)(5)(iii), relief is requested from the "essentially 100 percent" volumetric examination coverage requirement for the identified Reactor Vessel Meridional Weld at 0°, weld W05. This requirement is considered impractical due to the configuration of the reactor vessel incore instrumentation nozzles and core lug obstructions.

Ultrasonic examination of weld W05 is limited to 79% coverage due to the incore instrumentation nozzles and core lug obstructions as shown in Enclosure A3-1. Examination was performed to the extent possible using qualified equipment, and no further coverage is possible with existing technology.

5.A3 BURDEN CAUSED BY COMPLIANCE

Destruction of the component would be necessary to perform 100% of the Code required examination as written in the 1995 ASME Section XI Code with 1996 Addenda and is contrary to the intent of the Code.

6.A3 PROPOSED ALTERNATIVE AND BASIS

It is proposed that the examinations already completed at the reduced coverage be counted as meeting the Code requirements. The limited volumetric examination and vessel internal visual examination should detect any general patterns of degradation that may occur in the areas covered, therefore providing reasonable assurance of the continued structural integrity of the subject weld.

As part of the examination of the reactor vessel internal surfaces, complete electronic visual examination (EVT) was performed at each of these weld locations as well. Two other examinations were performed on a Category B-A, Item B1.22 component in the third ISI inspection interval, welds W06 and W07, obtaining "essentially 100 percent" volumetric examination coverage.

The examination was performed using the Trans-World Services Reactor Vessel Inspection System (TWS) examination tool. TWS is a computer controlled, remotely operated manipulator. TWS, when lowered into the reactor vessel, can be positioned to provide inspection coverage of all accessible areas of the vessel. Six degrees of freedom allow the inspection head to examine vessel circumferential and longitudinal welds, bottom head welds, nozzle to vessel welds from the vessel and the nozzle bore, nozzle to pipe, elbow, and safe-end welds.

The examinations were performed in accordance with detailed scan plans developed to maximize coverage of the examination volume based on vessel configuration and manipulator search unit head layout. The examination procedures are based on advanced ASME Section XI, Appendix VIII demonstrated techniques. Based on access and physical limitations of the vessel, alternative or other advanced technologies would not provide complete coverage of the examination volume.

Detailed scan plans for the vessel examinations with limited coverage are included in Enclosure A3-1. Included in Enclosure A3-1 is the detailed vessel layout and configuration, scanning tool head configurations, dimensions and configuration details that resulted in the accessibility limitations for the subject vessel welds. Obstructions include the instrumentation nozzles and core lug obstructions as identified.

All Examination Category B-A examinations for the welds included in this request were conducted in accordance with the performance demonstration requirements described in ASME Code, Section XI, Appendix VIII.

Enclosure A3-1 includes the weld report for the Meridional at 0° weld W05. Included in Enclosure A3-1 are details of the equipment setup and search unit head configurations which include the wave modality and insonification angles used for the UT examinations. Enclosure A3-1 also includes the detailed scan plans with cross sectional views of the examination volume with the extent of area scanned to maximize examination coverage. There were no recordable indications identified for the examination of weld #5 (W05).

The examination of the Meridional at 0° weld W05 was performed from the inside surface of the vessel. Access to the required scan areas on the outside surface of the vessel is not possible for increasing examination coverage.

Any decrease in examination coverage from the second interval is based on differences in examination techniques between the two examinations. The third inspection interval examination technique is based on Appendix VIII demonstrations versus the standard Section V, Article 4 examination techniques used for the second interval inspections, including differences in search unit size and different methods required for determining coverage.

ENCLOSURE A3-1

AREVA

Dominion

TWS Weld Number: W05

Summary No.:	**N2.B1.22.001**
Component ID:	12050-WMKS-RC-R-1.1/5
Item Number:	B1.22
Description:	Meridional at 0° [0°][1]
Examination Procedure:	54-ISI-801-02 (including SDCN # 30-9106855-000)
Calibration Block:	FTI RPV-95001
Calibration Setup No.:	5
UT Head No.:	3
Results:	No Recordable Indications
Status:	Acceptable
Data Analysts:	H. Bezlaj, UT Level III M. Cvitanovic, UT Level III C. E. Martin, UT Level II

[1] Number in brackets is the TWS angular layout.

ENCLOSURE A3-1

AREVA

Dominion

Data Acquisition Log

Weld Acquisition Data - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://ndeserv3/cgi-bin/showWeldSet.cgi

Red Hat, Inc. Red Hat Network Support Shop Products Training

Weld Acquisition Data

Site: northannan2r20 | Select: Set Site | Weld: 05 | Count: 100 | Valid only: | Search: Get Weld Data

Weld	Sin	IndxInc	Start(%)	Stop(%)	Channels	Result	Analyst	Select
05	W05_0001.MTP3	0.5	100.0(0)	120.6(99)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_12.29.39
05	W05_0002.MAP3	0.5	319.2(100)	305.9(0)	1 3 4 5 6 7	Data acceptable	MCvitanv	Select B0097_12.22.11
05	W05_0051.MTP3	0.2	100.8(0)	117.8(99)	1 3 4 5 6 9	Data acceptable	HBezlaj	Select B0095_21.06.39
05	W05_0052.MTP3	0.2	117.0(0)	120.8(98)	1 3 4 5 6 9	Data acceptable	HBezlaj	Select B0095_21.19.06
05	W05_0052.MTP3	0.2	117.0(0)	0.0(-3087)	1 3 4 5 6 9	No valid data	HBezlaj	Select B0095_21.18.23
05	W05_0053.MAN3	0.2	6.7(100)	-1.4(1)	1 3 4 5 6 9	Data acceptable	CMartin	Select B0095_20.30.14
05	W05_0054.MAN3	0.2	-0.5(100)	-6.6(0)	1 3 4 5 6 9	Data acceptable	HBezlaj	Select B0095_20.57.18

Exam Results Home

Done

ENCLOSURE A3-1

WELD W05

WELD W05 CHANNEL FIRING 2x3 HEAD #3		
CHANNEL	STATUS	TRANSDUCER
1	ACTIVE	45°S
2	ACTIVE	45°S
3	ACTIVE	70°L
4	ACTIVE	70°L
5	ACTIVE	45°L
6	ACTIVE	45°L

(SINGLE SIDED EXAM)

WELD W05 SCAN INFO			
	INDEX	INTERVAL	SPEED
MAN	0.20" 0.14"	0.08"	18 IPS MAX
MAN (CLO)	0.20" 0.14"	0.08"	18 IPS MAX
MTP	0.20" 0.14"	0.08"	18 IPS MAX
MTP (IND)	0.20" 0.14"	0.08"	18 IPS MAX

WELD W05

WELD W05 CHANNEL FIRING 2x3 HEAD #7		
CHANNEL	STATUS	TRANSDUCER
1	ACTIVE	45°S
2	ACTIVE	45°S
3	ACTIVE	70°L
4	ACTIVE	70°L
5	ACTIVE	45°L
6	ACTIVE	45°L

(SINGLE SIDED EXAM)

WELD W05 SCAN INFO			
	INDEX	INTERVAL	SPEED
MAN	0.20" 0.14"	0.08"	18 IPS MAX
MTP	0.20" 0.14"	0.08"	12 IPS MAX

WELD W07

WELD W07 CHANNEL FIRING 2x3 HEAD #3		
CHANNEL	STATUS	TRANSDUCER
1	ACTIVE	45°S
2	ACTIVE	45°S
3	ACTIVE	70°L
4	ACTIVE	70°L
5	ACTIVE	45°L
6	ACTIVE	45°L

(SINGLE SIDED EXAM)

WELD W07 SCAN INFO			
	INDEX	INTERVAL	SPEED
MAN	0.20" 0.14"	0.08"	18 IPS MAX
MTP	0.20" 0.14"	0.08"	12 IPS MAX

LEGEND
BMT = BASE METAL THICKNESS
EC = EXTENDED COVERAGE
CLO = CORE LUG OBSTRUCTED
IND = INSTRUMENTATION NOZZLE OBSTRUCTED
T = THICKNESS
WW = WELD WIDTH

MERIDIONAL SCANNING							
LOCATION	SCAN TYPE	ALPHA ANGLE			THETA ANGLE		
		START	STOP	DELTA	START	STOP	DELTA
W05 @ 0° [0°]	MTP	100.75	118.00	17.25	7.05	352.95	14.10
W05 @ 0° [0°]	MTP (CLO)	117.00	120.79	3.79	7.05	357.00	10.05
W05 @ 0° [0°]	MAN	99.95	120.79	20.83	6.71	358.50	8.21
W05 @ 0° [0°]	MAN (IND)	99.96	119.50	19.54	359.50	353.29	5.21
W05 @ 240° [120°]	MAN	99.95	120.79	20.83	246.71	233.29	13.42
W05 @ 240° [120°]	MTP	99.96	120.79	20.83	247.05	232.95	14.10
W07 @ 120° [240°]	MAN	59.95	120.79	20.83	126.71	113.29	13.42
W07 @ 120° [240°]	MTP	99.96	120.79	20.83	127.05	112.95	14.10

2x3 UT HEAD CONFIGURATION #3
FOR SHELL SCANNING
(AS VIEWED FROM BACK OF ROBOHAND COUPLING)

TWS ID: W05
COMPONENT ID: 12C50-WMKS-RC-R-1.1/5
ASME ITEM NO.: B1.22
ASME CATEGORY: B-A
FIGURE: IWB-2500-3

TWS ID: W06
COMPONENT ID: 12C50-WMKS-RC-R-1.1/6
ASME ITEM NO.: B1.22
ASME CATEGORY: B-A
FIGURE: IWB-2500-3

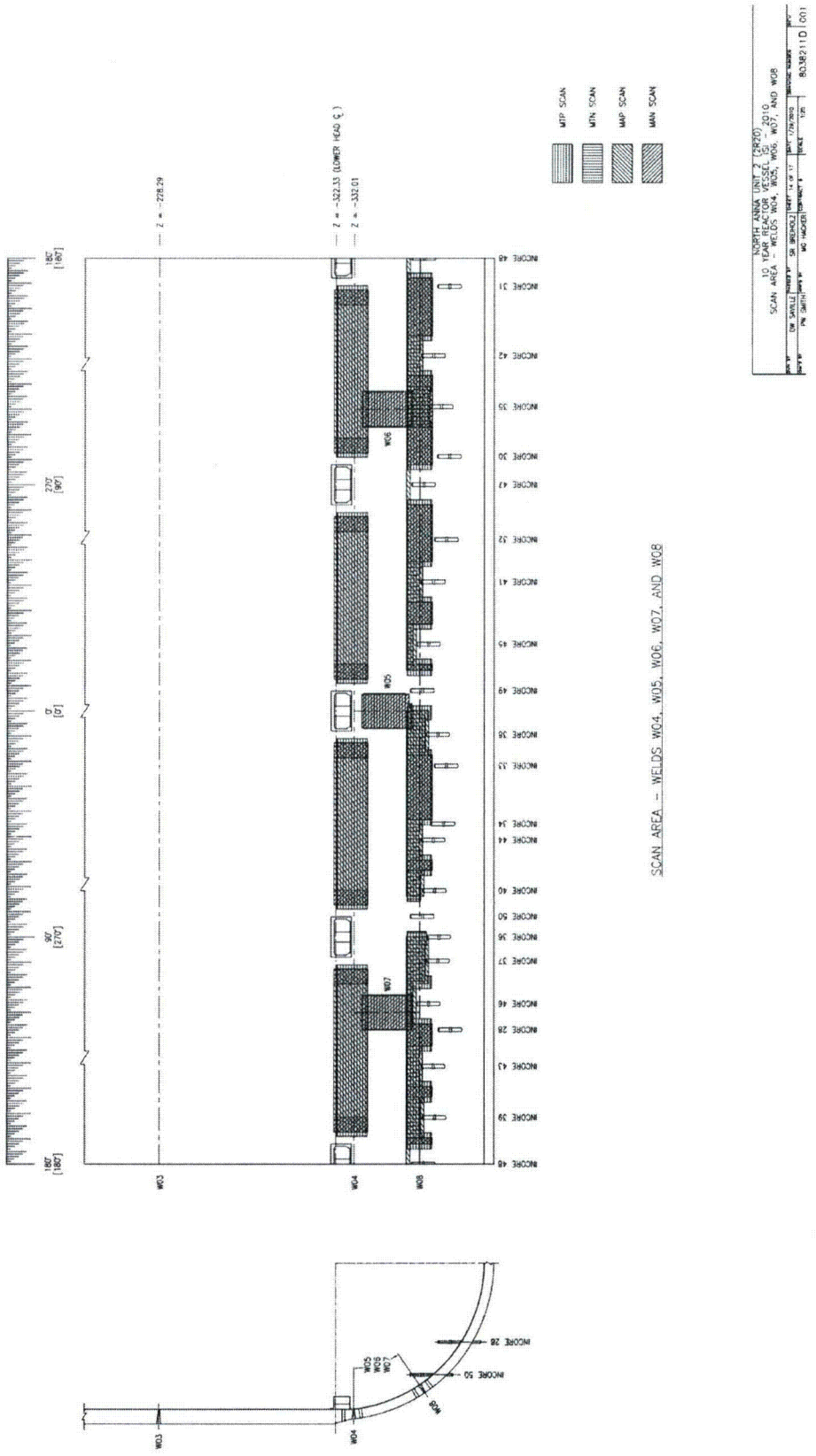
TWS ID: W07
COMPONENT ID: 12C50-WMKS-RC-R-1.1/7
ASME ITEM NO.: B1.22
ASME CATEGORY: B-A
FIGURE: IWB-2500-3

REFERENCE DRAWINGS: SEE SHEET 1

NORTH ANNA UNIT 2 (EB20)
10 YEAR REACTOR VESSEL ISI - 2010
WELDS W05, W06, & W07
(MERIDIONAL)

DW BY	DW SAMPLE	SR BREHOLT	DATE 12-29-10	SCALE NONE	DRAWING NUMBER
CHK BY	PW SMITH	MC HACKER	CONTRACT #	SHEET 1 OF 1	8033211D 001

ENCLOSURE A3-1



A4. Reactor Vessel Nozzle-To-Vessel Welds

4.A4 IMPRACTICALITY OF COMPLIANCE

In accordance with 10CFR50.55a(g)(5)(iii), relief is requested from the "essentially 100 percent" volumetric examination coverage requirement for the identified Reactor Vessel Nozzle-To-Vessel Welds. This requirement is considered impractical due to the reactor vessel to nozzle weld configuration, particularly the outlet nozzle boss.

Ultrasonic examination of the following reactor vessel nozzle-to-vessel welds are limited in coverage due to the vessel to nozzle weld configuration as shown in the attached data reports. Examination was performed to the extent possible using qualified equipment, and no further coverage is possible with existing technology.

Mark/Weld #	Line #	Scan Coverage %	Enclosure
10	2-RC-R-1.1	81%	A4-1
12	2-RC-R-1.1	81%	A4-2
14	2-RC-R-1.1	81%	A4-3

Welds 10, 12, and 14, the outlet nozzles, are limited to 81% due to nozzle geometry, particularly the interference of the outlet nozzle boss. Refer to Enclosure A4-1 through Enclosure A4-3 for coverage details of the limitations experienced. Second interval relief for welds 10, 12, and 14 exam limitations was granted in Relief Request Partial 1, NRC Letter dated 5/14/2002 (TAC No. MB4084).

There are six total welds in Category B-D, Item No. B3.90, and only these three had limited examination coverage. The remaining three were examined with full coverage.

5.A4 BURDEN CAUSED BY COMPLIANCE

Destruction of the component would be necessary to perform 100% of the Code required examination as written in the 1995 ASME Section XI Code with 1996 Addenda and is contrary to the intent of the Code.

6.A4 PROPOSED ALTERNATIVE AND BASIS

It is proposed that the examinations already completed at the reduced coverage be counted as meeting the Code requirements. Alternative components could not be substituted for examination due to the mandatory selection requirements of the Code. The limited volumetric examination should detect any general patterns of degradation that may occur in the areas covered, therefore providing reasonable assurance of the continued structural integrity of the subject weld.

The examinations were performed using the Trans-World Services Reactor Vessel Inspection System (TWS) examination tool. TWS is a computer controlled, remotely operated manipulator. TWS, when lowered into the reactor vessel, can be positioned to

provide inspection coverage of all accessible areas of the vessel. Six degrees of freedom allow the inspection head to examine vessel circumferential and longitudinal welds, bottom head welds, nozzle to vessel welds from the vessel and the nozzle bore, nozzle to pipe, elbow, and safe-end welds.

The examinations were performed in accordance with detailed scan plans developed to maximize coverage of the examination volume based on vessel configuration and manipulator search unit head layout. The examination procedures are based on advanced ASME Section XI, Appendix VIII demonstrated techniques. Based on access and physical limitations of the vessel, alternative or other advanced technologies would not provide complete coverage of the examination volume.

Detailed scan plans for the outlet nozzle welds with limited coverage are included in Enclosures A4-1 through A4-3. Included in the enclosures are the detailed nozzle layout and configuration, scanning tool head configurations, dimensions and configuration details that resulted in the accessibility limitations for the subject nozzle welds. Limitations are due to the configuration of the outlet nozzle boss as identified in the sketches.

All Examination Category B-D examinations for the welds included in this request were conducted in accordance with the performance demonstration requirements described in ASME Code, Section XI, Appendix VIII.

Enclosure A4-1 through A4-3 include the weld reports for the outlet nozzle welds 10 (W09), weld 12 (W11), and weld 14 (W13). Included in the enclosures are details of the equipment setup and search unit head configurations which include the wave modality and insonification angles used for the UT examinations. They also include the detailed scan plans with cross sectional views of the examination volume with the extent of area scanned to maximize examination coverage. Weld 10 had seven (7) recordable indications, all identified as fabrication anomalies located within the weld volume. There were no recordable indications identified for the examination of weld 12. Weld 14 had eleven (11) recordable indications, also determined to be acceptable fabrication anomalies located within the weld volume.

The examination of the outlet nozzle welds was performed from the inside surface of the vessel. Access to the required scan areas on the outside surface of the vessel is not possible for increasing examination coverage.

ENCLOSURE A4-1

AREVA

Dominion

TWS Weld Number: W09

Summary No.:	**N2.B3.90.001**
Component ID:	12050-WMKS-RC-R-1.1/10
Item Number:	B3.90
Description:	Outlet Nozzle at 25° [335°][1] – Nozzle to Shell from Vessel ID Outlet Nozzle at 25° [335°][1] – Nozzle to Shell from Nozzle Bore
Examination Procedure:	54-ISI-801-02 (including SDCN # 30-9106855-000) 54-ISI-855-04
Calibration Block:	FTI RPV-95001
Calibration Setup No.:	1 & 6
UT Head No.:	2, 3, 4
Results:	7 Recordable Indications
Status:	Acceptable
Data Analysts:	H. Bezlaj, UT Level III C. E. Martin, UT Level II

[1] Number in brackets is the TWS angular layout.

ENCLOSURE A4-1

AREVA

Dominion

Flaw Evaluation Summary Sheet

Customer:	Dominion	**Plant:**	North Anna	**Unit:**	2
Weld:	W09	**Flaw No.:** 1		**Outage:**	N2R20
Detection Files:	R0099_00.05.38				
Sizing Files:	R0099_00.05.38				

Transducer	*Beam*	*Flaw Length (beta)*			*Flaw Depth*		
Angle/Mode	*Dir.*	*Min. (deg.)*	*Max. (deg.)*	*Total (deg.)*	*Min. (in.)*	*Max. (in)*	*Total (in.)*
45°- L	W-	367.2	369.7	2.5	2.15	2.31	0.2

Estimate of Flaw Length: (Calculate the average of all length values which are considered credible)

Length: 1.258 in 2.580 deg

Estimate of Flaw Depth: (Calculate the average of all depth values which are considered credible)

Depth (flaw height):	0.160 in.		
Radius of Curvature@ Indication:	26.01 in.		
Depth of Flaw at Max. Amp.:	2.15 in		
Max. Amp.:	39 %		
Max. Location:	X= 369 deg.	Y=	25.01 "
Nominal Wall Thickness:	9.86 in		
Nominal Clad Thickness:	0.16 in.		

Evaluation:

S =	1.99
2a =	0.16
a =	0.08
Y =	1.00
L=	1.27
a/L=	0.06
a/t =	0.8 %

Maximum Allowable a/t: 2.3 %

Interpolation		
	a/L	*a/t %*
min.	0.05	2.20
max.	0.10	2.50

Acceptance Standard: IWB-3512-1

Disposition: SUBSURFACE FLAW ACCEPTABLE

Comments:

This indication was not recorded during the previous examination

This scan is perpendicular to the weld on the vessel shell.

This indication is located within the weld and is indicative of a fabrication anomaly.

Performed by:	Michael G Hacker	Level:	III	Date:	04/10/10
Reviewed by:	Scott Breiholz	Level:	II	Date:	04/20/10

ENCLOSURE A4-1

AREVA

Dominion

Flaw Evaluation Summary Sheet

Customer:	Dominion	**Plant:**	North Anna	**Unit:**	2
Weld:	W09	**Flaw No.:** 2		**Outage:** N2R20	
Detection Files:	R0099_00 05.38				
Sizing Files:	R0099_00.05.38				

Transducer	*Beam*	*Flaw Length (beta)*			*Flaw Depth*		
Angle/Mode	*Dir.*	*Min. (deg.)*	*Max. (deg.)*	*Total (deg.)*	*Min. (in.)*	*Max. (in)*	*Total (in.)*
45°- L	W-	361.3	362.4	1 1	2.28	2.41	0 1

Estimate of Flaw Length: (Calculate the average of all length values which are considered credible)

Length: 0 520 in. 1.050 deg.

Estimate of Flaw Depth: (Calculate the average of all depth values which are considered credible)

Depth (flaw height):	0 130 in		
Radius of Curvature @ Indication:	26 10 in.		
Depth of Flaw at Max Amp.:	2 30 in.		
Max. Amp.:	24 %		
Max. Location:	X= 361.67 deg.	Y=	26 10 "
Nominal Wall Thickness:	9.86 in.		
Nominal Clad Thickness:	0.16 in.		

Evaluation:	S =	2 12
	2a =	0 13
	a =	0 07
	Y =	1 00
	L=	0 52
	a/L=	0.12
	a/t =	0 7 %
Maximum Allowable a/t:		2 7 %

Interpolation		
	a/L	*a/t %*
min.	0.10	2.50
max.	0.15	2.90

Acceptance Standard: IWB-3512-1

Disposition: SUBSURFACE FLAW ACCEPTABLE

Comments:

This indication was not recorded during the previous examination

This scan is perpendicular to the weld on the vessel shell.

This indication is located within the weld and is indicative of a fabrication anomaly.

Performed by:	Michael G Hacker	Level:	III	Date:	04/10/10
Reviewed by:	Scott Breiholz	Level:	II	Date:	04/20/10

ENCLOSURE A4-1

AREVA

Dominion

Flaw Evaluation Summary Sheet

Customer:	Dominion	**Plant:**	North Anna	**Unit:**	2
Weld:	W09	**Flaw No.:** 3		**Outage:**	N2R20
Detection Files:	R0099_00.05.38				
Sizing Files:	R0099_00.05.38				

Transducer	*Beam*	*Flaw Length (beta)*			*Flaw Depth*		
Angle/Mode	*Dir.*	*Min. (deg.)*	*Max. (deg.)*	*Total (deg.)*	*Min. (in.)*	*Max. (in)*	*Total (in.)*
45°- L	W-	356.9	358.7	1.8	2.11	2.30	0.2

Estimate of Flaw Length. (Calculate the average of all length values which are considered credible)

Length 0.687 in 1.790 deg.

Estimate of Flaw Depth: (Calculate the average of all depth values which are considered credible)

Depth (flaw height):	0.190 in.		
Radius of Curvature @ Indication	26.22 in.		
Depth of Flaw at Max. Amp.:	2.17 in.		
Max. Amp.:	17 %		
Max. Location.	X= 358.41 deg	Y=	26.22 "
Nominal Wall Thickness:	9.86 in		
Nominal Clad Thickness:	0.16 in.		

Evaluation:	S =	1.95
	2a =	0.19
	a =	0.10
	Y =	1.00
	L=	0.89
	a/L=	0.11
	a/t =	1.0 %
Maximum Allowable a/t:		2.6 %
Acceptance Standard:	IWB-3512-1	
Disposition:	SUBSURFACE FLAW	ACCEPTABLE

Interpolation

	a/L	*a/t %*
min.	0.10	2.50
max.	0.15	2.90

Comments:

This indication was not recorded during the previous examination

This scan is perpendicular to the weld on the vessel shell.

This indication is located within the weld and is indicative of a fabrication anomaly.

Performed by:	Michael G Hacker	Level:	III	Date:	04/10/10
Reviewed by:	Scott Breiholz	Level:	II	Date:	04/20/10

ENCLOSURE A4-1

AREVA

Dominion

Flaw Evaluation Summary Sheet

Customer:	Dominion	**Plant:**	North Anna	**Unit:**	2
Weld:	W09	**Flaw No.:** 4		**Outage:**	N2R20
Detection Files:	R0099_00 05 38				
Sizing Files:	R0099_00.05.38				

Transducer	*Beam*	*Flaw Length (beta)*			*Flaw Depth*		
Angle/Mode	*Dir.*	*Min. (deg.)*	*Max. (deg.)*	*Total (deg.)*	*Min. (in.)*	*Max. (in)*	*Total (in.)*
45°- L	W-	334 2	336.1	1.9	1.35	1.55	0 2

Estimate of Flaw Length: (Calculate the average of all length values which are considered credible)

Length: 0 869 in. 1 890 deg.

Estimate of Flaw Depth: (Calculate the average of all depth values which are considered credible)

Depth (flaw height):	0.200 in.		
Radius of Curvature @ Indication:	24.84 in.		
Depth of Flaw at Max. Amp.:	1 50 in.		
Max. Amp.:	45 %		
Max. Location:	X= 334 98 deg.	Y=	24.84 "
Nominal Wall Thickness:	9.86 in.		
Nominal Clad Thickness:	0 16 in		

Evaluation:	S =	1.19
	2a =	0.20
	a =	0.10
	Y =	1.00
	L=	0.87
	a/L=	0.12
	a/t =	1 0 %
Maximum Allowable a/t:		2.6 %
Acceptance Standard:		IWB-3512-1
Disposition:		SUBSURFACE FLAW ACCEPTABLE

Interpolation

	a/L	*a/t %*
min.	0.10	2.50
max.	0.15	2.90

Comments:

This indication was not recorded during the previous examination

This scan is perpendicular to the weld on the vessel shell.

This indication is located within the weld and is indicative of a fabrication anomaly

Performed by:	Michael G Hacker	Level:	III	Date:	04/10/10
Reviewed by:	Scott Breiholz	Level:	II	Date:	04/20/10

ENCLOSURE A4-1

AREVA

Dominion

Flaw Evaluation Summary Sheet

Customer:	Dominion	**Plant:**	North Anna	**Unit:**	2
Weld:	W09	**Flaw No.:** 5		**Outage:**	N2R20
Detection Files:	R0099_00.05.38				
Sizing Files:	R0099_00.05.38				

Transducer Angle/Mode	Beam Dir.	Flaw Length (beta)			Flaw Depth		
		Min. (deg.)	Max. (deg.)	Total (deg.)	Min. (in.)	Max. (in)	Total (in.)
45°- L	W-	324.7	326.2	1.5	1.52	1.75	0.2

Estimate of Flaw Length: (Calculate the average of all length values which are considered credible)

Length: 0.681 in. 1.480 deg.

Estimate of Flaw Depth: (Calculate the average of all depth values which are considered credible)

Depth (flaw height):	0.230 in.		
Radius of Curvature @ Indication:	24.80 in.		
Depth of Flaw at Max. Amp.:	1.57 in.		
Max. Amp.:	55 %		
Max. Location:	X= 325.42 deg.	Y=	24.80 "
Nominal Wall Thickness:	9.86 in.		
Nominal Clad Thickness:	0.16 in.		

Evaluation:

S =	1.36
2a =	0.23
a =	0.12
Y =	1.00
L=	0.68
a/L=	0.17
a/t =	1.2 %

Maximum Allowable a/t: 3.1 %

Acceptance Standard: IWB-3512-1

Disposition: SUBSURFACE FLAW ACCEPTABLE

Interpolation		
	a/L	a/t %
min.	0.15	2.90
max.	0.20	3.30

Comments:

This indication was not recorded during the previous examination

This scan is perpendicular to the weld on the vessel shell.

This indication is located within the weld and is indicative of a fabrication anomaly.

Performed by:	Michael G Hacker	Level:	III	Date:	04/10/10
Reviewed by:	Scott Breiholz	Level:	II	Date:	04/20/10

ENCLOSURE A4-1

AREVA

Dominion

Flaw Evaluation Summary Sheet

Customer:	Dominion	**Plant:**	North Anna	**Unit:**	2
Weld:	W09	**Flaw No.:** 6		**Outage:**	N2R20
Detection Files:	B0098_21 54.49				
Sizing Files:	B0098_21.54.49				

Transducer	*Beam*	*Flaw Length (beta)*			*Flaw Depth*		
Angle/Mode	*Dir.*	*Min. (deg.)*	*Max. (deg.)*	*Total (deg.)*	*Min. (in.)*	*Max. (in)*	*Total (in.)*
45°- L	W-	188.3	192 6	4 3	1 39	1.49	0 1

Estimate of Flaw Length: (Calculate the average of all length values which are considered credible)

Length: 1 751 in. 4 300 deg.

Estimate of Flaw Depth: (Calculate the average of all depth values which are considered credible)

Depth (flaw height):	0 100 in.		
Radius of Curvature @ Indication:	21 92 in		
Depth of Flaw at Max. Amp.:	1.41 in.		
Max. Amp.:	45 %		
Max. Location:	X= 188 91 deg.	Y=	21 92 "
Nominal Wall Thickness:	9 86 in.		
Nominal Clad Thickness:	0 16 in		

Evaluation:	S =	1.23
	2a =	0.10
	a =	0.05
	Y =	1.00
	L=	1.75
	a/L=	0.03
	a/t =	0.5 %
Maximum Allowable a/t:		2.1 %

Interpolation		
	a/L	*a/t %*
min.	0.00	2.00
max.	0.05	2.20

Acceptance Standard: IWB-3512-1

Disposition: SUBSURFACE FLAW ACCEPTABLE

Comments:

This indication was not recorded during the previous examination

This scan is perpendicular to the weld on the vessel shell

This indication is located within the weld and is indicative of a fabrication anomaly.

Performed by:	Michael G Hacker	Level:	III	Date:	04/11/10
Reviewed by:	Scott Breiholz	Level:	II	Date:	04/20/10

ENCLOSURE A4-1

AREVA

Dominion

Flaw Evaluation Summary Sheet

Customer:	Dominion	**Plant:**	North Anna	**Unit:**	2
Weld:	W09	**Flaw No.:** 7		**Outage:** N2R20	
Detection Files:	B0098_21.54.49				
Sizing Files:	B0098_21.54.49				

Transducer	*Beam*	*Flaw Length (beta)*			*Flaw Depth*		
Angle/Mode	*Dir.*	*Min. (deg.)*	*Max. (deg.)*	*Total (deg.)*	*Min. (in.)*	*Max. (in)*	*Total (in.)*
45°-L	W-	174.7	177.7	3.0	1.53	1.67	0.1

Estimate of Flaw Length: (Calculate the average of all length values which are considered credible)

Length. 1.557 in. 3.050 deg.

Estimate of Flaw Depth: (Calculate the average of all depth values which are considered credible)

Depth (flaw height):	0.140 in.		
Radius of Curvature @ Indication:	27.75 in		
Depth of Flaw at Max. Amp.:	1.49 in.		
Max. Amp.:	31 %		
Max. Location:	X= 175.68 deg.	Y=	27.75 "
Nominal Wall Thickness:	9.86 in.		
Nominal Clad Thickness:	0.16 in		

Evaluation.	S =	1.37
	2a =	0.14
	a =	0.07
	Y =	1.00
	L=	1.56
	a/L=	0.04
	a/t =	0.7 %
Maximum Allowable a/t:		2.2 %

Interpolation		
	a/L	*a/t %*
min.	0.00	2.00
max.	0.05	2.20

Acceptance Standard: IWB-3512-1

Disposition: SUBSURFACE FLAW ACCEPTABLE

Comments:

This indication was not recorded during the previous examination

This scan is perpendicular to the weld on the vessel shell.

This indication is located within the weld and is indicative of a fabrication anomaly.

Performed by:	Michael G Hacker	Level:	III	Date:	04/11/10
Reviewed by:	Scott Breiholz	Level:	II	Date:	04/20/10

ENCLOSURE A4-1

AREVA

Dominion

Data Acquisition Log

Weld Acquisition Data - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

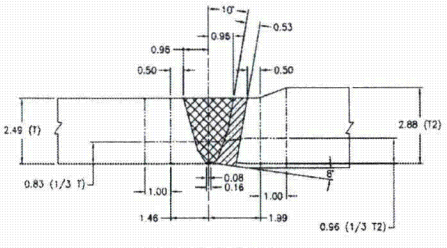
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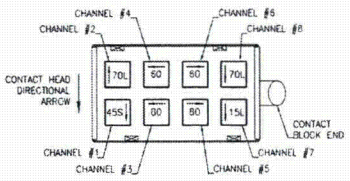
Weld	Sin	Indxlncr	Start(%)	Stop(%)	Channels	Result	Analyst	Select
09	W09_0001.NBP3	0.5	24.7(0)	31.2(99)	3 4 5 6	Data acceptable	HBezlaj	Select R0098_23.43.13
09	W09_0002.NBP3	0.5	26.8(0)	29.8(98)	3 4 5 6	Data acceptable	HBezlaj	Select R0098_23.56.33
09	W09_0003.NBP3	0.45	26.8(0)	29.8(98)	3 4 5 6	Data acceptable	CMartin	Select B0098_19.49.48
09	W09_0004.NBP3	0.45	26.8(0)	29.8(98)	3 4 5 6	Data acceptable	CMartin	Select B0098_19.52.32
09	W09_0005.NBP3	0.45	24.7(0)	31.2(99)	3 4 5 6	Data acceptable	CMartin	Select B0098_20.01.46
09	W09_0005.NBP3	0.45	24.7(0)	31.0(97)	3 4 5 6	No valid data	CMartin	Select B0098_19.54.33
09	W09_0006.NBP3	0.45	26.8(0)	29.8(98)	3 4 5 6	Data acceptable	CMartin	Select B0098_20.22.27
09	W09_0007.NBP3	0.45	26.8(0)	29.9(99)	3 4 5 6	Data acceptable	CMartin	Select B0098_20.24.12
09	W09_0008.NBP3	0.5	26.8(0)	29.8(97)	3 4 5 6	Data acceptable	HBezlaj	Select R0098_23.36.58
09	W09_0009.NBN3	0.5	24.7(0)	31.2(99)	3 4 5 6	Data acceptable	HBezlaj	Select R0098_23.45.42
09	W09_0010.NBN3	0.5	26.8(0)	29.9(99)	3 4 5 6	Data acceptable	HBezlaj	Select R0098_23.58.00
09	W09_0011.NBN3	0.45	26.8(0)	29.9(99)	3 4 5 6	Data acceptable	CMartin	Select B0098_19.50.44
09	W09_0012.NBN3	0.45	26.8(0)	29.8(98)	3 4 5 6	Data acceptable	CMartin	Select B0098_19.58.07
09	W09_0013.NBN3	0.45	24.7(0)	31.2(99)	3 4 5 6	Data acceptable	CMartin	Select B0098_20.07.52
09	W09_0014.NBN3	0.45	26.8(0)	29.8(98)	3 4 5 6	Data acceptable	CMartin	Select B0098_20.26.55
09	W09_0015.NBN3	0.45	26.8(0)	29.8(98)	3 4 5 6	Data acceptable	CMartin	Select B0098_20.27.48
09	W09_0016.NBN3	0.5	26.8(0)	29.8(98)	3 4 5 6	Data acceptable	HBezlaj	Select R0098_23.34.48
09	W09_0017.NWP3	0.5	310.0(0)	409.0(99)	3 4 5 6	Data accept. req. sizing	HBezlaj	Select R0098_23.48.04
09	W09_0018.NWP3	0.5	40.0(0)	94.5(99)	3 4 5 6	Data acceptable	HBezlaj	Select R0098_23.53.51
09	W09_0019.NWP3	0.45	85.0(0)	129.6(99)	3 4 5 6	Data acceptable	CMartin	Select B0098_19.47.02
09	W09_0020.NWP3	0.45	120.0(0)	139.8(99)	3 4 5 6	Data acceptable	CMartin	Select B0098_19.59.19
09	W09_0021.NWP3	0.45	130.0(0)	229.0(99)	3 4 5 6	Data accept. req. sizing	CMartin	Select B0098_20.11.03
09	W09_0022.NWP3	0.45	220.0(0)	239.8(99)	3 4 5 6	Data acceptable	CMartin	Select B0098_20.17.48
09	W09_0023.NWP3	0.45	230.0(0)	274.6(99)	3 4 5 6	Data acceptable	CMartin	Select B0098_20.18.59
09	W09_0024.NWP3	0.5	265.0(0)	319.4(99)	3 4 5 6	Data acceptable	HBezlaj	Select R0098_23.40.11
09	W09_0025.PBN2	0.08	78.0(0)	104.8(99)	1 7	Data acceptable	HBezlaj	Select R0097_23.09.57
09	W09_S117.NWP3	0.2	310.0(0)	409.0(99)	1 2 3 4 5 6	Sizing scan accepatable	HBezlaj	Select R0099_00.05.38
09	W09_S121.NWP3	0.15	173.0(0)	207.7(99)	3 4 5 6	Sizing scan accepatable	CMartin	Select B0098_21.54.49

Done

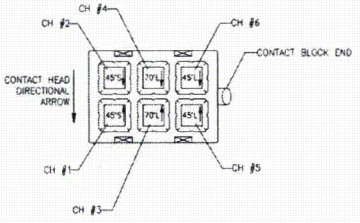
ENCLOSURE A4-1



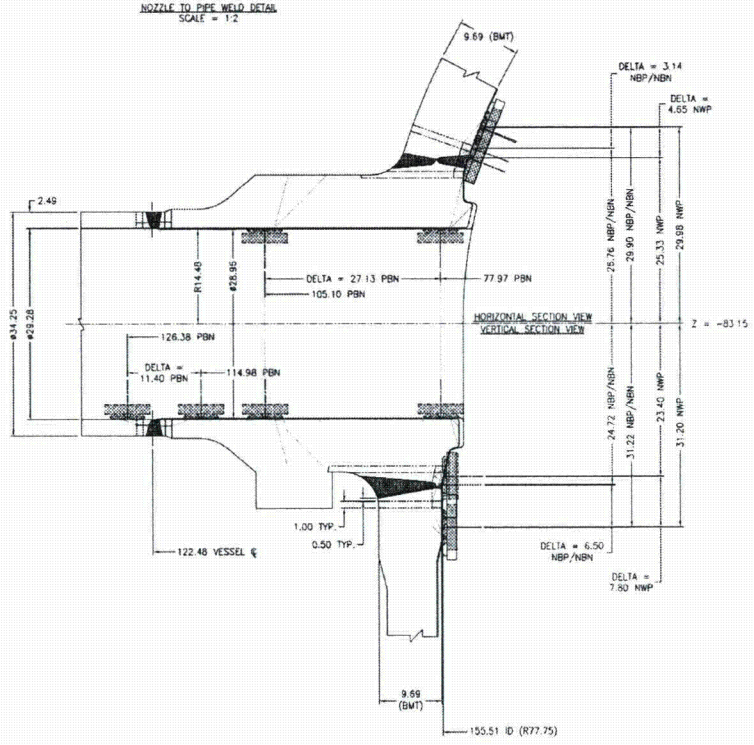
NOZZLE TO PIPE WELD DETAIL
SCALE = 1:2



2x4 UT HEAD CONFIGURATION #2
FOR NOZZLE SCANNING
(AS VIEWED FROM BACK OF ROBOHAND COUPLING)



2x3 UT HEAD CONFIGURATION #3
FOR SHELL SCANNING
(AS VIEWED FROM BACK OF ROBOHAND COUPLING)



NOZZLE TO SHELL CHANNEL FIRING 2x4 HEAD #2		
CHANNEL	STATUS	TRANSDUCER
1	ACTIVE	45°S
2	----	70°L
3	----	60°
4	----	60°
5	----	60°
6	----	60°
7	ACTIVE	15°L
8	----	70°L

NOZZLE TO PIPE CHANNEL FIRING 2x4 HEAD #2		
CHANNEL	STATUS	TRANSDUCER
1	----	45°S
2	ACTIVE	70°L
3	ACTIVE	60°
4	ACTIVE	60°
5	ACTIVE	60°
6	ACTIVE	60°
7	----	15°L
8	ACTIVE	70°L

CHANNEL FIRING 2x3 HEAD #3		
CHANNEL	STATUS	TRANSDUCER
1	----	45°S
2	----	45°S
3	ACTIVE	70°L
4	ACTIVE	70°L
5	ACTIVE	45°L
6	ACTIVE	45°L

SCAN INFO			
	INDEX	INTERVAL	SPEED
PBN (NOZZLE TO SHELL)	0.08"	0.08"	12 IPS MAX
PBN (NOZZLE TO PIPE)	0.05"	0.05"	3 IPS MAX
NBP (NOZZLE TO SHELL)	0.50"	0.08"	18 IPS MAX
NBN (NOZZLE TO SHELL)	0.50"	0.08"	18 IPS MAX
NWP (NOZZLE-TO-SHELL)	0.50"	0.08"	18 IPS MAX

NOZZLE TO SHELL WELD
CLADDING = 0.15" NOM.
CASE N-613-1 = 0.50"
EC = 1.00"
15%T = 1.45"
85%T = 8.24"

LEGEND
BMT = BASE METAL THICKNESS
EC = EXTENDED COVERAGE

TWS ID: W09 335° [25°]
COMPONENT ID: 12050-WMKS-RC-R-1.1/10
ASME ITEM NO.: B3.90
ASME CATEGORY: B-D
FIGURE: 1 (CODE: N-613-1)

TWS ID: W11 95° [265°]
COMPONENT ID: 12050-WMKS-RC-R-1.1/12
ASME ITEM NO.: B3.90
ASME CATEGORY: B-D
FIGURE: 1 (CODE: N-613-1)

TWS ID: W13 215° [145°]
COMPONENT ID: 12050-WMKS-RC-R-1.1/14
ASME ITEM NO.: B3.90
ASME CATEGORY: B-D
FIGURE: 1 (CODE: N-613-1)

TWS ID: W15 335° [25°]
COMPONENT ID: 12050-WMKS-0109F-1/29-RC-404/13
ASME ITEM NO.: R1.11
ASME CATEGORY: R-A
FIGURE: IWB-2500-8(c)

TWS ID: W17 95° [265°]
COMPONENT ID: 12050-WMKS-0109G-1/29-RC-407/25
ASME ITEM NO.: R1.11
ASME CATEGORY: R-A
FIGURE: IWB-2500-8(c)

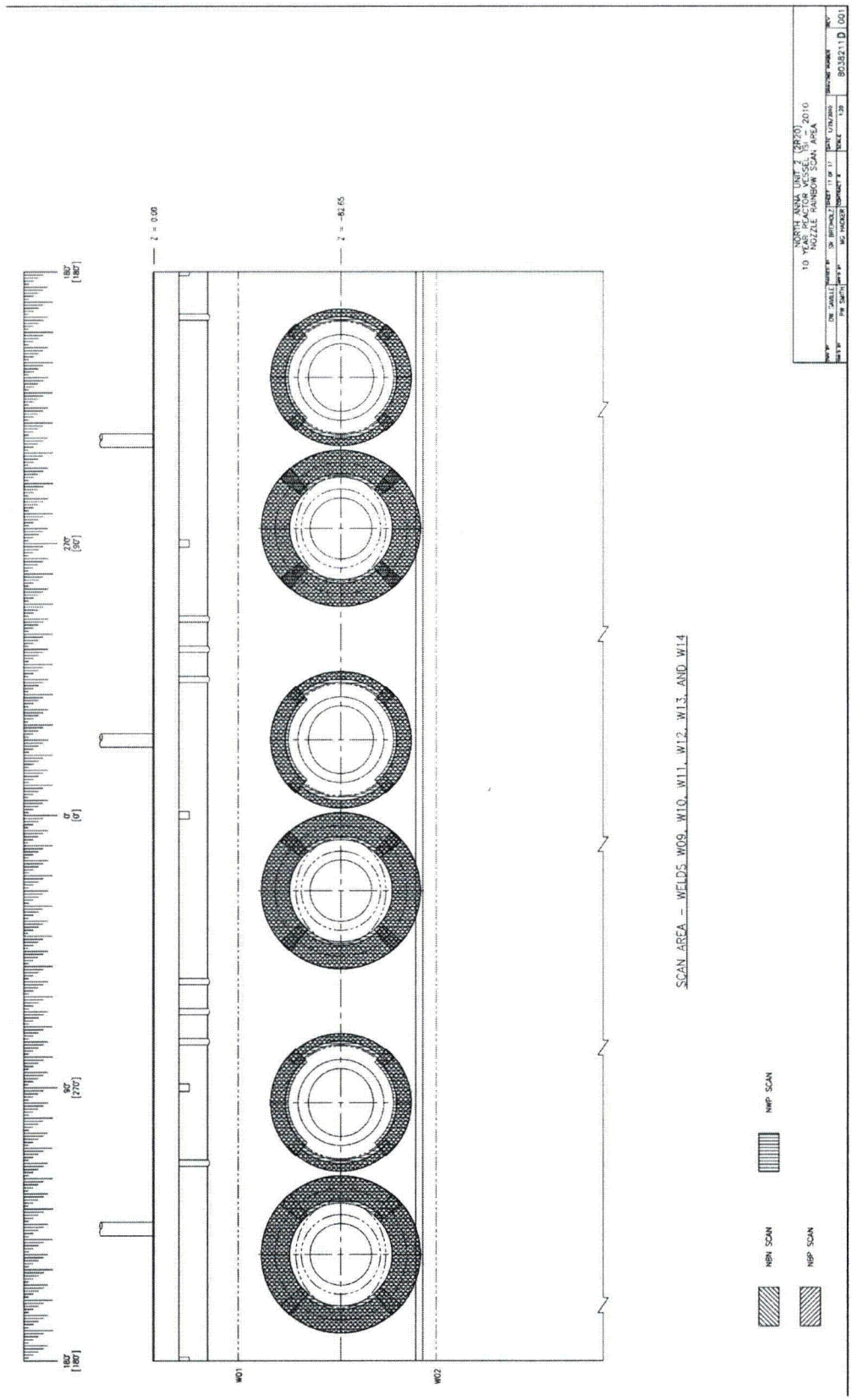
TWS ID: W19 215° [145°]
COMPONENT ID: 12050-WMKS-0109E-1/29-RC-401/1
ASME ITEM NO.: R1.11
ASME CATEGORY: R-A
FIGURE: IWB-2500-8(c)

REFERENCE DRAWINGS: SEE SHEET 1

NORTH ANNA UNIT 2 (2R20)
10 YEAR REACTOR VESSEL ISI - 2010
OUTLET NOZZLE

DWN BY	CHKD BY	SHEET 15 OF 17	DATE 1/28/2010	DRAWING NUMBER	REV
DW SAWILLE	SR BREWOLF				
DES'D BY	APP'D BY	CONTRACT #	SCALE		
PW SMITH	MC HACKER		1:8	8038211D	001

ENCLOSURE A4-1



AREVA

Dominion

TWS Weld Number: W11

Summary No.:	**N2.B3.90.003**
Component ID:	12050-WMKS-RC-R-1.1/12
Item Number:	B3.90
Description:	Outlet Nozzle at 265 ° [95°][1] – Nozzle to Shell from Vessel ID Outlet Nozzle at 265 ° [95°][1] – Nozzle to Shell from Nozzle Bore
Examination Procedure:	54-ISI-801-02 (including SDCN # 30-9106855-000) 54-ISI-855-04
Calibration Block:	FTI RPV-95001
Calibration Setup No.:	1 & 6
UT Head No.:	2, 3, 4
Results:	No Recordable Indications
Status:	Acceptable
Data Analysts:	H. Bezlaj, UT Level III M. Cvitanovic, UT Level III

[1] Number in brackets is the TWS angular layout.

ENCLOSURE A4-2

AREVA

Dominion

Data Acquisition Log

Weld Acquisition Data - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

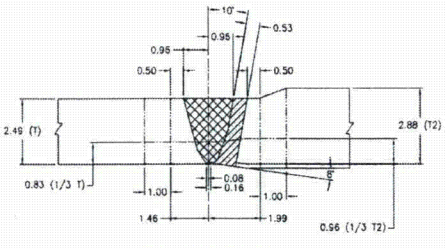
http://ndeserv3/cgi-bin/showWeldSet.cgi

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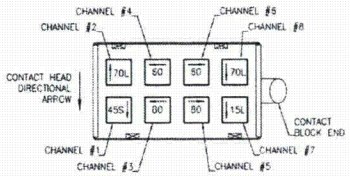
Weld	Sin	IndxIncr	Start(%)	Stop(%)	Channels	Result	Analyst	Select
11	W11_0001.NBP3	0.45	24.7(0)	31.2(99)	3 4 5 6	Data acceptable	HBezlaj	Select R0098_21.13.55
11	W11_0002.NBP3	0.45	26.8(0)	29.9(99)	3 4 5 6	Data acceptable	HBezlaj	Select R0098_21.40.29
11	W11_0003.NBP3	0.45	26.8(0)	29.9(99)	3 4 5 6	Data acceptable	MCvitanv	Select B0098_15.44.56
11	W11_0004.NBP3	0.45	26.8(0)	29.8(98)	3 4 5 6	Data acceptable	MCvitanv	Select B0098_15.49.45
11	W11_0005.NBP3	0.45	25.7(15)	32.2(114)	3 4 5 6	Data acceptable	MCvitanv	Select B0098_16.07.47
11	W11_0005.NBP3	0.45	25.7(15)	0.0(-380)	3 4 5 6	No valid data	MCvitanv	Select B0098_16.07.07
11	W11_0006.NBP3	0.45	26.8(0)	29.8(98)	3 4 5 6	Data acceptable	MCvitanv	Select B0098_16.18.42
11	W11_0007.NBP3	0.45	26.8(0)	29.9(99)	3 4 5 6	Data acceptable	MCvitanv	Select B0098_16.19.46
11	W11_0008.NBP3	0.45	26.8(0)	29.8(98)	3 4 5 6	Data acceptable	HBezlaj	Select R0098_21.09.12
11	W11_0009.NBN3	0.45	24.7(0)	31.2(99)	3 4 5 6	Data acceptable	HBezlaj	Select R0098_21.18.23
11	W11_0010.NBN3	0.45	26.8(0)	29.8(98)	3 4 5 6	Data acceptable	HBezlaj	Select R0098_21.42.51
11	W11_0011.NBN3	0.45	26.8(0)	29.9(99)	3 4 5 6	Data acceptable	MCvitanv	Select B0098_15.46.43
11	W11_0012.NBN3	0.45	26.8(0)	29.9(99)	3 4 5 6	Data acceptable	MCvitanv	Select B0098_15.51.34
11	W11_0013.NBN3	0.45	25.7(15)	32.2(114)	3 4 5 6	Data acceptable	MCvitanv	Select B0098_16.11.05
11	W11_0014.NBN3	0.45	26.8(0)	29.9(99)	3 4 5 6	Data acceptable	MCvitanv	Select B0098_16.22.14
11	W11_0015.NBN3	0.45	26.8(0)	29.9(99)	3 4 5 6	Data acceptable	MCvitanv	Select B0098_16.21.07
11	W11_0016.NBN3	0.45	26.8(0)	29.9(99)	3 4 5 6	Data acceptable	HBezlaj	Select R0098_21.07.09
11	W11_0017.NWP3	0.45	310.0(0)	409.0(99)	3 4 5 6	Data acceptable	HBezlaj	Select R0098_21.33.10
11	W11_0018.NWP3	0.45	40.0(0)	94.5(99)	3 4 5 6	Data acceptable	HBezlaj	Select R0098_21.44.27
11	W11_0019.NWP3	0.45	85.0(0)	129.6(99)	3 4 5 6	Data acceptable	MCvitanv	Select B0098_15.42.17
11	W11_0019.NWP3	0.5	85.0(0)	129.6(99)	3 4 5 6	Request rescan	MCvitanv	Select B0098_15.39.46
11	W11_0020.NWP3	0.45	120.0(0)	139.8(99)	3 4 5 6	Data acceptable	MCvitanv	Select B0098_15.52.31
11	W11_0021.NWP3	0.45	130.0(0)	229.0(99)	3 4 5 6	Data acceptable	MCvitanv	Select B0098_15.56.55
11	W11_0022.NWP3	0.45	220.0(0)	239.8(99)	3 4 5 6	Data acceptable	MCvitanv	Select B0098_16.14.29
11	W11_0023.NWP3	0.45	230.0(0)	274.6(99)	3 4 5 6	Data acceptable	MCvitanv	Select B0098_16.15.50
11	W11_0024.NWP3	0.45	265.0(0)	319.4(99)	3 4 5 6	Data acceptable	HBezlaj	Select R0098_21.10.45
11	W11_0025.PBN2	0.08	78.0(0)	104.8(99)	1 7	Data acceptable	HBezlaj	Select R0097_21.30.40

Exam Results Home

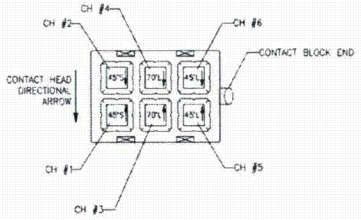
ENCLOSURE A4-2



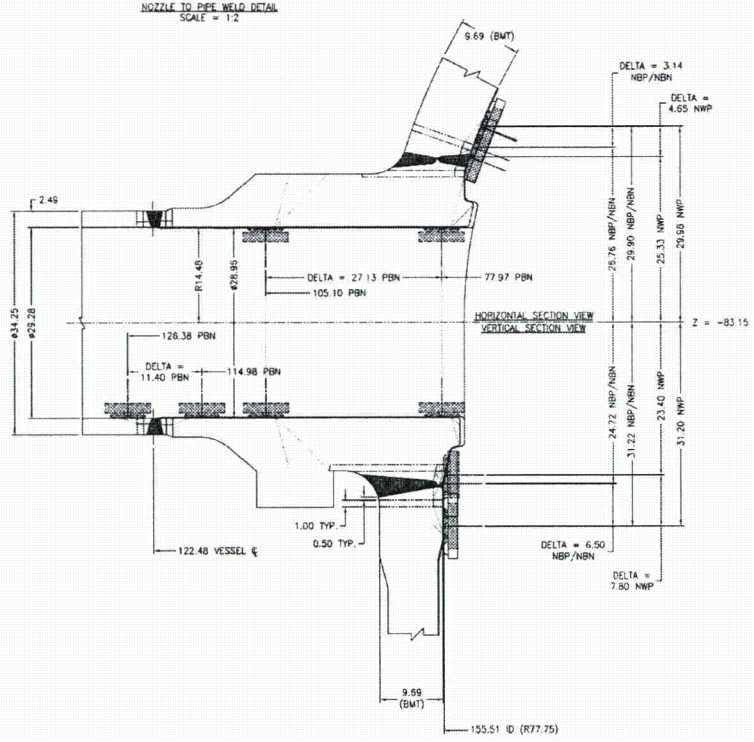
NOZZLE TO PIPE WELD DETAIL
SCALE = 1:2



2x4 UT HEAD CONFIGURATION #2
FOR NOZZLE SCANNING
(AS VIEWED FROM BACK OF ROBOHAND COUPLING)



2x3 UT HEAD CONFIGURATION #3
FOR SHELL SCANNING
(AS VIEWED FROM BACK OF ROBOHAND COUPLING)



NOZZLE TO SHELL CHANNEL FIRING 2x4 HEAD #2		
CHANNEL	STATUS	TRANSDUCER
1	ACTIVE	45°S
2	----	70°L
3	----	60°
4	----	60°
5	----	60°
6	----	60°
7	ACTIVE	15°L
8	----	70°L

NOZZLE TO PIPE CHANNEL FIRING 2x4 HEAD #2		
CHANNEL	STATUS	TRANSDUCER
1	----	45°S
2	ACTIVE	70°L
3	ACTIVE	60°
4	ACTIVE	60°
5	ACTIVE	60°
6	ACTIVE	60°
7	----	15°L
8	ACTIVE	70°L

CHANNEL FIRING 2x3 HEAD #3		
CHANNEL	STATUS	TRANSDUCER
1	----	45°S
2	----	45°S
3	ACTIVE	70°L
4	ACTIVE	70°L
5	ACTIVE	45°L
6	ACTIVE	45°L

SCAN INFO			
	INDEX	INTERVAL	SPEED
PBN (NOZZLE TO SHELL)	0.08"	0.08"	12 IPS MAX
PBN (NOZZLE TO PIPE)	0.05"	0.05"	3 IPS MAX
NBP (NOZZLE TO SHELL)	0.50"	0.08"	18 IPS MAX
NBN (NOZZLE TO SHELL)	0.50"	0.08"	18 IPS MAX
NWP (NOZZLE-TO-SHELL)	0.50"	0.08"	18 IPS MAX

NOZZLE TO SHELL WELD
CLADDING = 0.15" NOM.
CASE N-613-1 = 0.50"
EC = 1.00"
15%T = 1.45"
85%T = 8.24"

LEGEND
BMT = BASE METAL THICKNESS
EC = EXTENDED COVERAGE

TWS ID: W09 335° [25°]
COMPONENT ID: 12050-WMKS-RC-R-1.1/10
ASME ITEM NO.: B3.90
ASME CATEGORY: B-D
FIGURE: 1 (CODE: N-613-1)

TWS ID: W11 95° [265°]
COMPONENT ID: 12050-WMKS-RC-R-1.1/12
ASME ITEM NO.: B3.90
ASME CATEGORY: B-D
FIGURE: 1 (CODE: N-613-1)

TWS ID: W13 215° [145°]
COMPONENT ID: 12050-WMKS-RC-R-1.1/14
ASME ITEM NO.: B3.90
ASME CATEGORY: B-D
FIGURE: 1 (CODE: N-613-1)

TWS ID: W15 335° [25°]
COMPONENT ID: 12050-WMKS-0109F-1/29-RC-404/13
ASME ITEM NO.: R1.11
ASME CATEGORY: R-A
FIGURE: IWB-2500-8(c)

TWS ID: W17 95° [265°]
COMPONENT ID: 12050-WMKS-0109G-1/29-RC-407/25
ASME ITEM NO.: R1.11
ASME CATEGORY: R-A
FIGURE: IWB-2500-8(c)

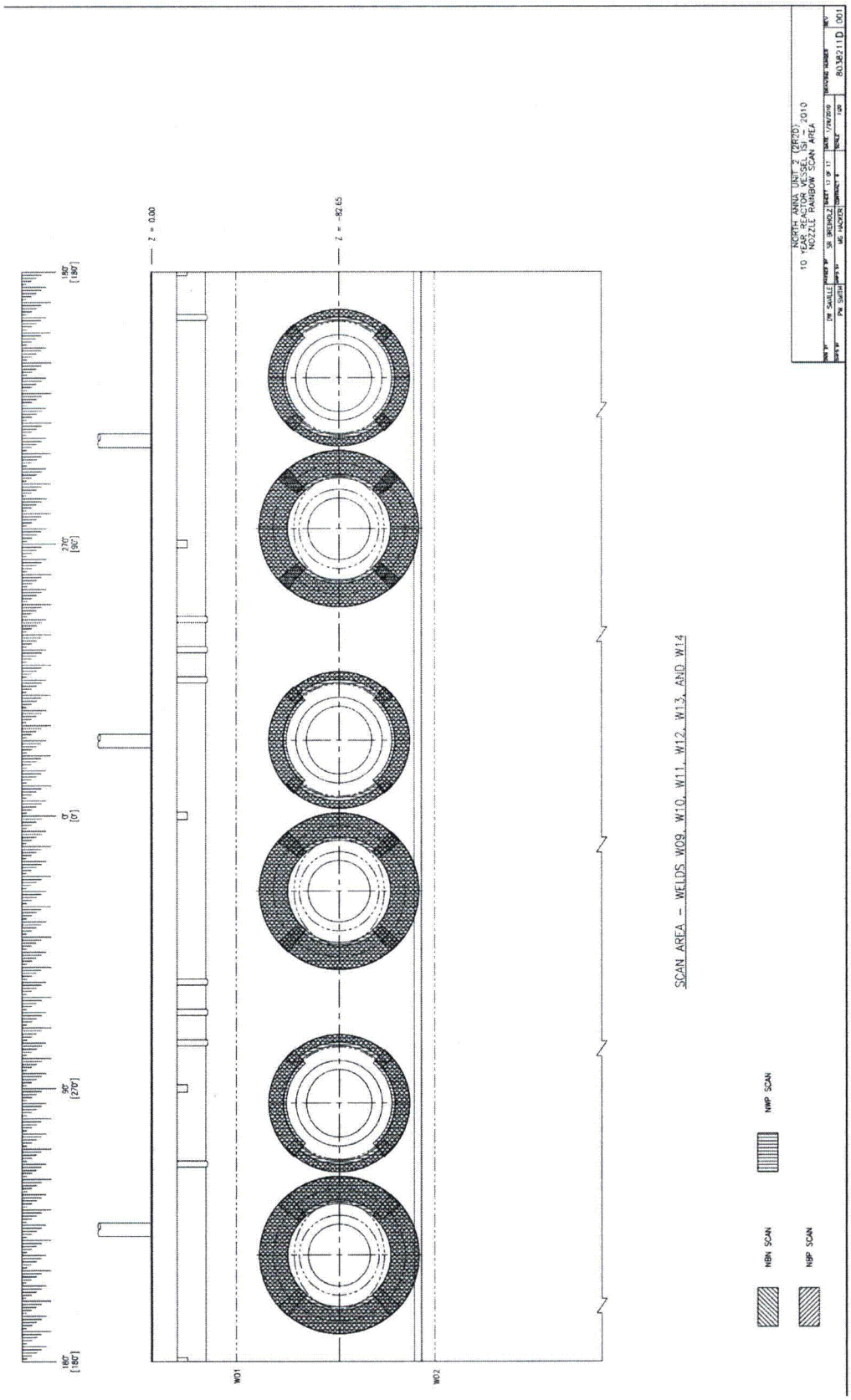
TWS ID: W19 215° [145°]
COMPONENT ID: 12050-WMKS-0109E-1/29-RC-401/1
ASME ITEM NO.: R1.11
ASME CATEGORY: R-A
FIGURE: IWB-2500-8(c)

REFERENCE DRAWINGS: SEE SHEET 1

NORTH ANNA UNIT 2 (2R20)
10 YEAR REACTOR VESSEL ISI - 2010
OUTLET NOZZLE

DRAWN BY	DW SAVILLE	PROJECT MGR	SR BREMOLZ	SHEET	10 OF 17	DATE	1/29/2010	DRAWING NUMBER	REV
CHK'D BY	PW SMITH	APP'D BY	MG HACKER	CONTRACT #		SCALE	1:8	8038211D	001

ENCLOSURE A4-2



AREVA

Dominion

TWS Weld Number: W13

Summary No.:	**N2.B3.90.005**
Component ID:	12050-WMKS-RC-R-1.1/14
Item Number:	B3.90
Description:	Outlet Nozzle at 145 ° [215°][1] – Nozzle to Shell from Vessel ID Outlet Nozzle at 145 ° [215°][1] – Nozzle to Shell from Nozzle Bore
Examination Procedure:	54-ISI-801-02 (including SDCN # 30-9106855-000) 54-ISI-855-04
Calibration Block:	FTI RPV-95001
Calibration Setup No.:	1 & 6
UT Head No.:	2, 3, 4
Results:	11 Recordable Indications
Status:	Acceptable
Data Analysts:	H. Bezlaj, UT Level III C. E. Martin, UT Level II

[1] Number in brackets is the TWS angular layout.

ENCLOSURE A4-3

AREVA

Dominion

Flaw Evaluation Summary Sheet

Customer:	Dominion	**Plant:**	North Anna	**Unit:**	2
Weld:	W13	**Flaw No.:** 1		**Outage:**	N2R20
Detection Files:	R0099_04.19.53				
Sizing Files:	R0099_04.19.53				

Transducer	*Beam*	*Flaw Length (beta)*			*Flaw Depth*		
Angle/Mode	*Dir.*	*Min. (deg.)*	*Max. (deg.)*	*Total (deg.)*	*Min. (in.)*	*Max. (in)*	*Total (in.)*
45°- L	W-	392.9	394.2	1.4	1.85	2.10	0.3

Estimate of Flaw Length: (Calculate the average of all length values which are considered credible)

Length: 0.660 in. 1.380 deg.

Estimate of Flaw Depth: (Calculate the average of all depth values which are considered credible)

Depth (flaw height)		0.250 in.	
Radius of Curvature@ Indication:		25.56 in.	
Depth of Flaw at Max. Amp.:		1.85 in.	
Max. Amp.:		33 %	
Max. Location:	X=	393.68 deg	Y= 25.56 "
Nominal Wall Thickness:		9.86 in.	
Nominal Clad Thickness:		0.16 in.	

Evaluation:		
	S =	1.69
	2a =	0.25
	a =	0.13
	Y =	1.00
	L=	0.66
	a/L=	0.19
	a/t =	1.3 %
Maximum Allowable a/t:		3.2 %
Acceptance Standard:		IWB-3512-1
Disposition:		SUBSURFACE FLAW — ACCEPTABLE

Interpolation		
	a/L	*a/t %*
min.	0.15	2.90
max.	0.20	3.30

Comments:

This indication was not recorded during the previous examination

This scan is perpendicular to the weld on the vessel shell.

This indication is located within the weld and is indicative of a fabrication anomaly.

Performed by:	Michael G Hacker	Level:	III	Date:	04/10/10
Reviewed by:	Scott Breiholz	Level:	II	Date:	04/20/10

ENCLOSURE A4-3

AREVA

Dominion

Flaw Evaluation Summary Sheet

Customer:	Dominion	**Plant:**	North Anna	**Unit:**	2
Weld:	W13	**Flaw No.:** 2		**Outage:** N2R20	
Detection Files:	R0099_04.19.53				
Sizing Files:	R0099_04.19.53				

Transducer	*Beam*	*Flaw Length (beta)*			*Flaw Depth*		
Angle/Mode	*Dir.*	*Min. (deg.)*	*Max. (deg.)*	*Total (deg.)*	*Min. (in.)*	*Max. (in)*	*Total (in.)*
45°- L	W-	388.7	390.7	2.0	1.96	2.22	0.3

Estimate of Flaw Length: (Calculate the average of all length values which are considered credible)

Length: 0.949 in. 1.970 deg.

Estimate of Flaw Depth: (Calculate the average of all depth values which are considered credible)

Depth (flaw height):	0.260 in.	
Radius of Curvature @ Indication:	25.64 in.	
Depth of Flaw at Max. Amp.	1.96 in.	
Max. Amp.:	30 %	
Max. Location:	X= 389.53 deg.	Y= 25.64 "
Nominal Wall Thickness	9.85 in	
Nominal Clad Thickness:	0.16 in.	

Evaluation:	S =	1.80
	2a =	0.26
	a =	0.13
	Y =	1.00
	L=	0.95
	a/L=	0.14
	a/t =	1.3 %
Maximum Allowable a/t:		2.8 %

Interpolation		
	a/L	*a/t %*
min.	0.10	2.50
max.	0.15	2.90

Acceptance Standard: IWB-3512-1

Disposition: SUBSURFACE FLAW ACCEPTABLE

Comments:

This indication was not recorded during the previous examination

This scan is perpendicular to the weld on the vessel shell

This indication is located within the weld and is indicative of a fabrication anomaly

Performed by:	Michael G Hacker	Level:	III	Date:	04/10/10
Reviewed by:	Scott Breiholz	Level:	II	Date:	04/20/10

ENCLOSURE A4-3

AREVA

Dominion

Flaw Evaluation Summary Sheet

Customer:	Dominion	**Plant:**	North Anna	**Unit:**	2	
Weld:	W13	**Flaw No.:** 3		**Outage:** N2R20		
Detection Files:	R0099_04 19.53					
Sizing Files:	R0099_04.19.53					

Transducer	*Beam*	*Flaw Length (beta)*			*Flaw Depth*		
Angle/Mode	*Dir.*	*Min. (deg.)*	*Max. (deg.)*	*Total (deg.)*	*Min. (in.)*	*Max. (in)*	*Total (in.)*
45°- L	W-	357.4	359.6	2.2	1.72	1.82	0.1

Estimate of Flaw Length: (Calculate the average of all length values which are considered credible)

Length: 1.058 in. 2.200 deg

Estimate of Flaw Depth. (Calculate the average of all depth values which are considered credible)

Depth (flaw height):	0.100 in.		
Radius of Curvature @ Indication:	26.04 in.		
Depth of Flaw at Max. Amp.:	1.78 in.		
Max. Amp.:	19 %		
Max. Location:	X= 357.9 deg.	Y=	26.04 "
Nominal Wall Thickness:	9.86 in.		
Nominal Clad Thickness:	0.16 in.		

Evaluation:

S =	1.56
2a =	0.10
a =	0.05
Y =	1.00
L=	1.07
a/L=	0.05
a/t =	0.5 %
Maximum Allowable a/t:	2.2 %
Acceptance Standard:	IWB-3512-1
Disposition:	SUBSURFACE FLAW — ACCEPTABLE

Interpolation

	a/L	*a/t %*
min.	0.00	2.00
max.	0.05	2.20

Comments:

This indication was not recorded during the previous examination

This scan is perpendicular to the weld on the vessel shell.

This indication is located within the weld and is indicative of a fabrication anomaly.

Performed by:	Michael G Hacker	Level:	III	Date:	04/10/10
Reviewed by:	Scott Breiholz	Level:	II	Date:	04/20/10

ENCLOSURE A4-3

AREVA

Dominion

Flaw Evaluation Summary Sheet

Customer:	Dominion	**Plant:**	North Anna	**Unit:**	2
Weld:	W13	**Flaw No.:** 4		**Outage:** N2R20	
Detection Files:	R0099_04.19.53				
Sizing Files:	R0099_04.19.53				

Transducer	*Beam*	*Flaw Length (beta)*			*Flaw Depth*		
Angle/Mode	*Dir.*	*Min. (deg.)*	*Max. (deg.)*	*Total (deg.)*	*Min. (in.)*	*Max. (in)*	*Total (in.)*
45°- L	W-	345.9	350.3	4.4	1.84	1.95	0.1

Estimate of Flaw Length: (Calculate the average of all length values which are considered credible)

Length: 2.142 in 4.410 deg.

Estimate of Flaw Depth: (Calculate the average of all depth values which are considered credible)

Depth (flaw height):		0.110 in.		
Radius of Curvature @ Indication:		25.99 in.		
Depth of Flaw at Max. Amp.:		1.84 in.		
Max. Amp.:		*29 %*		
Max. Location:	X=	346.49 deg.	Y=	25.99 "
Nominal Wall Thickness.		9.86 in.		
Nominal Clad Thickness:		0.16 in.		

Evaluation:	S =	1.68
	2a =	0.11
	a =	0.05
	Y =	1.00
	L=	2.14
	a/L=	0.03
	a/t =	0.6 %
Maximum Allowable a/t:		2.1 %

Interpolation		
	a/L	*a/t %*
min.	0.00	2.00
max.	0.05	2.20

Acceptance Standard. IWB-3512-1

Disposition: SUBSURFACE FLAW ACCEPTABLE

Comments:

This indication was not recorded during the previous examination

This scan is perpendicular to the weld on the vessel shell.

This indication is located within the weld and is indicative of a fabrication anomaly.

Performed by:	Michael G Hacker	Level:	III	Date:	04/10/10
Reviewed by:	Scott Breiholz	Level:	II	Date:	04/20/10

ENCLOSURE A4-3

AREVA

Dominion

Flaw Evaluation Summary Sheet

Customer:	Dominion	**Plant:**	North Anna	**Unit:**	2
Weld:	W13	**Flaw No.:** 5		**Outage:**	N2R20
Detection Files:	R0099_04.19.53				
Sizing Files:	R0099_04.19.53				

Transducer	*Beam*	*Flaw Length (beta)*			*Flaw Depth*		
Angle/Mode	*Dir.*	*Min. (deg.)*	*Max. (deg.)*	*Total (deg.)*	*Min. (in.)*	*Max. (in)*	*Total (in.)*
45 - L	W-	340.9	342.8	1.9	1.73	1.90	0.2

Estimate of Flaw Length: (Calculate the average of all length values which are considered credible)

Length: 0.906 in 1.870 deg.

Estimate of Flaw Depth: (Calculate the average of all depth values which are considered credible)

Depth (flaw height):		0.170 in.	
Radius of Curvature @ Indication:		25.94 in.	
Depth of Flaw at Max. Amp.:		1.81 in.	
Max. Amp.:		32 %	
Max. Location:	X=	342.03 deg.	Y= 25.94 "
Nominal Wall Thickness:		9.86 in.	
Nominal Clad Thickness:		0.16 in.	

Evaluation	S =	1.57
	2a =	0.17
	a =	0.09
	Y =	1.00
	L=	0.91
	a/L=	0.09
	a/t =	0.9 %
Maximum Allowable a/t:		2.5 %

Interpolation		
	a/L	*a/t %*
min.	0.05	2.20
max.	0.10	2.50

Acceptance Standard: IWB-3512-1

Disposition: SUBSURFACE FLAW — ACCEPTABLE

Comments:

This indication was not recorded during the previous examination

This scan is perpendicular to the weld on the vessel shell.

This indication is located within the weld and is indicative of a fabrication anomaly.

Performed by:	Michael G Hacker	Level:	III	Date:	04/10/10
Reviewed by:	Scott Breiholz	Level:	II	Date:	04/20/10

ENCLOSURE A4-3

AREVA

Dominion

Flaw Evaluation Summary Sheet

Customer:	Dominion	**Plant:**	North Anna	**Unit:**	2		
Weld:	W13	**Flaw No.:** 6		**Outage:** N2R20			
Detection Files:	R0099_04.19.53						
Sizing Files:	R0099_04.19.53						

Transducer Angle/Mode	Beam Dir.	Flaw Length (beta)			Flaw Depth		
		Min. (deg.)	Max. (deg.)	Total (deg.)	Min. (in.)	Max. (in)	Total (in.)
45 - L	W-	379.4	381.6	2.2	2.28	2.38	0.1

Estimate of Flaw Length: (Calculate the average of all length values which are considered credible)

Length 1.061 in. 2.160 deg.

Estimate of Flaw Depth: (Calculate the average of all depth values which are considered credible)

Depth (flaw height):	0.100 in		
Radius of Curvature @ Indication:	25.87 in.		
Depth of Flaw at Max. Amp.:	2.27 in.		
Max. Amp.	22 %		
Max. Location	X= 380.73 deg.	Y=	25.87 "
Nominal Wall Thickness:	9.86 in		
Nominal Clad Thickness:	0.16 in		

Evaluation:

S =	2.12
2a =	0.10
a =	0.05
Y =	1.00
L=	1.06
a/L=	0.05
a/t =	0.5 %

Maximum Allowable a/t: 2.2 %

Acceptance Standard: IWB-3512-1

Disposition: SUBSURFACE FLAW ACCEPTABLE

Interpolation		
	a/L	a/t %
min.	0.00	2.00
max.	0.05	2.20

Comments:

This indication was not recorded during the previous examination

This scan is perpendicular to the weld on the vessel shell.

This indication is located within the weld and is indicative of a fabrication anomaly

Performed by:	Michael G Hacker	Level:	III	Date:	04/10/10
Reviewed by:	Scott Breiholz	Level:	II	Date:	04/20/10

ENCLOSURE A4-3

AREVA

Dominion

Flaw Evaluation Summary Sheet

Customer:	Dominion	**Plant:**	North Anna	**Unit:**	2
Weld:	W13	**Flaw No.:** 7		**Outage:**	N2R20
Detection Files:	R0099_04.41.12				
Sizing Files:	R0099_04.41.12				

Transducer	*Beam*	*Flaw Length (beta)*			*Flaw Depth*		
Angle/Mode	*Dir.*	*Min. (deg.)*	*Max. (deg.)*	*Total (deg.)*	*Min. (in.)*	*Max. (in)*	*Total (in.)*
45° - L	W-	64.4	66.4	2.0	2.36	2.52	0.2

Estimate of Flaw Length: (Calculate the average of all length values which are considered credible)

Length: 0.956 in. 2.010 deg.

Estimate of Flaw Depth: (Calculate the average of all depth values which are considered credible)

Depth (flaw height):	0.160 in.		
Radius of Curvature@ Indication:	24.90 in.		
Depth of Flaw at Max. Amp.:	2.36 in		
Max. Amp.:	45 %		
Max. Location:	X= 64.9 deg.	Y=	24.90 "
Nominal Wall Thickness:	9.86 in		
Nominal Clad Thickness:	0.16 in.		

Evaluation:		
	S =	2.20
	2a =	0.16
	a =	0.08
	Y =	1.00
	L=	0.96
	a/L=	0.08
	a/t =	0.8 %
Maximum Allowable a/t:		2.4 %

Interpolation		
	a/L	*a/t %*
min.	0.05	2.20
max.	0.10	2.50

Acceptance Standard: IWB-3512-1

Disposition: SUBSURFACE FLAW ACCEPTABLE

Comments:

This indication was not recorded during the previous examination

This scan is perpendicular to the weld on the vessel shell.

This indication is located within the weld and is indicative of a fabrication anomaly.

Performed by:	Michael G Hacker	Level:	III	Date:	04/10/10
Reviewed by:	Scott Breiholz	Level:	II	Date:	04/20/10

ENCLOSURE A4-3

AREVA

Dominion

Flaw Evaluation Summary Sheet

Customer:	Dominion	**Plant:**	North Anna	**Unit:**	2
Weld:	W13	**Flaw No.:** 8		**Outage:**	N2R20
Detection Files:	R0099_04.41.12				
Sizing Files:	R0099_04.41.12				

Transducer	*Beam*	*Flaw Length (beta)*			*Flaw Depth*		
Angle/Mode	*Dir.*	*Min. (deg.)*	*Max. (deg.)*	*Total (deg.)*	*Min. (in.)*	*Max. (in)*	*Total (in.)*
45°- L	W-	57.5	60.4	2.9	2.27	2.44	0.2

Estimate of Flaw Length: (Calculate the average of all length values which are considered credible)

Length: 1.372 in. 2.880 deg.

Estimate of Flaw Depth: (Calculate the average of all depth values which are considered credible)

Depth (flaw height):	0.170 in.		
Radius of Curvature@ Indication:	25.01 in.		
Depth of Flaw at Max. Amp.:	2.29 in.		
Max. Amp.:	54 %		
Max. Location:	X= 59.14 deg	Y=	25.01 "
Nominal Wall Thickness:	9.86 in.		
Nominal Clad Thickness:	0.16 in.		

Evaluation:	S =	2.11
	2a =	0.17
	a =	0.09
	Y =	1.00
	L=	1.37
	a/L=	0.06
	a/t =	0.9 %
Maximum Allowable a/t.		2.3 %

Interpolation		
	a/L	*a/t %*
min.	0.05	2.20
max.	0.10	2.50

Acceptance Standard: IWB-3512-1

Disposition: SUBSURFACE FLAW ACCEPTABLE

Comments:

This indication was not recorded during the previous examination

This scan is perpendicular to the weld on the vessel shell.

This indication is located within the weld and is indicative of a fabrication anomaly.

Performed by:	Michael G Hacker	Level:	III	Date:	04/10/10
Reviewed by:	Scott Breiholz	Level:	II	Date:	04/20/10

ENCLOSURE A4-3

AREVA

Dominion

Flaw Evaluation Summary Sheet

Customer:	Dominion	**Plant:**	North Anna	**Unit:**	2
Weld:	W13	**Flaw No.:** 9		**Outage:** N2R20	
Detection Files:	B0098_23.04.51				
Sizing Files:	B0098_23.04.51				

Transducer	*Beam*	*Flaw Length (beta)*			*Flaw Depth*		
Angle/Mode	*Dir.*	*Min. (deg.)*	*Max. (deg.)*	*Total (deg.)*	*Min. (in.)*	*Max. (in)*	*Total (in.)*
45°- L	W-	138.8	142.3	3.5	1.71	1.79	0.1

Estimate of Flaw Length: (Calculate the average of all length values which are considered credible)

Length: 1.582 in. 3.500 deg.

Estimate of Flaw Depth: (Calculate the average of all depth values which are considered credible)

Depth (flaw height):	0.080 in.		
Radius of Curvature @ Indication:	25.75 in.		
Depth of Flaw at Max. Amp.:	1.79 in		
Max. Amp.:	23 %		
Max. Location:	X= 139.89 deg	Y=	25.75 "
Nominal Wall Thickness	9.86 in.		
Nominal Clad Thickness:	0.16 in.		

Evaluation:	S =	1.55
	2a =	0.08
	a =	0.04
	Y =	1.00
	L=	1.68
	a/L=	0.02
	a/t =	0.4 %
Maximum Allowable a/t:		2.1 %

Interpolation		
	a/L	*a/t %*
min.	0.00	2.00
max.	0.05	2.20

Acceptance Standard: IWB-3512-1

Disposition: SUBSURFACE FLAW ACCEPTABLE

Comments:

This indication was not recorded during the previous examination

This scan is perpendicular to the weld on the vessel shell.

This indication is located within the weld and is indicative of a fabrication anomaly.

Performed by:	Michael G Hacker	Level:	III	Date:	04/10/10
Reviewed by:	Scott Breiholz	Level:	II	Date:	04/20/10

ENCLOSURE A4-3

AREVA

Dominion

Flaw Evaluation Summary Sheet

Customer:	Dominion	**Plant:**	North Anna	**Unit:**	2	
Weld:	W13	**Flaw No.:** 10		**Outage:** N2R20		
Detection Files:	B0098_23.31.58					
Sizing Files:	B0098_23.31.58					

Transducer	*Beam*	*Flaw Length (beta)*			*Flaw Depth*		
Angle/Mode	*Dir.*	*Min. (deg.)*	*Max. (deg.)*	*Total (deg.)*	*Min. (in.)*	*Max. (in)*	*Total (in.)*
45° - L	W-	238.1	239.6	1.5	3.45	3.61	0.2

Estimate of Flaw Length: (Calculate the average of all length values which are considered credible)

Length: 0.708 in. 1.490 deg.

Estimate of Flaw Depth: (Calculate the average of all depth values which are considered credible)

Depth (flaw height):	0.160 in		
Radius of Curvature@ Indication:	23.79 in		
Depth of Flaw at Max. Amp.:	3.45 in.		
Max. Amp.:	19 %		
Max. Location:	X= 238.74 deg.	Y=	23.79 "
Nominal Wall Thickness:	9.86 in		
Nominal Clad Thickness:	0.16 in.		

Evaluation:

S =	3.29
2a =	0.16
a =	0.08
Y =	1.00
L=	0.71
a/L=	0.11
a/t =	0.8 %

Maximum Allowable a/t: 2.5 %

Interpolation		
	a/L	*a/t %*
min.	0.10	2.50
max.	0.15	2.90

Acceptance Standard: IWB-3512-1

Disposition: SUBSURFACE FLAW ACCEPTABLE

Comments:

This indication was not recorded during the previous examination

This scan is perpendicular to the weld on the vessel shell.

This indication is located within the weld and is indicative of a fabrication anomaly.

Performed by:	Michael G Hacker	Level:	III	Date:	04/10/10
Reviewed by:	Scott Breiholz	Level:	II	Date:	04/20/10

ENCLOSURE A4-3

AREVA

Dominion

Flaw Evaluation Summary Sheet - Nozzle to Shell

Customer: Dominion **Plant:** North Anna **Unit:** 2
Weld: W13 (Outlet) **Flaw No.:** 11 **Outage:** N2R20
Detection Files: R0097_18 46 58
Sizing Files: R0097_18.46.58

Transducer Angle/Mode	Beam Dir.	Flaw Length (Beta)			Flaw Depth		
		Min. (deg.)	Max. (deg.)	Total (deg.)	Min. (in.)	Max. (in)	Total (in.)
45° - S	R-	265.5	271.6	6 1	89.1	89.4	0 3

Estimate of Flaw Length: (Calculate the average of all length values which are considered credible)
Length: 2 575 in. 5 1 deg.
Estimate of Flaw Depth: (Calculate the average of all depth values which are considered credible)
Depth (flaw height): 0.270 in.
Radius of Curvature @ Surface: 77.75 in.
Depth of Flaw at Max Amp.: 4 25 in.
Max. Amp.: 292 %
Scan Position: 266.9 deg.
Nominal Wall Thickness: 9 85 in.
Nominal Clad Thickness: 0 16 in.

Evaluation:
S = 4.25
2a = 0.27
a = 0.13
Y = n·a
L = 2.58
a/L = 0.05
a/t = 1.4 %
Maximum Allowable a/t: 2.2 %
Acceptance Standard: IWB-3512-1
Disposition: SUBSURFACE FLAW ACCEPTABLE

Interpolation		
	a/L	a/t %
min.	0.05	2.20
max.	0.10	2.50

Comments:
This indication was not recorded during the previous examination
This scan is perpendicular to the weld from the nozzle bore.
This indication is located within the weld and is indicative of a fabrication anomaly.

Performed by: Michael G Hacker Level: III Date: 04/08/10

Reviewed by: Scott Breiholz Level: II Date: 04/20/10

ENCLOSURE A4-3

AREVA

Dominion

Data Acquisition Log

Weld Acquisition Data - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

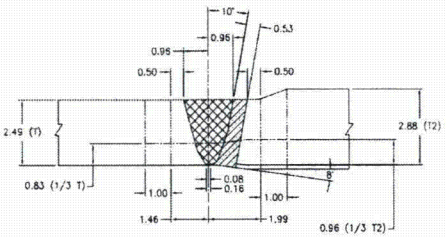
http://ndeserv3/cgi-bin/showWeldSet.cgi

Red Hat, Inc. Red Hat Network Support Shop Products Training

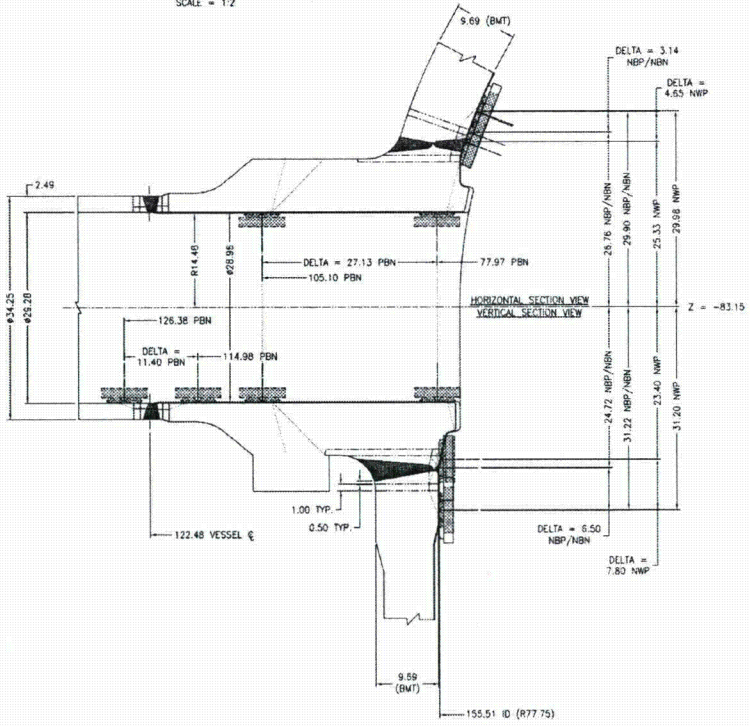
Weld	Sin	IndxIncr	Start(%)	Stop(%)	Channels	Result	Analyst	Select
13	W13_0001.NBP3	0.45	24.7(0)	31.2(99)	3 4 5 6	Data acceptable	HBezlaj	Select R0099_03.14.53
13	W13_0002.NBP3	0.45	26.8(0)	29.9(99)	3 4 5 6	Data acceptable	HBezlaj	Select R0099_03.38.08
13	W13_0003.NBP3	0.45	26.8(0)	29.9(99)	3 4 5 6	Data acceptable	CMartin	Select B0098_22.51.47
13	W13_0004.NBP3	0.45	26.8(0)	29.9(99)	3 4 5 6	Data acceptable	CMartin	Select B0098_22.52.56
13	W13_0005.NBP3	0.45	24.7(0)	31.2(99)	3 4 5 6	Data acceptable	CMartin	Select B0098_23.19.33
13	W13_0006.NBP3	0.45	26.8(0)	29.9(99)	3 4 5 6	Data acceptable	CMartin	Select B0098_23.25.26
13	W13_0007.NBP3	0.45	26.8(0)	29.9(99)	3 4 5 6	Data acceptable	CMartin	Select B0098_23.26.56
13	W13_0008.NBP3	0.45	26.8(0)	29.9(99)	3 4 5 6	Data acceptable	HBezlaj	Select R0099_03.10.21
13	W13_0009.NBN3	0.45	24.7(0)	31.2(99)	3 4 5 6	Data acceptable	HBezlaj	Select R0099_03.17.28
13	W13_0010.NBN3	0.45	26.8(0)	29.9(99)	3 4 5 6	Data acceptable	HBezlaj	Select R0099_03.39.34
13	W13_0011.NBN3	0.45	26.8(0)	29.9(99)	3 4 5 6	Data acceptable	CMartin	Select B0098_22.53.48
13	W13_0012.NBN3	0.45	26.8(0)	29.8(97)	3 4 5 6	Data acceptable	CMartin	Select B0098_22.55.19
13	W13_0013.NBN3	0.45	24.7(0)	31.2(99)	3 4 5 6	Data acceptable	CMartin	Select B0098_23.23.00
13	W13_0014.NBN3	0.45	26.8(0)	29.9(99)	3 4 5 6	Data acceptable	CMartin	Select B0098_23.28.35
13	W13_0015.NBN3	0.45	26.8(0)	29.9(99)	3 4 5 6	Data acceptable	CMartin	Select B0098_23.29.29
13	W13_0016.NBN3	0.45	26.8(0)	29.9(99)	3 4 5 6	Data acceptable	HBezlaj	Select R0099_03.09.13
13	W13_0017.NWP3	0.45	310.0(0)	409.0(99)	3 4 5 6	Data accept. req. sizing	HBezlaj	Select R0099_03.32.20
13	W13_0018.NWP3	0.45	40.0(0)	94.5(99)	3 4 5 6	Data accept. req. sizing	HBezlaj	Select R0099_03.40.37
13	W13_0019.NWP3	0.4	85.0(0)	129.6(99)	3 4 5 6	Data acceptable	CMartin	Select B0098_22.58.24
13	W13_0019.NWP3	0.45	85.0(0)	129.6(99)	3 4 5 6	No valid data	CMartin	Select B0098_22.47.37
13	W13_0020.NWP3	0.45	120.0(0)	139.8(99)	3 4 5 6	Data acceptable	CMartin	Select B0098_22.50.16
13	W13_0021.NWP3	0.45	130.0(0)	229.0(99)	3 4 5 6	Data accept. req. sizing	CMartin	Select B0098_18.27.02
13	W13_0022.NWP3	0.45	220.0(0)	239.8(99)	3 4 5 6	Data acceptable	CMartin	Select B0098_23.30.48
13	W13_0022.NWP3	0.45	220.0(0)	239.8(99)	3 4 5 6	No valid data	CMartin	Select B0098_18.33.35
13	W13_0023.NWP3	0.45	230.0(0)	274.6(99)	3 4 5 6	Data accept. req. sizing	CMartin	Select B0098_18.34.49
13	W13_0024.NWP3	0.45	265.0(0)	319.4(99)	3 4 5 6	Data acceptable	HBezlaj	Select R0099_03.11.37
13	W13_0025.PBN2	0.08	78.0(0)	104.8(99)	1 7	Data acceptable	HBezlaj	Select R0097_18.46.58
13	W13_S117.NWP3	0.15	310.0(0)	409.0(99)	3 4 5 6	Sizing scan acceptable	HBezlaj	Select R0099_04.19.53
13	W13_S118.NWP3	0.15	40.0(0)	94.5(99)	3 4 5 6	Sizing scan acceptable	HBezlaj	Select R0099_04.41.12
13	W13_S121.NWP3	0.15	128.0(0)	203.2(99)	3 4 5 6	Sizing scan acceptable	CMartin	Select B0098_23.04.51
13	W13_S121.NWP3	0.15	130.0(2)	203.3(99)	3 4 5 6	No valid data	CMartin	Select B0098_23.03.33
13	W13_S123.NWP3	0.15	232.0(0)	252.8(99)	3 4 5 6	Sizing scan acceptable	CMartin	Select B0098_23.31.58

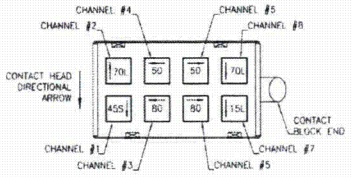
g scan acceptable HBezlaj Select R0099_04.19.53 3 4 5 6 Data

ENCLOSURE A4-3

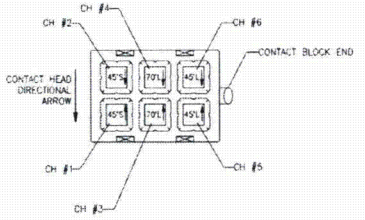


NOZZLE TO PIPE WELD DETAIL
SCALE = 1:2





2x4 UT HEAD CONFIGURATION #2
FOR NOZZLE SCANNING
(AS VIEWED FROM BACK OF ROBOHAND COUPLING)



2x3 UT HEAD CONFIGURATION #3
FOR SHELL SCANNING
(AS VIEWED FROM BACK OF ROBOHAND COUPLING)

NOZZLE TO SHELL CHANNEL FIRING 2x4 HEAD #2		
CHANNEL	STATUS	TRANSDUCER
1	ACTIVE	45°S
2	---	70°L
3	---	80°
4	---	50°
5	---	80°
6	---	50°
7	ACTIVE	15°L
8	---	70°L

NOZZLE TO PIPE CHANNEL FIRING 2x4 HEAD #2		
CHANNEL	STATUS	TRANSDUCER
1	---	45°S
2	ACTIVE	70°L
3	ACTIVE	80°
4	ACTIVE	50°
5	ACTIVE	80°
6	ACTIVE	50°
7	---	15°L
8	ACTIVE	70°L

CHANNEL FIRING 2x3 HEAD #3		
CHANNEL	STATUS	TRANSDUCER
1	---	45°S
2	---	45°S
3	ACTIVE	70°L
4	ACTIVE	70°L
5	ACTIVE	45°L
6	ACTIVE	45°L

SCAN INFO			
	INDEX	INTERVAL	SPEED
PBN (NOZZLE TO SHELL)	0.08"	0.08"	12 IPS MAX
PBN (NOZZLE TO PIPE)	0.05"	0.05"	3 IPS MAX
NBP (NOZZLE TO SHELL)	0.50"	0.08"	18 IPS MAX
NBN (NOZZLE TO SHELL)	0.50"	0.08"	18 IPS MAX
NWP (NOZZLE-TO-SHELL)	0.50"	0.08"	18 IPS MAX

NOZZLE TO SHELL WELD
CLADDING = 0.15" NOM.
CASE N-513-1 = 0.50"
EC = 1.00"
15%T = 1.45"
85%T = 8.24"

LEGEND
BMT = BASE METAL THICKNESS
EC = EXTENDED COVERAGE

TWS ID: W09 335° [25°]
COMPONENT ID: 12050-WMKS-RC-R-1.1/10
ASME ITEM NO.: B3.90
ASME CATEGORY: B-D
FIGURE: 1 (CODE: N-513-1)

TWS ID: W11 95° [265°]
COMPONENT ID: 12050-WMKS-RC-R-1.1/12
ASME ITEM NO.: B3.90
ASME CATEGORY: B-D
FIGURE: 1 (CODE: N-513-1)

TWS ID: W13 215° [145°]
COMPONENT ID: 12050-WMKS-RC-R-1.1/14
ASME ITEM NO.: B3.90
ASME CATEGORY: B-D
FIGURE: 1 (CODE: N-513-1)

TWS ID: W15 335° [25°]
COMPONENT ID: 12050-WMKS-0109F-1/25-RC-404/13
ASME ITEM NO.: R1.11
ASME CATEGORY: R-A
FIGURE: IWB-2500-8(c)

TWS ID: W17 95° [265°]
COMPONENT ID: 12050-WMKS-0109G-1/29-RC-407/25
ASME ITEM NO.: R1.11
ASME CATEGORY: R-A
FIGURE: IWB-2500-8(c)

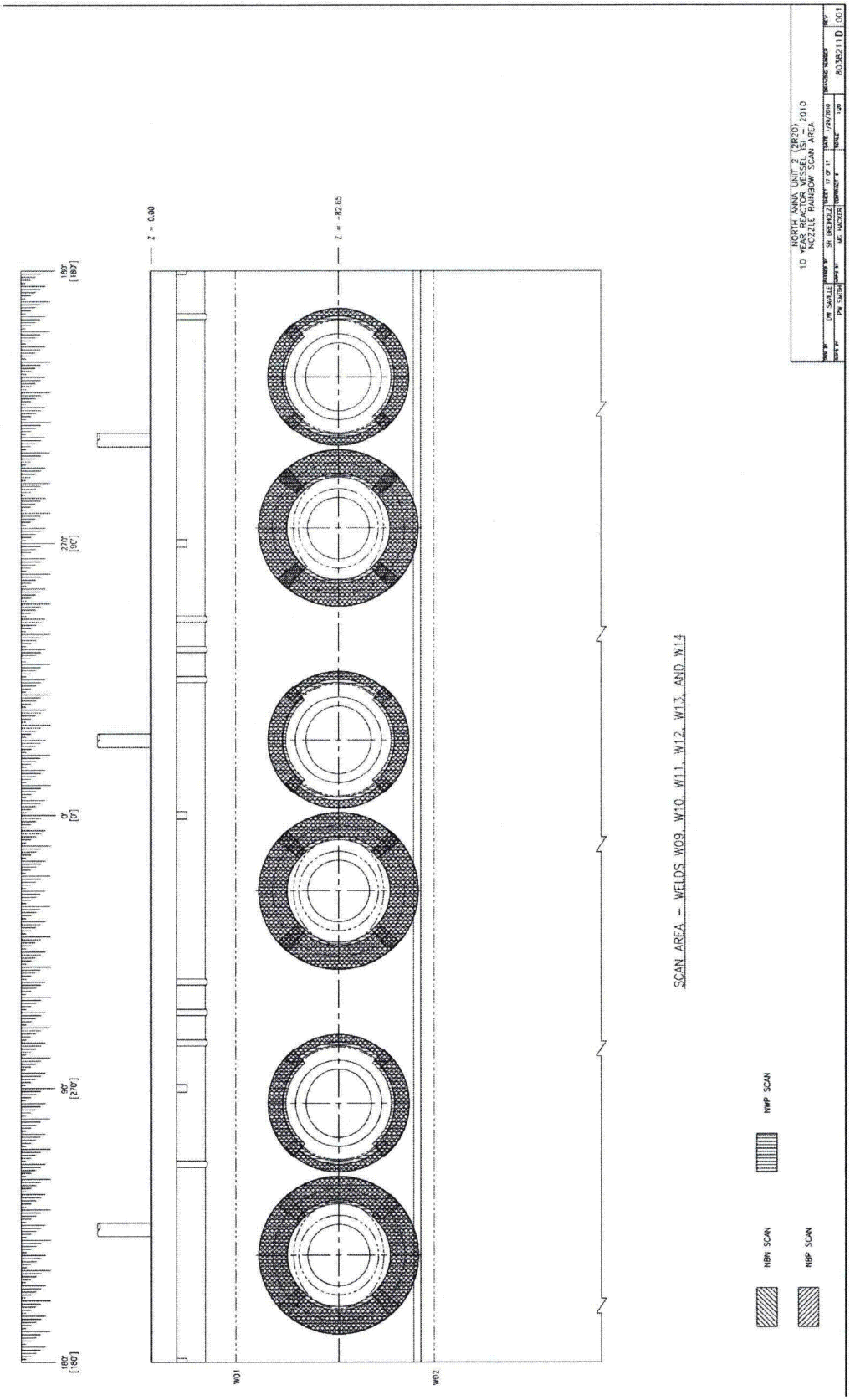
TWS ID: W19 215° [145°]
COMPONENT ID: 12050-WMKS-0109E-1/29-RC-401/1
ASME ITEM NO.: R1.11
ASME CATEGORY: R-A
FIGURE: IWB-2500-8(c)

REFERENCE DRAWINGS: SEE SHEET 1

NORTH ANNA UNIT 2 (2R20)
10 YEAR REACTOR VESSEL ISI - 2010
OUTLET NOZZLE

DRAWN BY	CHECKED BY	SHEET 10 OF 17	DATE 1/29/2010	DRAWING NUMBER	REV
DW SAVILLE	SR BREWBOLE				
DES'D BY	APP'D BY	CONTRACT #	SCALE	80382111D	001
PW SMITH	MD HACKER		1:8		

ENCLOSURE A4-3



A5. Pressurizer Nozzle-To-Vessel Welds

4.A5 IMPRACTICALITY OF COMPLIANCE

In accordance with 10CFR50.55a(g)(5)(iii), relief is requested from the "essentially 100 percent" volumetric examination coverage requirement for the identified Pressurizer Nozzle-To-Vessel Welds. This requirement is considered impractical due to the pressurizer to nozzle weld configuration.

Ultrasonic examination of the following pressurizer nozzle-to-vessel welds are limited in coverage due to the pressurizer to nozzle weld configuration as shown in the attached enclosures. Examination was performed to the extent possible using qualified equipment, and no further coverage is possible with existing technology.

Mark/Weld #	Line #	Scan Coverage %	Enclosure
10	2-RC-E-2	56.6%	A5-1
11	2-RC-E-2	81%	A5-2
12	2-RC-E-2	81%	A5-3
13	2-RC-E-2	81%	A5-4
14	2-RC-E-2	56.7%	A5-5

Weld 10, one of the safety nozzles, was limited to 56.6% due to nozzle geometry associated with the nozzle blend radius. Cladding also prevents an extended V-path. Refer to Enclosure A5-1 for coverage details of the limitations experienced. Second interval relief for welds 10 exam limitations was granted in Relief Request NDE-19.

Welds 11 and 12, also safety nozzles, were limited to 81% coverage due to nozzle geometry associated with the nozzle blend radius and cladding that prevents an extended V-path. Refer to Enclosures A5-2 and A5-3 for coverage details of the limitations experienced. Second interval relief for welds 11 and 12 exam limitations was granted in Relief Request NDE-28.

Weld 13, the relief nozzle, was limited to 81% due to nozzle geometry associated with the nozzle to pressurizer head transition. The angle between the nozzle and the pressurizer head is not perpendicular, limiting search unit manipulation particularly at the intrados angle. Refer to Enclosure A5-4 for coverage details of the limitations experienced. Second interval relief for weld 13 exam limitations was granted in Relief Request NDE-43.

Weld 14, the spray nozzle, is limited to 56.7% due to the weld location in relation to the nozzle. The weld volume and adjacent base metal was examined from the pressurizer side only, with no examination from the nozzle side. Second interval relief for weld 14 exam limitations was granted in Relief Request NDE-20.

All six of the welds in Category B-D, Item No. B3.110, have limited examination coverage. Weld 9 is included in relief request NDE-007 with alternative examination requirements (VT-2 each refueling).

5.A5 BURDEN CAUSED BY COMPLIANCE

Destruction of the component would be necessary to perform 100% of the Code required examination as written in the 1995 ASME Section XI Code with 1996 Addenda and is contrary to the intent of the Code.

6.A5 PROPOSED ALTERNATIVE AND BASIS

It is proposed that the examinations already completed at the reduced coverage be counted as meeting the Code requirements. Alternative components could not be substituted for examination due to the mandatory selection requirements of the Code. The limited volumetric examination should detect any general patterns of degradation that may occur in the areas covered, therefore providing reasonable assurance of the continued structural integrity of the subject weld.

The examinations were performed using standard ASME Section V, Article 4 UT techniques. Manual scanning was performed for these examinations. The configuration of the nozzle to shell weld limits the effective examination of the required examination volume. The nozzle's close proximity to the weld limits scanning due to the nozzle bend radius causing lift-off of the search unit during scanning. The physical limitation of each nozzle limits the effectiveness of alternative or advanced technologies from increasing the examination coverage for this configuration.

Enclosures A5-1, A5-2, A5-3, A5-4, and A5-5 include the complete Ultrasonic Examination Data Records for each Category B-D, Item B3.110, examination included in this request. Each report includes details of the UT scanning parameters, including transducer size, frequency and angle. Also included are coverage plots for each of the examinations showing the nozzle configuration and percent coverage for each individual scan.

The A5 Enclosures include search unit details, wave modality, and insonification angles used for all examinations, including the results of each scan. The examinations were performed with 45 degree shear wave, 60 degree shear wave, and 0 degree longitudinal wave search units (as identified in the reports).

ENCLOSURE A5-1

Dominion
Ultrasonic Examination Data Record

Interval: 3

UTRNO	Station	Unit	Drawing	Line	NDER
1077	NAPS	2	12050-WMKS-RC-E-2	2-RC-E-2	03-201

uplant	CalCheck1	CalCheck2	CalCheck3	WO / DCP	Procedure	Rev
01220					NDE-UT-703	3

Thermometer SerNo: PT-12

Exam Data

UTRNO	RECTAG	mark/weld	Scan dB	Exam Area	Surface Condition	Temp	Partial	Single Side	Results
1077	5953	14	*	ATTACH. 7	GROUND	73	Yes	No	NRI
1077	5949	10	*	ATTACH. 7	GROUND	73	Yes	No	NRI

Comments:

* SCANNING SENSITIVITY FOR THE 0 DEG EXAM WAS 4.5 dB FOR THE BASE METAL EXAM AND 6.0 dB FOR THE WELD METAL EXAM. SCANNING SENSITIVITY FOR THE 45 DEG AND 60 DEG EXAMS WAS REFERENCE +14dB.

UTRNO		Signature	Level	Method	Date	Activity
1077	Examined By:	DAVID TUCKER	II	UT	05/09/2004	11/10/2004

Reviewed By: Level: III Date: 5-17-04

ANII Initial ☐ Final ☑ Date 5/22/04
HSB-CT

ENCLOSURE A5-1

VIRGINIA POWER

PERCENT VOLUME BY SCAN DIRECTION

[redacted]

DRAWING 12050-WMKS-RC-E-2 WELD # 10

ANGLE	SCAN AREA	DIRECTION	SCAN %
0°	Weld + Base Metal	0	59
45°	Weld	2	15
45°	Weld	5	81
45°	Weld	7	63
45°	Weld	8	63
60°	Weld	2	9
60°	Weld	5	89
60°	Weld	7	78
60°	Weld	8	78
45°+60°	Base Metal	2	28
45°+60°	Base Metal	5	85
45°+60°	Base Metal	7	44
45°+60°	Base Metal	8	44
	Total		56.6%

Virginia Power NDE Level III

5-17-04
Date

ANII [signature] Date 5/22/04
Initial ☐ Final ☐
HSB-CT

ENCLOSURE A5-1

Dominion
UT Partial Record

UTRNO	RECTAG	Drawing	Line	Mark/weld	Procedure	Rev
1077	5949	12050-WMKS-RC-E-2	2-RC-E-2	10	NDE-UT-703	3

CalNo	Weld Width	Exam Angle	SU Length	SU Width	SU Nose	Percent
549	2.5"	0	N/A	N/A	N/A	57%

Area Not Examined

SEE SKETCH BELOW FOR VOLUME NOT EXAMINED.

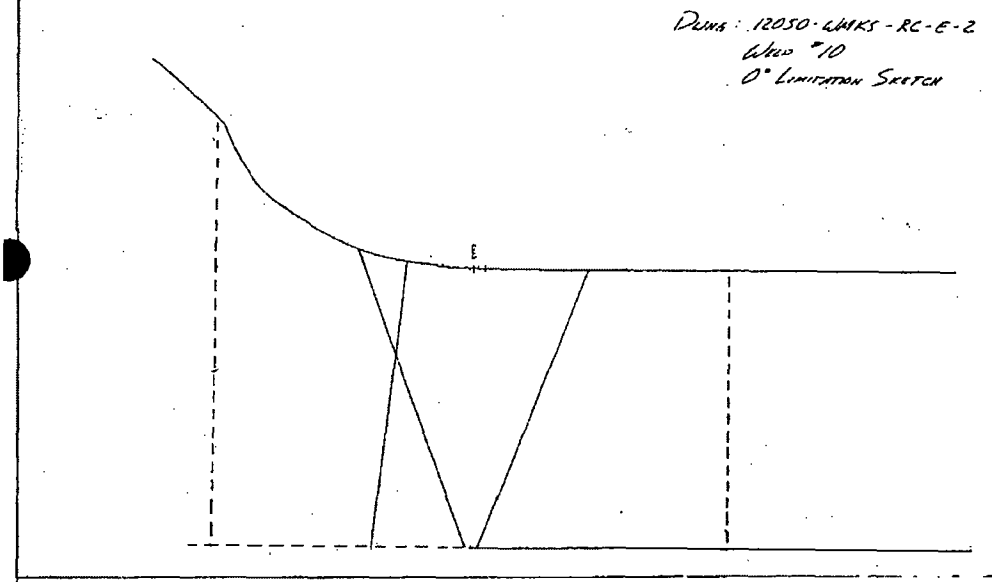
Reason

LIMITED EXAM DUE TO NOZZLE BLEND RADIUS

Comments

56.6% OF THE TOTAL CODE REQUIRED VOLUME COVED. SEE COVERAGE WORKSHEET FOR SPECIFIC SCAN PERCENTAGES.

Cross Section Sketch



Evaluation

The weld volume and adjacent base metal was examined from the Pressurizer side only. Geometry precludes examination from the nozzle side. The weld was examined to the maximum extent possible. See the attached Percent Volume by Scan Direction" sheet for the covered by each scan.

Signature	Level	DATE
David K. Tucker	II	5/9/04

Reviewed By: Level: III Date: 5-17-04

ANII Date 5/22/04
Initial ☐ Final ☑
HSB-CT

ENCLOSURE A5-1

Dominion
UT Partial Record

UTRNO	RECTAG	Drawing	Line	Mark/weld	Procedure	Rev
1077	5949	12050-WMKS-RC-E-2	2-RC-E-2	10	NDE-UT-703	3

CalNo	Weld Width	Exam Angle	SU Length	SU Width	SU Nose	Percent
104	2.5"	45	1.4	1.6	.75	57%

Area Not Examined

SEE SKETCH BELOW FOR VOLUME NOT EXAMINED.

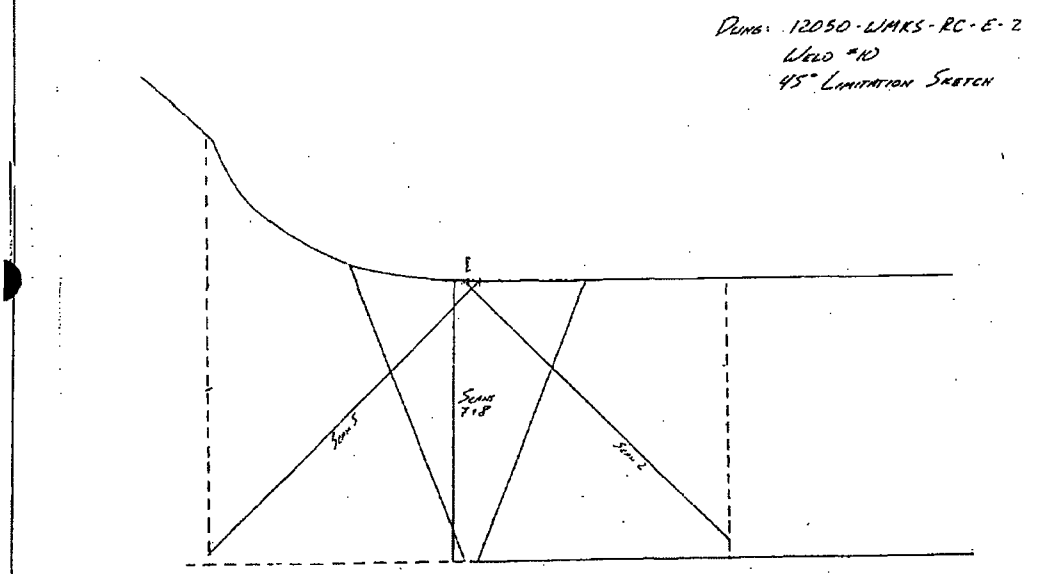
Reason

LIMITED EXAM DUE TO NOZZLE BLEND RADIUS

Comments

56.6% OF THE TOTAL CODE REQUIRED VOLUME COVED. SEE COVERAGE WORKSHEET FOR SPECIFIC SCAN PERCENTAGES.

Cross Section Sketch



Evaluation

The weld volume and adjacent base metal was examined from the Pressurizer side only. Geometry precludes examination from the nozzle side. The weld was examined to the maximum extent possible. See the attached Percent Volume by Scan Direction" sheet for the covered by each scan.

Signature	Level	DATE
David K. Tucker	II	5/9/04

Reviewed By: Level: Date: 5-17-04

ANII Date 5/22/04
Initial ☐ Final ☑
HSB-CT

ENCLOSURE A5-1

Dominion
UT Partial Record

UTRNO	RECTAG	Drawing	Line	Mark/weld	Procedure	Rev
1077	5949	12050-WMKS-RC-E-2	2-RC-E-2	10	NDE-UT-703	3

CalNo	Weld Width	Exam Angle	SU Length	SU Width	SU Nose	Percent
103	2.5"	60	1.5	1.55	.65	57 %

Area Not Examined

SEE SKETCH BELOW FOR VOLUME NOT EXAMINED.

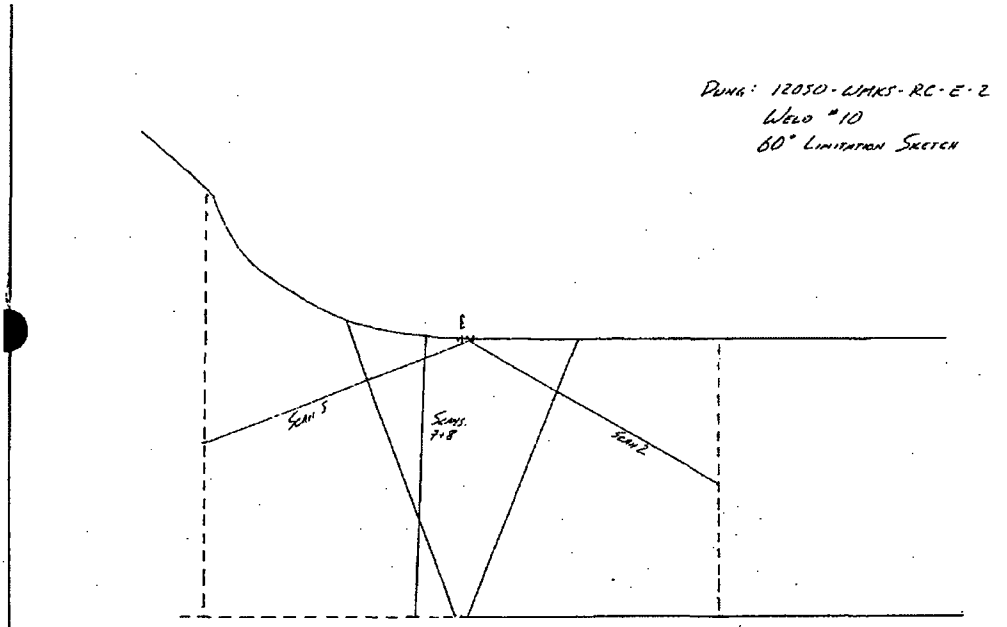
Reason

LIMITED EXAM DUE TO NOZZLE BLEND RADIUS

Comments

56.6% OF THE TOTAL CODE REQUIRED VOLUME COVED. SEE COVERAGE WORKSHEET FOR SPECIFIC SCAN PERCENTAGES.

Cross Section Sketch



Evaluation

The weld volume and adjacent base metal was examined from the Pressurizer side only. Geometry precludes examination from the nozzle side. The weld was examined to the maximum extent possible. See the attached Percent Volume by Scan Direction" sheet for the covered by each scan.

Signature	Level	DATE
David K. Tucker	II	5/9/04

Reviewed By: Level III Date: 5-17-04

ANII Initial ☐ Final ☑ Date 5/22/04
HSB-CT

ENCLOSURE A5-2

Dominion
Ultrasonic Examination Data Record

Interval: 3

UTRNO	Station	Unit	Drawing	Line	NDER
1293	NAPS	2	12050-WMKS-RC-E-2	2-RC-E-2	05-006

Couplant	CalCheck1	CalCheck2	CalCheck3	WO / DCP	Procedure	Rev
01220					NDE-UT-703	3

Thermometer SerNo: 1071BGCY

Exam Data

UTRNO	RECTAG	mark/weld	Scan dB	Exam Area	Surface Condition	Temp	Partial	Single Side	Results
1293	5971	3	*	ATT. 2	GROUND	102	No	No	NRI
1293	5978	7	*	ATT. 1B	GROUND	102	Yes	No	NRI
1293	5950	11	*	ATT. 7	GROUND	102	Yes	No	NRI
1293	5952	13	*	ATT. 7	GROUND	102	Yes	No	NRI
1293	5951	12	*	ATT. 7	GROUND	102	Yes	No	NRI

Comments:

SEE ATTACHED PARTIAL SHEETS. * Scanning with the 0 deg.,45deg. And 60deg. were all performed at 12dB over reference levels.

UTRNO		Signature	Level	Method	Date	Activity
1293	Examined By:	HARRY E. POSTER	II	UT	10/06/2005	04/06/2006
1293	Evaluated By:	NORMAN L. CAGE	II	UT	10/06/2005	04/06/2006

Reviewed By: Daniel Jens Level: III Date: 10/18/05

ANII MN Date 10/22/05
Initial ☐ Final ☐
HSB-CT

ENCLOSURE A5-2

Dominion

VESSEL - PERCENT VOLUME BY SCAN DIRECTION

DRAWING NUMBER 12050-WMKS-RC-E-2 *MARK NUMBER* 11

ANGLE	*SCAN AREA*	*DIRECTION*	*SCAN %*
45°	WELD METAL	UP (2)	96.3 %
45°	WELD METAL	DOWN (5)	40 %
45°	WELD METAL	CW	100 %
45°	WELD METAL	CCW	100 %
45°	BASE METAL	UP (2)	92.4 %
45°	BASE METAL	DOWN (5)	58.3 %
45°	BASE METAL	CW	86.7 %
45°	BASE METAL	CCW	86.7 %
60°	WELD METAL	UP (2)	96.5 %
60°	WELD METAL	DOWN (5)	26.7 %
60°	WELD METAL	CW	100 %
60°	WELD METAL	CCW	100 %
60°	BASE METAL	UP (2)	88.4 %
60°	BASE METAL	DOWN (5)	52.3 %
60°	BASE METAL	CW	86.7 %
60°	BASE METAL	CCW	86.7 %
0°	WELD & BASE METAL	0	86.7 %
		TOTAL PERCENT	*81.4%*

COMMENTS:

Daniel L Jensen

DOMINION NDE LEVEL III
Daniel L Jensen

October 18, 2005
DATE

ANII [signature] Date 10/26/05
Initial ☐ Final ☑
HSB-CT

ENCLOSURE A5-2

Dominion
UT Partial Record

UTRNO	RECTAG	Drawing	Line	Mark/weld	Procedure	Rev
1293	5950	12050-WMKS-RC-E-2	2-RC-E-2	11	NDE-UT-703	3

XDucer Serial	Weld Width	Exam Angle	SU Length	SU Width	SU Nose	Percent
~~M14204SP~~	1.7	0	N/A	N/A	N/A	87%%

Area Not Examined

See drawing below.

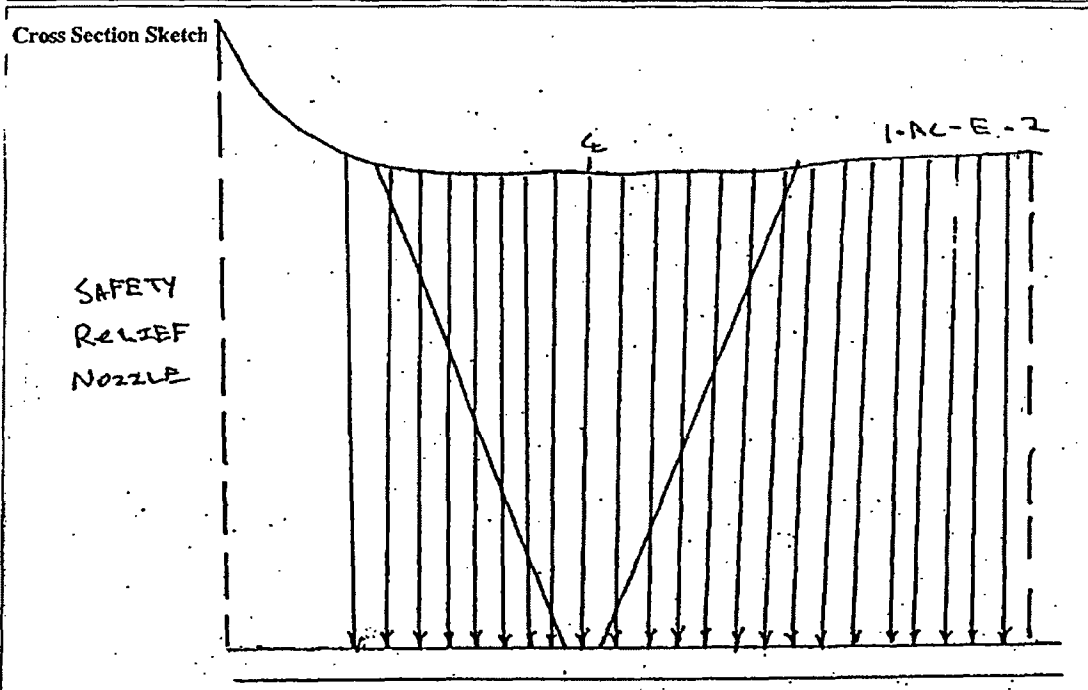
Reason

Due to Nozzle to Pressurizer configuration.

Comments

Scanned on Pressurizer only. See percent volume by scan direction attachment.

Cross Section Sketch



Evaluation

Due to the Pressurizer to Nozzle weld configuration, 100% of the required exam volume was unable to be achieved. The weld was examined to the maximum extent possible using the 0, 45 and 60 degree search units. No further examinations are required.

Signature	Level	DATE
NORMAN L CAGE	II	10/06/2005

Reviewed By: Level: III Date: 10/19/05

ANII Date 10/22/05
Initial ☐ Final ☒

ENCLOSURE A5-2

Dominion
UT Partial Record

UTRNO	RECTAG	Drawing	Line	Mark/weld	Procedure	Rev
1293	5950	12050-WMKS-RC-E-2	2-RC-E-2	11	NDE-UT-703	3

XDucer Serial	Weld Width	Exam Angle	SU Length	SU Width	SU Nose	Percent
L21123	2.7"	45	N/A	N/A	N/A	82%%

Area Not Examined

SEE DRAWING BELOW

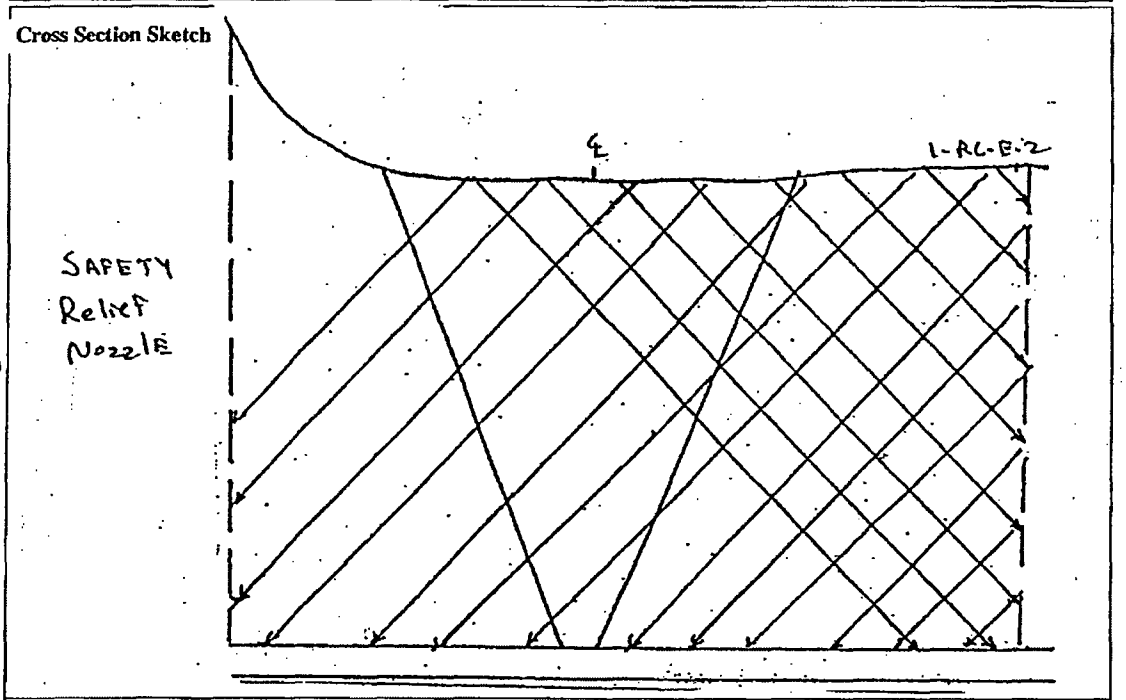
Reason

NOZZLE TO PRESSURIZER CONFIGURATION

Comments

SCANNED ON PRESSURIZER ONLY. SEE PERCENT VOLUME BY SCAN DIRECTION ATTACHMENT.

Cross Section Sketch



Evaluation

DUE TO THE PRESSURIZER TO NOZZLE WELD CONFIGURATION, 100% OF THE REQUIRED VOLUME WAS UNABLE TO BE ACHIEVED. THE WELD WAS EXAMINED TO THE MAXIMUM EXTENT POSSIBLE USING THE 0, 45, AND 60 DEGREE SEARCH UNITS. NO FURTHER EXAMINATIONS ARE REQUIRED.

Signature	Level	DATE
NORMAN L.CAGE	II	10/06/2005

Reviewed By: Daniel Jena Level: III Date: 10/19/05

ANII [signature] Date 10/22/05
Initial ☐ Final ☒
HSB-CT

ENCLOSURE A5-2

Dominion
UT Partial Record

UTRNO	RECTAG	Drawing	Line	Mark/weld	Procedure	Rev
1293	5950	12050-WMKS-RC-E-2	2-RC-E-2	11	NDE-UT-703	3

XDucer Serial	Weld Width	Exam Angle	SU Length	SU Width	SU Nose	Percent
L21122	1.7"	60	2.3"	1.6"	1.2"	80%

Area Not Examined

See drawing below.

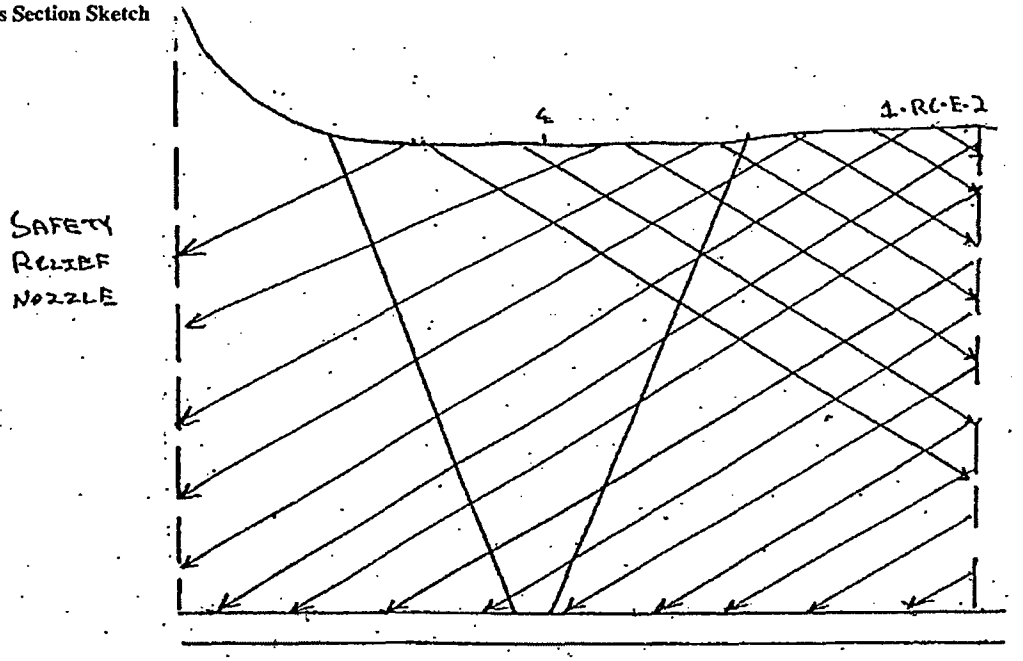
Reason

Due to Nozzle to Pressurizer configuration.

Comments

Scanned on Pressurizer only. See percent volume by scan direction attachment.

Cross Section Sketch



Evaluation

Due to the Pressurizer to Nozzle weld configuration, 100% of the required exam volume was unable to be achieved. The weld was examined to the maximum extent possible using the 0, 45 and 60 degree search units. No further examinations are required.

Signature	Level	DATE
NORMAN L CAGE	II	10/06/2005

Reviewed By: Daniel L Jens Level: III Date: 10/19/05

ANII MK Date 10/22/05
Initial ☐ Final ☒

N2.B3.110.002 .003 & .004

Interval: 3

Dominion Power Ultrasonic Calibration Data Record

UTRNO	Station	Unit	Procedure	Rev	Sizing Procedure	Rev	Couplant	CalBlock1	CBLKTKS	CBLKTemp
1293	NAPS	2	NDE-UT-703	3	NDE-UT-N/A		01220	VGB-21	4.0"TX15.0"LX4.0"W	98

CLbType	CLbLngth	#Connect	Simulator	AmpSwp	CalDate	CaLIn	CaLOut	CalBlock2	CBLKTKS2	CBLkTemp2
RG-58	12'	0			10/04/2005	19:30	4:30			

Thermometer SerNo 1071BGCY

Instrument Settings

UTRNO	MemLoc	XDUC SER	REJECT	dB	REF dB	RANGE	VELOCITY	ZERO	DELAY	FREQ	DISP MODE	PRR/PRF	PULSER	FILTER	ENERGY	DAMPING
ID																
1293	5	M14204SP	0	0	5	4.793	0.2230	0.533	N/A	AUTO	FULL WAVE	AUTO	N/A	STD	HIGH	400
1555																
1293	3	L21123	0	0	35.4	7.533	0.1270	10.31	N/A	AUTO	FULL WAVE	AUTO	N/A	STD	HIGH	400
1556																
1293	4	L21122	0	0	53.4	10.13	0.1270	18.88	N/A	AUTO	FULL WAVE	AUTO	N/A	STD	HIGH	400
1557																

Xducer Data

UTRNO	ID	SerialNo	Manuf	Model	Size	Frequency	Nom Angle	Measured Angle	Wave Mode	Shape	No. Elements
				Wedge Type		Wedge Length	Wedge Width	Wedge Nose			
1293	1460	L21123	KB-AEROTECH	GAMMA	1.0"	2.25 MHZ	0	0	LONG.	RD	1
				N/A		N/A	N/A	N/A			
1293	1461	L21123	KB-AEROTECH	GAMMA	1.0"	2.25 MHZ	45	45	SHEAR	RD	1
				MSWQC		2.1"	1.6"	1.2"			
1293	1462	L21122	KB-AEROTECH	GAMMA	1.0"	2.25 MHZ	60	60	SHEAR	RD	1
				MSWQC		1.3"	1.6"	1.2"			

Vertical Beam Spread

UTRNO	ID	1/4Depth	1/2Depth	3/4Depth	1/4SPF	1/4SPM	1/4SPB	1/2SPF	1/2SPM	1/2SPB	3/4SPF	3/4SPM	3/4SPB	Beam Spread	Angle
1293	1556	1	2	3	0.65	0.9	1.45	1.83	2.15	2.38	2.93	3.1	3.38	20.85560837095	45.939190945736
1293	1557	1	2	3	1.45	1.8	2.1	3.25	3.65	4.05	4.8	5.35	5.63	23.43008981892	60.718572938941

Instrument

UTRNO	SHAC	Inst. Serial	Inst. Model	Inst. Manuf	ID
1293	199	98318711	Epoch III	Panametrics	1557
1293	199	98318711	Epoch III	Panametrics	1556
1293	199	98318711	Epoch III	Panametrics	1555

Calibration Data

UTRNO	Blk	XDID	IS ID	Direction	CaLType	Point	Reflector	Position	Amplitude	Sweep
1293	1	1460	1555	0	DET	1	1/4 T	N/A	80%	2.0
1293	1	1460	1555	0	DET	2	1/2 T	N/A	70%	4.0
1293	1	1460	1555	0	DET	3	3/4 T	N/A	50%	6
1293	1	1461	1556	AX-CIRC	DET	1	1/4 T	N/A	80%	2

UTRNO		Signature	Level	Method	Date	Activity
1293	Calibrated By	HARRY E. POSTER	II	UT	10/06/2005	05/02/2006
1293	Calibrated By	NORMAN L. CAGE	II	UT	10/06/2005	09/26/2006

10/18/05

ANII Initial ☐ Date 10/22/05 Final ☒

HSB-CT

ENCLOSURE A5-2

Serial No. 11-472
Docket No. 50-339
NAPS Unit 2 3rd Interval Limited Exams
Page 81 of 383

Interval: 3

Dominion Power Ultrasonic Calibration Data Record

1293	1	1461	1556	AX-CIRC	DET	2	1/2 T	N/A	80%	4
1293	1	1461	1556	AX-CIRC	DET	3	3/4 T	N/A	65%	6
1293	1	1461	1556	AX-CIRC	DET	4	1 T	N/A	35%	8
1293	1	1462	1557	AX-CIRC	DET	1	1/4 T	N/A	60%	2
1293	1	1462	1557	AX-CIRC	DET	2	1/2 T	N/A	80%	4
1293	1	1462	1557	AX-CIRC	DET	3	3/4 T	N/A	60%	6
1293	1	1462	1557	AX-CIRC	DET	4	1 T	N/A	25%	8.2

UTRNO		Signature	Level	Method	Date	Activity
1293	Calibrated By	HARRY E. POSTER	II	UT	10/06/2005	05/02/2006
1293	Calibrated By	NORMAN L. CAGE	II	UT	10/06/2005	09/26/2006

10/18/05

ANII Initial ☐ Date 10/22/05 Final ☒ HSB-CT

ENCLOSURE A5-2

Serial No. 11-472
Docket No. 50-339
NAPS Unit 2 3rd interval Limited Exams
Page 82 of 383

ENCLOSURE A5-3

Dominion
Ultrasonic Examination Data Record

Interval: 3

UTRNO	Station	Unit	Drawing	Line	NDER
1293	NAPS	2	12050-WMKS-RC-E-2	2-RC-E-2	05-006

Couplant	CalCheck1	CalCheck2	CalCheck3	WO / DCP	Procedure	Rev
01220					NDE-UT-703	3

Thermometer SerNo: 1071BGCY

Exam Data

UTRNO	RECTAG	mark/weld	Scan dB	Exam Area	Surface Condition	Temp	Partial	Single Side	Results
1293	5971	3	*	ATT. 2	GROUND	102	No	No	NRI
1293	5978	7	*	ATT. 1B	GROUND	102	Yes	No	NRI
1293	5950	11	*	ATT. 7	GROUND	102	Yes	No	NRI
1293	5952	13	*	ATT. 7	GROUND	102	Yes	No	NRI
1293	5951	12	*	ATT. 7	GROUND	102	Yes	No	NRI

Comments:

SEE ATTACHED PARTIAL SHEETS. * Scanning with the 0 deg.,45deg. And 60deg. were all performed at 12dB over reference levels.

UTRNO		Signature	Level	Method	Date	Activity
1293	Examined By:	HARRY E. POSTER	II	UT	10/06/2005	04/06/2006
1293	Evaluated By:	NORMAN L. CAGE	II	UT	10/06/2005	04/06/2006

Reviewed By: Daniel Jens Level: III Date: 10/18/05

ANII MN Date 10/22/05
Initial ☐ Final ☐
HSB-CT

ENCLOSURE A5-3

Dominion

VESSEL - PERCENT VOLUME BY SCAN DIRECTION

DRAWING NUMBER 12050-WMKS-RC-E-2 *MARK NUMBER 12*

ANGLE	*SCAN AREA*	*DIRECTION*	*SCAN %*
45°	WELD METAL	UP (2)	96.3 %
45°	WELD METAL	DOWN (5)	40 %
45°	WELD METAL	CW	100 %
45°	WELD METAL	CCW	100 %
45°	BASE METAL	UP (2)	92.4 %
45°	BASE METAL	DOWN (5)	58.3 %
45°	BASE METAL	CW	86.7 %
45°	BASE METAL	CCW	86.7 %
60°	WELD METAL	UP (2)	96.5 %
60°	WELD METAL	DOWN (5)	26.7 %
60°	WELD METAL	CW	100 %
60°	WELD METAL	CCW	100 %
60°	BASE METAL	UP (2)	88.4 %
60°	BASE METAL	DOWN (5)	52.3 %
60°	BASE METAL	CW	86.7 %
60°	BASE METAL	CCW	86.7 %
0°	WELD & BASE METAL	0	86.7 %
		TOTAL PERCENT	*81.4%*

COMMENTS:

DOMINION NDE LEVEL III
Daniel L Jensen

October 18, 2005
DATE

ANII _____ Date 10/22/05
Initial ☐ Final ☐
HSB-CT

ENCLOSURE A5-3

Dominion
UT Partial Record

UTRNO	RECTAG	Drawing	Line	Mark/weld	Procedure	Rev
1293	5951	12050-WMKS-RC-E-2	2-RC-E-2	12	NDE-UT-703	3

XDucer Serial	Weld Width	Exam Angle	SU Length	SU Width	SU Nose	Percent
M14204SP	1.7	0	N/A	N/A	N/A	87%%

Area Not Examined

See drawing below.

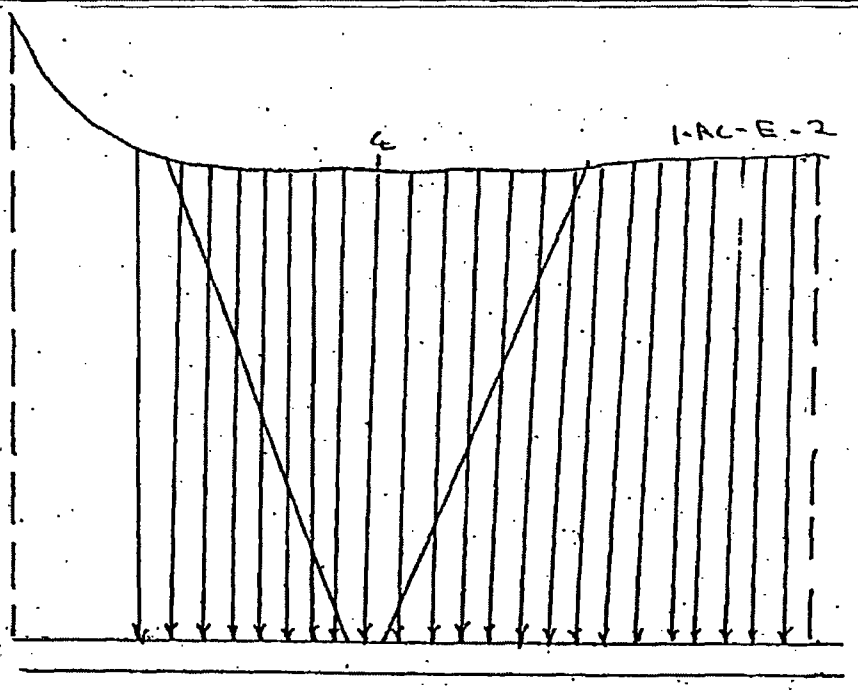
Reason

Due to nozzle to pressurizer configuration.

Comments

Scanned on pressurizer only. See percent volume by scan direction attachment.

Cross Section Sketch



Evaluation

Due to the pressurizer to nozzle weld configuration, 100% of the required exam volume was unable to be achieved. The weld was examined to the maximum extent possible using the 0, 45, and 60 degree search units. No further examinations are required.

Signature	Level	DATE
NORMAN L CAGE	II	10/06/2005

Reviewed By: Daniel L Jones Level: III Date: 10/19/05

ANII MK Date 10/22/05
Initial ☐ Final ☑

ENCLOSURE A5-3

Dominion
UT Partial Record

UTRNO	RECTAG	Drawing	Line	Mark/weld	Procedure	Rev
1293	5951	12050-WMKS-RC-E-2	2-RC-E-2	12	NDE-UT-703	3

XDucer Serial	Weld Width	Exam Angle	SU Length	SU Width	SU Nose	Percent
L21123	1.7"	45	2.1	1.6	1.2	82%

Area Not Examined

See drawing below.

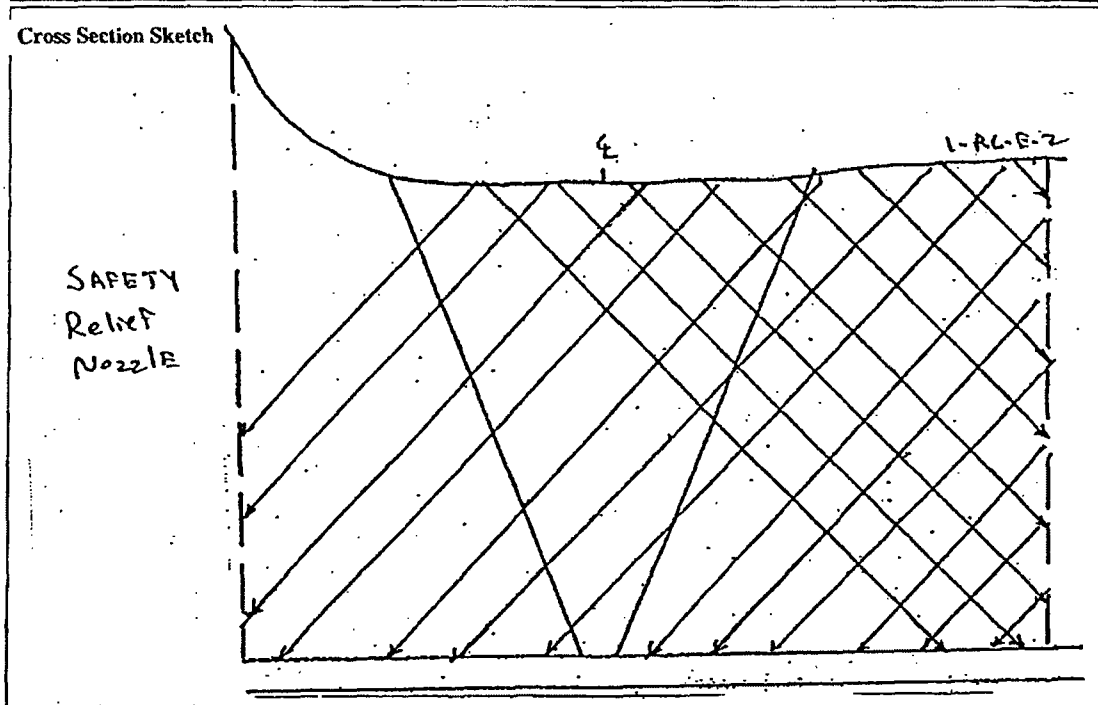
Reason

Due to nozzle to pressurizer configuration.

Comments

Scanned on pressurizer only. See percent volume by scan direction attachment.

Cross Section Sketch



Evaluation

Due to the Pressurizer to nozzle configuration, 100% of the required exam volume was unable to be achieved. The weld was examined to the maximum extent possible using the 0, 45 and 60 degree search units. No further examinations are required.

Signature	Level	DATE
NORMAN L CAGE	II	10/06/2005

Reviewed By: Daniel L Jones Level: III Date: 10/19/05

ANII [signature] Date 10/20/05
Initial ☐ Final ☒

ENCLOSURE A5-3

Dominion
UT Partial Record

UTRNO	RECTAG	Drawing	Line	Mark/weld	Procedure	Rev
1293	5951	12050-WMKS-RC-E-2	2-RC-E-2	12	NDE-UT-703	3

XDucer Serial	Weld Width	Exam Angle	SU Length	SU Width	SU Nose	Percent
~~L21122~~	~~1.7"~~	60	2.25"	1.6"	1.2"	78%

Area Not Examined

See drawing below.

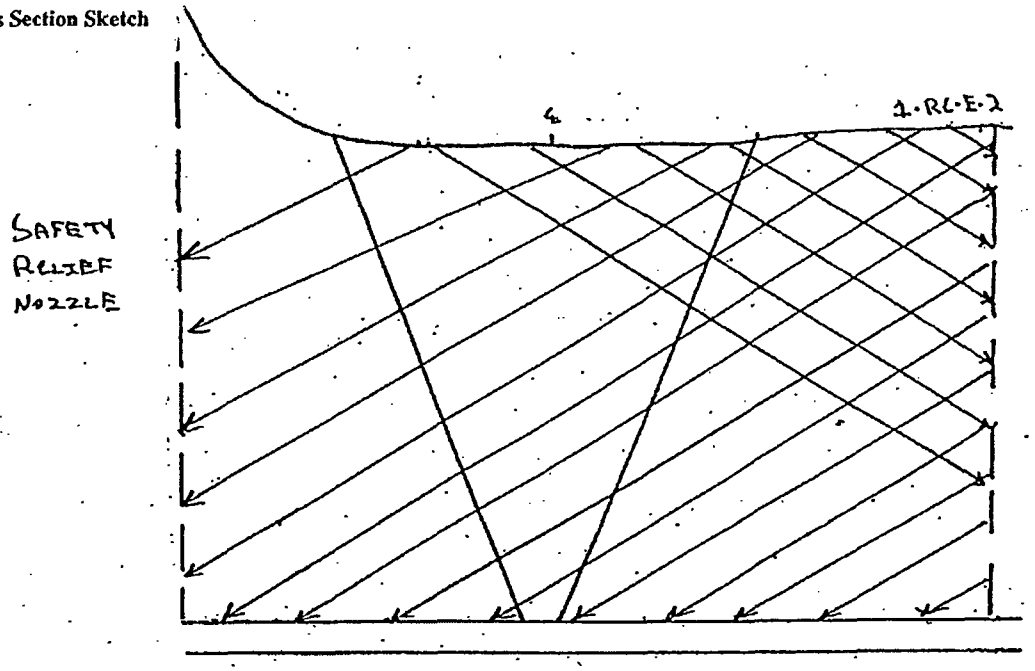
Reason

Due to nozzle to pressurizer configuration.

Comments

Scanned on pressurizer only. See percent volume by scan direction attachment.

Cross Section Sketch



Evaluation

Due to the Pressurizer to nozzle configuration, 100% of the required exam volume was unable to be achieved. The weld was examined to the maximum extent possible using the 0, 45 and 60 degree search units. No further examinations are required.

Signature	Level	DATE
NORMAN L CAGE	II	10/06/2005

Reviewed By: Daniel L Jones Level: ~~III~~ Date: 10/19/05

ANII MN Date 10/22/05
Initial ☐ Final ☐

ENCLOSURE A5-4

Dominion
Ultrasonic Examination Data Record

Interval: 3

UTRNO	Station	Unit	Drawing	Line	NDER
1293	NAPS	2	12050-WMKS-RC-E-2	2-RC-E-2	05-006

Couplant	CalCheck1	CalCheck2	CalCheck3	WO / DCP	Procedure	Rev
01220					NDE-UT-703	3

Thermometer SerNo: 1071BGCY

Exam Data

UTRNO	RECTAG	mark/weld	Scan dB	Exam Area	Surface Condition	Temp	Partial	Single Side	Results
1293	5971	3	*	ATT. 2	GROUND	102	No	No	NRI
1293	5978	7	*	ATT. 1B	GROUND	102	Yes	No	NRI
1293	5950	11	*	ATT. 7	GROUND	102	Yes	No	NRI
1293	5952	13	*	ATT. 7	GROUND	102	Yes	No	NRI
1293	5951	12	*	ATT. 7	GROUND	102	Yes	No	NRI

Comments:

SEE ATTACHED PARTIAL SHEETS. * Scanning with the 0 deg.,45deg. And 60deg. were all performed at 12dB over reference levels.

UTRNO		Signature	Level	Method	Date	Activity
1293	Examined By:	HARRY E. POSTER	II	UT	10/06/2005	04/06/2006
1293	Evaluated By:	NORMAN L. CAGE	II	UT	10/06/2005	04/06/2006

Reviewed By: Daniel D Jens Level: III Date: 10/18/05

ANII MN Date 10/22/05
Initial ☐ Final ☐
HSB-CT

ENCLOSURE A5-4

Dominion

VESSEL - PERCENT VOLUME BY SCAN DIRECTION

DRAWING NUMBER 12050-WMKS-RC-E-2 *MARK NUMBER* 13

ANGLE	*SCAN AREA*	*DIRECTION*	*SCAN %*
45°	WELD METAL	UP (2)	96.3 %
45°	WELD METAL	DOWN (5)	40 %
45°	WELD METAL	CW	100 %
45°	WELD METAL	CCW	100 %
45°	BASE METAL	UP (2)	92.4 %
45°	BASE METAL	DOWN (5)	58.3 %
45°	BASE METAL	CW	86.7 %
45°	BASE METAL	CCW	86.7 %
60°	WELD METAL	UP (2)	96.5 %
60°	WELD METAL	DOWN (5)	26.7 %
60°	WELD METAL	CW	100 %
60°	WELD METAL	CCW	100 %
60°	BASE METAL	UP (2)	88.4 %
60°	BASE METAL	DOWN (5)	52.3 %
60°	BASE METAL	CW	86.7 %
60°	BASE METAL	CCW	86.7 %
0°	WELD & BASE METAL	0	86.7 %
		TOTAL PERCENT	*81.4%*

COMMENTS:

DOMINION NDE LEVEL III October 18, 2005 *DATE*
Daniel L Jensen

ANII _____ Date 10/22/05
Initial ☐ Final ☒
HSB-CT

ENCLOSURE A5-4

Dominion
UT Partial Record

UTRNO	RECTAG	Drawing	Line	Mark/weld	Procedure	Rev
1293	5952	12050-WMKS-RC-E-2	2-RC-E-2	13	NDE-UT-703	3

XDucer Serial	Weld Width	Exam Angle	SU Length	SU Width	SU Nose	Percent
M14204SP	1.7"	0	N/A	N/A	N/A	87%

Area Not Examined

See drawing below

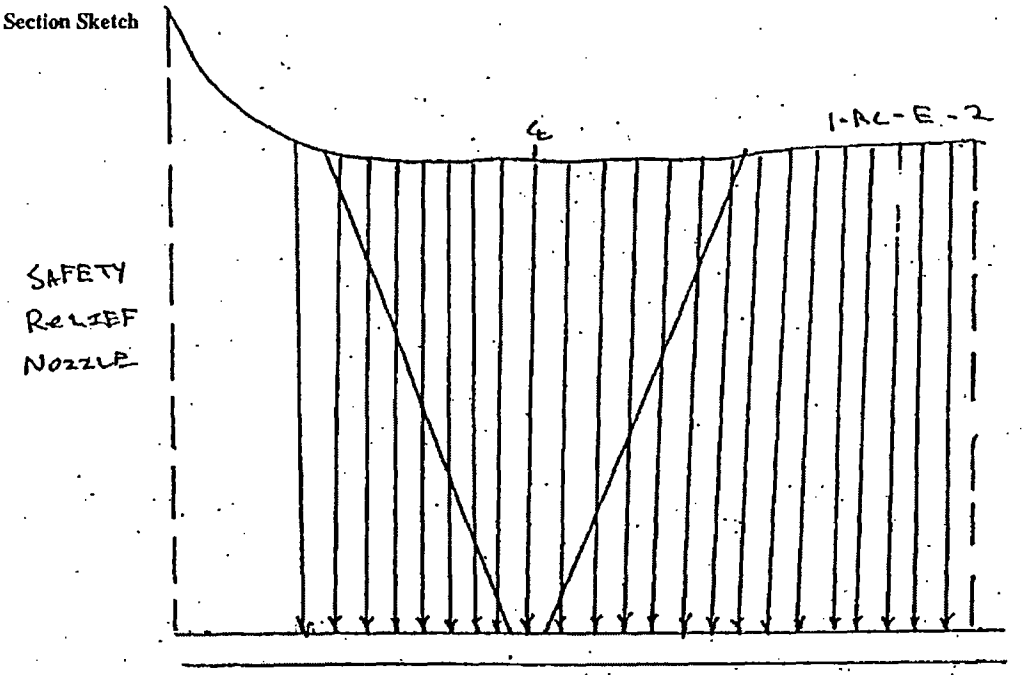
Reason

Due to Nozzle to Pressurizer configuration.

Comments

Scanned on Pressurizer only. See percent volume by scan direction attachment.

Cross Section Sketch



Evaluation

Due to the Pressurizer to Nozzle weld configuration, 100% of the required exam volume was unable to be achieved. The weld was examined to the maximum extent possible using the 0, 45 and 60 degree search units. No further examinations are required.

Signature	Level	DATE
NORMAN L.CAGE	II	10/06/2005

Reviewed By: Daniel L Jones Level: III Date: 10/19/05

ANII [signature] Date 10/22/05
Initial ☐ Final ☐

ENCLOSURE A5-4

Dominion
UT Partial Record

UTRNO	RECTAG	Drawing	Line	Mark/weld	Procedure	Rev
1293	5952	12050-WMKS-RC-E-2	2-RC-E-2	13	NDE-UT-703	3

XDucer Serial	Weld Width	Exam Angle	SU Length	SU Width	SU Nose	Percent
L21123	1.7	45	2.1"	1.6"	1.2"	82%

Area Not Examined

See drawing below

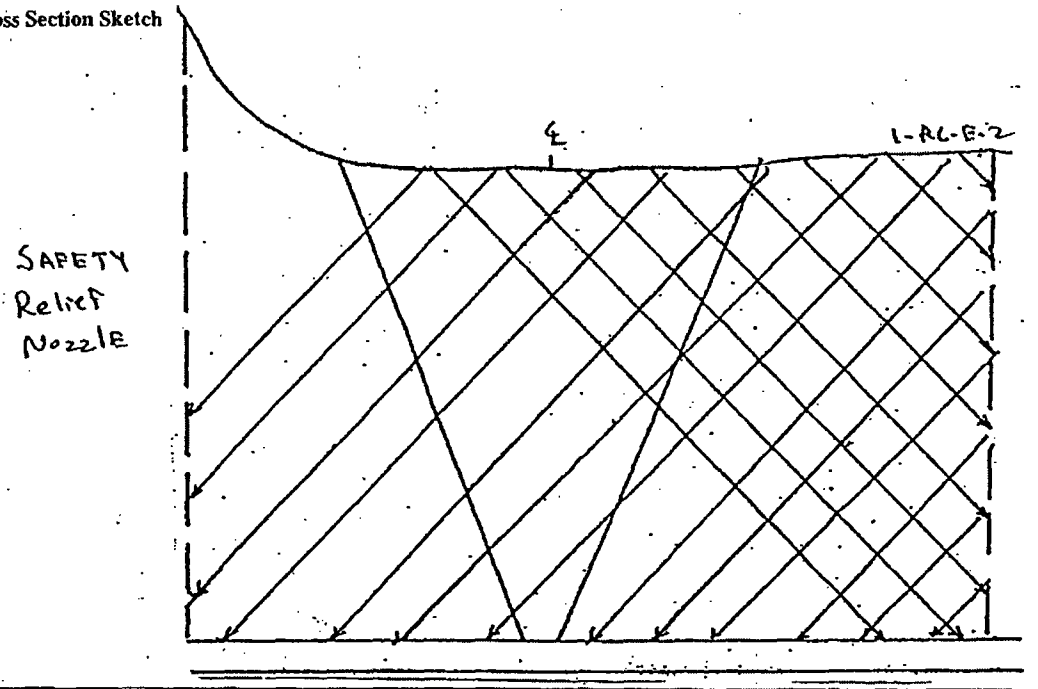
Reason

Due to Nozzle to Pressurizer configuration.

Comments

Scanned on Pressurizer only. See percent volume by scan direction attachment.

Cross Section Sketch



Evaluation

Due to the Pressurizer to Nozzle weld configuration, 100% of the required exam volume was unable to be achieved. The weld was examined to the maximum extent possible using the 0, 45 and 60 degree search units. No further examinations are required.

Signature	Level	DATE
NORMAN L. CAGE	II	10/06/2005

Reviewed By: _____ Level: ~~tst~~ Date: 10/19/05

ANII Initial ☐ Date 10/22/05 Final ☒

ENCLOSURE A5-4

Dominion
UT Partial Record

UTRNO	RECTAG	Drawing	Line	Mark/weld	Procedure	Rev
1293	5952	12050-WMKS-RC-E-2	2-RC-B-2	13	NDE-UT-703	3

XDucer Serial	Weld Width	Exam Angle	SU Length	SU Width	SU Nose	Percent
L21122	1.7	60	2.3"	1.6"	1.2"	78%

Area Not Examined

See drawing below

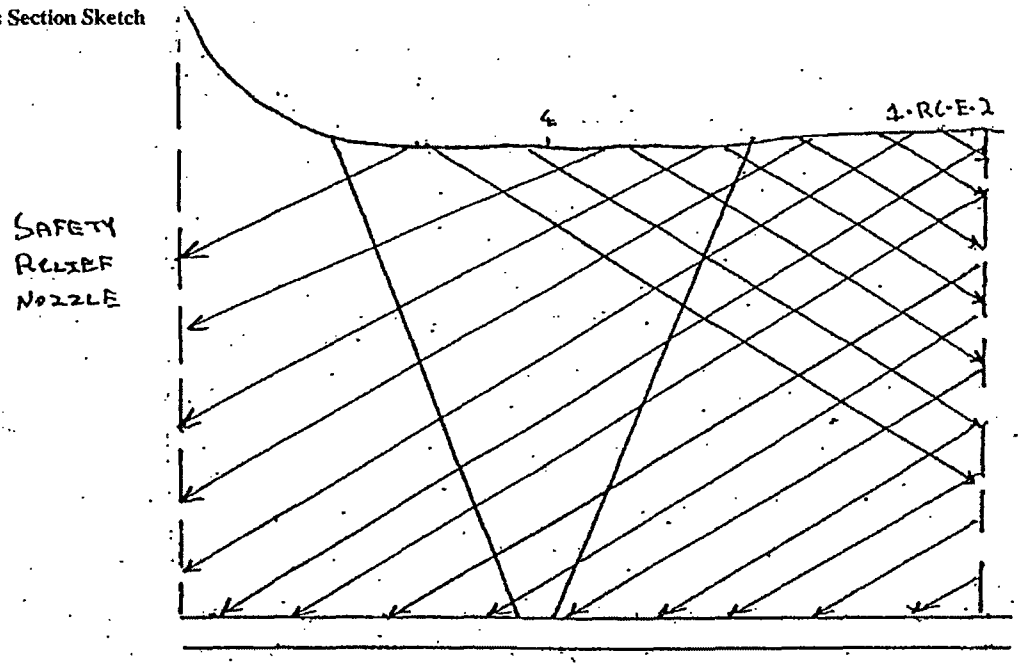
Reason

Due to Nozzle to Pressurizer configuration.

Comments

Scanned on Pressurizer only. See percent volume by scan direction attachment.

Cross Section Sketch



Evaluation

Due to the Pressurizer to Nozzle weld configuration, 100% of the required exam volume was unable to be achieved. The weld was examined to the maximum extent possible using the 0, 45 and 60 degree search units. No further examinations are required.

Signature	Level	DATE
NORMAN L.CAGE	II	10/06/2005

Reviewed By: Daniel L Jens Level: III Date: 10/19/05

ANII: [initials] Date 10/20/05
Initial ☐ Final ☑

ENCLOSURE A5-5

Dominion
Ultrasonic Examination Data Record

Interval: 3

UTRNO	Station	Unit	Drawing	Line	NDER
1077	NAPS	2	12050-WMKS-RC-E-2	2-RC-E-2	03-201

uplant	CalCheck1	CalCheck2	CalCheck3	WO / DCP	Procedure	Rev
01220					NDE-UT-703	3

Thermometer SerNo: PT-12

Exam Data

UTRNO	RECTAG	mark/weld	Scan dB	Exam Area	Surface Condition	Temp	Partial	Single Side	Results
1077	5953	14	*	ATTACH. 7	GROUND	73	Yes	No	NRI
1077	5949	10	*	ATTACH. 7	GROUND	73	Yes	No	NRI

Comments:

* SCANNING SENSITIVITY FOR THE 0 DEG EXAM WAS 4.5 dB FOR THE BASE METAL EXAM AND 6.0 dB FOR THE WELD METAL EXAM. SCANNING SENSITIVITY FOR THE 45 DEG AND 60 DEG EXAMS WAS REFERENCE +14dB.

UTRNO		Signature	Level	Method	Date	Activity
1077	Examined By:	DAVID TUCKER	II	UT	05/09/2004	11/10/2004

Reviewed By: Level: III Date: 5-17-04

ANII Initial ☐ Final ☑ Date 5/22/04
HSB-CT

ENCLOSURE A5-5

VIRGINIA POWER

PERCENT VOLUME BY SCAN DIRECTION

[redacted]

DRAWING 12050-WMKS-RC-E-2 WELD # 14

ANGLE	SCAN AREA	DIRECTION	SCAN %
0°	Weld & Base Metal	0	60
45°	Weld	2	80
45°	Weld	5	5
45°	Weld	7	74
45°	Weld	8	74
60°	Weld	2	95
60°	Weld	5	2
60°	Weld	7	74
60°	Weld	8	74
45°+60°	Base Metal	2	88
45°+60°	Base Metal	5	11
45°+60°	Base Metal	7	50
45°+60°	Base Metal	8	50
	Total		56.7%

Virginia Power NDE Level III

5-17-04
Date

ANII [redacted] Date 5/22/04
Initial ☐ Final ☒
HSB-CT

ENCLOSURE A5-5

Dominion
UT Partial Record

UTRNO	RECTAG	Drawing	Line	Mark/weld	Procedure	Rev
1077	5953	12050-WMKS-RC-E-2	2-RC-E-2	14	NDE-UT-703	3

CalNo	Weld Width	Exam Angle	SU Length	SU Width	SU Nose	Percent
549	1.5"	0	N/A	N/A	N/A	57 %

Area Not Examined

SEE SKETCH BELOW FOR VOLUME NOT EXAMINED.

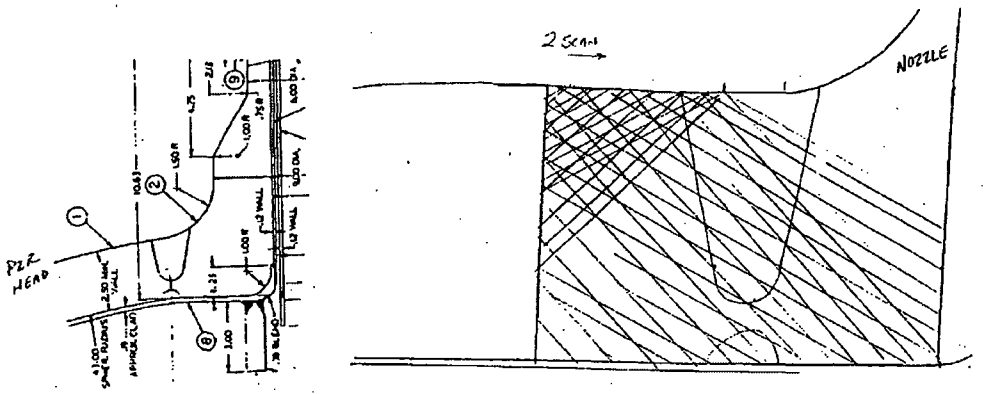
Reason

LIMITED EXAM DUE TO THE NOZZLE BLEND RADIUS

Comments

CODE REQUIRED VOLUME COVERAGE CALCULATIONS TAKEN FROM PREVIOUS DATA (9-16-93 / NDER #93-299)

Cross Section Sketch



Evaluation

The weld volume and adjacent base metal was examined from the Pressurizer side only. Geometry precludes examination from the nozzle side. The weld was examined to the maximum extent possible. See the attached Percent Volume by Scan Direction" sheet for the covered by each scan.

Signature	Level	DATE
David K. Tucker	II	5/9/04

Reviewed By: Level: III Date: 5-17-04

ANII MN Date 5/22/04
Initial ☐ Final ☑
HSB-CT

ENCLOSURE A5-5

Dominion
UT Partial Record

UTRNO	RECTAG	Drawing	Line	Mark/weld	Procedure	Rev
1077	5953	12050-WMKS-RC-E-2	2-RC-E-2	14	NDE-UT-703	3

CalNo	Weld Width	Exam Angle	SU Length	SU Width	SU Nose	Percent
104	1.5"	45	1.4	1.6	.75	57 %

Area Not Examined

SEE SKETCH BELOW FOR VOLUME NOT EXAMINED.

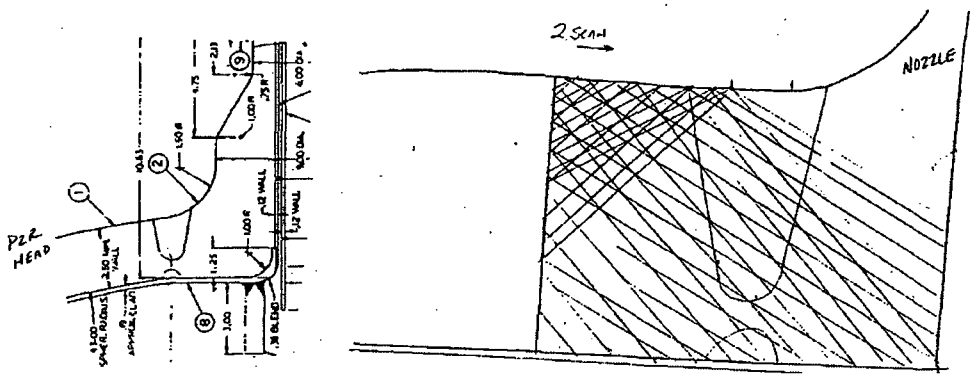
Reason

LIMITED EXAM DUE TO NOZZLE BLEND RADIUS

Comments

CODE REQUIRED VOLUME COVERAGE CALCULATIONS TAKEN FROM PREVIOUS DATA (9-16-93 / NDER #93-299)

Cross Section Sketch



Evaluation

The weld volume and adjacent base metal was examined from the Pressurizer side only. Geometry precludes examination from the nozzle side. The weld was examined to the maximum extent possible. See the attached Percent Volume by Scan Direction" sheet for the covered by each scan.

Signature	Level	DATE
David K. Tucker	II	5/9/04

Reviewed By: Level: III Date: 5-17-04

ANII MA Date 5/20/04
Initial ☐ Final ☐
HSB-CT

ENCLOSURE A5-5

Dominion
UT Partial Record

UTRNO	RECTAG	Drawing	Line	Mark/weld	Procedure	Rev
1077	5953	12050-WMKS-RC-E-2	2-RC-E-2	14	NDE-UT-703	3

CalNo	Weld Width	Exam Angle	SU Length	SU Width	SU Nose	Percent
103	1.5"	60	1.5	1.55	.65	57 %

Area Not Examined

SEE SKETCH BELOW FOR VOLUME NOT EXAMINED.

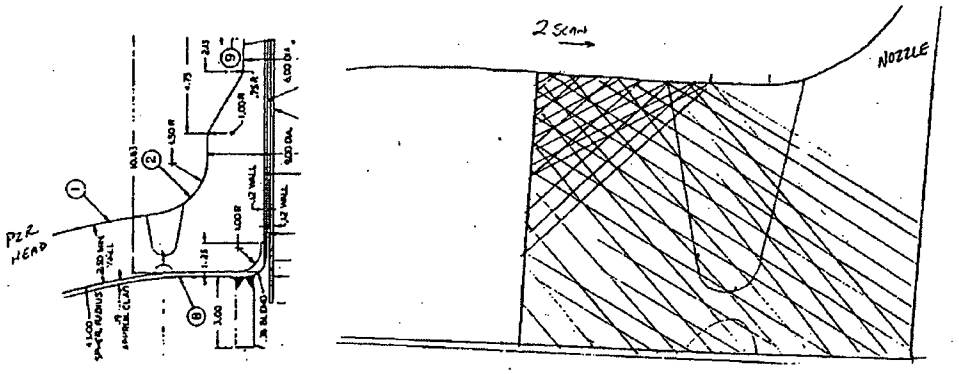
Reason

LIMITED EXAM DUE TO NOZZLE BLEND RADIUS

Comments

CODE REQUIRED VOLUME COVERAGE CALCULATIONS TAKEN FROM PREVIOUS DATA (9-16-93 / NDER #93-299)

Cross Section Sketch



Evaluation

The weld volume and adjacent base metal was examined from the Pressurizer side only. Geometry precludes examination from the nozzle side. The weld was examined to the maximum extent possible. See the attached Percent Volume by Scan Direction" sheet for the covered by each scan.

Signature	Level	DATE
David K. Tucker	II	5/9/04

Reviewed By: Level: Date: 5-17-04

ANII Date 5/22/04
Initial ☐ Final ☑
HSB-CT

Interval: 3

Dominion Power Ultrasonic Calibration Data Record

UTRNO	Station	Unit	Procedure	Rev	Sizing Procedure	Rev	Couplant	CalBlock	CBLKTKS	CBLKTemp
1077	NAPS	2	NDE-UT-703	3	NDE-UT-N/A		01220	VRA-27	2.479"TX10.057"LX6.0	75

CLbType	CLbLngth	#Connect	Simulator	AmpSwp	CalDate	CaLIn	CaLOut	CalBlock2	CBLKTKS2	CBLkTemp2
RG-58	12'	0			05/09/2004	9:45	16:32			

Thermometer SerNo: PT-12

Instrument Settings

UTRNO	MemLoc	CalNo	CAL BLK	REJECT	dB	REF dB	RANGE	VELOCITY	ZERO	DELAY	FREQ	FILTER	ENERGY	DAMPING
1077	VRA2760	103	VRA-27	0%	27.2	+0	.623	0.1259	16.58	N/A	2.27	.8-3.0	MAX	400
1077	VRA2745	104	VRA-27	0%	18.1	+0.0	.429	0.1264	10.86	N/A	2.27	.8-3.0	MAX	400
1077	VRA270	549	VRA-27	0 %	0.0	+ 0.0dB	0.316 in	0.2339 in/us	0.491 us	N/A	2.27	.8-3.0	MEDIUM	400

Xducer Data

UTRNO	CalNo	SerialNo	Manuf	Model	Size	Frequency	Angle	Wedge Type	Wedge Length	Wedge Width	Wedge Nose
1077	103	337349	PANAMETRICS	CONTACT	.5" X 1.0"	2.25 MHZ.	60	SWS	1.5	1.55	.65
1077	104	337350	PANAMETRICS	CONTACT	.5" X 1.0"	2.25 MHZ	45	SWS	1.4	1.6	.75
1077	549	M18207SP	KB-AEROTECH	GAMMA	.75"	2.25 MHZ	0	N/A	N/A	N/A	N/A

Vertical Beam Spread

UTRNO	CalNo	1/4Depth	1/2Depth	3/4Depth	1/4SPF	1/4SPM	1/4SPB	1/2SPF	1/2SPM	1/2SPB	3/4SPF	3/4SPM	3/4SPB	Beam Spread	Angle
1077	103	0.62	1.24	1.87	0.85	1.1	1.35	1.87	2.3	2.83	2.84	3.46	4.17	37.35095963384	61.6104444233522
1077	104	0.62	1.24	1.87	0.55	0.69	0.82	1.12	1.34	1.5	1.64	1.9	2.19	18.98655223019	45.4559249616 72

Instrument

UTRNO	SHAC	Inst. Serial	Inst. Model	Inst. Manuf	CalNo
1077	153	040182503	EPOCH 4	R.D.TECH INST.	549
1077	153	040182503	EPOCH 4	R.D.TECH INST.	103
1077	153	040182503	EPOCH 4	R.D.TECH INST.	104

Calibration Data

UTRNO	CalNo	Direction	CaLType	Point	Reflector	Position	Amplitude	Sweep
1077	103	2,5,7,8	DET	1	1/4TSDH	1.15"	80%	2.0
1077	103	2,5,7,8	DET	2	1/2TSDH	2.25"	50%	4.0
1077	103	2,5,7,8	DET	3	3/4TSDH	3.35"	38%	6.0
1077	103	2,5,7,8	DET	4	ID NOTCH	4.15"	18%	7.9
1077	103	2,5,7,8	DET	5	5/4TSDH	N/A	19%	10.0
1077	104	2,5,7,8	DET	1	1/4TSDH	0.70"	80%	2.0
1077	104	2,5,7,8	DET	2	1/2TSDH	1.35"	61%	4.0
1077	104	2,5,7,8	DET	3	3/4TSDH	1.90"	48%	6.0
1077	104	2,5,7,8	DET	4	ID NOTCH	2.40"	20%	8.1
1077	104	2,5,7,8	DET	5	5/4TSDH	N/A	24%	10.0
1077	549	N/A	DET	1	1/4TSDH	N/A	78%	2.0
1077	549	N/A	DET	2	1/2TSDH	N/A	85%	4.0

UTRNO		Signature	Level	Method	Date	Activity
1077	Calibrated By	DAVID TUCKER	II	UT	05/09/2004	11/07/2004

ANII MK Date 5/22/04
Initial ☐ Final ☐
HSB-CT

Reviewed By: [signature] Level: III Date: 5-17-04

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Interval: 3

Dominion Power Ultrasonic Calibration Data Record

1077	549	N/A	DET	3	3/4TSDII	N/A	75%	6.0
1077	549	N/A	DET	4	BW	N/A	>100%	8.1

UTRNO		Signature	Level	Method	Date	Activity
1077	Calibrated By	DAVID TUCKER	II	UT	05/09/2004	11/07/2004

ANII [signature] Date 5/22/04
Initial ☐ Final ☐
HSB-CT

Reviewed By: [signature] Level: III Date: 5-17-04

ENCLOSURE A5-5

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B1. Nozzles Without Reinforcing Plate in Vessels > ½ in. Nominal Thickness, Nozzle-to-Vessel Welds

4.B1 IMPRACTICALITY OF COMPLIANCE

In accordance with 10CFR50.55a(g)(5)(iii), relief is requested from the "essentially 100 percent" volumetric examination coverage requirement for the identified Nozzle-to-Vessel welds. This requirement is considered impractical due to single-sided access.

Ultrasonic examination of the identified nozzle-to-vessel welds on the boron injection tank are limited to 30.5% volume coverage because of single-sided access due to nozzle to shell weld configuration. It was not possible to scan over the weld with any angle. Refer to Enclosure B1-1 for coverage details for weld # 3. Examination was performed to the extent possible.

5.B1 BURDEN CAUSED BY COMPLIANCE

Destruction of the component would be necessary to perform 100% of the Code required examination as written in the 1995 ASME Section XI Code with 1996 Addenda and is contrary to the intent of the Code.

6.B1 PROPOSED ALTERNATIVE AND BASIS

It is proposed that the examinations already completed at the reduced coverage be counted as meeting the Code requirements. The limited volumetric examination should detect any general patterns of degradation that may occur in the areas covered, therefore providing reasonable assurance of the continued structural integrity of the subject weld. 100 percent magnetic particle examination coverage was obtained with no reported recordable indications.

Two other components were examined in Category C-B, Item No. C2.21, in the third ISI inspection interval, obtaining "essentially 100 percent" volumetric examination coverage. Second interval relief was granted in relief request NDE-44.

The examinations were performed using standard ASME Section V, Article 4 UT techniques. Manual scanning was performed for these examinations. The configuration of the nozzle to shell weld limits the effective examination of the required examination volume. The nozzle's close proximity to the weld limits scanning due to the nozzle blend radius causing lift-off of the search unit during scanning. The physical limitation of each nozzle limits the effectiveness of alternative or advanced technologies from increasing the examination coverage for this configuration.

Enclosure B1-1 includes the complete Ultrasonic Examination Data Record for the Category C-B, Item C2.21, examination included in this request. The report includes details of the UT scanning apparatus, including transducer size, frequency and angle. Also included are scan plots for the examination showing the nozzle configuration and percent coverage for each individual scan. The wave modality and insonification angles are also included. No recordable indications were identified during the examination.

Magnetic Particle Examination (MT) was performed for the subject weld included in this request, and the exam was a full ASME Code examination (>90% coverage). There were no recordable indications detected. The complete MT Examination report is included in Enclosure B1-1.

The Boron Injection Tank head is ASTM A-516 Grade 70 carbon steel with 0.125" weld deposit clad ASTM A-240 Type 304L. Tank head design thickness is a minimum of 2.00". The nozzles are ASTM A-508 Class 1, and are just over 5" thick. The nozzles are also clad with ASTM A-240 Type 304L.

UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-702	Outage No.:	N2R20
Summary No.:	N2.C2.21.007	Procedure Rev.:	3	Report No.:	UT-10-131
Workscope:	ISI	Work Order No.:	59101919553	Page:	1 of 4

Code: Sect. XI 1995ed/96 Add | Cat./Item: C-B/C2.21 | Location: AUX 244

Drawing No.: 12050-WMKS-SI-TK-2 | Description: Nozzle to Vessel

System ID: SI

Component ID: 12050-WMKS-SI-TK-2 / 3 | Size/Length: 1.5" / 33.0" | Thickness/Diameter: 2.50" / 10.0"

Limitations: Single side access due to nozzle to shell weld configuration. | Start Time: 1455 | Finish Time: 1503

Instrument Settings

Serial No.:	091639803		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	1.330 us	Range:	2.658"
M'tl Cal/Vel:	0.2332 In/us	Pulser:	Square
Damping:	400 Ω	Reject:	0%
Rep. Rate:	Auto	Freq.:	2.0 Mhz
Filter:	0.8 - 3.0 Mhz	Mode:	Fullwave
Voltage:	Low	Other:	N/A
Ax. Gain (dB):	16.0	Circ. Gain (dB):	N/A

10 Screen Div. = 2.658 in. of Sound Path

Linearity Report No.: L-10-011

Calibration Block

Cal. Block No.:	VRA-27		
Thickness:	2.478"	Dia.:	0
Cal. Blk. Temp.:	69°	Temp. Tool:	07
Comp. Temp.:	82°	Temp. Tool:	07

Search Unit

Serial No.:	299107		
Manufacturer:	Panametrics		
Size:	0.50"	Shape:	Round
Freq.:	2.25 MHZ	Style:	Accuscan
Exam Angle:	0°	# of Elements:	Single
Mode:	Longitudinal		
Measured Angle:	N/A		
Wedge Style:	N/A		

Search Unit Cable

Type: RG-174 | Length: 6.0' | No. Conn.: 0

Scan Coverage

Upstream ☐ Downstream ☑ Scan dB: 22.0

CW ☑ CCW ☑ Scan dB: 22.0

Exam Surface: OD

Surface Condition: Ground

Cal. Checks	Time	Date
Initial Cal.	1318	04/04/2010
Inter. Cal.	1454	04/04/2010
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	1635	04/04/2010

Couplant

Cal. Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.: 05-6998

Type: CS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1/4 T Hole	80%	2.0	0.527"
1/2 T Hole	58%	4.3	1.146"
3/4 T Hole	38%	7.7	1.775"
Backwall	100% +	8.5	2.467"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
16.3	0.7" SDH	67%	2.6	0.691"

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

Results: NRI ☑ RI ☐ Geom ☐

Comments: Reference report # UTRNO 602 dated 9/28/1999 for thickness and contour.

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

	Level		Signature	Date
Examiner: Zollner, Brian D	II-PDI		Brian Zollner	04/04/2010
Examiner: N/A	N/A			
Other: N/A	N/A			

Reviewer: W.L. Thomas	Signature		4-6-10
Site Review: Jeff Odegard	Signature		4/8/10
ANII Review	Signature		11 Apr 2010

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NAPS Unit 2 3rd Interval Limited Exams
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Docket No. 50-339

UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-702	Outage No.:	N2R20
Summary No.:	N2.C2.21.007	Procedure Rev.:	3	Report No.:	UT-10-131
Workscope:	ISI	Work Order No.:	59101919553	Page:	2 of 4

Code: Sect. XI 1995ed/96 Add | Cat./Item: C-B/C2.21 | Location: AUX 244

Drawing No.: 12050-WMKS-SI-TK-2 | Description: Nozzle to Vessel

System ID: SI

Component ID: 12050-WMKS-SI-TK-2 / 3 | Size/Length: 1.5" / 33.0" | Thickness/Diameter: 2.50" / 10.0"

Limitations: Single side access due to nozzle to shell weld configuration. | Start Time: 1505 | Finish Time: 1518

Instrument Settings

Serial No.:	091639803		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	5.406 us	Range:	4.202"
M'tl Cal/Vel:	0.1237 in/us	Pulser:	Square
Damping:	400 Ω	Reject:	0%
Rep. Rate:	Auto	Freq.:	2.0 Mhz
Filter:	0.8 - 3.0 Mhz	Mode:	Fullwave
Voltage:	Med	Other:	N/A
Ax. Gain (dB):	16.0	Circ. Gain (dB):	N/A

10 Screen Div. = 4.202 in. of Sound Path

Linearity Report No.: L-10-011

Calibration Block

Cal. Block No.:	VRA-27		
Thickness:	2.478"	Dia.:	0
Cal. Blk. Temp.:	69°	Temp. Tool:	07
Comp. Temp.:	82°	Temp. Tool:	07

Search Unit

Serial No.:	01CXBN		
Manufacturer:	KBA		
Size:	0.5"	Shape:	Round
Freq.:	2.25 MHZ	Style:	Comp-G
Exam Angle:	45°	# of Elements:	Single
Mode:	Shear		
Measured Angle:	42°		
Wedge Style:	MSWQC		

Search Unit Cable

Type: RG-174 | Length: 6.0' | No. Conn.: 0

Scan Coverage

Upstream ☐ Downstream ☑ Scan dB: 30.0

CW ☑ CCW ☑ Scan dB: 30.0

Exam Surface: OD

Surface Condition: Ground

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

Results: NRI ☑ RI ☐ Geom ☐

Cal. Checks	Time	Date
Initial Cal.	1312	04/04/2010
Inter. Cal.	1504	04/04/2010
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	1637	04/04/2010

Couplant

Cal. Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.: 05-6998

Type: CS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1/4 T Hole	80%	2.0	0.842"
1/2 T Hole	58%	4.0	1.683"
3/4 T Hole	38%	6.0	2.540"
ID Notch	22%	8.2	3.441"
5/4 T Hole	12%	10.0	4.211"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
16.0	0.7" SDH	43%	2.5	1.035"

Comments: Transducer nose dimension = 0.40"

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

Examiner	Level	II-PDI	Signature	Date	Reviewer	Signature	Date
Zollner, Brian D			Brian Zollner	04/04/2010	W.L. Thomas		4.6.10
Examiner	Level	N/A	Signature	Date	Site Review	Signature	Date
N/A					Jeff Odegard		4/8/10
Other	Level	N/A	Signature	Date	ANII Review	Signature	Date
N/A							11 Apr 2010

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UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-702	Outage No.:	N2R20
Summary No.:	N2.C2.21.007	Procedure Rev.:	3	Report No.:	UT-10-131
Workscope:	ISI	Work Order No.:	59101919553	Page:	3 of 4

Code:	Sect. XI 1995ed/96 Add	Cat./Item:	C-B/C2.21	Location:	AUX 244
Drawing No.:	12050-WMKS-SI-TK-2	Description:	Nozzle to Vessel		
System ID:	SI				
Component ID:	12050-WMKS-SI-TK-2 / 3	Size/Length:	1.5" / 33.0"	Thickness/Diameter:	2.50" / 10.0"
Limitations:	Single side access due to nozzle to shell weld configuration.	Start Time:	1520	Finish Time:	1532

Instrument Settings

Serial No.:	091639803		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	7.386 us	Range:	6.144"
M'tl Cal/Vel:	0.1237 in/us	Pulser:	Square
Damping:	400 Ω	Reject:	0%
Rep. Rate:	Auto	Freq.:	2.0 Mhz
Filter:	0.8 - 3.0 Mhz	Mode:	Fullwave
Voltage:	Med	Other:	N/A
Ax. Gain (dB):	22.0	Circ. Gain (dB):	N/A

10 Screen Div. = 6.144 in. of Sound Path

Linearity Report No.: L-10-011

Calibration Block

Cal. Block No.:	VRA-27		
Thickness:	2.478"	Dia.:	0
Cal. Blk. Temp.:	69°	Temp. Tool:	07
Comp. Temp.:	82°	Temp. Tool:	07

Search Unit

Serial No.:	00H45N		
Manufacturer:	KBA		
Size:	0.50"	Shape:	Round
Freq.:	2.25 MHZ	Style:	Comp-G
Exam Angle:	60°	# of Elements:	Single
Mode:	Shear		
Measured Angle:	60°		
Wedge Style:	MSWQC		

Search Unit Cable

Type:	RG-174		
Length:	6.0'	No. Conn.:	0

Scan Coverage

Upstream ☐	Downstream ☑	Scan dB:	36.0
CW ☑	CCW ☑	Scan dB:	36.0
Exam Surface:	OD		
Surface Condition:	Ground		

Cal. Checks	Time	Date
Initial Cal.	1314	04/04/2010
Inter. Cal.	1519	04/04/2010
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	1639	04/04/2010

Couplant

Cal. Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.:	05-6998
Type:	CS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1/4 T Hole	80%	2.0	1.220"
1/2 T Hole	38%	4.0	2.450"
3/4 T Hole	22%	6.0	3.696"
ID Notch	15%	8.2	5.048"
5/4 T Hole	10%	10.0	6.145"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
22	0.7" SDH	31%	2.5	1.516"

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

Results: NRI ☑ RI ☐ Geom ☐

Comments: Transducer nose dimension = 0.40"

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

Examiner	Level II-RDI	Signature	Date	Reviewer	Signature	Date
Zoltner, Brian D			04/04/2010	W.L. THOMAS		4.6.10
Examiner	Level N/A	Signature	Date	Site Review	Signature	Date
N/A				Jeff Odegard		4/8/10
Other	Level N/A	Signature	Date	ANII Review	Signature	Date
N/A						11 Apr 2010

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NAPS Unit 2 3rd interval Limited Exams
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ENCLOSURE B1-1

Supplemental Report

Dominion

Report No.: UT-10-131

Page: 4 of 4

Summary No.: N2.C2.21.007

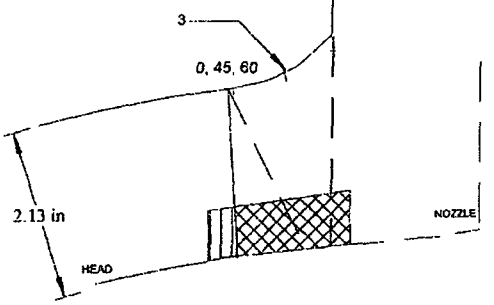
Examiner: Zollner, Brian D Level: II-PDI Reviewer: W.L. Thomas Date: 4/6/10

Examiner: N/A Level: N/A Site Review: Jeff Odegard JDO Date: 4/8/10

Other: N/A Level: N/A ANII Review: [signature] Date: 11 Apr 10

Comments: **Single sided access due to nozzle to shell weld configuration. Reference report # UTRNO 602 for thickness and contour. Unable to scan over weld with any angle.**

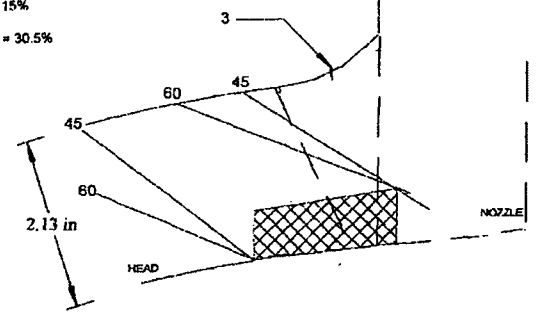
Sketch or Photo:



1.42 SQ. IN REQUIRED EXAM VOLUME
0.32 SQ IN EXAMINED 0 DEG. 45 AND 60
0.32 / 1.42 = 22.5% EXAMINED WITH 0 DEG. 45 AND 60
0.21 SQ IN. EXAMINED HEAD SIDE 0, 45, 60 DEGREE
0.21 / 1.42 = .1478 X 100 = 15%

0 DEG COVERAGE = 15%
45 DEG HEAD SIDE = 100%
45 DEG NOZ SIDE = 0%
60 DEG HEAD SIDE 100%
60 DEG NOZ SIDE = 0%
45 CIRC CW = 15%
45 CIRC CCW = 15%
60 CIRC CW = 15%
60 CIRC CCW = 15%

TOTAL = 275 / 9 = 30.5%



100% REQUIRED VOLUME EXAMINED 45, 60 DEG.
AXIAL DIRECTION HEAD SIDE. NO EXAM NOZ SIDE AX DIR.

ENCLOSURE B1-1

Magnetic Particle Examination

Dominion

Site/Unit: NAPS / 2 | Procedure: ER-AA-NDE-MT-200 | Outage No.: N2R20
Summary No.: N2.C2.21.007 | Procedure Rev.: 4 | Report No.: MT-10-012
Workscope: ISI | Work Order No.: 59101919553 | Page: 1 of 1

Code: Sect. XI 1995ed/96 Add | Cat./Item: C-B/C2.21 | Location: AUX 244
Drawing No.: 12050-WMKS-SI-TK-2 | Description: Nozzle to Vessel
System ID: SI
Component ID: 12050-WMKS-SI-TK-2 / 3 | Size/Length: 1.5" / 33.0"
Limitations: None

Light Meter Mfg.: N/A | Serial No.: N/A | Illumination: N/A
Temp. Tool Mfg.: N/A | Serial No.: N/A | Surface Temp.: N/A °F
Resolution: 0.044" Character Card
Lift Block Serial No.: MT-04 | Surface Condition: As Welded
Lo/Wo Location: N/A | Field Orientation: 0/90° Field Orientation

Magnetic Particle Material

Brand: MAGNAFLUX | Wet ☐ | Mixed: Yes ☐ | Applied By: Dusting ☑
Type: 8A Red | Dry ☑ | No ☑ | Spraying ☐
Batch No.: 09F056 | Fluorescent ☐ | With: N/A | Flooding ☐
Equipment: PARKER | Serial No.: 3227
Head Shot ☐ ____ Amperes | Fixed Spacing ☐ | AC ☑ DC ☐
Adj. Spacing ☑ 6" inches | Encircling Coils ☐ N/A Turns
Prods. Spacing ☐ ____ inches | Current (machine setting) ☐ N/A Amperes

Indication No.	Loc L	Loc W	Diameter	Length	Type R/L	Remarks
NRI						

Comments:
Character card SN DOM-2009-0269

Results: NRI ☑ RI ☐ Eval ☐
Percent Of Coverage Obtained > 90%: Yes – Reviewed Previous Data: N/A Exam Time: 1430

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Tolosky, Ryan J	II		04/04/2010	W.L. THOMAS		4.6.10
Examiner	Level	Signature	Date	Site Review	Signature	Date
N/A	N/A			Jeff Odegard		4/8/10
Other	Level	Signature	Date	ANII Review	Signature	Date
N/A	N/A					11 Apr 2010

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B2. Pressure Vessels – Integrally Welded Attachments

4.B2 IMPRACTICALITY OF COMPLIANCE

In accordance with 10CFR50.55a(g)(5)(iii), relief is requested from the "essentially 100 percent" surface examination coverage requirement for the identified welded attachments. Access to the full length of the welds is limited due to the proximity of the concrete support structures for welds WS-1 and WS-2, and the adjacent support plate for electronics for weld WS-3. Examination was performed to the extent possible.

5.B2 BURDEN CAUSED BY COMPLIANCE

Disassembly or destruction of the components would be necessary to perform 100% of the Code required examination as written in the 1995 ASME Section XI Code with 1996 Addenda and is contrary to the intent of the Code.

6.B2 PROPOSED ALTERNATIVE AND BASIS

It is proposed that the examinations already completed at the reduced coverage be counted as meeting the Code requirements. The limited surface examination should detect any general patterns of degradation that may occur in the areas covered, therefore providing reasonable assurance of the continued structural integrity of the subject weld.

Among eight (8) active components in Category C-C, Item No. C3.10, 25% (2) were required to be examined (only one welded attachment of only one of the multiple vessels shall be selected for examination), and six (6) were examined, three limited and included in this request, and three with full coverage. Second interval relief was granted for weld # WS-2 in request NDE-20.

The material for the support and residual heat removal heat exchanger tube side shell is ASTM A-240 TP 304. The boron injection tank shell is ASME SA-264 material, and the support is ASTM A-36 STL.

Reportable indications were identified for weld # WS-1 on 2-RH-E-1B, included in this report. The indications were found at the weld toe, ground out for identification, and found to be insignificant with regard to the structural integrity of the weld and support. As a result of the reportable indications, scope was expanded to examine the C3.10 welds on 2-RH-E-1A, and similar indications were identified there as well. The evaluation indicates that the indications were construction defects rather than service induced flaws and had no impact on the structural integrity of the components.

ENCLOSURE B2-1

Dominion

Liquid Penetrant Report

PTRNO: 7325
NDER: 02-001
Interval: 3

WO/DCP:

Station: NAPS Unit 2 Drawing: 12050-WMKS-RH-E-1B Line: 2-RH-E-1B

Procedure: NDE-PT-701 Revision: 3 Technique: SOLVENT REMOVABLE-VISIBLE

Thermometer SerNo: 212880

	Batch	Manufacturer	Designation
Cleaner:	01E04K	MAGNAFLUX	SKC-S
Penetrant:	99E02K	MAGNAFLUX	SKL-SP
Remover:	01E04K	MAGNAFLUX	SKC-S
Developer:	02B05K	MAGNAFLUX	SKD-S2

Meter Serial No: NA started: 9:25 completed: 10:45

uvcheck1: uvcheck2: uvcheck3:

Reading1: NA Reading2: NA Reading3: NA

PTRNO	RECTAG	Mark/Weld	Cat/Add	Exam Area	Surface Condition	Visual	Lighting	Temp	Partial	Results
7325	6514	WS-1	C-C	ATT. 4	GROUND	SAT	SAT	72 DE	Yes	RI

Comments

SEE ATTACHED PARTIAL AND INDICATION REPORTS FOR EXAMINATION DETAILS.

PTRNO		Signature	Level	Date
7325	Examined By:	ROBERT SISTEK Robt Sistek	II	9/18/02

Reviewed By: Raymond F. Stark Level: III Date: 9-27-02

MK 9/30/02

ENCLOSURE B2-1

Dominion

Surface Partial Record

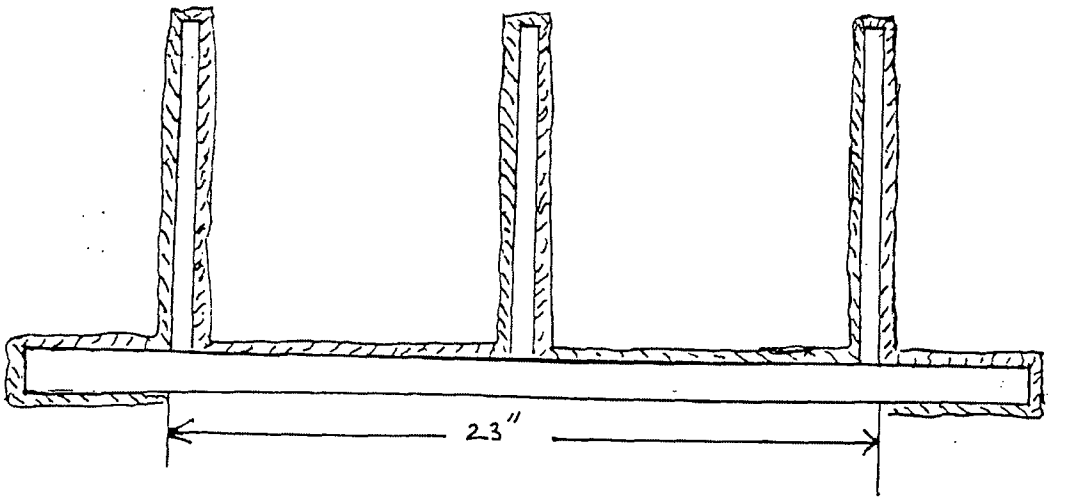
PTRNO:	7325	**Drawing:**	12050-WMKS-RH-E-1B	**Line:**	2-RH-E-1B
RECTAG:	6514	**Mark/weld:**	WS-1	**Percent Examined:**	81%%

Reason For Partial: 23" AREA OF WELD IS INACCESSABLE DUE TO CONCRETE SUPPORT

Area Not Examined: WELD AT BOTTOM SIDE OF SUPPORT TO HEAT EXCHANGER.

Comments:

Sketch



TOTAL WELD 121.5"
WELD NOT EXAMINED 23"

PERSONNEL QUALIFIED
MM
N.S.P.
9/30/02
N.D.E. GRADE

Evaluation

100% OF WELD AREA UNABLE TO BE EXAMINED DUE TO CONCRETE SUPPORT STRUCTURE. THE WELD WAS EXAMINED TO THE MAXIMUM EXTENT POSSIBLE

SSN: 197-38-9893 **Completed By:** ROBERT SISTEK **Level:** II **Date:** 9/18/02

Robert Sistek

Evaluated By: Raymond T Stark **Level:** III **Date:** 9-27-02

ENCLOSURE B2-1

Dominion PTRNO: 7325

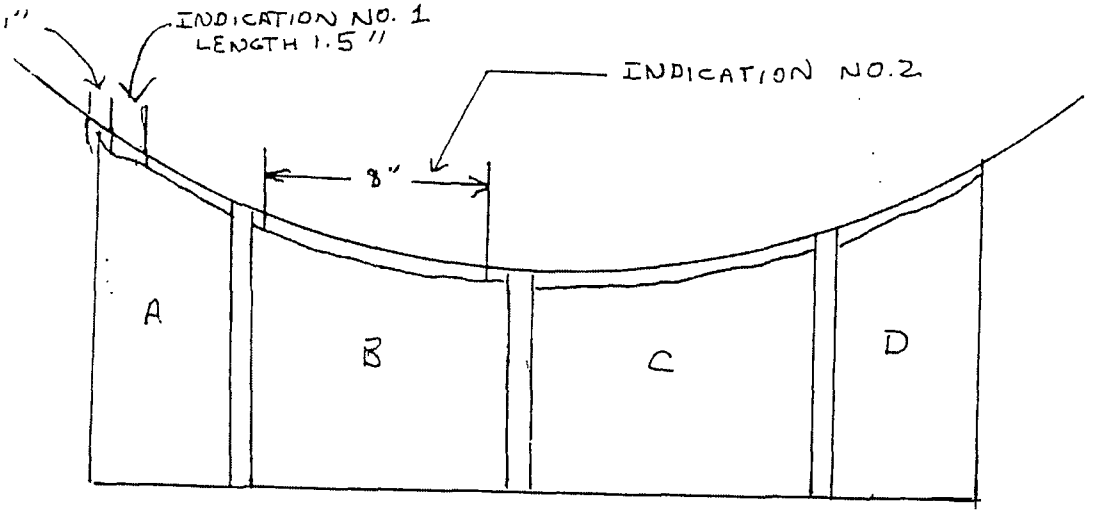
Surface Indication Record

Drawing: 12050-WMKS-RH-E-1B Line: 2-RH-E-1B Mark/Weld: WS-1

PTRNO	RecTag	Ind No	Orientation	Location	Position	Length
7325	6514	1	AXIAL	A		1.5""
7325	6514	2	AXIAL	B		8.0"

Sketch

2-RH-E-1B



INDICATION LOCATED AT TOE OF WELD ON SUPPORT PAD.

Comments: PLEASE SEE SKETCH FOR DETAILED LOCATIONS.

SSN: 197-38-9893 Completed By: ROBERT SISTEK Level: II Date: 9/18/02

9/30/02

Reviewed By: Level: III Date: 9-27-02

ENCLOSURE B2-1

NORTH ANNA SITE ENGINEERING SERVICES
IMPLEMENTING PROCEDURE

NASES-6.03
REV. 5
ATTACHMENT 1
Page 1 of 1

ASME Section XI Component Support
Visual Examination Program

STATION REQUEST REA # 2002 - 003
STATION ISI REQUEST #

ENGINEERING EVALUATION
Class 1, 2, and 3 Component Support Problem Resolution

INF 9-20-02 NP

COMPONENT NO. Weld WS-21 LINE NO. 2-RH-E-1B

LOCATION DWG. 2-RH-E-1B REFERENCE DWG. 12050-WMKS-RH-E-1B

REPORTED PROBLEM:

Two indications were found on integral attachment weld connecting 2-RH-E-1B to the support pad. Indications are near toe of weld in base metal of support pad.

REPORTED BY: S. P. Hamill DATE: 9-18-02 EXT. 2330
Is the component support operable in the current condition? X yes _____ no

EVALUATION: SEE ATTACHED ENGR LOG ENTRY FOR DETAILS. REFER TO DOCUMENTS BY MECH. MAINT. FOR THE SOURCE OF INDICATION SIZES.

CORRECTIVE ACTION REQUIRED

NONE. ACCEPT AS-IS.

EVALUATED BY: Mark C Tharp DATE: 10-1-02

REVIEWED BY: _____ DATE: _____

ENCLOSURE B2-1

"Bengi Miller reported 2-RH-E-1B support indictions have been ground out. Both indications removed by grinding 3/16" wide and 3/64" deep. MCA assessed these indications as flaws with no material affect on the structural integrity of this fillet weld. The flaw depth is insignificant versus the original design 5/8" fillet. The flaw location, at the weld toe to the support plate, does not impact the weld critical cross section on the hypotenuse. These indications do not need to be weld repaired and the 2-RH-E-1B support is considered fully functional."

Mark Avery 9-21-02 at 0005h engineering log entry.

10-1-02

ENCLOSURE B2-1

Dominion

Nuclear Non-Destructive Examination Request

VPAP-0901 - Attachment 2 — Page 1 of 1

NDE-R Number: 02-178

To Be Completed By Requestor

Requested By (Print Name)	Title	Phone Extension	Department
W.R. POWELL	WELD SUPV	2734	MAINT

Work Order, DCP, etc.	Repair/Replacement No. (if applicable)	Date Requested	Date Scheduled
478638-01	2002-135	9-20-02	9-20-02

Type of Non-Destructive Examination Requested [ ] Surface Exam (either MT or LP)
[ ] Magnetic Particle [X] Liquid Penetrant [ ] Radiography [ ] Visual [ ] Ultrasonic (For Thickness Specify)

See Special Instructions for specific information that may be required to complete Examination

Specific Code to be Examined
[ ] ASME Section XI (Preservice Required? [X] Yes [ ] No) Per Steve Hamill Sec. III & Sec. XI Exam Requirements apply. Robert E. 9-20-02
[ ] PMT requirement code listed for NDE:
[ ] Repair/Replacement Follower code listed for NDE:
[X] Other:

Location (Include Unit, Building, and Elevation)	RWP Number
R.C. 241	

Mark Number	Line Number	Drawing Number (Attach)	Material Type
2-RH-E-1B	N/A	12050-WMKS-RH-E-1B	CS

Weld Number/Piece Number (If weld numbers are not identified, estimate number of welds to be examined)
1,2

Id Traveler Sign Off? [X] Yes [ ] No | Procedure Sign Off? [ ] Yes [ ] No | ANII Review? [ ] Yes [ ] No

Special Instructions

Bolt Inspection	Material	Diameter	Length	
Ultrasonic Thickness Inspection	Nominal Thickness	Manufacturer's Minimum Thickness		
Radiography Inspection	Material	Diameter	Thickness	Welding Process

If any additional information is required, attach information to this request.

To Be Completed By NDE

Assigned To (Print Name)	Date Assigned
Techs	9-20-02

Procedure (Include Revision and Addendum)
PT-101 R.8 Add 4.1.1 PT-701 C-C

Supervisor (Signature)	Request Completed? [X] Yes [ ] No	Date
RTS for D. Smith		9-30-02

Form No. 722115(Mar 2002)

ENCLOSURE B2-1

VIRGINIA POWER

Examination Requirements

POW 26

VPAP-0107 Attachment 4

Program Number	2002- 135	Page 2 of 2

1. Repair/Replacement Instructions (If Applicable)

Note: If it is obvious by visual examination that the indication has not been removed or reduced to an acceptable size, then it is not necessary to perform an LP examination at every increment.

1. Remove defect by grinding and/or buffing by excavating (depth) in increments of approx. 0.010 to 0.020. The maximum depth of excavation shall not exceed 0.2"
2. Perform surface examination PT to clear indication.
3. Measure the size of the cavities created using a rule, dial calipers, UT thickness meter, and/or pit mic and record below.

Indication #1_____ length _____ width _____ depth
Indication #2_____ length _____ width _____ depth

4. Contact DEO Mark Avery (ext. 2824) or Bill Standley (2474) to determine if a weld build-up is required
5. If a weld buildup is required, then perform welding in accordance with Technique 103.
6. Blend the excavation or repair weld as applicable into surrounding base metal by grinding and/or buffing.
7. Perform final Construction Code surface examination (PT).
8. Perform an ASME XI Pre-service surface examination (PT) on weld WS-2 in the area of the weld repairs. (12050-WMKS-RH-E-1B)

Post Repair/Replacement Examination Requirements

[X] None Examination requirements are stated above.

[ ] Refer to PMT Test Data Sheet attached to the work order

ENCLOSURE B2-1

Dominion

Base Metal Repair/Weld Repair/ Cutout Sheet

VPAP-0903 - Attachment 8

1. Mark Number 2-RH-E-B-HTEXCH	2. WO/DCP Number WO : 478638-01		3. Weld Map/Engineering Drawing Number 12050- WMKS-RH-E-1B
4. NDE Report Number 7325	5. Type of Work [X] Repair [ ] Cutout	6. Type of Repair [X] Base Metal [ ] Weld	7. Weld Number 1
8. Removal Method [X] Mechanical [ ] Thermal . Required Preheat Temperature _____ F		9. Excavation Size : _____ Depth : _____ 10. NDE Required for Excavation Visual ____ PT XX MT ____ RT ____ Other ____	

11. Description

- Rejectable indication on weld as indicated on NDE report
- Perform weld repair per steps below in accordance with Repair / Replacement Plan # 2002-115
- When weld repair PT is accepted, then resume welding operation and documentation on original weld data sheet
- If weld repair fails fill in PT (step 7) then re-commence weld repair on a new base metal/weld repair/cutout sheet

Resolution

HOLD POINTS	WELD	QC	NDE	ANII	WELD Initial/Date	QC Initial/date	NDE Initial/Date	ANII Initial/Date
1. Excavate until the indication is clear*	XX							
2. (PT) excavation area until clear			XX					
3 Visual of excavation area **		XX						
Record the size, depth, and location final excavation area	XX							
4. Perform weld repair	XX							
5 Visual of Weld Repair		XX						
7 Final NDE of weld repair (PT)			XX					
8, Final NDE of Integral Weld ASME Pre-Service			XX					

* Repeat steps 1-3 as required, to clear the indication. NDE to document on report all exams performed to clear indication by grinding. If weld is ground out entirely at repair area, then NDE shall mark signoff as N/A.
** If weld is ground out completely at repair area, then QC shall inspect excavation and fit-up gap.
*** If purge is not mention per weld technique then N/A
****If weld is not ground out, then mark steps 6-8 N/A.

12 Originator (Signature) R. Winslow Date 9-20-02

13.
Welder's ID Number _____ Welding Technique Number 103 Rev 8 Weld Joint Detail 14 A
AWS Classification _____ Filler Metal Heat/PO/WMCF Number _____

14. Remarks (NDE and welding requirements for repair or reweld shall be the same as the original weld.)

ISI review (Signature) J.P. Nd Date 9-20-02

15. Quality Inspector (Signature) Date

NDE Representative Other (Signature) Date

Key. WO-Work Order; DCP-Design Change Package; NDE-Non-destructive Examination; PT-Penetrant Testing; MT-Magnetic Particle Testing; RT-Radiography Testing; ID-Identification; QI-Quality Inspector; PO-Purchase Order; AWS- American Welding Society; WMFCF-Weld Material Field Control Form

Form No 722340(Nov 2001)

9/20/02

ENCLOSURE B2-1

Dominion

Repair/Replacement Plan

Page of

VPAP-0107 - Attachment 2

1. Work Order Number 478638-01	2. Component "B" RHR Heat Exchanger Support
Mark Number (Unit Number) 2-RH-E-1B	Program Number 2002-135

4. Description of Work (note component size)
Repair two indications near the toe of integral attachment weld WS-2 in the "B" RHR Heat Exchanger support pad. The indications are 8" and 1.5" long respectively

5. Reason for Replacement N/A This a repair only.

6. Repaired/Replaced Component Information (if available)
See below.

Component Manufacturer Joseph Oat	ASME Stamp Yes
Manufacturer Serial Number 1832-6	Manufacturer Date 11/9/70
Number Replaced Bolts/Nuts	Bolt/Nut Material
Bolt Size ( ) x ( ) x ( )	

7. Initiator (Print Name)	Extension	Date	Required Due Date
Tom Nissel	2962	9/19/02	9/19/02

8. Applicability: [X] Yes [ ] No	9. ISI Reviewer (Initials)	10. Code Class	DCP, IEER, ET Number [ ] N/A
Exempt	SPH	2	
Other	Date 9/19/02	Section XI Edition/Cases 1995 w/96 Add.	

Type [X] Repair [ ] Replacement [ ] Design Change [ ] Configuration Change [ ] Material Sub. [ ] Rerating

12a. Item Requiring Repair or Replacement:	12b. Replacement Item.	12c. Codes Used to Perform R/R Activity:
Construction Code/Code Cases ASME VIII 1968	Construction Code/Code Cases N/A	Construction Code/Code Cases ASME III 1992 (NF)
Owner's Requirements: [X] E-Spec. G676454	Owner's Requirements. [X] N/A	Owner's Requirements. [X] E-Spec. G676454

12d. Reconciliation Required [ ] Yes (Specify) [X] No

13. Failure Mode [X] N/A
No failure involved.

14. NDE Flaw Discovery Method [X] N/A
PT Examination

15. Description of Flaw 8" and 1.5" linear indications adjacent to toe of weld. See NDE report.

16. Flaw Removal Method [X] N/A
Mechanical grinding

17. Cavity Measurement Method and Reference Points [X] N/A
Cavity size will be measured as indicated on page 2 of this program. See attached report for location and reference points.

19. ANI/ANII Preview/Hold Points
Weld Data Sheets

ANII (Signature) [signature] Date 9/20/02

18. Verification of Acceptability [X] N/A

Replacement Information (if available) [X] N/A (Initials)
Component Manufacturer
Manufacturer Serial Number
Manufacturer Date
ASME Stamp
Applicable PO Number

20. Post Job Requirements [ ] N/A

ISI Reviewer (Print Name)

ISI Reviewer (Signature) Date

ANI/ANII Representative (Signature) Date

Supporting Documents
Eng. Eval # 2002-005

Key: ANI-Authorized Nuclear Inspector; ANII-Authorized Nuclear In-service Inspector; ISI-In-service Inspection; NDE-Non-destructive Examination; ASME-American Society of Mechanical Engineers

ENCLOSURE B2-1

VIRGINIA POWER

Weld Map

VEAP-0903 - Attachment 1 Page 1 of 1

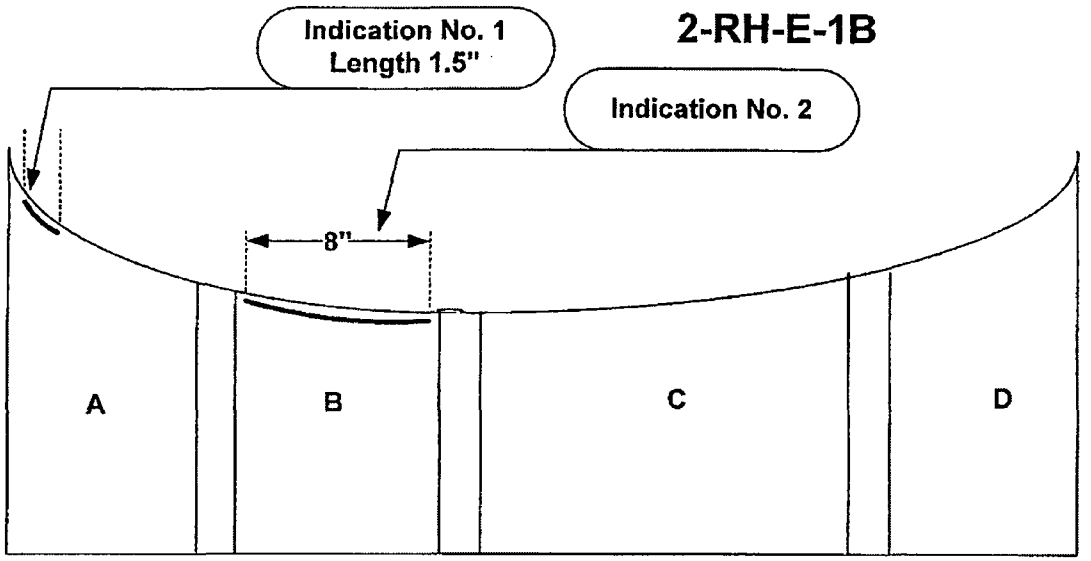
1. Mark/Unit Number	2. WO Number	2. DCP Number	3.
2 - RH-E-1B- HTEXCH	478638- 01		Page 1 of 1

4.	5. Reference Drawing
☒ Safety Related ☒ Seismic ☐ ASME B&PV ☐ Non-Safety Related	12050 - WMKS-RH-E-1B PTRNO:7325

6. Line number/Weld Map Number: WS-2 1 NIS 9-20-02

7. Prepared By (Signature)	Date	8. Reviewed By (Signature)	Date
R Weinstein	9-20-02	[illegible]	9-26-02

9. Isometric or Plan View (Identify lines, major components, and welds) * Indicates for reference only.



Indications Located At Toe Of Weld On Support Pad

Item	Description
A	Carbon Steel
B	Carbon Steel

10. Revisions

Key: WO-Work Order; DCP-Design Change Package

ENCLOSURE B2-1

Dominion

Base Metal Repair/Weld Repair/ Cutout Sheet

VEAP 06NX - Attachment 8

1. Mark Number	2. WO/DCP Number	3. Weld Map/Engineering Drawing Number
2-RH-E-B-HTEXCH	WO : 478638-01	12050- WMKS-RH-E-1B

4. NDE Report Number	5. Type of Work	6. Type of Repair	7. Weld Number
7325	[X] Repair [ ] Cutout	[X] Base Metal [ ] Weld	2

8. Removal Method	9. Excavation
[X] Mechanical	Size : Depth :
[ ] Thermal : Required Preheat Temperature _____ F	10. NDE Required for Excavation Visual ____ PT XX MT ____ RT ____ Other ____

11. Description

- Rejectable indication on weld as indicated on NDE report
- Perform weld repair per steps below in accordance with *Repair / Replacement Plan* # 2002-115
- When weld repair PT is accepted, then resume welding operation and documentation on original weld data sheet
- If weld repair fails fill in PT (step 7) then re-commence weld repair on a new base metal/weld repair/cutout sheet

Resolution

HOLD POINTS	WELD	QC	NDE	ANII	WELD Initial/Date	QC Initial/date	NDE Initial/Date	ANII Initial/Date
1. Excavate until the indication is clear*	XX							
2. (PT) excavation area until clear			XX					
3 Visual of excavation area **		XX						
Record the size, depth, and location inal excavation area	XX							
5. Perform weld repair	XX							
6. Visual of Weld Repair		XX						
7. Final NDE of weld repair (PT)			XX					
8. Final NDE of Integral weld ASME Pre-service			XX					

* Repeat steps 1-3 as required, to clear the indication. NDE to document on report all exams performed to clear indication by grinding If weld is ground out entirely at repair area, then NDE shall mark signoff as N/A.
** If weld is ground out completely at repair area, then QC shall inspect excavation and fill-up gap.
*** If purge is not mention per weld technique then N/A
****If weld is not ground out, then mark steps 6-8 N/A.

12 Originator (Signature) R. Colaiuta WMH 9-20-02 Date 9-20-02

13.
Welder's ID Number _____ Welding Technique Number 103 Rev 8 Weld Joint Detail 14A
AWS Classification _____ Filler Metal Heat/PO/WMCF Number _____

14. Remarks (NDE and welding requirements for repair of reweld shall be the same as the original weld.)

ISI review (Signature) J. P. Hill Date 9-20-02

15 Quality Inspector (Signature) Date

OE/Representative Other (Signature) Date

Key: WO-Work Order; DCP-Design Change Package; NDE-Non-destructive Examination; PT-Penetrant Testing; MT-Magnetic Particle Testing; RT-Radiography Testing; ID-Identification; QI-Quality Inspector; PO-Purchase Order; AWS- American Welding Society; WMFCF-Weld Material Field Control Form

H.S.B. 9/20/02 M.M. GRACE

Form No 722343(Nov 2001)

ENCLOSURE B2-1

Dominion

Liquid Penetrant Report

PTRNO: 7370
NDER: 02-178
WO/DCP: 478638-01
Interval: 3

Station: NAPS Unit 2 Drawing: 1250-WMKS-RH-E-1B Line: N/A

Procedure: NDE-PT-101 Revision: 8 Technique: SOLVENT REMOVABLE - VISIBLE

Thermometer SerNo: PT-8

	Batch	Manufacturer	Designation
Cleaner:	01E04K	MAGNAFLUX	SKC-S
Penetrant:	92K08K	MAGNAFLUX	SKL-SP
Remover:	01E04K	MAGNAFLUX	SKC-S
Developer:	02B05K	MAGNAFLUX	SKD-S2

Meter Serial No: NA started: 21:15 completed: 22:00

uvcheck1: uvcheck2: uvcheck3:

Reading1: NA Reading2: NA Reading3: NA

PTRNO	RECTAG	Mark/Weld	Cat/Add	Exam Area	Surface Condition	Visual	Lighting	Temp	Partial	Results
7370	0	IND.#-1	4.1.1	EXCAVATION	GROUND	SAT	SAT	74-D.F	No	NRI
7370	0	IND.#-2	4.1.1	EXCAVATION	GROUND	SAT	SAT	74-D.F	No	NRI

Comments

MARK # 2-RH-E-1B. WS-1 PTRNO 7325

PTRNO		Signature	Level	Date
7370	Examined By:	ART SULLIVAN Art Sullivan	II	9/20/02

Reviewed By: Level: II Date: 9/24/02

ANII Date 9/26/02
Initial ☐ Final ☑
HSB-CT

ENCLOSURE B2-1

Dominion

Liquid Penetrant Report

PTRNO: 7371
NDER: 02-178
Interval: 3

WO/DCP: 478638-01

Station: NAPS Unit 2 Drawing: 1250-WMKS-RH-E-1B Line: N/A

Procedure: NDE-PT-701 Revision: 3 Technique: SOLVENT REMOVABLE - VISIBLE

Thermometer SerNo: PT-8

	Batch	Manufacturer	Designation
Cleaner:	01E04K	MAGNAFLUX	SKC-S
Penetrant:	92K08K	MAGNAFLUX	SKL-SP
Remover:	01E04K	MAGNAFLUX	SKC-S
Developer:	02B05K	MAGNAFLUX	SKD-S2

Meter Serial No: NA started: 21:15 completed: 22:00

uvcheck1: uvcheck2: uvcheck3:

Reading1: NA Reading2: NA Reading3: NA

PTRNO	RECTAG	Mark/Weld	Cat/Add	Exam Area	Surface Condition	Visual	Lighting	Temp	Partial	Results
7371	0	IND.#-1	C-C	EXCAVATION	GROUND	SAT	SAT	74-D.F	No	NRI
7371	0	IND.#2	C-C	EXCAVATION	GROUND	SAT	SAT	74-D.F	No	NRI

Comments

MARK # 2-RH-E-1B WS-1 PTRNO 7325 (PRE-SERVICE)

PTRNO		Signature	Level	Date
7371	Examined By:	ART SULLIVAN	II	9/20/02

Reviewed By: Ed Hullary Level: II Date: 9/24/02

ANII Date 9/2/03
Initial ☐ Final ☒
HSB-CT

ENCLOSURE B2-2

Dominion

Liquid Penetrant Report

PTRNO: 7375
NDER: 02-001
Interval: 3

WO/DCP: NA

Station: NAPS Unit 2 Drawing: 12050-WMKS-RH-E-1B Line: 2-RH-E-1B

Procedure: NDE-PT-701 Revision: 3 Technique: SOLVENT REMOVABLE-VISIBLE DYE

Thermometer SerNo: PT-8

	Batch	Manufacturer	Designation
Cleaner:	01E04K	MAGNAFLUX	SKC-S
Penetrant:	99J04K	MAGNAFLUX	SKL-SP
Remover:	01E04K	MAGNAFLUX	SKC-S
Developer:	02B05K	MAGNAFLUX	SKD-S2

Meter Serial No: NA started: 4:30 completed: 6:00

uvcheck1: uvcheck2: uvcheck3:

Reading1: NA Reading2: NA Reading3: NA

PTRNO	RECTAG	Mark/Weld	Cal/Add	Exam Area	Surface Condition	Visual	Lighting	Temp	Partial	Results
7375	6515	WS-2	C-C	ATT.4	GROUND	SAT	SAT	78F	Yes	NRI

Comments

SEE ATTACHED PARTIAL AND INDICATION REPORTS FOR EXAMINATION DETAILS.

PTRNO		Signature	Level	Date
7375	Examined By:	ROBERT Jr. PORTER	II	9/21/02

Reviewed By: Level: III Date: 9-27-02

9/30/02

ENCLOSURE B2-2

Dominion

Surface Partial Record

PTRNO: 7375 Drawing: 12050-WMKS-RH-E-1B Line: 2-RH-E-1B

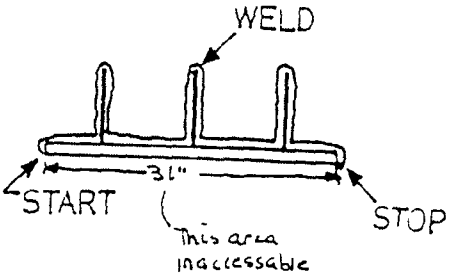
RECTAG: 6515 Mark/weld: WS-2 Percent Examined: 76%

Reason For Partial: 31" AREA OF WELD INACCESSIBLE DUE TO CLOSE PROXIMITY OF CONCRETE SUPPORT

Area Not Examined: WELD AT BOTTOM SIDE OF SUPPORT TO HEAT EXCHANGER .

Comments:

Sketch



9/30/02

Evaluation

100% OF WELD AREA UNABLE TO BE EXAMINED DUE TO CONCRETE SUPPORT STRUCTURE . THE WELD WAS EXAMINED TO THE MAXIMUM EXTENT POSSIBLE . 76.15% OF WELD INSPECTED

SSN: 065-32-7105 Completed By: ROBERT Jr. PORTER Level: II Date: 9/21/02

Evaluated By: Level: III Date: 9-27-02

ENCLOSURE B2-3

Magnetic Particle Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	NDE-MT-701	Outage No.:	N2R18
Summary No.:	N2.C3.10.023	Procedure Rev.:	4	Report No.:	MT-07-002
Workscope:	ISI	Work Order No.:		Page:	1 of 2

Code: Sect. XI 1995 Ed./1996 Add. Cat./Item: C-C/C3.10 Location: AUX 244

Drawing No.: 12050-WMKS-SI-TK-2 Description: Integral Attachment Welds

System ID: SI

Component ID: 12050-WMKS-SI-TK-2 / WS-3 Size/Length: 1" / 40"

Limitations: Support plate for electronics

Light Meter Mfg.: AEMC Instruments Serial No.: AEMC-5 Illumination: 110FC

Temp. Tool Mfg.: N/A Serial No.: N/A Surface Temp.: N/A °F

Resolution: Not Used

Lift Block Serial No.: MT-35 Surface Condition: As Welded

Lo/Wo Location: N/A Field Orientation: 0/90° FIELD ORIENTATION

Magnetic Particle Material

Brand: MAGNAFLUX Wet ☐ Mixed: Yes ☐ Applied By: Dusting ☑

Type: 8A Dry ☑ No ☑ Spraying ☐

Batch No.: 01M027 Fluorescent ☐ With: Flooding ☐

Equipment: PARKER Serial No.: 7820

Head Shot ☐ Amperes Fixed Spacing ☐ AC ☑ DC ☐

Adj. Spacing ☑ 4" - 6" inches Encircling Coils ☐ Turns

Prods. Spacing ☐ inches Current (machine setting) ☐ Amperes

Indication No.	Loc L	Loc W	Diameter	Length	Type R/L	Remarks
N/A						NDE-R # 07-001

Comments:

Indications seen at same location & size as previous report. These indications are below recording criteria, they're also seen visually & considered non relevant. These Indications will not mask a recordable Indication as per procedure NDE-MT-701.

Results: NRI ☑ RI ☐ Eval ☐

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

Examiner Odegard, Jeffrey D	Level II	Signature	Date 03/27/2007	Reviewer Robert Davies	Signature Robert Davies	Date 4/2/07
Examiner N/A	Level N/A	Signature	Date	Site Review N/A	Signature	Date
Other N/A	Level N/A	Signature	Date	ANII Review Mark Grece	Signature MM Hess	Date 4/6/07

Magnetic Particle Examination <Edit From Setup>

ENCLOSURE B2-3

Supplemental Report

Dominion

Report No.: MT-07-002

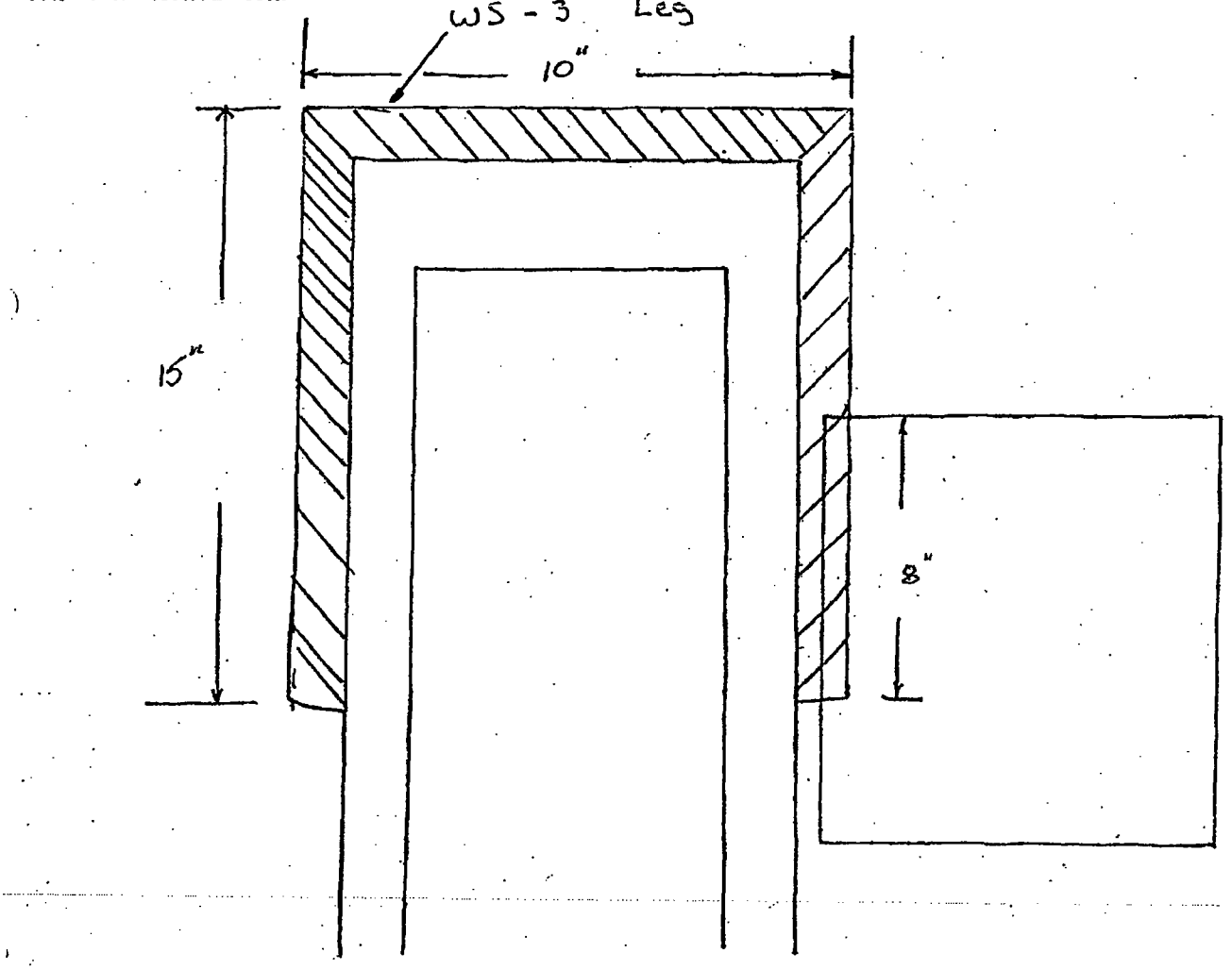
Page: 2 of 2

Summary No.: N2.C3.10.023

Examiner:	Odegard, Jeffrey D JDo	Level:	II	Reviewer:	Robert Davies	Date:	4/2/07
Examiner:	N/A	Level:	N/A	Site Review:	N/A	Date:	
Other:	N/A	Level:	N/A	ANII Review:	MH	Date:	4/6/07

Comments: Support Plate for electronics limited access to weld.

8" of 40" were not accessable in either direction.
8" / 40" = 20% - 100% = 80%.
80% coverage in one direction and 80% coverage in the other direction.
80% + 80% = 160% / 2 = 80%.



B3. Piping – Integrally Welded Attachments

4.B3 IMPRACTICALITY OF COMPLIANCE

In accordance with 10CFR50.55a(g)(5)(iii), relief is requested from the "essentially 100 percent" surface examination coverage requirement for the identified welded attachments.

For weld # SW-92, the limitation is due to the obstruction of the large U-bolt clamps against the integral attachment weld. The U-bolts cover approximately one-third of the weld and are not practical to remove. Configuration details are shown in Enclosure B3-1. There were no reportable indications.

Weld # 45H and 46H were examined to the extent possible, with limitations due to the configuration associated with the adjacent welded pad. 50% of the total required examination area was examined per the Code, with an additional 15% best effort coverage (VT-1 examination). There were no reportable indications.

Weld # 52H was limited in areas not accessible due to the installed pipe clamp. It is not practical to remove the clamp for this examination. There were no reportable indications found.

Weld # 66H was limited in areas under the support at the lug to support interface, and would require destruction in order to examine. There were no reportable indications identified.

5.B3 BURDEN CAUSED BY COMPLIANCE

Disassembly or destruction of the components would be necessary to perform 100% of the Code required examination as written in the 1995 ASME Section XI Code with 1996 Addenda and is contrary to the intent of the Code.

6.B3 PROPOSED ALTERNATIVE AND BASIS

It is proposed that the examinations already completed at the reduced coverage be counted as meeting the Code requirements. The limited surface examination should detect any general patterns of degradation that may occur in the areas covered, therefore providing reasonable assurance of the continued structural integrity of the subject weld.

A total of nineteen (19) examinations were completed among 165 active components in Category C-C, Item No. C3.20, during the third ISI inspection interval with no unacceptable indications found.

Welds # SW-92, 45H, and 46H are on class 601-Q2 piping, A-691 600lb ANSI carbon steel with A-299 steel fittings.

Weld # 52H is on class 153A-Q3 piping, A-312-TP304 stainless steel with A-403-WP304 fittings.

Weld # 66H is on class 1502-Q2 piping, A-376-TP316 stainless steel with A-240-TP316/304 lugs.

Previous relief was granted for the second interval on weld # 52H per request NDE-29.

ENCLOSURE B3-1

NZ, C3, 20.002

Dominion

Magnetic Particle Report

Interval: 3 WO/DCP:

Station: NAPS Unit 2 Drawing: 12050-WMKS-0101A-1 Line: 32"-SHP-401-601-Q2

MTRNO: 3485 NDER: 05-006 Procedure: NDE-MT-701 Revision: 4 Thermometer SerNo: NA

Batch:	03L090	SerialNo:	7821	Current:	AC
Manuf:	MAGNAFLUX	Equipment:	MT Yoke	Amps:	NA
Type:	DRY-RED	Model:	B300	Turns:	NA
Designation:	8A	Lift Block:	MT-35	Spacing:	7"

Started:	14:00	Completed:	14:20	Final Lift Test:	SAT

Verification of Wet Particle Concentration: NA Meter Serial # AEMC-7

uvcheck1: uvcheck2: uvcheck3:

Reading1: Reading2: Reading3:

MTRNO	RECTAG	Mark/Weld	Cat/Add	Exam Area	Surface Condition	Visual	Lighting	Temp	Partial	Results
3485	7534	SW-92	C-C	ATT. 4	As Welded	SAT	129 fc	NA	Yes	NRI

Comments:

Mark # SW-92

MTRNO		Signature	Level	Date
3485	Examined By:	JEFFREY T. CURRAO	II	10/11/2005

Reviewed By: Level: III Date: 10/18/05

ANII Date 10/18/05
Initial ☐ Final ☐
HSB-CT

ENCLOSURE B3-1

Dominion
Surface Partial Record

MTRNO: 3485 **Drawing:** 12050-WMKS-0101A-1 **Line:** 32"-SHP-401-601-Q2

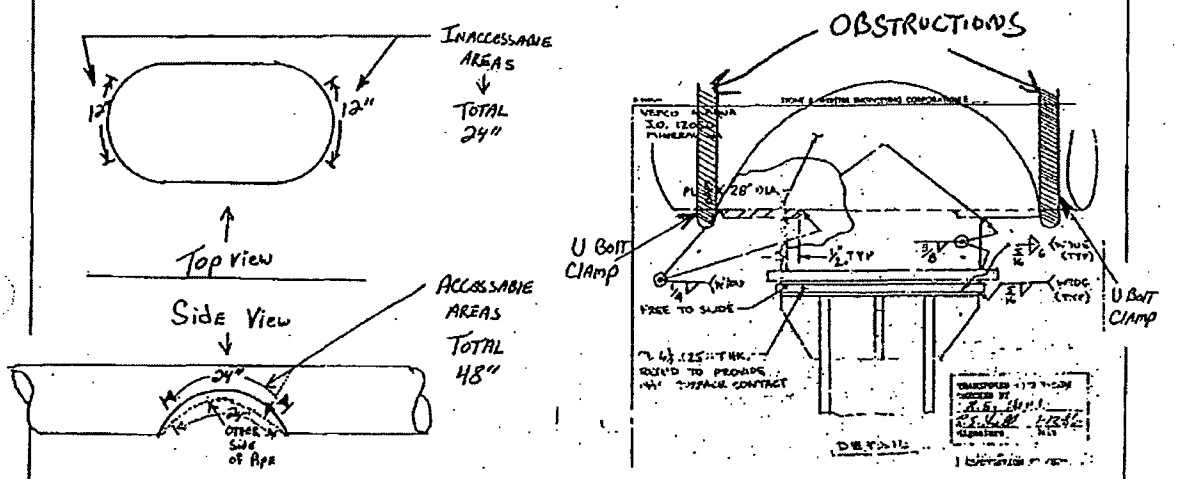
RECTAG: 7534 **Mark/weld:** SW-92 **Percent Examined:** 66%

Reason For Partial: Obstruction due to Large Diameter U Bolt Clamps against the Integral Attachment Weld.

Area Not Examined: See Sketch

Comments: NA

Sketch



Evaluation

The U-bolts associated with this support cover 1/3 of the weld and not practical to remove.

Signature: JEFFREY T. CURRAO **Level:** II **Date:** 10/11/2005

Jeffrey T Currao

Evaluated By: Donald L Jensen **Level:** III **Date:** 10/18/05

ANII DLJ Date 10/19/05
Initial ☐ Final ☑
HSB-CT

ENCLOSURE B3-2

Magnetic Particle Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-MT-200	Outage No.:	N2R20
Summary No.:	N2.C3.20.042	Procedure Rev.:	4	Report No.:	MT-10-010
Workscope:	ISI	Work Order No.:		Page:	1 of 2

Code: Sect. XI 1995 Ed./1996 Add. Cat./Item: C-C/C3.20 Location: RC291

Drawing No.: 12050-WMKS-0102A Description: Integral attachment

System ID: WFPD

Component ID: 12050-WMKS-0102A / 16-WFPD-424 / 45H Size/Length: 1.0" / 32.0"

Limitations: See attached page

Light Meter Mfg.: N/A Serial No.: N/A Illumination: N/A

Temp. Tool Mfg.: N/A Serial No.: N/A Surface Temp.: N/A °F

Resolution: 0.044" Character Card

Lift Block Serial No.: MT-33 Surface Condition: As Welded

Lo/Wo Location: TDC / Weld Center Line Field Orientation: 0/90° Field Orientation

Magnetic Particle Material

Brand: MAGNAFLUX Wet ☐ Mixed: Yes ☐ Applied By: Dusting ☑

Type: 8A Red Dry ☑ No ☐ Spraying ☐

Batch No.: 02K075 Fluorescent ☐ With: N/A Flooding ☐

Equipment: PARKER Serial No.: 7820

Head Shot ☐ N/A Amperes Fixed Spacing ☐ AC ☑ DC ☐

Adj. Spacing ☑ 3"- 8" inches Encircling Coils ☐ N/A Turns

Prods. Spacing ☐ N/A inches Current (machine setting) ☐ N/A Amperes

Indication No.	Loc L	Loc W	Diameter	Length	Type R/L	Remarks
NRI						

Comments:

See attached page for inspection coverage and limitations.
NDER–2010-053 Character Resolution Card S/N #DOM-2009-0271 WO#59101919553

Results: NRI ☑ RI ☐ Eval ☐

Percent Of Coverage Obtained > 90%: No Reviewed Previous Data: N/A Exam Time: 1015

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Roehl, Adam L.	II	Adam Roehl	04/03/2010	W.L. THOMAS		4-8-10
Examiner	Level	Signature	Date	Site Review	Signature	Date
Zollner, Brian D	II	Brian Zollner	04/03/2010	Jeff Odegard		4/8/10
Other	Level	Signature	Date	ANII Review	Signature	Date
N/A	N/A					11 Apr 2010

ENCLOSURE B3-2

Supplemental Report

Dominion

Report No.: MT-10-010

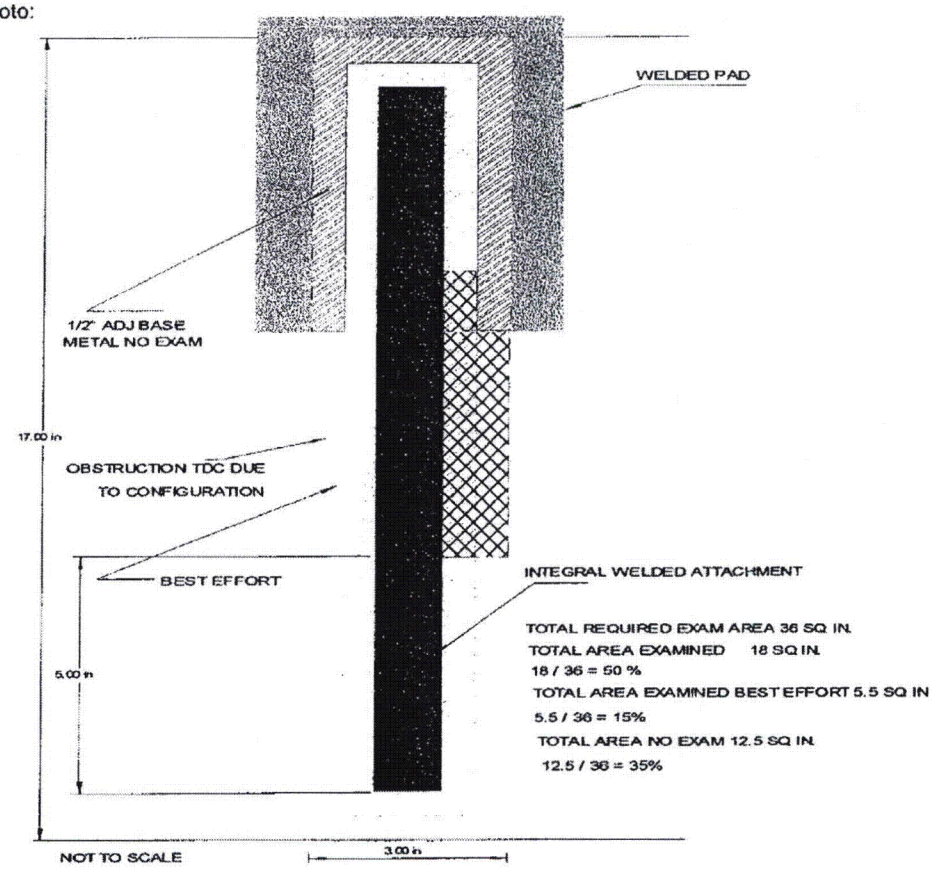
Page: 2 of 2

Summary No.: N2.C3.20.042

Examiner:	Roehl, Adam L.	Level:	II	Reviewer:	W.C. Thomas	Date:	4.8.10
Examiner:	Zollner, Brian D	Level:	II	Site Review:	Jeff Odegard JDO	Date:	4/8/10
Other:	N/A	Level:	N/A	ANII Review:	M Hu	Date:	11 Apr 10

Comments:

Sketch or Photo:



Additional - Supplemental Data

ENCLOSURE B3-2

Visual Examination of Welds (VT-1)

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-VT-601	Outage No.:	N2R20
Summary No.:	N2.C3.20.042	Procedure Rev.:	2	Report No.:	VT-10-104
Workscope:	ISI	Work Order No.:		Page:	1 of 1

Code: Sect. XI 1995 Ed./1996 Add. Cat./Item: C-C/C3.20 Location: RC291

Drawing No.: 12050-WMKS-0102A Description: Integral attachment

System ID: WFPD

Component ID: 12050-WMKS-0102A / 16-WFPD-424 / 45H

Limitations: None

Light Meter Mfg.: N/A Serial No.: N/A Illumination: N/A

Light Verification Times: Cal In ☑ 1015 / N/A / N/A Cal Out ☑ 1020

When Applicable: Temp. Tool Mfg.: N/A Serial No.: N/A Surface Temp.: N/A °F

Resolution: 0.044" Character Card Surface Condition: As Welded

Visual Equipment/Aids: Character Card, Mirror, Flash Light, & Scale

Lo Location: TDC

Visual Examination: Direct

Observed Conditions	Accept	Reject	N/A	See Comments	Comments
1) Cracking	☑	☐	☐	☐	
2) Surface Discontinuities	☑	☐	☐	☐	
3) Surface Irregularities	☑	☐	☐	☐	
4) Distortion	☑	☐	☐	☐	
5) Wear	☑	☐	☐	☐	
6) Pitting	☑	☐	☐	☐	
7) Corrosion	☑	☐	☐	☐	
8) Arc Strikes	☑	☐	☐	☐	
9) Gouges	☑	☐	☐	☐	
10) Other (Describe)	☐	☐	☑	☐	

Comments:

Inspected the 6.0" of weld that was not accessable for Magnetic Particle Examination.
NDER-2010-053 Character Resolution Card S/N: DOM-2009-0271 WO#59101919553

Results: Accept ☑ Reject ☐ Eval ☐

Percent Of Coverage Obtained > 90%: Yes Reviewed Previous Data: N/A

Examiner	Level II	Signature	Date	Reviewer		Signature	Date
Roehl, Adam L.			04/03/2010	W.L. Thomas			4-8-10
Examiner	Level II	Signature	Date	Site Review		Signature	Date
Ollner, Brian D			04/03/2010	Jeff Odegard			4/8/10
Other	Level N/A	Signature	Date	ANII Review		Signature	Date
N/A					N/A		

ENCLOSURE B3-3

Magnetic Particle Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-MT-200	Outage No.:	N2R20
Summary No.:	N2.C3.20.043	Procedure Rev.:	4	Report No.:	MT-10-011
Workscope:	ISI	Work Order No.:		Page:	1 of 2

Code: Sect. XI 1995 Ed./1996 Add. Cat./Item: C-C/C3.20 Location: RC291

Drawing No.: 12050-WMKS-0102A Description: Integral attachment

System ID: WFPD

Component ID: 12050-WMKS-0102A / 16-WFPD-424 / 46H Size/Length: 1.0" / 32.0"

Limitations: See attached page

Light Meter Mfg.: N/A Serial No.: N/A Illumination: N/A

Temp. Tool Mfg.: N/A Serial No.: N/A Surface Temp.: N/A °F

Resolution: 0.044" Character Card

Lift Block Serial No.: MT-33 Surface Condition: As Welded

Lo/Wo Location: TDC / Weld Center Line Field Orientation: 0/90° Field Orientation

Magnetic Particle Material

Brand: MAGNAFLUX Wet ☐ Mixed: Yes ☐ Applied By: Dusting ☑

Type: 8A Red Dry ☑ No ☐ Spraying ☐

Batch No.: 02K075 Fluorescent ☐ With: N/A Flooding ☐

Equipment: PARKER Serial No.: 7820

Head Shot ☐ N/A Amperes Fixed Spacing ☐ AC ☑ DC ☐

Adj. Spacing ☑ 3"- 8" inches Encircling Coils ☐ N/A Turns

Prods. Spacing ☐ N/A inches Current (machine setting) ☐ N/A Amperes

Indication No.	Loc L	Loc W	Diameter	Length	Type R/L	Remarks
NRI						

Comments:

See attached page for inspection coverage and limitations.
NDER--2010-053 Character Resolution Card S/N #DOM-2009-0271 WO#59101919553

Results: NRI ☑ RI ☐ Eval ☐

Percent Of Coverage Obtained > 90%: No Reviewed Previous Data: N/A Exam Time: 1015

Examiner	Level II	Signature	Date	Reviewer	Signature	Date
Roehl, Adam L.			04/03/2010	W.L. THOMAS		4-8-10
Examiner	Level II	Signature	Date	Site Review	Signature	Date
ollner, Brian D			04/03/2010	Jeff odegard		4/8/10
Other	Level N/A	Signature	Date	ANII Review	Signature	Date
N/A						11 Apr 2010

ENCLOSURE B3-3

Supplemental Report

Dominion

Report No.: MT-10-011

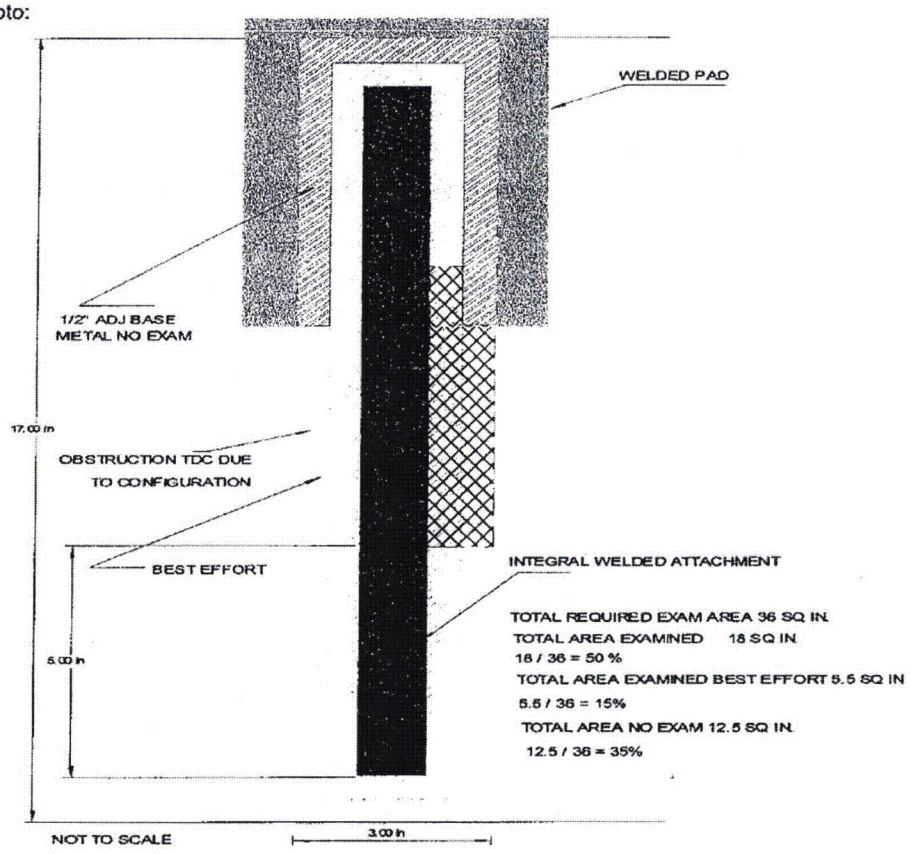
Page: 2 of 2

Summary No.: N2.C3.20.043

Examiner:	Roehl, Adam L.	Level:	II	Reviewer:	W.L. THOMAS	Date:	4.8.10
Examiner:	Zollner, Brian D	Level:	II	Site Review:	Jeff Edgerd JDE	Date:	4/8/10
Other:	N/A	Level:	N/A	ANII Review:	M Lee	Date:	11 Apr 10

Comments:

Sketch or Photo:



Additional - Supplemental Data

ENCLOSURE B3-3

Visual Examination of Welds (VT-1)

Dominion

Site/Unit: NAPS / 2 | Procedure: ER-AA-NDE-VT-601 | Outage No.: N2R20

Summary No.: N2.C3.20.043 | Procedure Rev.: 2 | Report No.: VT-10-105

Workscope: ISI | Work Order No.: | Page: 1 of 1

Code: Sect. XI 1995 Ed./1996 Add. | Cat./Item: C-C/C3.20 | Location: RC291

Drawing No.: 12050-WMKS-0102A | Description: Integral attachment

System ID: WFPD

Component ID: 12050-WMKS-0102A / 16-WFPD-424 / 46H

Limitations: None

Light Meter Mfg.: N/A | Serial No.: N/A | Illumination: N/A

Light Verification Times: Cal In ☑ 1015 / N/A / N/A Cal Out ☑ 1020

When Applicable: Temp. Tool Mfg.: N/A | Serial No.: N/A | Surface Temp.: N/A °F

Resolution: 0.044" Character Card | Surface Condition: As Welded

Visual Equipment/Aids: Character Card, Mirror, Flash Light, & Scale

Lo Location: TDC

Visual Examination: Direct

Observed Conditions	Accept	Reject	N/A	See Comments	Comments
1) Cracking	☑	☐	☐	☐	
2) Surface Discontinuities	☑	☐	☐	☐	
3) Surface Irregularities	☑	☐	☐	☐	
4) Distortion	☑	☐	☐	☐	
5) Wear	☑	☐	☐	☐	
6) Pitting	☑	☐	☐	☐	
7) Corrosion	☑	☐	☐	☐	
8) Arc Strikes	☑	☐	☐	☐	
9) Gouges	☑	☐	☐	☐	
10) Other (Describe)	☐	☐	☑	☐	

Comments:

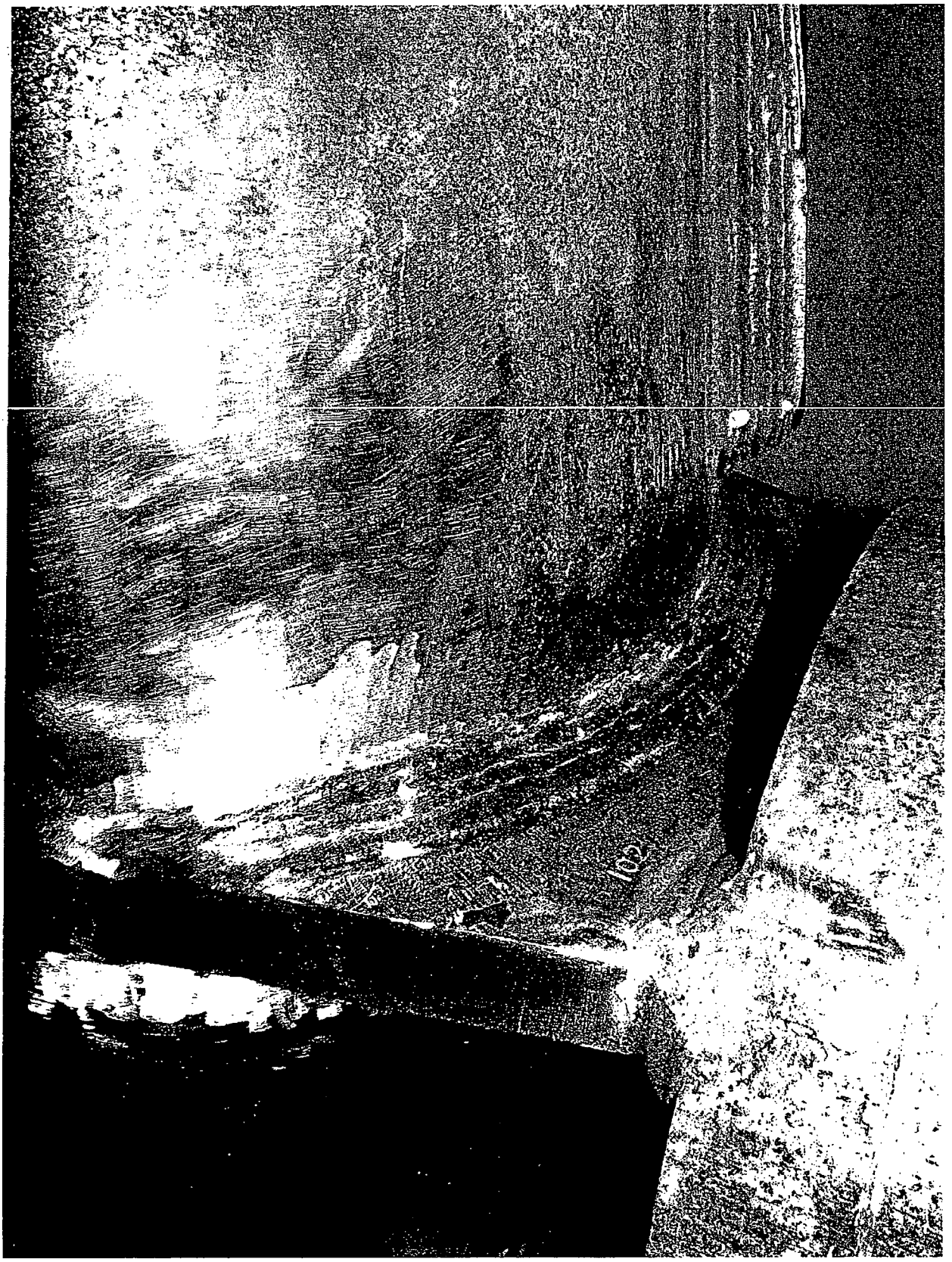
Inspected the 6.0" of weld that was not accessable for Magnetic Particle Examination.
NDER-2010-053 Character Resolution Card S/N: DOM-2009-0271 WO#59101919553

Results: Accept ☑ Reject ☐ Eval ☐

Percent Of Coverage Obtained > 90%: Yes | Reviewed Previous Data: N/A

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Roehl, Adam L.	II	Adam Roehl	04/03/2010	W.L. Thomas		4-8-10
Examiner	Level	Signature	Date	Site Review	Signature	Date
Ollner, Brian D	II	Brian Ollner	04/03/2010	Jeff Odegard		4/8/10
Other	Level	Signature	Date	ANII Review	Signature	Date
N/A	N/A			N/A		

ENCLOSURE B3-3



ENCLOSURE B3-4

Liquid Penetrant Examination

Dominion

Site/Unit: NAPS / 2 Procedure: NDE-PT-701 Outage No.: N2R18

Summary No.: N2.C3.20.089 Procedure Rev.: 6 Report No.: PT-07-008

Workscope: ISI Work Order No.: Page: 1 of 2

Code: Sect. XI 1995 Ed./1996 Add. Cat./Item: C-C/C3.20 Location: QSPH

Drawing No.: 12050-WMKS-0107D Description: Integral Attachment Welds

System ID: QS

Component ID: 12050-WMKS-0107D / 8-QS-403 / 52H Size/Length: 4 LUGS @ 6.1"

Limitations: See attached

Light Meter Mfg.: AEMC Instruments Serial No.: AEMC-9 Illumination: 385

Temp. Tool Mfg.: AEMC Instruments Serial No.: 1066BGCY Surface Temp.: 70 °F

Comparator Block Temp.: Side A: N/A °F Side B: N/A °F Resolution: Not Used

Lo/Wo Location: N/A Surface Condition: AS WELDED

	Cleaner	Penetrant	Remover	Developer
Brand	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX
Type	SKC-S	SKL-SP1	SKC-S	SKD-S2
Batch No.	05H06K	03H05K	05H06K	05A10K
Time	Evap. 5 min	Dwell 10 min	Evap. 5 min	Develop 7 min

Time Exam Started: 2018 Time Exam Completed: 2145

Indication No.	Loc L	Loc W	Diameter	Length	Type R/L	Remarks

Comments:
See attached

Results: NRI ☑ RI ☐ Eval ☐

Percent Of Coverage Obtained > 90%: No Reviewed Previous Data: N/A

Examiner	Level II	Signature	Date	Reviewer		Signature	Date
Wickenhauser, Keith F.		Keith Wickenhauser	03/29/2007		Raigal J Koch		4-10-07
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				Mark Grace		M Grace	4/12/07

Liquid Penetrant Examination <Edit From Setup>

ENCLOSURE B3-4

Supplemental Report

Dominion

Report No.: PT-07-008

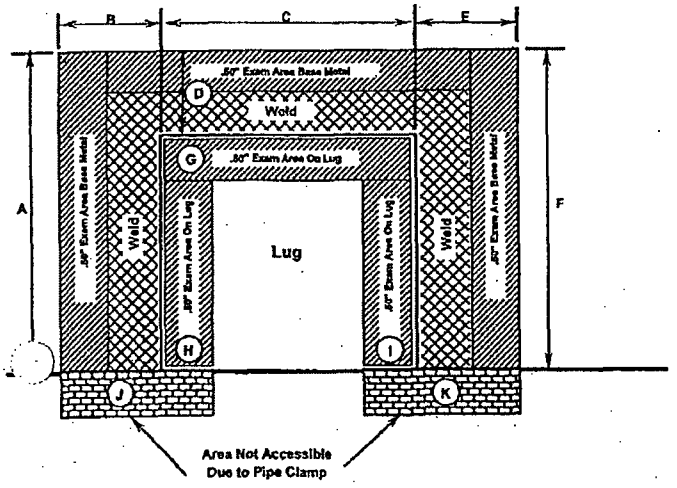
Page: 2 of 2

Summary No.: N2.C3.20.089

Examiner:	Wickenhauser, Keith F.	Level:	II	Reviewer:	Date: 4-10-07
Examiner:	N/A	Level:	N/A	Site Review: N/A	Date:
Other:	N/A	Level:	N/A	ANII Review:	Date: 4/12/07

Comments:

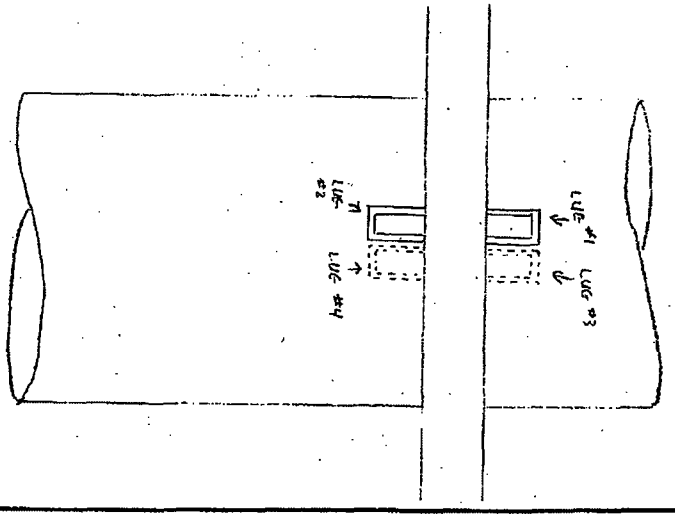
Picture shows 1 of 4 limitations. All 4 lugs were limited for this exam.



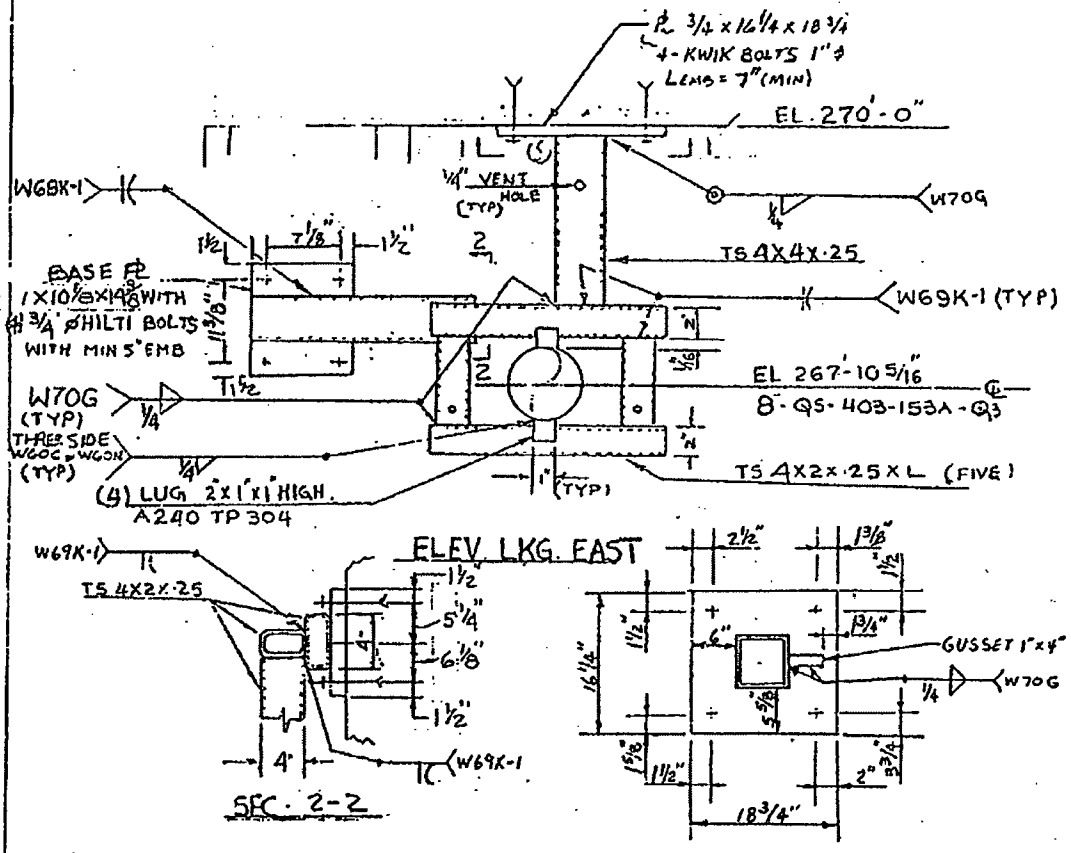
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3.000	1.000	3.0000
A	B	
1.375	0.875	1.2031
C	D	
0.900	1.000	0.9000
E	F	
1.00	3.000	3.0000
	G	
.50	0.500	0.2500
	H	
.50	0.500	0.2500
	I	
[illegible]	[illegible]	[illegible]
	J	
[illegible]	[illegible]	[illegible]
	K	

Surface Area Missed Due to Pipe Clamp

Surface Area Required	10.1031	*Total ASME Code Coverage Achieved*
Area Missed Due to Pipe Clamp	1.5000	
Surface Area Examined	8.6031	85.15%



Additional - Supplemental Reports <Edit From Setup>



SUPPORT TYPE: VC-EW

REFERENCES

12050-ZPSK-2545
GRINNELL SHT: 7090
E&DCR: P-1676 D; 31; 104
N&D: 2275-8 PD 18A
SUPPORT CALCS: 2120; 3294
12050-FP-7D
" FC-19A
STRESS CALC 12050-X7-71
12080-MSK-107D(PT 69)
NUCLEAR SAFETY RELATED
Q.A. CAT. 1

INFORMATION TRANSPOSED BY A. SADOWSKI
Signature 11-5-85 Date
CHECKED BY E. MICHEL 07-31-86

HANG. NO 2 QS-R-200
RESTRAINT FOR 8-QS-403-153A-Q3

YARD PIPING - NORTH QUENCH SPRAY M.S. VALVE HOUSE UNIT 2

12050-PSSK-107D.2
SH 1 OF 1

CAUTION: Modifications made by DCP's or EWR's with an installation complete date after 4-30-85 are not reflected on this drawing.

ENCLOSURE B3-5

Liquid Penetrant Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	NDE-PT-701	Outage No.:	N2R18
Summary No.:	N2.C3.20.143	Procedure Rev.:	6	Report No.:	PT-07-001
Workscope:	ISI	Work Order No.:		Page:	1 of 2

Code: Sect. XI 1995 Ed./1996 Add. Cat./Item: C-C/C3.20 Location: AUX 244

Drawing No.: 12050-WMKS-0111DC Description: Integral Attachment Welds

System ID: SI

Component ID: 12050-WMKS-0111DC / 3-SI-456 / 66H Size/Length: 1/4"/ 6" per Lug

Limitations: Yes

Light Meter Mfg.: AEMC Instruments Serial No.: AEMC-11 Illumination: 212 Fc

Temp. Tool Mfg.: AEMC Instruments Serial No.: 1072BGCY Surface Temp.: 86 °F

Comparator Block Temp.: Side A: N/A °F Side B: N/A °F Resolution: Not Used

Lo/Wo Location: N/A Surface Condition: GROUND

	Cleaner	Penetrant	Remover	Developer
Brand	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX
Type	SKC-S	SKL-SP1	SKC-S	SKD-S2
Batch No.	05H06K	02K01K	05H06K	02D07K
Time	Evap. 5 MIN.	Dwell 10 MIN.	Evap. 5 MIN.	Develop 7 MIN.

Time Exam Started: 13:20 Time Exam Completed: 14:15

Indication No.	Loc L	Loc W	Diameter	Length	Type R/L	Remarks

Comments:
For Exam corverage % see Supplemental Report.

Results: NRI ☑ RI ☐ Eval ☐

Percent Of Coverage Obtained > 90%: No Reviewed Previous Data: N/A

Examiner Currao, Jeffrey T	Level II	Signature Jeffrey Currao	Date 03/23/2007	Reviewer Raymond T Stach		Signature Raymond T Stach	Date 4-3-07
Examiner N/A	Level N/A	Signature	Date	Site Review		Signature N/A	Date
Other N/A	Level N/A	Signature	Date	ANII Review	Mark Grace	Signature Mark Grace	Date 4/6/07

Liquid Penetrant Examination <Edit From Setup>

ENCLOSURE B3-5

Supplemental Report

Dominion

Report No.: PT-07-001

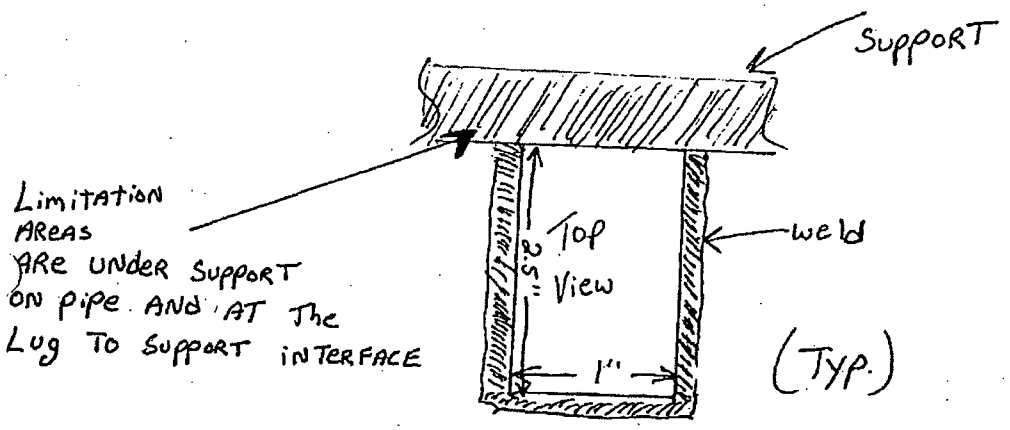
Page: 2 of 2

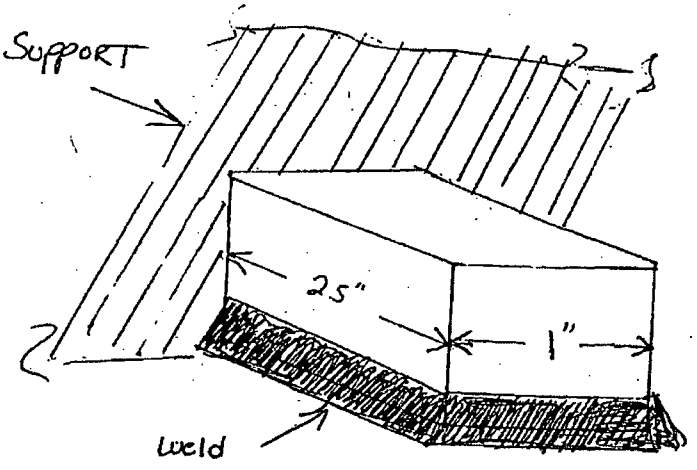
Summary No.: N2.C3.20.143

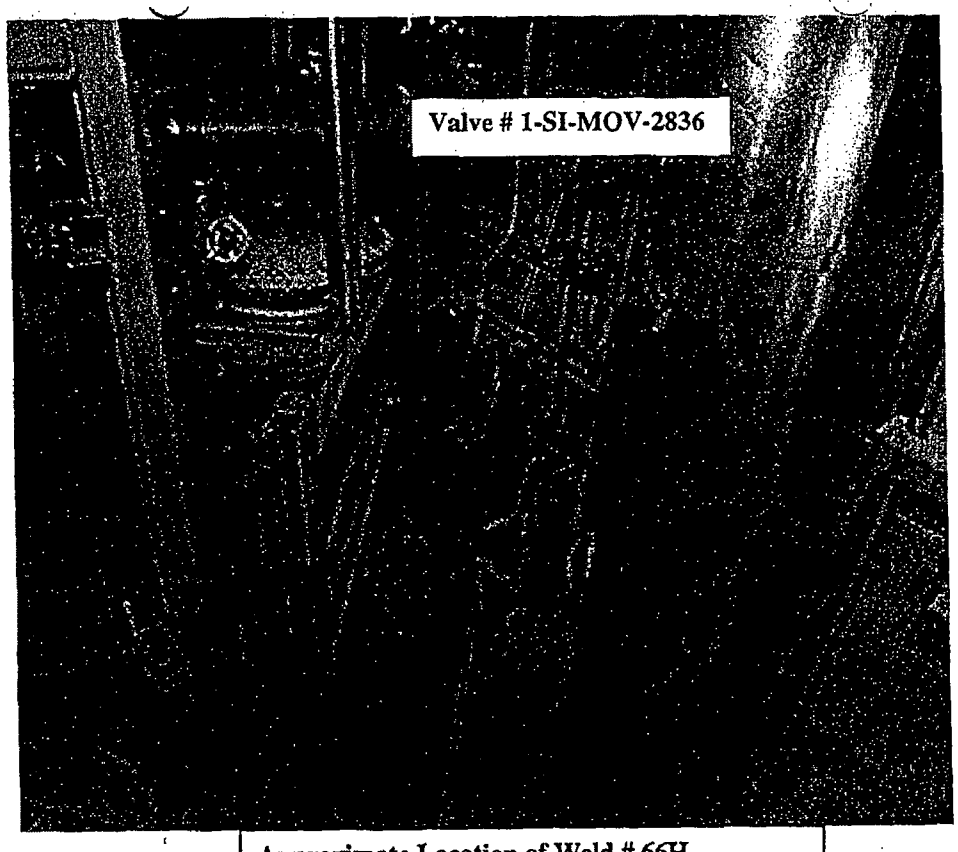
Examiner:	Currao, Jeffrey T	Level:	II	Reviewer:		Date:	4-2-07
Examiner:	N/A	Level:	N/A	Site Review:	N/A	Date:	
Other:	N/A	Level:	N/A	ANII Review:		Date:	4/6/07

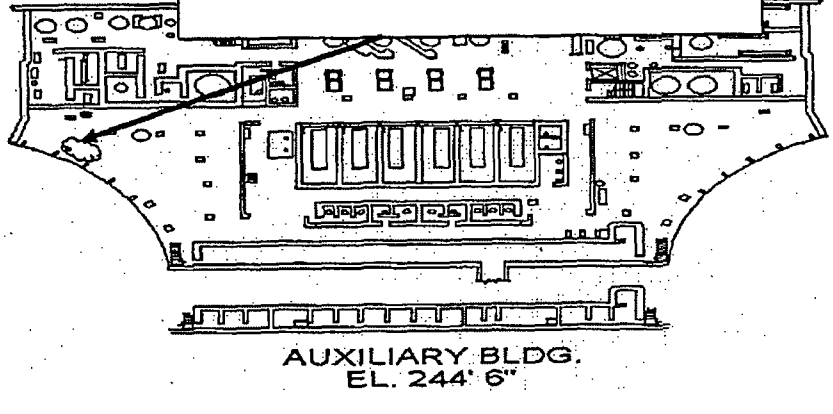
Comments:

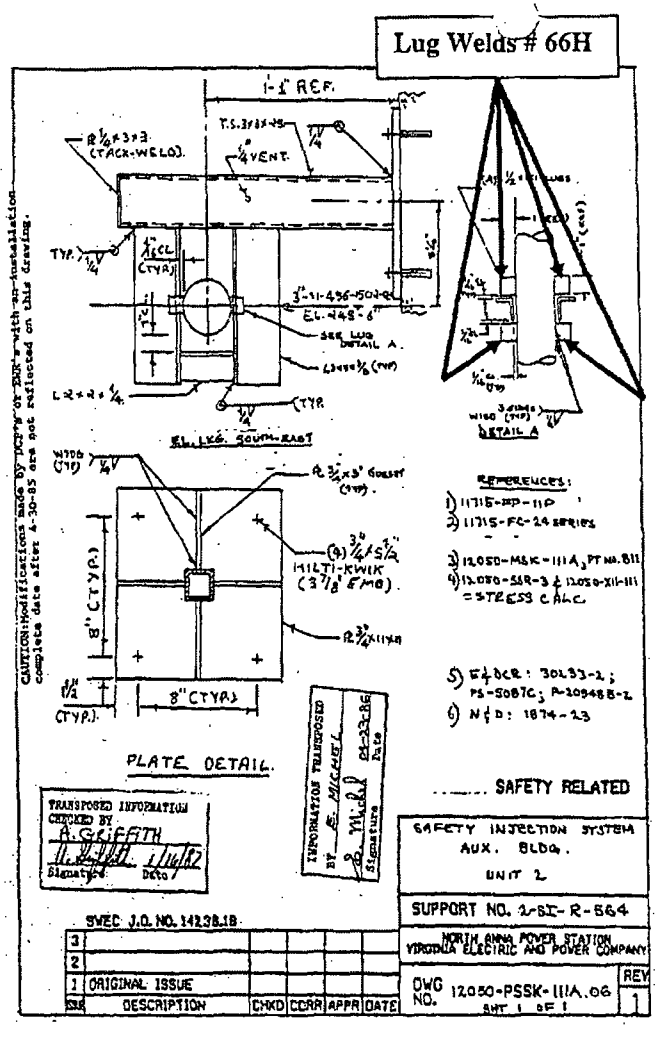
Total Sq inches per lug 10.5" Total limitation per Lug 2" entire exam was a total of 4 lugs.
Total Exam sq inches 42"
Total Exam limitations in sq inches 8" TOTAL EXAM COVERAGE % FOR ALL 4 LUGS IS 81%
See drawing below.





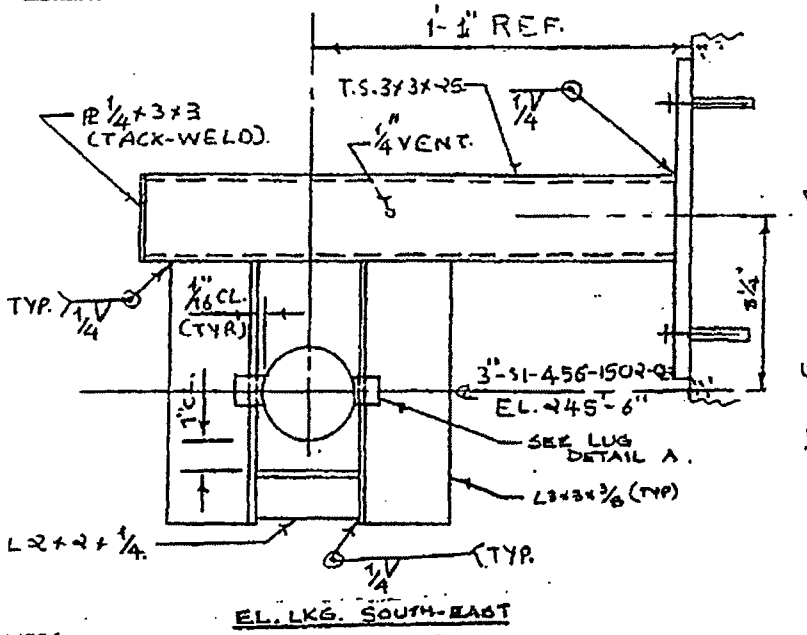

Valve # 1-SI-MOV-2836

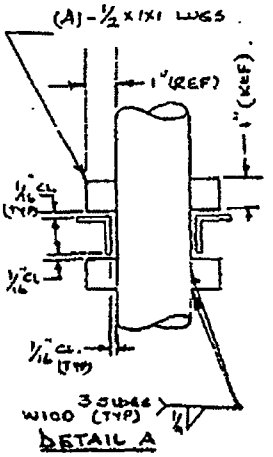

Approximate Location of Weld # 66H
AUXILIARY BLDG.
EL. 244' 6"


Lug Welds # 66H
PLATE DETAIL
SAFETY RELATED
SAFETY INJECTION SYSTEM
AUX. BLDG.
UNIT 2
SUPPORT NO. 2-SI-R-564
NORTH ANNA POWER STATION
VIRGINIA ELECTRIC AND POWER COMPANY
SWEC J.O. NO. 14238.18
ORIGINAL ISSUE
OWG NO. 12050-PSSK-111A.06
REV 1

ENCLOSURE B3-5

CAUTION: Modifications made by DCP's or EWR's with an installation complete date after 4-30-85 are not reflected on this drawing.





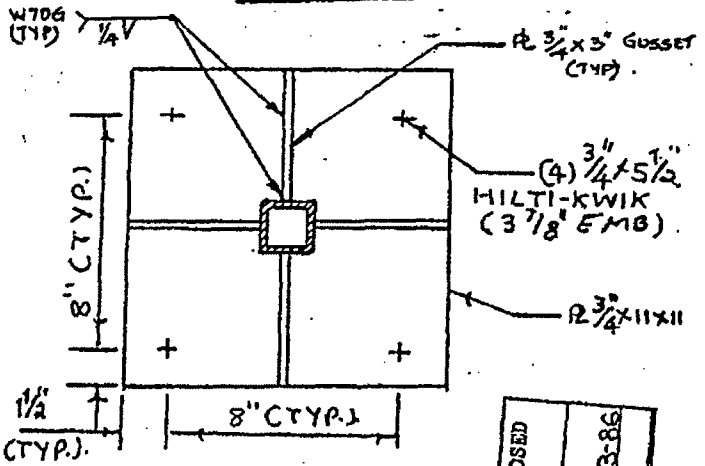


PLATE DETAIL.

REFERENCES:

1) 11715-FP-11P
2) 11715-FC-24 SERIES
3) 12050-MSK-111A, PT No. B11
4) 12050-SSR-3 & 12050-XII-111 = STRESS CALC.
5) E&DCR: 30233-2; PS-5087C; P-2094BB-2
6) N&D: 1874-23

SAFETY RELATED

TRANSPOSED INFORMATION CHECKED BY
A. GRIFFITH
A. Griffith 1/16/87
Signature Date

INFORMATION TRANSPOSED BY E. MICHEL
E. Michel 04-23-86
Signature Date

SAFETY INJECTION SYSTEM
AUX. BLDG.
UNIT 2

SUPPORT NO. 2-SI-R-564

SWEC J.O. NO. 14238.18

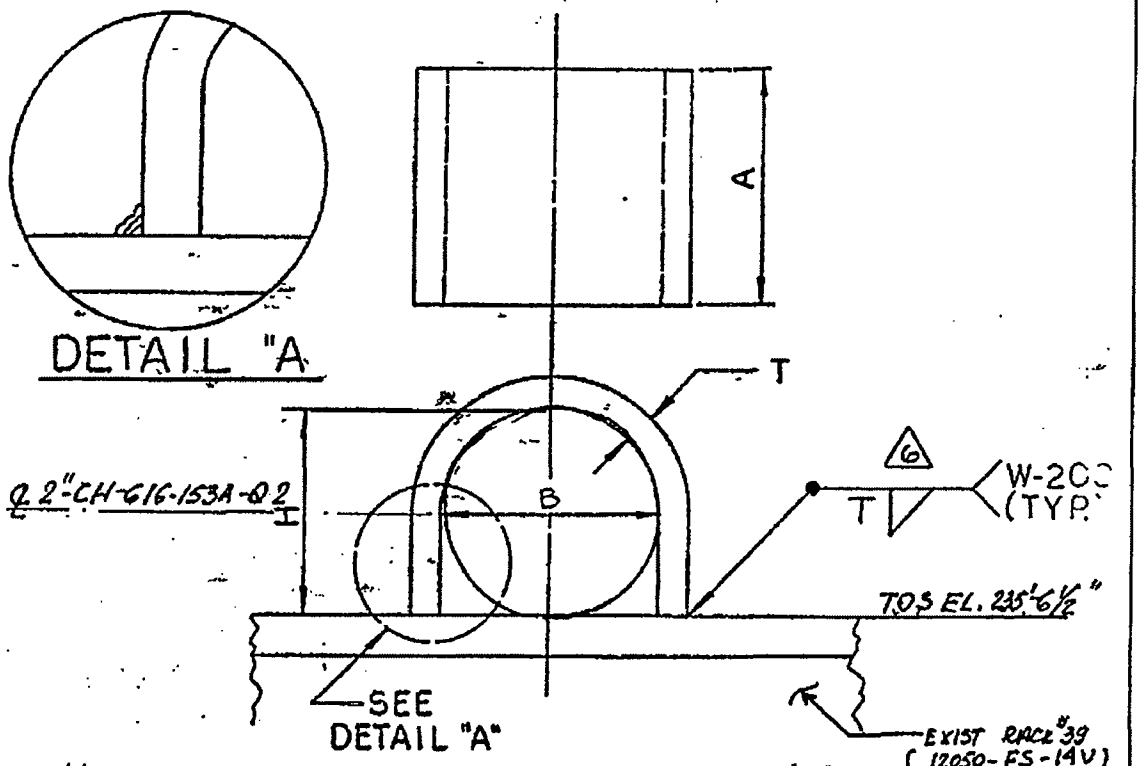
NORTH ANNA POWER STATION
VIRGINIA ELECTRIC AND POWER COMPANY

ISSUE	DESCRIPTION	CHKD	CORR	APPR	DATE
3					
2					
1	ORIGINAL ISSUE				

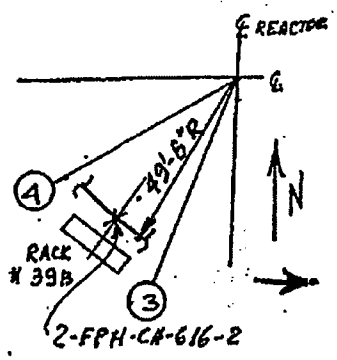
DWG NO. 12050-PSSK-111A.06 SHT 1 OF 1

REV 1

ENCLOSURE B3-5



NOTES:
1. PIPE STRAP MAY BE SUBSTITUTED FOR 'U' BOLTS
2. ALL WELDS TO BE W-200. EXCEPT WHERE NOTED



KEY PLAN

REF.
12050-FP-3C, 11B
FS-14V
MSK-111M
SSR-8
STRESS PT. 550
STRESS CALC. XII-719E
ISO: SPH-CH-616
& CH-2616A
HSD-1078

REVISION DESCRIPTION	Dominion	NUCLEAR ENGINEERING RICHMOND, VIRGINIA
REVISED PER DCR 2002-2056. THIS DWG SUPERSEDES REV 2	PIPE SUPPORT SKETCH FOR VERTICAL & LATERAL PIPE STRAP FOR 2-FPH-CH-616-2 LINE 2"-CH-616-153A-Q2 CHEMICAL & VOLUME CONTROL SYSTEM - REACTOR CONTAINMENT NORTH ANNA POWER STATION - UNIT 2	

DSGN AEG	CAD NO: (A1) ALON001 C:\usr\dgn\111M021HYBxpl	DRAWING NO: 12050-PSSK-111M.02	SH 1 OF 1	REV 3

16-DEC-2002 07:29 PC=EA1 & MA1

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B4. Pumps – Integrally Welded Attachments

4.B4 IMPRACTICALITY OF COMPLIANCE

In accordance with 10CFR50.55a(g)(5)(iii), relief is requested from the "essentially 100 percent" surface examination coverage requirement for the identified welded attachments. Inaccessibility to the examination area prevented full examination of each of these welds. No other NDE method would obtain a greater percentage of coverage. 76% of weld # WS-01 was examined, and 78% of weld #'s WS-02, WS-03, and WS-04 were examined. Data reports and extent of limitations are demonstrated in Enclosures B4-1 and B4-2, attached.

5.B4 BURDEN CAUSED BY COMPLIANCE

Disassembly or destruction of the components would be necessary to perform 100% of the Code required examination as written in the 1995 ASME Section XI Code with 1996 Addenda and is contrary to the intent of the Code.

6.B4 PROPOSED ALTERNATIVE AND BASIS

It is proposed that the examinations already completed at the reduced coverage be counted as meeting the Code requirements. The limited surface examination should detect any general patterns of degradation that may occur in the areas covered, therefore providing reasonable assurance of the continued structural integrity of the subject weld.

Among 12 active components in Category C-C, Item No. C3.30, a total of two (2) were required to be examined. Four (4) integrally welded attachments on pumps were examined, all with limitations and included in this request.

The Centrifugal Charging Pump casing material is ASME SA-182 grade 304 stainless steel.

Second interval relief was granted per relief request NDE-19, NRC Letter dated 8/8/1995 (TAC No. M89740), and NDE-30, NRC Letter dated 10/10/1996 (TAC Nos. M95202).

ENCLOSURE B4-1

N2.03.30.005

Dominion

Liquid Penetrant Report

PTRNO: 7554
NDER: 02-223
WO/DCP: N/A
Interval: 3

Station: NAPS Unit 2 Drawing: 12050-WMKS-CH-P-1B Line: 2-CH-P-1B

Procedure: NDE-PT-701 Revision: 3 Technique: SOLVENT REMOVABLE-VISIBLE

Thermometer SerNo: PT-2

	Batch	Manufacturer	Designation
Cleaner:	02E05K	MAGNAFLUX	SKC-S
Penetrant:	99E02K	MAGNAFLUX	SKL-SP
Remover:	02E05K	MAGNAFLUX	SKC-S
Developer:	02B05K	MAGNAFLUX	SKD-S2

Meter Serial No: NA started: 9:30 completed: 10:30

uvcheck1: uvcheck2: uvcheck3:

Reading1: NA Reading2: NA Reading3: NA

PTRNO	RECTAG	Mark/Weld	Cat/Add	Exam Area	Surface Condition	Visual	Lighting	Temp	Partial	Results
7554	5786	WS-01	C-C	Attachment 4	Ground	SAT	Sat	75	Yes	NRI

Comments

See attached partial record.

PTRNO		Signature	Level	Date
7554	Examined By:	TODD A. KUPFER	II	11/14/02

Reviewed By: Level: III Date: 12/12/02

FINAL REVIEW
MH
H.S.B CT
12/13/02
M.M. GRACE

ENCLOSURE B4-1

Dominion

Surface Partial Record

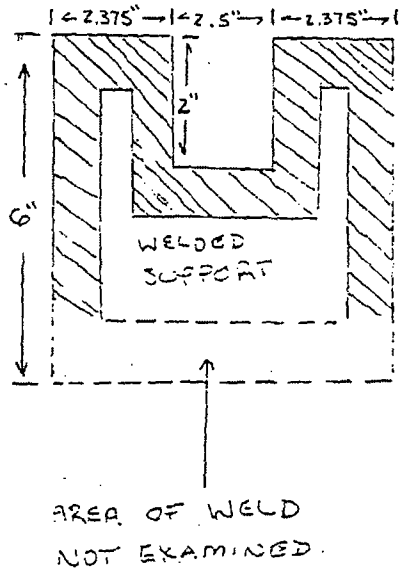
PTRNO:	7554	Drawing:	12050-WMKS-CH-P-1B	Line:	2-CH-P-1B
RECTAG:	5786	Mark/weld:	WS-01	Percent Examined:	76 %

Reason For Partial: Component configuration

Area Not Examined: Bottom of support

Comments: Unable to access bottom of welded support and base metal due to flange connection. Weld is 1" wide and 30.5" total weld length. 7.25" not examined.

Sketch



MK
CT
12/13/02

Evaluation

The support was examined to the maximum extent practical. No other NDE method would obtain a greater percentage of coverage.

SSN: 154-54-3810 Completed By: TODD A. KUPFER Level: II Date: 11 14 02

Evaluated By: Level: Date: 12/13/02

ENCLOSURE B4-2

Dominion

Liquid Penetrant Report

PTRNO: 8376
NDER: 03-201
Interval: 3

WO/DCP: N/A

Station: NAPS Unit 2 Drawing: 12050-WMKS-CH-P-1B Line: 2-CH-P-1B

Procedure: NDE-PT-701 Revision: 5 Technique: SOLVENT REMOVABLE-VISIBLE DYE

Thermometer SerNo: PT-13

	Batch	Manufacturer	Designation
Cleaner:	02E05K	MAGNAFLUX	SKC-S
Penetrant:	99J04K	MAGNAFLUX	SKL-SP
Remover:	02E05K	MAGNAFLUX	SKC-S
Developer:	01B08K	MAGNAFLUX	SKD-S2

Meter Serial No: AEMC-12 started: 14:00 completed: 15:15

uvcheck1: uvcheck2: uvcheck3:

Reading1: NA Reading2: NA Reading3: NA

PTRNO	RECTAG	Mark/Weld	Cat/Add	Exam Area	Surface Condition	Visual	Lighting	Temp	Partial	Results
8376	5787	WS-02	C-C	ATT. 4	GROUND	SAT	186 FC	87 F	Yes	NRI
8376	5788	WS-03	C-C	ATT. 4	GROUND	SAT	186 FC	87 F	Yes	NRI
8376	5789	WS-04	C-C	ATT. 4	GROUND	SAT	186 FC	87 F	Yes	NRI

Comments

...LS USED , FLASHLIGHT WITH LIGHT METER # AEMC-12, MIRROR,SCALE(SEE PARTIAL REPORTS). TOTAL WELD LENGTH WAS 34.5"(PER EACH SUPPORT). WELD WIDTH 1", TOTAL LENGTH EXAMINED WAS 27". TOTAL INACESSIBLE LENGTH WAS 7.5".

WS-02 N2.C3.30.006
WS-03 .007
WS-04 .008

78.3 %

PTRNO		Signature	Level	Date
8376	Examined By:	JULIEN STANFORD	II	5/ 7/04
8376	Examined By:	JEFFREY T. CURRAO	II	5/ 7/04

Reviewed By: Level: III Date: 5-14-04

ANII Initial ☐ Date 5/22/04 Final ☐
HSB-CT

ENCLOSURE B4-2

Dominion

Surface Partial Record

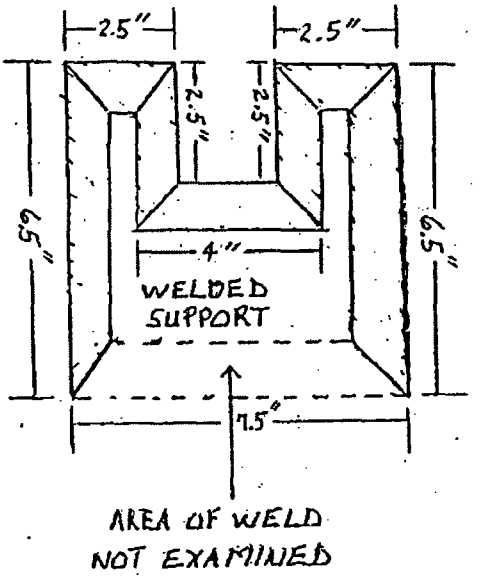
PTRNO:	8376	**Drawing:**	12050-WMKS-CH-P-1B	**Line:**	2-CH-P-1B
RECTAG:	5787	**Mark/weld:**	WS-02	**Percent Examined:**	78%

Reason For Partial: COMPONENT CONFIGURATION

Area Not Examined: BOTTOM 7.5 INCHES OF WELD AND BASE METAL

Comments: SEE ATTACHED DRAWING

Sketch



Evaluation

Due to the inaccessibility to the bottom of the support 100% of the required exam volume was unable to be achieved. The weld was examined to the maximum extent possible no other NDE methods would increase the examination coverage.

Completed By: JEFFREY T. CURRAO **Level:** II **Date:** 5/7/04

Evaluated By: Jeffrey T Currao Raymond Stark **Level:** III **Date:** 5-14-04

ANII MK Date 5/22/04
Initial ☐ Final ☒

ENCLOSURE B4-2

Dominion

Surface Partial Record

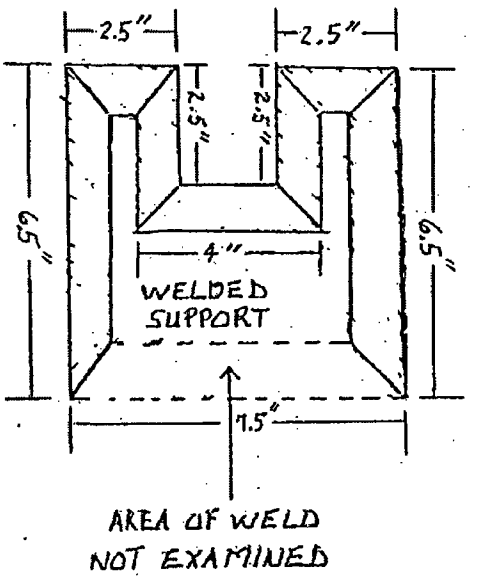
PTRNO:	8376	**Drawing:**	12050-WMKS-CH-P-1B	**Line:**	2-CH-P-1B
RECTAG:	5788	**Mark/weld:**	WS-03	**Percent Examined:**	78%

Reason For Partial: COMPONENT CONFIGURATION

Area Not Examined: BOTTOM 7.5 INCHES OF WELD AND BASE METAL

Comments: SEE ATTACHED DRAWING

Sketch



Evaluation

Due to the inaccessibility to the bottom of the support 100% of the required exam volume was unable to be achieved. The weld was examined to the maximum extent possible no other NDE methods would increase the examination coverage.

Completed By: JEFFREY T. CURRAO **Level:** II **Date:** 5/7/04

Evaluated By: [signature] **Level:** III **Date:** 5/14/04

ANII [signature] Date 5/22/04
Initial ☐ Final ☑

ENCLOSURE B4-2

Dominion

Surface Partial Record

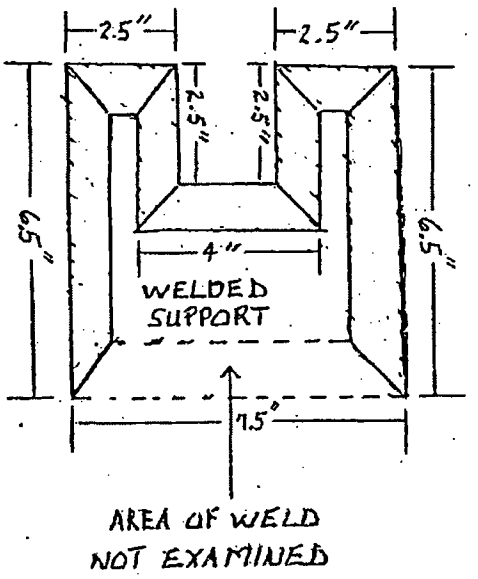
PTRNO:	8376	**Drawing:**	12050-WMKS-CH-P-1B	**Line:**	2-CH-P-1B
RECTAG:	5789	**Mark/weld:**	WS-04	**Percent Examined:**	78%

Reason For Partial: COMPONENT CONFIGURATION

Area Not Examined: BOTTOM 7.5 INCHES OF WELD AND BASE METAL

Comments: SEE ATTACHED DRAWING

Sketch



Evaluation

Due to the inaccessibility to the bottom of the support 100% of the required exam volume was unable to be achieved. The weld was examined to the maximum extent possible no other NDE methods would increase the examination coverage.

Completed By: JEFFREY T. CURRAO **Level:** II **Date:** 5/7/04

Evaluated By: [signature] **Level:** III **Date:** 5/14/04

ANII MR Date 5/22/04
Initial ☐ Final ☒

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B5. Circumferential Piping Welds ≥ 3/8 in. Nominal Wall Thickness for Piping > NPS 4

4.B5 IMPRACTICALITY OF COMPLIANCE

In accordance with 10CFR50.55a(g)(5)(iii), relief is requested from the "essentially 100 percent" volumetric examination coverage requirement for the identified piping welds. This requirement is considered impractical primarily due to single-sided access for these components.

Ultrasonic examinations of the identified piping welds are limited as identified in the following table primarily due to single-sided access. Examinations were performed to the extent possible.

Mark/Weld #	Line #	Scan Coverage %	Enclosure
6A	12-RS-407	42.5%	B5-1
4A	12-RS-408	88%	B5-2
66	10-RS-410	50%	B5-3
2	16-SI-407	48%	B5-4
SW-73	6-SI-570	54.5%	B5-5
SW-55	6-SI-570	60.5%	B5-6
14	8-CH-605	50%	B5-7
1	8-SI-440	49.5%	B5-8
1	10-RH-413	50%	B5-9
SW-56	6-RH-417	88%	B5-10

Refer to the enclosures identified for each weld for details of the limitation and the coverage obtained.

5.B5 BURDEN CAUSED BY COMPLIANCE

The purpose of nondestructive examination (NDE) is to perform inspections without destroying the component. Any actions necessary to make these welds accessible for NDE exam would be contrary to the intent of the Code.

6.B5 PROPOSED ALTERNATIVE AND BASIS

It is proposed that the examinations already completed at the reduced coverage be counted as meeting the Code requirements. The limited volumetric examinations should detect any general patterns of degradation that may occur in the areas covered, therefore providing reasonable assurance of the continued structural integrity of the subject welds.

Several of these examinations obtained additional Best Effort Coverage as identified in the figures and tables that follow. Best Effort Coverage refers to the required examination volume past the weld centerline that is examined with an Appendix VIII demonstrated procedure for single sided coverage. Best Effort Coverage is clearly indicated in the attached tables.

Weld # 6A was a single sided examination due to the obstruction caused by the weldolet. An additional 7.5% best-effort (non-Code) coverage was obtained. Acceptable ID geometry indications were identified. Liquid penetrant (surface) examinations identified surface indications that were either ground out and removed or found within acceptable ASME Section XI, IWB-3514 acceptance standards. In accordance with ASME Code Case N-586-1, the determination of the root cause of the flaws is identified as porosity in the original weld that has existed in this location from the time of original construction. The indications were not indicative of inservice induced defects, and the weld was fully capable of performing its design fuction.

Weld # 4A examination was limited due to two two-inch sockolets adjacent to the weld toe. The weld was examined to the maximum extent possible. There were no reportable indications. Second interval relief was granted in NDE-19, NRC Letter dated 8/8/1995 (TAC No. M89740).

Weld # 66 was a single sided examination due to the pipe to valve configuration of the subject weld. An additional 8.4% best effort (non-Code) coverage was obtained. There were no reportable indications.

Weld # 2 was a single sided examination due to the pipe to valve configuration of the subject weld. An additional 3% best effort (non-Code) coverage was obtained. There were no reportable indications.

Weld # SW-73 examination was performed from the safe end side only due to the nozzle configuration. The weld was examined to the extent possible. Geometric indications were identified and determined to be acceptable. Liquid penetrant (surface) examinations were performed with no limitations and with no reportable indications.

Weld # SW-55 examination was performed from the safe end side only due to the nozzle configuration. The weld was examined to the extent possible. Geometric indications were identified and determined to be acceptable. Liquid penetrant (surface) examinations were performed with no limitations and with no reportable indications.

Weld # 14 was a single side examination due to the pipe to valve configuration. An additional 4.1% best effort (non-Code) coverage was obtained. There were no reportable indications identified.

Weld # 1 (8-SI-440) was a single sided examination due to the valve to pipe configuration and the cast valve material of the valve. No credit was taken for scanning of the weld on the valve side. The techniques used for this examination are considered best effort for single side detection of far side defects parallel to the weld. There were no recordable indications.

Weld # 1 (10-RH-413) was a single sided examination due to the pipe to valve configuration. An additional 11% best effort (non-Code) coverage was obtained. There were no reportable indications.

Weld # SW-56 was limited due to the elbow to tee configuration, as well as no scan for 2.5-inches due to a ¾" branch connection 0.5" from the weld toe in the scanning path. An additional 8% best effort (non-Code) coverage was obtained. There were no reportable indications.

A total of 77 examinations were completed among 877 components in Category C-F-1, Item No. C5.11, during the third ISI inspection interval. 66 examinations (7.5%) were required. Code case N-663 was implemented, limiting required surface examinations to those areas susceptible to outside surface attack.

Weld #'s 6A, 4A, 66, 14, and 1 (8-SI-440), are material type ASTM A-312-TP 304 stainless steel, except AISI type 316 stainless steel is acceptable for valve bodies (in pipe to valve configurations).

Weld 2 is in material type ASTM A-358-TP 304 stainless steel, with AISI type 316 as an acceptable valve body material.

Weld SW-56 is in material type ASTM A-376-TP 304 stainless steel,

Weld # 1 (10-RH-413) is in material type ASTM A-376-TP 316 stainless steel.

Weld #'s SW-73 and SW-55 are dissimilar metal welds between ASTM A-312-TP 316 stainless steel safe end and the ASTM A-508 carbon steel nozzles.

UT Calibration/ amination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R20
Summary No.:	N2.C5.11.181	Procedure Rev.:	00	Report No.:	UT-10-016
Workscope:	ISI	Work Order No.:		Page:	1 of 6

Code: Sect. XI 1995ed/96 Add | Cat./Item: C-F-1/C5.11 | Location: Valve Pit

Drawing No.: 12050-WMKS-0104DA | Description: Pipe to Valve

System ID: RS

Component ID: 12050-WMKS-0104DA / 12-RS-407 / 6A | Size/Length: 1.0" / 40" | Thickness/Diameter: .375" / 12"

Limitations: Single sided access due to configuration | Start Time: 0840 | Finish Time: 0859

Instrument Settings

Serial No.:	01XK03		
Manufacturer:	Krautkramer		
Model:	USN 60 SW		
Delay:	5.740	Range:	1.204"
M'tl Cal/Vel:	.1243	Pulser:	Square
Damping:	500 Ohms	Reject:	0%
Rep. Rate:	Auto High	Freq.:	2.25 Mhz
Filter:	Fixed	Mode:	Full Wave
Voltage:	450	Other:	P.W.=220
Ax. Gain (dB):	16.0	Circ. Gain (dB):	N/A

10 Screen Div. = 1.2 in. of Sound Path

Linearity Report No.: L-10-003

Calibration Block

Cal. Block No.:	05-8513		
Thickness:	2.25"	Dia.:	0
Cal. Blk. Temp.:	71°	Temp. Tool:	1074BGCY
Comp. Temp.:	71°	Temp. Tool:	1074BGCY

Search Unit

Serial No.:	01VNJD		
Manufacturer:	KBA		
Size:	0.375"	Shape:	Round
Freq.:	2.25 MHZ	Style:	COMP-G
Exam Angle:	45°	# of Elements:	Single
Mode:	Shear		
Measured Angle:	45°		
Wedge Style:	MSWQC		

Search Unit Cable

Type: RG-174 | Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 28

CW ☑ CCW ☑ Scan dB: 28

Exam Surface: OD

Surface Condition: Ground

Cal. Checks	Time	Date
Initial Cal.	0602	03/24/2010
Inter. Cal.	0840	03/24/2010
Inter. Cal.	0859	03/24/2010
Inter. Cal.	N/A	
Final Cal.	1045	03/24/2010

Couplant

Cal. Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.: 05-6533

Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
.5" Notch	80%	6.0	.715"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
16.0	.7 SDH	27%	8.7	1.048"

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

Results: NRI ☑ RI ☐ Geom ☐

Comments: ID Geometry observed @ less than recordable levels. IGSCC Examination.

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

Examiner	Level II-PDI	Signature	Date	Reviewer	Signature	Date
Thomas, Travis W.			03/24/2010			4.6.10
Examiner	Level N/A	Signature	Date	Site Review	Signature	Date
N/A						4/6/10
Other	Level N/A	Signature	Date	ANII Review	Signature	Date
N/A						11 Apr 2010

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UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R20
Summary No.:	N2.C5.11.181	Procedure Rev.:	00	Report No.:	UT-10-016
Workscope:	ISI	Work Order No.:		Page:	2 of 6

Code:	Sect. XI 1995ed/96 Add	Cat./Item:	C-F-1/C5.11
Location:	Valve Pit		
Drawing No.:	12050-WMKS-0104DA	Description:	Pipe to Valve
System ID:	RS		
Component ID:	12050-WMKS-0104DA / 12-RS-407 / 6A	Size/Length:	1.0" / 40"
Thickness/Diameter:	.375" / 12"		
Limitations:	Single sided access due to configuration	Start Time:	0900
Finish Time:	0918		

Instrument Settings

Serial No.:	01XK03		
Manufacturer:	Krautkramer		
Model:	USN 60 SW		
Delay:	7.137	Range:	1.590"
M'tl Cal/Vel:	.1243	Pulser:	Square
Damping:	500 Ohms	Reject:	0%
Rep. Rate:	Auto High	Freq.:	2.25 Mhz
Filter:	Fixed	Mode:	Full Wave
Voltage:	450	Other:	P.W.=220
Ax. Gain (dB):	34.5	Circ. Gain (dB):	N/A

10 Screen Div. = 1.5 in. of Sound Path

Linearity Report No.: L-10-003

Calibration Block

Cal. Block No.:	05-8513		
Thickness:	2.25"	Dia.:	0
Cal. Blk. Temp.:	71°	Temp. Tool:	1074BGCY
Comp. Temp.:	71°	Temp. Tool:	1074BGCY

Search Unit

Serial No.:	00VBBK		
Manufacturer:	KBA		
Size:	0.375"	Shape:	Round
Freq.:	2.25 MHZ	Style:	Comp-G
Exam Angle:	60°	# of Elements:	Single
Mode:	Shear		
Measured Angle:	59°		
Wedge Style:	MSWQC		

Search Unit Cable

Type: RG-174

Length: 6' No. Conn.: 0

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 40.5

CW ☑ CCW ☑ Scan dB: 40.5

Exam Surface: OD

Surface Condition: Ground

Cal. Checks	Time	Date
Initial Cal.	0612	03/24/2010
Inter. Cal.	0900	03/24/2010
Inter. Cal.	0918	03/24/2010
Inter. Cal.	N/A	
Final Cal.	1046	03/24/2010

Couplant

Cal. Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.:	05-6533
Type:	SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
.5" Notch	80%	6.0	.964"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
16.0	.7 Sdh	27%	8.7	1.048"

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

Results: NRI ☐ RI ☐ Geom ☑

Comments: Effective Coverage using the 60° search unit has been verified by the presence of the weld root response during the required scans.

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

Examiner	Level	II-PDI	Signature	Date	Reviewer	Signature	Date
Thomas, Travis W.				03/24/2010	W.L. Thomas		4.6.10
Examiner	Level	N/A	Signature	Date	Site Review	Signature	Date
N/A					Jeff Odegard		4/6/10
Other	Level	N/A	Signature	Date	ANII Review	Signature	Date
N/A							11 Apr 2010

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UT Calibration/Examination

Dominion

Site/Unit: NAPS / 2 | Procedure: ER-AA-NDE-UT-802 | Outage No.: N2R20
Summary No.: N2.C5.11.181 | Procedure Rev.: 00 | Report No.: UT-10-016
Workscope: ISI | Work Order No.: | Page: 3 of 6

Code: Sect. XI 1995ed/96 Add | Cat./Item: C-F-1/C5.11 | Location: Valve Pit
Drawing No.: 12050-WMKS-0104DA | Description: Pipe to Valve
System ID: RS
Component ID: 12050-WMKS-0104DA / 12-RS-407 / 6A | Size/Length: 1.0" / 40" | Thickness/Diameter: .375" / 12"
Limitations: Single sided access due to configuration | Start Time: 0919 | Finish Time: 0935

Instrument Settings

Serial No.:	01XK03		
Manufacturer:	Krautkramer		
Model:	USN 60 SW		
Delay:	7.868	Range:	2.288
M'tl Cal/Vel:	.1243	Pulser:	Square
Damping:	500 Ohms	Reject:	0%
Rep. Rate:	Auto High	Freq.:	2.25 Mhz
Filter:	Fixed	Mode:	Full Wave
Voltage:	450	Other:	P.W. =220
Ax. Gain (dB):	41	Circ. Gain (dB):	N/A

10 Screen Div. = 2.2 in. of Sound Path
Linearity Report No.: L-10-003

Calibration Block

Cal. Block No.: 05-8513
Thickness: 2.25" | Dia.: 0
Cal. Blk. Temp.: 71° | Temp. Tool: 1074BGCY
Comp. Temp.: 71° | Temp. Tool: 1074BGCY

Search Unit

Serial No.:	01VNJB		
Manufacturer:	KBA		
Size:	0.375"	Shape:	Round
Freq.:	2.25 MHZ	Style:	COMP-G
Exam Angle:	70°	# of Elements:	Single
Mode:	Shear		
Measured Angle:	68°		
Wedge Style:	MSWQC		

Search Unit Cable

Type: RG-174
Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 47
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 ☐ Geom ☑

Cal. Checks	Time	Date
Initial Cal.	0855	03/24/2010
Inter. Cal.	0919	03/24/2010
Inter. Cal.	0935	03/24/2010
Inter. Cal.	N/A	
Final Cal.	1047	03/24/2010

Couplant

Cal. Batch: 07220
Type: SoundSafe
Mfg.: SONOTECH
Exam Batch: 07220
Type: SoundSafe
Mfg.: SONOTECH

Reference Block

Serial No.: 05-6533
Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
.5" Notch	80%	6.0	1.368"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
31	.3 SDH	62	4.0	.928"

Comments: None

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

Examiner	Level II-PDI	Signature	Date	Reviewer		Signature	Date
Thomas, Travis W.		Travis	03/24/2010	W.L. Thomas			04.05.10
Examiner	Level N/A	Signature	Date	Site Review		Signature	Date
N/A				Jeff Odegard			4/6/10
Other	Level N/A	Signature	Date	ANII Review		Signature	Date
N/A							11 Apr 2010

UT Calibration/Examination

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ENCLOSURE B5-1

Supplemental Report

Dominion

Report No.: UT-10-016

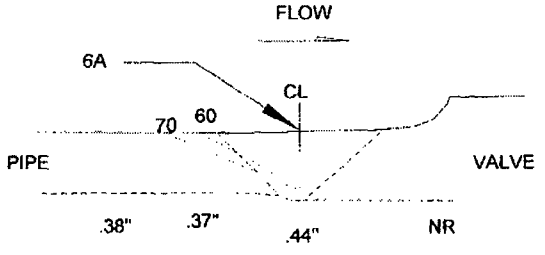
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Summary No.: N2.C5.11.181

Examiner:	Thomas, Travis W. T.T.	Level:	II-PDI	Reviewer:	W.L. Thomas	Date:	4-6-10
Examiner:	N/A	Level:	N/A	Site Review:		Date:	4/6/10
Other:	N/A	Level:	N/A	ANII Review:		Date:	4/6/10

Comments:

Sketch or Photo:



ENCLOSURE B5-1

Supplemental Report

Dominion

Report No.: UT-10-016

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Summary No.: N2.C5.11.181

Examiner: Thomas, Travis W. Level: II-PDI Reviewer: W.L. Thomas Date: 4.6.10

Examiner: N/A Level: N/A Site Review: Date:

Other: N/A Level: N/A ANII Review: Date: 4/6/10

Weld Number 6A

Weld Thickness .44" (.37" BM)

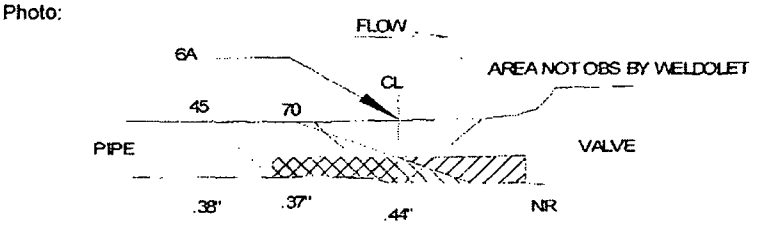
Weld Length 40"

Weld Width 1"

Comments:

Prepared By: W.L. Thomas
Date: 3/26/2010

Sketch or Photo:



AXIAL US SIDE OBSTRUCTED 12" / 40" = 30% AXIAL US COVERAGE DUE TO WELDOLET

EXAMINED .092 SQ. IN X 28" LENGTH = 2.58 CUB. IN
.092 X 40" CIRC = 3.68 CUB. IN. 2.58 / 3.68 = .70 X 100 = 70% AX. US COVERAGE

.04 SQ. IN. X 28" = 1.12 CUB. IN. EXAMINED BEST EFFORT AX. DS SIDE
1.12 CUB. IN. / 3.68 CUB. IN. = .30 X 100 = 30%

.052 SQ. IN. X 28" LENGTH = 1.46 CUB. IN .092 X 12" = 1.10 CUB. IN
1.46 + 1.1 = 2.56 CUB. IN. / 3.68 = .6956 X 100 = 70%

Examination Volume Dimensions - Height .123" Length 40" Width 1.5"

Coverage Summary				
	Required Scans (each has a weighing factor of 100 for complete coverage)			
ANGLE	UpSt-Ax	UpSt-Circ	DnSt-Ax	DnSt-Circ
45/60		100%		0%
45/60/70	70%		30% Best Effort	
			Code Coverage Total	42.5%
			Best Effort Coverage (Max 25%) Total	7.5%

Notes:

1) Code Coverage refers to the maximum percentage of the required examination volume that is effectively examined with the qualified examination procedure.
2) Best Effort Coverage refers to the required examination volume past the weld centerline that is examined in the axial beam direction with an Appendix VIII demonstrated procedure for single sided coverage.

Ultrasonic Indication Report

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R20
Summary No.:	N2.C5.11.181	Procedure Rev.:	00	Report No.:	UT-10-016
Workscope:	ISI	Work Order No.:		Page:	6 of 6

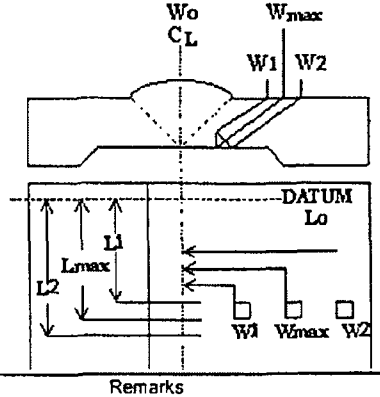
Search Unit Angle: 60 / 70 °

Wo Location: WCL

Lo Location: TDC

- (●) Piping Welds
- ( ) Ferritic Vessels ≥ 2"T
- ( ) Other _____

MP	Metal Path	Wmax	Distance From Wo To S.U. At Maximum Response
RBR	Remaining Back Reflection	W1	Distance From Wo At Of Max (Forward)
L	Distance From Datum	W2	Distance From Wo At Of Max (Forward)



Comments: **See indication plot**

Angle	Indication No.	% Of DAC	W Max W	W Max MP	Forward Of Max W1	Forward Of Max MP	Backward Of Max W2	Backward Of Max MP	L1 Of Max	L Max	L2 Of Max	RBR Amp.	Remarks
60°	1	60	.6"	.75"					*	30"	*		*ID Geometry observed 360° intermittent US side.
70°	1	100	.8"	.916"					*	12"	*		*ID Geometry observed 360° intermittent US side.

Examiner	Level II-PDI	Signature	Date	Reviewer	Signature	Date
Thomas, Travis W.			03/24/2010	W.L. Thomas		4-6-10
Examiner	Level N/A	Signature	Date	Site Review	Signature	Date
N/A						
Other	Level N/A	Signature	Date	ANII Review	Signature	Date
N/A						6 Apr 2010

Additional - UT Indication Data <Edit From Setup>

ENCLOSURE B5-1

NAPS Unit 2 3rd interval Limited Exams

Docket No. 50-339

Serial No. 11-472

ENCLOSURE B5-1

Liquid Penetrant Examination

Dominion

Site/Unit: NAPS / 2 Procedure: ER-AA-NDE-PT-300 Outage No.: N2R20

Summary No.: N2.C5.11.181 Procedure Rev.: 4 Report No.: PT-10-013

Workscope: ISI Work Order No.: 59101919553 Page: 1 of 1

Code: Sect. XI 1995ed/96 Add Cat./Item: C-F-1/C5.11 Location: Valve Pit

Drawing No.: 12050-WMKS-0104DA Description: Pipe to Valve

System ID: RS

Component ID: 12050-WMKS-0104DA / 12-RS-407 / 6A Size/Length: 12.0" / 40.0"

Limitations: None

Light Meter Mfg.: AEMC Instruments Serial No.: AEMC-4 Illumination: 204 F.C.

Temp. Tool Mfg.: AEMC Instruments Serial No.: 1079BGCY Surface Temp.: 72 °F

Comparator Block Temp.: Side A: N/A °F Side B: N/A °F Resolution: Not Used

Lo/Wo Location: N/A Surface Condition: Ground

	Cleaner	Penetrant	Remover	Developer
Brand	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX
Type	SKC-S	SKL-SP1	SKC-S	SKD-S2
Batch No.	09B02K	06G16K	09B02K	04G11K
Time	Evap. 3 Min.	Dwell 10 Min.	Evap. 3 Min.	Develop 10 Min.

Time Exam Started: 2100 Time Exam Completed: 0130

Indication No.	Loc L	Loc W	Diameter	Length	Type R/L	Remarks
6A (1)	0.55"	-0.22"	N/A	N/A		As left after grinding.
6A (2)	2.00	-.50"	N/A	N/A		As left after grinding.
6A (9)	13.1	-0.50"	N/A	0.10"	Rounded	As left after grinding.

Comments:

This report covers after grinding of indication 1,2 & 9 noted on Report No. PT-10-008, NDER 2010-053. R&R 2010-066. Indication (9) length is less than the IWB-3514 acceptance standards. This is considered an acceptable indication.

Results: NRI ☐ RI ☑ Eval ☐ Reference CR 373925

Percent Of Coverage Obtained > 90%: Yes Reviewed Previous Data: Yes

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Gunther, Robert L	II	Robt L Gunther	4/1/2010	N/A		
Examiner	Level	Signature	Date	Site Review	Signature	Date
N/A	N/A			Kevin Hacker Lv III	K Hacker	4/2/2010
Other	Level	Signature	Date	ANII Review	Signature	Date
					M Lee	11 Apr 2010

ENCLOSURE B5-1

Liquid Penetrant Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-PT-301	Outage No.:	N/A
Summary No.:	10-089	Procedure Rev.:	3	Report No.:	BOP-PT-10-077
Workscope:	BOP	Work Order No.:	59102100646	Page:	1 of 1

Code: ASME SEC III Cat./Item: N/A Location: SVGD VALVE PIT

Drawing No.: 12050-RS-407A Description: 12" RS-407-153A-Q2

System ID: RS

Component ID: Weld 6A after grinding of indications # 6A (1), 6A (2) & 6A (9). Size/Length: 12" / 40"

Limitations: NONE

Light Meter Mfg.: AEMC Instruments Serial No.: AEMC-4 Illumination: 204 F.C.

Temp. Tool Mfg.: AEMC Instruments Serial No.: 1079BGCY Surface Temp.: 72 °F

Comparator Block Temp.: Side A: N/A °F Side B: N/A °F Resolution: Not Used

Lo/Wo Location: N/A Surface Condition: Ground

	Cleaner	Penetrant	Remover	Developer
Brand	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX
Type	SKC-S	SKL-SP1	SKC-S	SKD-S2
Batch No.	09B02K	06G16K	09B02K	04G11K
Time	Evap. 3 MIN.	Dwell 10 MIN.	Evap. 3 MIN.	Develop 10 MIN.

Time Exam Started: 2100 Time Exam Completed: 0130

Indication No.	Loc L	Loc W	Diameter	Length	Type R/L	Remarks
6A(9)	13.1"	0.50"	0.10	N.A	Rounded	AS LEFT AFTER GRINDING.

Comments:

This report covers the after grinding of indications1, 2 & 9 noted on Report No. PT-10-008, NDER 2010-053.

Results: NRI ☑ RI ☐ Eval ☐ Reference CR# CR373925

Percent Of Coverage Obtained > 90%: Yes Reviewed Previous Data: Yes

Examiner	Level II	Signature	Date	Reviewer		Signature	Date
Gunther, Robert L			04/01/2010	N/A			
Examiner	Level N/A	Signature	Date	Site Review		Signature	Date
N/A				KJ Hacker		KJ Hack LIII	4/02/10
Other	Level N/A	Signature	Date	ANII Review		Signature	Date
N/A							11 Apr 2010

ENCLOSURE B5-1

UT Thickness Examination

Dominion

Site/Unit: NAPS / 2 | Procedure: ER-AA-NDE-UT-701 | Outage No.: N/A

Summary No.: N2.C5.11.181 | Procedure Rev.: 3 | Report No.: BOP-UT-10-052

Workscope: BOP | Work Order No.: 59102100646 | Page: 1 of 2

Code: Defer to Engineering | Cat./Item: N/A | Location: Safeguards Valve Pit

Drawing No.: 12050-WMKS-0104DA | Description: Pipe to Valve

System ID: RS

Component ID: 12050-WMKS-0104DA / 12-RS-407 / 6A | Size/Length: 12"/40" | Thickness/Diameter: 0.375"

Limitations: None

Temp. Tool Mfg.: AEMC Instruments | Serial No.: 1079BGCY | Surface Temp.: 73 °F

Couplant: SoundSafe | Batch No.: 07220 | Cal. Report No.: CAL-10-032

Examination Surface: Inside ☐ Outside ☑ | Surface Condition: As Welded / Ground

Lo Location: N/A | Wo Location: N/A

6A(1)	0.538"													
6A(2)*	0.365"													
6A(9)	0.356"													

Comments:

See Supplemental Report for contours & thicknesses. *Excavation inaccessible due to diameter of transducer. Reported thickness reflects minimum reading adjacent to excavation. Repair NDER 2010-089. ASME XI NDER 2010-053. This Report covers post-grinding of rejectable indications #1, #2, & #9 on Report No. PT-10-008. Reference CR373925.

Results: Accept ☑ Reject ☐ Info ☐ Per repair/replacement program.

Percent Of Coverage Obtained > 90%: N/A | Reviewed Previous Data: N/A

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Porter III, Robert E.	II		04/01/2010	N/A		
Examiner	Level	Signature	Date	Site Review	Signature	Date
N/A	N/A			K.J. Harker		4/02/10
Other	Level	Signature	Date	ANII Review	Signature	Date
N/A	N/A				11 Apr 2010	

UT Thickness Examination <Edit From Setup>

ENCLOSURE B5-1

UT Thickness Calibration Report

Dominion

Site: NAPS | Procedure Rev.: 3

Procedure: ER-AA-NDE-UT-701 | Cal. Report No.: CAL-10-032

Instrument Type:	DMS2	Serial No.:	016FVX	Search Unit Mfg.:	KBA	Serial No.:	0164MR
Temp. Tool Mfg.:	AEMC Instruments	Serial No.:	1079BGCY	Search Unit Size:	.38"	Frequency:	8 MHZ
Couplant:	SoundSafe	Batch No.:	07220	Search Unit Nom. Angle:	0 °	Meas. Angle:	0 °
Calibration Block Serial No.:	09-2481			Search Unit Cable Length:	4'	Cable Type:	RG-174
Reference/Simulator Block Type:	1.0" SS Step Wedge	Serial No.:	09-2481	Calibration Block Temperature:	71 °F		

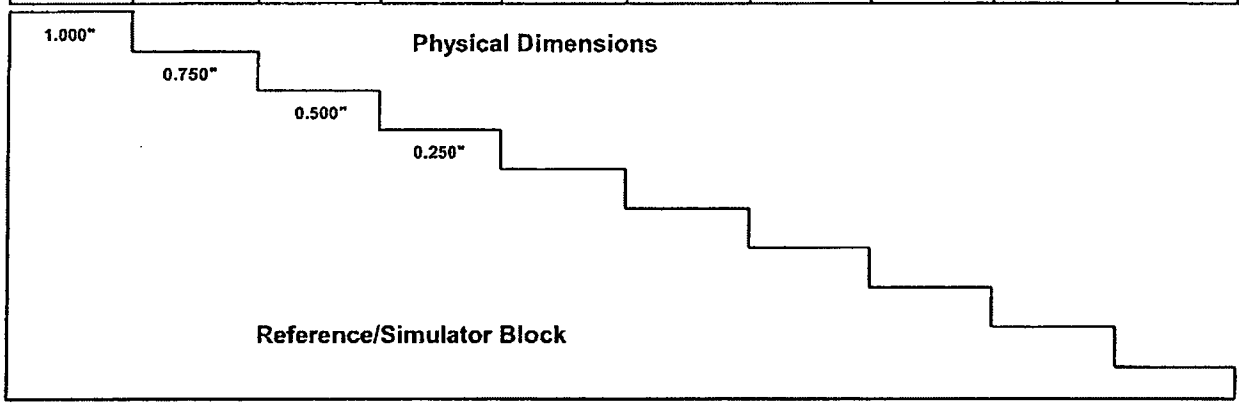
Instrument Settings	
Gain	60dB
Range	1.250"
Delay	0
Velocity/Mat. Cal.	0.2277
Frequency	8.0MHz
Rep. Rate	Autohigh
Damping	N/A
Display/Video/Rectif.	Video
Reject	0

	Time	Initials
Initial Calibration	0100	REP3
Cal. Verification	N/A	N/A
Cal. Verification	N/A	N/A
Cal. Verification	N/A	N/A
Cal. Verification	N/A	N/A
Cal. Verification	N/A	N/A
Final Calibration	0130	REP3

4 Screen Divisions = 1.250 in. of Sound Path

UT Measurements

0.999"	0.749"	0.499"	0.249"						



Comments:

None

Summary No.(s):

N2.C5.11.181

Examiner	Level II	Signature	Date	Reviewer		Signature		Date
Porter III, Robert E.			04/01/2010	N/A				
Examiner	Level N/A	Signature	Date	Site Review		Signature		Date
N/A				RJ Hacker			LTIII	4/02/10
Other	Level N/A	Signature	Date	ANII Review		Signature		Date
N/A							11 Apr 2010	

UT Thickness Calibration Report <Edit From Setup>

Supplemental Report

Dominion

Report No.: BOP-UT-10-052

Page: 2 of 2

Summary No.: N2.C5.11.181

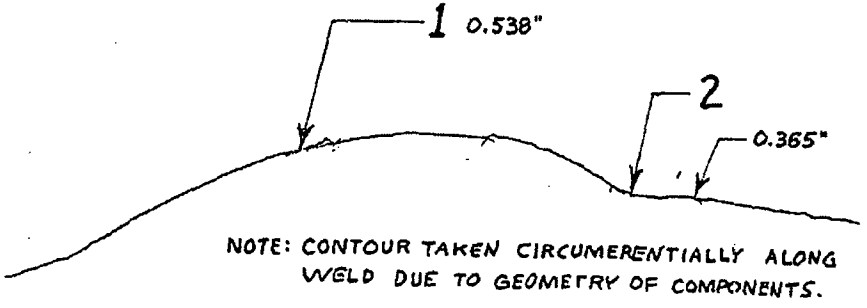
Examiner: Porter III, Robert E. Level: II Reviewer: N/A Date:

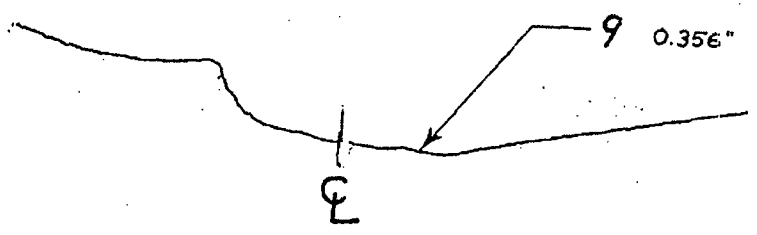
Examiner: N/A Level: N/A Site Review: KJ Hacker [illegible] LTII Date: 4/02/10

Other: N/A Level: N/A ANII Review: [illegible] Date: 11 Apr 2010

Comments:

Sketch or Photo:





Additional - Supplemental Data

ENCLOSURE B5-1

Serial No. 11-472
Docket No. 50-339
NAPS Unit 2 3rd interval Limited Exams
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ENCLOSURE B5-1

Liquid Penetrant Examination

Dominion

Site/Unit: NAPS / 2 Procedure: ER-AA-NDE-PT-300 Outage No.: N2R20

Summary No.: N2.C5.11.181 Procedure Rev.: 4 Report No.: PT-10-008

Workscope: ISI Work Order No.: 59101919553 Page: 1 of 4

Code: Sect. XI 1995 Ed./1996 Add. Cat./Item: C-F-1/C5.11 Location: Valve Pit

Drawing No.: 12050-WMKS-0104DA Description: Pipe to Valve

System ID: RS

Component ID: 12050-WMKS-0104DA / 12-RS-407 / 6A Size/Length: 12.0" / 40.0"

Limitations: None

Light Meter Mfg.: N/A Serial No.: N/A Illumination: N/A

Temp. Tool Mfg.: AEMC Instruments Serial No.: 1072BGCY Surface Temp.: 71 °F

Comparator Block Temp.: Side A: N/A °F Side B: N/A °F Resolution: 0.044" Character Card

Lo/Wo Location: TDC / Weld Center Line Surface Condition: Ground Smooth

	Cleaner	Penetrant	Remover	Developer
Brand	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX
Type	SKC-S	SKL-SP1	SKC-S	SKD-S2
Batch No.	09L08K	06G16K	09L08K	08H01K
Time	Evap. 3 minutes	Dwell 10 minutes	Evap. 3 minutes	Develop 10 minutes

Time Exam Started: 1300 Time Exam Completed: 1345

Indication No.	Loc L	Loc W	Diameter	Length	Type R/L	Remarks
1	0.50"	-0.20"	N/A	0.25"	Rounded	Recordable Linear Indication, see attached photo
2	2.00"	-0.50"	N/A	0.30"	Rounded	Recordable Linear Indication, see attached photo
3	3.00"	-0.50"	N/A	0.10"	Rounded	Recordable Linear Indication
4	3.10"	-0.50"	N/A	0.10"	Rounded	Recordable Linear Indication

Comments:
NDER 2010-053
Character Card SN DOM-2009-0271

Results: NRI ☐ RI ☑ Eval ☐ CR373925

Percent Of Coverage Obtained > 90%: Yes Reviewed Previous Data: Yes

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Roehl, Adam L.	II		3/27/2010	N/A		
Examiner	Level	Signature	Date	Site Review	Signature	Date
N/A	N/A			Kevin Hacker Lv III		3/27/2010
Other	Level	Signature	Date	ANII Review	Signature	Date
N/A	N/A					27 Apr 2010

ENCLOSURE B5-1

Liquid Penetrant Examination Continuation

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-PT-300	Outage No.:	N2R20
Summary No.:	N2.C5.11.181	Procedure Rev.:	4	Report No.:	PT-10-008
Workscope:	ISI	Work Order No.:	59101919553	Page:	2 of 4

Description: Pipe to Valve

Component ID: 12050-WMKS-0104DA / 12-RS-407 / 6A

Indication No.	Loc L	Loc W	Diameter	Length	Type R/L	Remarks
5	3.15"	-0.50"	N/A	0.15"	Rounded	Recordable Linear Indication
6	7.00"	-0.50"	N/A	0.10"	Rounded	Recordable Linear Indication
7	11.60"	-0.50"	N/A	0.10"	Rounded	Recordable Linear Indication
8	13.0"	-0.10"	N/A	0.15"	Rounded	Recordable Linear Indication
9	13.1"	-0.50"	N/A	0.25"	Rounded	Recordable Linear Indication, see attached photo
10	14.75"	-0.50"	N/A	0.15"	Rounded	Recordable Linear Indication
11	28.00"	-0.30"	N/A	0.10"	Rounded	Recordable Linear Indication
12	30.70"	-0.50"	N/A	0.20"	Rounded	Recordable Linear Indication
13	33.80"	-0.40"	N/A	0.15"	Rounded	Recordable Linear Indication
14	37.00"	-0.70"	N/A	0.15"	Rounded	Recordable Linear Indication
15	38.4"	-0.40"	N/A	0.15"	Rounded	Recordable Linear Indication
16	39.30"	-0.40"	N/A	0.10"	Rounded	Recordable Linear Indication

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Roehl, Adam L.	II		3/27/2010	N/A		
Examiner	Level	Signature	Date	Site Review	Signature	Date
N/A	N/A			Kevin Hacker Lv III		3/27/2010
Other	Level	Signature	Date	ANII Review	Signature	Date
N/A	N/A					11 Apr 2010

Continuation - Liquid Penetrant Examination <Edit From Setup>

Dominion

Supplemental Report

Report No.: PT-10-008

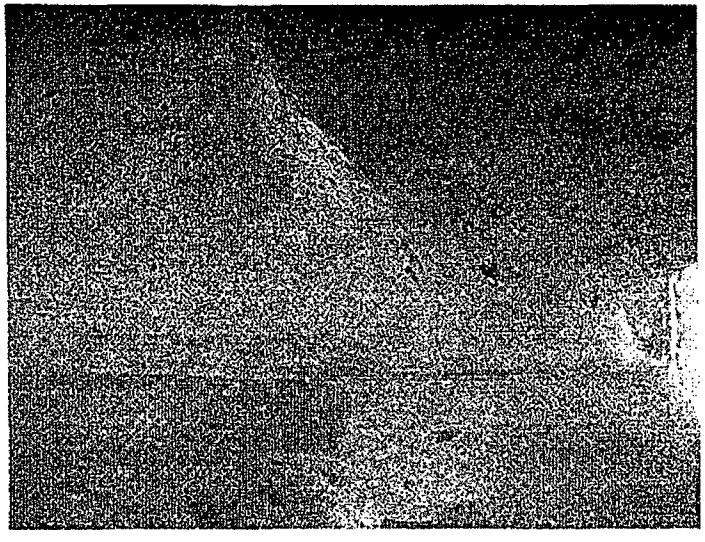
Page: 3 of 4

Summary No.: N2.C5.11.181

Examiner:	Roehl, Adam L. AR	Level:	II	Reviewer:	N/A	Date:	
Examiner:	N/A	Level:	N/A	Site Review:	Kevin Hacker I.v III KH	Date:	3/27/2010
Other:	N/A	Level:	N/A	ANII Review:	MH	Date:	11 Apr 2010

Comments: **Left picture includes indication #1 and #2**
Right picture includes indication #9

Sketch or Photo: S:\N ANNA PWR STA\3\Data1\IDDEAL\Iddeal_Server\Iddeal_NA 2&3\Data\Graphics\Weld 6A on 12-RS-407 2nd Exam Pic1.JPG



S:\N ANNA PWR STA\3\Data1\IDDEAL\Iddeal_Server\Iddeal_NA 2&3\Data\Graphics\Weld 6A on 12-RS-407 2nd Exam Pic2.JPG



Additional - Supplemental Data

ENCLOSURE B5-1

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ENCLOSURE B5-1

Supplemental Report

Dominion

Report No.: PT-10-008

Page: 4 of 4

Summary No.: N2.C5.11.181

Examiner:	Roehl, Adam L.	Level:	II	Reviewer:	N/A	Date:	
Examiner:	N/A	Level:	N/A	Site Review:	Kevin Hacker Lv III	Date:	3/27/2010
Other:	N/A	Level:	N/A	ANII Review:		Date:	11Apr10

Comments:

Indication Evaluation:

Indication #1 - Length = 0.25", nominal thickness = 0.375", Maximum length for an austenitic category B-J weld in accordance with ASME Section XI, IWB-3514 acceptance standards is greater than 0.20". This indication is considered an unacceptable linear surface indication.

Indication #2 - Length = 0.30", nominal thickness = 0.375", Maximum length for an austenitic category B-J weld in accordance with ASME Section XI, IWB-3514 acceptance standards is greater than 0.20". This indication is considered an unacceptable linear surface indication.

Indications #3 thru #8 lengths are less than the rejectable surface linear flaw length and are considered acceptable.

Indication #9 - Length = 0.25", nominal thickness = 0.375", Maximum length for an austenitic category B-J weld in accordance with ASME Section XI, IWB-3514 acceptance standards is greater than 0.20". This indication is considered an unacceptable linear surface indication.

Indications #10 thru #16 lengths are less than the rejectable surface linear flaw length and are considered acceptable.

ENCLOSURE B5-1

Liquid Penetrant Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-PT-300	Outage No.:	N2R20
Summary No.:	N2.C5.11.181	Procedure Rev.:	4	Report No.:	PT-10-001
Workscope:	ISI	Work Order No.:	59101919553	Page:	1 of 3

Code: Sect. XI 1995ed/96 Add Cat./Item: C-F-1/C5.11 Location: Valve Pit

Drawing No.: 12050-WMKS-0104DA Description: Pipe to Valve

System ID: RS

Component ID: 12050-WMKS-0104DA / 12-RS-407 / 6A Size/Length: 12"/40"

Limitations: None

Light Meter Mfg.: N/A Serial No.: N/A Illumination: N/A

Temp. Tool Mfg.: AEMC Instruments Serial No.: 1074BGCY Surface Temp.: 72 °F

Comparator Block Temp.: Side A: N/A °F Side B: N/A °F Resolution: 0.044" Character Card

Lo/Wo Location: TDC / Weld Center Line Surface Condition: Ground Smooth

	Cleaner	Penetrant	Remover	Developer
Brand	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX
Type	SKC-S	SKL-SP1	SKC-S	SKD-S2
Batch No.	09L08K	06G16K	09L08K	08H01K
Time	Evap. 3 minutes	Dwell 10 minutes	Evap. 3 minutes	Develop 10 minutes

Time Exam Started: 1030 Time Exam Completed: 1145

Indication No.	Loc L	Loc W	Diameter	Length	Type R/L	Remarks
1	23.75	-0.30	N/A	0.400"	Rounded	Recordable Linear Indication, See attached photo
2	23.25	-0.50	N/A	0.250"	Rounded	Recordable Linear Indication, See attached photo

Comments:

NDER 2010-053
Character Card SN: DOM-2009-0271

Results: NRI ☐ RI ☑ Eval ☐ CR373253

Percent Of Coverage Obtained > 90%: Yes Reviewed Previous Data: Yes

Examiner	Level II	Signature	Date	Reviewer		Signature	Date
Roehl, Adam L.			3/23/2010	N/A			
Examiner	Level II	Signature	Date	Site Review		Signature	Date
Tashburn, Jonathan			3/23/2010	Kevin Hacker Lv III			3/23/2010
Other	Level N/A	Signature	Date	ANII Review		Signature	Date
N/A							11/Apr 2010

ENCLOSURE B5-1

Supplemental Report

Dominion

Report No.: PT-10-001

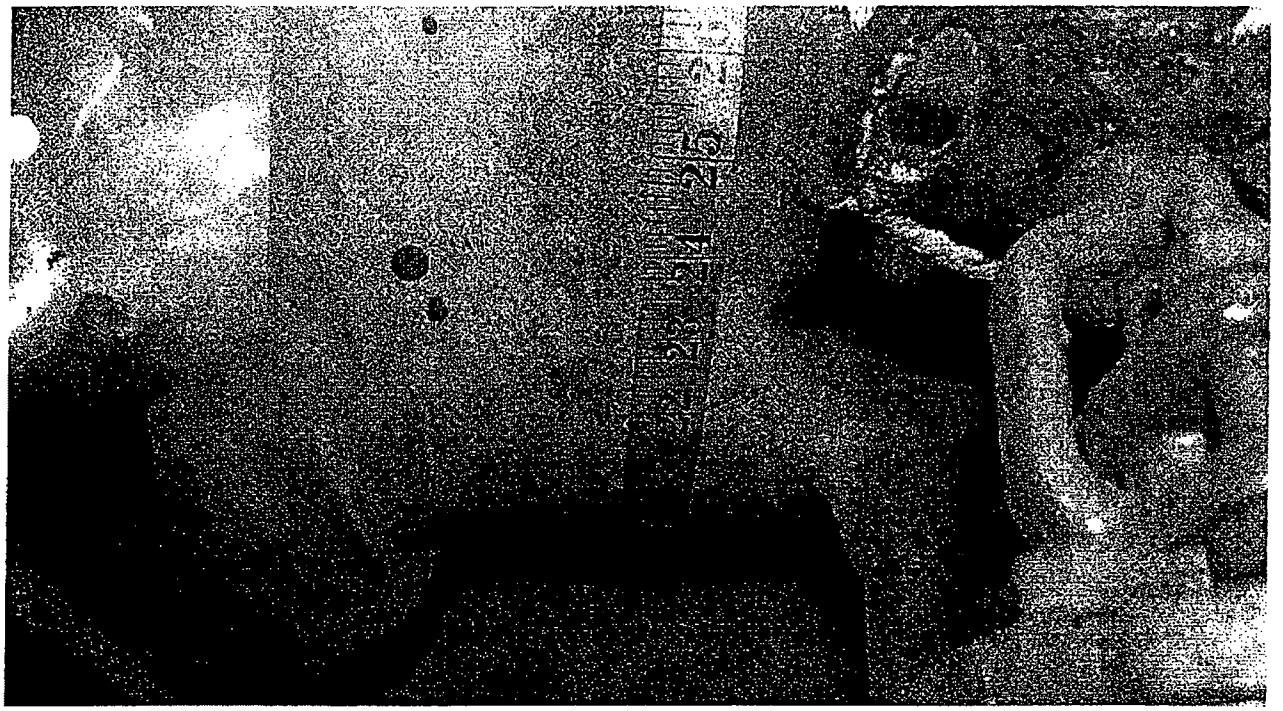
Page: 2 of 3

Summary No.: N2.C5.11.181

Examiner:	Roehl, Adam L. AR	Level:	II	Reviewer:	N/A	Date:	
Examiner:	Washburn, Jonathan JW	Level:	II	Site Review:	Kevin Hacker Lv III KH	Date:	3/23/2010
Other:	N/A	Level:	N/A	ANII Review:	MH	Date:	4/5/2010

Comments:

Sketch or Photo: S:\N ANNA PWR STA\3\Data1\ISI_NDE\NDE\N2R20\ISI\Photos\IMG_0383.jpg



Additional - Supplemental Data

ENCLOSURE B5-1

Supplemental Report

Dominion

Report No.: PT-10-001

Page: 3 of 3

Summary No.: N2.C5.11.181

Examiner:	Roehl, Adam L. AR	Level:	II	Reviewer:	N/A	Date:	
Examiner:	Washburn, Jonathan JW	Level:	II	Site Review:	Kevin Hacker Lv III	Date:	3/23/2010
Other:	N/A	Level:	N/A	ANII Review:		Date:	4 Apr 2010

Comments:

Indication Evaluation:

Indication #1 - Length = 0.40", nominal thickness = 0.375", Maximum length for an austenitic category B-J weld in accordance with ASME Section XI, IWB-3514 acceptance standards is 0.20". This indication is considered an unacceptable linear surface indication.

Indication #2 - Length = Length = 0.25", nominal thickness = 0.375", Maximum length for an austenitic category B-J weld in accordance with ASME Section XI, IWB-3514 acceptance standards is 0.20". This indication is considered an unacceptable linear surface indication.

ENCLOSURE B5-2

N2,C5,11,190

Dominion
ULtrasonic Examination Data Record

Interval: 3

UTRNO	Station	Unit	Drawing	Line	NDER
911	NAPS	2	12050-WMKS-0104DA	12"-RS-408-153A-Q2	02-001

Couplant	CalCheck1	CalCheck2	CalCheck3	WO / DCP	Procedure	Rev
98220					NDE-UT-803	0

Thermometer SerNo: 212880

Exam Data

UTRNO	RECTAG	mark/weld	Scan dB	Exam Area	Surface Condition	Temp	Partial	Single Side	Results
911	3137	4A	*	ATT. 1	GROUND	76	Yes	Yes	NRI

Comments:

EXAM PERFORMED AT REFERENCE PLUS 18 db. 45 DEG. EXAM PERFORMED ON 5 SIDE OF WELD TO ASSURE COVERAGE IN THE 7 AND 8 SCAN DIRECTIONS.

UTRNO		SSN	Signature	Level	Method	Date	Activity
911	Examined By:	230-72-8918	NORMAN L. CAGE	DET-S	UT	9/6/02	3/9/03
911	Examined By:	197-38-9893	ROBERT SISTEK	DET-S	UT	9/6/02	3/9/03

Reviewed By: [signature] Level: III Date: 9-12-02

FINAL R...
H.S.B.C.T.
9/16/02
MAL GRACE

Interval: 3 **Dominion Power Ultrasonic C[illegible]ration Data Record**

UTRNO	Station	Unit	Procedure	Rev	Sizing Procedure	Rev	Couplant	CalBlock	CBLKTKS	CBLKTemp
911	NAPS	2	NDE-UT-803	0	NDE-UT- NA	NA	98220	VP.50-SS-02	SIZING BLOCK	70

CLbType	CLbLngth	#Connect	Simulator	AmpSwp	CalDate	CaLIn	CaLOut	CalBlock2	CBLKTKS2	CBLkTemp2
RG-174/U	6'	0			9/6/02	8:00	14.00			

Thermometer SerNo 212880

Instrument Settings

UTRNO	MemLoc	CalNo	CAL BLK	REJECT	dB	REF dB	RANGE	VELOCITY	ZERO	DELAY	FREQ	FILTER	ENERGY	DAMPING
911		269	VP.50-SS-02	0 %	19.2	+ 0.0dB	0.233 in	0.1289	5.268	NA	AUTO	STD	PULSER HIGH	400
911		272	VP.50-SS-02	0 %	29.3	+ 0.0dB	0.241	0.1279	7.037	NA	AUTO	STD	PULSER HIGH	400

Xducer Data

UTRNO	CalNo	SerialNo	Manuf	Model	Size	Frequency	Angle	Wedge Type	Wedge Length	Wedge Width	Wedge Nose
911	269	00H7W0	KB-AEROTECH	Comp	0.375"	5.0 MHZ	45	MWSQC	0.9"	0.5"	0.4"
911	272	006V30	KB-AEROTECH	Comp	0.375"	1.5MHZ	60	MWSQC	1.0"	0.5"	0.5"

Vertical Beam Spread

Instrument

UTRNO	SHAC	Inst. Serial	Inst. Model	Inst. Manuf	CalNo
911	63	98323012	2300	Panametrics	272
911	63	98323012	2300	Panametrics	269

Calibration Data

UTRNO	CalNo	Direction	CaLType	Point	Reflector	Position	Amplitude	Sweep
911	269	2,5,7&8	DET	1	1T	N/A	N/A	3
911	269	2,5,7&8	DET	2	2T	N/A	N/A	6
911	269	2,5,7&8	DET	3	3T	N/A	N/A	9
911	269	2,5,7&8	DET	4	I.D. NOTCH	N/A	80%	3
911	272	2,5,7&8	DET	1	1T	N/A	N/A	3
911	272	2,5,7&8	DET	2	2T	N/A	N/A	6
911	272	2,5,7&8	DET	3	3T	N/A	N/A	9
911	272	2,5,7&8	DET	4	I.D. NOTCH	N/A	80%	3.5

UTRNO		SSN	Signature	Level	Method	Date	Activity
911	Calibrated By	197-38-9893	ROBERT SISTEK	DET-S	UT	9/6/02	2/28/03
911	Calibrated By	230-72-8918	NORMAN L. CAGE	DET-S	UT	9/6/02	2/28/03

FINAL REVIEW H.S.B CT 9/16/02 M.M. GRACE

RTS 9-12-02

ENCLOSURE B5-2

Serial No. 11-472
Docket No. 50-339
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ENCLOSURE B5-2

Dominion
UT Partial Record

UTRNO	RECTAG	Drawing	Line	Mark/weld	Procedure	Rev
911	3137	12050-WMKS-0104DA	12"-RS-408-153A-Q2	4A	NDE-UT-803	0

CalNo	Weld Width	Exam Angle	SU Length	SU Width	SU Nose	Percent	Area Not Examined
272	1.1"	60	1.0"	0.5"	0.5"	88%%	Two areas 2.25" each at 90 degrees, and 180 degrees.

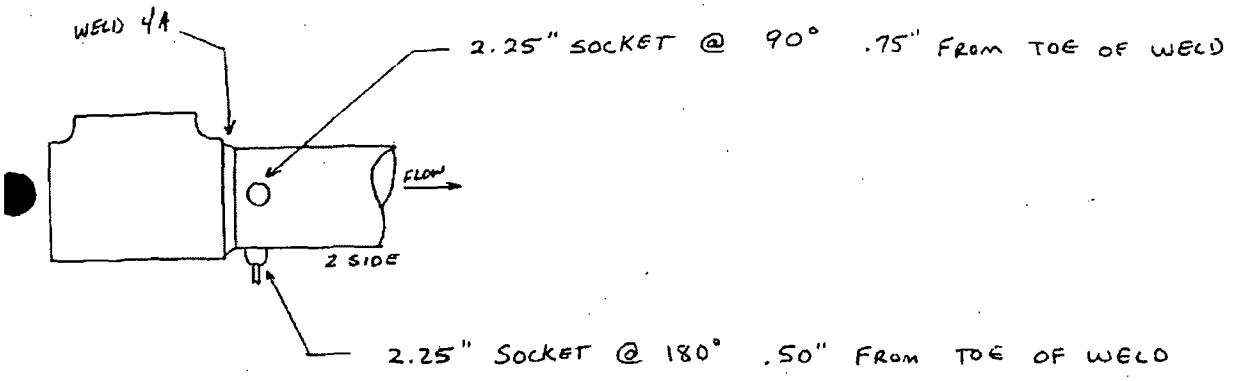
Reason

TWO 2" SOCKET WELDS

Comments

SEE PREVIOUS EXAM REPORT DATED 03/08/1992 . NDER-92-001, CAL. REPORT A05246.

Cross Section Sketch



Evaluation

88% of exam volume was covered. Due to the sockolets being adjacent to the weld toe the required volume was unable to be achieved. The weld was examined to the maximum extent practical.

SSN	Signature	Level	DATE
197-38-9893	ROBERT SISTEK	DET-S	9/6/02

MH CT 9/16/02

Reviewed By: Level: III Date: 9-12-02

ENCLOSURE B5-2

DWG: 12050-WMKS-0104DA
LINE #: 12"-RS-408-153A-Q2
MARK #: 4A



W.W.: 1.1"

V.T.: 0.580"
℄: 0.445"
P.T.: 0.365"
PIPE: 0.335"
PIPE: 0.340"
PIPE: 0.340"

VIRGINIA POWER
RTS
9-11-02
NDE Review

Robert P Sestak
9-8-02

UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R20
Summary No.:	N2.C5.11.287	Procedure Rev.:	00	Report No.:	UT-10-018
Workscope:	ISI	Work Order No.:	59101919553	Page:	1 of 5

Code: Sect. XI 1995ed/96 Add | Cat./Item: C-F-1/C5.11 | Location: SFGD

Drawing No.: 12050-WMKS-0104L | Description: Pipe to valve

System ID: RS

Component ID: 12050-WMKS-0104L / 10-RS-410 / 66 | Size/Length: 1.20" / 34.0" | Thickness/Diameter: 0.365" / 10.0"

Limitations: Single sided due to configuration. | Start Time: 1440 | Finish Time: 1525

Instrument Settings

Serial No.:	01XK03		
Manufacturer:	Krautkramer		
Model:	USN 60 SW		
Delay:	5.2353 in	Range:	1.20 in
M'tl Cal/Vel:	0.1245 in/us	Pulser:	Square
Damping:	500 Ω	Reject:	0%
Rep. Rate:	Autohigh	Freq.:	5.0 Mhz
Filter:	N/A	Mode:	Fullwave
Voltage:	450 V	Other:	PW--100ns
Ax. Gain (dB):	31.0	Circ. Gain (dB):	NA

10 Screen Div. = 1.20 in. of Sound Path

Linearity Report No.: L-10-003

Calibration Block

Cal. Block No.:	05-8513		
Thickness:	2.25"	Dia.:	0
Cal. Blk. Temp.:	71°	Temp. Tool:	07
Comp. Temp.:	76°	Temp. Tool:	07

Search Unit

Serial No.:	00H7W0		
Manufacturer:	KBA		
Size:	0.375"	Shape:	Round
Freq.:	5.0 MHZ	Style:	Comp-G
Exam Angle:	45°	# of Elements:	Single
Mode:	Shear		
Measured Angle:	45°		
Wedge Style:	MSWQC		

Search Unit Cable

Type: RG-174 | Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 43.0

CW ☑ CCW ☑ Scan dB: 43.0

Exam Surface: OD

Surface Condition: Ground Smooth

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

Results: NRI ☑ RI ☐ Geom ☐

Cal. Checks	Time	Date
Initial Cal.	0820	03/21/2010
Inter. Cal.	1440	03/21/2010
Inter. Cal.		
Inter. Cal.		
Final Cal.	1750	03/21/2010

Couplant

Cal. Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.: 05-6534 | Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
0.5" Notch	80	5.8	0.693

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
31.0	0.7" SDH	80	8.6	1.032

Comments: Refer to UTRNO #306 dated 4/6/1998 for actual thickness and contour.

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

Examiner	Level		Signature	Date
Tolosky, Ryan J	II-PDI			03/21/2010
Examiner	Level		Signature	Date
Zollner, Brian D	II-PDI			03/21/2010
Other	Level		Signature	Date
N/A	N/A			

Reviewer	Signature	Date
W.L. THOMAS		3-25-10
Site Review	Signature	Date
Robert Davies	Robert Davies	3/29/10
ANII Review	Signature	Date
		3 Apr 2010

ENCLOSURE B5-3
NAPS Unit 2 3rd Interval Limited Exams
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Docket No. 50-339
Serial No. 11-472

UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R20
Summary No.:	N2.C5.11.287	Procedure Rev.:	00	Report No.:	UT-10-018
Workscope:	ISI	Work Order No.:	59101919553	Page:	2 of 5

Code: Sect. XI 1995ed/96 Add | Cat./Item: C-F-1/C5.11 | Location: SFGD

Drawing No.: 12050-WMKS-0104L | Description: Pipe to valve

System ID: RS

Component ID: 12050-WMKS-0104L / 10-RS-410 / 66 | Size/Length: 1.20" / 34.0" | Thickness/Diameter: 0.365" / 10.0"

Limitations: Single sided examination due to configuration. | Start Time: 1440 | Finish Time: 1525

Instrument Settings

Serial No.:	01XK03		
Manufacturer:	Krautkramer		
Model:	USN 60 SW		
Delay:	6.9675 in	Range:	1.50 In
M'tl Cal/Vel:	0.1245 In/us	Pulser:	Square
Damping:	500 Ω	Reject:	0%
Rep. Rate:	Autohigh	Freq.:	5.0 Mhz
Filter:	N/A	Mode:	Fullwave
Voltage:	450 V	Other:	PW--100ns
Ax. Gain (dB):	41.0	Circ. Gain (dB):	N/A

10 Screen Div. = 1.50 in. of Sound Path

Linearity Report No.: L-10-003

Calibration Block

Cal. Block No.: 05-8513

Thickness: 2.25" | Dia.: 0

Cal. Blk. Temp.: 71° | Temp. Tool: 07

Comp. Temp.: 76° | Temp. Tool: 07

Search Unit

Serial No.:	0153Y7		
Manufacturer:	KBA		
Size:	0.375"	Shape:	Round
Freq.:	5.0 MHZ	Style:	Comp-G
Exam Angle:	60°	# of Elements:	Single
Mode:	Shear		
Measured Angle:	60°		
Wedge Style:	MSWQC		

Search Unit Cable

Type: RG-174

Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 47.0

CW ☑ CCW ☑ Scan dB: 47.0

Exam Surface: OD

Surface Condition: Ground Smooth

Cal. Checks	Time	Date
Initial Cal.	0822	03/21/2010
Inter. Cal.	1555	03/21/2010
Inter. Cal.		
Inter. Cal.		
Final Cal.	1751	03/21/2010

Couplant

Cal. Batch: 07220

Type: SoundSafe

Mfg.: SONOTECH

Exam Batch: 07220

Type: SoundSafe

Mfg.: SONOTECH

Reference Block

Serial No.: 05-6534

Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
0.5" Notch	80	6.0	0.901

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
33.0	0.3" SDH	80	4.3	0.637

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

Results: NRI ☑ RI ☐ Geom ☐

Comments: Effective coverage using the 60° search unit has been verified by the presence of the weld root response during the required scans.

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

Examiner	Level	II-PDI	Signature	Date	Reviewer	Signature	Date
Tolosky, Ryan J				03/21/2010	W.L. THOMAS		3.25.10
Examiner	Level	II-PDI	Signature	Date	Site Review	Signature	Date
Zollner, Brian D				03/21/2010	Robert Davies	Robert Davies	3/29/10
Other	Level	N/A	Signature	Date	ANII Review	Signature	Date
N/A							5 Apr 2010

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UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R20
Summary No.:	N2.C5.11.287	Procedure Rev.:	00	Report No.:	UT-10-018
Workscope:	ISI	Work Order No.:	59101919553	Page:	3 of 5

Code: Sect. XI 1995ed/96 Add | Cat./Item: C-F-1/C5.11 | Location: SFGD

Drawing No.: 12050-WMKS-0104L | Description: Pipe to valve

System ID: RS

Component ID: 12050-WMKS-0104L / 10-RS-410 / 66 | Size/Length: 1.20" / 34.0" | Thickness/Diameter: 0.365" / 10.0"

Limitations: Single sided examination due to configuration. | Start Time: 1440 | Finish Time: 1525

Instrument Settings

Serial No.:	01XK03		
Manufacturer:	Krautkramer		
Model:	USN 60 SW		
Delay:	8.1841 us	Range:	2.231 in
M'tl Cal/Vel:	0.1245 in/us	Pulser:	Square
Damping:	500 Ω	Reject:	0%
Rep. Rate:	Autohigh	Freq.:	5.0 Mhz
Filter:	N/A	Mode:	Fullwave
Voltage:	450 V	Other:	PW–100ns
Ax. Gain (dB):	51.0	Circ. Gain (dB):	N/A

10 Screen Div. = 2.231 in. of Sound Path

Linearity Report No.: L-10-003

Calibration Block

Cal. Block No.:	05-8513		
Thickness:	2.25"	Dia.:	0
Cal. Blk. Temp.:	71°	Temp. Tool:	07
Comp. Temp.:	76°	Temp. Tool:	07

Search Unit

Serial No.:	016H54		
Manufacturer:	KBA		
Size:	0.375"	Shape:	Round
Freq.:	5.0 MHZ	Style:	Comp-G
Exam Angle:	70°	# of Elements:	Single
Mode:	Shear		
Measured Angle:	68°		
Wedge Style:	MSWQC		

Search Unit Cable

Type: RG-174 | Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 51.0

CW ☐ CCW ☐ Scan dB: N/A

Exam Surface: OD

Surface Condition: Ground Smooth

Cal. Checks	Time	Date
Initial Cal.	0824	03/21/2010
Inter. Cal.	1515	03/21/2010
Inter. Cal.		
Inter. Cal.		
Final Cal.	1752	03/21/2010

Couplant

Cal. Batch: 07220 | Type: SoundSafe | Mfg.: SONOTECH

Exam Batch: 07220 | Type: SoundSafe | Mfg.: SONOTECH

Reference Block

Serial No.: 05-6534 | Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
0.5" Notch	80	6.0	1.331

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
39.4	0.3" SDH	80	4.1	0.910

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

Results: NRI ☑ RI ☐ Geom ☐

Comments: None

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

Examiner	Level		Signature	Date	Reviewer	Signature	Date
Tolosky, Ryan J	II-PDI			03/21/2010	W.L. THOMAS		3-25-10
Examiner	Level		Signature	Date	Site Review	Signature	Date
Zollner, Brian D	II-PDI			03/21/2010	Robert Davies	Robert Davies	3/29/10
Other	Level		Signature	Date	ANII Review	Signature	Date
N/A	N/A						30 Mar 2010

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UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R20
Summary No.:	N2.C5.11.287	Procedure Rev.:	00	Report No.:	UT-10-018
Workscope:	ISI	Work Order No.:	59101919553	Page:	4 of 5

Code: Sect. XI 1995ed/96 Add | Cat./Item: C-F-1/C5.11 | Location: SFGD

Drawing No.: 12050-WMKS-0104L | Description: Pipe to valve

System ID: RS

Component ID: 12050-WMKS-0104L / 10-RS-410 / 66 | Size/Length: 1.20" / 34.0" | Thickness/Diameter: 0.365" / 10.0"

Limitations: Single sided examination due to configuration | Start Time: 1440 | Finish Time: 1530

Instrument Settings

Serial No.:	01XK03		
Manufacturer:	Krautkramer		
Model:	USN 60 SW		
Delay:	8.4084 us	Range:	2.0 in
M'tl Cal/Vel:	0.1245 in/ us	Pulser:	Square
Damping:	500 Ω	Reject:	0%
Rep. Rate:	Autohigh	Freq.:	2.25 mhz
Filter:	N/A	Mode:	Fullwave
Voltage:	450 V	Other:	PW 220 ns
Ax. Gain (dB):	40.0	Circ. Gain (dB):	N/A

10 Screen Div. = 2.0 in. of Sound Path

Linearity Report No.: L-10-003

Calibration Block

Cal. Block No.:	05-8513		
Thickness:	2.25"	Dia.:	0
Cal. Blk. Temp.:	72°	Temp. Tool:	07
Comp. Temp.:	71°	Temp. Tool:	07

Search Unit

Serial No.:	01VNJD		
Manufacturer:	KBA		
Size:	0.375"	Shape:	Round
Freq.:	2.25 MHZ	Style:	MSWQC
Exam Angle:	70°	# of Elements:	Single
Mode:	Shear		
Measured Angle:	68°		
Wedge Style:	MSWQC		

Search Unit Cable

Type: RG-174 | Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☑ Downstream ☐ Scan dB: 46.0

CW ☐ CCW ☐ Scan dB: N/A

Exam Surface: OD

Surface Condition: Ground

Cal. Checks	Time	Date
Initial Cal.	0841	03/21/2010
Inter. Cal.	1525	03/21/2010
Inter. Cal.		
Inter. Cal.		
Final Cal.	1753	03/21/2010

Couplant

Cal. Batch: 07220 | Type: SoundSafe | Mfg.: SONOTECH

Exam Batch: 07220 | Type: SoundSafe | Mfg.: SONOTECH

Reference Block

Serial No.: 05-6534 | Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
0.5" Notch	80	6.0	1.205

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
33.0	0.3" SDH	80	4.5	0.899

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

Results: NRI ☑ RI ☐ Geom ☐

Comments: Supplemental examination due to single side access.

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

Examiner	Level II-PDI	Signature	Date	Reviewer	Signature	Date
Tolosky, Ryan J			03/21/2010	W.L. THOMAS		3-25-10
Examiner	Level II-PDI	Signature	Date	Site Review	Signature	Date
Zollner, Brian D			03/21/2010	Robert Davies	Robert Davies	3/29/10
Other	Level N/A	Signature	Date	ANII Review	Signature	Date
N/A						3 Apr 2010

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Supplemental Report

Dominion

Report No.: UT-10-018

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Summary No.: N2.C5.11.287

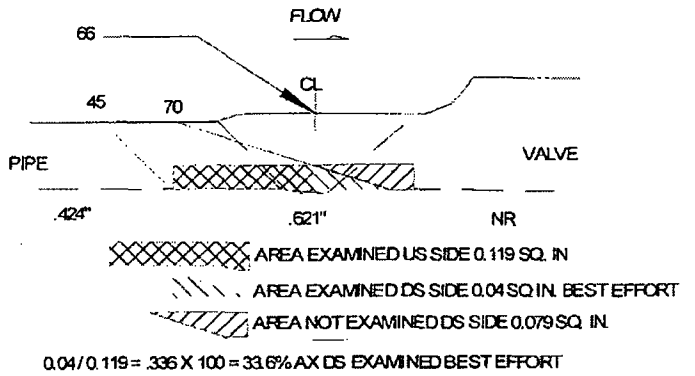
Examiner:	Tolosky, Ryan J	RT	Level:	II-PDI	Reviewer:	WAYNE L. Thomas	Date: 3-25-10
Examiner:	Zollner, Brian D	BZ	Level:	II-PDI	Site Review:	Robert Davis	Date: 3/29/10
Other:	N/A		Level:	N/A	ANII Review:		Date: 30 Apr 10

Comments: **Not to scale.**

Sketch or Photo:

Weld Number	66
Weld Thickness	.621" (.424" BM)
Weld Length	34"
Weld Width	1.2"

Prepared By: W.L. Thomas
Date: 3/24/2010



0.04 / 0.119 = .336 X 100 = 33.6% AX DS EXAMINED BEST EFFORT

100 + 100 + 33.6+ 0 = 233.6 / 4 = 58.4 %

Examination Volume Dimensions - Height .14" Length 34" Width 1.7"

Coverage Summary				
	Required Scans (each has a weighing factor of 100 for complete coverage)			
ANGLE	UpSt-Ax	UpSt-Circ	DnSt-Ax	DnSt-Circ
45/60		100%		0%
45/60/70	100%		33.6% Best Effort	
			Code Coverage Total	50%
			Best Effort Coverage (Max 25%) Total	8.4%

Notes:

1) Code Coverage refers to the maximum percentage of the required examination volume that is effectively examined with the qualified examination procedure.
2) Best Effort Coverage refers to the required examination volume past the weld centerline that is examined in the axial beam direction with an Appendix VIII demonstrated procedure for single sided coverage.

Additional - Supplemental Data

UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R20
Summary No.:	N2.C5.11.350	Procedure Rev.:	00	Report No.:	UT-10-029
Workscope:	ISI	Work Order No.:	59101919553	Page:	1 of 5

Code: Sect. XI 1995ed/96 Add | Cat./Item: C-F-1/C5.11 | Location: Yard/RWST

Drawing No.: 12050-WMKS-0107B | Description: Valve to Elbow

System ID: SI

Component ID: 12050-WMKS-0107B / 16-SI-407 / 2 | Size/Length: 1.125" / 50.3" | Thickness/Diameter: 0.375" / 16.0"

Limitations: Single sided access due to configuration | Start Time: 0930 | Finish Time: 0950

Instrument Settings

Serial No.:	081624811		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	5.047 us	Range:	1.200"
M'tl Cal/Vel:	.1220 in/us	Pulser:	Square
Damping:	400 Ω	Reject:	0%
Rep. Rate:	Auto	Freq.:	5.0 MHz
Filter:	3.0 - 6.0	Mode:	Fullwave
Voltage:	Max	Other:	N/A
Ax. Gain (dB):	14.5	Circ. Gain (dB):	N/A

10 Screen Div. = 1.200 in. of Sound Path

Linearity Report No.: L-10-004

Calibration Block

Cal. Block No.:	10872		
Thickness:	2.25"	Dia.:	0
Cal. Blk. Temp.:	72°	Temp. Tool:	07
Comp. Temp.:	65°	Temp. Tool:	07

Search Unit

Serial No.:	016H54		
Manufacturer:	KBA		
Size:	0.375"	Shape:	Round
Freq.:	5.0 MHZ	Style:	Comp-G
Exam Angle:	45°	# of Elements:	Single
Mode:	Shearwave		
Measured Angle:	46°		
Wedge Style:	MSWQC		

Search Unit Cable

Type: RG-174 | Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 26.5

CW ☑ CCW ☑ Scan dB: 26.5

Exam Surface: OD

Surface Condition: Ground

Cal. Checks	Time	Date
Initial Cal.	0711	04/04/2010
Inter. Cal.	0930	04/04/2010
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	1150	04/04/2010

Couplant

Cal. Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.: 05-6534

Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
0.5" Notch	80	6.0	0.718"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
14.5	.7" SDH	60	8.8	1.053"

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

Results: NRI ☑ RI ☐ Geom ☐

Comments: Refer to UTRNO 612, dated 10/1/99 for thickness & contour.

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

Examiner	Level		Signature	Date
Roehl, Adam L.	II-PDI			04/04/2010
Tolosky, Ryan J	II-PDI			04/04/2010
N/A	Other	N/A		

Reviewer	Signature	Date
W.C. Thomas		4.8.10
Site Review: Jeff Odegard		4/8/10
ANII Review		11 Apr 2011

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UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R20
Summary No.:	N2.C5.11.350	Procedure Rev.:	00	Report No.:	UT-10-029
Workscope:	ISI	Work Order No.:	59101919553	Page:	2 of 5

Code: Sect. XI 1995ed/96 Add | Cat./Item: C-F-1/C5.11 | Location: Yard/RWST

Drawing No.: 12050-WMKS-0107B | Description: Valve to Elbow

System ID: SI

Component ID: 12050-WMKS-0107B / 16-SI-407 / 2 | Size/Length: 1.125" / 50.3" | Thickness/Diameter: 0.375" / 16.0"

Limitations: Single sided access due to configuration | Start Time: 0951 | Finish Time: 1001

Instrument Settings

Serial No.:	081624811		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	7.167 us	Range:	1.555"
M'tl Cal/Vel:	.1220 in/us	Pulser:	Square
Damping:	400 Ω	Reject:	0%
Rep. Rate:	Auto	Freq.:	5.0 MHz
Filter:	3.0 - 6.0	Mode:	Fullwave
Voltage:	Max	Other:	N/A
Ax. Gain (dB):	29.0	Circ. Gain (dB):	N/A

10 Screen Div. = 1.555 in. of Sound Path

Linearity Report No.: L-10-004

Calibration Block

Cal. Block No.:	10872		
Thickness:	2.25"	Dia.:	0
Cal. Blk. Temp.:	72°	Temp. Tool:	07
Comp. Temp.:	65°	Temp. Tool:	07

Search Unit

Serial No.:	015PF6		
Manufacturer:	KBA		
Size:	0.375"	Shape:	Round
Freq.:	5.0 MHZ	Style:	Comp-G
Exam Angle:	60°	# of Elements:	Single
Mode:	Shearwave		
Measured Angle:	60°		
Wedge Style:	MSWQC		

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

Cal. Checks	Time	Date
Initial Cal.	0743	04/04/2010
Inter. Cal.	0951	04/04/2010
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	1152	04/04/2010

Couplant

Cal. Batch: 07220

Type: SoundSafe

Mfg.: SONOTECH

Exam Batch: 07220

Type: SoundSafe

Mfg.: SONOTECH

Reference Block

Serial No.: 05-6534

Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
0.5" Notch	80	6.0	0.933"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
19.0	.3" SDH	80	4.2	0.659"

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

Results: NRI ☑ RI ☐ Geom ☐

Comments: Effective coverage using the 60° search unit has been verified by the presence of the weld root response during the circ scan.

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

Examiner	Level		Signature	Date	Reviewer	Signature	Date
Roahl, Adam L.		II-PDI	Adam Roahl	04/04/2010	W.L. THOMAS		4.8.10
Examiner	Level		Signature	Date	Site Review	Signature	Date
Tolosky, Ryan J		II-PDI	Ryan Tolosky	04/04/2010	Jeff Odegard		4/8/10
Other	Level		Signature	Date	ANII Review	Signature	Date
N/A		N/A					11 Apr 2010

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UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R20
Summary No.:	N2.C5.11.350	Procedure Rev.:	00	Report No.:	UT-10-029
Workscope:	ISI	Work Order No.:	59101919553	Page:	3 of 5

Code: Sect. XI 1995ed/96 Add | Cat./Item: C-F-1/C5.11 | Location: Yard/RWST

Drawing No.: 12050-WMKS-0107B | Description: Valve to Elbow

System ID: SI

Component ID: 12050-WMKS-0107B / 16-SI-407 / 2 | Size/Length: 1.125" / 50.3" | Thickness/Diameter: 0.375" / 16.0"

Limitations: Single sided access due to configuration | Start Time: 1002 | Finish Time: 1012

Instrument Settings

Serial No.:	081624811		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	7.625 us	Range:	2.225"
M'tl Cal/Vel:	.1220 in/us	Pulser:	Square
Damping:	400 Ω	Reject:	0%
Rep. Rate:	Auto	Freq.:	5.0 MHz
Filter:	3.0 - 6.0	Mode:	Fullwave
Voltage:	Max	Other:	N/A
Ax. Gain (dB):	35.0	Circ. Gain (dB):	N/A

10 Screen Div. = 2.225 in. of Sound Path

Linearity Report No.: L-10-004

Calibration Block

Cal. Block No.:	10872		
Thickness:	2.25"	Dia.:	0
Cal. Blk. Temp.:	72°	Temp. Tool:	07
Comp. Temp.:	65°	Temp. Tool:	07

Search Unit

Serial No.:	0153Y6		
Manufacturer:	KBA		
Size:	0.375"	Shape:	Round
Freq.:	5.0 MHZ	Style:	Comp-G
Exam Angle:	70°	# of Elements:	Single
Mode:	Shearwave		
Measured Angle:	68		
Wedge Style:	MSWQC		

Search Unit Cable

Type: RG-174 | Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 35

CW ☐ CCW ☐ Scan dB: N/A

Exam Surface: OD

Surface Condition: Ground

Cal. Checks	Time	Date
Initial Cal.	0753	4/4/2010
Inter. Cal.	1002	4/4/2010
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	1154	4/4/2010

Couplant

Cal. Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.: 05-6534

Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
0.5" Notch	80	6.0	1.359

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
23.0	.3" SDH	80	4.0	0.885"

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

Results: NRI ☑ RI ☐ Geom ☐

Comments: None

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

Examiner	Level II-PDI	Signature	Date	Reviewer	Signature	Date
Roehl, Adam L.			4/4/2010	W. L. Thomas		4.8.10
Examiner	Level II-PDI	Signature	Date	Site Review	Signature	Date
Tolosky, Ryan J			4/4/2010	Jeff Odegard		4/8/10
Other	Level N/A	Signature	Date	ANII Review	Signature	Date
N/A						11 Apr 2010

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NAPS Unit 2 3rd Interval Limited Exams
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UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R20
Summary No.:	N2.C5.11.350	Procedure Rev.:	00	Report No.:	UT-10-029
Workscope:	ISI	Work Order No.:	59101919553	Page:	4 of 5

Code:	Sect. XI 1995ed/96 Add	Cat./Item:	C-F-1/C5.11
Location:	Yard/RWST		
Drawing No.:	12050-WMKS-0107B	Description:	Valve to Elbow
System ID:	SI		
Component ID:	12050-WMKS-0107B / 16-SI-407 / 2	Size/Length:	1.125" / 50.3"
Thickness/Diameter:	0.375" / 16.0"		
Limitations:	Single sided access due to configuration	Start Time:	1013
Finish Time:	1023		

Instrument Settings

Serial No.:	081624811		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	7.541 us	Range:	2.246"
M'tl Cal/Vel:	.1240 in/us	Pulser:	Square
Damping:	400 Ω	Reject:	0%
Rep. Rate:	Auto	Freq.:	2.0 MHz
Filter:	.8 - 3.0	Mode:	Fullwave
Voltage:	Max	Other:	N/A
Ax. Gain (dB):	32.0	Circ. Gain (dB):	N/A

10 Screen Div. = 2.246 in. of Sound Path

Linearity Report No.: L-10-004

Calibration Block

Cal. Block No.:	10872		
Thickness:	2.25"	Dia.:	0
Cal. Blk. Temp.:	72°	Temp. Tool:	07
Comp. Temp.:	65°	Temp. Tool:	07

Search Unit

Serial No.:	01CLMV		
Manufacturer:	KBA		
Size:	0.375"	Shape:	Round
Freq.:	2.25 MHZ	Style:	Comp-G
Exam Angle:	70	# of Elements:	Single
Mode:	Shearwave		
Measured Angle:	68		
Wedge Style:	MSWQC		

Search Unit Cable

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

Scan Coverage

Upstream ☑	Downstream ☑	Scan dB:	32
CW ☐	CCW ☐	Scan dB:	N/A
Exam Surface:	OD		
Surface Condition:	Ground		

Cal. Checks	Time	Date
Initial Cal.	0812	4/4/2010
Inter. Cal.	1013	4/4/2010
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	1156	4/4/2010

Couplant

Cal. Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.:	05-6534
Type:	SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
0.5" Notch	80	5.5	1.240"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
20.0	.3" SDH	60	3.7	0.835"

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

Results: NRI ☑ RI ☐ Geom ☐

Comments: Supplemental exam for coverage.

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

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Roehl, Adam L.	II-PDI		4/4/2010	W.L. Thomas		4.8.10
Examiner	Level	Signature	Date	Site Review	Signature	Date
Tolosky, Ryan J	II-PDI		4/4/2010	Jeff Odegard		4/8/10
Other	Level	Signature	Date	ANII Review	Signature	Date
N/A	N/A					11 Apr 2010

ENCLOSURE B5-4
NAPS Unit 2 3rd interval Limited Exams
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Serial No. 11-472

ENCLOSURE B5-4

Supplemental Report

Dominion

Report No.: UT-10-029

Page: 5 of 5

Summary No.: N2.C5.11.350

Examiner: Roehl, Adam L. AR Level: II-PDI Reviewer: W.L. Thomas Date: 4.7.10

Examiner: Tolosky, Ryan J RT Level: II-PDI Site Review: Jeff Odegard JDO Date: 4/8/10

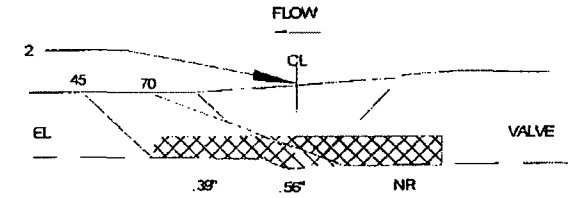
Other: N/A Level: N/A ANII Review: M Date: 11 April 10

Comments:

Weld Number	2
Weld Thickness	.56 (.39" BM)
Weld Length	50.3"
Weld Width	1.125"

Prepared By: W.L. Thomas
Date: 4/7/2010

Sketch or Photo:



.11 SQ IN. EXAMINED DS SIDE AXIAL DIR. (TOTAL REQUIRED .12 SQ IN.)
.11 / .12 = .916 X 100 = 92%

AREA NOT EXAMINED DS SIDE AXIAL DIR. .01 / .12 = .08 X 100 = 8%

.13 SQ IN. AREA NOT EXAMINED US SIDE AXIAL DIR. (TOTAL REQ. .15 SQ IN.)
.13 / .15 = .866 X 100 = 87%

.02 SQ. IN. EXAMINED BEST EFFORT US SIDE AXIAL DIRECTION.
.02 / .15 = .13 X 100 = 13%

NOTE: ALL AREA MEASUREMENTS WERE CALCULATED WITH CAD PROGRAM

100 + 92 + 0 + 13 = 205 / 400 = .51 X 100 = 51%

Examination Volume Dimensions - Height .13" Length 50.3" Width 1.125"

Coverage Summary				
	Required Scans (each has a weighing factor of 100 for complete coverage)			
ANGLE	UpSt-Ax	UpSt-Circ	DnSt-Ax	DnSt-Circ
45/60		0%		100%
70	13% Best Effort		92%	
			Code Coverage Total	48%
			Best Effort Coverage (Max 25%) Total	3%

Notes:

1) Code Coverage refers to the maximum percentage of the required examination volume that is effectively examined with the qualified examination procedure.
2) Best Effort Coverage refers to the required examination volume past the weld centerline that is examined in the axial beam direction with an Appendix VIII demonstrated procedure for single sided coverage.

Additional - Supplemental Data

ENCLOSURE B5-5

N2, CS, 11.514

Dominion

Interval: 3

Ultrasonic Examination Data Record

UTRNO	Station	Unit	Drawing	Line	NDER
1318	NAPS	2	12050-WMKS-0111AAJ	6"-SI-570-1502-Q2	05-006

Couplant	CalCheck1	CalCheck2	CalCheck3	WO / DCP	Procedure	Rev
01220	13:45				NDE-UT-810	1

Thermometer SerNo: 1070BGCY

Exam Data

UTRNO	RECTAG	mark/weld	Scan dB	Exam Area	Surface Condition	Temp	Partial	Single Side	Results
1318	4611	SW-73	*	**	GROUND	95	No	Yes	GI

Comments:

* (45L - 33dB, FOCAL DEPTH 18mm, CONTOURED TO 8" Dia.), (60L -40dB, FOCAL DEPTH 15mm, CONTOURED TO 8" Dia.), (45S - 23dB, FOCAL DEPTH N/A, CONTOUR FLAT), (40L - 41dB, FOCAL DEPTH 22mm, CONTOURED TO 8" Dia.), (40S - 23dB, FOCAL DEPTH N/A, CONTOUR FLAT) ** - SEE ATTACHED COVERAGE PLOTS MAINTAINED A 5 - 20% BASELINE NOISE LEVEL THROUGHOUT EXAMS. CALIBRATION VERIFICATIONS WERE PERFORMED PRIOR TO EACH EXAM AND WERE SATISFACTORY. EXAM PERFORMED FROM SAFE END SIDE ONLY DUE TO NOZZLE CONFIGURATION.

UTRNO		Signature	Level	Method	Date	Activity
1318	Examined By:	PAUL R. WEEKS	DET	UT	10/08/2005	04/08/2006
1318	Examined By:	PAUL S. ANDERSON	DET	UT	10/08/2005	04/08/2006

Reviewed By: Level: III Date: 10/12/05

ANII [signature] Date 4/11/07
Initial ☐ Final ☒
HSB-CT

Interval: 3

Dominion Power Ultrasonic C..oration Data Record

UTRNO	Station	Unit	Procedure	Rev	Sizing Procedure	Rev	Couplant	CalBlock1	CBLKTKS	CBLKTemp
1318	NAPS	2	NDE-UT-810	1	NDE-UT-N/A		01220	02-5073292	4" Radius	78

CLbType	CLbLngth	#Connect	Simulator	AmpSwp	CalDate	CaLIn	CaLOut	CalBlock2	CBLKTKS2	CBLkTemp2
RG-174	6'	0	6039005	SEE COMMENTS	10/08/2005	10:20	17:30	02-5073289	8" Pipe Seg.	78

Thermometer SerNo 1070BGCY

Instrument Settings

UTRNO	MemLoc	XDUC SER	REJECT	dB	REF dB	RANGE	VELOCITY	ZERO	DELAY	FREQ	DISP MODE	PRR/PRF	PULSER	FILTER	ENERGY	DAMPING
ID																
1318	15	21HY-05001	0	27.8	0.0	2.0	0.230	7.668	N/A	2	FULLWAVE	AUTO	SQUARE	0.8-3.0	MAX	400
1612																
1318	17	22GN-05001	0	29.4	0.0	2.80	0.230	9.153	N/A	2	FULLWAVE	AUTO	SQUARE	0.8-3.0	MAX	400
1613																
1318	27	00P3JK	0	21	0.0	2.5	0.123	5.956	N/A	2	FULLWAVE	AUTO	SQUARE	0.8-3.0	MAX	400
1614																
1318	18	21HZ-05001	0	35.8	0.0	2.6	0.230	6.004	N/A	2	FULLWAVE	AUTO	SQUARE	0.8-3.0	MAX	400
1615																
1318	28	00VBYF	0	20.1	0.0	2.5	0.123	5.706	N/A	2	FULLWAVE	AUTO	SQUARE	0.8-3.0	MAX	400
1616																

Xducer Data

UTRNO	ID	SerialNo	Manuf	Model	Size	Frequency	Nom Angle	Measured Angle	Wave Mode	Shape	No. Elements
				Wedge Type		Wedge Length	Wedge Width	Wedge Nose			
1318	1522	21HY-05001	Sigma	SDA2 45L	2(18X10)	2	45 DEG	45 DEG	LONG	RECT	2
				INTEGRAL		1.2"	1.2"	0.5"			
1318	1523	22GN-05001	Sigma	SDA2 60L	2(25X15)	2	60 DEG	60 DEG	LONG	RECT	2
				INTEGRAL		1.5"	1.5"	0.75"			
1318	1524	00P3JK	KB-AEROTECH	Comp-G	0.375"	1.5 MHZ	45 DEG	45 DEG	SHEAR	ROUND	1
				MSWQC		0.75"	0.55"	0.35"			
1318	1525	21HZ-05001	Sigma	SDA2 40L	2(25X15)	2	40 DEG	40 DEG	LONG	RECT	2
				INTEGRAL		1.5"	1.5"	0.65"			
1318	1526	00VBYF	KB-AEROTECH	Comp-G	0.375"	1.5 MHZ	40 DEG	40 DEG	SHEAR	ROUND	1
				MSWQC		0.8"	0.55"	0.4"			

Vertical Beam Spread

UTRNO		Signature	Level	Method	Date	Activity
1318	Calibrated By	PAUL R. WEEKS	DET	UT	10/08/2005	04/08/2006
1318	Calibrated By	PAUL S. ANDERSON	DET	UT	10/08/2005	04/08/2006

ANII Initial ☐ Date 4/11/07 Final ☒

HSB-CT

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Interval: 3

Dominion Power Ultrasonic C..bration Data Record

Instrument						Calibration Data										
UTRNO	SHAC	Inst. Serial	Inst. Model	Inst. Manuf	ID	UTRNO	Blk	XDID	IS ID	Direction	CaLType	Point	Reflector	Position	Amplitude	Sweep
1318	200	040182503	Epoch 4	Panametrics	1616	1318	1	1522	1612	AX	DET	1	0.75" SDH	N/A	80%	5.0
1318	200	040182503	Epoch 4	Panametrics	1615	1318	1	1523	1613	AX	DET	1	0.75" SDH	N/A	80%	5.0
1318	200	040182503	Epoch 4	Panametrics	1614	1318	1	1524	1614	AX	DET	1	0.75" SDH	N/A	80%	4.2
1318	200	040182503	Epoch 4	Panametrics	1613	1318	2	1525	1615	CIRC	DET	1	0.75" SDH	N/A	80%	4.2
1318	200	040182503	Epoch 4	Panametrics	1612	1318	2	1526	1616	CIRC	DET	1	0.75" SDH	N/A	80%	4.7

UTRNO		Signature	Level	Method	Date	Activity
1318	Calibrated By	PAUL R. WEEKS	DET	UT	10/08/2005	04/08/2006
1318	Calibrated By	PAUL S. ANDERSON	DET	UT	10/08/2005	04/08/2006

ANII MH Date 4/11/07
Initial ☐ Final ☒
HSB-CT

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UT Metallurgical and Geometric Indication Record

UTRNO	RECTAG	Drawing		Line	Mark/weld	Procedure	Rev
1318	4611	12050-WMKS-0111AAJ		6"-SI-570-1502-Q2	SW-73	NDE-UT-810	1
ID	**Angle**	**SU Length**	**SU Width**	**SU Nose**	**Material**	**Thickness**	**Weld Width**
158	45 DEG	0.75"	0.55"	0.35"	CS/INC/SS	0.75"	1.0

Maximum Amp	Position	Start	End	Direction	Sweep	Basis For Disposition
100%	1.2"	*	*	AX	1.05	

Evaluation

~~SEE ATTACHED EVALUATION SHEET~~ KH 10/13/05

Comments

I.D. GEOMETRY OBSERVED 360 DEGREES AT VARYING AMPLITUDES WITH THREE DISTINCT AREAS OF INCREASED AMPLITUDE. (*) AT 0, 120, AND 240 DEGREES CIRCUMFERENTIALY AN AREA OF INCREASED AMPLITUDE 0.8" IN LENGTH WAS NOTED. THESE INDICATIONS WERE GEOMETRIC IN NATURE. THESE INDICATIONS WERE ALSO OBSERVE WITH THE 45RL AND 60RL AXIAL TRANSDUCERS AT VARYING AMPLITUDES BELOW RECORDABLE LEVELS. RADIOGRAPHIC AND AS-BUILT DRAWINGS WERE REQUESTED BUT ARE NOT AVAILABLE AT THIS TIME. DATUM "0" IS AT THE OUTSIDE RADIUS OF THE ELBOW BELOW AND THE CS/INC INTERFACE.

Cross Section Sketch

Signature	Level	DATE
PAUL S.ANDERSON	DET	10/08/2005

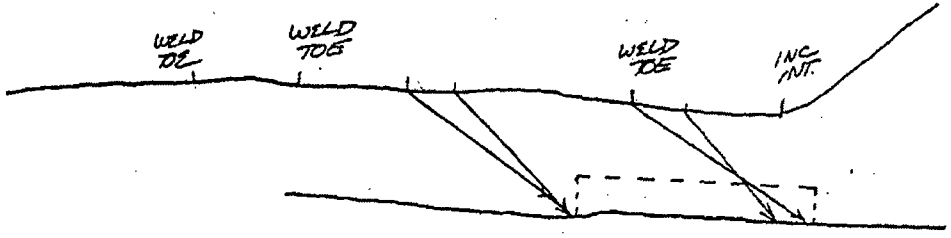
Reviewed By: KHacker Level: III Date: 10/12/05

ANII MH Date 4/11/07
Initial ☐ Final ☒
HSB-CT

UTRNO: T318

BIT TANK INLET
Code Coverage
AXIAL SCANS
SW-73

Axial scan coverage = 77%
circ scan coverage = 32%
Composite coverage = 54.5%
KJHack 10/20/05



FLOW →

Coverage
45 - 75%
60 - 77%

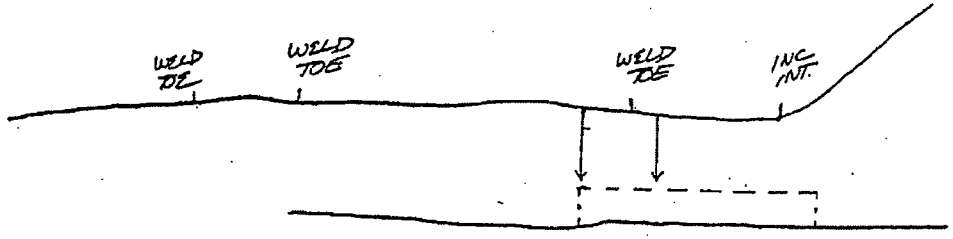
ANII PM K Date 4/11/07
Initial ☐ Final ☒
HSB-CT

Prepared by:
Paul K Weeks
KJHack 10/20/05

ENCLOSURE B5-5

UTRNO: 1318

BIT TANK INLET
Circ Scan
Code Coverage
SW-73



FLOW →

ANII MK Date 4/16/07
Initial ☐ Final ☒
HSB-CT

Coverage.
Circ - 32%

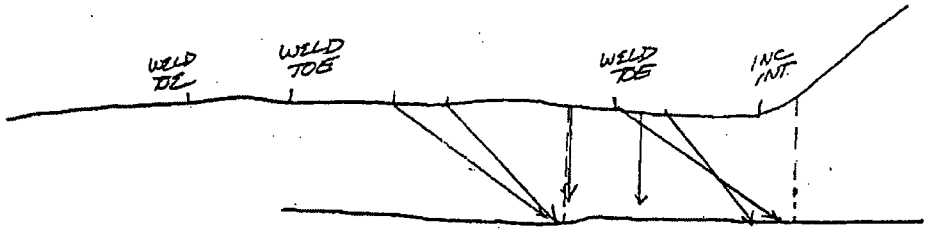
Prepared by:
Paul R Weeks
KJ Hack 10/20/05

ENCLOSURE B5-5

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UTRNO: 1318

BIT TANK INLET
Procedural Coverage
SW-73



FLOW →

ANII mk Date 4/11/07
Initial ☐ Final ☒
HSB-CT

Coverage

45 = 63%
60 = 58%
Circ = 32%

Prepared by:
Paul R Weeks
KJHacker 10/20/05

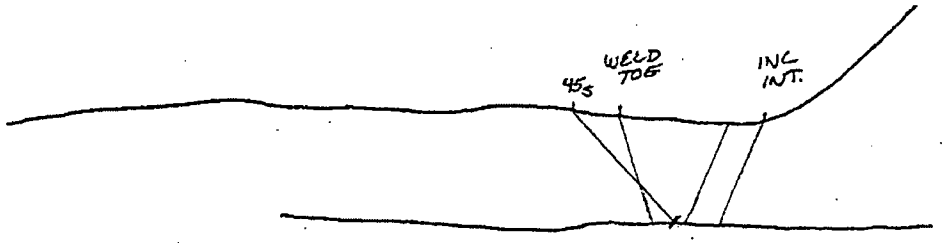
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UTRNO: 1318

B.t Tank
INLET
SW-73

INDICATION PLOT



FLOW →

NOTE: WELD PREP AND BUTTER Dimensions
Taken From Design Drawings

ANII MH Date 4/11/07
Initial ☐ Final ☒
HSB-CT

Prepared by: Paul R Weeks
KJ Hacker 10/20/05

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ENCLOSURE B5-5

Liquid Penetrant Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	NDE-PT-701	Outage No.:	N2R18
Summary No.:	N2.C5.11.514	Procedure Rev.:	6	Report No.:	PT-07-009
Workscope:	ISI	Work Order No.:		Page:	1 of 1

Code: Sect. XI 1995 Ed./1996 Add. Cat./Item: C-F-1/C5.11 Location: AUX 244

Drawing No.: 12050-WMKS-0111AAJ Description: DM Weld

System ID: SI

Component ID: 12050-WMKS-0111AAJ / 6-SI-570 / SW-73 Size/Length: 6.625"/20.8"

Limitations: NONE

Light Meter Mfg.: AEMC Instruments Serial No.: AEMC-11 Illumination: 212 Fc

Temp. Tool Mfg.: AEMC Instruments Serial No.: 1074BGCY Surface Temp.: 80 °F

Comparator Block Temp.: Side A: N/A °F Side B: N/A °F Resolution: Not Used

Lo/Wo Location: See Comments* Surface Condition: GROUND

	Cleaner	Penetrant	Remover	Developer
Brand	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX
Type	SKC-S	SKL-SP1	SKC-S	SKD-S2
Batch No.	05H06K	02M04K	05H06K	02B05K
Time	Evap. 5 min.	Dwell 12 min.	Evap. 5 min.	Develop 10 min.

Time Exam Started: 1100 Time Exam Completed: 1155

Indication No.	Loc L	Loc W	Diameter	Length	Type R/L	Remarks

Comments:
* CENTERLINE OF MANWAY/WELD CENTERLINE

Results: NRI ☑ RI ☐ Eval ☐

Percent Of Coverage Obtained > 90%: Yes Reviewed Previous Data:

Examiner	Level II	Signature	Date	Reviewer		Signature	Date
Sistek, Robert P		Robert Sistek	04/01/2007	Robert Davies		Robert Davies	4/2/07
Examiner	Level	Signature	Date	Site Review		Signature	Date
	N/A				N/A		
Other	Level	Signature	Date	ANII Review		Signature	Date
	N/A			Mark Greer			4/11/07

Liquid Penetrant Examination <Edit From Setup>

ENCLOSURE B5-6

N2.CS.11.511

Dominion
Ultrasonic Examination Data Record

Interval: 3

UTRNO	Station	Unit	Drawing	Line	NDER
1317	NAPS	2	12050-WMKS-0111AAG	6"-SI-569-1502-Q2	05-024

Couplant	CalCheck1	CalCheck2	CalCheck3	WO / DCP	Procedure	Rev
01220	13:45				NDE-UT-810	1

Thermometer SerNo: 1070BGCY

Exam Data

UTRNO	RECTAG	mark/weld	Scan dB	Exam Area	Surface Condition	Temp	Partial	Single Side	Results
1317	4547	SW-55	*	**	GROUND	95	~~No~~ Yes	Yes	GI

Comments:

* (45L - 33dB, FOCAL DEPTH 18mm, CONTOURED TO 8" Dia.), (60L -40dB, FOCAL DEPTH 15mm, CONTOURED TO 8" Dia.), (45S - 23dB, FOCAL DEPTH N/A, CONTOUR FLAT), (40L - 41dB, FOCAL DEPTH 22mm, CONTOURED TO 8" Dia.), (40S - 23dB, FOCAL DEPTH N/A, CONTOUR FLAT) ** - SEE ATTACHED COVERAGE PLOTS MAINTAINED A 5 - 20% BASELINE NOISE LEVEL THROUGHOUT EXAMS. CALIBRATION VERIFICATIONS WERE PERFORMED PRIOR TO EACH EXAM AND WERE SATISFACTORY. EXAM PERFORMED FROM SAFE END SIDE ONLY DUE TO NOZZLE CONFIGURATION.

UTRNO		Signature	Level	Method	Date	Activity
1317	Examined By:	PAUL R. WEEKS	DET	UT	10/08/2005	04/08/2006
1317	Examined By:	PAUL S. ANDERSON	DET	UT	10/08/2005	04/08/2006

Reviewed By: Level: III Date: 10/12/05

ANII Date 12/19/05
Initial ☐ Final ☐
HSB-CT

Interval 3

Dominion Power Ultrasonic C[illegible]ration Data Record

UTRNO	Station	Unit	Procedure	Rev	Sizing Procedure	Rev	Couplant	CalBlock1	CBLKTKS	CBLKTemp
1317	NAPS	4	NDE-UT-810	1	NDE-UT-N/A		01220	02-5073292	4" Radius	78

CLbType	CLbLngth	#Connect	Simulator	AmpSwp	CalDate	CaLIn	CaLOut	CalBlock2	CBLKTKS2	CBLkTemp2
RG-174	6'	0	6039005	SEE COMMENTS	10/08/2005	10:50	15:30	02-5073289	8" Pipe Seg.	78

Thermometer SerNo 1070BC[illegible]CY

Instrument Settings

UTRNO	MemLoc	XDUC SER	REJECT	dB	REF dB	RANGE	VELOCITY	ZERO	DELAY	FREQ	DISP MODE	PRR/PRF	PULSER	FILTER	ENERGY	DAMPING
ID																
1317	15	21HY-05001	0	27.8	0.0	2.0	0.230	7.668	N/A	2	FULLWAVE	AUTO	SQUARE	0.8-3.0	MAX	400
1607																
1317	17	22GN-05001	0	29.4	0	2.80	0.230	9.153	N/A	2	FULLWAVE	AUTO	SQUARE	0.8-3.0	MAX	400
1608																
1317	27	00P3JK	0	21	0.0	2.5	0.123	5.956	N/A	2	FULLWAVE	AUTO	SQUARE	0.8-3.0	MAX	400
1609																
1317	18	21HZ-05001	0	35.8	0.0	2.6	0.230	6.004	N/A	2	FULLWAVE	AUTO	SQUARE	0.8-3.0	MAX	400
1610																
1317	28	00VBYF	0	20.1	0.0	2.5	0.123	5.706	N/A	2	FULLWAVE	AUTO	SQUARE	0.8-3.0	MAX	400
1611																

Xducer Data

UTRNO	ID	SerialNo	Manuf	Model	Size	Frequency	Nom Angle	Measured Angle	Wave Mode	Shape	No. Elements
				Wedge Type		Wedge Length	Wedge Width	Wedge Nose			
1317	1517	21HY-05001	Sigma	SDA2 45L	2(18X10)	2	45 DEG	45 DEG	LONG	RECT	2
				INTEGRAL		1.2"	1.2"	0.5"			
1317	1518	22GN-05001	Sigma	SDA2 60L	2(25X15)	2	60 DEG	60 DEG	LONG	RECT	2
				INTEGRAL		1.5"	1.5"	0.75"			
1317	1519	00P3JK	KB-AEROTECH	Comp-G	0.375"	1.5 MHZ	45 DEG	45 DEG	SHEAR	ROUND	1
				MSWQC		0.75"	0.55"	0.35"			
1317	1520	21HZ-05001	Sigma	SDA2 40L	2(25X15)	2	40 DEG	40 DEG	LONG	RECT	2
				INTEGRAL		1.5"	1.5"	0.65"			
1317	1521	00VBYF	KB-AEROTECH	Comp-G	0.375"	1.5 MHZ	40 DEG	40 DEG	SHEAR	ROUND	1
				MSWQC		0.8"	0.55"	0.45"			

Vertical Beam Spread

UTRNO		Signature	Level	Method	Date	Activity
1317	Calibrated By	PAUL R. WEEKS	DET	UT	10/08/2005	04/07/2006
1317	Calibrated By	PAUL S. ANDERSON	DET	UT	10/08/2005	04/07/2006

ANII [illegible] Date 12/19/05
Initial ☐ Final ☐
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Interval: 3

Dominion Power Ultrasonic Calibration Data Record

Instrument						Calibration Data										
UTRNO	SHAC	Inst. Serial	Inst. Model	Inst. Manuf	ID	UTRNO	Blk	XDID	IS ID	Direction	CalType	Point	Reflector	Position	Amplitude	Sweep
1317	200	040182503	Epoch 4	Panametrics	1611	1317	1	1517	1607	AX	DET	1	0.75" SDH	N/A	80%	5.0
1317	200	040182503	Epoch 4	Panametrics	1610	1317	1	1518	1608	AX	DET	1	0.75" SDH	N/A	80%	5.0
1317	200	040182503	Epoch 4	Panametrics	1609	1317	1	1519	1609	AX	DET	1	0.75" SDH	N/A	80%	4.2
1317	200	040182503	Epoch 4	Panametrics	1608	1317	2	1520	1610	CIRC	DET	1	0.75" SDH	N/A	80%	4.2
1317	200	040182503	Epoch 4	Panametrics	1607	1317	2	1521	1611	CIRC	DET	1	0.75" SDH	N/A	80%	4.7

UTRNO		Signature	Level	Method	Date	Activity
1317	Calibrated By	PAUL R. WEEKS	DET	UT	10/08/2005	04/07/2006
1317	Calibrated By	PAUL S. ANDERSON	DET	UT	10/08/2005	04/07/2006

ANII [signature] Date 12/19/05
Initial ☐ Final ☐
HSB-CT

ENCLOSURE B5-6

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ENCLOSURE B5-6

UT Metallurgical and Geometric Indication Record

UTRNO	RECTAG	Drawing	Line	Mark/weld	Procedure	Rev
1317	4547	12050-WMKS-0111AAG	6"-SI-569-1502-Q2	SW-55	NDE-UT-810	1

ID	Angle	SU Length	SU Width	SU Nose	Material	Thickness	Weld Width
157	45 DEG	0.75"	0.55"	0.35"	CS/INC/SS	.75"	1.0"

Maximum Amp	Position	Start	End	Direction	Sweep	Basis For Disposition
120%	1.2"	*	*	AX	1.05	

Evaluation

SEE ATTACHED EVALUATION 10/10/05

Comments

(*) - I.D. GEOMETRY OBSERVED 360 DEGREES AT VARYING AMPLITUDES THESE INDICATIONS WERE GEOMETRIC IN NATURE. THESE INDICATIONS WERE ALSO OBSERVED WITH THE 45RL AND 60RL AXIAL TRANSDUCERS AT VARYING AMPLITUDES BELOW RECORDABLE LEVELS. RADIOGRAPHIC AND AS-BUILT DRAWINGS WERE REQUESTED BUT ARE NOT AVAILABLE AT THIS TIME. DATUM "0" IS AT THE OUTSIDE RADIUS OF THE ELBOW ABOVE AND THE CS/INC INTERFACE.

Cross Section Sketch

Signature	Level	DATE
PAUL S.ANDERSON	DET	10/08/2005

Reviewed By: [signature] Level: III Date: 10/12/05

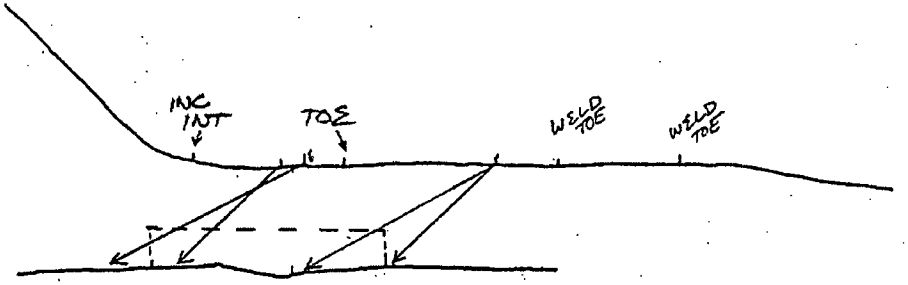
ANII [signature] Date 12/19/05
Initial ☐ Final ☐
HSB-CT

UTRNO 317

BIT TANK OUTLET
Code Coverage
Axial Scans
SW-55

Axial coverage = 81%
Circ scan coverage = 40%
Composite coverage = 60.5%

KJHacker 10/20/05



Coverage
45 - 79%
60 - 81%

Prepared by:
Paul R Weeks

KJHacker 10/20/05

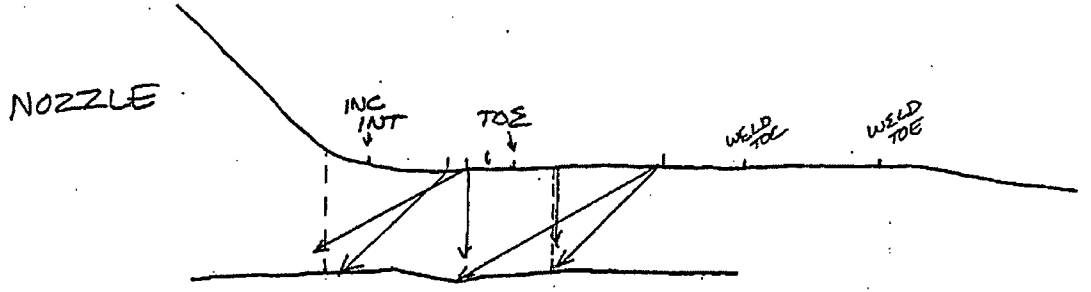
ANII MK Date 12/19/05
Initial ☐ Final ☒
HSB-CT

ENCLOSURE B5-6

Serial No. 11-472
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UTRNO: 317

BIT TANK OUTLET
Procedural Coverage
SW-55



Coverage
45 = 69%
60 = 64%
Circ = 40%

Prepared by:
Paul R Weeks

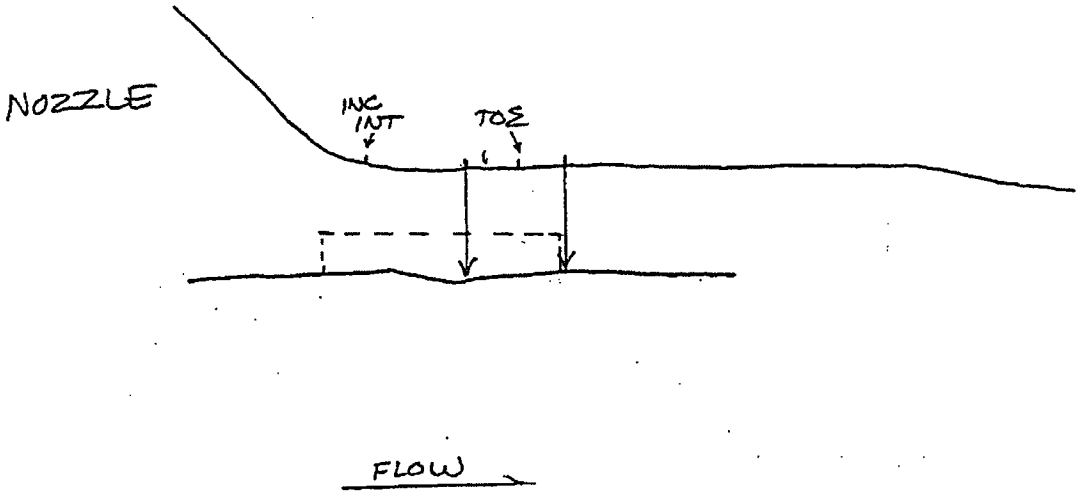
KJ Hack 10/20/05

ANII MK Date 12/19/05
Initial ☐ Final ☒
HSB-CT

C

UTRNO: 317

B;+ TANK OUTLET
Code Coverage
Circ Scans
SW-55



Coverage
Circ - 40%

Prepared by:
Paul K Weeks
AJ Hack 10/20/05

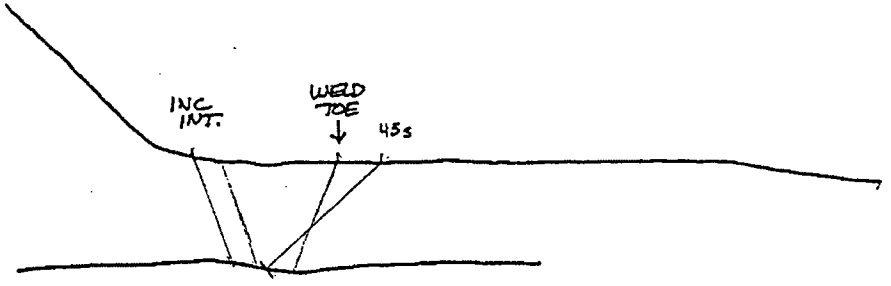
ANII [signature] Date 12/19/05
Initial ☐ Final ☒
HSB-CT

ENCLOSURE B5-6

UTRNO: 1517

B.t Tank
Outlet
SW-55

Indication PLOT



FLOW →

NOTE: WELD PREP AND BUTTER DIMENSIONS TAKEN FROM DESIGN DRAWINGS

Prepared by: Paul K Weeks
KJ Hack 10/20/05

ANII [illegible] Date 12/19/05
Initial ☐ Final ☐
HSB-CT

ENCLOSURE B5-6

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NAPS Unit 2 3rd interval Limited Exams
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ENCLOSURE B5-6

Liquid Penetrant Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	NDE-PT-701	Outage No.:	N2R18
Summary No.:	N2.C5.11.511	Procedure Rev.:	6	Report No.:	PT-07-004
Workscope:	ISI	Work Order No.:		Page:	1 of 1

Code: Sect. XI 1995 Ed./1996 Add. Cat./Item: C-F-1/C5.11 Location: AUX 244

Drawing No.: 12050-WMKS-0111AAG Description: DM Weld

System ID: SI

Component ID: 12050-WMKS-0111AAG / 6-SI-569 / SW-55 Size/Length: 0.50" x 6"

Limitations: NONE

Light Meter Mfg.: AEMC Instruments Serial No.: AEMC-12 Illumination: 265 Fc

Temp. Tool Mfg.: AEMC Instruments Serial No.: 1073BGCY Surface Temp.: 85 °F

Comparator Block Temp.: Side A: N/A °F Side B: N/A °F Resolution: Not Used

Lo/Wo Location: EXTRADOSE OF ELBOW Surface Condition: GROUND

	Cleaner	Penetrant	Remover	Developer
Brand	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX
Type	SKC-S	SKL-SP1	SKC-S	SKD-S2
Batch No.	05L17K	02M04K	05L17K	02B05K
Time	Evap. 5 min.	Dwell 12 min.	Evap. 5 min.	Develop 7 min.
	Time Exam Started: 15:15		Time Exam Completed: 16:00	

Indication No.	Loc L	Loc W	Diameter	Length	Type R/L	Remarks

Comments:
This work was performed to NDE-R#: 07-001

Results: NRI ☑ RI ☐ Eval ☐

Percent Of Coverage Obtained > 90%: Yes Reviewed Previous Data: N/A

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Sistek, Robert P	II	Robert P Sistek	03/26/2007	Robert Davies	Robert Davies	3/27/07
Examiner	Level	Signature	Date	Site Review	Signature	Date
	N/A			N/A		
Other	Level	Signature	Date	ANII Review	Signature	Date
	N/A			Mark Grace	MM Grace	4/6/07

Liquid Penetrant Examination <Edit From Setup>

UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R18
Summary No.:	N2.C5.11.550	Procedure Rev.:	00	Report No.:	UT-07-037
Workscope:	ISI	Work Order No.:		Page:	1 of 1

Code:	Sect. XI 1995 Ed./1996 Add.	Cat./Item:	C-F-1/C5.11	Location:	AUX 244
Drawing No.:	12050-WMKS-0111AG	Description:	Elbow to Valve Weld		
System ID:	CH				
Component ID:	12050-WMKS-0111AG / 8-CH-605 / 14	Size/Length:	.7"/25"	Thickness/Diameter:	.3"/8"
Limitations:	Single Sided	Start Time:	1400	Finish Time:	1430

Instrument Settings

Serial No.:	98300406		
Manufacturer:	Panametrics		
Model:	2300		
Delay:	5.863	Range:	1.7
M'tl Cal/Vel:	.1244	Pulser:	High
Damping:	400	Reject:	0
Rep. Rate:	Fixed	Freq.:	Fixed
Filter:	STD	Mode:	P.E.
Voltage:	N/A		
Ax. Gain (dB):	41.0	Circ. Gain (dB):	41.0

10 Screen Div. = 1.7 In. of Sound Path

Linearity Report No.: L-07-006

Calibration Block

Cal. Block No.:	10872		
Thickness	2.25"	Dia.:	0
Cal. Blk. Temp.	75	Temp. Tool:	1066BGCY
Comp. Temp.:	78	Temp. Tool:	1066BGCY

Search Unit

Serial No.:	00FX06		
Manufacturer:	KBA		
Size:	0.25"	Shape:	Round
Freq.:	5.0 MHZ	Style:	Comp-G
Exam Angle:	60	# of Elements:	Single
Mode:	Shear		
Measured Angle:	61		
Wedge Style:	MSWQC		

Search Unit Cable

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

Scan Coverage

Upstream ☐	Downstream ☑	Scan dB:	48
CW ☑	CCW ☑	Scan dB:	48
Exam Surface:	O.D		
Surface Condition:	Contour Ground		

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

Results: NRI ☑ RI ☐ Geom ☐ NDER#07-001.Previous Weld Profile Used.

Percent Of Coverage Obtained > 90%: No Reviewed Previous Data: N/A

Cal. Checks	Time	Date
Initial Cal.	1225	03/31/2007
Inter. Cal.	1412	03/31/2007
Inter. Cal.	1430	03/31/2007
Inter. Cal.		
Final Cal.	1521	03/31/2007

Couplant

Cal. Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.:	05-6534
Type:	SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
.5"Notch	80%	5.0	.85

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
.5"Notch	80%	5.0	.85

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
41	FSDH	80%	8.5	1.45

Comments: 60 Deg.Transducer Used For Coverage Due To Weld Crown Width.Coverage Verified By Observing ID Root Roll.

Examiner	Level II-PDI	Signature	Date	Reviewer		Signature	Date
Cage, Norman			03/31/2007				4-9-07
Examiner	Level II-PDI	Signature	Date	Site Review		Signature	Date
Sistek, Robert P			03/31/2007		N/A		
Other	Level II	Signature	Date	ANII Review		Signature	Date
Tolosky, Ryan J			03/31/2007	Mark Grace			4/11/07

UT Calibration/Examination <Edit From Setup>

UT Calibration/Examination

Dominion

Site/Unit: NAPS / 2 | Procedure: ER-AA-NDE-UT-802 | Outage No.: N2R18
Summary No.: N2.C5.11.550 | Procedure Rev.: 00 | Report No.: UT-07-038
Workscope: ISI | Work Order No.: | Page: 1 of 2

Code: Sect. XI 1995 Ed./1996 Add. | Cat./Item: C-F-1/C5.11 | Location: AUX 244
Drawing No.: 12050-WMKS-0111AG | Description: Elbow to Valve Weld
System ID: CH
Component ID: 12050-WMKS-0111AG / 8-CH-605 / 14 | Size/Length: .7"/25" | Thickness/Diameter: .3"/8"
Limitations: Single Sided | Start Time: 1400 | Finish Time: 1430

Instrument Settings

Serial No.: 98300406
Manufacturer: Panametrics
Model: 2300
Delay: 6.281 | Range: 2.0
M'tl Cal/Vel: .1206 | Pulser: High
Damping: 400 | Reject: 0
Rep. Rate: Fixed | Freq.: Fixed
Filter: STD | Mode: P.E.
Voltage: N/A
Ax. Gain (dB): 50.4 | Circ. Gain (dB): N/a
10 Screen Div. = 2.0 in. of Sound Path
Linearity Report No.: L-07-006

Calibration Block

Cal. Block No.: 10872
Thickness 2.25" | Dia.: 0
Cal. Blk. Temp. 75 | Temp. Tool: 1066BGCY
Comp. Temp.: 78 | Temp. Tool: 1066BGCY

Search Unit

Serial No.: 01CWK5
Manufacturer: KBA
Size: 0.25" | Shape: Round
Freq.: 2.25 MHZ | Style: Comp-G
Exam Angle: 70 | # of Elements: Single
Mode: Shear
Measured Angle: 68
Wedge Style: MSWQC

Search Unit Cable

Type: RG-174
Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☑ Downstream ☐ Scan dB: 58
CW ☐ CCW ☐ Scan dB:
Exam Surface: O.D
Surface Condition: Contour Ground

Cal. Checks	Time	Date
Initial Cal.	1230	03/31/2007
Inter. Cal.	1400	03/31/2007
Inter. Cal.	1410	03/31/2007
Inter. Cal.		
Final Cal.	1520	03/31/2007

Couplant

Cal. Batch: 06120
Type: SoundSafe
Mfg.: SONOTECH
Exam Batch: 06120
Type: SoundSafe
Mfg.: SONOTECH

Reference Block

Serial No.: 05-6534
Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
.5"Notch	80%	6.0	1.2

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
50.4	FSDH	100	9.8	1.96

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

Results: NRI ☑ RI ☐ Geom ☐ NDER#07-001. Previous Weld Profile Used.

Comments: Used For Far Side Best Effort.

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

Examiner	Level II-PDI	Signature	Date	Reviewer		Signature	Date
Cage, Norman			03/31/2007				4-9-07
Examiner	Level II-PDI	Signature	Date	Site Review	N/A	Signature	Date
Sistek, Robert P			03/31/2007				
Other	Level II	Signature	Date	ANII Review	Mark Greer	Signature	Date
Tolosky, Ryan J			03/31/2007				4/11/07

UT Calibration/Examination <Edit From Setup>

ENCLOSURE B5-7
NAPS Unit 2 3rd interval Limited Exams
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ENCLOSURE B5-7

Supplemental Report

Dominion

Report No.: UT-07-038

Page: 2 of 2

Summary No.: N2.C5.11.550

Examiner: Cage, Norman Level: II-PDI

Examiner: Sistek, Robert P Level: II-PDI

Other: Tolosky, Ryan J Level: II

Reviewer: Date: 4-9-07

Site Review: N/A Date:

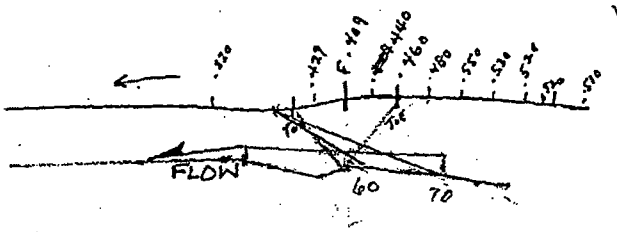
ANII Review: Date: 4/10/07

Comments:

Partial Weld Info

14

VALVE



Weld Number 14
Nominal Thickness .3
Weld Length 2.5"
Weld Width .7

.109 x .6 = .0654

.109 x .35 = .0327

2 | .0327 = .01635

.0163 ÷ .0654 = 25%

.25 ÷ 6 = 4.1%

Box Dimensions = H .109" L 1.2"

Coverage Summary						
Angle	Required Scans (each scan has a weighting factor of 100 for complete coverage)					
	UpSt- Ax	UpSt- CW	UpSt- CCW	DnSt- Ax	DnSt- CW	DnSt- CCW
60°	N/A	N/A	N/A	100	100	100
70°	25%	0	0	N/A	N/A	N/A
					Code Coverage Total	50%
					Best Effort Coverage (Max 50%) Total	4.1%

Notes:

1) Code Coverage refers to the maximum percentage of the required examination volume that is effectively examined with the qualified examination procedure.
2) Best Effort Coverage refers to the required examination volume past the weld centerline that is examined with an Appendix VIII demonstrated procedure for single sided coverage.

ENCLOSURE B5-8

N2.C5.11.579

Dominion
Ultrasonic Examination Data Record

Interval: 3

UTRNO	Station	Unit	Drawing	Line	NDER
1286	NAPS	2	12050-WMKS-0111AJ	8"-SI-440-153A-Q2	05-006

Couplant	CalCheck1	CalCheck2	CalCheck3	WO / DCP	Procedure	Rev
01220					NDE-UT-812	0

Thermometer SerNo: 1071BGCY

Exam Data

UTRNO	RECTAG	mark/weld	Scan dB	Exam Area	Surface Condition	Temp	Partial	Single Side	Results
1286	5021	SW-72	*	FIG. 2-A	Contour Ground	86	No	No	NRI
1286	5020	SW-54	*	FIG. 2-A	Contour Ground	86	No	No	NRI
1286	4995	1	*	FIG. 2-A	Contour Ground	86	Yes	Yes	NRI

Comments:

45 degree scanning sensitivity was 36.4, 60 degree scanning sensitivity was 47.8 and 70 degree scanning sensitivity was 37.6.

UTRNO		Signature	Level	Method	Date	Activity
1286	Examined By:	JEFF ODEGARD	DET	UT	10/05/2005	04/05/2006

Reviewed By: Daniel D. Jones Level: III Date: 10/19/05

ANII [signature] Date 10/22/05
Initial ☐ Final ☐
HSB-CT

ENCLOSURE B5-8

Dominion
UT Partial Record

UTRNO	RECTAG	Drawing	Line	Mark/weld	Procedure	Rev
1286	4995	12050-WMKS-0111AJ	8"-SI-440-153A-Q2	1	NDE-UT-812	0

XDucer Serial	Weld Width	Exam Angle	SU Length	SU Width	SU Nose	Percent
00VJBX	.8"	68	1.0	.55	.4	49%

Area Not Examined

No credit taken for scanning upstream side of weld, this is a cast valve.

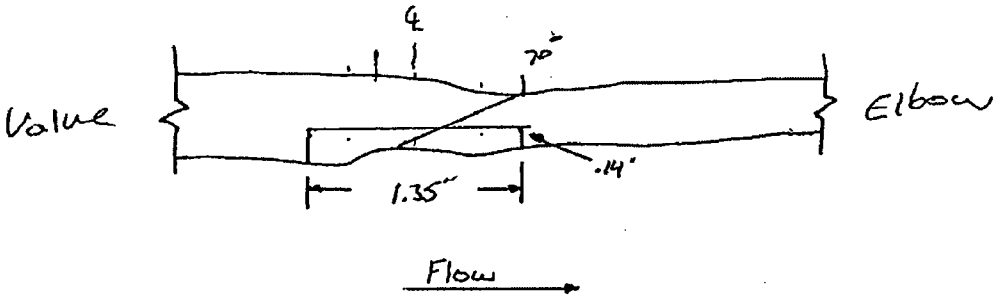
Reason

Configuration: Valve to Elbow configuration.

Comments

The techniques used for this examination are considered best effort for single side detetection of far side defects parallel to the weld.

Cross Section Sketch



Evaluation

Signature	Level	DATE
JEFFODEGARD	DET	10/05/2005

Reviewed By: David D... Level: III Date: 10/19/05

ANII [signature] Date 10/22/05
Initial ☐ Final ☐
HSB-CT

Interval: 3

Dominion Power Ultrasonic Calibration Data Record

UTRNO	Station	Unit	Procedure	Rev	Sizing Procedure	Rev	Couplant	CalBlock1	CBLKTKS	CBLKTemp
1286	NAPS	2	NDE-UT-812	0	NDE-UT-NA	NA	01220	VP.50-SS-02	SIZING BLOCK	70

CLbType	CLbLngth	#Connect	Simulator	AmpSwp	CalDate	CaLIn	CaLOut	CalBlock2	CBLKTKS2	CBLkTemp2
RG174	6"	0	NA	NA	10/04/2005	11:00	15:30			

Thermometer SerNo 1071BGCY

Instrument Settings

UTRNO	MemLoc	XDUC SER	REJECT	dB	REF dB	RANGE	VELOCITY	ZERO	DELAY	FREQ	DISP MODE	PRR/PRF	PULSER	FILTER	ENERGY	DAMPING
ID																
1286	1	00M66X	0%	18.4	0.0	.139	.1231	6.536	NA	FIXED	FULL WAVE	AUTO	NA	STD	HIGH	400
1538																
1286	2	00H7W0	0%	29.8	0.0	.195	.1231	6.536	NA	FIXED	FULL WAVE	AUTO	NA	STD	HIGH	400
1540																
1286	3	00VJBX	0%	43.6	0.0	.361	.1231	6.536	NA	FIXED	FULL WAVE	AUTO	NA	STD	HIGH	400
1541																

Xducer Data

UTRNO	ID	SerialNo	Manuf	Model	Size	Frequency	Nom Angle	Measured Angle	Wave Mode	Shape	No. Elements
				Wedge Type		Wedge Length	Wedge Width	Wedge Nose			
1286	1445	00M66X	KB-AEROTECH	Comp-G	0.375"	5.0 MHZ	45	44	SHEAR	ROUND	1
				MSWQC		.75	.55	.3			
1286	1446	00H7W0	KB-AEROTECH	Comp-G	0.375"	5.0 MHZ	60	59	SHEAR	ROUND	1
				MSWQC		.85	.55	.35			
1286	1447	00VJBX	KB-AEROTECH	Comp-G	0.375"	2.25 MHZ	70	68	SHEAR	ROUND	1
				MSWQC		1.0	.55	.4			

Vertical Beam Spread

Instrument

UTRNO	SHAC	Inst. Serial	Inst. Model	Inst. Manuf	ID
1286	194	98318411	Epoch III	Panametrics	1541
1286	194	98318411	Epoch III	Panametrics	1540
1286	194	98318411	Epoch III	Panametrics	1538

Calibration Data

UTRNO	Blk	XDID	IS ID	Direction	CaLType	Point	Reflector	Position	Amplitude	Sweep
1286	1	1445	1538	AX/CIRC	DET	1	10%NOTCH	NA	80	4.5
1286	1	1446	1540	AX/CIRC	DET	1	10% NOTCH	NA	80	5.0
1286	1	1447	1541	AX/CIRC	DET	1	10% NOTCH	NA	80	4.1

UTRNO		Signature	Level	Method	Date	Activity
1286	Calibrated By	JEFF ODEGARD	DET	UT	10/04/2005	04/04/2006

ANII [signature] Date 10/22/05
Initial ☐ Final ☑
HSB-CT

Reviewed By: [signature] Level: III Date: 10/19/05

ENCLOSURE B5-8

Serial No. 11-472
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NAPS Unit 2 3rd Interval Limited Exams
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ENCLOSURE B5-8

Dominion

STAINLESS STEEL PIPE, SINGLE SIDED PERCENT VOLUME BY SCAN DIRECTION

DRAWING NUMBER 12050-WMKS-0111AJ *MARK NUMBER* -1

ANGLE	*SCAN AREA*	*DIRECTION*	*SCAN %*
45°	EXAMINATION VOLUME	UP STREAM (1ST LEG)	NA
45°	EXAMINATION VOLUME	UP STREAM (2ND LEG)	NA
45°	EXAMINATION VOLUME	DOWN STREAM (1ST LEG)	NA
45°	EXAMINATION VOLUME	DOWN STREAM (2ND LEG)	NA
45°	EXAMINATION VOLUME	CW	50 %
45°	EXAMINATION VOLUME	CCW	50 %
60°	EXAMINATION VOLUME	UP STREAM (1ST LEG)	NA
60°	EXAMINATION VOLUME	UP STREAM (2ND LEG)	NA
60°	EXAMINATION VOLUME	DOWN STREAM (1ST LEG)	NA
60°	EXAMINATION VOLUME	DOWN STREAM (2ND LEG)	NA
70°	EXAMINATION VOLUME	UP STREAM (1ST LEG)	50 %
70°	EXAMINATION VOLUME	DOWN STREAM (1ST LEG)	72 %
	UPSTREAM COVERAGE		50 %
	DOWNSTREAM COVERAGE		48 %
	CLOCK WISE COVERAGE		50 %
	COUNTER CLOCKWISE COVERAGE		50 %
		TOTAL PERCENT	*49.5%*

COMMENTS: NONE

DOMINION NDE LEVEL III OCTOBER 19, 2005 *DATE*

Daniel L Jensen

ANII Date 10/22/05
Initial ☐ Final ☒
HSB-CT

UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R20
Summary No.:	N2.C5.11.837	Procedure Rev.:	00	Report No.:	UT-10-032
Workscope:	ISI	Work Order No.:	59101919553	Page:	1 of 5

Code: Sect. XI 1995ed/96 Add | Cat./Item: C-F-1/C5.11 | Location: RC216

Drawing No.: 12050-WMKS-0113C-2 | Description: Pipe to valve

System ID: RH

Component ID: 12050-WMKS-0113C-2 / 10-RH-413 / 1 | Size/Length: 1.625" / 50.3" | Thickness/Diameter: 0.843" / 16.0"

Limitations: Single sided exam due to configuration | Start Time: 1405 | Finish Time: 1415

Instrument Settings

Serial No.:	01XK03		
Manufacturer:	Krautkramer		
Model:	USN 60 SW		
Delay:	5.7212 us	Range:	2.859"
M'tl Cal/Vel:	0.1230 in/us	Pulser:	Square
Damping:	500 Ω	Reject:	0%
Rep. Rate:	Auto	Freq.:	2.25 MHz
Filter:	N/A	Mode:	Fullwave
Voltage:	450	Other:	N/A
Ax. Gain (dB):	15	Circ. Gain (dB):	N/A

10 Screen Div. = 2.859 in. of Sound Path

Linearity Report No.: L-10-003

Calibration Block

Cal. Block No.:	10876		
Thickness:	2.25"	Dia.:	0
Cal. Blk. Temp.:	70°	Temp. Tool:	07
Comp. Temp.:	70°	Temp. Tool:	07

Search Unit

Serial No.:	00F1DF		
Manufacturer:	KBA		
Size:	0.50"	Shape:	Round
Freq.:	2.25 MHZ	Style:	Comp-G
Exam Angle:	45°	# of Elements:	Single
Mode:	Shearwave		
Measured Angle:	46°		
Wedge Style:	MSWQC		

Search Unit Cable

Type: RG-174 | Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 33

CW ☑ CCW ☑ Scan dB: 33

Exam Surface: OD

Surface Condition: Contour Ground

Cal. Checks	Time	Date
Initial Cal.	0813	04/05/2010
Inter. Cal.	1405	04/05/2010
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	1630	04/05/2010

Couplant

Cal. Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.: 05-6534 | Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1.0" Notch	80	5.0	1.432"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
15	.7 SDH	20	3.7	1.062"

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

Results: NRI ☑ RI ☐ Geom ☐

Comments: None

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

Examiner	Level II-PDI	Signature	Date	Reviewer	Signature	Date
Tolosky, Ryan J			04/05/2010	W.L. THOMAS		4.6.10
Examiner	Level II-PDI	Signature	Date	Site Review	Signature	Date
Roehl, Adam L.			04/05/2010	Jeff Odegard		4/6/10
Other	Level N/A	Signature	Date	ANII Review	Signature	Date
N/A						11 Apr 10

ENCLOSURE B5-9
NAPS Unit 2 3rd Interval Limited Exams
Docket No. 50-339
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UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R20
Summary No.:	N2.C5.11.837	Procedure Rev.:	00	Report No.:	UT-10-032
Workscope:	ISI	Work Order No.:	59101919553	Page:	2 of 5

Code:	Sect. XI 1995ed/96 Add	Cat./Item:	C-F-1/C5.11	Location:	RC216
Drawing No.:	12050-WMKS-0113C-2	Description:	Pipe to valve		
System ID:	RH				
Component ID:	12050-WMKS-0113C-2 / 10-RH-413 / 1	Size/Length:	1.625" / 50.3"	Thickness/Diameter:	0.843" / 16.0"
Limitations:	Single sided exam due to configuration	Start Time:	1416	Finish Time:	1426

Instrument Settings

Serial No.:	01XK03		
Manufacturer:	Krautkramer		
Model:	USN 60 SW		
Delay:	7.1703 us	Range:	3.572"
M'tl Cal/Vel:	0.1254 in/us	Pulser:	Square
Damping:	500 Ω	Reject:	0%
Rep. Rate:	Auto	Freq.:	2.25 MHz
Filter:	N/A	Mode:	Fullwave
Voltage:	450	Other:	N/A
Ax. Gain (dB):	31	Circ. Gain (dB):	N/A

10 Screen Div. = 3.572 in. of Sound Path

Linearity Report No.: L-10-003

Calibration Block

Cal. Block No.:	10876		
Thickness:	2.25"	Dia.:	0
Cal. Blk. Temp.:	70°	Temp. Tool:	07
Comp. Temp.:	70°	Temp. Tool:	07

Search Unit

Serial No.:	00VJBX		
Manufacturer:	KBA		
Size:	0.375"	Shape:	Round
Freq.:	2.25 MHZ	Style:	Comp-G
Exam Angle:	60°	# of Elements:	Single
Mode:	Shearwave		
Measured Angle:	60°		
Wedge Style:	MSWQC		

Search Unit Cable

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

Scan Coverage

Upstream ☑	Downstream ☑	Scan dB:	43
CW ☑	CCW ☑	Scan dB:	43
Exam Surface:	OD		
Surface Condition:	Contour Ground		

Cal. Checks	Time	Date
Initial Cal.	0825	04/05/2010
Inter. Cal.	1416	04/05/2010
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	1632	04/05/2010

Couplant

Cal. Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.:	05-6534
Type:	SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1.0" Notch	80	5.0	1.784"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
31	.7 SDH	50	4.0	1.400"

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

Results: NRI ☑ RI ☐ Geom ☐

Comments: None

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

Examiner	Level II-PDI	Signature	Date	Reviewer	Signature	Date
Tolosky, Ryan J			04/05/2010	W.L. THOMAS		4.6.10
Examiner	Level II-PDI	Signature	Date	Site Review	Signature	Date
Roehl, Adam L.			04/05/2010	Jeff Odegard		4/6/10
Other	Level N/A	Signature	Date	ANII Review	Signature	Date
N/A						11 Apr 10

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UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R20
Summary No.:	N2.C5.11.837	Procedure Rev.:	00	Report No.:	UT-10-032
Workscope:	ISI	Work Order No.:	59101919553	Page:	3 of 5

Code:	Sect. XI 1995ed/96 Add	Cat./Item:	C-F-1/C5.11	Location:	RC216
Drawing No.:	12050-WMKS-0113C-2	Description:	Pipe to valve		
System ID:	RH				
Component ID:	12050-WMKS-0113C-2 / 10-RH-413 / 1	Size/Length:	1.625" / 50.3"	Thickness/Diameter:	0.843" / 16.0"
Limitations:	Single sided exam due to configuration	Start Time:	1427	Finish Time:	1437

Instrument Settings

Serial No.:	01XK03		
Manufacturer:	Krautkramer		
Model:	USN 60 SW		
Delay:	8.8331 us	Range:	5.861"
M'tl Cal/Vel:	0.1308 in/us	Pulser:	Square
Damping:	500 Ω	Reject:	0%
Rep. Rate:	Auto	Freq.:	2.25 MHz
Filter:	N/A	Mode:	Fullwave
Voltage:	450	Other:	N/A
Ax. Gain (dB):	37	Circ. Gain (dB):	N/A

10 Screen Div. = 5.861 In. of Sound Path

Linearity Report No.: L-10-003

Calibration Block

Cal. Block No.:	10876		
Thickness:	2.25"	Dia.:	0
Cal. Blk. Temp.:	70°	Temp. Tool:	07
Comp. Temp.:	70°	Temp. Tool:	07

Search Unit

Serial No.:	01CLMV		
Manufacturer:	KBA		
Size:	0.375"	Shape:	Round
Freq.:	2.25 MHZ	Style:	Comp-G
Exam Angle:	70°	# of Elements:	Single
Mode:	Shearwave		
Measured Angle:	70°		
Wedge Style:	MSWQC		

Search Unit Cable

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

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 43

CW ☐ CCW ☐ Scan dB: N/A

Exam Surface: OD

Surface Condition: Contour Ground

Cal. Checks	Time	Date
Initial Cal.	0849	04/05/2010
Inter. Cal.	1427	04/05/2010
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	1636	04/05/2010

Couplant

Cal. Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.: 05-6534

Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1.0" Notch	80	5.0	2.920"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
32	.3 SDH	80	1.4	0.897"

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

Results: NRI ☑ RI ☐ Geom ☐

Comments: None

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

Examiner	Level II-PDI	Signature	Date	Reviewer	Signature	Date
Tolosky, Ryan J			04/05/2010	W.L. THOMAS		4.6.10
Examiner	Level II-PDI	Signature	Date	Site Review	Signature	Date
Roehl, Adam L.			04/05/2010	Jeff Odegard		4/8/10
Other	Level N/A	Signature	Date	ANII Review	Signature	Date
N/A						11 Apr 10

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Serial No. 11-472

UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R20
Summary No.:	N2.C5.11.837	Procedure Rev.:	00	Report No.:	UT-10-032
Workscope:	ISI	Work Order No.:	59101919553	Page:	4 of 5

Code: Sect. XI 1995ed/96 Add | Cat./Item: C-F-1/C5.11 | Location: RC216

Drawing No.: 12050-WMKS-0113C-2 | Description: Pipe to valve

System ID: RH

Component ID: 12050-WMKS-0113C-2 / 10-RH-413 / 1 | Size/Length: 1.625" / 50.3" | Thickness/Diameter: 0.843" / 16.0"

Limitations: Single sided exam due to configuration | Start Time: 1438 | Finish Time: 1448

Instrument Settings

Serial No.:	01XK03		
Manufacturer:	Krautkramer		
Model:	USN 60 SW		
Delay:	9.0797 us	Range:	3.903"
M'tl Cal/Vel:	0.2370 in/us	Pulser:	Square
Damping:	500 Ω	Reject:	0%
Rep. Rate:	Auto	Freq.:	2.0 MHz
Filter:	N/A	Mode:	Fullwave
Voltage:	450	Other:	PW 250
Ax. Gain (dB):	52	Circ. Gain (dB):	N/A

10 Screen Div. = 3.903 in./of Sound Path

Linearity Report No.: L-10-003

Calibration Block

Cal. Block No.:	10876		
Thickness:	2.25"	Dia.:	0
Cal. Blk. Temp.:	70°	Temp. Tool:	07
Comp. Temp.:	70°	Temp. Tool:	07

Search Unit

Serial No.:	06-108		
Manufacturer:	RTD		
Size:	2(8X14)	Shape:	Retangular
Freq.:	2.0 MHZ	Style:	TRL2-AUST
Exam Angle:	60°	# of Elements:	Dual
Mode:	Longitudinal		
Measured Angle:	60°		
Wedge Style:	Intergal		

Search Unit Cable

Type: RG-174 | Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 52

CW ☐ CCW ☐ Scan dB: N/A

Exam Surface: OD

Surface Condition: Contour Ground

Cal. Checks	Time	Date
Initial Cal.	0837	04/05/2010
Inter. Cal.	1438	04/05/2010
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	1634	04/05/2010

Couplant

Cal. Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.: 05-6534 | Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1.0" Notch	80	5.0	1.940"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
46.6	.7 SDH	80	3.7	1.440"

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

Results: NRI ☑ RI ☐ Geom ☐

Comments: Probe used for exam coverage.

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

	Level		Signature	Date		Signature	Date
Examiner: Tolosky, Ryan J	II-PDI			04/05/2010	Reviewer: W.L. THOMAS		4.6.10
Examiner: Roehl, Adam L.	II-PDI			04/05/2010	Site Review: Jeff Odegard		4/8/10
Other: N/A	N/A				ANII Review		11 Apr 10

UT Calibration/Examination

ENCLOSURE B5-9

Supplemental Report

Dominion

Report No.: UT-10-032

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Summary No.: N2.C5.11.837

Examiner: Tolosky, Ryan J RT Level: II-PDI Reviewer: W.L. Thomas Date: 4.6.10

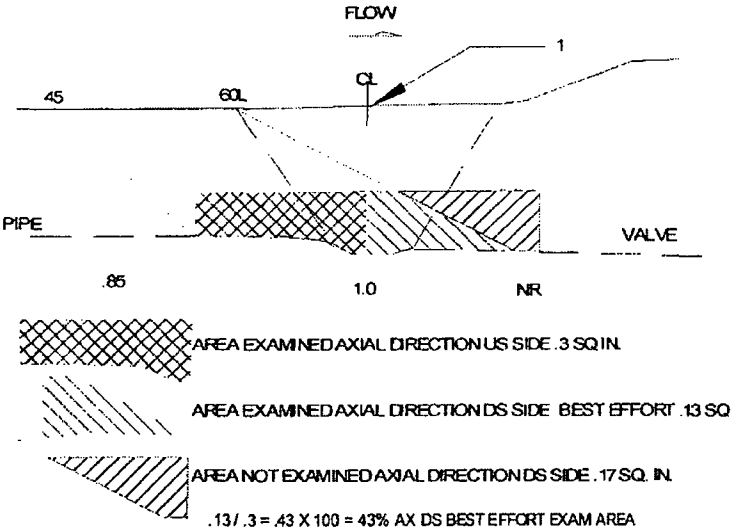
Examiner: Roehl, Adam L. AR Level: II-PDI Site Review: Jeff Odegard JDO Date: 4/8/10

Other: N/A Level: N/A ANII Review: Date: 11 Apr 10

Comments:

Weld Number	1
Weld Thickness	1.0" (.85" BM)
Weld Length	50.3"
Weld Width	1.625"

Sketch or Photo: Date: 4/6/2010 Prepared By: W.L. Thomas



100 + 100 + 43 + 0 = 243/400 = 61%

Examination Volume Dimensions - Height .28" Length 50.3" Width 2.125"

Coverage Summary				
	Required Scans (each has a weighing factor of 100 for complete coverage)			
ANGLE	UpSt-Ax	UpSt-Circ	DnSt-Ax	DnSt-Circ
45		100%		0%
45/60	100%		43% Best Effort	
			Code Coverage Total	50%
			Best Effort Coverage (Max 25%) Total	11%

Notes:

1) Code Coverage refers to the maximum percentage of the required examination volume that is effectively examined with the qualified examination procedure.
2) Best Effort Coverage refers to the required examination volume past the weld centerline that is examined in the axial beam direction with an Appendix VIII demonstrated procedure for single sided coverage.

Additional - Supplemental Data

UT Calibration/Examination

Dominion

Site/Unit: NAPS / 2 | Procedure: ER-AA-NDE-UT-802 | Outage No.: N2R18

Summary No.: N2.C5.11.846 | Procedure Rev.: 00 | Report No.: UT-07-039

Workscope: ISI | Work Order No.: | Page: 1 of 1

Code: Sect. XI 1995 Ed./1996 Add. | Cat./Item: C-F-1/C5.11 | Location: RC216

Drawing No.: 12050-WMKS-0113C-2 | Description: Tee to Elbow Weld

System ID: RH

Component ID: 12050-WMKS-0113C-2 / 6-RH-417 / SW-56 | Size/Length: .4"/21" | Thickness/Diameter: .3"/6"

Limitations: 3/4" Line In Scanning Path,Tee Configuration. | Start Time: 1400 | Finish Time: 1431

Instrument Settings

Serial No.:	98300406		
Manufacturer:	Panametrics		
Model:	2300		
Delay:	5.863	Range:	1.7
M'tl Cal/Vel:	.1244	Pulser:	High
Damping:	400	Reject:	0
Rep. Rate:	Fixed	Freq.:	Fixed
Filter:	STD	Mode:	F.W.
Voltage:	N/A		
Ax. Gain (dB):	41	Circ. Gain (dB):	41

10 Screen Div. = 1.7 In. of Sound Path

Linearity Report No.: L-07-006

Calibration Block

Cal. Block No.:	10872		
Thickness:	2.25"	Dia.:	0
Cal. Blk. Temp.	75	Temp. Tool:	1066BGCY
Comp. Temp.:	78	Temp. Tool:	1066BGCY

Search Unit

Serial No.:	01CP6X		
Manufacturer:	KBA		
Size:	0.25"	Shape:	Round
Freq.:	5.0 MHZ	Style:	Comp-G
Exam Angle:	60	# of Elements:	Single
Mode:	Shear		
Measured Angle:	61		
Wedge Style:	MSWQC		

Search Unit Cable

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

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 50

CW ☑ CCW ☑ Scan dB: 50

Exam Surface: O.D

Surface Condition: Contour Ground

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

Results: NRI ☑ RI ☐ Geom ☐ NDER#07-001

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

Cal. Checks	Time	Date
Initial Cal.	1300	03/27/2007
Inter. Cal.	1400	03/27/2007
Inter. Cal.	1415	03/27/2007
Inter. Cal.		
Final Cal.	1600	03/27/2007

Couplant

Cal. Batch:	08120
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.:	05-6535
Type:	SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
.5"Notch	80%	5.0	.850

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
.5"Notch	80%	5.0	.850

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
41	FSDH	80%	8.3	1.411

Comments: 60 Deg.Used For Coverage Due To Weld Crown Width.Coverage Verified By Observing ID Root Roll.

Examiner	Level II-PDI	Signature	Date	Reviewer		Signature	Date
Cage, Norman			03/27/2007				4-11-07
Examiner	Level	Signature	Date	Site Review	N/A	Signature	Date
	N/A						
Other	Level	Signature	Date	ANII Review	Mark Grace	Signature	Date
	N/A						4/11/07

UT Calibration/Examination <Edit From Setup>

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UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R18
Summary No.:	N2.C5.11.846	Procedure Rev.:	00	Report No.:	UT-07-040
Workscope:	ISI	Work Order No.:		Page:	1 of 3

Code: Sect. XI 1995 Ed./1996 Add. Cat./Item: C-F-1/C5.11 Location: RC216

Drawing No.: 12050-WMKS-0113C-2 Description: Tee to Elbow Weld

System ID: RH

Component ID: 12050-WMKS-0113C-2 / 6-RH-417 / SW-56 Size/Length: .4"/21" Thickness/Diameter: .3"/6"

Limitations: Tee Configuration Start Time: 1400 Finish Time: 1431

Instrument Settings

Serial No.:	98300406		
Manufacturer:	Panametrics		
Model:	2300		
Delay:	6.281	Range:	2.0
M'tl Cal/Vel:	.1244	Pulser:	High
Damping:	400	Reject:	0
Rep. Rate:	Fixed	Freq.:	Fixed
Filter:	STD	Mode:	F.W.
Voltage:	N/A		
Ax. Gain (dB):	50.4	Circ. Gain (dB):	

10 Screen Div. = 2.0 In. of Sound Path

Linearity Report No.: L-07-006

Calibration Block

Cal. Block No.:	10872		
Thickness:	2.25"	Dia.:	0
Cal. Blk. Temp.	75	Temp. Tool:	1066BGCY
Comp. Temp.:	76	Temp. Tool:	1066BGCY

Search Unit

Serial No.:	01CWK5		
Manufacturer:	KBA		
Size:	0.25"	Shape:	Round
Freq.:	2.25 MHZ	Style:	Comp-G
Exam Angle:	70	# of Elements:	Single
Mode:	Shear		
Measured Angle:	68		
Wedge Style:	MSWQC		

Search Unit Cable

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

Scan Coverage

Upstream ☐ Downstream ☑ Scan dB: 54.4

CW ☐ CCW ☐ Scan dB:

Exam Surface: O.D

Surface Condition: Contour Ground

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

Results: NRI ☑ RI ☐ Geom ☐

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

Cal. Checks	Time	Date
Initial Cal.	1315	03/27/2007
Inter. Cal.	1416	03/27/2007
Inter. Cal.	1430	03/27/2007
Inter. Cal.		
Final Cal.	1605	03/27/2007

Couplant

Cal. Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.: 05-6535 Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
.5"Notch	80%	6.0	1.2

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
50.4	NSDH	80%	5.0	1.0

Comments: See Supplemental sheets for profile and coverage. NDE-R 07-001.

Examiner	Level II-PDI	Signature	Date	Reviewer		Signature	Date
Cage, Norman			03/27/2007				4-11-07
Examiner	Level N/A	Signature	Date	Site Review	N/A	Signature	Date
N/A							
Other	Level N/A	Signature	Date	ANII Review		Signature	Date
N/A				Mark Grace			4/11/07

UT Calibration/Examination <Edit From Setup>

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ENCLOSURE B5-10

Supplemental Report

Dominion

Report No.: UT-07-040

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Summary No.: N2.C5.11.846

Examiner: Cage, Norman NLC Level: II-PDI Reviewer: Ryan T. Stark Date: 4-11-07

Examiner: N/A Level: N/A Site Review: N/A Date:

Other: N/A Level: N/A ANII Review: M Hess Date: 4/11/07

Comments:

Weld Partial Info: Dual sided/Single sided/Partial Due to Toe Configuration.

DnSt-Ax coverage:
No Scan from 18.5" to 21" CW on extrados of elbow. Due to 3/4" branch connection 0.5" from weld toe.
18.5" (scanned) / 21" (Total) = 88%

UpSt-Ax Coverage w/ 60 Deg:

No coverage area : Triangle .1" x .1" = .01" .01" / 2 = .005 sq. in.
Box .2" x .1" = .02 sq. in.
Total area no coverage: .02 sq. in. + .005 sq. in. = .025 sq. in.
Total volume no coverage .025 sq. in. x 21" = .525 cu. in.

Coverage Box: .1" x .45" = .045 sq. in.
.045 sq. in. x 21" = .945 cu. in.
Total volume coverage box: .945 cu. In

Total coverage: .945 - .525 = .420
.420 / .945 = 44% (UpSt-Ax volume coverage)

Best Effort coverage: .025 sq. in. x 18.5" = .463 cu. in. (best effort volume)
.463 (best effort volume) / .945 cu. in. (coverage box volume) = 49%
49% / 600% = 8% (Total best effort coverage with 70 deg)

Weld Number SW-56
Nominal Thickness .3"
Weld Length 21"
Weld Width .4" Box Dimensions = H .1" L .9"

Coverage Summary						
Angle	Required Scans (each scan has a weighting factor of 100 for complete coverage)					
	UpSt- Ax	UpSt- CW	UpSt- CCW	DnSt- Ax	DnSt- CW	DnSt- CCW
60	44%	100%	100%	88%	100%	100%
70	49%					
					Code Coverage Total	88%
					Best Effort Coverage (Max 50%) Total	8%

Notes:
1) Code Coverage refers to the maximum percentage of the required examination volume that is effectively examined with the qualified examination procedure.
2) Best Effort Coverage refers to the required examination volume past the weld centerline that is examined with an Appendix VIII demonstrated procedure for single sided coverage.

ENCLOSURE B5-10

Supplemental Report

Dominion

Report No.: UT-07-040

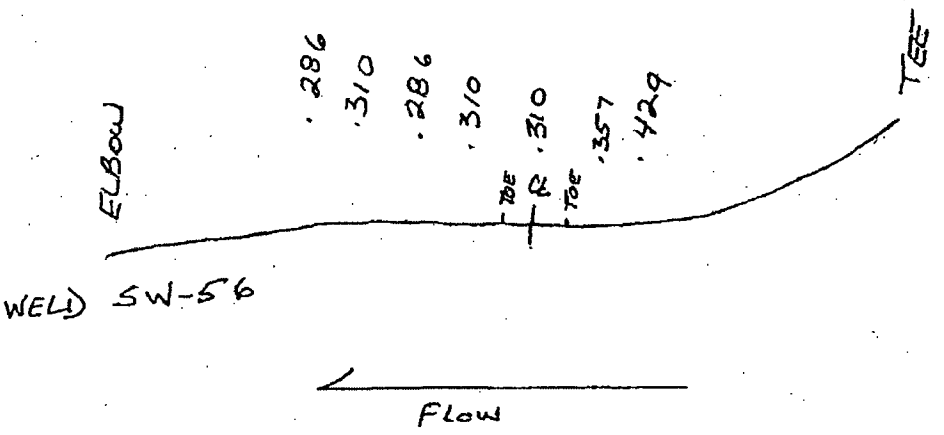
Page: 3 of 3

Summary No.: N2.C5.11.846

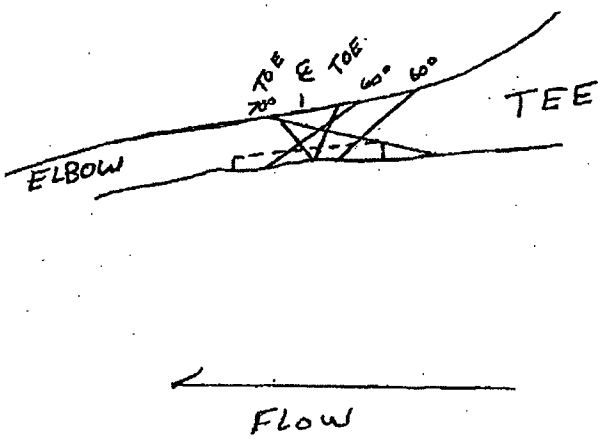
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Examiner:	N/A	Level:	N/A	Site Review:	N/A	Date:	
Other:	N/A	Level:	N/A	ANII Review:	M Hara	Date:	4/11/07

Comments:

Weld Profile



Coverage Plot



Additional - Supplemental Reports <Edit From Setup>

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B6. Circumferential Piping Welds > 1/5 in. Nominal Wall Thickness for Piping ≥ NPS 2 and ≤ NPS 4

4.B6 IMPRACTICALITY OF COMPLIANCE

In accordance with 10CFR50.55a(g)(5)(iii), relief is requested from the "essentially 100 percent" volumetric examination coverage requirement for the identified piping welds. This requirement is considered impractical primarily due to single-sided access for these components.

Ultrasonic examination of the identified piping welds are limited as identified in the following table primarily due to single-sided access. Examination was performed to the extent possible.

Mark/Weld #	Line #	Scan Coverage %	Enclosure
SW-49W	3-CH-402	47%	B6-1
2A	3-CH-403	63%	B6-2
SW-64	3-SI-424	50%	B6-3
23A	3-SI-423	47%	B6-4
7A	3-SI-536	50%	B6-5
24A	3-SI-571	50%	B6-6
26	3-SI-571	50%	B6-7
SW-39W	2-CH-422	88%	B6-8

5.B6 BURDEN CAUSED BY COMPLIANCE

The purpose of nondestructive examination (NDE) is to perform inspections without destroying the component. Any actions necessary to make these welds accessible for NDE exam would be contrary to the intent of the Code.

6.B6 PROPOSED ALTERNATIVE AND BASIS

It is proposed that the examinations already completed at the reduced coverage be counted as meeting the Code requirements. The limited volumetric examination should detect any general patterns of degradation that may occur in the areas covered, therefore providing reasonable assurance of the continued structural integrity of the subject weld.

Weld # SW-49W was limited due to the tee to elbow configuration. An additional 12% best effort (non-Code) coverage was obtained. An acceptable ID geometry indication was identified and confirmed in previous radiographs.

Weld # 2A was limited due to the configuration associated with the upstream valve body taper. The techniques used for this examination are considered best effort for single sided detection of far side defects parallel to the weld. Additional scans or alternative techniques will not provide additional coverage within the limitations of the procedure. There were no reportable indications.

Weld # SW-64 was a single sided examination limited due to the pipe to tee configuration. An additional 16.66% best effort (non-Code) coverage was obtained. A liquid penetrant (surface) examination was performed with full coverage. There were no reportable indications.

Weld # 23A was a single sided examination due to the elbow to valve configuration, limited at the elbow intrados. An additional 13% best effort (non-Code) coverage was obtained. A liquid penetrant examination (surface) was performed at full coverage. There were no reportable indications.

Weld # 7A was limited due to the pipe to valve configuration during a preservice examination. ID geometry indication was identified due to the weld root, verified by reviews of cross sectional plots and RT film. An additional 23% best effort coverage was obtained. Liquid penetrant (surface) examination was performed at full coverage. There were no reportable indications.

Weld # 24A was a preservice examination limited due to the tee to valve configuration. An additional 14% best effort (non-Code) coverage was obtained. A liquid penetrant (surface) examination and a VT-2 visual examination were also performed. There were no reportable indications.

Weld # 26 was a single sided preservice examination limited due to the elbow to valve configuration. An additional 20% best effort coverage was obtained. A liquid penetrant (surface) and a VT-2 visual examination were also performed. There were no reportable indications.

Weld # SW-39W was a single-sided examination limited due to the pipe to reducer configuration. The techniques used for this examination are considered best effort for single sided detection of far side defects parallel to the weld. Additional scans or alternative techniques will not provide additional coverage within the limitations of the procedure. There were no reportable indications.

There were twenty six exams performed among 323 active components in Category C-F-1, Item No. C5.21, in the third ISI inspection interval. There were no reportable indications other than acceptable geometry indications identified among the required examinations.

All welds identified in Category C-F-1, Item No. C5.21, included in this report, are made in ASTM A376-TP 316 stainless steel material.

UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R18
Summary No.:	N2.C5.21.007	Procedure Rev.:	00	Report No.:	UT-07-066
Workscope:	ISI	Work Order No.:		Page:	1 of 1

Code:	Sect. XI 1995 Ed./1996 Add.	Cat./Item:	C-F-1/C5.21	Location:	AUX 244
Drawing No.:	12050-WMKS-0111AAC	Description:	Tee to Elbow Weld		
System ID:	CH				
Component ID:	12050-WMKS-0111AAC / 3-CH-402 / SW-49W	Size/Length:	.5" / 11.0"	Thickness/Diameter:	.4" / 3.5"
Limitations:	Tee and elbow intrados	Start Time:	1430	Finish Time:	1450

Instrument Settings

Serial No.:	040186603		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	Zero 7.191	Range:	1.47
M'tl Cal/Vel:	.1249	Pulser:	Square
Damping:	400	Reject:	0%
Rep. Rate:	Max	Freq.:	2.0
Filter:	.8 - 3.0	Mode:	Fullwave
Voltage:	N/A		
Ax. Gain (dB):	35.0	Circ. Gain (dB):	N/A
1 Screen Div. =	.147	In. of	Sound Path
Linearity Report No.:	L-07-007		

Calibration Block

Cal. Block No.:	10873		
Thickness:	2.25"	Dia.:	0
Cal. Blk. Temp.	72	Temp. Tool:	1072BGCY
Comp. Temp.:	62	Temp. Tool:	1072BGCY

Search Unit

Serial No.:	01CTV5		
Manufacturer:	KBA		
Size:	0.25"	Shape:	Round
Freq.:	2.25 MHZ	Style:	Comp-G
Exam Angle:	70	# of Elements:	Single
Mode:	Shear		
Measured Angle:	67		
Wedge Style:	MSWQC		

Search Unit Cable

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

Scan Coverage

Upstream ☐	Downstream ☑	Scan dB:	41.0
CW ☐	CCW ☐	Scan dB:	N/A
Exam Surface:	OD		
Surface Condition:	Contour Ground		

Cal. Checks	Time	Date
Initial Cal.	1345	04/08/2007
Inter. Cal.		
Inter. Cal.		
Inter. Cal.		
Final Cal.	1600	04/08/2007

Couplant

Cal. Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.:	05-6535
Type:	SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
.5" Notch	80%	6.0	.882"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
35	NSDH	35%	4.5	.66"

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

Results: NRI ☑ RI ☐ Geom ☐

Comments: NDE-R# 07-001
See report UT-07-067 for indication and coverage.

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

Examiner	Level III	Signature	Date	Reviewer		Signature	Date
Odegard, Jeffrey D			04/08/2007				04-09-07
Examiner	Level N/A	Signature	Date	Site Review		Signature	Date
N/A							4/14/07
Other	Level N/A	Signature	Date	ANII Review		Signature	Date
N/A				Mark Grace			4/16/07

UT Calibration/Examination <Edit From Setup>

ENCLOSURE B6-1

Serial No. 11-472
Docket No. 50-339
NAPS Unit 2 3rd interval Limited Exams
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UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R18
Summary No.:	N2.C5.21.007	Procedure Rev.:	00	Report No.:	UT-07-067
Workscope:	ISI	Work Order No.:		Page:	1 of 4

Code:	Sect. XI 1995 Ed./1996 Add.	Cat./Item:	C-F-1/C5.21	Location:	AUX 244
Drawing No.:	12050-WMKS-0111AAC	Description:	Tee to Elbow Weld		
System ID:	CH				
Component ID:	12050-WMKS-0111AAC / 3-CH-402 / SW-49W			Size/Length:	.4" / 11.0"
Thickness/Diameter:	.4" / 3.5"				
Limitations:	Tee and elbow intrados			Start Time:	1500
Finish Time:	1520				

Instrument Settings

Serial No.:	040186603		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	Zero 4.216	Range:	1.555
M'tl Cal/Vel:	.1249	Pulser:	Square
Damping:	400	Reject:	0%
Rep. Rate:	Max	Freq.:	2.0
Filter:	.8 - 3.0	Mode:	Fullwave
Voltage:	N/A		
Ax. Gain (dB):	24.5	Circ. Gain (dB):	24.5
1 Screen Div. =	.147	In. of	Sound Path
Linearity Report No.:	L-07-007		

Calibration Block

Cal. Block No.:	10873		
Thickness	2.25"	Dia.:	0
Cal. Blk. Temp.	72	Temp. Tool:	1072BGCY
Comp. Temp.:	62	Temp. Tool:	1072BGCY

Search Unit

Serial No.:	01CWK2		
Manufacturer:	KBA		
Size:	0.25"	Shape:	Round
Freq.:	2.25 MHZ	Style:	Comp-G
Exam Angle:	60	# of Elements:	Single
Mode:	Shear		
Measured Angle:	57		
Wedge Style:	MSWQC		

Search Unit Cable

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

Scan Coverage

Upstream ☑	Downstream ☐	Scan dB:	30.5
CW ☑	CCW ☑	Scan dB:	30.5
Exam Surface:	OD		
Surface Condition:	Contour Ground		

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

Results: NRI ☐ RI ☐ Geom ☑

Cal. Checks	Time	Date
Initial Cal.	1330	04/08/2007
Inter. Cal.		
Inter. Cal.		
Inter. Cal.		
Final Cal.	1600	04/08/2007

Couplant

Cal. Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.:	
Type:	N/A

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
.5" Notch	80%	6.0	.93"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A				

Comments: NDE-R# 07-001

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

Examiner	Level III	Signature	Date	Reviewer	Signature		Date
Odegard, Jaffrey D			04/08/2007	Norman Cage		RT IIA	04/09/2007
Examiner	Level N/A	Signature	Date	Site Review	Signature		Date
N/A							4/14/07
Other	Level N/A	Signature	Date	ANII Review	Signature		Date
N/A				Mark Grace			4/16/07

UT Calibration/Examination <Edit From Setup>

Ultrasonic Indication Report

Dominion

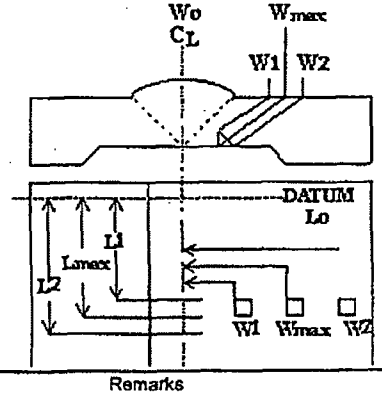
Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R18
Summary No.:	N2.C5.21.007	Procedure Rev.:	00	Report No.:	UT-07-067
Workscope:	ISI	Work Order No.:		Page:	2 of 4

Search Unit Angle: 60 °

Wo Location: Weld center line

Lo Location: Elbow extrados

- (●) Piping Welds
- ( ) Ferritic Vessels ≥ 2"T
- ( ) Other _____



MP	Metal Path	Wmax	Distance From Wo To S.U. At Maximum Response
RBR	Remaining Back Reflection	W1	Distance From Wo At 20% DAC Of Max (Forward)
L	Distance From Datum	W2	Distance From Wo At 20% DAC Of Max (Forward)

Comments: **Reviewed radiographs for confirmation. Also noted with 70 degree 2.25 mhz. Indication was not seen with 60 or 70 degree 5.0 mhz, which also confirms location to be far side root.**

Scan #	Indication No.	% Of DAC	W Max W	W Max MP	Forward Of Max W1	Forward Of Max MP	Backward Of Max W2	Backward Of Max MP	L1 Of Max	L Max	L2 Of Max	RBR Amp.	Remarks
UPS	1	52%	.7"	.99"	.65"	.95"	.8"	1.0"	2.6"	2.75"	2.9"	N/A	ID geometry

Examiner	Level III	Signature	Date	Reviewer	Signature	RT IIA	Date
Odegard, Jeffrey D			04/08/2007	Norman Cage			04/09/2007
Examiner	Level N/A	Signature	Date	Site Review	Signature		Date
N/A							4-14-07
Other	Level N/A	Signature	Date	ANII Review	Signature		Date
N/A				Mark Grace			4/16/07

Additional - UT Indication Data <Edit From Setup>

ENCLOSURE B6-1

Supplemental Report

Dominion

Report No.: UT-07-067

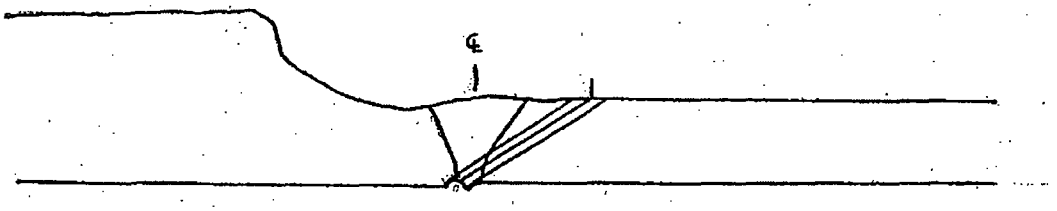
Page: 3 of 4

Summary No.: N2.C5.21.007

Examiner:	Odegard, Jeffrey D JDO	Level:	III	Reviewer:	Norman Cage NLCRT IIA	Date:	04/09/2007
Examiner:	N/A	Level:	N/A	Site Review:	Ronald F. Stark	Date:	4-14-07
Other:	N/A	Level:	N/A	ANII Review:	M Hess	Date:	4/16/07

Comments:

Plot showing root geometry with 60 degree.



ENCLOSURE B6-1

Supplemental Report

Dominion

Report No.: UT-07-067

Page: 4 of 4

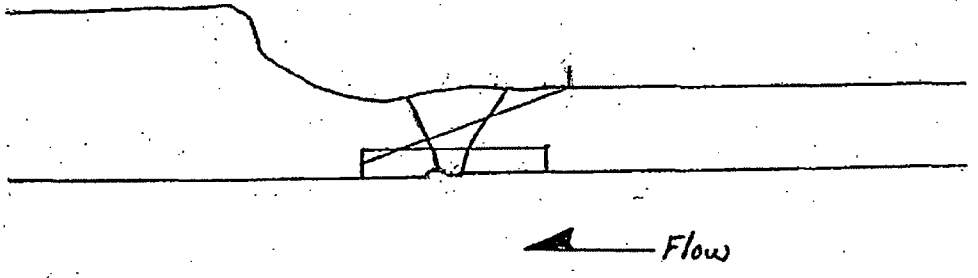
Summary No.: N2,C5.21.007

Examiner:	Odegard, Jeffrey D JDO	Level:	III	Reviewer:	Raymond J Hatch	Date: 4/14/07
Examiner:	N/A	Level:	N/A	Site Review:	N/A	Date:
Other:	N/A	Level:	N/A	ANII Review:	M Hess	Date: 4/16/07

Comments:

Limitation: Intrados of elbow - No axial exam for 2" - 11" total weld length upstream.
Code coverage: USAX examined 9" of 11" = 82%
Best effort coverage:
DNS exam box 0.146" x 0.5" = 0.073 sq. in.
.2 x .1 = .02 / 2 = .01 sq. inches not covered.
.01 sq inches / .073 sq inches = 14%
100% - 14% = 86% of 82% best effort.
.82 x .86 = 70.5% of best effort.

Weld Number: sw – 49w
Nominal Thickness: .438"
Weld Length: 11.0"
Weld Width: .5"



Box Dimensions: H = .146" L = 1.0"

Coverage Summary						
Angle	Required Scans (each scan has a weighting factor of 100 for complete coverage)					
	UpSt- Ax	UpSt- CW	UpSt- CCW	DnSt- Ax	DnSt- CW	DnSt- CCW
60	82%	100%	100%	N/A	N/A	N/A
70	N/A	N/A	N/A	71%	N/A	N/A
					Code Coverage Total	47%
					Best Effort Coverage (Max 50%) Total	12%

Notes:
1) Code Coverage refers to the maximum percentage of the required examination volume that is effectively examined with the qualified examination procedure.
2) Best Effort Coverage refers to the required examination volume past the weld centerline that is examined with an Appendix VIII demonstrated procedure for single sided coverage.

ENCLOSURE B6-2

NZ.C5.21009

Dominion

Ultrasonic Examination Data Record

Interval: 3

UTRNO	Station	Unit	Drawing	Line	NDER
1330	NAPS	2	12050-WMKS-0111AAC	3"-CH-403-1502-Q2	05-006

Couplant	CalCheck1	CalCheck2	CalCheck3	WO / DCP	Procedure	Rev
01220					NDE-UT-812	0

Thermometer SerNo: 1077BGCY

Exam Data

UTRNO	RECTAG	mark/weld	Scan dB	Exam Area	Surface Condition	Temp	Partial	Single Side	Results
1330	4438	2A	*	FIG. 2-A	GROUND	83	Yes	Yes	NRI

Comments:

THE AXIAL SCANS WERE PERFORMED AT REFERENCE PLUS 18db. THE CIRCUMFERENTIAL SCANS WERE PREFORMED AT REFERENCE PLUS 24db.

UTRNO		Signature	Level	Method	Date	Activity
1330	Examined By:	ROBERT SISTEK	DET	UT	10/10/2005	04/10/2006

Reviewed By: Daniel D Jan Level: III Date: 10/19/05

ANII Initial ☐ Final ☐ Date 10/22/05

HSB-CT

ENCLOSURE B6-2

Dominion
UT Partial Record

UTRNO	RECTAG	Drawing	Line	Mark/weld	Procedure	Rev
1330	4438	12050-WMKS-0111AAC	3"-CH-403-1502-Q2	2A	NDE-UT-812	0

XDucer Serial	Weld Width	Exam Angle	SU Length	SU Width	SU Nose	Percent
005YPV	0.50	44	0.60	0.45	0.25	63 %

Area Not Examined

UPSTREAM AXIAL AND CIRC SCANS.

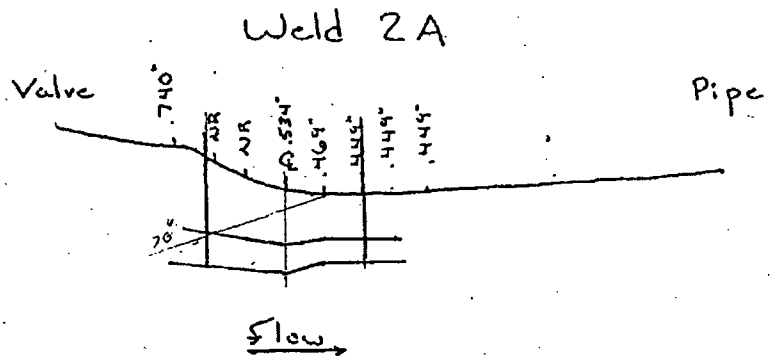
Reason

UPSTREAM VALVE BODY TAPER.

Comments

THE TECHNIQUES USED FOR THIS EXAM ARE CONSIDERED BEST EFFORT FOR SINGLE SIDE DETECTION OF FAR SIDE DEFECTS PARALLEL TO THE WELD.

Cross Section Sketch



Evaluation

ADDITIONAL SCANS OR ALTERNATIVE TECHNIQUES WILL NOT PROVIDE ADDITIONAL COVERAGE WITHIN THE LIMITATIONS OF THE PROCEDURE.

Signature	Level	DATE
ROBERTSISTEK	DET	10/10/2005

Reviewed By: David Dyne Level: III Date: 10/21/05

ANII [initials] Date 10/21/05
Initial ☐ Final ☑
HSB-CT

Interval: 3

Dominion Power Ultrasonic Calibration Data Record

UTRNO	Station	Unit	Procedure	Rev	Sizing Procedure	Rev	Couplant	CalBlock1	CBLKTKS	CBLKTemp
1330	NAPS	2	NDE-UT-812	0	NDE-UT- NA	NA	01220	VP.50-SS-02	SIZING BLOCK	73

CLbType	CLbLngth	#Connect	Simulator	AmpSwp	CalDate	CaLIn	CaLOut	CalBlock2	CBLKTKS2	CBLkTemp2
RG-174	6'	0			10/10/2005	8:30	13:00			

Thermometer SerNo 1072BGCY

Instrument Settings

UTRNO	MemLoc	XDUC SER	REJECT	dB	REF dB	RANGE	VELOCITY	ZERO	DELAY	FREQ	DISP MODE	PRR/PRF	PULSER	FILTER	ENERGY	DAMPING
ID																
1330	2	005YPV	0%	15.9	0.0	0.175	0.1237	4.520	N/A	FIXED	FULL WAVE	AUTO	N/A	STD	HIGH	400
1630																
1330	3	006274	0%	31.8	0.0	0.242	0.1249	5.647	N/A	FIXED	FULL WAVE	AUTO	N/A	STD	HIGH	400
1631																
1330	4	006273	0%	41.1	0.0	0.317	0.1239	7.801	N/A	FIXED	FULL WAVE	AUTO	N/A	STD	HIGH	400
1632																
1330	8	006CC7	0%	49.3	0.0	0.317	0.1239	7.801	N/A	FIXED	FULL WAVE	AUTO	N/A	STD	HIGH	400
1633																

Xducer Data

UTRNO	ID	SerialNo	Manuf	Model	Size	Frequency	Nom Angle	Measured Angle	Wave Mode	Shape	No. Elements
				Wedge Type		Wedge Length	Wedge Width	Wedge Nose			
1330	1544	005YPV	KB-AEROTECH	Comp-G	0.25"	5.0 MHZ	45	44	SHEAR	ROUND	1
				MWSQC		0.60	0.45	0.25			
1330	1545	006274	KB-AEROTECH	Comp-G	0.25"	5.0 MHZ	60	59	SHEAR	ROUND	1
				MWSQC		0.70	0.45	0.25			
1330	1546	006273	KB-AEROTECH	Comp-G	0.25"	5.0 MHZ	70	67	SHEAR	ROUND	1
				MWSQC		0.80	0.45	0.30			
1330	1547	006CC7	KB-AEROTECH	Comp-G	0.25"	2.25 MHZ	70	67	SHEAR	ROUND	1
				MWSQC		0.80	0.45	0.30			

Vertical Beam Spread

Instrument	Calibration Data

UTRNO		Signature	Level	Method	Date	Activity
1330	Calibrated By	ROBERT SISTEK	DET	UT	10/09/2005	04/08/2006

ANII Date 10/22/05
Initial ☐ Final ☒
HSB-CT

Reviewed By: Daniel L Jones Level: III Date: 10/19/05

ENCLOSURE B6-2

Serial No. 11-472
Docket No. 50-339
NAPS Unit 2 3rd interval Limited Exams
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Interval: 3

Dominion Power Ultrasonic Calibration Data Record

UTRNO	SHAC	Inst. Serial	Inst. Model	Inst. Manuf	ID	UTRNO	Blk	XDID	IS ID	Direction	CalType	Point	Reflector	Position	Amplitude	Sweep
1330	193	98321012	Epoch III	Panametrics	1633	1330	1	1544	1630	AX&CIRC	DET	1	10%NOTCH	N/A	80%	3.8
1330	193	98321012	Epoch III	Panametrics	1632	1330	1	1545	1631	AX	DET	1	10%NOTCH	N/A	80%	4.0
1330	193	98321012	Epoch III	Panametrics	1631	1330	1	1546	1632	AXIAL	DET	1	10%NOTCH	N/A	80%	4.2
1330	193	98321012	Epoch III	Panametrics	1630	1330	1	1547	1633	AXIAL	DET	1	10%NOTCH	N/A	80%	4.0

UTRNO		Signature	Level	Method	Date	Activity
1330	Calibrated By	ROBERT SISTEK	DET	UT	10/09/2005	04/08/2006

ANII Date 10/19/05
Initial ☐ Final ☑
HSB-CT

Reviewed By: Daniel Dunn Level: III Date: 10/19/05

ENCLOSURE B6-2

Serial No. 11-472
Docket No. 50-339
NAPS Unit 2 3rd Interval Limited Exams
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ENCLOSURE B6-2

Dominion

STAINLESS STEEL PIPE, SINGLE SIDED PERCENT VOLUME BY SCAN DIRECTION

DRAWING NUMBER 12050-WMKS-0111AAC *MARK NUMBER* 2A

ANGLE	*SCAN AREA*	*DIRECTION*	*SCAN %*
45°	EXAMINATION VOLUME	UP STREAM (1ST LEG)	NA
45°	EXAMINATION VOLUME	UP STREAM (2ND LEG)	50 %
45°	EXAMINATION VOLUME	DOWN STREAM (1ST LEG)	NA
45°	EXAMINATION VOLUME	DOWN STREAM (2ND LEG)	NA
45°	EXAMINATION VOLUME	CW	50 %
45°	EXAMINATION VOLUME	CCW	50 %
60°	EXAMINATION VOLUME	UP STREAM (1ST LEG)	NA
60°	EXAMINATION VOLUME	UP STREAM (2ND LEG)	NA
60°	EXAMINATION VOLUME	DOWN STREAM (1ST LEG)	NA
60°	EXAMINATION VOLUME	DOWN STREAM (2ND LEG)	NA
70°	EXAMINATION VOLUME	UP STREAM (1ST LEG)	NA
70°	EXAMINATION VOLUME	DOWN STREAM (1ST LEG)	100 %
	UPSTREAM COVERAGE		50 %
	DOWNSTREAM COVERAGE		100 %
	CLOCK WISE COVERAGE		50 %
	COUNTER CLOCKWISE COVERAGE		50 %
		TOTAL PERCENT	*63 %*

COMMENTS: NONE

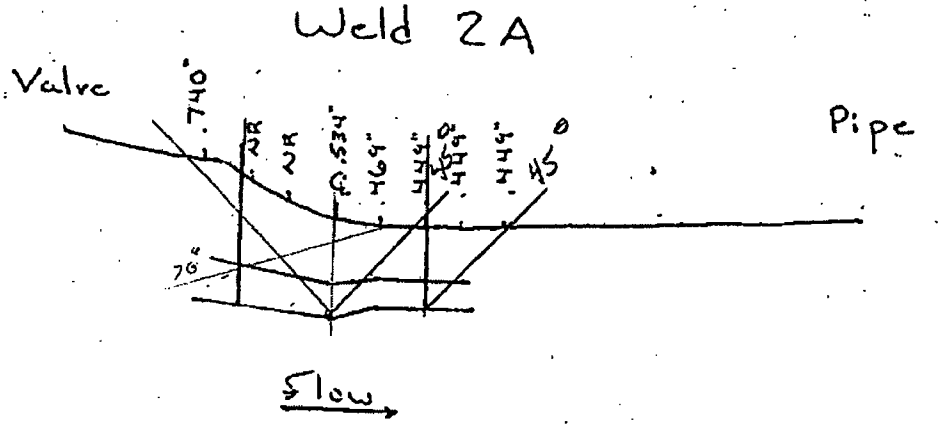
Daniel L Jensen

DOMINION NDE LEVEL III OCTOBER 21, 2005 *DATE*

Daniel L Jensen

ANII _____ Date 10/22/05
Initial ☐ Final ☒
HSB-CT

ENCLOSURE B6-2



RPS
10-21-05

UT Calibration/Examination

Dominion

Site/Unit: NAPS / 2 | Procedure: ER-AA-NDE-UT-802 | Outage No.: N2R18

Summary No.: N2.C5.21.085 | Procedure Rev.: 00 | Report No.: UT-07-068

Workscope: ISI | Work Order No.: | Page: 1 of 1

Code: Sect. XI 1995 Ed./1996 Add. | Cat./Item: C-F-1/C5.21 | Location: AUX 244

Drawing No.: 12050-WMKS-0111AAG | Description: Tee to Pipe Weld

System ID: SI

Component ID: 12050-WMKS-0111AAG / 3-SI-424 / SW-64 | Size/Length: .75"/11.25" | Thickness/Diameter: 0.437"/3.5"

Limitations: SINGLE SIDED ACCESS | Start Time: 1240 | Finish Time: 1400

Instrument Settings

Serial No.:	98322812		
Manufacturer:	Panametrics		
Model:	2300		
Delay:	zero 5.518	Range:	0.186in/div
M'tl Cal/Vel:	0.1231	Pulser:	HIGH
Damping:	400	Reject:	0%
Rep. Rate:	FIXED	Freq.:	FIXED
Filter:	STD	Mode:	FULLWAVE
Voltage:	N/A		
Ax. Gain (dB):	35.8	Circ. Gain (dB):	35.8

1 Screen Div. = 0.186 In. of Sound Path

Linearity Report No.: L-07-004

Calibration Block

Cal. Block No.: 10876

Thickness 2.25" Dia.: 0

Cal. Blk. Temp. 72 Temp. Tool: 1074BGCY

Comp. Temp.: 80 Temp. Tool: 1074BGCY

Search Unit

Serial No.:	00FX06		
Manufacturer:	KBA		
Size:	0.25"	Shape:	Round
Freq.:	5.0 MHZ	Style:	Comp-G
Exam Angle:	60	# of Elements:	Single
Mode:	SHEAR		
Measured Angle:	58		
Wedge Style:	MSWQC		

Search Unit Cable

Type: RG-174

Length: 6' No. Conn.: 0

Scan Coverage

Upstream ☑ Downstream ☐ Scan dB: 41.8

CW ☑ CCW ☑ Scan dB: 41.8

Exam Surface: O.D.

Surface Condition: AS WELDED

Cal. Checks	Time	Date
Initial Cal.	0845	04/01/2007
Inter. Cal.	1245	04/01/2007
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	1355	04/01/2007

Couplant

Cal. Batch: 06120

Type: SoundSafe

Mfg.: SONOTECH

Exam Batch: 06120

Type: SoundSafe

Mfg.: SONOTECH

Reference Block

Serial No.: 05-6534

Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
.5" NOTCH	80%	5.0	0.93"
-N/A-			

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
.5" NOTCH	80%	5.0	0.93"

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
35.8	FSDH	80%	4.1	0.762"

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

Results: NRI ☑ RI ☐ Geom ☐

Comments: NDE-R#: 07-001

Percent Of Coverage Obtained > 90%: No | Reviewed Previous Data: N/A

Examiner	Level II-PDI	Signature	Date	Reviewer		Signature	Date
Sistek, Robert P		Robert P Sistek	04/01/2007		Lloyd T Stark		4-9-07
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				Mark Grace		M Grace	4/11/07

UT Calibration/Examination <Edit From Setup>

ENCLOSURE B6-3

NAPS Unit 2 3rd interval Limited Exams

Docket No. 50-339

Serial No. 11-472

UT Calibration/Examination

Dominion

Site/Unit: NAPS / 2 | Procedure: ER-AA-NDE-UT-802 | Outage No.: N2R18
Summary No.: N2.C5.21.085 | Procedure Rev.: 00 | Report No.: UT-07-069
Workscope: ISI | Work Order No.: | Page: 1 of 3

Code: Sect. XI 1995 Ed./1996 Add. | Cat./Item: C-F-1/C5.21 | Location: AUX 244
Drawing No.: 12050-WMKS-0111AAG | Description: Tee to Pipe Weld
System ID: SI
Component ID: 12050-WMKS-0111AAG / 3-SI-424 / SW-64 | Size/Length: .75"/11.25" | Thickness/Diameter: 0.437"/3.5"
Limitations: SINGLE SIDED ACCESS | Start Time: 1240 | Finish Time: 1400

Instrument Settings

Serial No.:	98322812		
Manufacturer:	Panametrics		
Model:	2300		
Delay:	zero 7.039	Range:	0.244in/div
M'tl Cal/Vel:	0.1231	Pulser:	HIGH
Damping:	400	Reject:	0%
Rep. Rate:	FIXED	Freq.:	FIXED
Filter:	STD	Mode:	FULLWAVE
Voltage:	N/A		
Ax. Gain (dB):	46.7	Circ. Gain (dB):	n/a
1 Screen Div. =	.244	In. of	Sound Path
Linearity Report No.:	L-07-004		

Calibration Block

Cal. Block No.: 10876
Thickness 2.25" | Dia.: 0
Cal. Blk. Temp. 72 | Temp. Tool: 1074BGCY
Comp. Temp.: 80 | Temp. Tool: 1074BGCY

Search Unit

Serial No.:	01CWK5		
Manufacturer:	KBA		
Size:	0.25"	Shape:	Round
Freq.:	2.25 MHZ	Style:	Comp-G
Exam Angle:	70	# of Elements:	Single
Mode:	SHEAR		
Measured Angle:	68		
Wedge Style:	MSWQC		

Search Unit Cable

Type: RG-174
Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☑ Downstream ☐ Scan dB: 40.7
CW ☐ CCW ☐ Scan dB: n/a
Exam Surface: O.D.
Surface Condition: AS WELDED

Cal. Checks	Time	Date
Initial Cal.	0915	04/01/2007
Inter. Cal.	1305	04/01/2007
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	1355	04/01/2007

Couplant

Cal. Batch: 06120
Type: SoundSafe
Mfg.: SONOTECH
Exam Batch: 06120
Type: SoundSafe
Mfg.: SONOTECH

Reference Block

Serial No.: 05-6534
Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
.5" NOTCH	80%	5.0	1.22"
-N/A-			

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
-N/A-			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
38.5	SSDH	80%	4.3	1.04"
-N/A-				

Recordable Indication(s): Yes ☐ No ☑ (If Yes, Ref. Attached Ultrasonic Indication Report.)
Results: NRI ☑ RI ☐ Geom ☐
Comments: NDE-R#: 07-001
Percent Of Coverage Obtained > 90%: No | Reviewed Previous Data: N/A

	Level		Signature	Date
Examiner: Sistek, Robert P	II-PDI		Robert P Sistek	04/01/2007
Examiner: N/A	N/A			
Other: N/A	N/A			

Reviewer	Signature	Date	4-9-07
Site Review	N/A Signature	Date	
ANII Review: Mark Geiger	Signature	Date	4/11/07

UT Calibration/Examination <Edit From Setup>

ENCLOSURE B6-3
NAPS Unit 2 3rd Interval Limited Exams
Docket No. 50-339
Serial No. 11-472
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ENCLOSURE B6-3

Supplemental Report

Dominion

Report No.: UT-07-069

Page: 2 of 3

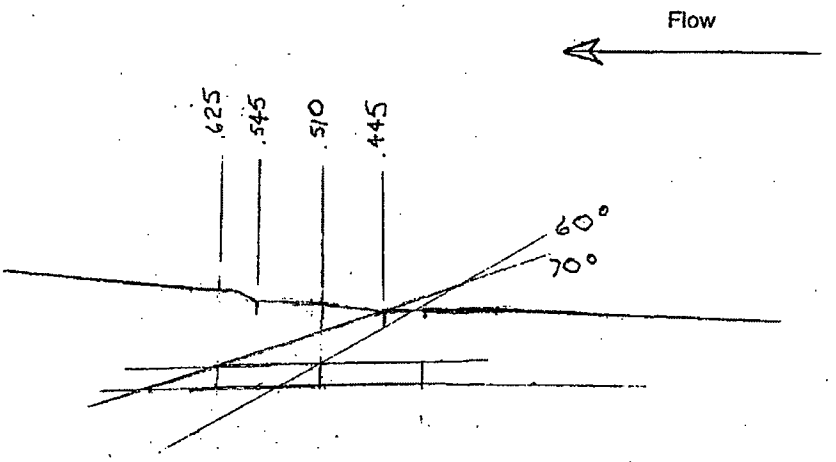
Summary No.: N2.C5.21.085

Examiner:	Sistek, Robert P RPS	Level:	II-PDI	Reviewer:	[signature]	Date:	4-9-07
Examiner:	N/A	Level:	N/A	Site Review:	N/A	Date:	
Other:	N/A	Level:	N/A	ANII Review:	[signature]	Date:	4/11/07

Comments:

WELD COVERAGE PLOTS.

Weld Number SH-64
Nominal Thickness 0.437"
Weld Length 11.25"
Weld Width 0.75"



Box Dimensions = H 0.144 L 1.25

Coverage Summary						
Angle	Required Scans (each scan has a weighting factor of 100 for complete coverage)					
	UpSt- Ax	UpSt- CW	UpSt- CCW	DnSt- Ax	DnSt- CW	DnSt- CCW
60	100	100	100	N/A	N/A	N/A
70	100	N/A	N/A	N/A	N/A	N/A
					Code Coverage Total	50 %
					Best Effort Coverage (Max 50%) Total	16.66%

Notes:
1) Code Coverage refers to the maximum percentage of the required examination volume that is effectively examined with the qualified examination procedure.
2) Best Effort Coverage refers to the required examination volume past the weld centerline that is examined with an Appendix VIII demonstrated procedure for single sided coverage.

ENCLOSURE B6-3

Supplemental Report

Dominion

Report No.: UT-07-069

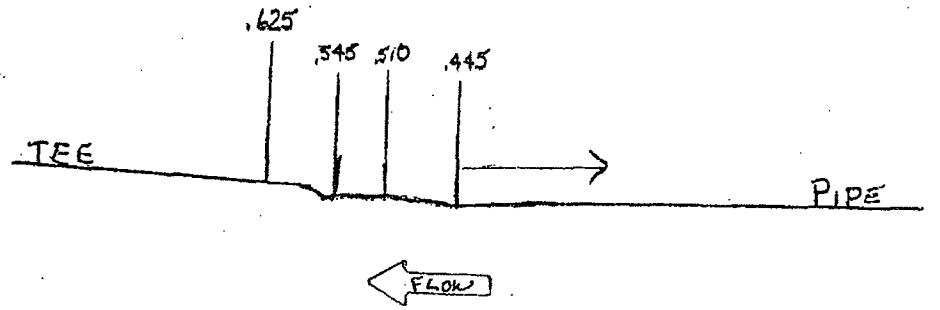
Page: 3 of 3

Summary No.: N2.C5.21.085

Examiner:	Sistek, Robert P RPS	Level:	II-PDI	Reviewer:	Ryan T Stacks	Date:	4-9-07
Examiner:	N/A	Level:	N/A	Site Review:	N/A	Date:	
Other:	N/A	Level:	N/A	ANII Review:	M Hunt	Date:	4/10/07

Comments:

WELD PROFILE.



ENCLOSURE B6-3

Liquid Penetrant Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	NDE-PT-701	Outage No.:	N2R18
Summary No.:	N2.C5.21.085	Procedure Rev.:	6	Report No.:	PT-07-010
Workscope:	ISI	Work Order No.:		Page:	1 of 1

Code: Sect. XI 1995 Ed./1996 Add. Cat./Item: C-F-1/C5.21 Location: AUX 244

Drawing No.: 12050-WMKS-0111AAG Description: Tee to Pipe Weld

System ID: SI

Component ID: 12050-WMKS-0111AAG / 3-SI-424 / SW-64 Size/Length: 3.5"/11.25"

Limitations: NONE

Light Meter Mfg.: AEMC Instruments Serial No.: AEMC-11 Illumination: 212 Fc

Temp. Tool Mfg.: AEMC Instruments Serial No.: 1074BGCY Surface Temp.: 80 °F

Comparator Block Temp.: Side A: N/A °F Side B: N/A °F Resolution: Not Used

Lo/Wo Location: See Comments* Surface Condition: AS WELDED

	Cleaner	Penetrant	Remover	Developer
Brand	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX
Type	SKC-S	SKL-SP1	SKC-S	SKD-S2
Batch No.	05H06K	02M04K	05H06K	02B05K
Time	Evap. 5 MIN.	Dwell 10 MIN.	Evap. 5 MIN.	Develop 8 MIN.

Time Exam Started: 1200 Time Exam Completed: 1240

Indication No.	Loc L	Loc W	Diameter	Length	Type R/L	Remarks

Comments:

* Extradose of upstream elbow. NDE-R#: 07-001

Results: NRI ☑ RI ☐ Eval ☐

Percent Of Coverage Obtained > 90%: Yes Reviewed Previous Data: N/A

Examiner	Level II	Signature	Date	Reviewer		Signature	Date
Sistek, Robert P		Robert Sistek	04/01/2007	Raymond T. Stack		Raymond T. Stack	04/09/2007
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				Mark Greer		Mark Greer	4/11/07

Liquid Penetrant Examination <Edit From Setup>

UT Calibration/Examination

Dominion

Site/Unit: NAPS / 2 | Procedure: ER-AA-NDE-UT-802 | Outage No.: N2R18
Summary No.: N2.C5.21.093 | Procedure Rev.: 00 | Report No.: UT-07-004
Workscope: ISI | Work Order No.: | Page: 1 of 2

Code: Sect. XI 1995 Ed./1996 Add. | Cat./Item: C-F-1/C5.21 | Location: AUX 244
Drawing No.: 12050-WMKS-0111AAJ | Description: Elbow to Valve Weld
System ID: SI
Component ID: 12050-WMKS-0111AAJ / 3-SI-423 / 23A | Size/Length: .55" / 11.0" | Thickness/Diameter: .438" / 3.0"
Limitations: One sided exam due to elbow/valve configuration.scan limitation at elbow intrados | Start Time: 0220 | Finish Time: 0256

Instrument Settings

Serial No.: 98323112
Manufacturer: Panametrics
Model: 2300
Delay: 4.243 | Range: 1.000"
M'tl Cal/Vel: .1231us | Pulser: High
Damping: 400 | Reject: 0%
Rep. Rate: High | Freq.: Fixed
Filter: Std | Mode: PE
Voltage: N/A
Ax. Gain (dB): N/A | Circ. Gain (dB): 17
10 Screen Div. = 1 | In. of Sound Path
Linearity Report No.: L-07-003

Calibration Block

Cal. Block No.: 10873
Thickness 2.25" | Dia.: 0
Cal. Blk. Temp. 74 | Temp. Tool: 1076BGCY
Comp. Temp.: 85 | Temp. Tool: 1076BGCY

Search Unit

Serial No.: 00FP0J
Manufacturer: KBA
Size: 0.25" | Shape: Round
Freq.: 5.0 MHZ | Style: Comp-G
Exam Angle: 45 | # of Elements: Single
Mode: Shear
Measured Angle: 45
Wedge Style: MSWQC

Search Unit Cable

Type: RG-174
Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☐ Downstream ☐ Scan dB: N/A
CW ☑ CCW ☑ Scan dB: 29
Exam Surface: OD
Surface Condition: Contour Ground

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

Results: NRI ☑ RI ☐ Geom ☐

Percent Of Coverage Obtained > 90%: No | Reviewed Previous Data: N/A

Cal. Checks	Time	Date
Initial Cal.	2030	03/25/2007
Inter. Cal.	0232	03/26/2007
Inter. Cal.		
Inter. Cal.		
Final Cal.	0402	03/26/2007

Couplant

Cal. Batch: 06120
Type: SoundSafe
Mfg.: SONOTECH
Exam Batch: 06120
Type: SoundSafe
Mfg.: SONOTECH

Reference Block

Serial No.: 05-6534
Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
.500" Notch	80	7.1	.711"

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
23	NSDH	60	4.5	.449"

Comments: This calibration used for base metal circ scan only. 07-001

Examiner	Level II	Signature	Date	Reviewer		Signature	Date
Gahan, Timothy L.		Timothy Gahan	03/26/2007	Robert Davies		Robert Davies	3/28/2007
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							4/5/07

UT Calibration/Examination <Edit From Setup>

ENCLOSURE B6-4

Serial No. 11-472
Docket No. 50-339
NAPS Unit 2 3rd Interval Limited Exams
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ENCLOSURE B6-4

Supplemental Report

Dominion

Report No.: UT-07-004

Page: 2 of 2

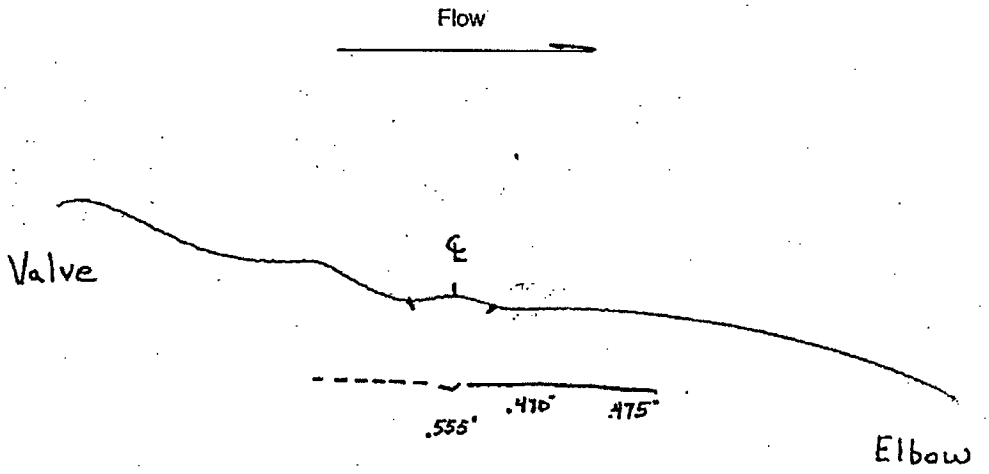
Summary No.: N2.C5.21.093

Examiner:	Gahan, Timothy L. TG	Level:	II	Reviewer:	Robert Davies	Date:	3/28/2007
Examiner:	N/A	Level:	N/A	Site Review:	N/A	Date:	
Other:	N/A	Level:	N/A	ANII Review:	M M Hoag	Date:	4/3/07

Comments:

Thickness and contour for 23A, Line 3-SI-423-1502-Q2

Weld Number 23A
Nominal Thickness .438"
Weld Length 11"
Weld Width .55"



Additional - Supplemental Reports <Edit From Setup>

UT Calibration/Examination

Dominion

Site/Unit: NAPS / 2 | Procedure: ER-AA-NDE-UT-802 | Outage No.: N2R18
Summary No.: N2.C5.21.093 | Procedure Rev.: 00 | Report No.: UT-07-014
Workscope: ISI | Work Order No.: | Page: 1 of 2

Code: Sect. XI 1995 Ed./1996 Add. | Cat./Item: C-F-1/C5.21 | Location: AUX 244
Drawing No.: 12050-WMKS-0111AAJ | Description: Elbow to Valve Weld
System ID: SI
Component ID: 12050-WMKS-0111AAJ / 3-SI-423 / 23A | Size/Length: .55" / 11.0" | Thickness/Diameter: .438" / 3"
Limitations: One sided exam due to elbow/valve configuration,scan limitation at elbow intrados | Start Time: 0220 | Finish Time: 0256

Instrument Settings

Serial No.:	98323112		
Manufacturer:	Panametrics		
Model:	2300		
Delay:	5.126	Range:	1.500"
M'ti Cal/Vel:	.1231us	Pulser:	High
Damping:	400	Reject:	0%
Rep. Rate:	High	Freq.:	Fixed
Filter:	Std.	Mode:	PE
Voltage:	N/A		
Ax. Gain (dB):	28	Circ. Gain (dB):	N/A
1 Screen Div. =	.15	in. of	Sound Path
Linearity Report No.:	L-07-003		

Calibration Block

Cal. Block No.:	10873		
Thickness:	2.25"	Dia.:	0
Cal. Blk. Temp.	74	Temp. Tool:	1076BGCY
Comp. Temp.:	85	Temp. Tool:	1076BGCY

Search Unit

Serial No.:	01CP6Y		
Manufacturer:	KBA		
Size:	0.25"	Shape:	Round
Freq.:	5.0 MHZ	Style:	Comp-G
Exam Angle:	60	# of Elements:	Single
Mode:	Shear		
Measured Angle:	59		
Wedge Style:	MSWQC		

Search Unit Cable

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

Scan Coverage

Upstream ☐ Downstream ☑ Scan dB: 40
CW ☑ CCW ☑ Scan dB: 40
Exam Surface: OD
Surface Condition: Contour Ground

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

Results: NRI ☑ RI ☐ Geom ☐

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

Cal. Checks	Time	Date
Initial Cal.	2010	03/25/2007
Inter. Cal.	0241	03/26/2007
Inter. Cal.		
Inter. Cal.		
Final Cal.	0405	03/26/2007

Couplant

Cal. Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.:	05-6534
Type:	SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
.500" Notch	80	6.5	.970"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
.500" Notch	80	6.5	.970"

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
27	NSDH	55	4.6	.690"

Comments: 07-001 Tangentially skewed circ scan to get under weld cap until root was displayed.

Examiner	Level II	Signature	Date	Reviewer	Signature	Date
Gahan, Timothy L.		Timothy Gahan	03/26/2007	Robert Davies	Robert Davies	3/28/2007
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				Mark Grace		4/5/07

UT Calibration/Examination <Edit From Setup>

ENCLOSURE B6-4

Supplemental Report

Dominion

Report No.: UT-07-014

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Summary No.: N2.C5.21.093

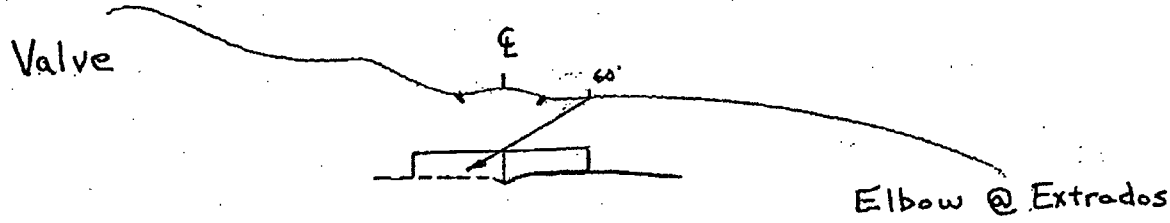
Examiner:	Gahan, Timothy L. TG	Level:	II	Reviewer:	Robert Darrea	Date:	3/28/2007
Examiner:	N/A	Level:	N/A	Site Review:	N/A	Date:	
Other:	N/A	Level:	N/A	ANII Review:	MM Hess	Date:	4/5/07

Comments:

Coverage plot for weld 23A, Line 3-SI-423-1502-Q2
Limited scan area @ intradose due to elbow configuration from 4.5" to 6.5", Total of 2" scan limitation
Downstream Axial coverage 9.0"/11.0" = 82%
82% + 100% + 100% = 282% / 6 = 47% Elbow side coverage

Weld Number 23A
Nominal Thickness .438"
Weld Length 11"
Weld Width .55"

Flow →



Box Dimensions = H .15" L .52"

Coverage Summary						
Angle	Required Scans (each scan has a weighting factor of 100 for complete coverage)					
	UpSt- Ax	UpSt- CW	UpSt- CCW	DnSt- Ax	DnSt- CW	DnSt- CCW
60°				82%	100%	100%
					Code Coverage Total	47%
					Best Effort Coverage (Max 50%) Total	

Notes:
1) Code Coverage refers to the maximum percentage of the required examination volume that is effectively examined with the qualified examination procedure.
2) Best Effort Coverage refers to the required examination volume past the weld centerline that is examined with an Appendix VIII demonstrated procedure for single sided coverage.

UT Calibration/Examination

Dominion

Site/Unit: NAPS / 2 | Procedure: ER-AA-NDE-UT-802 | Outage No.: N2R18
Summary No.: N2.C5.21.093 | Procedure Rev.: 00 | Report No.: UT-07-013
Workscope: ISI | Work Order No.: | Page: 1 of 2

Code: Sect. XI 1995 Ed./1996 Add. | Cat./Item: C-F-1/C5.21 | Location: AUX 244
Drawing No.: 12050-WMKS-0111AAJ | Description: Elbow to Valve Weld
System ID: SI
Component ID: 12050-WMKS-0111AAJ / 3-SI-423 / 23A | Size/Length: .55" / 110" | Thickness/Diameter: .438" / 16"
Limitations: one sided exam due to elbow/valve configuration,scan limitation on elbow intrados | Start Time: 0220 | Finish Time: 0256

Instrument Settings

Serial No.: 98323112
Manufacturer: Panametrics
Model: 2300
Delay: 6.360 | Range: 2.200"
M'tl Cal/Vel: .1223us | Pulser: High
Damping: 400 | Reject: 0%
Rep. Rate: High | Freq.: Fixed
Filter: Std. | Mode: PE
Voltage: N/A
Ax. Gain (dB): 47.3 | Circ. Gain (dB): N/A
1 Screen Div. = .22 In. of Sound Path
Linearity Report No.: L-07-003

Calibration Block

Cal. Block No.: 10873
Thickness 2.25" | Dia.: 0
Cal. Blk. Temp. 74 | Temp. Tool: 1076BGCY
Comp. Temp.: 85 | Temp. Tool: 1076BGCY

Search Unit

Serial No.: 01CWK5
Manufacturer: KBA
Size: 0.25" | Shape: Round
Freq.: 2.25 MHZ | Style: Comp-G
Exam Angle: 70 | # of Elements: Single
Mode: Shear
Measured Angle: 68
Wedge Style: MSWQC

Search Unit Cable

Type: RG-174
Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☐ Downstream ☑ Scan dB: 53.3
CW ☐ CCW ☐ Scan dB: N/A
Exam Surface: OD
Surface Condition: Contour Ground

Cal. Checks	Time	Date
Initial Cal.	2045	03/25/2007
Inter. Cal.	0250	03/26/2007
Inter. Cal.		
Inter. Cal.		
Final Cal.	0403	03/26/2007

Couplant

Cal. Batch: 06120
Type: SoundSafe
Mfg.: SONOTECH
Exam Batch: 06120
Type: SoundSafe
Mfg.: SONOTECH

Reference Block

Serial No.: 05-6534
Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
.500 Notch	80	6.1	1.351"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
40.7	NSDH	100	3.7	.810"

Recordable Indication(s): Yes ☐ No ☑ (If Yes, Ref. Attached Ultrasonic Indication Report.)
Results: NRI ☑ RI ☐ Geom ☐
Comments: 07-001 This calibration used for far side coverage.
Percent Of Coverage Obtained > 90%: No | Reviewed Previous Data: N/A

	Level	Signature	Date
Examiner: Gahan, Timothy L.	II	Timothy Gahan	03/26/2007
Examiner: N/A	N/A		
Other: N/A	N/A		

	Signature	Date
Reviewer: Robert Davies	Robert Davies	3/28/2007
Site Review: N/A		
ANII Review: Mark Grace	M M Hess	4/5/07

UT Calibration/Examination <Edit From Setup>

ENCLOSURE B6-4

Supplemental Report

Dominion

Report No.: UT-07-013

Page: 2 of 2

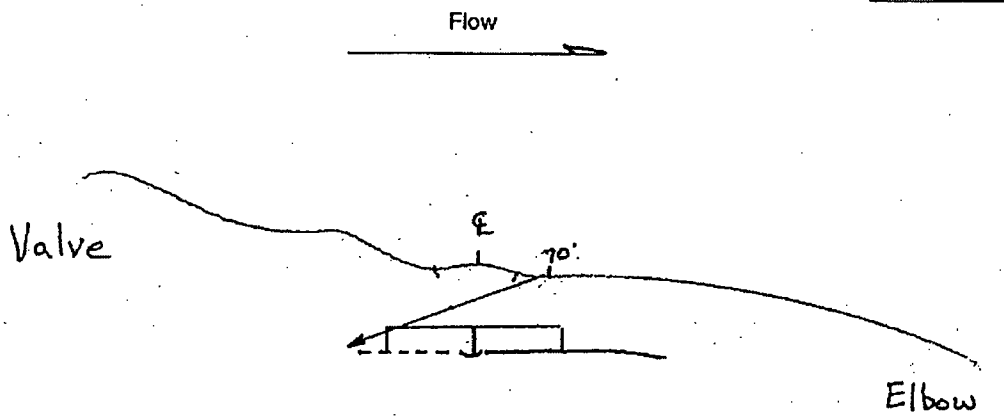
Summary No.: N2.C5.21.093

Examiner:	Gahan, Timothy L. TG	Level:	II	Reviewer:	Robert Davies	Date:	3/28/2007
Examiner:	N/A	Level:	N/A	Site Review:	N/A	Date:	
Other:	N/A	Level:	N/A	ANII Review:	[signature]	Date:	4/5/07

Comments:

Coverage plot for weld 23A, Line 3-SI-423-1502-Q-2
Scan limited area at intradose due to elbow configuration from 4.5" to 6.5", Total of 2" scan limitation
Upstream axial coverage 9.0"/11.0" = 82%
Additional area acheaved best effort: 82%/6 = 13%

Weld Number 23A
Nominal Thickness .438"
Weld Length 11"
Weld Width .55"



Box Dimensions = H .15" L .52"

Coverage Summary						
Angle	Required Scans (each scan has a weighting factor of 100 for complete coverage)					
	UpSt- Ax	UpSt- CW	UpSt- CCW	DnSt- Ax	DnSt- CW	DnSt- CCW
70°	82%					
					Code Coverage Total	
					Best Effort Coverage (Max 50%) Total	13%

Notes:

1) Code Coverage refers to the maximum percentage of the required examination volume that is effectively examined with the qualified examination procedure.
2) Best Effort Coverage refers to the required examination volume past the weld centerline that is examined with an Appendix VIII demonstrated procedure for single sided coverage.

ENCLOSURE B6-4

Liquid Penetrant Examination

Dominion

Site/Unit: NAPS / 2 Procedure: NDE-PT-701 Outage No.: N2R18

Summary No.: N2.C5.21.093 Procedure Rev.: 6 Report No.: PT-07-003

Workscope: ISI Work Order No.: Page: 1 of 1

Code: Sect. XI 1995 Ed./1996 Add. Cat./Item: C-F-1/C5.21 Location: AUX 244

Drawing No.: 12050-WMKS-0111AAJ Description: Elbow to Valve Weld

System ID: SI

Component ID: 12050-WMKS-0111AAJ / 3-SI-423 / 23A Size/Length: 3.0" / 11.0"

Limitations: None

Light Meter Mfg.: AEMC Instruments Serial No.: AEMC-12 Illumination: 163fc

Temp. Tool Mfg.: AEMC Instruments Serial No.: 1076BGCY Surface Temp.: 85 °F

Comparator Block Temp.: Side A: N/A °F Side B: N/A °F Resolution: Not Used

Lo/Wo Location: N/A Surface Condition: GROUND

	Cleaner	Penetrant	Remover	Developer
Brand	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX
Type	SKC-S	SKL-SP1	SKC-S	SKD-S2
Batch No.	05H06K	06G16K	05H06K	05A10K
Time	Evap. 6 min	Dwell 10 min	Evap. 7 min	Develop 10 min

Time Exam Started: 0101 Time Exam Completed: 0145

Indication No.	Loc L	Loc W	Diameter	Length	Type R/L	Remarks
NRI						None

Comments:
07-001

Results: NRI ☑ RI ☐ Eval ☐

Percent Of Coverage Obtained > 90%: Yes Reviewed Previous Data: N/A

Examiner Gahan, Timothy L.	Level II	Signature Timothy Gahan	Date 03/26/2007	Reviewer DENNIS STRICKLAND		Signature	Date 3/29/07
Examiner N/A	Level N/A	Signature	Date	Site Review N/A		Signature	Date
Other N/A	Level N/A	Signature	Date	ANII Review		Signature	Date 4/3/07

Liquid Penetrant Examination <Edit From Setup>

UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R19
Summary No.:	N2.C5.21.109	Procedure Rev.:	00	Report No.:	UT-08-056
Workscope:	PSI	Work Order No.:	5910178265	Page:	1 of 6

Code:	Sect. XI 1995ed/96 Add	Cat./Item:	C-F-1/C5.21	Location:	Aux 244 Pen
Drawing No.:	12050-WMKS-0111AAJ	Description:	Pipe to Valve		
System ID:	SI				
Component ID:	12050-WMKS-0111AAJ / 3-SI-536 / 7A	Size/Length:	0.6" / 11.0"	Thickness/Diameter:	0.438" / 3.0"
Limitations:	Pipe to valve configuration.	Start Time:	0425	Finish Time:	0435

Instrument Settings

Serial No.:	040186603		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	5.575 us	Range:	1.214 in
M'tl Cal/Vel:	0.1253 in/us	Pulser:	Square
Damping:	400	Reject:	0%
Rep. Rate:	Auto	Freq.:	2.0
Filter:	0.8 - 3.0	Mode:	Fullwave
Voltage:	Max	Other:	N/A
Ax. Gain (dB):	13.4	Circ. Gain (dB):	13.4

10 Screen Div. = 1.2 in. of Sound Path

Linearity Report No.: L-08-025

Calibration Block

Cal. Block No.:	05-8514		
Thickness:	2.25"	Dia.:	0
Cal. Blk. Temp.:	73	Temp. Tool:	07
Comp. Temp.:	92	Temp. Tool:	1071BGCY

Search Unit

Serial No.:	006CC7		
Manufacturer:	KBA		
Size:	0.25"	Shape:	Round
Freq.:	2.25 MHZ	Style:	Comp-G
Exam Angle:	45	# of Elements:	Single
Mode:	Shear		
Measured Angle:	44		
Wedge Style:	MSWQC		

Search Unit Cable

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

Scan Coverage

Upstream ☑ Downstream ☐ Scan dB: 25.4

CW ☑ CCW ☑ Scan dB: 25.4

Exam Surface: O.D.

Surface Condition: Contour Ground

Cal. Checks	Time	Date
Initial Cal.	2230	10/10/2008
Inter. Cal.	0425	10/11/2008
Inter. Cal.	0435	09/18/2008
Inter. Cal.	N/A	
Final Cal.	0638	10/11/2008

Couplant

Cal. Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.:	05-6535
Type:	SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
0.5" Notch	80%	5.4	0.655
N/A			
N/A			
N/A			
N/A			

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
13.4	.7" SDH	20%	8.0	0.969
N/A				
N/A				

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

Results: NRI ☑ RI ☐ Geom ☐

Comments: Pre-Service examination due to replacement of valve 2-SI-MOV-2869B.

Percent Of Coverage Obtained > 90%: No Reviewed Previous Data: N/A

	Level		Signature	Date
Examiner	Level III*		Raymond T. Stack	10/11/2008
Stack, Raymond T.				
Examiner	Level N/A		Signature	Date
N/A				
Other	Level N/A		Signature	Date
N/A				

Reviewer	Signature		Date
Robert E. Jones Level III	Robert E. Jones		10-13-08
Site Review	Signature		Date
Kevin J. Hacker Level III	Signed Per Telecom for Kevin Hacker	Raymond T. Stack Level III	10-13-08
ANII Review	Signature		Date
			11/20/08

UT Calibration/Examination

UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R19
Summary No.:	N2.C5.21.109	Procedure Rev.:	00	Report No.:	UT-08-056
Workscope:	PSI	Work Order No.:	59101782651	Page:	2 of 6

Code:	Sect. XI 1995ed/96 Add	Cat./Item:	C-F-1/C5.21	Location:	Aux 244 Pen
Drawing No.:	12050-WMKS-0111AAJ	Description:	Pipe to Valve		
System ID:	SI				
Component ID:	12050-WMKS-0111AAJ / 3-SI-536 / 7A	Size/Length:	0.6" / 11.0"	Thickness/Diameter:	0.438" / 3.0"
Limitations:	Pipe to valve configuration	Start Time:	0438	Finish Time:	0454

Instrument Settings

Serial No.:	040186603		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	6.133 us	Range:	1.460 in
M'tl Cal/Vel:	0.1248 in/us	Pulser:	Square
Damping:	400	Reject:	0%
Rep. Rate:	Auto	Freq.:	2.0
Filter:	0.8 - 3.0	Mode:	Fullwave
Voltage:	Max	Other:	N/A
Ax. Gain (dB):	30.0	Circ. Gain (dB):	30.0

10 Screen Div. = 1.46 in. of Sound Path

Linearity Report No.: L-08-025

Calibration Block

Cal. Block No.:	05-8514		
Thickness:	2.25"	Dia.:	0
Cal. Blk. Temp.:	73	Temp. Tool:	07
Comp. Temp.:	92	Temp. Tool:	1071BGCY

Search Unit

Serial No.:	006CCD		
Manufacturer:	KBA		
Size:	0.25"	Shape:	Round
Freq.:	2.25 MHZ	Style:	Comp-G
Exam Angle:	60	# of Elements:	Single
Mode:	Shear		
Measured Angle:	60		
Wedge Style:	MSWQC		

Search Unit Cable

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

Scan Coverage

Upstream ☑ Downstream ☐ Scan dB: 0

CW ☑ CCW ☑ Scan dB: 0

Exam Surface: O.D.

Surface Condition: Contour Ground

Cal. Checks	Time	Date
Initial Cal.	2318	10/10/2008
Inter. Cal.	0438	10/11/2008
Inter. Cal.	0454	10/11/2008
Inter. Cal.	N/A	
Final Cal.	0637	10/11/2008

Couplant

Cal. Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.:	05-6535
Type:	SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
0.5" Notch	80%	5.8	0.851
N/A			
N/A			
N/A			
N/A			

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
30.0	.7" SDH	45%	9.0	1.303
N/A				
N/A				

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

Results: NRI ☐ RI ☐ Geom ☑ See attached for geometric indication.

Comments: Effective coverage using the 60 Deg search unit has been verified by the presence of the weld root response during the required scans.

Percent Of Coverage Obtained > 90%: No Reviewed Previous Data: N/A

Examiner	Level III*	Signature	Date	Reviewer	Level II	Signature	Date
Stack, Raymond T.		Raymond T Stack	10/11/2008	ROBERT E. JONES		Robert E Jones	10-13-08
Examiner	Level N/A	Signature	Date	Site Review	Level III	Signature	Date
N/A				KEVIN J. HACKER		KEVIN J. HACKER Signed for Raymond T Stack	10-13-08
Other	Level N/A	Signature	Date	ANII Review		Signature	Date
N/A							11/20/08

ENCLOSURE B6-5
Serial No. 11-472
Docket No. 50-339
NAPS Unit 2 3rd interval Limited Exams
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UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R19
Summary No.:	N2.C5.21.109	Procedure Rev.:	00	Report No.:	UT-08-056
Workscope:	PSI	Work Order No.:	59101782651	Page:	3 of 6

Code: Sect. XI 1995ed/96 Add | Cat./Item: C-F-1/C5.21 | Location: Aux 244 Pen

Drawing No.: 12050-WMKS-0111AAJ | Description: Pipe to Valve

System ID: SI

Component ID: 12050-WMKS-0111AAJ / 3-SI-536 / 7A | Size/Length: 0.6" / 11.0" | Thickness/Diameter: 0.438" / 3.0"

Limitations: Pipe to valve configuration | Start Time: 0457 | Finish Time: 0507

Instrument Settings

Serial No.:	040186603		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	7.427 us	Range:	2.135 in
M'tl Cal/Vel:	0.1257 in/us	Pulser:	Square
Damping:	400	Reject:	0%
Rep. Rate:	Auto	Freq.:	2.0
Filter:	0.8 - 3.0	Mode:	Fullwave
Voltage:	Max	Other:	N/A
Ax. Gain (dB):	33.3	Circ. Gain (dB):	N/A

10 Screen Div. = 2.135 in. of Sound Path

Linearity Report No.: L-08-025

Calibration Block

Cal. Block No.:	05-8514		
Thickness:	2.25"	Dia.:	0
Cal. Blk. Temp.:	73	Temp. Tool:	07
Comp. Temp.:	92	Temp. Tool:	1071BGCY

Search Unit

Serial No.:	01CTV4		
Manufacturer:	KBA		
Size:	0.25"	Shape:	Round
Freq.:	2.25 MHZ	Style:	Comp-G
Exam Angle:	70	# of Elements:	Single
Mode:	Shear		
Measured Angle:	70		
Wedge Style:	MSWQC		

Search Unit Cable

Type: RG-174 | Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☑ Downstream ☐ Scan dB: 0

CW ☐ CCW ☐ Scan dB: N/A

Exam Surface: O.D.

Surface Condition: Contour Ground

Cal. Checks	Time	Date
Initial Cal.	2345	10/10/2008
Inter. Cal.	0457	10/11/2008
Inter. Cal.	0507	10/11/2008
Inter. Cal.	N/A	
Final Cal.	0636	10/11/2008

Couplant

Cal. Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.: 05-8535

Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
0.5" Notch	80%	7.0	1.489
N/A			
N/A			
N/A			
N/A			

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
33.3	.7" SDH	80%	4.0	0.855

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

Results: NRI ☑ RI ☐ Geom ☐ Geometry of 50% or less was noted at varying amplitudes.

Percent Of Coverage Obtained > 90%: No | Reviewed Previous Data: N/A

Comments: Geometry due to weld root and beam redirect was verified by Cross sectional plots & review of "RT" film which confirmed the presence of weld root geometry.

Examiner	Level	Signature	Date	Reviewer		Signature	Date
Stack, Raymond T.	III*	Raymond T. Stack	10/11/2008	Robert E. Jones	Level III	Robert E. Jones	10-13-08
Examiner	Level	Signature	Date	Site Review		Signature	Date
N/A	N/A			Kevin S. Hacker	Level III	Signed per Telecon for Kevin Hacker Raymond T. Stack	L III 10-15-08
Other	Level	Signature	Date	ANII Review		Signature	Date
N/A	N/A						11/20/08

ENCLOSURE B6-5
Serial No. 11-472
Docket No. 50-339
NAPS Unit 2 3rd interval Limited Exams
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Ultrasonic Indication Report

Dominion

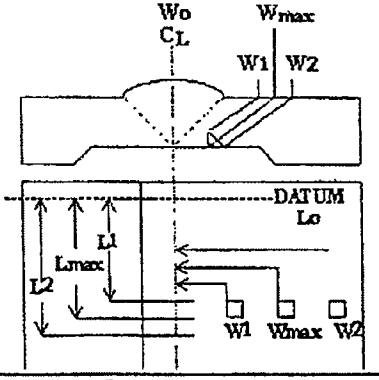
Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R19
Summary No.:	N2.C5.21.109	Procedure Rev.:	00	Report No.:	UT-08-056
Workscope:	PSI	Work Order No.:	59101782651	Page:	4 of 6

Search Unit Angle: 60 °

Wo Location: Weld Center Line

Lo Location: TDC

- (●) Piping Welds
- ( ) Ferritic Vessels ≥ 2"T
- ( ) Other _____



MP	Metal Path	Wmax	Distance From Wo To S.U. At Maximum Response
RBR	Remaining Back Reflection	W1	Distance From Wo At Of Max (Forward)
L	Distance From Datum	W2	Distance From Wo At Of Max (Forward)

Comments: **Geo. Of varying amplitudes noted intermittently 360 degrees. Weld root geometry verified by Cross sectional plots & review of "RT", confirming the presence of weld root geometry.**

Angle	Indication No.	% Of DAC	W Max W	W Max MP	Forward Of Max W1	Forward Of Max MP	Backward Of Max W2	Backward Of Max MP	L1 Of Max	L Max	L2 Of Max	RBR Amp.	Remarks
60	1	70%	0.7"	0.827"	N/A	N/A	N/A	N/A	*	1.2"	*	N/A	Weld Root Geometry

Examiner	Level III*	Signature	Date	Reviewer	Level II	Signature	Date
Stack, Raymond T.		Raymond T. Stack	10/11/2008	Robert E. Jones		Robert E. Jones	10-15-08
Examiner	Level N/A	Signature	Date	Site Review	Level III	Signature	Date
N/A				Kevin J. Hacker		SIGNED PER TELECON Kevin Hacker Raymond T. Stack	10-15-08
Other	Level N/A	Signature	Date	ANII Review		Signature	Date
N/A							11/20/08

Additional - UT Indication Data <Edit From Setup>

ENCLOSURE B6-5

Serial No. 11-472
Docket No. 50-339
NAPS Unit 2 3rd interval Limited Exams
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ENCLOSURE B6-5

Supplemental Report

Dominion

Report No.: UT-08-056

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Summary No.: N2.C5.21.109

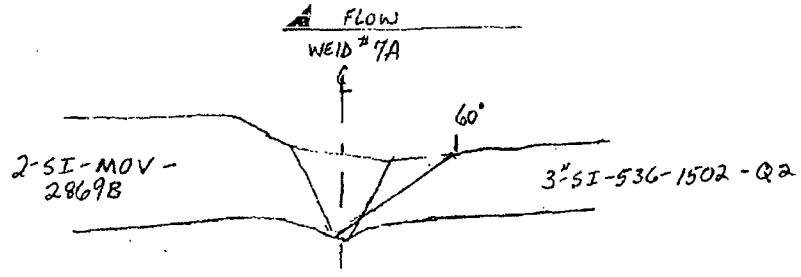
Examiner: Stack, Raymond T. RTS Level: III* Reviewer: Robert G Jones Date: 10/15-08

Examiner: N/A Level: N/A Site Review: Ray Stack for Kevin Hickar Date: 10-13-08

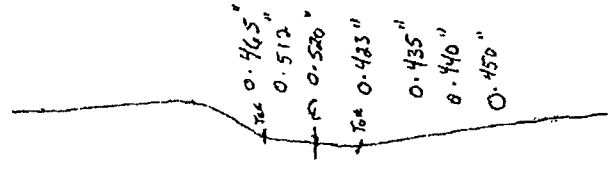
Other: N/A Level: N/A ANII Review: Date: 11/20/08

Comments:

Cross sectional Plot of Weld Root Geometry



Weld 7A O.D. Profile and Thickness Readings



Additional - Supplemental Data

ENCLOSURE B6-5

Supplemental Report

Dominion

Report No.: UT-08-056

Page: 6 of 6

Summary No.: N2.C5.21.109

Examiner: Stack, Raymond T. RTS Level: III* Reviewer: Robert E. Jones Date: 10-13-08

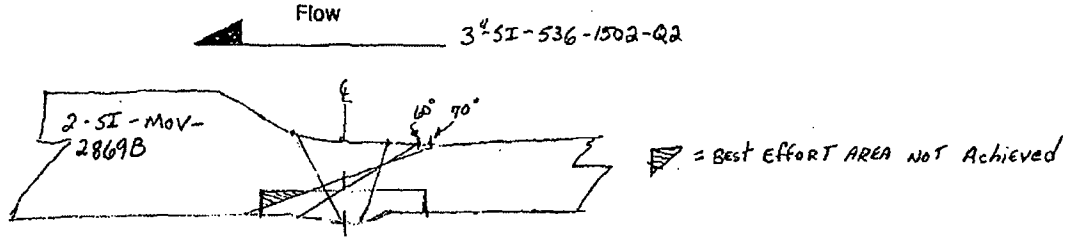
Examiner: N/A Level: N/A Site Review: Ray Stack for Kevin Hacker Date: 10-15-08

Other: N/A Level: N/A ANII Review: Date: 11/20/08

Comments:

COVERAGE PLOT

Weld Number 7A
Weld Thickness 0.530
Weld Length 11.0"
Weld Width 0.6"



TOTAL REQUIRED AREA DnSt-Ax = 0.531" x 0.146" = 0.077 IN^2
BEST EFFORT COVERAGE ACHIEVED of DnSt-Ax = 0.1 IN^2 + 0.25 IN^2 = 0.0725 IN^2
0.0725 IN^2 ÷ 0.077 IN^2 = 94%

Examination Volume Dimensions - Height 0.146 Length 11.0" Width 1.0625"

Coverage Summary				
Angle	Required Scans (each scan has a weighting factor of 100 for complete coverage)			
	UpSt- Ax	UpSt- Circ	DnSt- Ax	DnSt- Circ
60°	100%	100%	0%	0%
90°	N/A	N/A	94% (BEST EFFORT)	0%
			Code Coverage Total	50%
			Best Effort Coverage (Max 25%) Total	23%

Notes:
1) Code Coverage refers to the maximum percentage of the required examination volume that is effectively examined with the qualified examination procedure.
2) Best Effort Coverage refers to the required examination volume past the weld centerline that is examined in the axial beam direction with an Appendix VIII demonstrated procedure for single sided coverage.

Additional - Supplemental Data

ENCLOSURE B6-5

Liquid Penetrant Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-PT-300	Outage No.:	N2R19
Summary No.:	N2.C5.21.109	Procedure Rev.:	2	Report No.:	PT-08-023
Workscope:	PSI	Work Order No.:	59101782651	Page:	1 of 1

Code: Sect. XI 1995ed/96 Add Cat./Item: C-F-1/C5.21 Location: Aux 244 Pen

Drawing No.: 12050-WMKS-0111AAJ Description: Pipe to Valve

System ID: SI

Component ID: 12050-WMKS-0111AAJ / 3-SI-536 / 7A Mat./Thickness: S.S. / 0.437"

Limitations: None

Light Meter Mfg.: AEMC Instruments Serial No.: AEMC-12 Illumination: 200 fc

Temp. Tool Mfg.: AEMC Instruments Serial No.: 1071BGCY Surface Temp.: 118 °F

Comparator Block Temp.: Side A: N/A °F Side B: N/A °F Resolution: Not Used

Lo/Wo Location: N/A Surface Condition: AS WELDED

	Cleaner	Penetrant	Remover	Developer
Brand	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX
Type	SKC-S	SKL-SP1	SKC-S	SKD-S2
Batch No.	08B01K	02M04K	08B01K	05L14K
Time	Evap. 3 Minutes	Dwell 10 Minutes	Evap. 3 Minutes	Develop 10 Minutes

Time Exam Started: 0255 Time Exam Completed: 0402

Indication No.	Loc L	Loc W	Diameter	Length	Type R/L	Remarks
N/A						

Comments:
Dwg No.: Const. DWG 12050-CBM-096A-3, Sh. 3 / 12050-SI-27A

Results: NRI ☑ RI ☐ Eval ☐

Percent Of Coverage Obtained > 90%: Yes Reviewed Previous Data: N/A

Examiner	Level II	Signature	Date	Reviewer		Signature	Date
Porter III, Robert E.		10/11/2008		E.O. Holloway	E.O. Holloway		10-12-08
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							11/20/08

UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R20
Summary No.:	N2.C5.21.126	Procedure Rev.:	00	Report No.:	UT-10-116
Workscope:	PSI	Work Order No.:	59078558401	Page:	1 of 6

Code:	Sect. XI 1995ed/96 Add	Cat./Item:	C-F-1/C5.21	Location:	AUX 244
Drawing No.:	12050-WMKS-0111AAJ	Description:	Tee to Valve		
System ID:	SI				
Component ID:	12050-WMKS-0111AAJ / 3-SI-571 / 24A	Size/Length:	0.65" / 11.0"	Thickness/Diameter:	0.437" / 3.0"
Limitations:	Single sided and limited exam due to tee to valve (2-SI-MOV-2867B) configuration.	Start Time:	1429	Finish Time:	1434

Instrument Settings

Serial No.:	040182503		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	4.155 us	Range:	1.250"
M'ti Cal/Vel:	0.1231 in/us	Pulser:	Square
Damping:	400 Ω	Reject:	0%
Rep. Rate:	Auto	Freq.:	5.0 Mhz
Filter:	3.0 - 6.0 Mhz	Mode:	Fullwave
Voltage:	Max	Other:	N/A
Ax. Gain (dB):	4.5	Circ. Gain (dB):	N/A

10 Screen Div. = 1.25 in. of Sound Path

Linearity Report No.: L-10-009

Calibration Block

Cal. Block No.:	10876		
Thickness:	2.25"	Dia.:	N/A
Cal. Blk. Temp.:	71°	Temp. Tool:	07
Comp. Temp.:	79°	Temp. Tool:	07

Search Unit

Serial No.:	01CP6Y		
Manufacturer:	KBA		
Size:	0.25"	Shape:	Round
Freq.:	5.0 MHZ	Style:	Comp-G
Exam Angle:	45°	# of Elements:	Single
Mode:	Shear		
Measured Angle:	45°		
Wedge Style:	MSWQC		

Search Unit Cable

Type:	RG-174		
Length:	6.0'	No. Conn.:	0

Scan Coverage

Upstream ☑	Downstream ☐	Scan dB:	22.5
CW ☑	CCW ☑	Scan dB:	22.5
Exam Surface:	OD		
Surface Condition:	Ground		

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

Results: NRI ☑ RI ☐ Geom ☐

Percent Of Coverage Obtained > 90%: No Reviewed Previous Data: N/A

Cal. Checks	Time	Date
Initial Cal.	0930	4/2/2010
Inter. Cal.	1428	4/2/2010
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	1602	4/2/2010

Couplant

Cal. Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.:	05-6534
Type:	SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
0.5" Notch	80%	5.7	0.707"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
10.0	0.7" SDH	35%	8.2	1.025"

Comments: ISI NDER # 2010-053, ISI WO # 59101919553, BOP NDE-R # 2010-091 WO # listed above is the maintenance WO for replacing valve 2-SI-MOV-2867B.

Examiner	Level	II-PDI	Signature	Date	Reviewer	Signature	Date
Zollner, Brian D				4/2/2010	Wayne Thomas Lv III		4/8/2010
Examiner	Level	II-PDI	Signature	Date	Site Review	Signature	Date
Roehl, Adam L.				4/2/2010	Raymond Stack Lv III		4/8/2010
Other	Level	N/A	Signature	Date	ANII Review	Signature	Date
N/A						3 May 2010	

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NAPS Unit 2 3rd Interval Limited Exams
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UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R20
Summary No.:	N2.C5.21.126	Procedure Rev.:	00	Report No.:	UT-10-116
Workscope:	PSI	Work Order No.:	59078559401	Page:	2 of 6

Code:	Sect. XI 1995ed/96 Add	Cat./Item:	C-F-1/C5.21	Location:	AUX 244
Drawing No.:	12050-WMKS-0111AAJ	Description:	Tee to Valve		
System ID:	SI				
Component ID:	12050-WMKS-0111AAJ / 3-SI-571 / 24A	Size/Length:	0.65" / 11.0"	Thickness/Diameter:	0.437" / 3.0"
Limitations:	Single sided and limited exam due to tee to valve (2-SI-MOV-2867B) configuration.	Start Time:	1435	Finish Time:	1440

Instrument Settings

Serial No.:	040182503		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	5.360 us	Range:	1.750"
M'd Cal/Vel:	0.1231 in/us	Pulser:	Square
Damping:	400 Ω	Reject:	0%
Rep. Rate:	Auto	Freq.:	5.0 Mhz
Filter:	3.0 - 6.0 Mhz	Mode:	Fullwave
Voltage:	Max	Other:	N/A
Ax. Gain (dB):	25.0	Circ. Gain (dB):	N/A

10 Screen Div. = 1.75 In. of Sound Path

Linearity Report No.: L-10-009

Calibration Block

Cal. Blk. No.:	10876		
Thickness:	2.25"	Dia.:	N/A
Cal. Blk. Temp.:	71°	Temp. Tool:	07
Comp. Temp.:	79°	Temp. Tool:	07

Search Unit

Serial No.:	00VJNH		
Manufacturer:	KBA		
Size:	0.25"	Shape:	Round
Freq.:	5.0 MHZ	Style:	Comp-G
Exam Angle:	60°	# of Elements:	Single
Mode:	Shear		
Measured Angle:	60°		
Wedge Style:	MSWQC		

Search Unit Cable

Type:	RG-174		
Length:	6.0'	No. Conn.:	0

Scan Coverage

Upstream ☑	Downstream ☐	Scan dB:	37.0
CW ☑	CCW ☑	Scan dB:	37.0
Exam Surface:	OD		
Surface Condition:	Ground		

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

Cal. Checks	Time	Date
Initial Cal.	0947	4/2/2010
Inter. Cal.	1434	4/2/2010
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	1600	4/2/2010

Couplant

Cal. Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.:	05-6534
Type:	SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
0.5" Notch	80%	5.3	0.926"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
25.0	0.7" SDH	50%	8.5	1.497

Results: NRI ☑ RI ☐ Geom ☐ NDE-R # 2010-091 WO for replacement of valve 2-SI-MOV-2867B.

Comments: Preservice examination. Effective coverage using the 60° search unit has been verified by the presence of the weld root response during the required scans.

Percent Of Coverage Obtained > 90%: No Reviewed Previous Data: N/A

Examiner	Level II-PDI	Signature	Date	Reviewer		Signature	Date
Zollner, Brian D			4/2/2010	Wayne Thomas Lv III			4/8/2010
Examiner	Level II-PDI	Signature	Date	Site Review		Signature	Date
Roehl, Adam L.			4/2/2010	Raymond Stack Lv III			4/8/2010
Other	Level N/A	Signature	Date	ANII Review		Signature	Date
N/A						3 May 2010	

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NAPS Unit 2 3rd interval Limited Exams
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UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R20
Summary No.:	N2.C5.21.126	Procedure Rev.:	00	Report No.:	UT-10-116
Workscope:	PSI	Work Order No.:	59078558401	Page:	3 of 6

Code: Sect. XI 1995ed/96 Add | Cat./Item: C-F-1/C5.21 | Location: AUX 244

Drawing No.: 12050-WMKS-0111AAJ | Description: Tee to Valve

System ID: SI

Component ID: 12050-WMKS-0111AAJ / 3-SI-571 / 24A | Size/Length: 0.65" / 11.0" | Thickness/Diameter: 0.437" / 3.0"

Limitations: Single sided and limited exam due to tee to valve (2-SI-MOV-2867B) configuration. | Start Time: 1441 | Finish Time: 1445

Instrument Settings

Serial No.:	040182503		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	6.843 us	Range:	2.50"
M'tl Cal/Vel:	0.1231 in/us	Pulser:	Square
Damping:	400 Ω	Reject:	0%
Rep. Rate:	Auto	Freq.:	5.0 Mhz
Filter:	3.0 - 6.0 Mhz	Mode:	Fullwave
Voltage:	Max	Other:	N/A
Ax. Gain (dB):	28.5	Circ. Gain (dB):	N/A

10 Screen Div. = 2.50 In. of Sound Path

Linearity Report No.: L-10-009

Calibration Block

Cal. Block No.:	10876		
Thickness:	2.25"	Dia.:	N/A
Cal. Blk. Temp.:	71°	Temp. Tool:	07
Comp. Temp.:	79°	Temp. Tool:	07

Search Unit

Serial No.:	01CP6X		
Manufacturer:	KBA		
Size:	0.25"	Shape:	Round
Freq.:	5.0 MHZ	Style:	Comp-G
Exam Angle:	70°	# of Elements:	Single
Mode:	Shear		
Measured Angle:	70°		
Wedge Style:	MSWQC		

Search Unit Cable

Type: RG-174 | Length: 6.0' | No. Conn.: 0

Scan Coverage

Upstream ☑ Downstream ☐ Scan dB: 40.5

CW ☑ CCW ☑ Scan dB: 40.5

Exam Surface: OD

Surface Condition: Ground

Cal. Checks	Time	Date
Initial Cal.	1012	4/2/2010
Inter. Cal.	1440	4/2/2010
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	1804	4/2/2010

Couplant

Cal. Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.: 05-6534

Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
0.5" Notch	80%	5.8	1.460"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
28.5	0.3" SDH	90%	3.8	0.943"

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

Results: NRI ☑ RI ☐ Geom ☐

Comments: ISI NDER # 2010-053, ISI WO # 59101919553, BOP NDE-R # 2010-091 WO # listed above is the maintenance WO for replacing valve 2-SI-MOV-2867B.

Percent Of Coverage Obtained > 90%: No | Reviewed Previous Data: N/A

Examiner	Level	II-PDI	Signature	Date	Reviewer	Signature	Date
Zollner, Brian D				4/2/2010	Wayne Thomas Lv III		4/8/2010
Examiner	Level	II-PDI	Signature	Date	Site Review	Signature	Date
Roehl, Adam L.				4/2/2010	Raymond Stack Lv III		4/8/2010
Other	Level	N/A	Signature	Date	ANII Review	Signature	Date
N/A						3 May 2010	

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UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R20
Summary No.:	N2.C5.21.126	Procedure Rev.:	00	Report No.:	UT-10-116
Workscope:	PSI	Work Order No.:	59078558401	Page:	4 of 6

Code: Sect. XI 1995ed/96 Add | Cat./Item: C-F-1/C5.21 | Location: AUX 244

Drawing No.: 12050-WMKS-0111AAJ | Description: Tee to Valve

System ID: SI

Component ID: 12050-WMKS-0111AAJ / 3-SI-571 / 24A | Size/Length: 0.65" / 11.0" | Thickness/Diameter: 0.437" / 3.0"

Limitations: Single sided and limited exam due to tee to valve (2-SI-MOV-2867B) configuration. | Start Time: 1446 | Finish Time: 1450

Instrument Settings

Serial No.:	040182503		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	6.624 us	Range:	2.50"
M'tl Cal/Vel:	0.1231 In/us	Pulser:	Square
Damping:	400 Ω	Reject:	0%
Rep. Rate:	Auto	Freq.:	2.0 Mhz
Filter:	0.8 - 3.0 Mhz	Mode:	Fullwave
Voltage:	Max	Other:	N/A
Ax. Gain (dB):	40.0	Circ. Gain (dB):	N/A

10 Screen Div. = 2.50" In. of Sound Path

Linearity Report No.: L-10-009

Calibration Block

Cal. Block No.:	10876		
Thickness:	2.25"	Dia.:	N/A
Cal. Blk. Temp.:	71°	Temp. Tool:	07
Comp. Temp.:	79°	Temp. Tool:	07

Search Unit

Serial No.:	01CWK5		
Manufacturer:	KBA		
Size:	0.25"	Shape:	Round
Freq.:	2.25 MHZ	Style:	Comp-G
Exam Angle:	70°	# of Elements:	Single
Mode:	Shear		
Measured Angle:	70°		
Wedge Style:	MSWQC		

Search Unit Cable

Type: RG-174 | Length: 6.0' | No. Conn.: 0

Scan Coverage

Upstream ☑ Downstream ☐ Scan dB: 40.0

CW ☑ CCW ☑ Scan dB: 40.0

Exam Surface: OD

Surface Condition: Ground

Cal. Checks	Time	Date
Initial Cal.	1022	4/2/2010
Inter. Cal.	1445	4/2/2010
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	1558	4/2/2010

Couplant

Cal. Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.: 05-6534

Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
0.5" Notch	80%	5.2	1.297"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
30.0	0.3" SDH	70%	3.4	0.855"

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

Results: NRI ☑ RI ☐ Geom ☐ Single sided best effort coverage attempt.

Comments: ISI NDER # 2010-053, ISI WO # 59101919563, BOP NDE-R # 2010-091 WO # listed above is the maintenance WO for replacing valve 2-SI-MOV-2867B.

Percent Of Coverage Obtained > 90%: No | Reviewed Previous Data: N/A

Examiner	Level	II-PDI	Signature	Date	Reviewer	Signature	Date
Zollner, Brian D			Brian Zollner	4/2/2010	Wayne Thomas Lv III		4/8/2010
Examiner	Level	II-PDI	Signature	Date	Site Review	Signature	Date
Roehl, Adam L.			Adam Roehl	4/2/2010	Raymond Stack Lv III	Raymond Stack	4/8/2010
Other	Level	N/A	Signature	Date	ANII Review	Signature	Date
N/A							3 May 2010

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ENCLOSURE B6-6

Supplemental Report

Dominion

Report No.: UT-10-116

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Summary No.: N2.C5.21.126

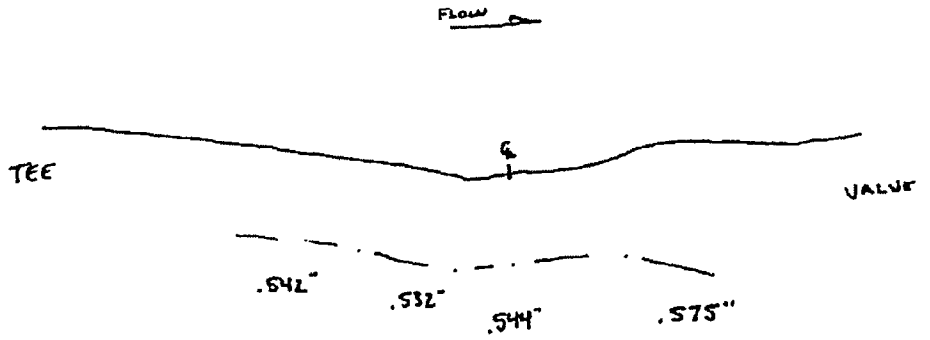
Examiner: Zollner, Brian D BZ Level: II-PDI Reviewer: W.L. Thomas Date: 4.8.10

Examiner: Roehl, Adam L. AR Level: II-PDI Site Review: Raymond T. Shell Date: 4/9/10

Other: N/A Level: N/A ANII Review: [signature] Date: 3 May 10

Comments:

Sketch or Photo:



ENCLOSURE B6-6

Supplemental Report

Dominion

Report No.: UT-10-116

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Summary No.: N2.C5.21.126

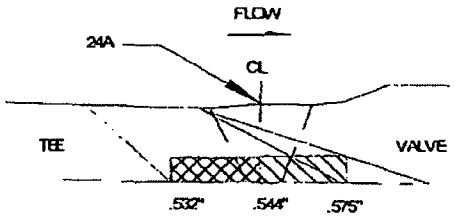
Examiner:	Zollner, Brian D		Level:	II-PDI	Reviewer:	Wayne Thomas Lv III	Date: 04/08/2010
Examiner:	Roehl, Adam L.		Level:	II-PDI	Site Review:	Raymond Stack Lv III	Date: 04/08/2010
Other:	N/A		Level:	N/A	ANII Review:		Date: 3 May 10

Comments:

Weld Number	24A
Weld Thickness	.544" (.532" BM)
Weld Length	11"
Weld Width	.65"

Prepared By: W.L. Thomas
Date: 4/6/2010

Sketch or Photo:



.1 SQ IN. AREA EXAMINED AXIAL DIRECTION US SIDE

.1 SQ IN. AREA EXAMINED BEST EFFORT AXIAL DIRECTION DS SIDE

NOTE 5" LIMITATION OF THE 70 DEG. BEST EFFORT EXAM DUE TO INTRODOS OF TEE

5" / 11" LENGTH = .45 X 100 = 45% BEST EFFORT DS SIDE AXIAL DIR = 55%

Examination Volume Dimensions - Height .177" Length 11" Width 1.15"

Coverage Summary				
	Required Scans (each has a weighing factor of 100 for complete coverage)			
ANGLE	UpSt-Ax	UpSt-Circ	DnSt-Ax	DnSt-Circ
45/60		100%		0%
60/70	100%		55% Best Effort	
			Code Coverage Total	50%
			Best Effort Coverage (Max 25%) Total	14%

Notes:

1) Code Coverage refers to the maximum percentage of the required examination volume that is effectively examined with the qualified examination procedure.
2) Best Effort Coverage refers to the required examination volume past the weld centerline that is examined in the axial beam direction with an Appendix VIII demonstrated procedure for single sided coverage.

Additional - Supplemental Data

ENCLOSURE B6-6

Liquid Penetrant Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-PT-300	Outage No.:	N2R20
Summary No.:	N2.C5.21.126	Procedure Rev.:	4	Report No.:	PT-10-014
Workscope:	PSI	Work Order No.:	59078558401	Page:	1 of 1

Code: Sect. XI 1995ed/96 Add Cat./Item: C-F-1/C5.21 Location: AUX 244

Drawing No.: 12050-WMKS-0111AAJ Description: Tee to Valve

System ID: SI

Component ID: 12050-WMKS-0111AAJ / 3-SI-571 / 24A Size/Length: 3.0" / 11.0"

Limitations: None

Light Meter Mfg.: N/A Serial No.: N/A Illumination: N/A

Temp. Tool Mfg.: ATKINS Serial No.: 07 Surface Temp.: 79 °F

Comparator Block Temp.: Side A: N/A °F Side B: N/A °F Resolution: 0.044" Character Card

Lo/Wo Location: TDC / Weld Center Line Surface Condition: Ground Smooth

	Cleaner	Penetrant	Remover	Developer
Brand	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX
Type	SKC-S	SKL-SP1	SKC-S	SKD-S2
Batch No.	08M13K	06G16K	08M13K	08H01K
Time	Evap. 3 minutes	Dwell 10 minutes	Evap. 3 minutes	Develop 10 minutes
	Time Exam Started: 1310		Time Exam Completed: 1350	

Indication No.	Loc L	Loc W	Diameter	Length	Type R/L	Remarks
NRI						

Comments:
ISI NDER # 2010-053, ISI WO # 59101919553, BOP NDE-R # 2010-091 WO # listed above is the maintenance WO for replacing valve 2-SI-MOV-2867B.
Character Card SN: DOM-2009-0271

Results: NRI ☑ RI ☐ Eval ☐

Percent Of Coverage Obtained > 90%: Yes Reviewed Previous Data: N/A

Examiner	Level II	Signature	Date	Reviewer		Signature	Date
Roehl, Adam L.			4/2/2010	Wayne Thomas Lv III			4/3/2010
Examiner	Level II	Signature	Date	Site Review		Signature	Date
Zollner, Brian D			4/2/2010	Raymond Stack Lv III			4/8/2010
Other	Level N/A	Signature	Date	ANII Review		Signature	Date
N/A						3 May 2010	

ENCLOSURE B6-6

Dominion

Visual Examination For Leakage (VT-2)

Site / Unit:	North Anna Unit 2	Procedure:	ER-AA-NDE-VT-602	Outage No.:	N2-R-20
Summary No.:	N/A	Procedure Rev.:	2	Report No.:	N/A
Workscope:	ISI	Work Order No.:	59078558401	Page :	1 of 1

Code: ASME Section XI 1995/1996 Add. Cat./Item: CH/C7.70 Location: Aux Bldg U2 Pen Area

Drawing No.: 12050-SPM-096A-3 Sh. 3 Description: Unit 2 Boron Injection Tank Inlet Isolation Valve

System ID: Safety Injection

Component ID: 2-SI-MOV-2867B

Limitations: N/A

Light Meter Mfg: N/A Serial No.: N/A Illumination: N/A

Resolution: Character Resolution Card (0.158") Visual Equipment / Aids: Flashlights

Examination Conditions Non insulated ☒ Insulated ☒ Buried ☐ Inaccessible ☐
(These conditions may be identified on the attached drawing)

Test Method / Hold Time:

System Leakage / Not Required ☒ System Functional / 10 Minute ☐
System Inservice / 4 Hours ☐ System Hydrostatic / 10 Minute Non-insulated, 4 Hour Insulated ☐
System Pneumatic / 10 Minute ☐ Bolted Connection / No Hold Time ☐

Conditions To Be Verified:

Pressure Gage No.: N/A Cal Date: N/A Range: N/A Pressure: N/A
Temp Gage No.: N/A Cal Date: N/A Temp.: N/A °F
Relief Valve No.: N/A Cal Date: N/A Proper Valve Line Up: Yes ☒ No ☐
Stop Watch No.: N/A (If Used) N/A

Time Test Pressure Achieved: 04/23/10 1945 Exam Start Time: 04/24/10 0300 Exam End Time: 04/24/10 0500
Flowmeter Rate: Upstream: N/A Downstream: N/A
Pressure Decay Exam: Hold Time: N/A Pressure: N/A

Visual Examination: Direct ☒ Remote ☐ Direct / Remote ☐ N/A ☐

Observed Conditions	Accept	Reject	N/A	See Comments	Comments / Leak Rate
1) Insulated	X				
2) Uninsulated	X				
3) Buried Systems			X		
4) Collection Systems			X		
5) Boric Acid Residues	X				
6) Corrosion	X				

Comments: **Unit is at normal operating temperature and pressure IAW 2-PT-46.21**

Results: Accept ☒ Reject ☐ N/A ☐

Percent of Coverage Obtained > 90%: N/A Reviewed Previous Data: N/A

Examiner	Level	Signature	Date	Reviewer	Signature	Date
R. Blanchard	Level II		4/27/10	Randy Hoper		4/27/10
Examiner	Level	Signature	Date	Site Review	Signature	Date
N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other	Level	Signature	Date	ANII Review	Signature	Date
N/A	N/A	N/A	N/A			3 May 2010

UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R20
Summary No.:	N2.C5.21.127	Procedure Rev.:	00	Report No.:	UT-10-117
Workscope:	PSI	Work Order No.:	59078558401	Page:	1 of 6

Code: Sect. XI 1995ed/96 Add | Cat./Item: C-F-1/C5.21 | Location: AUX 244

Drawing No.: 12050-WMKS-0111AAJ | Description: Elbow to Valve Weld

System ID: SI

Component ID: 12050-WMKS-0111AAJ / 3-SI-571 / 28 | Size/Length: 0.65" / 11.0" | Thickness/Diameter: 0.437" / 3.0"

Limitations: Single sided and limited exam due to valve (2-SI-MOV-2867B) to elbow configuration | Start Time: 1409 | Finish Time: 1413

Instrument Settings

Serial No.:	040182503		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	4.165 us	Range:	1.250"
M'tl Cal/Vel:	0.1231 in/us	Pulser:	Square
Damping:	400 Ω	Reject:	0%
Rep. Rate:	Auto	Freq.:	5.0 Mhz
Filter:	3.0 - 8.0 Mhz	Mode:	Fullwave
Voltage:	Max	Other:	N/A
Ax. Gain (dB):	4.5	Circ. Gain (dB):	N/A

10 Screen Div. = 1.25 In. of Sound Path

Linearity Report No.: L-10-009

Calibration Block

Cal. Block No.: 10876

Thickness: 2.25" | Dia.: N/A

Cal. Blk. Temp.: 71° | Temp. Tool: 07

Comp. Temp.: 79° | Temp. Tool: 07

Search Unit

Serial No.:	01CP6Y		
Manufacturer:	KBA		
Size:	0.25"	Shape:	Round
Freq.:	5.0 MHZ	Style:	Comp-G
Exam Angle:	45°	# of Elements:	Single
Mode:	Shear		
Measured Angle:	45°		
Wedge Style:	MSWQC		

Search Unit Cable

Type: RG-174

Length: 6.0' | No. Conn.: 0

Scan Coverage

Upstream ☐ Downstream ☑ Scan dB: 22.5

CW ☑ CCW ☑ Scan dB: 22.5

Exam Surface: OD

Surface Condition: Ground

Cal. Checks	Time	Date
Initial Cal.	0930	4/2/2010
Inter. Cal.	1408	4/2/2010
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	1602	4/2/2010

Couplant

Cal. Batch: 07220

Type: SoundSafe

Mfg.: SONOTECH

Exam Batch: 07220

Type: SoundSafe

Mfg.: SONOTECH

Reference Block

Serial No.: 05-6534

Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
0.5" Notch	80%	5.7	0.707"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
10.0	0.7" SDH	35%	8.2	1.025"

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

Results: NRI ☑ RI ☐ Geom ☐

Comments: ISI NDER # 2010-053, ISI WO # 59101919553, BOP NDE-R # 2010-091 WO # listed above is the maintenance WO for replacing valve 2-SI-MOV-2867B.

Percent Of Coverage Obtained > 90%: No | Reviewed Previous Date: N/A

Examiner	Level	II-PDI	Signature	Date	Reviewer	Signature	Date
Zollner, Brian D				4/2/2010	Wayne Thomas Lv III		4/8/2010
Examiner	Level	II-PDI	Signature	Date	Site Review	Signature	Date
Roehl, Adam L.				4/2/2010	Raymond Stack Lv III		4/8/2010
Other	Level	N/A	Signature	Date	ANII Review	Signature	Date
N/A						3 May 2010	

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UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R20
Summary No.:	N2.C5.21.127	Procedure Rev.:	00	Report No.:	UT-10-117
Workscope:	PSI	Work Order No.:	59078558401	Page:	2 of 6

Code:	Sect. XI 1995ed/96 Add	Cat./Item:	C-F-1/C5.21	Location:	AUX 244
Drawing No.:	12050-WMKS-0111AAJ	Description:	Elbow to Valve Weld		
System ID:	SI				
Component ID:	12050-WMKS-0111AAJ / 3-SI-571 / 26	Size/Length:	0.65" / 11.0"	Thickness/Diameter:	0.437" / 3.0"
Limitations:	Single sided and limited exam due to valve (2-SI-MOV-2867B) to elbow configuration.	Start Time:	1414	Finish Time:	1419

Instrument Settings

Serial No.:	040182503		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	5.360 us	Range:	1.750"
M'll Cal/Vel:	0.1231 in/us	Pulser:	Square
Damping:	400 Ω	Reject:	0%
Rep. Rate:	Auto	Freq.:	5.0 Mhz
Filter:	3.0 - 6.0 Mhz	Mode:	Fullwave
Voltage:	Max	Other:	N/A
Ax. Gain (dB):	25.0	Circ. Gain (dB):	N/A

10 Screen Div. = 1.75 In. of Sound Path

Linearity Report No.: L-10-009

Calibration Block

Cal. Block No.:	10876		
Thickness:	2.25"	Dia.:	N/A
Cal. Blk. Temp.:	71°	Temp. Tool:	07
Comp. Temp.:	79°	Temp. Tool:	07

Search Unit

Serial No.:	00VJNH		
Manufacturer:	KBA		
Size:	0.25"	Shape:	Round
Freq.:	5.0 MHZ	Style:	Comp-G
Exam Angle:	60°	# of Elements:	Single
Mode:	Shear		
Measured Angle:	60°		
Wedge Style:	MSWQC		

Search Unit Cable

Type:	RG-174		
Length:	6.0'	No. Conn.:	0

Scan Coverage

Upstream ☐	Downstream ☑	Scan dB:	37.0
CW ☑	CCW ☑	Scan dB:	37.0
Exam Surface:	OD		
Surface Condition:	Ground		

Cal. Checks	Time	Date
Initial Cal.	0947	4/2/2010
Inter. Cal.	1413	4/2/2010
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	1600	4/2/2010

Couplant

Cal. Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.:	05-6534
Type:	SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
0.5" Notch	80%	5.3	0.926"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
25.0	0.7" SDH	50%	8.5	1.497

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

Results: NRI ☑ RI ☐ Geom ☐ NDE-R # 2010-091 WO listed is for replacing valve 2-SI-MOV-2867B.

Comments: Preservice examination. Effective coverage using the 60° search unit has been verified by the presence of the weld root response during the required scans.

Percent Of Coverage Obtained > 90%: No Reviewed Previous Data: N/A

Examiner	Level II-PDI	Signature	Date	Reviewer		Signature	Date
Zollner, Brian D		Brian Zollner	4/2/2010	Wayne Thomas Lv III			4/8/2010
Examiner	Level II-PDI	Signature	Date	Site Review		Signature	Date
Roehl, Adam L.		Adam Roehl	4/2/2010	Raymond Stack Lv III		Raymond Stack	4/8/2010
Other	Level N/A	Signature	Date	ANII Review		Signature	Date
N/A						3 May 2010	

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UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R20
Summary No.:	N2.C5.21.127	Procedure Rev.:	00	Report No.:	UT-10-117
Workscope:	PSI	Work Order No.:	59078558401	Page:	3 of 6

Code: Sect. XI 1995ed/96 Add | Cat./Item: C-F-1/C5.21 | Location: AUX 244

Drawing No.: 12050-WMKS-0111AAJ | Description: Elbow to Valve Weld

System ID: SI

Component ID: 12050-WMKS-0111AAJ / 3-SI-571 / 28 | Size/Length: 0.65" / 11.0" | Thickness/Diameter: 0.437" / 3.0"

Limitations: Single sided and limited exam due to valve (2-SI-MOV-2867B) to elbow configuration. | Start Time: 1420 | Finish Time: 1424

Instrument Settings

Serial No.:	040182503		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	6.843 us	Range:	2.50"
M'tl Cal/Vel:	0.1231 in/us	Pulser:	Square
Damping:	400 Ω	Reject:	0%
Rep. Rate:	Auto	Freq.:	5.0 Mhz
Filter:	3.0 - 6.0 Mhz	Mode:	Fullwave
Voltage:	Max	Other:	N/A
Ax. Gain (dB):	28.5	Circ. Gain (dB):	N/A

10 Screen Div. = 2.50 In. of Sound Path

Linearity Report No.: L-10-009

Calibration Block

Cal. Block No.:	10876		
Thickness:	2.25"	Dia.:	N/A
Cal. Blk. Temp.:	71°	Temp. Tool:	07
Comp. Temp.:	79°	Temp. Tool:	07

Search Unit

Serial No.:	01CP6X		
Manufacturer:	KBA		
Size:	0.25"	Shape:	Round
Freq.:	5.0 MHZ	Style:	Comp-G
Exam Angle:	70°	# of Elements:	Single
Mode:	Shear		
Measured Angle:	70°		
Wedge Style:	MSWQC		

Search Unit Cable

Type: RG-174 | Length: 6.0' | No. Conn.: 0

Scan Coverage

Upstream ☐ Downstream ☑ Scan dB: 40.5

CW ☑ CCW ☑ Scan dB: 40.5

Exam Surface: OD

Surface Condition: Ground

Cal. Checks	Time	Date
Initial Cal.	1012	4/2/2010
Inter. Cal.	1419	4/2/2010
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	1604	4/2/2010

Couplant

Cal. Batch: 07220

Type: SoundSafe

Mfg.: SONOTECH

Exam Batch: 07220

Type: SoundSafe

Mfg.: SONOTECH

Reference Block

Serial No.: 05-6534

Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
0.5" Notch	80%	5.8	1.460"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
28.5	0.3" SDH	90%	3.8	0.943"

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

Results: NRI ☑ RI ☐ Geom ☐

Comments: ISI NDER # 2010-053, ISI WO # 59101919653, BOP NDE-R # 2010-091 WO # listed above is the maintenance WO for replacing valve 2-SI-MOV-2867B.

Percent Of Coverage Obtained > 90%: No | Reviewed Previous Data: N/A

Examiner	Level	II-PDI	Signature	Date	Reviewer	Signature	Date
Zollner, Brian D			Brian Zollner	4/2/2010	Wayne Thomas Lv III		4/8/2010
Examiner	Level	II-PDI	Signature	Date	Site Review	Signature	Date
Roehl, Adam L.			Adam Roehl	4/2/2010	Raymond Stack Lv III	Raymond Stack	4/8/2010
Other	Level	N/A	Signature	Date	ANII Review	Signature	Date
N/A						3 May 2010	

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UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R20
Summary No.:	N2.C6.21.127	Procedure Rev.:	00	Report No.:	UT-10-117
Workscope:	PSI	Work Order No.:	59078558401	Page:	4 of 6

Code: Sect. XI 1995ed/96 Add | Cat./Item: C-F-1/C5.21 | Location: AUX 244

Drawing No.: 12050-WMKS-0111AAJ | Description: Elbow to Valve Weld

System ID: SI

Component ID: 12050-WMKS-0111AAJ / 3-SI-571 / 26 | Size/Length: 0.65" / 11.0" | Thickness/Diameter: 0.437" / 3.0"

Limitations: Single sided and limited exam due to valve (2-SI-MOV-2867B) to elbow configuration. | Start Time: 1425 | Finish Time: 1428

Instrument Settings

Serial No.:	040182503		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	6.624 us	Range:	2.50"
M'tl Cal/Vel:	0.1231 in/us	Pulser:	Square
Damping:	400 Ω	Reject:	0%
Rep. Rate:	Auto	Freq.:	2.0 Mhz
Filter:	0.8 - 3.0 Mhz	Mode:	Fullwave
Voltage:	Max	Other:	N/A
Ax. Gain (dB):	40.0	Circ. Gain (dB):	N/A

10 Screen Div. = 2.50" in. of Sound Path

Linearity Report No.: L-10-009

Calibration Block

Cal. Block No.:	10876		
Thickness:	2.25"	Dia.:	N/A
Cal. Blk. Temp.:	71°	Temp. Tool:	07
Comp. Temp.:	79°	Temp. Tool:	07

Search Unit

Serial No.:	01CWK5		
Manufacturer:	KBA		
Size:	0.25"	Shape:	Round
Freq.:	2.25 MHZ	Style:	Comp-G
Exam Angle:	70°	# of Elements:	Single
Mode:	Shear		
Measured Angle:	70°		
Wedge Style:	MSWQC		

Search Unit Cable

Type: RG-174 | Length: 6.0' | No. Conn.: 0

Scan Coverage

Upstream ☐ Downstream ☑ Scan dB: 40.0

CW ☑ CCW ☑ Scan dB: 40.0

Exam Surface: OD

Surface Condition: Ground

Cal. Checks	Time	Date
Initial Cal.	1022	4/2/2010
Inter. Cal.	1424	4/2/2010
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	1558	4/2/2010

Couplant

Cal. Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.: 05-6534

Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
0.5" Notch	80%	5.2	1.297"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
30.0	0.3" SDH	70%	3.4	0.855"

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

Results: NRI ☑ RI ☐ Geom ☐ Single sided best effort coverage attempt.

Comments: ISI NDER # 2010-053, ISI WO # 59101919553, BOP NDE-R # 2010-091 WO # listed above is the maintenance WO for replacing valve 2-SI-MOV-2867B.

Percent Of Coverage Obtained > 90%: No | Reviewed Previous Data: N/A

Examiner	Level II-PDI	Signature	Date	Reviewer		Signature	Date
Zollner, Brian D			4/2/2010	Wayne Thomas Lv III			4/8/2010
Examiner	Level II-PDI	Signature	Date	Site Review		Signature	Date
Roehl, Adam L.			4/2/2010	Raymond Stack Lv III			4/8/2010
Other	Level N/A	Signature	Date	ANII Review		Signature	Date
N/A						3 May 2010	

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ENCLOSURE B6-7

Supplemental Report

Dominion

Report No.: UT-10-117

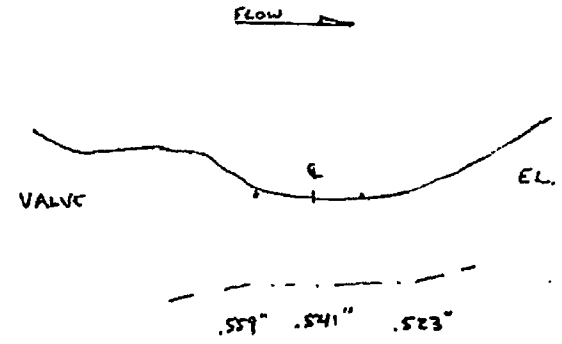
Page: 5 of 6

Summary No.: N2.C5.21.127

Examiner:	Zollner, Brian D		Level:	II-PDI	Reviewer:	W.L. THOMAS	Date: 4.8.10
Examiner:	Roehl, Adam L.		Level:	II-PDI	Site Review:	RAYMOND T. STACK	Date: 4-8-10
Other:	N/A		Level:	N/A	ANII Review:		Date: 3 May 10

Comments:

Sketch or Photo:



ENCLOSURE B6-7

Supplemental Report

Dominion

Report No.: UT-10-117

Page: 6 of 6

Summary No.: N2.C5.21.127

Examiner: Zollner, Brian D Level: II-PDI Reviewer: Wayne Thomas Lv III Date: 04/08/2010

Examiner: Roehl, Adam L. Level: II-PDI Site Review: Raymond Stack Lv III Date: 04/08/2010

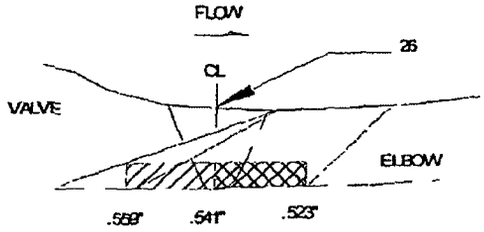
Other: N/A Level: N/A ANII Review: Date: 3 May 10

Comments:

Weld Number	26
Weld Thickness	.541" (.523" BM)
Weld Length	11"
Weld Width	.65"

Prepared By: W.L. Thomas
Date: 4/6/2010

Sketch or Photo:



.10 SQ IN. EXAMINED AXIAL DIRECTION DS SIDE

.10 SQ IN. EXAMINED BEST EFFORT AXIAL DIRECTION US SIDE

NOTE: 2" LIMITATION OF THE 70 DEG. BEST EFFORT EXAM DUE TO INTRODOS OF ELBOW

2" / 11" LENGTH = .18 X 100 = 18% BEST EFFORT US SIDE AXIAL DIRECTION = 82%

Examination Volume Dimensions - Height .174" Length 11" Width 1.15"

Coverage Summary				
	Required Scans (each has a weighing factor of 100 for complete coverage)			
ANGLE	UpSt-Ax	UpSt-Circ	DnSt-Ax	DnSt-Circ
45/60		0%		100%
60/70	82% Best Effort		100%	

Code Coverage Total	50%
Best Effort Coverage (Max 25%) Total	20%

Notes:

1) Code Coverage refers to the maximum percentage of the required examination volume that is effectively examined with the qualified examination procedure.
2) Best Effort Coverage refers to the required examination volume past the weld centerline that is examined in the axial beam direction with an Appendix VIII demonstrated procedure for single sided coverage.

Additional - Supplemental Data

Liquid Penetrant Examination

Dominion

Site/Unit: NAPS / 2 Procedure: ER-AA-NDE-PT-300 Outage No.: N2R20

Summary No.: N2.C5.21.127 Procedure Rev.: 4 Report No.: PT-10-015

Workscope: PSI Work Order No.: 59078558401 Page: 1 of 1

Code: Sect. XI 1995ed/96 Add Cat./Item: C-F-1/C5.21 Location: AUX 244

Drawing No.: 12050-WMKS-0111AAJ Description: Elbow to Valve Weld

System ID: SI

Component ID: 12050-WMKS-0111AAJ / 3-SI-571 / 26 Size/Length: 3.0" / 11.0"

Limitations: None

Light Meter Mfg.: N/A Serial No.: N/A Illumination: N/A

Temp. Tool Mfg.: ATKINS Serial No.: 07 Surface Temp.: 79 °F

Comparator Block Temp.: Side A: N/A °F Side B: N/A °F Resolution: 0.044" Character Card

Lo/Wo Location: TDC / Weld Center Line Surface Condition: Ground Smooth

	Cleaner	Penetrant	Remover	Developer
Brand	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX
Type	SKC-S	SKL-SP1	SKC-S	SKD-S2
Batch No.	08M13K	06G16K	08M13K	08H01K
Time	Evap. 3 minutes	Dwell 10 minutes	Evap. 3 minutes	Develop 10 minutes

Time Exam Started: 1310 Time Exam Completed: 1350

Indication No.	Loc L	Loc W	Diameter	Length	Type R/L	Remarks
NRI						

Comments:
ISI NDER # 2010-053, ISI WO # 59101919553, BOP NDE-R # 2010-091 WO # listed above is the maintenance WO for replacing valve 2-SI-MOV-2867B.
Character Card SN: DOM-2009-0271

Results: NRI ☑ RI ☐ Eval ☐

Percent Of Coverage Obtained > 90%: Yes Reviewed Previous Data: N/A

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Roehl, Adam L	II		4/2/2010	Wayne Thomas Lv III		4/8/2010
Examiner	Level	Signature	Date	Site Review	Signature	Date
Zollner, Brian D	II		4/2/2010	Raymond Stack Lv III		4/8/2010
Other	Level	Signature	Date	ANII Review	Signature	Date
N/A	N/A				3 May 2010	

ENCLOSURE B6-7

Dominion

Visual Examination For Leakage (VT-2)

Site / Unit:	North Anna Unit 2	Procedure:	ER-AA-NDE-VT-602	Outage No.:	N2-R-20
Summary No.:	N/A	Procedure Rev.:	2	Report No.:	N/A
Workscope:	ISI	Work Order No.:	59078558401	Page :	1 of 1

Code: ASME Section XI 1995/1996 Add. Cat./Item: CH/C7.70 Location: Aux Bldg U2 Pen Area

Drawing No.: 12050-SPM-096A-3 Sh. 3 Description: Unit 2 Boron Injection Tank Inlet Isolation Valve

System ID: Safety Injection

Component ID: 2-SI-MOV-2867B

Limitations: N/A

Light Meter Mfg: N/A Serial No.: N/A Illumination: N/A

Resolution: Character Resolution Card (0.158") Visual Equipment / Aids: Flashlights

Examination Conditions Non insulated ☒ Insulated ☒ Buried ☐ Inaccessible ☐
(These conditions may be identified on the attached drawing)

Test Method / Hold Time:

System Leakage / Not Required ☒ System Functional / 10 Minute ☐
System Inservice / 4 Hours ☐ System Hydrostatic / 10 Minute Non-insulated, 4 Hour Insulated ☐
System Pneumatic / 10 Minute ☐ Bolted Connection / No Hold Time ☐

Conditions To Be Verified:

Pressure Gage No.: N/A Cal Date: N/A Range: N/A Pressure: N/A
Temp Gage No.: N/A Cal Date: N/A Temp.: N/A °F
Relief Valve No.: N/A Cal Date: N/A Proper Valve Line Up: Yes ☒ No ☐
Stop Watch No.: N/A (If Used) N/A

Time Test Pressure Achieved: 04/23/10 1945 Exam Start Time: 04/24/10 0300 Exam End Time: 04/24/10 0500

Flowmeter Rate: Upstream: N/A Downstream: N/A

Pressure Decay Exam: Hold Time: N/A Pressure: N/A

Visual Examination: Direct ☒ Remote ☐ Direct / Remote ☐ N/A ☐

Observed Conditions	Accept	Reject	N/A	See Comments	Comments / Leak Rate
1) Insulated	X				
2) Uninsulated	X				
3) Buried Systems			X		
4) Collection Systems			X		
5) Boric Acid Residues	X				
6) Corrosion	X				

Comments: **Unit is at normal operating temperature and pressure IAW 2-PT-46.21**

Results: Accept ☒ Reject ☐ N/A ☐

Percent of Coverage Obtained > 90%: N/A Reviewed Previous Data: N/A

Examiner	Level	Signature	Date	Reviewer	Signature	Date
R. Blanchard	Level II		4/24/10	Randy Hoper		4/27/10
Examiner	Level	Signature	Date	Site Review	Signature	Date
N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other	Level	Signature	Date	ANII Review	Signature	Date
N/A	N/A	N/A	N/A			3 May 2010

ENCLOSURE B6-8

NZ.C5.21.189

Dominion
Ultrasonic Examination Data Record

Interval: 3

UTRNO	Station	Unit	Drawing	Line	NDER
1296	NAPS	2	12050-WMKS-0111AAN	2"-CH-422-1502-Q2	05-006

Couplant	CalCheck1	CalCheck2	CalCheck3	WO / DCP	Procedure	Rev
01220					NDE-UT-812	0

Thermometer SerNo: 1072BGCY

Exam Data

UTRNO	RECTAG	mark/weld	Scan dB	Exam Area	Surface Condition	Temp	Partial	Single Side	Results
1296	4721	SW-39W	*	FIG. 2-A	GROUND	92	Yes	Yes	NRI

Comments:

* 70 DEG. 2.25mhz. SCAN WAS PERFORMED AT REFERENCE PLUS 6db.

UTRNO		Signature	Level	Method	Date	Activity
1296	Examined By:	ROBERT SISTEK	DET	UT	10/06/2005	04/08/2006

Robert Sistek

Reviewed By: David L Jenn Level: III Date: 10/19/05

ANII MN Date 10/20/05
Initial ☐ Final ☑
HSB-CT

ENCLOSURE B6-8

Dominion
UT Partial Record

UTRNO	RECTAG	Drawing	Line	Mark/weld	Procedure	Rev
1296	4721	12050-WMKS-0111AAN	2"-CH-422-1502-Q2	SW-39W	NDE-UT-812	0

XDucer Serial	Weld Width	Exam Angle	SU Length	SU Width	SU Nose	Percent
006CC7	0.50	67	0.80	0.45	0.30	88 %

Area Not Examined

NO AXIAL EXAMS POSSIBLE FROM UPSTREAM SIDE OF WELD.

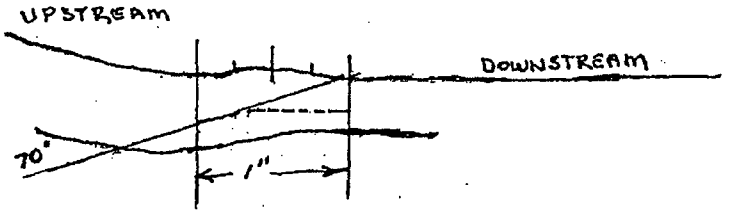
Reason

PIPE TO REDUCER CONFIGURATION.

Comments

CIRCUMFERENTIAL EXAM ON UPSTREAM SIDE OF WELD 100%. THE TECHNIQUES USED FOR THIS EXAM ARE CONCIDERED BEST EFFORT FOR SINGLE SIDE DETECTION OF FAR SIDE DEFECTS PARALLEL TO THE WELD.

Cross Section Sketch



Evaluation

ADDITIONAL SCANS OR ALTERNATIVE TECHNIQUES WILL NOT PROVIDE ADDITIONAL COVERAGE WITHIN THE LIMITATIONS OF THE PROCIDURE.

Signature	Level	DATE
ROBERTSISTEK	DET	10/06/2005

Reviewed By: Daniel A Jones Level: II Date: 10/21/05

ANII [initials] Date 10/22/05
Initial ☐ Final ☑
HSB-CT

Interval: 3

Dominion Power Ultrasonic Calibration Data Record

UTRNO	Station	Unit	Procedure	Rev	Sizing Procedure	Rev	Couplant	CalBlock1	CBLKTKS	CBLKTemp
1296	NAPS	2	NDE-UT-812	0	NDE-UT-NA	NA	01220	VP.50-SS-02	SIZING BLOCK	73

CLbType	CLbLngth	#Connect	Simulator	AmpSwp	CalDate	CaLIn	CaLOut	CalBlock2	CBLKTKS2	CBLkTemp2
RG-174	6'	0			10/06/2005	9:45	16:00			

Thermometer SerNo 1072BCCY

Instrument Settings

UTRNO	MemLoc	XDUC SER	REJECT	dB	REF dB	RANGE	VELOCITY	ZERO	DELAY	FREQ	DISP MODE	PRR/PRF	PULSER	FILTER	ENERGY	DAMPING
ID																
1296	2	005YPV	0%	15.9	0.0	0.175	0.1237	4.520	NA	FIXED	FULL WAVE	AUTO	NA	STD	HIGH	400
1561																
1296	3	006274	0%	31.8	0.0	0.242	0.1249	5.647	NA	FIXED	FULL WAVE	AUTO	NA	STD	HIGH	400
1562																
1296	4	006273	0%	41.1	0.0	0.317	0.1239	7.801	NA	FIXED	FULL WAVE	AUTO	NA	STD	HIGH	400
1563																
1296	8	006CC7	0%	49.3	0.0	0.317	0.1239	7.801	N/A	FIXED	FULL WAVE	AUTO	N/A	STD	HIGH	400
1573																

Xducer Data

UTRNO	ID	SerialNo	Manuf	Model	Size	Frequency	Nom Angle	Measured Angle	Wave Mode	Shape	No. Elements
				Wedge Type		Wedge Length	Wedge Width	Wedge Nose			
1296	1465	005YPV	KB-AEROTECH	Comp-G	0.25"	5.0 MHZ	45	44	SHEAR	ROUND	1
				MSWQC		0.60"	0.45"	0.25"			
1296	1466	006274	KB-AEROTECH	Comp-G	0.25"	5.0 MHZ	60	59	SHEAR	ROUND	1
				MSWQC		0.70"	0.45"	0.25"			
1296	1468	006273	KB-AEROTECH	Comp-G	0.25"	5.0 MHZ	70	67	SHEAR	ROUND	1
				MWSQC		0.80"	0.45"	0.30"			
1296	1478	006CC7	KB-AEROTECH	Comp-G	0.25"	2.25 MHZ	70	67	SHEAR	ROUND	1
				MWSQC		0.80	0.45	0.30			

Vertical Beam Spread

	Instrument	Calibration Data

UTRNO		Signature	Level	Method	Date	Activity
1296	Calibrated By	ROBERT SISTEK Robert Sistek	DET	UT	10/06/2005	04/05/2006

ANII MK Date 10/22/05
Initial ☐ Final ☑
HSB-CT

Reviewed By: Daniel Dzeno Level: III Date: 10/19/05

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Interval: 3

Dominion Power Ultrasonic Calibration Data Record

UTRNO	SHAC	Inst. Serial	Inst. Model	Inst. Manuf	ID	UTRNO	Blk	XDID	IS ID	Direction	CalType	Point	Reflector	Position	Amplitude	Sweep
1296	193	98323012	Epoch III	Panametrics	1573	1296	1	1465	1561	AX/CIRC	DET	1	10%NOTCH	NA	80%	3.8
1296	193	98323012	Epoch III	Panametrics	1563	1296	1	1466	1562	AX/CIRC	DET	1	10%NOTCH	NA	80%	4.0
1296	193	98323012	Epoch III	Panametrics	1562	1296	1	1468	1563	AX	DET	1	10%NOTCH	NA	80%	4.2
1296	193	98323012	Epoch III	Panametrics	1561	1296	1	1478	1573	AXIAL	DET	1	10%NOTCH	N/A	805	4.0

UTRNO		Signature	Level	Method	Date	Activity
1296	Calibrated By	ROBERT SISTEK Robert Sistek	DET	UT	10/06/2005	04/05/2006

ANII [signature] Date 10/22/05
Initial ☐ Final ☒
HSB-CT

Reviewed By: Daniel Dyer Level: III Date: 10/19/05

ENCLOSURE B6-8

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ENCLOSURE B6-8

Dominion

STAINLESS STEEL PIPE, SINGLE SIDED PERCENT VOLUME BY SCAN DIRECTION

DRAWING NUMBER 12050-WMKS-0111AAN *MARK NUMBER* SW-39W

ANGLE	*SCAN AREA*	*DIRECTION*	*SCAN %*
45°	EXAMINATION VOLUME	UP STREAM (1ST LEG)	NA
45°	EXAMINATION VOLUME	UP STREAM (2ND LEG)	50 %
45°	EXAMINATION VOLUME	DOWN STREAM (1ST LEG)	NA
45°	EXAMINATION VOLUME	DOWN STREAM (2ND LEG)	NA
45°	EXAMINATION VOLUME	CW	100 %
45°	EXAMINATION VOLUME	CCW	100 %
60°	EXAMINATION VOLUME	UP STREAM (1ST LEG)	NA
60°	EXAMINATION VOLUME	UP STREAM (2ND LEG)	NA
60°	EXAMINATION VOLUME	DOWN STREAM (1ST LEG)	NA
60°	EXAMINATION VOLUME	DOWN STREAM (2ND LEG)	NA
70°	EXAMINATION VOLUME	UP STREAM (1ST LEG)	NA
70°	EXAMINATION VOLUME	DOWN STREAM (1ST LEG)	100 %
	UPSTREAM COVERAGE		50 %
	DOWNSTREAM COVERAGE		100 %
	CLOCK WISE COVERAGE		100 %
	COUNTER CLOCKWISE COVERAGE		100 %
		TOTAL PERCENT	88 %

COMMENTS: NONE

Daniel L Jensen

~~*DOMINION NDE LEVEL III*~~
Daniel L Jensen

OCTOBER 21, 2005
DATE

ANII [signature] Date 10/21/05
Initial ☐ Final ☒
HSB-CT

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R1. Risk-Informed Piping Welds

4.R1 IMPRACTICALITY OF COMPLIANCE

In accordance with 10CFR50.55a(g)(5)(iii), relief is requested from the "essentially 100 percent" volumetric examination coverage requirement for the identified piping welds. This requirement is considered impractical primarily due to single-sided access for these components.

These welds are governed by the Risk-Informed Inservice Inspection (RI-ISI) Program that was approved by the NRC for North Anna Power Station Unit 2 in a letter dated September 18, 2001. The welds are assigned category R-A, Item R1.11, and require ultrasonic examination. The North Anna Unit 2 risk-informed ISI Program was developed in accordance with the Westinghouse Owners Group Topical Report WCAP-14572, Revision 1-NPA, rather than per ASME Code Case N-577, as granted in the request to use risk informed inservice inspection. The Item R1.11 elements are either subject to Thermal Fatigue/Stratification or Defaulted to Thermal Fatigue as the most likely degradation mechanism.

These examinations were performed manually using advanced ASME Section XI, Appendix VIII demonstrated procedures and techniques in accordance with the performance demonstration requirements. Based on access and physical limitations of these welds, alternative or other advanced technologies would not have provided complete coverage of the examination volume at the time of these examinations.

The attached enclosures include the complete Ultrasonic Examination Data Records for each Category R-A, Item R1.11, examination included in this request. Each report includes details of the UT scanning apparatus, including transducer size, frequency, angle, wave modality and insonification angles.

Mark/Weld #	Line #	Scan Coverage %	Enclosure
2	6-RC-421	89%	R1-1
20	3-SI-417	53%	R1-2
1	6-RC-417	50%	R1-3
2	6-RC-417	88%	R1-4
1	6-RC-420	50%	R1-5
2B	6-RC-420	50%	R1-6
80	6-RC-419	50%	R1-7
SW-5	14-RC-410	75%	R1-8
9	27 ½-RC-403	49.9%	R1-9
SW-43	27 ½-RC-403	36%	R1-10
21	27 ½-RC-406	50%	R1-11
33	27 ½-RC-409	75%	R1-12
SW-49	27 ½-RC-409	35%	R1-13

SW-36	29-RC-407	52%	R1-14
SW-9	6-RC-438	63%	R1-15
SW-17	6-RC-439	53%	R1-16
N-SE29 IN.	29-RC-401	80%	R1-17
N-SE31 IN.	31-RC-402	80%	R1-18
22	27 ½-RC-406	50%	R1-19

Weld 2 downstream side axial scan is obstructed from examination due to the branch connection to the reactor coolant hot leg. Weld 2 is on risk-informed inservice inspection (RI-ISI) segment RC-018 which includes five welds. Two segment welds were examined, one with complete coverage and weld 2 receiving 89% coverage, which provides good representative coverage for the segment. An additional 4% "best effort" (non-Code) coverage with a 60 degree RL search unit was obtained during the examination. Weld 2 in Line# 6-RC-421, is 1,500 lb., Type 316 seamless stainless steel piping, with welding filler metal SFA 5.4 E316L-16, SFA 5.9 ER316L, and or SFA 5.30 1N316L procured with 8-20 FN delta ferrite and 75ksi min tensile strength.

Weld 20 was limited due to the pipe-to-valve configuration. The downstream side was limited due to the adjacent valve, and part of the upstream side was limited due to a welded ID tag. Additional scans or alternate techniques will not provide additional coverage within the limitations of the procedure. Weld 20 is on RI-ISI segment ECC-031 which includes only one weld. Weld 20 in Line# 3-SI-417, is 1,500 lb., Type 316 seamless stainless steel piping, with welding filler metal SFA 5.4 E316L-16, SFA 5.9 ER316L, and or SFA 5.30 1N316L procured with 8-20 FN delta ferrite and 75ksi min tensile strength.

Weld 1 (6-RC-417) was a single-sided examination due to the valve to elbow configuration, limiting upstream scans. Additional "Best Effort" (non-Code) scan with a 60 degree RL search unit obtained additional 13% total coverage of the upstream side of the weld. Weld 1 is on RI-ISI segment RC-041 which includes three welds, each of which were examined with limitations and included in this request. Weld 1 in Line# 6-RC-417, is 1,500 lb., Type 316 seamless stainless steel piping, with welding filler metal SFA 5.4 E316L-16, SFA 5.9 ER316L, and or SFA 5.30 1N316L procured with 8-20 FN delta ferrite and 75ksi min tensile strength.

Weld 2 (6-RC-417) was limited due to the nozzle configuration into the reactor coolant cold leg. Additional "Best Effort" (non-Code) scan with a 60 degree shear wave search unit obtained additional 3% total coverage on the downstream side of the weld. Weld 2 is also on RI-ISI segment RC-041 which includes three welds listed in this request, all of which were examined with limitations. Weld 2 in Line# 6-RC-417, is 1,500 lb., Type 316 seamless stainless steel piping, with welding filler metal SFA 5.4 E316L-16, SFA 5.9 ER316L, and or SFA 5.30 1N316L procured with 8-20 FN delta ferrite and 75ksi min tensile strength.

Weld 1 (6-RC-420) was a single-sided examination due to the check valve to elbow configuration. An additional 20% total "best effort" (non-Code) coverage was obtained on the valve side of the weld using a 70 degree shear wave search unit. Weld 1 is on RI-ISI segment RC-043 which includes three welds, all of which were examined with

limitations and included in this request. Weld 1 in Line# 6-RC-420, is 1,500 lb., Type 316 seamless stainless steel piping, with welding filler metal SFA 5.4 E316L-16, SFA 5.9 ER316L, and or SFA 5.30 1N316L procured with 8-20 FN delta ferrite and 75ksi min tensile strength.

Weld 2B (6-RC-420) was limited due to the nozzle configuration into the reactor coolant cold leg. Additional "Best Effort" (non-Code) scans with a 60 degree RL search unit obtained an additional 7% total coverage on the downstream, branch connection, side of the weld. Weld 2B is also on RI-ISI segment RC-043 which includes the three welds listed here, all of which were examined with limitations. Weld 2B in Line# 6-RC-420, is 1,500 lb., Type 316 seamless stainless steel piping, with welding filler metal SFA 5.4 E316L-16, SFA 5.9 ER316L, and or SFA 5.30 1N316L procured with 8-20 FN delta ferrite and 75ksi min tensile strength.

Weld 80 was a single-sided examination due to the check valve to pipe configuration. An additional 6.4% total "best effort" (non-Code) coverage was obtained on the valve side of the weld using a 60 degree RL search unit. Weld 80 is on RI-ISI segment RC-042 which includes three welds. One additional weld was examined in the segment with full coverage. Weld 80 in Line# 6-RC-420, is 1,500 lb., Type 316 seamless stainless steel piping, with welding filler metal SFA 5.4 E316L-16, SFA 5.9 ER316L, and or SFA 5.30 1N316L procured with 8-20 FN delta ferrite and 75ksi min tensile strength.

Weld SW-5 is a dissimilar metal weld that was initially examined during the spring 2004 outage at 63% coverage, with limitations on the safe-end side of the weld due to a clam shell support that was not removed for the examination. The weld was re-examined in the fall 2005 outage with the support removed obtaining 75% coverage due to component configuration. No reportable indications were identified for either examination. In the spring 2007 outage, the weld was overlaid (along with the adjacent safe end-to-pipe weld), and the overlay was examined with full coverage in both the 2007 outage and the fall 2008 outage. Weld SW-5 is on RI-ISI segment RC-019 which includes ten welds. The adjacent safe end-to-pipe weld (along with three supports on the segment) was examined on this segment, and full coverage was obtained. Additionally, the socket weld into the hot leg, weld SW-36 included in this report, was examined with limitations. The pressurizer nozzles are made of SA-508 Class 2 carbon steel with austenitic stainless steel weld inlay cladding and stainless steel inserts. The pressurizer surge line, spray line, and safety and relief lines are austenitic stainless steel. The connections between the stainless steel piping and the pressurizer nozzles use a SA-182-F316L stainless steel safe-end. The low-alloy carbon steel nozzles are buttered with 82/182 Inconel weld material and the stainless steel safe-end is attached to the nozzles with an 82/182 Inconel weld (these are dissimilar metal welds). During the spring 2007 outage, a full structural weld overlay was installed over the Inconel materials and extended over the pipe to safe end welds to meet the weld overlay design requirements. The full structural weld overlay is made using Alloy 52/52M weld material which is resistant to PWSCC and will ensure compatibility with the reactor coolant system.

Weld 9 is a reactor coolant pump discharge to cold leg pipe weld. The single sided configuration limited all Code examination from the pump side. An additional 3.8% "best effort" (non-Code) total coverage was obtained from an upstream axial scan with a 45 degree RL search unit. Weld 9 is on RI-ISI segment RC-010 which includes only two welds. A total of four out of the six welds included on similar segments for each loop

were examined, and all were limited examinations included in this request. Second interval relief was granted per relief request NDE-33 in an NRC letter dated 7/29/97. The reactor coolant pump casing is cast stainless steel ASTM A351-TP304, and the piping is centrifugally cast stainless steel material conforming to ASTM A-351 CF8 with cobalt content not exceeding 0.20% and silicon 1.00% max.

Weld SW-43 is a branch connection nozzle to reactor coolant cold leg weld. Due to the branch connection weld joint configuration and the cast stainless steel material type, the examination was limited to the downstream (loop piping) side using focused longitudinal waves. The inability of extending beam paths in cast stainless steel provides no practical means of furthering the examination coverage. Weld SW-43 is on RI-ISI segment RC-041, one of three welds on the segment, all of which were examined with limitations and included in this request. Second interval relief was granted per relief request NDE-20. The piping is centrifugally cast stainless steel material conforming to ASTM A-351 CF8 with cobalt content not exceeding 0.20% and silicon 1.00% max. The nozzle material is A-182 F-316 stainless steel with 0.20% max cobalt and an SA 240 TP 304 stainless thermal sleeve. Type 308 weld filler material is used for all welding applications.

Weld 21 is a reactor coolant pump discharge to cold leg pipe weld. The single sided configuration limited all Code examination from the pump side. An additional 25% "best effort" (non-Code) total coverage was obtained for the upstream side with a 45 and 60 degree RL search unit. Weld 21 is on RI-ISI segment RC-011 which includes only two welds, both examined. A total of four out of the six welds included on similar segments for each loop were examined, and all were limited examinations included in this request. Second interval relief was granted per relief request NDE-45 in an NRC letter dated 11/21/2000. The reactor coolant pump casing is cast stainless steel ASTM A351-TP304, and the piping is centrifugally cast stainless steel material conforming to ASTM A-351 CF8 with cobalt content not exceeding 0.20% and silicon 1.00% max.

Weld 33 is a reactor coolant pump discharge to cold leg pipe weld. The single sided configuration limited scans to the downstream side of the weld. Weld 33 is on RI-ISI segment RC-012 which includes only two welds. A total of four out of the six welds included on similar segments for each loop were examined, and all were limited examinations included in this request. Second interval relief was granted per relief request NDE-40 in an NRC letter dated 2/2/1999. The reactor coolant pump casing is cast stainless steel ASTM A351-TP304, and the piping is centrifugally cast stainless steel material conforming to ASTM A-351 CF8 with cobalt content not exceeding 0.20% and silicon 1.00% max.

Weld SW-49 is a branch connection to piping weld, and due to the weld geometry it is not feasible to scan from the smaller pipe side, preventing scans of the required lower 1/3 area of the weld from that direction. The piping material is type ASTM A-351 austenitic steel casting, which requires the use of focused L-waves, which cannot be extended beyond the first sound leg. The weld was examined to the maximum extent practical using 45 degree L RTD search unit from the larger pipe side. An additional 13% "best effort" (non-Code) total coverage was obtained from an upstream axial scan. Weld SW-49 is on RI-ISI segment RC-043 which includes the three welds listed here, all of which were examined with limitations. Second interval relief was granted per relief request NDE-41 in an NRC letter dated 2/2/1999. The piping is centrifugally cast stainless steel material conforming to ASTM A-351 CF8 with cobalt content not exceeding 0.20% and silicon 1.00% max. The nozzle material is A-182 F-316 stainless

steel with 0.20% max cobalt and an SA 240 TP 304 stainless thermal sleeve. Type 308 weld filler material is used for all welding applications.

Weld SW-36 is a branch connection to piping weld, and due to the weld geometry it is not feasible to scan from the smaller pipe side, preventing scans of the required lower 1/3 area of the weld from that direction. The piping material is type ASTM A-351 austenitic steel casting, which requires the use of focused L-waves. The weld was examined to the maximum extent practical using 45 degree L RTD search unit from the larger pipe side. Weld SW-36 is on RI-ISI segment RC-019 which includes ten welds. The two overlaid welds described previously for this segment are the only others examined. Second interval relief was granted per relief request NDE-41 in an NRC letter dated 2/2/1999. The piping is centrifugally cast stainless steel material conforming to ASTM A-351 CF8 with cobalt content not exceeding 0.20% and silicon 1.00% max. The nozzle material is A-240 or A-312 TP 304 or 316 stainless steel with 0.20% max cobalt. Type 308 weld filler material is used for all welding applications.

Weld SW-9 is a dissimilar metal weld that was initially examined during the fall 2005 outage at 63% coverage, with limitations due to the configuration of the nozzle to safe-end. There were no reportable indications. In the spring 2007 outage, the weld was overlaid (along with the adjacent safe end-to-pipe weld), and the overlay was examined with full coverage in both 2007 and the fall 2008 outages. Weld SW-9 is on RI-ISI segment RC-053 which includes nine welds. The adjacent safe end-to-pipe weld was examined on the segment, and full coverage was obtained. Additionally, augmented UT examinations were performed on two other segment welds and a preservice examination on another were performed with no reportable indications. All three of the nozzle-to-safe end welds for the pressurizer safety valves were examined, two with limitations and the third with full coverage. There were no reportable indications, and all three were overlaid during the spring 2007 outage. The pressurizer nozzles are made of SA-508 Class 2 carbon steel with austenitic stainless steel weld inlay cladding and stainless steel inserts. The pressurizer surge line, spray line, and safety and relief lines are austenitic stainless steel. The connections between the stainless steel piping and the pressurizer nozzles use a SA-182-F316L stainless steel safe-end . The low-alloy carbon steel nozzles are buttered with 82/182 Inconel weld material and the stainless steel safe-end is attached to the nozzles with an 82/182 Inconel weld (these are dissimilar metal welds). The full structural weld overlay is made using Alloy 52/52M weld material which is resistant to PWSCC and will ensure compatibility with the reactor coolant system.

SW-17 is also a dissimilar metal weld examined during the fall 2005 outage at 53% coverage, with limitations due to the configuration of the nozzle to safe-end. There were no reportable indications. In the spring 2007 outage, the weld was overlaid (along with the adjacent safe end-to-pipe weld), and the overlay was examined with full coverage in both the 2007 and fall 2008 outages. Weld SW-17 is on RI-ISI segment RC-052 which includes nine welds. The adjacent safe end-to-pipe weld was examined on the segment, and full coverage was obtained. Additionally, augmented UT examinations were performed on two other segment welds and a preservice examination on another were performed with no reportable indications. All three of the nozzle-to-safe end welds for the pressurizer safety valves were examined, two with limitations and the third with full coverage. There were no reportable indications, and all three were overlaid during the spring 2007 outage. The pressurizer nozzles are made of SA-508 Class 2 carbon steel with austenitic stainless steel weld inlay cladding and stainless steel inserts. The pressurizer surge line, spray line, and safety and relief lines are austenitic stainless steel.

The connections between the stainless steel piping and the pressurizer nozzles use a SA-182-F316L stainless steel safe-end . The low-alloy carbon steel nozzles are buttered with 82/182 Inconel weld material and the stainless steel safe-end is attached to the nozzles with an 82/182 Inconel weld (these are dissimilar metal welds). The full structural weld overlay is made using Alloy 52/52M weld material which is resistant to PWSCC and will ensure compatibility with the reactor coolant system.

Weld N-SE29 IN. (29-RC-401) is limited because of the nozzle outside radius which restricts movement of the transducer on the nozzle side of the weld. This weld was examined using focused dual element longitudinal wave transducers, necessary because the weld joint is carbon/inconel/stainless design. This weld is on RI-ISI segment RC-004 which includes three welds, with only this one selected for examination. No other supplemental ultrasonic means of examination was practical at the time of this examination. Second ISI interval relief request NDE-22 was granted for 75% coverage, but only applied to preservice examinations. This weld is made between the SA-508 CL. 3 channel head and the SA-336 CL. F316LN safe end, with alloy 82/182 butter welds with alloy 52 inlaid cladding.

Weld N-SE31 IN. (31-RC-402) is limited because of the nozzle outside radius which restricts movement of the transducer on the nozzle side of the weld. This weld was examined using focused dual element longitudinal wave transducers, necessary because the weld joint is carbon/inconel/stainless design. This weld is on RI-ISI segment RC-007 which includes seven welds, with only this one selected for examination. No other supplemental ultrasonic means of examination was practical at the time of this examination. Second ISI interval relief request NDE-22 was granted for 75% coverage, but only applied to preservice examinations. This weld is made between the SA-508 CL. 3 channel head and the SA-336 CL. F316LN safe end, with alloy 82/182 butter welds with alloy 52 inlaid cladding.

Weld 22 is limited due to single sided access because of the pipe to valve configuration. Weld 22 is on RI-ISI segment RC-011 which includes only two welds, both examined. A total of four out of the six welds included on similar segments for each loop were examined, and all were limited examinations included in this request. Second interval relief was granted per relief request NDE-45 in an NRC letter dated 11/21/2000. The weld was examined with both 45 and 60 RL search units. An additional 25% "best effort" (non-Code) total coverage was obtained from a downstream side. The piping is centrifugally cast stainless steel material conforming to ASTM A-351 CF8 with cobalt content not exceeding 0.20% and silicon 1.00% max, and the valve body is SA351-CF8M cast stainless steel. Type 308 weld filler material is used in this application.

5.R1 BURDEN CAUSED BY COMPLIANCE

The purpose of nondestructive examination (NDE) is to perform inspections without destroying the component. Any actions necessary to make these welds accessible for NDE exam would be contrary to the intent of the Code. Design modifications would be necessary to provide sufficient access, and imposition of this requirement would cause a considerable burden.

6.R1 PROPOSED ALTERNATIVE AND BASIS

It is proposed that the examinations already completed at the reduced coverage be counted as meeting the Code requirements. The limited volumetric examination should detect any general patterns of degradation that may occur in the areas covered, therefore providing reasonable assurance of the continued structural integrity of the subject weld. A portion of each of the subject welds was examined volumetrically. In addition, these welds receive a visual examination during the system leakage test. Therefore, any pattern of degradation should be detected by these examinations ensuring reasonable assurance of operational readiness.

UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R19
Summary No.:	N2.R1.11.005	Procedure Rev.:	00	Report No.:	UT-08-031
Workscope:	ISI	Work Order No.:		Page:	1 of 6

Code: Sect. XI 1995 Ed./1996 Add. Cat./Item: R-A/R1.11 Location: C-LOOP

Drawing No.: 12050-WMKS-0103AH Description: Elbow to Branch Connection

System ID: RC

Component ID: 12050-WMKS-0103AH / 6-RC-421 / 2 Size/Length: 1.1" / 21" Thickness/Diameter: .96" / 6"

Limitations: Downstream exam limited due to branch connection Start Time: 1730 Finish Time: 1739

Instrument Settings

Serial No.:	040182503		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	5.465	Range:	2.0"
M'tl Cal/Vel:	.1232 in/us	Pulser:	square
Damping:	400 ohms	Reject:	0%
Rep. Rate:	auto	Freq.:	2.0 Mhz.
Filter:	.8 - 3.0	Mode:	full wave
Voltage:	Max	Other:	N/A
Ax. Gain (dB):	7.4	Circ. Gain (dB):	7.4

10 Screen Div. = 2.0 In. of Sound Path

Linearity Report No.: L-08-006

Calibration Block

Cal. Block No.:	05-8514		
Thickness	2.25"	Dia.:	0
Cal. Blk. Temp.	71°	Temp. Tool:	1075BGCY
Comp. Temp.:	74°	Temp. Tool:	1075BGCY

Search Unit

Serial No.:	01CLN1		
Manufacturer:	KBA		
Size:	0.375"	Shape:	Round
Freq.:	2.25 MHZ	Style:	Comp-G
Exam Angle:	45°	# of Elements:	Single
Mode:	shear		
Measured Angle:	45°		
Wedge Style:	mswqc		

Search Unit Cable

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

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 25.4

CW ☑ CCW ☑ Scan dB: 25.4

Exam Surface: O.D

Surface Condition: Contour Ground

Cal. Checks	Time	Date
Initial Cal.	1345	09/21/2008
Inter. Cal.	1730	09/21/2008
Inter. Cal.	1739	09/21/2008
Inter. Cal.	N/A	
Final Cal.	1845	09/21/2008

Couplant

Cal. Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.:	05-8258
Type:	SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1" Notch	80	7.2	1.417"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
7.4	.7" sdh	25"	5.3	1.053"

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

Results: NRI ☑ RI ☐ Geom ☐

Comments: None

Percent Of Coverage Obtained > 90%: No Reviewed Previous Data: N/A

Examiner	Level	Signature	Date	Reviewer		Signature	Date
Thomas, Travis W.	II-PDI	Travis Thomas	09/21/2008	WAYNE L. THOMAS	LIII	Wayne L. Thomas	10-02-08
Examiner	Level	Signature	Date	Site Review		Signature	Date
Thompson, Lee D.	IIL	Lee D. Thompson	09/21/2008	KS Hacker	LIII	K S Hacker	10/3/08
Other	Level	Signature	Date	ANII Review		Signature	Date
N/A	N/A					M Shaw	10/4/08

ENCLOSURE R1-1
NAPS Unit 2 3rd interval Limited Exams
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Docket No. 50-339
Serial No. 11-472

UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R19
Summary No.:	N2.R1.11.005	Procedure Rev.:	00	Report No.:	UT-08-031
Workscope:	ISI	Work Order No.:		Page:	2 of 6

Code: Sect. XI 1995 Ed./1996 Add. Cat./Item: R-A/R1.11 Location: C-LOOP

Drawing No.: 12050-WMKS-0103AH Description: Elbow to Branch Connection

System ID: RC

Component ID: 12050-WMKS-0103AH / 6-RC-421 / 2 Size/Length: 1.1" / 21" Thickness/Diameter: .96" / 6"

Limitations: Downstream exam limited due to branch connection Start Time: 1740 Finish Time: 1748

Instrument Settings

Serial No.:	040182503		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	7.134	Range:	2.875"
M'tl Cal/Vel:	.1246in/us	Pulser:	Square
Damping:	400 Ohms	Reject:	0%
Rep. Rate:	Auto	Freq.:	2.0 Mhz.
Filter:	.8 - 3.0	Mode:	Full Wave
Voltage:	Max	Other:	N/A
Ax. Gain (dB):	23.2	Circ. Gain (dB):	23.2

10 Screen Div. = 2.8 In. of Sound Path

Linearity Report No.: L-08-006

Calibration Block

Cal. Block No.:	05-8514		
Thickness	2.25"	Dia.:	0
Cal. Blk. Temp.	71°	Temp. Tool:	1075BGCY
Comp. Temp.:	74°	Temp. Tool:	1075BGCY

Search Unit

Serial No.:	01CLN0		
Manufacturer:	KBA		
Size:	0.375"	Shape:	Round
Freq.:	2.25 MHZ	Style:	Comp-G
Exam Angle:	60°	# of Elements:	Single
Mode:	shear		
Measured Angle:	58°		
Wedge Style:	mswqc		

Search Unit Cable

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

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 29.2

CW ☑ CCW ☑ Scan dB: 29.2

Exam Surface: O.D

Surface Condition: Contour Ground

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

Results: NRI ☑ RI ☐ Geom ☐

Percent Of Coverage Obtained > 90%: No Reviewed Previous Data: N/A

Cal. Checks	Time	Date
Initial Cal.	1349	09/21/2008
Inter. Cal.	1740	09/21/2008
Inter. Cal.	1748	09/21/2008
Inter. Cal.	N/A	
Final Cal.	1846	09/21/2008

Couplant

Cal. Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.: 05-8258 Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1" Notch	80	6.3	1.804"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
23.2	.7 sdh	61	5.1	1.457"

Comments: Effective coverage using the 60° search unit has been verified by the presence of the weld root response during the required scans.

Examiner	Level II-PDI	Signature	Date	Reviewer		Signature	Date
Thomas, Travis W.			09/21/2008	WAYNE L. THOMAS	LIII		10-02-08
Examiner	Level IIL	Signature	Date	Site Review		Signature	Date
Thompson, Lee D.			09/21/2008	KS Hacker	LIII		10/3/08
Other	Level N/A	Signature	Date	ANII Review		Signature	Date
N/A							10/4/08

ENCLOSURE R1-1
NAPS Unit 2 3rd interval Limited Exams
Docket No. 50-339
Serial No. 11-472
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UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R19
Summary No.:	N2.R1.11.005	Procedure Rev.:	00	Report No.:	UT-08-031
Workscope:	ISI	Work Order No.:		Page:	3 of 6

Code: Sect. XI 1995 Ed./1996 Add. Cat./Item: R-A/R1.11 Location: C-LOOP

Drawing No.: 12050-WMKS-0103AH Description: Elbow to Branch Connection

System ID: RC

Component ID: 12050-WMKS-0103AH / 6-RC-421 / 2 Size/Length: 1.1" / 21" Thickness/Diameter: .96" / 6"

Limitations: Downstream limited due to branch connection Start Time: 1749 Finish Time: 1755

Instrument Settings

Serial No.:	040182503		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	7.759	Range:	4.2"
Mtl Cal/Vel:	.1239 in/us	Pulser:	Square
Damping:	400	Reject:	0%
Rep. Rate:	Auto	Freq.:	2.0 Mhz.
Filter:	.8 - 3.0	Mode:	Full Wave
Voltage:	Max	Other:	N/A
Ax. Gain (dB):	34.5	Circ. Gain (dB):	N/A

10 Screen Div. = 4.2 in. of Sound Path

Linearity Report No.: L-08-006

Calibration Block

Cal. Block No.:	05-8514		
Thickness	2.25"	Dia.:	0
Cal. Blk. Temp.	71°	Temp. Tool:	1075BGCY
Comp. Temp.:	74°	Temp. Tool:	1075BGCY

Search Unit

Serial No.:	00VBBK		
Manufacturer:	KBA		
Size:	0.375"	Shape:	Round
Freq.:	2.25 MHZ	Style:	Comp-G
Exam Angle:	70°	# of Elements:	Single
Mode:	Shear		
Measured Angle:	68°		
Wedge Style:	mswqc		

Search Unit Cable

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

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 40.5

CW ☐ CCW ☐ Scan dB: N/A

Exam Surface: O.D

Surface Condition: Contour Ground

Cal. Checks	Time	Date
Initial Cal.	1351	09/21/2008
Inter. Cal.	1749	09/21/2008
Inter. Cal.	1755	09/21/2008
Inter. Cal.	N/A	
Final Cal.	1847	09/21/2008

Couplant

Cal. Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.: 05-8258

Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1" Notch	80	6.6	2.704

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
20	.3 sdh	44	2.2	.895"

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

Results: NRI ☑ RI ☐ Geom ☐

Comments: None

Percent Of Coverage Obtained > 90%: Yes Reviewed Previous Data: N/A

Examiner	Level II-PDI	Signature	Date	Reviewer		Signature	Date
Thomas, Travis W.		Travis	09/21/2008	WAYNE L. THOMAS LIII			10.02.08
Examiner	Level IIL	Signature	Date	Site Review		Signature	Date
Thompson, Lee D.		Lee D Thompson	09/21/2008	KS Hacker LIII		KS Hacker	10/3/08
Other	Level N/A	Signature	Date	ANII Review		Signature	Date
N/A							10/4/08

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NAPS Unit 2 3rd interval Limited Exams
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UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R19
Summary No.:	N2.R1.11.005	Procedure Rev.:	00	Report No.:	UT-08-031
Workscope:	ISI	Work Order No.:		Page:	4 of 6

Code: Sect. XI 1995 Ed./1996 Add. Cat./Item: R-A/R1.11 Location: C-LOOP

Drawing No.: 12050-WMKS-0103AH Description: Elbow to Branch Connection

System ID: RC

Component ID: 12050-WMKS-0103AH / 6-RC-421 / 2 Size/Length: 1.1" / 21" Thickness/Diameter: .96" / 6"

Limitations: Downstream limited due to branch connection Start Time: 1756 Finish Time: 1803

Instrument Settings

Serial No.:	040182503		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	8.435	Range:	2.875"
M'tl Cal/Vel:	.2325 in/us	Pulser:	square
Damping:	400 Ohms	Reject:	0%
Rep. Rate:	Auto	Freq.:	2.0
Filter:	.8 - 3.0	Mode:	Full Wave
Voltage:	Max	Other:	N/A
Ax. Gain (dB):	39	Circ. Gain (dB):	N/A

10 Screen Div. = 2.8 In. of Sound Path

Linearity Report No.: L-08-006

Calibration Block

Cal. Block No.:	05-8514		
Thickness	2.25"	Dia.:	0
Cal. Blk. Temp.	71°	Temp. Tool:	1075BGCY
Comp. Temp.:	74°	Temp. Tool:	1075BGCY

Search Unit

Serial No.:	06-108		
Manufacturer:	RTD		
Size:	2(8X14)	Shape:	Rectangular
Freq.:	2.0 MHZ	Style:	TRL2-AUST
Exam Angle:	60°	# of Elements:	Dual
Mode:	RL		
Measured Angle:	60°		
Wedge Style:	Integral		

Search Unit Cable

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

Scan Coverage

Upstream ☑ Downstream ☐ Scan dB: 39

CW ☐ CCW ☐ Scan dB: N/A

Exam Surface: O.D

Surface Condition: Contour Ground

Cal. Checks	Time	Date
Initial Cal.	1352	09/21/2008
Inter. Cal.	1756	09/21/2008
Inter. Cal.	1803	09/21/2008
Inter. Cal.	N/A	
Final Cal.	1848	09/21/2008

Couplant

Cal. Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.: 05-8258

Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1" Notch	80	6.0	1.711

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
39.0	.7 sdh	90	5.3	1.482

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

Results: NRI ☑ RI ☐ Geom ☐

Comments: None

Percent Of Coverage Obtained > 90%: No Reviewed Previous Data: N/A

Examiner	Level	Signature	Date	Reviewer		Signature	Date
Thomas, Travis W.	II-PDI	Travis	09/21/2008	WAYNE L. THOMAS LIII			10.02.08
Examiner	Level	Signature	Date	Site Review		Signature	Date
Thompson, Lee D.	IIL	Lee D. Thompson	09/21/2008	KJ Hacker LIII			10/3/08
Other	Level	Signature	Date	ANII Review		Signature	Date
N/A	N/A						10/4/08

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ENCLOSURE R1-1

Supplemental Report

Dominion

Report No.: UT-08-031

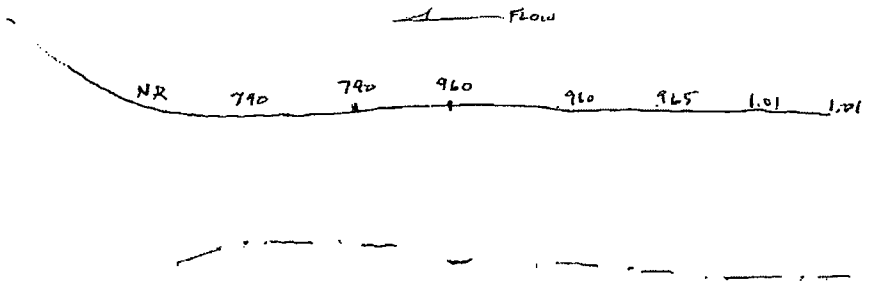
Page: 5 of 6

Summary No.: N2.R1.11.005

Examiner:	Thomas, Travis W. T.T.	Level:	II-PDI	Reviewer:	WAYNE L. THOMAS LTII	Date:	10-02-08
Examiner:	Thompson, Lee D. Lee D Thompson	Level:	IIL	Site Review:	KJ Hash LTII	Date:	10/3/08
Other:	N/A	Level:	N/A	ANII Review:	M Frau	Date:	10/4/08

Comments:

Sketch or Photo:

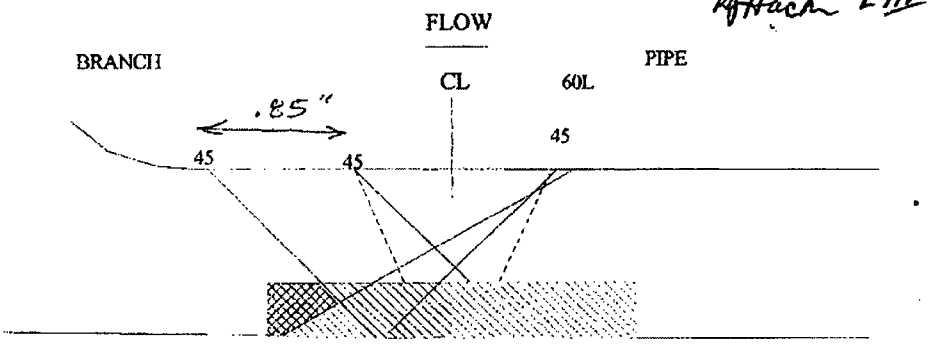


ENCLOSURE R1-1

Weld Number	2
Weld Thickness	.96"
Weld Length	21"
Weld Width	1.1"

Report No: UT-08-031
Summary # N2.R1.11.005
Pg. 6 of 6
Prepared By: W.L. Thomas
Date: 10/2/2008

Attach 4 III 10/3/08



0.67 SQ. INCH TOTAL RISK ASSESSED EXAM AREA

EXAMINED 0.195 SQ. INCHES DS SIDE DUE TO CONFIGURATION .195 / .335 = 58% AX DS

EXAMINED 100% US SIDE 0.335 SQ. INCHES

BEST EFFORT 0.05 SQ. INCH .05 / .335 = 15% BEST EFFORT AX DS

0.09 SQ. INCHES NOT EXAMINED

NO CIRC SCAN LIMITATIONS

100 + 100 + 58 + 100 = 358 / 400 = 89.5%

15 / 4 = 3.75% BEST EFFORT

Examination Volume Dimensions - Height .32" Length 21" Width 2.1"

Coverage Summary				
	Required Scans (each has a weighing factor of 100 for complete coverage)			
ANGLE	UpSt - Ax	UpSt - Circ	DnSt- Ax	DnSt - Circ
45	100%		58%	
45 / 60		100%		100%
60L			15%(Best Effort)	
			Code Coverage Total	89%
			Best Effort Coverage (Max 25%) Total	4%

Notes:

1) Code Coverage refers to the maximum percentage of the required examination volume that is effectively examined with the qualified examination procedure.
2) Best Effort Coverage refers to the required examination volume past the weld centerline that is examined in the axial beam direction with an Appendix VIII demonstrated procedure for single sided coverage.

ENCLOSURE R1-2

NZ.R1.11.261

Dominion
Ultrasonic Examination Data Record

Interval: 3

UTRNO	Station	Unit	Drawing	Line	NDER
1335	NAPS	2	12050-WMKS-0103BD-2	3"-SI-417-1502-Q1	05-006

Couplant	CalCheck1	CalCheck2	CalCheck3	WO / DCP	Procedure	Rev
01220					NDE-UT-812	0

Thermometer SerNo: 1072BGCY

Exam Data

UTRNO	RECTAG	mark/weld	Scan dB	Exam Area	Surface Condition	Temp	Partial	Single Side	Results
1335	1801	58A	*	FIG. 2-C	Contour Ground	85	Yes	No	NRI
1335	1773	20	*	FIG. 2-C	Contour Ground	85	Yes	Yes	NRI

Comments:

* 45 scanned at 34.7, 60 scanned at 51.5 and 70 degree scanned at 59.9 db. The techniques used for this examination are considered best effort for single side detection of far side defects parallel to the weld. For weld 20 this is single sided with an ID tag at 4.5 " to 6.0". Weld 58A is also single side due to vent line and intradose of elbow.

UTRNO		Signature	Level	Method	Date	Activity
1335	Examined By:	JEFF ODEGARD	DET	UT	10/12/2005	04/12/2006

Reviewed By: _____ Level: III Date: 10/19/05

ANII _____ Date 10/25/05
Initial ☐ Final ☐
HSB-CT

ENCLOSURE R1-2

Dominion
UT Partial Record

UTRNO	RECTAG	Drawing	Line	Mark/weld	Procedure	Rev
1335	1773	12050-WMKS-0103BD-2	3"-SI-417-1502-Q1	20	NDE-UT-812	0

XDucer Serial	Weld Width	Exam Angle	SU Length	SU Width	SU Nose	Percent
00L8T4	.75	68	.8	.45	.35	53%

Area Not Examined

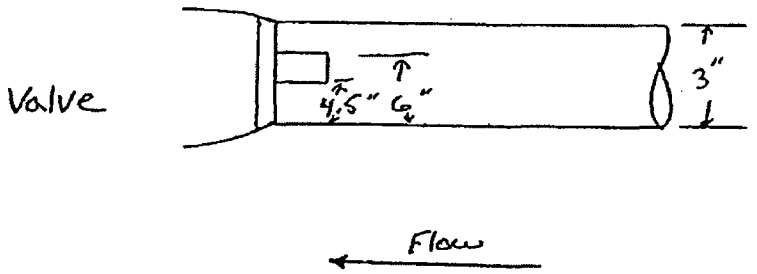
Downstream side of weld on valve. Also from 4.5" to 6" on upstream side due to welded ID tag.

Reason

Pipe to valve configuration.

Comments

Cross Section Sketch



Evaluation

Additional scans or alternate techniques will not provide additional coverage within the limitations of the procedure.

Signature	Level	DATE
JEFFODEGARD	DET	10/12/2005

Reviewed By: [signature] Level: III Date: 10/20/05

ANII [signature] Date 10/25/05
Initial ☐ Final ☒
HSB-CT

ENCLOSURE R1-2

Weld # 20
3"-SI-417-1502-Q1

10/19/05

10/19/05

ENCLOSURE R1-2

Dominion

STAINLESS STEEL PIPE, SINGLE SIDED PERCENT VOLUME BY SCAN DIRECTION

DRAWING NUMBER 12050-WMKS-0103BD-2 *MARK NUMBER* -20

ANGLE	*SCAN AREA*	*DIRECTION*	*SCAN %*
45°	EXAMINATION VOLUME	UP STREAM (1ST LEG)	NA
45°	EXAMINATION VOLUME	UP STREAM (2ND LEG)	NA
45°	EXAMINATION VOLUME	DOWN STREAM (1ST LEG)	NA
45°	EXAMINATION VOLUME	DOWN STREAM (2ND LEG)	NA
45°	EXAMINATION VOLUME	CW	42 %
45°	EXAMINATION VOLUME	CCW	42 %
60°	EXAMINATION VOLUME	UP STREAM (1ST LEG)	NA
60°	EXAMINATION VOLUME	UP STREAM (2ND LEG)	NA
60°	EXAMINATION VOLUME	DOWN STREAM (1ST LEG)	NA
60°	EXAMINATION VOLUME	DOWN STREAM (2ND LEG)	NA
70°	EXAMINATION VOLUME	UP STREAM (1ST LEG)	84 %
70°	EXAMINATION VOLUME	DOWN STREAM (1ST LEG)	42 %
	UPSTREAM COVERAGE		84 %
	DOWNSTREAM COVERAGE		42 %
	CLOCK WISE COVERAGE		42 %
	COUNTER CLOCKWISE COVERAGE		42 %
		TOTAL PERCENT	53.0%

COMMENTS: NONE

Daniel L Jens

DOMINION NDE LEVEL III OCTOBER 19, 2005 *DATE*

Daniel L Jensen

Interval: 3

Dominion Power Ultrasonic Calibration Data Record

UTRNO	Station	Unit	Procedure	Rev	Sizing Procedure	Rev	Couplant	CalBlock1	CBLKTKS	CBLKTemp
1335	NAPS	2	NDE-UT-812	0	NDE-UT-NA	NA	01220	VP.50-SS-02	SIZING BLOCK	75

CLbType	CLbLngth	#Connect	Simulator	AmpSwp	CalDate	CaLIn	CaLOut	CalBlock2	CBLKTKS2	CBLkTemp2
GR174	6'	0	NA	NA	10/10/2005	9:00				

Thermometer SerNo 1071BGCY

Instrument Settings

UTRNO	MemLoc	XDUC SER	REJECT	dB	REF dB	RANGE	VELOCITY	ZERO	DELAY	FREQ	DISP MODE	PRR/PRF	PULSER	FILTER	ENERGY	DAMPING
ID																
1335	15	00LBK3	0%	16.7	0.0	.175	.1297	3.831	NA	FIXED	FULL WAVE	AUTO	NA	STD	HIGH	400
1640																
1335	16	00L9Y1	0%	33.5	0.0	.247	.1297	3.831	NA	FIXED	FULL WAVE	AUTO	NA	STD	HIGH	400
1641																
1335	17	00L8T4	0%	47.9	0.0	.362	.1297	5.353	NA	FIXED	FULL WAVE	AUTO	NA	STD	HIGH	400
1642																

Xducer Data

UTRNO	ID	SerialNo	Manuf	Model	Size	Frequency	Nom Angle	Measured Angle	Wave Mode	Shape	No. Elements
				Wedge Type		Wedge Length	Wedge Width	Wedge Nose			
1335	1554	00LBK3	KB-AEROTECH	Comp-G	0.25"	5.0 MHZ	45	44	SHEAR	ROUND	1
				MSWQC		.6	.45	.2			
1335	1555	00L9Y1	KB-AEROTECH	Comp-G	0.25"	5.0 MHZ	60	59	SHEAR	ROUND	1
				MSWQC		.65	.45	.2			
1335	1556	00L8T4	KB-AEROTECH	Comp-G	0.25"	2.25 MHZ	70	68	SHEAR	ROUND	1
				MSWQC		.8	.45	.35			

Vertical Beam Spread

Instrument						Calibration Data										
UTRNO	SHAC	Inst. Serial	Inst. Model	Inst. Manuf	ID	UTRNO	Blk	XDID	IS ID	Direction	CaLType	Point	Reflector	Position	Amplitude	Sweep
1335	194	98318411	Epoch III	Panametrics	1642	1335	1	1554	1640	AX/CIRC	DET	1	10%NOTCH	NA	80	4.3
1335	194	98318411	Epoch III	Panametrics	1641	1335	1	1555	1641	AX/CIRC	DET	1	10%NOTCH	NA	80	4.4
1335	194	98318411	Epoch III	Panametrics	1640	1335	1	1556	1642	AX/CIRC	DET	1	10%NOTCH	NA	80	3.9

UTRNO		Signature	Level	Method	Date	Activity
1335	Calibrated By	JEFF ODEGARD	DET	UT	10/10/2005	04/05/2006

ANII MK Date 10/25/05
Initial ☐ Final ☐
HSB-CT

Reviewed By: Daniel Gen Level: III Date: 10/19/05

ENCLOSURE R1-2

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UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R20
Summary No.:	N2.R1.11.264	Procedure Rev.:	00	Report No.:	UT-10-102
Workscope:	ISI	Work Order No.:		Page:	1 of 4

Code: Sect. XI 1995ed/96 Add | Cat./Item: R-A/R1.11 | Location: A-LOOP

Drawing No.: 12050-WMKS-0103BE | Description: Valve to Elbow

System ID: RC

Component ID: 12050-WMKS-0103BE / 6-RC-417 / 1 | Size/Length: 1.0"/ 21.5" | Thickness/Diameter: .79"/ 6.0"

Limitations: Single sided Exam. | Start Time: 0020 | Finish Time: 0035

Instrument Settings

Serial No.:	081624811		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	7.940	Range:	2.12"
M'tl Cal/Vel:	.1253in/us	Pulser:	Square
Damping:	400 Ω	Reject:	0%
Rep. Rate:	Auto	Freq.:	2.0 Mhz
Filter:	.8 - 3.0	Mode:	Fullwave
Voltage:	Max	Other:	N/A
Ax. Gain (dB):	8.0	Circ. Gain (dB):	N/A

10 Screen Div. = 2.12 In. of Sound Path

Linearity Report No.: L-10-004

Calibration Block

Cal. Block No.:	10876		
Thickness:	2.25"	Dia.:	0
Cal. Blk. Temp.:	71°	Temp. Tool:	1066BGCY
Comp. Temp.:	72°	Temp. Tool:	1066BGCY

Search Unit

Serial No.:	01VNJD		
Manufacturer:	KBA		
Size:	0.375"	Shape:	Round
Freq.:	2.25 MHZ	Style:	Comp-G
Exam Angle:	45°	# of Elements:	Single
Mode:	Shear		
Measured Angle:	45°		
Wedge Style:	MSWQC		

Search Unit Cable

Type: RG-174 | Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☐ Downstream ☑ Scan dB: 26

CW ☑ CCW ☑ Scan dB: 26

Exam Surface: OD

Surface Condition: Ground Smooth

Cal. Checks	Time	Date
Initial Cal.	2300	04/01/2010
Inter. Cal.	0020	04/02/2010
Inter. Cal.		
Inter. Cal.		
Final Cal.	0230	04/02/2010

Couplant

Cal. Batch: 07220 | Type: SoundSafe | Mfg.: SONOTECH

Exam Batch: 07220 | Type: SoundSafe | Mfg.: SONOTECH

Reference Block

Serial No.: 05-6534 | Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1"ID Notch	80%	6.6	1.397"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
8.0	.75" SDH	23%	5.0	1.053"

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

Results: NRI ☑ RI ☐ Geom ☐ Counterbore noted for risk inform exam.

Comments: Effective Coverage using the 45° search unit has been verified by the presence of the weld root response during the required scan.

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

	Level		Signature	Date
Examiner: Currao, Jeffrey T	Level II-PDI			04/02/2010
Examiner: Wickenhauser, Keith F.	Level II		Keith Wickenhauser	04/02/2010
Other: N/A	Level N/A			

Reviewer	W.L. THOMAS		04.08.10
Site Review	Jeff Odegard		4/8/10
ANII Review			11 Apr 2010

UT Calibration/Examination

ENCLOSURE R1-3

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UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R20
Summary No.:	N2.R1.11.264	Procedure Rev.:	00	Report No.:	UT-10-102
Workscope:	ISI	Work Order No.:		Page:	2 of 4

Code:	Sect. XI 1995ed/96 Add	Cat./Item:	R-A/R1.11	Location:	A-LOOP
Drawing No.:	12050-WMKS-0103BE	Description:	Valve to Elbow		
System ID:	RC				
Component ID:	12050-WMKS-0103BE / 6-RC-417 / 1	Size/Length:	1.0"/ 21.5"	Thickness/Diameter:	.79"/ 6.0"
Limitations:	Single Sided	Start Time:	0036	Finish Time:	0050

Instrument Settings

Serial No.:	081624811		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	7.579	Range:	3.0"
M'tl Cal/Vel:	.1268in/us	Pulser:	Square
Damping:	400Ω	Reject:	0%
Rep. Rate:	Auto	Freq.:	2.0 Mhz
Filter:	.8 - 3.0	Mode:	Fullwave
Voltage:	Max	Other:	N/A
Ax. Gain (dB):	24.2	Circ. Gain (dB):	N/A

10 Screen Div. = 3.0 In. of Sound Path

Linearity Report No.: L-10-004

Calibration Block

Cal. Block No.:	10876		
Thickness:	2.25"	Dia.:	0
Cal. Blk. Temp.:	71°	Temp. Tool:	1066BGCY
Comp. Temp.:	72°	Temp. Tool:	1066BGCY

Search Unit

Serial No.:	00VJBX		
Manufacturer:	KBA		
Size:	0.375"	Shape:	Round
Freq.:	2.25 MHZ	Style:	Comp-G
Exam Angle:	60°	# of Elements:	Single
Mode:	Shear		
Measured Angle:	60°		
Wedge Style:	MSWQC		

Search Unit Cable

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

Scan Coverage

Upstream ☐ Downstream ☑ Scan dB: 30.2

CW ☐ CCW ☐ Scan dB: N/A

Exam Surface: OD

Surface Condition: Ground Smooth

Cal. Checks	Time	Date
Initial Cal.	2302	04/01/2010
Inter. Cal.	0036	04/02/2010
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	0232	04/02/2010

Couplant

Cal. Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.: 05-6534 Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1.0" ID Notch	80%	6.1	1.818"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
24.2	.75 SDH	65%	5.0	1.496"

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

Results: NRI ☑ RI ☐ Geom ☐

Comments: Refer to UTRNO 559 Dated 9/20/99 for Thickness and Contour.

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

Examiner	Level II-PDI	Signature	Date	Reviewer	Signature	Date
Currao, Jeffrey T			04/02/2010	W.L. THOMAS		04-08-10
Examiner	Level II	Signature	Date	Site Review	Signature	Date
Wickenhauser, Keith F.			04/02/2010	Jeff Rodegard		4/6/10
Other	Level N/A	Signature	Date	ANII Review	Signature	Date
N/A						11 Apr 2010

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UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R20
Summary No.:	N2.R1.11.264	Procedure Rev.:	00	Report No.:	UT-10-102
Workscope:	ISI	Work Order No.:		Page:	3 of 4

Code: Sect. XI 1995ed/96 Add | Cat./Item: R-A/R1.11 | Location: A-LOOP

Drawing No.: 12050-WMKS-0103BE | Description: Valve to Elbow

System ID: RC

Component ID: 12050-WMKS-0103BE / 6-RC-417 / 1 | Size/Length: 1.0"/ 21.5" | Thickness/Diameter: .79"/ 6.0"

Limitations: Single sided | Start Time: 0051 | Finish Time: 0101

Instrument Settings

Serial No.:	081624811		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	9.060	Range:	3.0"
M'tl Cal/Vel:	.2364in/us	Pulser:	Square
Damping:	400Ω	Reject:	0%
Rep. Rate:	Auto	Freq.:	2.0 Mhz
Filter:	.8 - 3.0	Mode:	Fullwave
Voltage:	Max	Other:	N/A
Ax. Gain (dB):	37.6	Circ. Gain (dB):	N/A

10 Screen Div. = 3.0 in. of Sound Path

Linearity Report No.: L-10-004

Calibration Block

Cal. Block No.:	10876		
Thickness:	2.25"	Dia.:	0
Cal. Blk. Temp.:	71°	Temp. Tool:	1066BGCY
Comp. Temp.:	72°	Temp. Tool:	1066BGCY

Search Unit

Serial No.:	06-108		
Manufacturer:	RTD		
Size:	2(8X14)	Shape:	Retangular
Freq.:	2.0 MHZ	Style:	TRL2-AUST
Exam Angle:	60°	# of Elements:	Dual
Mode:	Longitudinal		
Measured Angle:	60°		
Wedge Style:	Integral		

Search Unit Cable

Type: RG-174 | Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☐ Downstream ☑ Scan dB: 37.6

CW ☐ CCW ☐ Scan dB: N/A

Exam Surface: OD

Surface Condition: Ground Smooth

Cal. Checks	Time	Date
Initial Cal.	2304	04/01/2010
Inter. Cal.	0051	04/02/2010
Inter. Cal.		
Inter. Cal.		
Final Cal.	0234	04/02/2010

Couplant

Cal. Batch: 07220

Type: SoundSafe

Mfg.: SONOTECH

Exam Batch: 07220

Type: SoundSafe

Mfg.: SONOTECH

Reference Block

Serial No.: 05-6534

Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1"ID Notch	80%	6.6	1.988"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
30	.75 SDH	66%	5.1	1.52"

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

Results: NRI ☑ RI ☐ Geom ☐

Comments: Supplemental 60° RL Exam

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

Examiner	Level II-PDI	Signature	Date	Reviewer	Signature	Date
Currao, Jeffrey T			04/02/2010	W.L. THOMAS		04.08.10
Examiner	Level II	Signature	Date	Site Review	Signature	Date
Wickenhauser, Keith F.			04/02/2010	Jeff Odegard		4/9/10
Other	Level N/A	Signature	Date	ANII Review	Signature	Date
N/A						11 Apr 2010

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ENCLOSURE R1-3

Supplemental Report

Dominion

Report No.: UT-10-102

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Summary No.: N2.R1.11.264

Examiner: Currao, Jeffrey T JTC Level: II-PDI Reviewer: W.L. Thomas Date: 4-7-10

Examiner: Wickenhauser, Keith F. Level: II Site Review: Jeff Odegard Date: 4/8/10

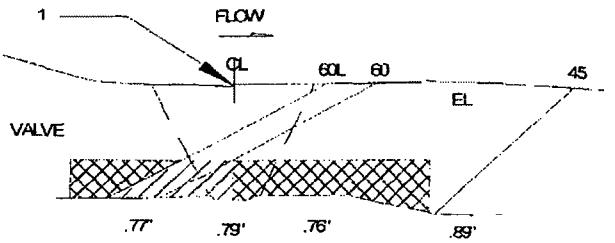
Other: N/A Level: N/A ANII Review: Date: 11Apr10

Comments:

Weld Number	1
Weld Thickness	.79" (.76" bm)
Weld Length	21.5
Weld Width	1"

Date: 4/7/2010 Prepared By: W.L. Thomas

Sketch or Photo:



.35 SQ IN AREA EXAMINED DS SIDE AXIAL DIR

.13 SQ IN. AREA EXAMINED BEST EFFORT US SIDE AXIAL DIR

.12 SQ IN. AREA NOT EXAMINED US SIDE AXIAL DIR

.13/.25 (TOTAL REQUIRED US SIDE AX DIR) = .52 X 100 = 52%

NOTE: ALL AREA MEASUREMENTS WERE CALCULATED USING CAD PROGRAM

100 + 100 + 0 + 52 = 252 / 400 = 0.63 x 100 = 63%

Examination Volume Dimensions - Height ..253" Length 21.5" Width 2.25"

Coverage Summary				
	Required Scans (each has a weighing factor of 100 for complete coverage)			
ANGLE	UpSt-Ax	UpSt-Circ	DnSt-Ax	DnSt-Circ
45		0%		100%
45/60			100%	
60L	52% Best Effort			
			Code Coverage Total	50%
			Best Effort Coverage (Max 25%) Total	13%

Notes:

1) Code Coverage refers to the maximum percentage of the required examination volume that is effectively examined with the qualified examination procedure.
2) Best Effort Coverage refers to the required examination volume past the weld centerline that is examined in the axial beam direction with an Appendix VIII demonstrated procedure for single sided coverage.

Additional - Supplemental Data

UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R20
Summary No.:	N2.R1.11.265	Procedure Rev.:	00	Report No.:	UT-10-103
Workscope:	ISI	Work Order No.:	59101983016	Page:	1 of 4

Code: Sect. XI 1995ed/96 Add | Cat./Item: R-A/R1.11 | Location: A-LOOP

Drawing No.: 12050-WMKS-0103BE | Description: Elbow to Nozzle

System ID: RC

Component ID: 12050-WMKS-0103BE / 6-RC-417 / 2 | Size/Length: 1" / 21" | Thickness/Diameter: .75" / 6"

Limitations: Limited due to Nozzle configuration | Start Time: 0020 | Finish Time: 0035

Instrument Settings

Serial No.:	081624811		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	7.940	Range:	2.12"
M'tl Cal/Vel:	.1253 In/us	Pulser:	Square
Damping:	400 Ω	Reject:	0%
Rep. Rate:	Auto	Freq.:	2.0 Mhz
Filter:	.8 - 3.0	Mode:	Fullwave
Voltage:	Max	Other:	N/ A
Ax. Gain (dB):	8	Circ. Gain (dB):	8

10 Screen Div. = 2.12 In. of Sound Path

Linearity Report No.: L-10-004

Calibration Block

Cal. Block No.:	10876		
Thickness:	2.25"	Dia.:	0
Cal. Blk. Temp.:	71°	Temp. Tool:	1066BGCY
Comp. Temp.:	72°	Temp. Tool:	1066BGCY

Search Unit

Serial No.:	01VNJD		
Manufacturer:	KBA		
Size:	0.375"	Shape:	Round
Freq.:	2.25 MHZ	Style:	COMP-G
Exam Angle:	45°	# of Elements:	Single
Mode:	Shear		
Measured Angle:	45°		
Wedge Style:	MSWQC		

Search Unit Cable

Type: RG-174 | Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 32

CW ☑ CCW ☑ Scan dB: 32

Exam Surface: OD

Surface Condition: Ground Smooth

Cal. Checks	Time	Date
Initial Cal.	2300	04/01/2010
Inter. Cal.	0020	04/02/2010
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	0230	04/02/2010

Couplant

Cal. Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.: 05-6534

Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1" Notch	80%	6.6	1.397"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
8	.75" SDH	23%	5	1.053"

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

Results: NRI ☑ RI ☐ Geom ☐ Counter bore noted for risk inform exam

Comments: Effective coverage using the 45° search unit has been verified by the presence of the weld root response during the required scans.

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

	Level		Signature	Date
Examiner: Currao, Jeffrey T	II-PDI			04/02/2010
Examiner: Wickenhauser, Keith F.	II			04/02/2010
Other: N/A	N/A			
Reviewer: W.L. Thomas				4-10-10
Site Review: Raymond T. Stack				4-10-10
ANI Review				14 Apr 2010

UT Calibration/Examination

ENCLOSURE R1-4

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UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R20
Summary No.:	N2.R1.11.265	Procedure Rev.:	00	Report No.:	UT-10-103
Workscope:	ISI	Work Order No.:	59101983016	Page:	2 of 4

Code: Sect. XI 1995ed/96 Add | Cat./Item: R-A/R1.11 | Location: A-LOOP

Drawing No.: 12050-WMKS-0103BE | Description: Elbow to Nozzle

System ID: RC

Component ID: 12050-WMKS-0103BE / 6-RC-417 / 2 | Size/Length: 1" / 21" | Thickness/Diameter: .75" / 6"

Limitations: Limited due to Nozzle configuration | Start Time: 0036 | Finish Time: 0050

Instrument Settings

Serial No.:	081624811		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	7.579	Range:	3.0"
M'tl Cal/Vel:	.1268in/us	Pulser:	Square
Damping:	400Ω	Reject:	0%
Rep. Rate:	Auto	Freq.:	2.0 Mhz
Filter:	.8 - 3.0	Mode:	Fullwave
Voltage:	Max	Other:	N/A
Ax. Gain (dB):	24.2	Circ. Gain (dB):	N/A

10 Screen Div. = 3.0" in. of Sound Path

Linearity Report No.: L-10-004

Calibration Block

Cal. Block No.:	10876		
Thickness:	2.25"	Dia.:	0
Cal. Blk. Temp.:	71°	Temp. Tool:	1066BGCY
Comp. Temp.:	72°	Temp. Tool:	1066BGCY

Search Unit

Serial No.:	00VJBX		
Manufacturer:	KBA		
Size:	0.375"	Shape:	Round
Freq.:	2.25 MHZ	Style:	Comp-G
Exam Angle:	60°	# of Elements:	Single
Mode:	Shear		
Measured Angle:	60°		
Wedge Style:	MSWQC		

Search Unit Cable

Type: RG-174 | Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 30.2

CW ☐ CCW ☐ Scan dB: N/A

Exam Surface: OD

Surface Condition: Ground Smooth

Cal. Checks	Time	Date
Initial Cal.	2302	04/01/2010
Inter. Cal.	0036	04/02/2010
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	0232	04/02/2010

Couplant

Cal. Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.: 05-6534

Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1.0" ID Notch	80%	6.1	1.818"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
24.2	.75" SDH	65%	5.0	1.496"

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

Results: NRI ☑ RI ☐ Geom ☐

Comments: None

Percent Of Coverage Obtained > 80%: No | Reviewed Previous Data: Yes

Examiner	Level II-PDI	Signature	Date	Reviewer		Signature	Date
Currao, Jeffrey T			04/02/2010	W.L. THOMAS			4-10-10
Examiner	Level II	Signature	Date	Site Review		Signature	Date
Wickenhauser, Keith F.			04/02/2010	RAYMOND T. STARK			4-10-10
Other	Level N/A	Signature	Date	ANII Review		Signature	Date
N/A							14 Apr 2010

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UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R20
Summary No.:	N2.R1.11.265	Procedure Rev.:	00	Report No.:	UT-10-103
Workscope:	ISI	Work Order No.:	59101983016	Page:	3 of 4

Code: Sect. XI 1995ed/96 Add | Cat./Item: R-A/R1.11 | Location: A-LOOP

Drawing No.: 12050-WMKS-0103BE | Description: Elbow to Nozzle

System ID: RC

Component ID: 12050-WMKS-0103BE / 6-RC-417 / 2 | Size/Length: 1" / 21" | Thickness/Diameter: .75" / 6"

Limitations: Limited due to Nozzle configuration | Start Time: 0051 | Finish Time: 0101

Instrument Settings

Serial No.:	081624811		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	9.060	Range:	3.0"
M'tl Cal/Vel:	.2364in/us	Pulser:	Square
Damping:	400Ω	Reject:	0%
Rep. Rate:	Auto	Freq.:	2.0Mhz
Filter:	0.8 - 3.0	Mode:	Fullwave
Voltage:	Max	Other:	N/A
Ax. Gain (dB):	37.6	Circ. Gain (dB):	N/A

10 Screen Div. = 3.0 In. of Sound Path

Linearity Report No.: L-10-004

Calibration Block

Cal. Block No.:	10876		
Thickness:	2.25"	Dia.:	0
Cal. Blk. Temp.:	71°	Temp. Tool:	1066BGCY
Comp. Temp.:	72°	Temp. Tool:	1066BGCY

Search Unit

Serial No.:	06-108		
Manufacturer:	RTD		
Size:	2(8X14)	Shape:	Retangular
Freq.:	2.0 MHZ	Style:	TRL2-AUST
Exam Angle:	60°	# of Elements:	Dual
Mode:	Longitudional		
Measured Angle:	60°		
Wedge Style:	Integral		

Search Unit Cable

Type: RG-174 | Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 37.6

CW ☐ CCW ☐ Scan dB: N/A

Exam Surface: OD

Surface Condition: Ground Smooth

Cal. Checks	Time	Date
Initial Cal.	2304	04/01/2010
Inter. Cal.	0051	04/02/2010
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	0234	04/02/2010

Couplant

Cal. Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.: 05-6534

Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1" ID Notch	80%	6.6	1.988"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
30	.75" SDH	66%	5.1	1.52"

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

Results: NRI ☑ RI ☐ Geom ☐

Comments: Supplemental 60° RL Exam.

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

Examiner	Level	Signature	Date
Currao, Jeffrey T	II-PDI		04/02/2010
Wickenhauser, Keith F.	II		04/02/2010
Other	Level	Signature	Date

Reviewer	Signature	Date
W. Thomas		4.10.10
Site Review	Signature	Date
Raymond T. Stack	LV III	4-10-10
ANII Review	Signature	Date
	14 Apr 2010	

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NAPS Unit 2 3rd Interval Limited Exams
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ENCLOSURE R1-4

Supplemental Report

Dominion

Report No.: UT-10-103

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Summary No.: N2.R1.11.265

Examiner: Currao, Jeffrey T JTC Level: II-PDI Reviewer: W.L. Thomas Date: 4-10-10

Examiner: Wickenhauser, Keith F. KFW Level: II Site Review: Raymond T. Stark Date: 4-10-10

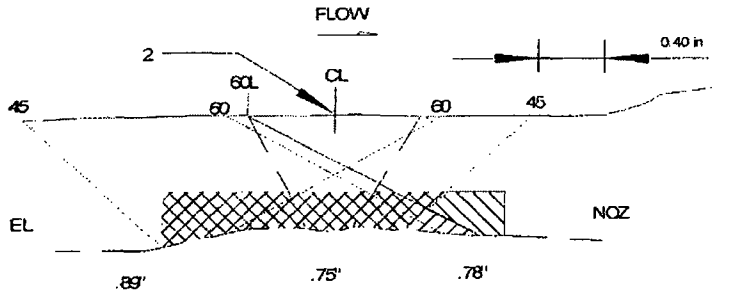
Other: N/A Level: N/A ANII Review: Date: 14 Apr 10

Comments: T & C used from previous data report # 559. From 9-20-1999, Mark # 2

Weld Number 2

Weld Thickness .75"
Weld Length 21"
Weld Width 1"

Sketch or Photo: 100 + 100 + 100 + 63 = 363/4 = 91% Date: 4/10/2010 Prepared By: W.L. Thomas



AREA EXAMINED DS SIDE AXIAL DIR .14 SQ IN

AREA OF NO EXAMINATION DS SIDE AXIAL DIR. 10 SQ IN

AREA EXAMINED BEST EFFORT .03 SQ IN / .27 = .11 X 100 = 11%

TOTAL REQUIRED .27 SQ IN - .13 SQ IN. = .14 / .27 = .518 X 100 = 52% DS SIDE AX DIR

NOTE: ALL AREA MEASUREMENTS WERE CALCULATED WITH CAD PROGRAM

R-A VOLUME

Examination Volume Dimensions - Height .25" Length 21" Width 2"

Coverage Summary				
	Required Scans (each has a weighing factor of 100 for complete coverage)			
ANGLE	UpSt-Ax	UpSt-Circ	DnSt-Ax	DnSt-Circ
45		100%		100%
45/60	100%		52%	
60L			11% Best Effort	
			Code Coverage Total	88%
			Best Effort Coverage (Max 25%) Total	3%

Notes:

1) Code Coverage refers to the maximum percentage of the required examination volume that is effectively examined with the qualified examination procedure.
2) Best Effort Coverage refers to the required examination volume past the weld centerline that is examined in the axial beam direction with an Appendix VIII *demonstrated procedure for single sided coverage.*

UT Calibration/Examination

Dominion

Site/Unit: NAPS / 2 | Procedure: ER-AA-NDE-UT-802 | Outage No.: N2R19

Summary No.: N2.R1.11.266 | Procedure Rev.: 00 | Report No.: UT-08-029

Workscope: ISI | Work Order No.: | Page: 1 of 5

Code: Sect. XI 1995 Ed./1996 Add. | Cat./Item: R-A/R1.11 | Location: C-LOOP

Drawing No.: 12050-WMKS-0103BN | Description:

System ID: RC

Component ID: 12050-WMKS-0103BN / 6-RC-420 / 1 | Size/Length: 1.1"/ 21" | Thickness/Diameter: .834" / 6"

Limitations: single sided exam due to valve | Start Time: 1500 | Finish Time: 1510

Instrument Settings

Serial No.:	040182503		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	5.465	Range:	2.0"
M'tl Cal/Vel:	.1232 in/us	Pulser:	square
Damping:	400 ohms	Reject:	0%
Rep. Rate:	auto	Freq.:	2.0 Mhz.
Filter:	.8 - 3.0	Mode:	full wave
Voltage:	Max	Other:	N/A
Ax. Gain (dB):	7.4	Circ. Gain (dB):	7.4

10 Screen Div. = 2.0 in..of Sound Path

Linearity Report No.: L-08-006

Calibration Block

Cal. Block No.: 05-8514

Thickness 2.25" Dia.: 0

Cal. Blk. Temp. 71° Temp. Tool: 1075BGCY

Comp. Temp.: 74° Temp. Tool: 1075BGCY

Search Unit

Serial No.:	01CLN1		
Manufacturer:	KBA		
Size:	0.375"	Shape:	Round
Freq.:	2.25 MHZ	Style:	Comp-G
Exam Angle:	45°	# of Elements:	Single
Mode:	shear		
Measured Angle:	45°		
Wedge Style:	mswqc		

Search Unit Cable

Type: RG-174

Length: 6' No. Conn.: 0

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 25.4

CW ☑ CCW ☑ Scan dB: 25.4

Exam Surface: O.D

Surface Condition: Contour Ground

Cal. Checks	Time	Date
Initial Cal.	1345	09/21/2008
Inter. Cal.	1500	09/21/2008
Inter. Cal.	1510	09/21/2008
Inter. Cal.	N/A	
Final Cal.	1845	09/21/2008

Couplant

Cal. Batch: 06120

Type: SoundSafe

Mfg.: SONOTECH

Exam Batch: 06120

Type: SoundSafe

Mfg.: SONOTECH

Reference Block

Serial No.: 05-8258

Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1" Notch	80	7.2	1.417"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
7.4	.7" sdh	25"	5.3	1.053"

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

Results: NRI ☑ RI ☐ Geom ☐

Comments: None

Percent Of Coverage Obtained > 90%: No Reviewed Previous Data: N/A

Examiner	Level II-PDI	Signature	Date	Reviewer		Signature	Date
Thomas, Travis W.		Travis	09/21/2008	WAYNE L. THOMAS LIII			9.29.08
Examiner	Level IIL	Signature	Date	Site Review		Signature	Date
Thompson, Lee D.		Lee D Thompson	09/21/2008	KJ Hacker LIII		KJ Hacker	09/29/08
Other	Level N/A	Signature	Date	ANII Review		Signature	Date
N/A						M Hess	9/30/08

ENCLOSURE R1-5
NAPS Unit 2 3rd interval Limited Exams
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UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R19
Summary No.:	N2.R1.11.266	Procedure Rev.:	00	Report No.:	UT-08-029
Workscope:	ISI	Work Order No.:		Page:	2 of 5

Code:	Sect. XI 1995 Ed./1996 Add.	Cat./Item:	R-A/R1.11	Location:	C-LOOP
Drawing No.:	12050-WMKS-0103BN	Description:			
System ID:	RC				
Component ID:	12050-WMKS-0103BN / 6-RC-420 / 1	Size/Length:	1.1"/ 21"	Thickness/Diameter:	.834" / 6"
Limitations:	single sided exam due to valve	Start Time:	1511	Finish Time:	1520

Instrument Settings

Serial No.:	040182503		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	7.134	Range:	2.875"
M'tl Cal/Vel:	.1246in/us	Pulser:	Square
Damping:	400 Ohms	Reject:	0%
Rep. Rate:	Auto	Freq.:	2.0 Mhz.
Filter:	.8 - 3.0	Mode:	Full Wave
Voltage:	Max	Other:	N/A
Ax. Gain (dB):	23.2	Circ. Gain (dB):	23.2

10 Screen Div. = 2.8 in. of Sound Path

Linearity Report No.: L-08-006

Calibration Block

Cal. Block No.:	05-8514		
Thickness	2.25"	Dia.:	0
Cal. Blk. Temp.	71°	Temp. Tool:	1075BGCY
Comp. Temp.:	74°	Temp. Tool:	1075BGCY

Search Unit

Serial No.:	01CLN0		
Manufacturer:	KBA		
Size:	0.375"	Shape:	Round
Freq.:	2.25 MHZ	Style:	Comp-G
Exam Angle:	60°	# of Elements:	Single
Mode:	shear		
Measured Angle:	58°		
Wedge Style:	mswqc		

Search Unit Cable

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

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 29.2

CW ☑ CCW ☑ Scan dB: 29.2

Exam Surface: O.D

Surface Condition: Contour Ground

Cal. Checks	Time	Date
Initial Cal.	1349	09/21/2008
Inter. Cal.	1511	09/21/2008
Inter. Cal.	1520	09/21/2008
Inter. Cal.	N/A	
Final Cal.	1846	09/21/2008

Couplant

Cal. Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.: 05-8258

Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1" Notch	80	6.3	1.804"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
23.2	.7 sdh	61	5.1	1.457"

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

Results: NRI ☑ RI ☐ Geom ☐

Comments: Effective coverage using the 60° search unit has been verified by the presence of the weld root response during the required scans.

Percent Of Coverage Obtained > 90%: No Reviewed Previous Data: N/A

Examiner	Level	Signature	Date	Reviewer		Signature	Date
Thomas, Travis W.	II-PDI	Travis Thomas	09/21/2008	WAYNE L. THOMAS	LIII	[signature]	9.29.08
Examiner	Level	Signature	Date	Site Review		Signature	Date
Thompson, Lee D.	IIL	Lee D Thompson	09/21/2008	K.S. Hacker	LIII	K.S. Hacker	09/29/08
Other	Level	Signature	Date	ANII Review		Signature	Date
N/A	N/A					M Hace	9/30/08

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NAPS Unit 2 3rd interval Limited Exams
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UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R19
Summary No.:	N2.R1.11.266	Procedure Rev.:	00	Report No.:	UT-08-029
Workscope:	ISI	Work Order No.:		Page:	3 of 5

Code: Sect. XI 1995 Ed./1996 Add. Cat./Item: R-A/R1.11 Location: C-LOOP

Drawing No.: 12050-WMKS-0103BN Description:

System ID: RC

Component ID: 12050-WMKS-0103BN / 6-RC-420 / 1 Size/Length: 1.1"/ 21" Thickness/Diameter: .834" / 6"

Limitations: Downstream limited due to valve. Start Time: 1521 Finish Time: 1526

Instrument Settings

Serial No.:	040182503		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	7.759	Range:	4.2"
M'tl Cal/Vel:	.1239 in/us	Pulser:	Square
Damping:	400	Reject:	0%
Rep. Rate:	Auto	Freq.:	2.0 Mhz.
Filter:	.8 - 3.0	Mode:	Full Wave
Voltage:	Max	Other:	N/A
Ax. Gain (dB):	34.5	Circ. Gain (dB):	N/A

10 Screen Div. = 4.2 In. of Sound Path

Linearity Report No.: L-08-006

Calibration Block

Cal. Block No.:	05-8514		
Thickness	2.25"	Dia.:	0
Cal. Blk. Temp.	71°	Temp. Tool:	1075BGCY
Comp. Temp.:	74°	Temp. Tool:	1075BGCY

Search Unit

Serial No.:	00VBBK		
Manufacturer:	KBA		
Size:	0.375"	Shape:	Round
Freq.:	2.25 MHZ	Style:	Comp-G
Exam Angle:	70°	# of Elements:	Single
Mode:	Shear		
Measured Angle:	68°		
Wedge Style:	mswqc		

Search Unit Cable

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

Scan Coverage

Upstream ☑ Downstream ☐ Scan dB: 40.5

CW ☐ CCW ☐ Scan dB: N/A

Exam Surface: O.D

Surface Condition: Contour Ground

Cal. Checks	Time	Date
Initial Cal.	1351	09/21/2008
Inter. Cal.	1521	09/21/2008
Inter. Cal.	1526	09/21/2008
Inter. Cal.	N/A	
Final Cal.	1847	09/21/2008

Couplant

Cal. Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.: 05-8258 Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1" Notch	80	6.6	2.704

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
20	.3 sdh	44	2.2	.895"

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

Results: NRI ☑ RI ☐ Geom ☐

Comments: None

Percent Of Coverage Obtained >90%: Yes Reviewed Previous Data: N/A

Examiner	Level II-PDI	Signature	Date	Reviewer		Signature	Date
Thomas, Travis W.			09/21/2008	WAYNE L. THOMAS LEVEL III			09-29-08
Examiner	Level IIL	Signature	Date	Site Review		Signature	Date
Thompson, Lee D.		Lee D. Thompson	09/21/2008	KJ Hacker LEVEL III			09/29/08
Other	Level N/A	Signature	Date	ANII Review		Signature	Date
N/A							9/30/08

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UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R19
Summary No.:	N2.R1.11.266	Procedure Rev.:	00	Report No.:	UT-08-029
Workscope:	ISI	Work Order No.:		Page:	4 of 5

Code: Sect. XI 1995 Ed./1996 Add. Cat./Item: R-A/R1.11 Location: C-LOOP

Drawing No.: 12050-WMKS-0103BN Description:

System ID: RC

Component ID: 12050-WMKS-0103BN / 6-RC-420 / 1 Size/Length: 1.1"/ 21" Thickness/Diameter: .834" / 6"

Limitations: single sided exam due to valve Start Time: 1527 Finish Time: 1533

Instrument Settings

Serial No.:	040182503		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	8.435	Range:	2.875"
M'tl Cal/Vel:	.2325 in/us	Pulser:	square
Damping:	400 Ohms	Reject:	0%
Rep. Rate:	Auto	Freq.:	2.0
Filter:	.8 - 3.0	Mode:	Full Wave
Voltage:	Max	Other:	N/A
Ax. Gain (dB):	39	Circ. Gain (dB):	N/A

10 Screen Div. = 2.8 In. of Sound Path

Linearity Report No.: L-08-006

Calibration Block

Cal. Block No.:	05-8514		
Thickness	2.25"	Dia.:	0
Cal. Blk. Temp.	71°	Temp. Tool:	1075BGCY
Comp. Temp.:	74°	Temp. Tool:	1075BGCY

Search Unit

Serial No.:	06-108		
Manufacturer:	RTD		
Size:	2(8X14)	Shape:	Retangular
Freq.:	2.0 MHZ	Style:	TRL2-AUST
Exam Angle:	60°	# of Elements:	Dual
Mode:	RL		
Measured Angle:	N/A		
Wedge Style:	Integral		

Search Unit Cable

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

Scan Coverage

Upstream ☑ Downstream ☐ Scan dB: 39

CW ☐ CCW ☐ Scan dB: N/A

Exam Surface: O.D

Surface Condition: Contour Ground

Cal. Checks	Time	Date
Initial Cal.	1352	09/21/2008
Inter. Cal.	1527	09/21/2008
Inter. Cal.	1533	09/21/2008
Inter. Cal.		
Final Cal.	1848	09/21/2008

Couplant

Cal. Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.: 05-8258 Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1" Notch	80	6.0	1.711

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
39.0	.7 sdh	90	5.3	1.482

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

Results: NRI ☑ RI ☐ Geom ☐

Comments: None

Percent Of Coverage Obtained > 90%: No Reviewed Previous Data: N/A

Examiner	Level	II-PDI	Signature	Date	Reviewer	Signature	Date
Thomas, Travis W.			Travis	09/21/2008	WAYNE L. THOMAS LIII		09.29.08
Examiner	Level	III	Signature	Date	Site Review	Signature	Date
Thompson, Lee D.			Lee D Thompson	09/21/2008	KJ Hacker LIII		09/29/08
Other	Level	N/A	Signature	Date	ANII Review	Signature	Date
N/A							9/30/08

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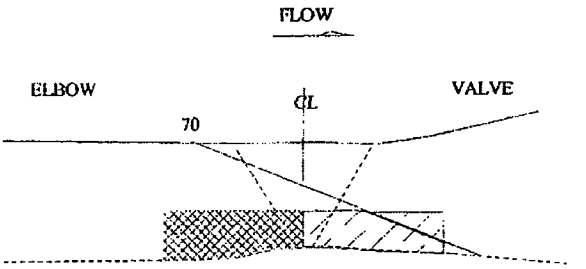
ENCLOSURE R1-5

Weld Number	1
Weld Thickness	.834"
Weld Length	21"
Weld Width	1.1"

Report No: UT-08-029

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KJ Hacker L III 09/29/08



50% R-A VOLUME EXAMINED

EXAMINED 0.21 SQ. IN OF A TOTAL OF 0.27 SQ. IN DOWN STREAM (BEST EFFORT)

.06 SQ. IN. NOT EXAMINED

VOLUME MEASURED WITH CAD PROGRAM DUE TO IRREGULAR ID

Examination Volume Dimensions - Height .28" Length 21" Width 2.1"

Coverage Summary				
	Required Scans (each has a weighing factor of 100 for complete coverage)			
ANGLE	UpSt - Ax	UpSt - Circ	DnSt- Ax	DnSt - Circ
60		100%		0%
70	100%		78% (Best Effort)	
			Code Coverage Total	50%
			Best Effort Coverage (Max 25%) Total	20%

Notes:

1) Code Coverage refers to the maximum percentage of the required examination volume that is effectively examined with the qualified examination procedure.
2) Best Effort Coverage refers to the required examination volume past the weld centerline that is examined in the axial beam direction with an Appendix VIII demonstrated procedure for single sided coverage.

UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R19
Summary No.:	N2.R1.11.267	Procedure Rev.:	00	Report No.:	UT-08-030
Workscope:	ISI	Work Order No.:		Page:	1 of 6

Code: Sect. XI 1995 Ed./1996 Add. Cat./Item: R-A/R1.11 Location: C-LOOP

Drawing No.: 12050-WMKS-0103BN Description: Elbow to Branch Connection

System ID: RC

Component ID: 12050-WMKS-0103BN / 6-RC-420 / 2B Size/Length: 1.1" / 21" Thickness/Diameter: .783" / 6"

Limitations: single sided exam due to configuration. Start Time: 1535 Finish Time: 1542

Instrument Settings

Serial No.:	040182503		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	5.465	Range:	2.0"
M'tl Cal/Vel:	.1232 in/us	Pulser:	square
Damping:	400 ohms	Reject:	0%
Rep. Rate:	auto	Freq.:	2.0 Mhz.
Filter:	.8 - 3.0	Mode:	full wave
Voltage:	Max	Other:	N/A
Ax. Gain (dB):	7.4	Circ. Gain (dB):	7.4

10 Screen Div. = 2.0 In. of Sound Path

Linearity Report No.: L-08-006

Calibration Block

Cal. Block No.:	05-8514		
Thickness:	2.25"	Dia.:	0
Cal. Blk. Temp.:	71°	Temp. Tool:	1075BGCY
Comp. Temp.:	74°	Temp. Tool:	1075BGCY

Search Unit

Serial No.:	01CLN1		
Manufacturer:	KBA		
Size:	0.375"	Shape:	Round
Freq.:	2.25 MHZ	Style:	Comp-G
Exam Angle:	45°	# of Elements:	Single
Mode:	shear		
Measured Angle:	45°		
Wedge Style:	mswqc		

Search Unit Cable

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

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 25.4

CW ☑ CCW ☑ Scan dB: 25.4

Exam Surface: O.D

Surface Condition: Contour Ground

Cal. Checks	Time	Date
Initial Cal.	1345	09/21/2008
Inter. Cal.	1535	09/21/2008
Inter. Cal.	1542	09/21/2008
Inter. Cal.	N/A	
Final Cal.	1845	09/21/2008

Couplant

Cal. Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.: 05-8258 Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1" Notch	80	7.2	1.417"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
7.4	.7" sdh	25[5]	5.3	1.053"

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

Results: NRI ☑ RI ☐ Geom ☐

Comments: None

Percent Of Coverage Obtained > 90%: No Reviewed Previous Data: N/A

Examiner	Level II-PDI	Signature	Date	Reviewer		Signature	Date
Thomas, Travis W.			09/21/2008	WAYNE L. THOMAS LIII			10-02-08
Examiner	Level IIL	Signature	Date	Site Review		Signature	Date
Thompson, Lee D.		Lee D Thompson	09/21/2008	KJ Hacker LIII		KJ Hacker	10/3/08
Other	Level N/A	Signature	Date	ANII Review		Signature	Date
N/A						M Hoag	10/4/08

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NAPS Unit 2 3rd interval Limited Exams
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UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R19
Summary No.:	N2.R1.11.267	Procedure Rev.:	00	Report No.:	UT-08-030
Workscope:	ISI	Work Order No.:		Page:	2 of 6

Code: Sect. XI 1995 Ed./1996 Add. Cat./Item: R-A/R1.11 Location: C-LOOP

Drawing No.: 12050-WMKS-0103BN Description: Elbow to Branch Connection

System ID: RC

Component ID: 12050-WMKS-0103BN / 6-RC-420 / 2B Size/Length: 1.1" / 21" Thickness/Diameter: .783" / 6"

Limitations: single sided exam due to configuration. Start Time: 1543 Finish Time: 1548

Instrument Settings

Serial No.:	040182503		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	7.134	Range:	2.875"
M'tl Cal/Vel:	.1246in/us	Pulser:	Square
Damping:	400 Ohms	Reject:	0%
Rep. Rate:	Auto	Freq.:	2.0 Mhz.
Filter:	.8 - 3.0	Mode:	Full Wave
Voltage:	Max	Other:	N/A
Ax. Gain (dB):	23.2	Circ. Gain (dB):	23.2

10 Screen Div. = 2.8 in. of Sound Path

Linearity Report No.: L-08-006

Calibration Block

Cal. Block No.:	05-8514		
Thickness:	2.25"	Dia.:	0
Cal. Blk. Temp.:	71°	Temp. Tool:	1075BGCY
Comp. Temp.:	74°	Temp. Tool:	1075BGCY

Search Unit

Serial No.:	01CLN0		
Manufacturer:	KBA		
Size:	0.375"	Shape:	Round
Freq.:	2.25 MHZ	Style:	Comp-G
Exam Angle:	60°	# of Elements:	Single
Mode:	shear		
Measured Angle:	58°		
Wedge Style:	mswqc		

Search Unit Cable

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

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 29.2

CW ☑ CCW ☑ Scan dB: 29.2

Exam Surface: O.D

Surface Condition: Contour Ground

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

Results: NRI ☑ RI ☐ Geom ☐

Percent Of Coverage Obtained > 90%: No Reviewed Previous Date: N/A

Cal. Checks	Time	Date
Initial Cal.	1349	09/21/2008
Inter. Cal.	1543	09/21/2008
Inter. Cal.	1548	09/21/2008
Inter. Cal.	N/A	
Final Cal.	1846	09/21/2008

Couplant

Cal. Batch: 06120

Type: SoundSafe

Mfg.: SONOTECH

Exam Batch: 06120

Type: SoundSafe

Mfg.: SONOTECH

Reference Block

Serial No.: 05-8258

Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1" Notch	80	6.3	1.804"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
23.2	.7 sdh	61	5.1	1.457"

Comments: Effective coverage using the 60° search unit has been verified by the presence of the weld root response during the required scans.

Examiner	Level II-PDI	Signature	Date	Reviewer		Signature	Date
Thomas, Travis W.			09/21/2008	WAYNE L. THOMAS	LTII		10-02-08
Examiner	Level IIL	Signature	Date	Site Review		Signature	Date
Thompson, Lee D.			09/21/2008	KJ Hacker	LTII		10/3/08
Other	Level N/A	Signature	Date	ANII Review		Signature	Date
N/A							10/4/08

ENCLOSURE R1-6
Serial No. 11-472
Docket No. 50-339
NAPS Unit 2 3rd interval Limited Exams
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UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R19
Summary No.:	N2.R1.11.267	Procedure Rev.:	00	Report No.:	UT-08-030
Workscope:	ISI	Work Order No.:		Page:	3 of 6

Code: Sect. XI 1995 Ed./1996 Add. Cat./Item: R-A/R1.11 Location: C-LOOP

Drawing No.: 12050-WMKS-0103BN Description: Elbow to Branch Connection

System ID: RC

Component ID: 12050-WMKS-0103BN / 6-RC-420 / 2B Size/Length: 1.1" / 21" Thickness/Diameter: .783" / 6"

Limitations: single sided exam due to configuration. Start Time: 1549 Finish Time: 1554

Instrument Settings

Serial No.:	040182503		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	7.759	Range:	4.2"
M'tl Cal/Vel:	.1239 in/us	Pulser:	Square
Damping:	400	Reject:	0%
Rep. Rate:	Auto	Freq.:	2.0 Mhz.
Filter:	.8 - 3.0	Mode:	Full Wave
Voltage:	Max	Other:	N/A
Ax. Gain (dB):	34.5	Circ. Gain (dB):	N/A

10 Screen Div. = 4.2 in. of Sound Path

Linearity Report No.: L-08-006

Calibration Block

Cal. Block No.:	05-8514		
Thickness:	2.25"	Dia.:	0
Cal. Blk. Temp.:	71°	Temp. Tool:	1075BGCY
Comp. Temp.:	74°	Temp. Tool:	1075BGCY

Search Unit

Serial No.:	00VBBK		
Manufacturer:	KBA		
Size:	0.375"	Shape:	Round
Freq.:	2.25 MHZ	Style:	Comp-G
Exam Angle:	70°	# of Elements:	Single
Mode:	Shear		
Measured Angle:	68°		
Wedge Style:	mswqc		

Search Unit Cable

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

Scan Coverage

Upstream ☑ Downstream ☐ Scan dB: 40.5

CW ☐ CCW ☐ Scan dB: N/A

Exam Surface: O.D

Surface Condition: Contour Ground

Cal. Checks	Time	Date
Initial Cal.	1351	09/21/2008
Inter. Cal.	1549	09/21/2008
Inter. Cal.	1554	09/21/2008
Inter. Cal.	N/A	
Final Cal.	1847	09/21/2008

Couplant

Cal. Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.:	05-8258
Type:	SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1" Notch	80	6.6	2.704

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
20	.3 sdh	44	2.2	.895"

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

Results: NRI ☑ RI ☐ Geom ☐

Comments: None

Percent Of Coverage Obtained > 90%: No Reviewed Previous Data: N/A

Examiner	Level II-PDI	Signature	Date	Reviewer		Signature	Date
Thomas, Travis W.		Travis Thomas	09/21/2008	WAYNE L. THOMAS	LTII		10.02.08
Examiner	Level IIL	Signature	Date	Site Review		Signature	Date
Thompson, Lee D.		Lee D Thompson	09/21/2008	KJ Hacker	LTII	KJ Hacker	10/3/08
Other	Level N/A	Signature	Date	ANII Review		Signature	Date
N/A						M Hoon	10/4/08

ENCLOSURE R1-6
NAPS Unit 2 3rd Interval Limited Exams
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Docket No. 50-339
Serial No. 11-472

UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R19
Summary No.:	N2.R1.11.267	Procedure Rev.:	00	Report No.:	UT-08-030
Workscope:	ISI	Work Order No.:		Page:	4 of 6

Code: Sect. XI 1995 Ed./1996 Add. Cat./Item: R-A/R1.11 Location: C-LOOP

Drawing No.: 12050-WMKS-0103BN Description: Elbow to Branch Connection

System ID: RC

Component ID: 12050-WMKS-0103BN / 6-RC-420 / 2B Size/Length: 1.1" / 21" Thickness/Diameter: .783" / 6"

Limitations: single sided exam due to configuration. Start Time: 1555 Finish Time: 1601

Instrument Settings

Serial No.:	040182503		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	8.435	Range:	2.875"
M'tl Cal/Vel:	.2325 in/us	Pulser:	square
Damping:	400 Ohms	Reject:	0%
Rep. Rate:	Auto	Freq.:	2.0
Filter:	.8 - 3.0	Mode:	Full Wave
Voltage:	Max	Other:	N/A
Ax. Gain (dB):	39	Circ. Gain (dB):	N/A

10 Screen Div. = 2.8 in. of Sound Path

Linearity Report No.: L-08-006

Calibration Block

Cal. Block No.:	05-8514		
Thickness:	2.25"	Dia.:	0
Cal. Blk. Temp.:	71°	Temp. Tool:	1075BGCY
Comp. Temp.:	74°	Temp. Tool:	1075BGCY

Search Unit

Serial No.:	06-108		
Manufacturer:	RTD		
Size:	2(8X14)	Shape:	Rectangular
Freq.:	2.0 MHZ	Style:	TRL2-AUST
Exam Angle:	60°	# of Elements:	Dual
Mode:	RL		
Measured Angle:	60°		
Wedge Style:	Integral		

Search Unit Cable

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

Scan Coverage

Upstream ☑ Downstream ☐ Scan dB: 39

CW ☐ CCW ☐ Scan dB: N/A

Exam Surface: O.D

Surface Condition: Contour Ground

Cal. Checks	Time	Date
Initial Cal.	1352	09/21/2008
Inter. Cal.	1555	09/21/2008
Inter. Cal.	1601	09/21/2008
Inter. Cal.	N/A	
Final Cal.	1848	09/21/2008

Couplant

Cal. Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.: 05-8258 Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1" Notch	80	6.0	1.711

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
39.0	.7 sdh	90	5.3	1.482

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

Results: NRI ☑ RI ☐ Geom ☐

Comments: None

Percent Of Coverage Obtained > 90%: No Reviewed Previous Data: N/A

Examiner	Level II-PDI	Signature	Date	Reviewer		Signature	Date
Thomas, Travis W.			09/21/2008	WAYNE L. THOMAS	LTII		10-02-08
Examiner	Level IIL	Signature	Date	Site Review		Signature	Date
Thompson, Lee D.			09/21/2008	KJ Hacker	LTII		10/3/08
Other	Level N/A	Signature	Date	ANII Review		Signature	Date
N/A							10/4/08

ENCLOSURE R1-6
NAPS Unit 2 3rd interval Limited Exams
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Docket No. 50-339
Serial No. 11-472

Supplemental Report

Dominion

Report No.: UT-08-030

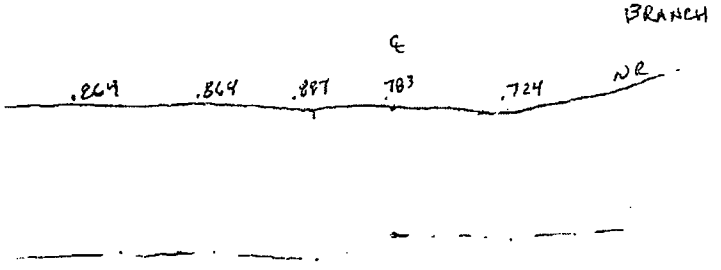
Page: 5 of 6

Summary No.: N2.R1.11.267

Examiner:	Thomas, Travis W.	Level:	II-PDI	Reviewer:	WAYNE L. THOMAS LTII	Date: 10.02.08
Examiner:	Thompson, Lee D.	Level:	IIL	Site Review:	KJ Hacker LTII	Date: 10/3/08
Other:	N/A	Level:	N/A	ANII Review:	M. Hare	Date: 10/4/08

Comments:

Sketch or Photo:



Additional - Supplemental Data

ENCLOSURE R1-6

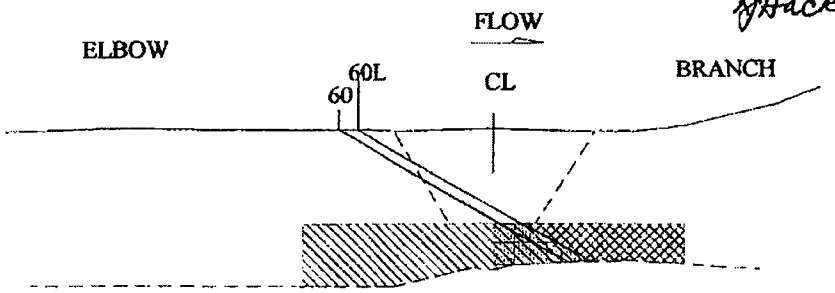
Serial No. 11-472
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NAPS Unit 2 3rd interval Limited Exams
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ENCLOSURE R1-6

Weld Number	2B
Weld Thickness	.783"
Weld Length	21"
Weld Width	1.1"

Report No: UT-08-030
Summary # N2.R1.11.267
Pg. 6 of 6
Prepared By: W.L. Thomas
Date: 10/2/2008

J Hacker LIII 10/3/08



0.55 SQ. INCHES TOTAL EXAM AREA

100% R-A US AX VOLUME (.275 SQ. IN.) EXAMINED

0.08 SQ IN. EXAMINED BEST EFFORT .08 / .275 = 29%

0.195 SQ. IN. NOT EXAMINED

NO CIRC EXAM DS SIDE

100 + 100 + 0 + 0 = 200 / 400 = 50%

29 / 4 = 7.25% BEST EFFORT

Examination Volume Dimensions - Height .26" Length 21" Width 2.1"

Coverage Summary				
	Required Scans (each has a weighing factor of 100 for complete coverage)			
ANGLE	UpSt-Ax	UpSt-Circ	DnSt-Ax	DnSt-Circ
60	100%		0%	
45/60		100%		0%
60L			29%	
			Code Coverage Total	50%
			Best Effort Coverage (Max 25%) Total	7%

Notes:

1) Code Coverage refers to the maximum percentage of the required examination volume that is effectively examined with the qualified examination procedure.
2) Best Effort Coverage refers to the required examination volume past the weld centerline that is examined in the axial beam direction with an Appendix VIII demonstrated procedure for single sided coverage.

UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R18
Summary No.:	N2.R1.11.269	Procedure Rev.:	00	Report No.:	UT-07-041
Workscope:	ISI	Work Order No.:		Page:	1 of 1

Code: Sect. XI 1995 Ed./1996 Add. Cat./Item: R-A/R1.11 Location: B-LOOP

Drawing No.: 12050-WMKS-0103BP Description: Pipe to Valve

System ID: RC

Component ID: 12050-WMKS-0103BP / 6-RC-419 / 80 Size/Length: 1"/23.5" Thickness/Diameter: .75"/6"

Limitations: Single Sided Start Time: 1000 Finish Time: 1030

Instrument Settings

Serial No.:	98300406		
Manufacturer:	Panametrics		
Model:	2300		
Delay:	6.997"	Range:	2.5"
M'tl Cal/Vel:	.123	Pulser:	High
Damping:	400	Reject:	0
Rep. Rate:	Fixed	Freq.:	Fixed
Filter:	STD	Mode:	P.E.
Voltage:	N/A		
Ax. Gain (dB):	37.8	Circ. Gain (dB):	37.8

10 Screen Div. = 2.5 in. of Sound Path

Linearity Report No.: L-07-006

Calibration Block

Cal. Block No.:	10873		
Thickness:	2.25"	Dia.:	0
Cal. Blk. Temp.	75	Temp. Tool:	1066BGCY
Comp. Temp.:	76	Temp. Tool:	1072BGCY

Search Unit

Serial No.:	01CWK2		
Manufacturer:	KBA		
Size:	0.25"	Shape:	Round
Freq.:	2.25 MHZ	Style:	Comp-G
Exam Angle:	60	# of Elements:	Single
Mode:	Shear		
Measured Angle:	58		
Wedge Style:	MSWQC		

Search Unit Cable

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

Scan Coverage

Upstream ☐ Downstream ☑ Scan dB: 44

CW ☑ CCW ☑ Scan dB: 44

Exam Surface: OD

Surface Condition: Contour Ground

Cal. Checks	Time	Date
Initial Cal.	0800	03/28/2007
Inter. Cal.	0959	03/28/2007
Inter. Cal.		
Inter. Cal.	1020	03/28/2007
Final Cal.	1205	03/28/2007

Couplant

Cal. Batch: 06120

Type: SoundSafe

Mfg.: SONOTECH

Exam Batch: 06120

Type: SoundSafe

Mfg.: SONOTECH

Reference Block

Serial No.: 05-6534

Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1.0"Notch	80%	7.2	1.8

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1.0"Notch	80%	7.2	1.8

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
30	FSDH	65%	6.0	1.5

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

Results: NRI ☑ RI ☐ Geom ☐ NDER#07-001.Previous Profile used.

Comments: 60 Deg.Used For Coverage Due To Weld Crown Width.Coverage Verified By ID Root Roll.Previous Geo.Verified Less Than 50%.

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

Examiner	Level II-PDI	Signature	Date	Reviewer	Signature	Date
Cage, Norman			03/28/2007	Robert Davies	Robert Davies	4/2/07
Examiner	Level III	Signature	Date	Site Review	Signature	Date
Odegard, Jeffrey D			03/28/2007	N/A		
Other	Level	Signature	Date	ANII Review	Signature	Date
				Mark Greer	M Greer	4/2/07

UT Calibration/Examination <Edit From Setup>

ENCLOSURE R1-7

NAPS Unit 2 3rd Interval Limited Exams

Docket No. 50-339

Serial No. 11-472

UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	ER-AA-NDE-UT-802	Outage No.:	N2R18
Summary No.:	N2.R1.11.269	Procedure Rev.:	00	Report No.:	UT-07-042
Workscope:	ISI	Work Order No.:		Page:	1 of 2

Code:	Sect. XI 1995 Ed./1996 Add.	Cat./Item:	R-A/R1.11	Location:	B-LOOP
Drawing No.:	12050-WMKS-0103BP	Description:	Pipe to Valve		
System ID:	RC				
Component ID:	12050-WMKS-0103BP / 6-RC-419 / 80	Size/Length:	1"/23.5"	Thickness/Diameter:	.75"/6"
Limitations:	Single Sided	Start Time:	1000	Finish Time:	1030

Instrument Settings

Serial No.:	98300406		
Manufacturer:	Panametrics		
Model:	2300		
Delay:	9.270	Range:	2.5
M'tl Cal/Vel:	.228	Pulser:	High
Damping:	400	Reject:	0
Rep. Rate:	Fixed	Freq.:	Fixed
Filter:	STD	Mode:	P.E.
Voltage:	N/A		
Ax. Gain (dB):	47.6	Circ. Gain (dB):	N/A

10 Screen Div. = 2.5 In. of Sound Path

Linearity Report No.: L-07-006

Calibration Block

Cal. Block No.:	10873		
Thickness:	2.25"	Dia.:	0
Cal. Blk. Temp.	75	Temp. Tool:	1072BGCY
Comp. Temp.:	78	Temp. Tool:	1072BGCY

Search Unit

Serial No.:	06-108		
Manufacturer:	RTD		
Size:	2(8X14)	Shape:	Retangular
Freq.:	2.0 MHZ	Style:	TRL2-AUST
Exam Angle:	60	# of Elements:	Dual
Mode:	Long.		
Measured Angle:	60		
Wedge Style:	Intrgral		

Search Unit Cable

Type:	RG-174		
Length:	6	No. Conn.:	0

Scan Coverage

Upstream ☑	Downstream ☐	Scan dB:	54
CW ☐	CCW ☐	Scan dB:	N/A
Exam Surface:	OD		
Surface Condition:	Contour Ground		

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

Results: NRI ☑ RI ☐ Geom ☐ NDER#07-001

Cal. Checks	Time	Date
Initial Cal.	0730	03/28/2007
Inter. Cal.	1020	03/28/2007
Inter. Cal.		
Inter. Cal.	1029	03/28/2007
Final Cal.	1200	03/28/2007

Couplant

Cal. Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.:	05-6534
Type:	SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1.0"Notch	80%	8.0	2.0

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
42	FSDH	80%	6.0	1.5"

Comments: Used For Far Side Coverage.

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

Examiner	Level II-PDI	Signature	Date	Reviewer	Robert Davies	Signature	Date
Cage, Norman			03/28/2007			Robert Davies	4/2/07
Examiner	Level III	Signature	Date	Site Review		Signature	Date
Odegard, Jeffrey D			03/28/2007		N/A		
Other	Level	Signature	Date	ANII Review		Signature	Date
				Mark Grece		M Grece	4/7/07

UT Calibration/Examination <Edit From Setup>

ENCLOSURE R1-7

NAPS Unit 2 3rd Interval Limited Exams

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Serial No. 11-472

ENCLOSURE R1-7

Supplemental Report

Dominion

Report No.: UT-07-042

Page: 2 of 2

Summary No.: N2.R1.11.269

Examiner: Cage, Norman NLC Level: II-PDI Reviewer: Robert Jones Date: 4/2/07

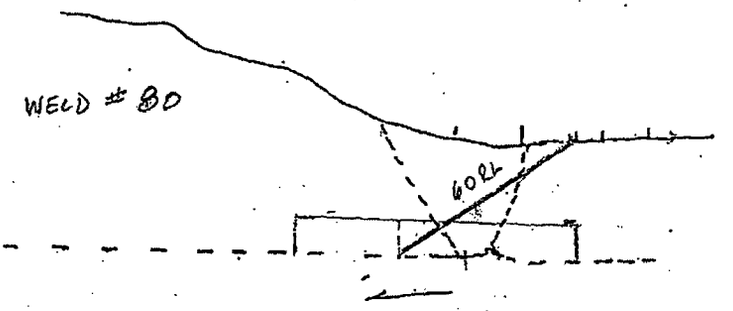
Examiner: Odegard, Jeffrey D JDO Level: III Site Review: N/A Date:

Other: Level: ANII Review: M Hess Date: 4/7/07

Comments:

Partial Weld Info.

Weld Number # 80
Nominal Thickness .75"
Weld Length 23.5"
Weld Width .9"



NON COVERAGE
□ .65 x .25 .1625
Δ .3 x .25 .075
.1625 2 .075 .038

TOTAL FARSIDE
1.0 x .25 .25
.1625 .038 .1663
.25 - .1663 .0963
.25 .3852 .0963 = 38.5% / 6 = 6.4% BEST EFFORT COVERAGE

Box Dimensions = H .25" L 1.7"

Coverage Summary						
Angle	Required Scans (each scan has a weighting factor of 100 for complete coverage)					
	UpSt- Ax	UpSt- CW	UpSt- CCW	DnSt- Ax	DnSt- CW	DnSt- CCW
60S	100%	100%	100%			
60RL				38.5%	0	0
					Code Coverage Total	50%
					Best Effort Coverage (Max 50%) Total	6.4%

Notes:
1) Code Coverage refers to the maximum percentage of the required examination volume that is effectively examined with the qualified examination procedure.
2) Best Effort Coverage refers to the required examination volume past the weld centerline that is examined with an Appendix VIII demonstrated procedure for single sided coverage.

ENCLOSURE R1-8

NZ, R1.11, 315

Interval: 3

Dominion
Ultrasonic Examination Data Record

UTRNO	Station	Unit	Drawing	Line	NDER
1054	NAPS	2	12050-WMKS-0109D	14"-RC-410-2501R-Q1	03-201

Couplant	CalCheck1	CalCheck2	CalCheck3	WO / DCP	Procedure	Rev
01220					NDE-UT-808	0

Thermometer SerNo: PT-18

Exam Data

UTRNO	RECTAG	mark/weld	Scan dB	Exam Area	Surface Condition	Temp	Partial	Single Side	Results
1054	4076	SW-5	64.8dB	ATT 1A	Ground	106°	Yes	No	NRI

Comments:

Please see attached partial report.

UTRNO		Signature	Level	Method	Date	Activity
1054	Examined By:	ROBERT SISTEK Robert Sistek	)ET-DI	UT	05/05/2004	11/06/2004
1054	Examined By:	DENNIS STRICKLAND	)ET-DI	UT	05/05/2004	11/07/2004

Redo- U2R17 see page prior

Reviewed By: [signature] **Level:** III **Date:** 5/13/04

ANII [signature] Date 5/24/04
Initial ☐ Final ☒
HSB-CT

ENCLOSURE R1-8

Dominion
UT Partial Record

UTRNO	RECTAG	Drawing	Line	Mark/weld	Procedure	Rev
1054	4076	12050-WMKS-0109D	14"-RC-410-2501R-Q1	SW-5	NDE-UT-808	0

CalNo	Weld Width	Exam Angle	SU Length	SU Width	SU Nose	Percent
~~547~~	~~1.35~~	~~45~~	~~0.90"~~	~~0.70"~~	~~0.40"~~	~~63%%~~

Area Not Examined

Two side of weld.

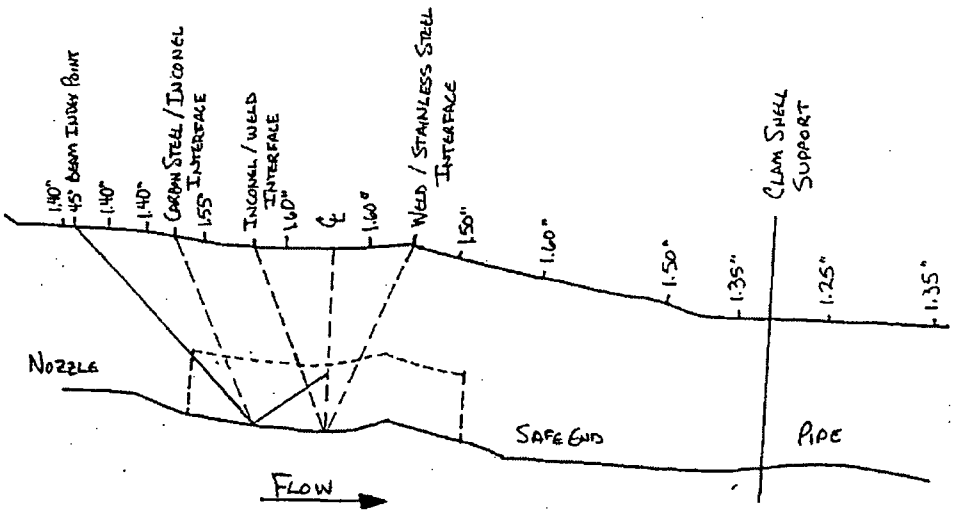
Reason

Clam shell support on 2 side of weld.

Comments

From the 5 side of the weld, 76% of the 5 scan was achieved, 27% of the 2 scan was achieved, and 100% of the 7 and 8 scans was achieved. On the 2 side of the weld, 100% of the 7 and 8 scans was achieved. (The inconel buttering on the 5 side of the weld was examined to the maximum extent possible utilizing qualified techniques to meet Appendix VIII, Supplement 10.) The exam was conducted utilizing circumferential scans in two directions and an axial scan from the nozzle side only. See sketch for details.

Cross Section Sketch



Evaluation

The weld was examined to the maximum extent possible from the 5 side; a total of 63% of the required exam volume was achieved. Due to the clam shell support no meaningful volume could be achieved from the 2 side. Due to the complexity of removing the clamshell the remaining weld volume to be scanned from the 2 side will be performed in a future outage. The additional coverage that will be achieved after the clamshell is removed is as follows. 2 side 2 direction 96%, 2 side 5 direction 32%. This will bring the total possible exam volume for this weld up to 79%.

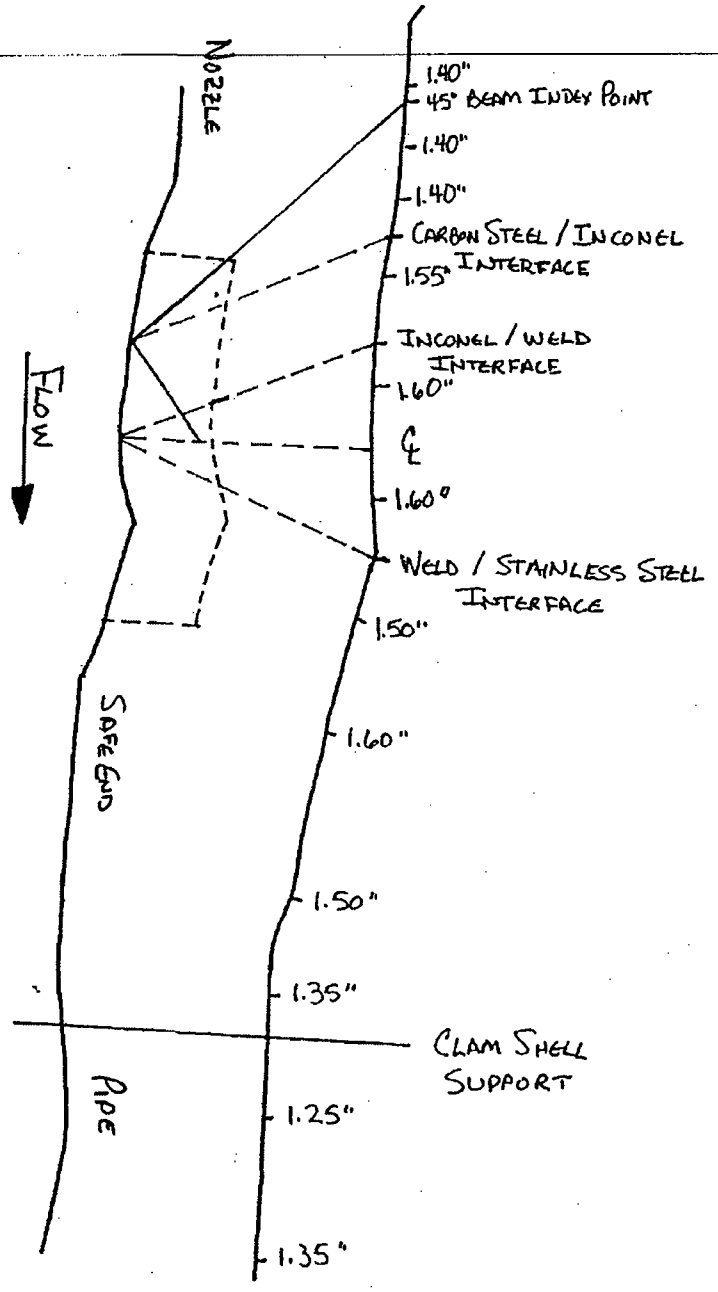
Signature	Level	DATE
DENNIS P. STRICKLAND	DET-DM	5/5/04

Reviewed By: _____ Level: ~~III~~ Date: 5-13-04

ANII _____ Date 5/22/04
Initial ☐ Final ☒
HSB-CT

ENCLOSURE R1-8

WELD: SW-5 DWG: 12050-WMICS-0109D LINE #: 14"-RC-410-2501R-Q1



UTR NO: 1059 DENNIS P. STRICKLAND 5-05-2004

Dennis P. Strickland II

Interval: 3

Dominion Power Ultrasonic Calibration Data Record

UTRNO	Station	Unit	Procedure	Rev	Sizing Procedure	Rev	Couplant	CalBlock	CBLKTKS	CBLKTemp
1054	NAPS	2	NDE-UT-808	0	NDE-UT-N/A		01220	VP-2.50-SS-02-B	SIZING BLOCK	97

CLbType	CLbLngth	#Connect	Simulator	AmpSwp	CalDate	CaLIn	CaLOut	CalBlock2	CBLKTKS2	CBLkTemp2
RG-174	6'	0	NA	NA	5/5/04	7:10	13:45			

Thermometer SerNo PT-18

Instrument Settings

UTRNO	MemLoc	CalNo	CAL BLK	REJECT	dB	REF dB	RANGE	VELOCITY	ZERO	DELAY	FREQ	FILTER	ENERGY	DAMPING
1054	1	547	VP-2.50-SS-02-B	0 %	28.8	+ 0.0dB	0.686 IN	0.1311 in/us	9.341 us	0.000	NA	STD	PULSER HIGH	150

Xducer Data

UTRNO	CalNo	SerialNo	Manuf	Model	Size	Frequency	Angle	Wedge Type	Wedge Length	Wedge Width	Wedge Nose
1054	547	0113H0	KB-AEROTECH	Comp	0.50"	1.0 MHZ	45	MSWQC	0.90"	0.70"	0.40"

Vertical Beam Spread

Instrument

UTRNO	SHAC	Inst. Serial	Inst. Model	Inst. Manuf	CalNo
1054	139	98318711	epoch III	panametrics	547

Calibration Data

UTRNO	CalNo	Direction	CaLType	Point	Reflector	Position	Amplitude	Sweep
1054	289	5,7,8	DET	1	1T	N/A	N/A	3.0
1054	289	5,7,8	DET	2	2T	N/A	N/A	6.0
1054	289	5,7,8	DET	3	3T	N/A	N/A	9.0
1054	289	5,7,8	DET	4	ID 10% N	N/A	80%	3.0

UTRNO		Signature	Level	Method	Date	Activity
1054	Calibrated By	ROBERT SISTEK	II	UT	5/5/04	11/2/04

Robert Sistek

ANII [signature] Date 5/22/04
Initial ☐ Final ☒
HSB-CT

Reviewed By: [signature] Level: II Date: 5-13-04

ENCLOSURE R1-8

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Docket No. 50-339
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ENCLOSURE R1-8

Dominion
Ultrasonic Examination Data Record

Interval: 3

UTRNO	Station	Unit	Drawing	Line	NDER
1295	NAPS	2	12050-WMKS-0109D	14"-RC-410-2501R-Q1	05-024

Couplant	CalCheck1	CalCheck2	CalCheck3	WO / DCP	Procedure	Rev
01220	10:10				NDE-UT-810	1

Thermometer SerNo: 1070BGCY

Exam Data

UTRNO	RECTAG	mark/weld	Scan dB	Exam Area	Surface Condition	Temp	Partial	Single Side	Results
1295	4076	SW-5	*	**	GROUND	106	Yes	No	NRI

Comments:

* - (40L-40dB, FOCAL DEPTH 38mm, CONTOURED TO 15" Dia.), (50L-45dB, FOCAL DEPTH 32mm, CONTOURED TO 15" Dia.), (45S-30dB), (42L-36dB, FOCAL DEPTH 44mm CONTOURED TO 15"Dia.), (40S-30dB) ** - SEE ATTACHED COVERAGE PLOTS. MAINTAINED A 5-20% BASELINE NOISE LEVEL THROUGHOUT EXAMS. CALIBRATION VERIFICATIONS WERE PERFORMED PRIOR TO EACH EXAM AND WERE SATISFACTORY.

Note: EXAMS WERE PERFORMED ON THE SAFE END TAPER FOR INFORMATION ONLY. NO COVERAGE CREDIT HAS BEEN TAKEN FROM THE TAPER SINCE IT IS OUTSIDE THE SCOPE OF THE PROCEDURE.

UTRNO		Signature	Level	Method	Date	Activity
1295	Examined By:	PAUL R. WEEKS	DET	UT	10/06/2005	04/06/2006
1295	Examined By:	PAUL S. ANDERSON	DET	UT	10/06/2005	04/06/2006

Reviewed By: K J Hacker Level: III Date: 10/12/05

ANII MK Date 10/12/05
Initial ☐ Final ☐
HSB-CT

ENCLOSURE R1-8

Dominion
UT Partial Record

UTRNO	RECTAG	Drawing	Line	Mark/weld	Procedure	Rev
1295	4076	12050-WMKS-0109D	14"-RC-410-2501R-Q1	SW-5	NDE-UT-810	1

XDucer Serial	Weld Width	Exam Angle	SU Length	SU Width	SU Nose	Percent
21HV-05001	2.2	40	1.5	1.5	0.9	***%

Area Not Examined

SEE ATACHED PROFILE AND COVERAGE PLOTS

Reason

COMPONENT CONFIGURATION

Comments

*** SEE ATTACHED COVERAGE PLOTS

Cross Section Sketch

Axial Scan Coverage = 80%
Circ Scan coverage = 70%
Composite coverage = 75%

KJHack 10/20/05

Evaluation

SEE ATTACHED COVERAGE EVALUATION

Signature	Level	DATE
PAUL S. ANDERSON	DET	

Reviewed By: KJHack **Level:** III **Date:** 10/12/05

ANII [illegible] Date 11/4/05
Initial ☐ Final ☐

ENCLOSURE R1-8

UTRNO 295

Surge
Axial Code Coverage

Axial Code Coverage = 80%

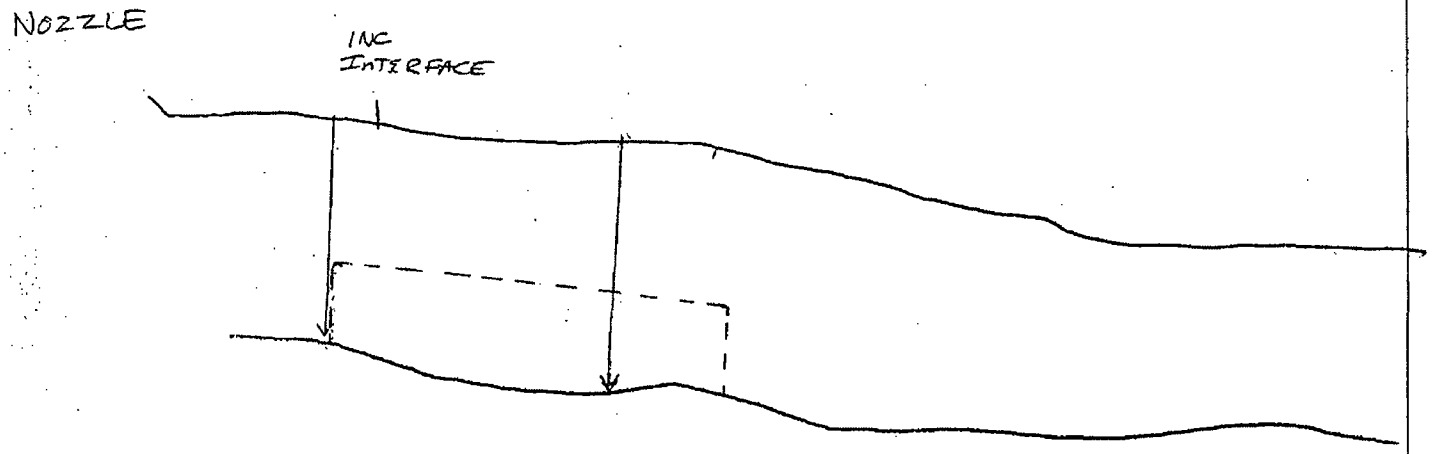
Prepared by: Paul K Hack

PKHack 10/20/05

Surge

UTRNO: 295

Circ Code Coverage



Circ Code Coverage = 70%

Prepared by: Paul R Weeks

RJ Hack 10/20/05

Surge C Procedural Coverage

UTRN: 1295

Axial Coverage = 83%

Circ Coverage = 70%

Combined Coverage = 76%

Prepared by: Paul R Weeks

KJ Hacker 10/20/05

Interval: 3

Dominion Power Ultrason[illegible]alibration Data Record

UTRNO	Station	Unit	Procedure	Rev	Sizing Procedure	Rev	Couplant	CalBlock1	CBLKTKS	CBLKTemp
1295	NAPS	2	NDE-UT-810	1	NDE-UT-NA		01220	02-5073293	7" Radius	95

CLbType	CLbLngth	#Connect	Simulator	AmpSwp	CalDate	CaLIn	CaLOut	CalBlock2	CBLKTKS2	CBLkTemp2
RG174	6'	0	6039005	SEE COMMENTS	10/05/2005	7:52	10:58	02-5073290	14" Pipe Scg.	95

Thermometer SerNo 1070BGCY

Instrument Settings

UTRNO	MemLoc	XDUC SER	REJECT	dB	REF dB	RANGE	VELOCITY	ZERO	DELAY	FREQ	DISP MODE	PRR/PRF	PULSER	FILTER	ENERGY	DAMPING
ID																
1295	1	21HV-05001	0	30	0.0	4.2	0.230	8.427	N/A	2.0	FULLWAVE	AUTO	SQUARE	0.8-3.0	MAX	400
1560																
1295	2	21HW-05001	0	24	0.0	4.979	0.230	9.155	N/A	2.0	FULLWAVE	AUTO	SQUARE	0.8-3.0	MAX	400
1564																
1295	17	00P3JK	0	25	0.0	4.000	0.132	8.222	N/A	2.0	FULLWAVE	AUTO	SQUARE	0.8-3.0	MAX	400
1565																
1295	3	21HX-05001	0	32	0.0	5.002	0.230	9.184	N/A	2.0	FULLWAVE	AUTO	SQUARE	0.8-3.0	MAX	400
1568																
1295	18	00VBYF	0	26	0.0	4.0	0.132	6.190	N/A	2.0	FULLWAVE	AUTO	SQUARE	0.8-3.0	MAX	400
1570																

Xducer Data

UTRNO	ID	SerialNo	Manuf	Model	Size	Frequency	Nom Angle	Measured Angle	Wave Mode	Shape	No. Elements
				Wedge Type		Wedge Length	Wedge Width	Wedge Nose			
1295	1467	21HV-05001	Sigma	SDA2 40L	2(25X15)	2 MHZ	40 DEG	40 DEG	LONG	RECT	2
				INTEGRAL		1.5"	1.5"	0.9"			
1295	1469	21HW-05001	Sigma	SDA2 50L	2(25X15)	2 MHZ	50 DEG	50 DEG	LONG	RECT	2
				INTEGRAL		1.5"	1.5"	0.7"			
1295	1470	00P3JK	KB-AEROTECH	Comp-G	0.375"	1.5 MHZ	45 DEG	45 DEG	SHEAR	ROUND	1
				MWSQC		0.8"	0.55"	0.3"			
1295	1473	21HX-05001	Sigma	SDA1.5 42L	2(25X15)	1.5 MHZ	42 DEG	40 DEG	LONG	RECT	2
				INTEGRAL		1.5"	1.5"	0.6"			
1295	1475	00VBYF	KB-AEROTECH	Comp-G	0.375"	1.5 MHZ	40 DEG	40 DEG	SHEAR	ROUND	1
				MSWQC		0.8"	0.55"	0.3"			

Vertical Beam Spread

UTRNO		Signature	Level	Method	Date	Activity
1295	Calibrated By	PAUL R. WEEKS	DET	UT	10/06/2005	04/06/2006
1295	Calibrated By	PAUL S. ANDERSON	DET	UT	10/06/2005	04/06/2006

ANII [illegible] Date [illegible]
Initial ☐ Final ☐
HSB-CT

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Interval: 3

Dominion Power Ultrasonic Calibration Data Record

Instrument						Calibration Data										
UTRNO	SHAC	Inst. Serial	Inst. Model	Inst. Manuf	ID	UTRNO	Blk	XDID	IS ID	Direction	CalType	Point	Reflector	Position	Amplitude	Sweep
1295	201	040186603	epoch 4	panametrics	1570	1295	1	1467	1560	AX	DET	1	1.5" SDH	N/A	80%	4.6
1295	201	040186603	epoch 4	panametrics	1568	1295	1	1469	1564	AX	DET	1	1.5" SDH	N/A	80%	4.8
1295	201	040186603	epoch 4	panametrics	1565	1295	1	1470	1565	AX	DET	1	1.5"SDH	N/A	80	5.1
1295	201	040186603	epoch 4	panametrics	1564	1295	2	1473	1568	CIRC	DET	1	1.5" SDH	N/A	80	4.4
1295	201	040186603	epoch 4	panametrics	1560	1295	2	1475	1570	CIRC	DET	1	1.5" SDH	N/A	80	5.8

UTRNO		Signature	Level	Method	Date	Activity
1295	Calibrated By	PAUL R. WEEKS	DET	UT	10/06/2005	04/06/2006
1295	Calibrated By	PAUL S. ANDERSON	DET	UT	10/06/2005	04/06/2006

ANII _____ Date 11/14/05
Initial ☐ Final ☒
H$B-CT

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N2.R1,11.315

Dominion

RECTAG # 4076
NDE-RC# 05-024

North Anna Unit 2 or Surry Unit 1 and Unit 2 VT-2 Visual Examination Report

(no remote visual aids such as boroscopes)

VPAP-1103 - Attachment 15 — Page 1 of 2

1. Station: [X] North Anna [ ] Surry	Unit: [ ] 1 [X] 2	System: RC	Repair / Replacement No. (When Applicable): N/A
2. Test Procedure Number: VPAP 1103 R/10		Type of Test: LEAK	DCP No. / Work Order No.: NDE-R 05-024
3. Examination Date: 10-05-05			4. ANII Hold Point? [ ] Yes [X] No

5. [ ] Remote (no visual aids) Must be between 6' and 9' 9" [X] Direct Must be less than or equal to 6'

6. At the inspection location, characters on visual test card / card standard can be seen at the distance required for either remote or direct examination as applicable. Supplemental lighting may be used.
[X] Accept [ ] Reject Note: If rejected, examination shall not be performed, contact ISI/NDE.

7. Component Inspected / RECTAG # if applicable: SW-S ON 14"-RC-410-2501R-Q1	Drawing / Revision No.: 12050-WMKS-0109 D Rev 2
8. Pressure Test Zone(s) Inspected / Area Inspected: SURGE NOZZLE AT BOTTOM OF PRESSRIZER	9. Hold Time (Hours / Minutes): N/A

10. Checklist

For statements a through f, mark the applicable selection for each condition.
If the statement is true, mark "Reject". If the statement is not true, mark "Accept". If the statement does not apply, mark "N/A".
Note: Checklist item (e) if rejected requires Plant Issue (Deviation) per DNAP-1004, all other rejected checklist conditions requires Plant Issue (Deviation) be issued.

a. Leakage from non-insulated components	[X] Accept	[ ] Reject	[ ] N/A
b. Leakage from components with leakage limiting devices, in excess of permissible levels	[ ] Accept	[ ] Reject	[X] N/A
c. Leakage from insulated components or inaccessible components that will require finding the leakage source	[ ] Accept	[ ] Reject	[X] N/A
d. Areas of general corrosion of a component resulting from leakage	[X] Accept	[ ] Reject	[ ] N/A
e. Discoloration or accumulated residues on surfaces of components, insulation, or floor area that may be evidence of borated water leakage (wet or dry)	[X] Accept	[ ] Reject	[ ] N/A
f. Leakage or flow test results from buried components in excess of limits	[ ] Accept	[ ] Reject	[X] N/A

11. Comments (Additional space on back) Illuminators (e.g., flashlight), instruments (e.g., mirror), equipment, tools, etc. used shall be noted in comments section. FLASHLIGHT USED DURING EXAM

12. Method of Examination: DIRECT

13. Start Pressure (2400 Hours): N/A	Time Interval (Hours/Minutes): N/A	Acceptance Criteria (N/A Block 13 if not pressure loss method.): N/A
End Pressure (2400 Hours): N/A	Pressure Loss Rate: N/A	

14. Pressure Gauge Identification (N/A if not hydro or pneumatic test.): N/A		Pressure Gauge Identification: N/A	
Calibration Date: N/A	Calibration Due Date: N/A	Calibration Date: N/A	Calibration Due Date: N/A

15. Examiner (Print Name): Eugene Simpson	Examiner (Signature): [signature]	Certification Level: II	Exam Date: 10-05-05
16. Dominion Reviewer (Print Name) (mark N/A if examiner is not a vendor or contractor examiner): DENNIS P. STRICKLAND	Dominion Reviewer (Signature): [signature]		Certification Level: III
17. ANII (Signature)			Date

Note: Provide any comments concerning visual aids needed, scaffolding, insulation removal or weld preparation in block 11 of this form.
Key: DCP-Design Change Package; VT-Visual Testing; ISI-Inservice Inspection;
ANII-Authorized Nuclear Inservice Inspection

UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	NDE-UT-705	Outage No.:	N2R18
Summary No.:	N2.R1.11.317	Procedure Rev.:	3	Report No.:	UT-07-065
Workscope:	ISI	Work Order No.:		Page:	1 of 1

Code: Sect. XI 1995 Ed./1996 Add. Cat./Item: R-A/R1.11 Location: A-LOOP

Drawing No.: 12050-WMKS-0109E-1 Description: Pipe to Pump Weld

System ID: RC

Component ID: 12050-WMKS-0109E-1 / 27 1/2-RC-403 / 9 Size/Length: 1.5"/102" Thickness/Diameter: 2.4"/27.5"

Limitations: Single Sided Start Time: 1230 Finish Time: 1245

Instrument Settings

Serial No.:	98300406		
Manufacturer:	Panametrics		
Model:	2300		
Delay:	11.45	Range:	4.667
M'ti Cal/Vel:	.2346	Pulser:	High
Damping:	400	Reject:	0
Rep. Rate:	Fixed	Freq.:	Fixed
Filter:	STD	Mode:	F.W.
Voltage:	N/A		
Ax. Gain (dB):	N/A	Circ. Gain (dB):	68.2

1 Screen Div. = .466 in. of Depth

Linearity Report No.: L-07-006

Calibration Block

Cal. Block No.:	VGB-33		
Thickness:	2.58"	Dia.:	0
Cal. Blk. Temp.	76	Temp. Tool:	1066BGCY
Comp. Temp.:	78	Temp. Tool:	1066BGCY

Search Unit

Serial No.:	97-733		
Manufacturer:	RTD		
Size:	2(20X34)	Shape:	Retangular
Freq.:	1.0 MHZ	Style:	TRL1-AUST
Exam Angle:	45	# of Elements:	Dual
Mode:	RL		
Measured Angle:	45		
Wedge Style:	Intergral		

Search Unit Cable

Type: RG-174 Length: 20' No. Conn.: 0

Scan Coverage

Upstream ☐ Downstream ☐ Scan dB: N/A

CW ☑ CCW ☑ Scan dB: 70.8

Exam Surface: OD

Surface Condition: Contour Ground

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

Cal. Checks	Time	Date
Initial Cal.	0730	03/27/2007
Inter. Cal.	1230	03/27/2007
Inter. Cal.	1300	03/27/2007
Inter. Cal.		
Final Cal.	1440	03/27/2007

Couplant

Cal. Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.:	06-0772
Type:	IIW Type 2 SS

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Depth
N/A			

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Depth
1/4 T	40	2.0	.630
1/2 T	75	4.0	1.254
3/4 T	80	6.0	1.875
ID Notch	60	8.0	2.56

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Depth
59.1	SDH	62	9.2	2.955

Results: NRI ☑ RI ☐ Geom ☐ NDER#07-001

Comments: See (UT-07-002) for partial information;Previous Profile Used.

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

Examiner	Level	II-PDI	Signature	Date	Reviewer	Signature	Date
Cage, Norman				03/27/2007			4/10/07
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					Mark Grace		4/12/07

UT Calibration/Examination <Edit From Setup>

ENCLOSURE R1-9

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UT Calibration/Examination

Dominion

Site/Unit: NAPS / 2 | Procedure: NDE-UT-705 | Outage No.: N2R18

Summary No.: N2.R1.11.317 | Procedure Rev.: 3 | Report No.: UT-07-002

Workscope: ISI | Work Order No.: | Page: 1 of 3

Code: Sect. XI 1995 Ed./1996 Add. | Cat./Item: R-A/R1.11 | Location: A-LOOP

Drawing No.: 12050-WMKS-0109E-1 | Description: Pipe to Pump Weld

System ID: RC

Component ID: 12050-WMKS-0109E-1 / 27 1/2-RC-403 / 9 | Size/Length: 1.5"/102" | Thickness/Diameter: 2.4"/27.5"

Limitations: Single Sided | Start Time: 1200 | Finish Time: 1240

Instrument Settings

Serial No.:	98300406		
Manufacturer:	Panametrics		
Model:	2300		
Delay:	18.48	Range:	4.493
M'tl Cal/Vel:	.2589	Pulser:	high
Damping:	400	Reject:	0
Rep. Rate:	Fixed	Freq.:	Fixed
Filter:	Std	Mode:	F.W.
Voltage:	N/A		
Ax. Gain (dB):	64.4	Circ. Gain (dB):	N/A

1 Screen Div. = .450 In. of Depth

Linearity Report No.: L-07-006

Calibration Block

Cal. Blk. No.:	VGB-33		
Thickness:	2.58	Dia.:	0
Cal. Blk. Temp.	76	Temp. Tool:	1066BGCY
Comp. Temp.:	78	Temp. Tool:	1066BGCY

Search Unit

Serial No.:	97-734		
Manufacturer:	RTD		
Size:	2(24X42)	Shape:	Retangular
Freq.:	1.0 MHZ	Style:	TRL1-AUST
Exam Angle:	45	# of Elements:	Dual
Mode:	R.L.		
Measured Angle:	45		
Wedge Style:	Intergral		

Search Unit Cable

Type: RG-174 | Length: 20' | No. Conn.: 0

Scan Coverage

Upstream ☑ Downstream ☑ Scan dB: 68.8

CW ☐ CCW ☐ Scan dB: N/A

Exam Surface: O.D

Surface Condition: Contour Ground

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

Cal. Checks	Time	Date
Initial Cal.	0700	03/27/2007
Inter. Cal.	1159	03/27/2007
Inter. Cal.	1230	03/27/2007
Inter. Cal.		
Final Cal.	1435	03/27/2007

Couplant

Cal. Batch: 06120 | Type: SoundSafe | Mfg.: SONOTECH

Exam Batch: 06120 | Type: SoundSafe | Mfg.: SONOTECH

Reference Block

Serial No.: 05-0772 | Type: IIW Type 2 SS

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Depth
1/4 T	64	2.0	.627"
1/2 T	80	4.0	1.254"
3/4 T	80	6.0	1.875"
IIDNotch	60	8.0	2.56"
ID Notch	80	8.0	2.56"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Depth
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Depth
59.1	SDH	62	9.2	2.955

Results: NRI ☑ RI ☐ Geom ☐ NDER#07-001

Comments: Previous Profile Used.See Attached Partial Sheet.

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

Examiner	Level	II-PDI	Signature	Date	Reviewer	Signature	Date
Cage, Norman				03/27/2007			4-10-07
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					Mark Grace		4/12/07

UT Calibration/Examination <Edit From Setup>

ENCLOSURE R1-9

NAPS Unit 2 3rd interval Limited Exams

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ENCLOSURE R1-9

Supplemental Report

Dominion

Report No.: UT-07-002

Page: 2 of 3

Summary No.: N2.R1.11.317

Examiner:	Cage, Norman NHC	Level:	II-PDI	Reviewer:	Raymond T. Stark	Date:	4-10-07
Examiner:	N/A	Level:	N/A	Site Review:	N/A	Date:	
Other:	N/A	Level:	N/A	ANII Review:	M Hara	Date:	4/12/07

Comments:

Weld Partial Info.

Code coverage DnSt-Ax:
.1" x .1" = .01" sq.
.01" sq. / 2 = .005" sq. (area not covered)
.005" sq. x 102" (length) = .51" cu. (volume not examined)

1.35" x .8" = 1.08" sq. (total area)
1.08" sq. x 102" = 110.6" cu. (total scan volume)

110.16" cu. - .51" cu. = 109.65" cu.
109.65 / 110.16 = 99.5% code coverage

Best effort (UpSt-Ax) coverage:
.7" x .7" = .49" sq .
.49" sq. / 2 = .245" sq. (area covered)
.245" sq. x 102" = 24.99" cu. (volume covered)
24.99 (volume covered) / 110.6 (total volume) = 22.7%
22.7% (UpSt-Ax %) / 600% (total %) = 3.8% best effort coverage

Weld Number 9
Nominal Thickness 2.42"
Weld Length 102"
Weld Width 1.5"

Box Dimensions = H .8 L 2.6"

Coverage Summary						
Angle	Required Scans (each scan has a weighting factor of 100 for complete coverage)					
	UpSt- Ax	UpSt- CW	UpSt- CCW	DnSt- Ax	DnSt- CW	DnSt- CCW
45RL	0	0	0	99.5%	100%	100%
45RL	22.7%	BEST EFFORT				
					Code Coverage Total	49.9%
					Best Effort Coverage (Max 50%) Total	3.8%

Notes:
1) Code Coverage refers to the maximum percentage of the required examination volume that is effectively examined with the qualified examination procedure.
2) Best Effort Coverage refers to the required examination volume past the weld centerline that is examined with an Appendix VIII demonstrated procedure for single sided coverage.

ENCLOSURE R1-9

Supplemental Report

Dominion

Report No.: UT-07-002

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Summary No.: N2.R1.11.317

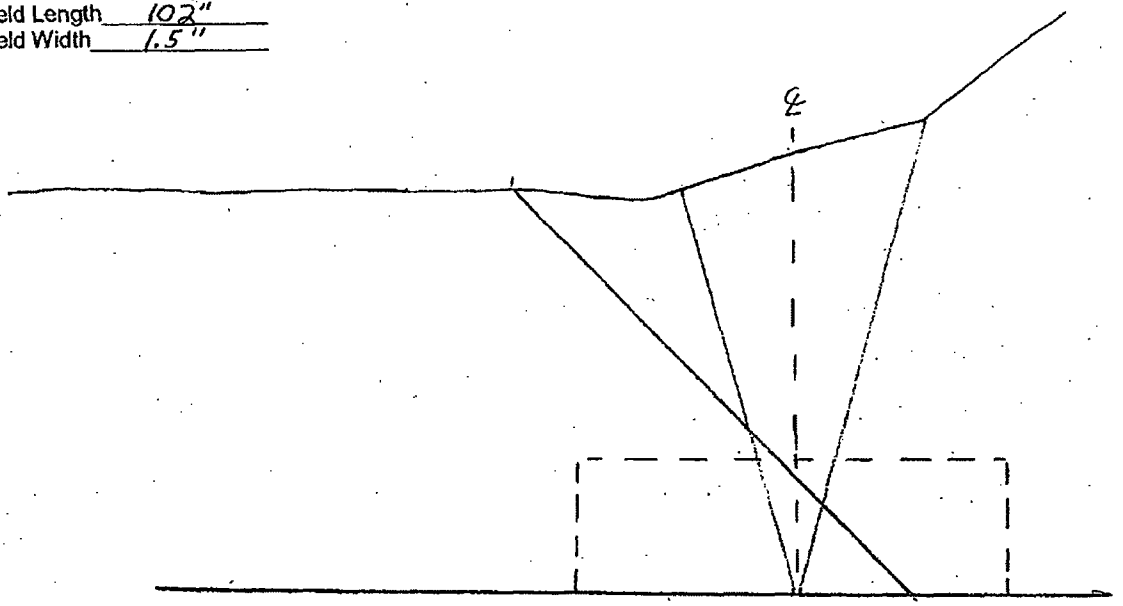
Examiner:	Cage, Norman NLC	Level:	II-PDI	Reviewer:	Raymond Hinds	Date:	4-10-07
Examiner:	N/A	Level:	N/A	Site Review:	N/A	Date:	
Other:	N/A	Level:	N/A	ANII Review:	M Hess	Date:	4/12/07

Comments:

Weld coverage plot

Flow

Weld Number 9
Nominal Thickness 2.42"
Weld Length 102"
Weld Width 1.5"



ENCLOSURE R1-10

Dominion

ULtrasonic Examination Data Record

Interval: 3

N2,R1,11,319

UTRNO	Station	Unit	Drawing	Line	NDER
966	NAPS	2	12050-WMKS-0109E-2	27 1/2"-RC-403-2501R-Q1	02-001

ouplant	CalCheck1	CalCheck2	CalCheck3	WO / DCP	Procedure	Rev
98220					NDE-UT-705	2

Thermometer SerNo: 212880

Exam Data

UTRNO	RECTAG	mark/weld	Scan dB	Exam Area	Surface Condition	Temp	Partial	Single Side	Results
966	4105	SW-43	*	ATT. 3	GROUND	72	Yes	Yes	NRI

Comments:

* THE SCANS WERE PERFORMED AT REFERENCE LEVEL DUE TO EXCESSIVE NOISE LEVELS AT +6db.

UTRNO		SSN	Signature	Level	Method	Date	Activity
966	Examined By:	197-38-9893	ROBERT SISTEK	II	UT	9/29/02	3/29/03

Robert Sistek

FINAL REVIEW
MH
9/30/02

Reviewed By: Lloyd T. Stuck Level: III Date: 9-30-02

Interval: 3

Dominion Power Ultrasonic Calibration Data Record

UTRNO	Station	Unit	Procedure	Rev	Sizing Procedure	Rev	Couplant	CalBlock	CBLKTKS	CBLKTemp
966	NAPS	2	NDE-UT-705	2	NDE-UT- NA	NA	98220	VGB-33	31" ID,2.580T	72

CLbType	CLbLngth	#Connect	Simulator	AmpSwp	CalDate	CaLIn	CaLOut	CalBlock2	CBLKTKS2	CBLkTemp2
NC TO LEMO	6'	0			9/29/02	9:00	12:45			

Thermometer SerNo 2 2880

Instrument Settings

UTRNO	MemLoc	CalNo	CAL BLK	REJECT	dB	REF dB	RANGE	VELOCITY	ZERO	DELAY	FREQ	FILTER	ENERGY	DAMPING
966		125	VGB-33	0 %	69.9	+0.0dB	0.419	0.2238	12.910	NA	AUTO	STD	PULSER HIGH	50
966		157	VGB-33	0 %	72.0	+0.0dB	0.419	0.2238	12.910	NA	AUTO	STD	PULSER HIGH	50

Xducer Data

UTRNO	CalNo	SerialNo	Manuf	Model	Size	Frequency	Angle	Wedge Type	Wedge Length	Wedge Width	Wedge Nose
966	125	92-1014	RTD	TRL	2(20X34)	1.0	45	INTEGRAL	1.70	1.70	0.80
966	157	92-1014	RTD	TRL	2(20X34)	1.0	45	INTEGRAL	1.70"	1.70	0.80"

Vertical Beam Spread

Instrument

UTRNO	SHAC	Inst. Serial	Inst. Model	Inst. Manuf	CalNo
966	66	98318411	2300	Panametrics	125
966	66	98318411	2300	Panametrics	157

Calibration Data

UTRNO	CalNo	Direction	CalType	Point	Reflector	Position	Amplitude	Sweep
966	125	7 & 8	DET	1	1/4 SDH	N/A	76%	2
966	125	7 & 8	DET	2	2/4 SDH	N/A	80%	4
966	125	7 & 8	DET	3	3/4 SDH	N/A	60%	6
966	125	7 & 8	DET	4	3/4 SDH	N/A	80%	6
966	125	7 & 8	DET	5	ID NOTCH	N/A	64%	7.6
966	157	2 & 5	DET	1	1/4 SDH	N/A	56%	2
966	157	2 & 5	DET	2	2/4 SDH	N/A	80%	4
966	157	2 & 5	DET	3	3/4 SDH	N/A	52%	6
966	157	2 & 5	DET	4	3/4 SDH	N/A	80%	6
966	157	2 & 5	DET	5	ID NOTCH	N/A	62%	8

UTRNO		SSN	Signature	Level	Method	Date	Activity
966	Calibrated By	197-38-9893	ROBERT SISTEK	II	UT	9/29/02	3/28/03

Robert Sistek

MK 9/30/02

Reviewed By: Richard T. Stark Lev III Date: 9-30-02

ENCLOSURE R1-10

Serial No. 11-472
Docket No. 50-339
NAPS Unit 2 3rd Interval Limited Exams
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ENCLOSURE R1-10

Dominion
UT Partial Record

UTRNO	RECTAG	Drawing	Line	Mark/weld	Procedure	Rev
966	4105	12050-WMKS-0109E-2	27 1/2"-RC-403-2501R-Q1	SW-43	NDE-UT-705	2

CalNo	Weld Width	Exam Angle	SU Length	SU Width	SU Nose	Percent
157	1.5"	45	1.70"	1.70	0.80"	36.%

Area Not Examined

5 SIDE OF WELD ON BRANCH CONNECTION.

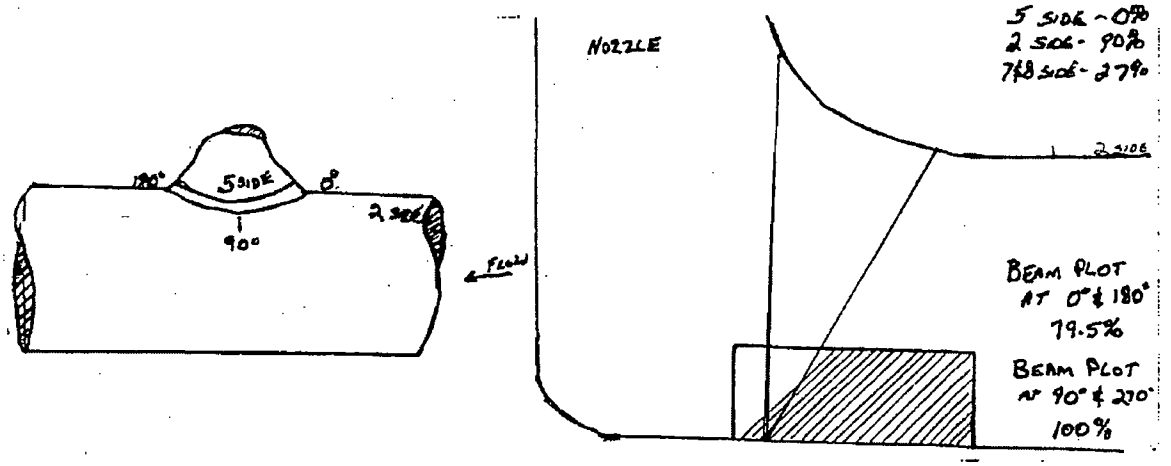
Reason

WELD JOINT CONFIGURATION.

Comments

5 SIDE SCAN VOLUME EXAMINED - 0%. 2 SIDE SCAN VOLUME EXAMINED - 90%. 7 & 8 SCAN VOLUMES EXAMINED- 27% IN EACH DIRECTION.

Cross Section Sketch



Evaluation

DUE TO THE WELD JOINT CONFIGURATION, ALONG WITH THE MATERIAL TYPE, THE REQUIRED EXAM VOLUME WAS NOT ABLE TO BE ACHIEVED. THE WELD WAS EXAMINED TO THE MAXIMUM EXTENT PRACTICAL USING THE RTD SEARCH UNIT. NOTE: THE CROSS SECTION SHOWN ABOVE IS TYPICAL OF 0 DEG. AND 180 DEG. , BECAUSE OF THE CHANGING CONFIGURATION WE WERE ABLE TO ACHIEVE 100% OF THE EXAM VOLUME IN THE 2 DIRECTION AT 90 DEG. AND 270 DEG.

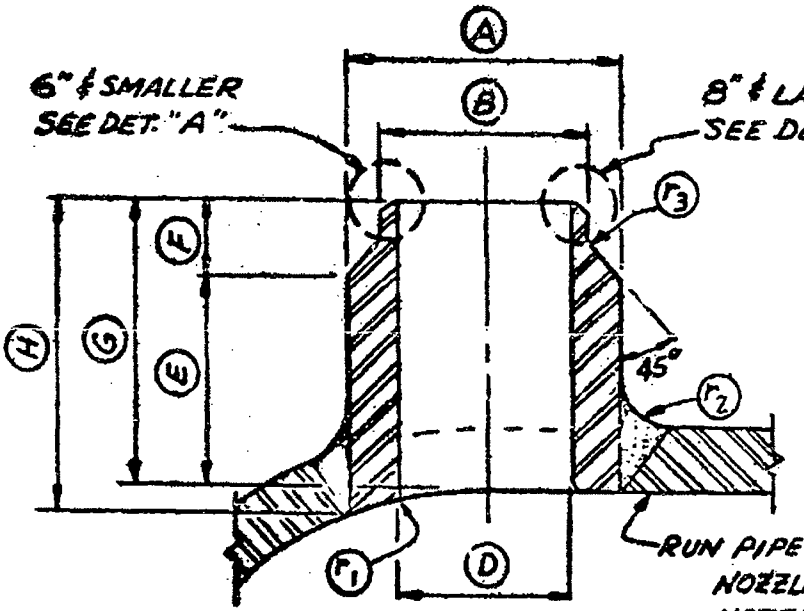
SSN	Signature	Level	DATE
197-38-9893	ROBERT SISTEK Robert Sistek	II	9/29/02

Reviewed By: Ralph Stucki Level: III Date: 9-30-02

FINAL REVIEW MH 9/30/02 MH UPDATE

ENCLOSURE R1-10

NO. REQ'D.	SIZE	℄ RUN TO END OF NOZ. ± 1/8"	MACHINING DATA (INCHES)								NOM. SCH.	NOM. WALL THK.	(r1) MIN	(r2) MIN	(r3) MIN
			(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)					
3	6" ON 27½"	2'-2 3/16"	10.127	6.625	5.327	5.189	8 7/8	3 5/8	12½	13½	160	.718	.221	2.174	1.238



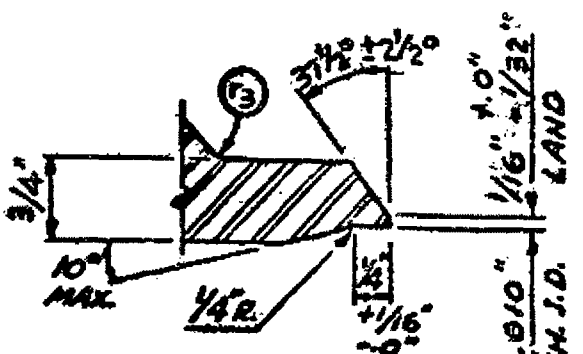
RUN PIPE TABLE		
NOM. I.D.	I.D.	O.D.
27½"	27.65"	32.072"
	27.43"	32.197"

6" & LARGER NOZZLES

NOZZLES FOR PLANT YRA ONLY.

NOTE:
FOR THERMAL SLEEVES, BORE THE (C) DIMENSION THE FULL LENGTH OF THE NOZZLE.

ALL MATL. A-182 F-316 STAINLESS STL. (0.20% MAX. COBALT)



DETAIL "A"
NOZZLE WELD BEVEL DETAIL
3/4" NOM. WALL THK. & LESS.

UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	NDE-UT-705	Outage No.:	N2R20
Summary No.:	N2.R1.11.320	Procedure Rev.:	3	Report No.:	UT-10-097
Workscope:	ISI	Work Order No.:	59101919553	Page:	1 of 4

Code: Sect. XI 1995ed/96 Add | Cat./Item: R-A/R1.11 | Location: B-LOOP

Drawing No.: 12050-WMKS-0109F-1 | Description: "B" pump to cold leg (pipe)

System ID: RC

Component ID: 12050-WMKS-0109F-1 / 27 1/2-RC-406 / 21 | Size/Length: 1.5" / 102.0" | Thickness/Diameter: 2.58" / 27.5"

Limitations: Single sided due to configuration | Start Time: 1045 | Finish Time: 1200

Instrument Settings

Serial No.:	081624211		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	10.89 us	Range:	4.67 in
M'ti Cal/Vel:	0.2222 in/us	Pulser:	Square
Damping:	400 Ω	Reject:	0%
Rep. Rate:	Auto	Freq.:	1.0 mhz
Filter:	0.8 - 3.0	Mode:	Fullwave
Voltage:	Max	Other:	N/A
Ax. Gain (dB):	N/A	Circ. Gain (dB):	48.6

10 Screen Div. = 4.67 in. of Sound Path

Linearity Report No.: L-10-010

Calibration Block

Cal. Block No.:	VGB-33		
Thickness:	2.580"	Dia.:	0
Cal. Blk. Temp.:	69°	Temp. Tool:	07
Comp. Temp.:	68°	Temp. Tool:	07

Search Unit

Serial No.:	97-733		
Manufacturer:	RTD		
Size:	2(20X34)	Shape:	Retangular
Freq.:	1.0 MHZ	Style:	TRL1-AUST
Exam Angle:	45°	# of Elements:	Dual
Mode:	Longitudinal		
Measured Angle:	45°		
Wedge Style:	Integral		

Search Unit Cable

Type: RG-174 | Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☐ Downstream ☐ Scan dB: N/A

CW ☑ CCW ☑ Scan dB: 54.6

Exam Surface: OD

Surface Condition: Ground

Cal. Checks	Time	Date
Initial Cal.	0830	03/29/2010
Inter. Cal.	1045	03/29/2010
Inter. Cal.		
Inter. Cal.		
Final Cal.	1330	03/29/2010

Couplant

Cal. Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.: 05-6535 | Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1/4T Hole	40	2.0	0.94
1/2T Hole	80	4.0	1.90
3/4T Hole	60	6.0	2.83
ID Notch	30	8.0	3.73

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
30.6	2" Radius	60	4.3	2.00

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

Results: NRI ☑ RI ☐ Geom ☐

Comments: ID Notch at 80% at +9 dB.
Circ Cal / Exam.

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

Examiner	Level II-PDI	Signature	Date	Reviewer		Signature	Date
Tolosky, Ryan J			03/29/2010	W.L. THOMAS			4.1.10
Examiner	Level II-PDI	Signature	Date	Site Review		Signature	Date
Roehl, Adam L.			03/29/2010	Robert Davies		Robert Davies	4/4/10
Other	Level N/A	Signature	Date	ANII Review		Signature	Date
N/A							11 Apr 2010

ENCLOSURE R1-11
NAPS Unit 2 3rd interval Limited Exams
Docket No. 50-339
Serial No. 11-472
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UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	NDE-UT-705	Outage No.:	N2R20
Summary No.:	N2.R1.11.320	Procedure Rev.:	3	Report No.:	UT-10-097
Workscope:	ISI	Work Order No.:	59101919553	Page:	2 of 4

Code:	Sect. XI 1995ed/96 Add	Cat./Item:	R-A/R1.11	Location:	B-LOOP
Drawing No.:	12050-WMKS-0109F-1	Description:	"B" pump to cold leg (pipe)		
System ID:	RC				
Component ID:	12050-WMKS-0109F-1 / 27 1/2-RC-406 / 21	Size/Length:	1.5" / 102.0"	Thickness/Diameter:	2.58" / 27.5"
Limitations:	Single sided due to configuration	Start Time:	1045	Finish Time:	1200

Instrument Settings

Serial No.:	081624211		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	13.94 us	Range:	4.47 In
M'tl Cal/Vel:	0.2222 in/us	Pulser:	Square
Damping:	400 Ω	Reject:	0%
Rep. Rate:	Auto	Freq.:	1.0 mhz
Filter:	0.3 - 8.0	Mode:	Fullwave
Voltage:	450 V	Other:	N/A
Ax. Gain (dB):	47.0	Circ. Gain (dB):	N/A

10 Screen Div. = 4.47 in. of Sound Path

Linearity Report No.: L-10-010

Calibration Block

Cal. Block No.:	VGB-33		
Thickness:	2.580"	Dia.:	0
Cal. Blk. Temp.:	69°	Temp. Tool:	07
Comp. Temp.:	68°	Temp. Tool:	07

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

Results: NRI ☑ RI ☐ Geom ☐

Search Unit

Serial No.:	97-734		
Manufacturer:	RTD		
Size:	2(24X42)	Shape:	Retangular
Freq.:	1.0 MHZ	Style:	TRL1-AUST
Exam Angle:	45°	# of Elements:	Dual
Mode:	Longitudinal		
Measured Angle:	45°		
Wedge Style:	Integral		

Search Unit Cable

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

Scan Coverage

Upstream ☐	Downstream ☑	Scan dB:	53.0
CW ☐	CCW ☐	Scan dB:	N/A
Exam Surface:	OD		
Surface Condition:	Ground		

Cal. Checks	Time	Date
Initial Cal.	0833	03/29/2010
Inter. Cal.	1110	03/29/2010
Inter. Cal.		
Inter. Cal.		
Final Cal.	1332	03/29/2010

Couplant

Cal. Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.:	05-6535
Type:	SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1/4T Hole	40	2.0	0.86
1/2T Hole	80	4.0	1.75
3/4T Hole	60	6.0	2.70
ID Notch	40	8.0	3.57

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
29	2" Radius	60	4.5	2.0

Comments: ID Notch to 80% at +6 dB.
Axial Cal / Exam.

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

Examiner	Level II-PDI	Signature	Date	Reviewer		Signature	Date
Tolosky, Ryan J			03/29/2010	WAYNE THOMAS			4.1.10
Examiner	Level II-PDI	Signature	Date	Site Review		Signature	Date
Roehl, Adam L.			03/29/2010	Robert Davies		Robert Davies	4/4/10
Other	Level N/A	Signature	Date	ANII Review		Signature	Date
N/A							11 Apr 2010

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Serial No. 11-472
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UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	NDE-UT-705	Outage No.:	N2R20
Summary No.:	N2.R1.11.320	Procedure Rev.:	3	Report No.:	UT-10-097
Workscope:	ISI	Work Order No.:	59101919553	Page:	3 of 4

Code: Sect. XI 1995ed/96 Add | Cat./Item: R-A/R1.11 | Location: B-LOOP

Drawing No.: 12050-WMKS-0109F-1 | Description: "B" pump to cold leg (pipe)

System ID: RC

Component ID: 12050-WMKS-0109F-1 / 27 1/2-RC-406 / 21 | Size/Length: 1.5" / 102.0" | Thickness/Diameter: 2.58" / 27.5"

Limitations: | Start Time: 1045 | Finish Time: 1200

Instrument Settings

Serial No.:	081624211		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	18.10 us	Range:	5.68 in
M'tl Cal/Vel:	0.2335 In/us	Pulser:	Square
Damping:	400 Ω	Reject:	0%
Rep. Rate:	Auto	Freq.:	1.0 mhz
Filter:	0.8 - 3.0	Mode:	Fullwave
Voltage:	Max	Other:	N/A
Ax. Gain (dB):	49.0	Circ. Gain (dB):	N/A

10 Screen Div. = 5.68 in. of Sound Path

Linearity Report No.: L-10-010

Calibration Block

Cal. Block No.:	VGB-33		
Thickness:	2.580"	Dia.:	0
Cal. Blk. Temp.:	69°	Temp. Tool:	07
Comp. Temp.:	68°	Temp. Tool:	07

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

Results: NRI ☑ RI ☐ Geom ☐

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

Search Unit

Serial No.:	94-584		
Manufacturer:	RTD		
Size:	2(24X42)	Shape:	Retangular
Freq.:	1.0 MHZ	Style:	TRL1-AUST
Exam Angle:	60°	# of Elements:	Dual
Mode:	Longitudinal		
Measured Angle:	60°		
Wedge Style:	Integral		

Search Unit Cable

Type: RG-174 | Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☐ Downstream ☑ Scan dB: 55.0

CW ☐ CCW ☐ Scan dB: N/A

Exam Surface: OD

Surface Condition: Ground

Cal. Checks	Time	Date
Initial Cal.	0900	03/29/2010
Inter. Cal.	1136	03/29/2010
Inter. Cal.		
Inter. Cal.		
Final Cal.	1336	03/29/2010

Couplant

Cal. Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.: 05-6535 | Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1/4T Hole	60	2.0	1.13
1/2T Hole	80	4.0	2.27
3/4T Hole	60	6.0	3.40
ID Notch	50	8.0	4.40

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
49.0	.0" Radius	80	3.5	2.00

Comments: ID Notch at 80% at +5 dB.
Axial Cal / Exam.

Examiner	Level II-PDI	Signature	Date	Reviewer	Signature	Date
Tolosky, Ryan J			03/29/2010	W. Thomas		4.1.10
Examiner	Level II-PDI	Signature	Date	Site Review	Signature	Date
Roehl, Adam L.			03/29/2010	Robert Davies	Robert Davies	4/4/10
Other	Level N/A	Signature	Date	ANII Review	Signature	Date
N/A						11 Apr 2010

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ENCLOSURE R1-11

Supplemental Report

Dominion

Report No.: UT-10-097

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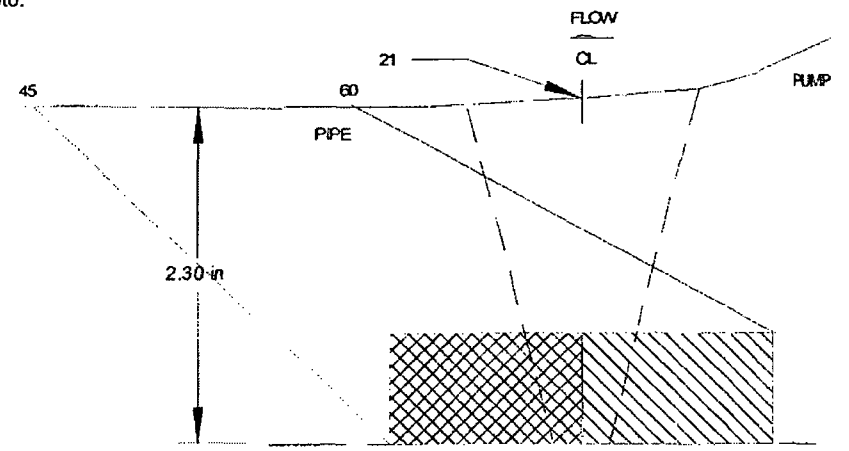
Summary No.: N2.R1.11.320

Examiner:	Tolosky, Ryan J	RT	Level:	II-PDI	Reviewer: Wayne L. Thomas LIII		Date: 04/01/2010
Examiner:	Roehl, Adam L.	ARL	Level:	II-PDI	Site Review: Robert C. Davies LIII		Date: 04/04/2010
Other:	N/A		Level:	N/A	ANII Review:		Date: 11 April 10

Comments:

Weld Number	21
Weld Thickness	2.3"
Weld Length	102"
Weld Width	1.5"

Sketch or Photo: Date: 3/31/2010 Prepared By: W.L. Thomas



Not To Scale

Examination Volume Dimensions - Height .77" Length 102" Width 2.5"

Coverage Summary				
	Required Scans (each has a weighing factor of 100 for complete coverage)			
ANGLE	UpSt-Ax	UpSt-Circ	DnSt-Ax	DnSt-Circ
45		0%		100%
45/60	100% Best Effort		100%	
			Code Coverage Total	50%
			Best Effort Coverage (Max 25%) Total	25%

Notes:

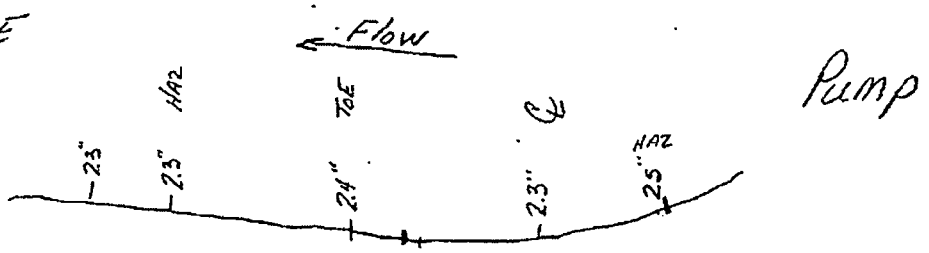
1) Code Coverage refers to the maximum percentage of the required examination volume that is effectively examined with the qualified examination procedure.
2) Best Effort Coverage refers to the required examination volume past the weld centerline that is examined in the axial beam direction with an Appendix VIII demonstrated procedure for single sided coverage.

Additional - Supplemental Data

ENCLOSURE R1-11

IS- [illegible]
IE 27½ RC-406-2501.R-01
ARK # 21
DER- 99-068
-T 4121

2" WELD CROWN



.77

[illegible] LT 9.26-99

PDS 9.27.99 NDE Review

UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	NDE-UT-705	Outage No.:	N2R19
Summary No.:	N2.R1.11.323	Procedure Rev.:	3	Report No.:	UT-08-035
Workscope:	ISI	Work Order No.:		Page:	1 of 3

Code: Sect. XI 1995 Ed./1996 Add. Cat./Item: R-A/R1.11 Location: C-LOOP

Drawing No.: 12050-WMKS-0109G-1 Description: Pump to Pipe weld

System ID: RC

Component ID: 12050-WMKS-0109G-1 / 27 1/2-RC-409 / 33 Size/Length: 1.5" / 85" Thickness/Diameter: 2.25" / 27.5"

Limitations: No upstream scan due to pump to pipe configuration Start Time: 1027 Finish Time: 1047

Instrument Settings

Serial No.:	040186603		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	12.02	Range:	4.533"
M'tl Cal/Vel:	.2238in/us	Pulser:	Square
Damping:	400Ohms	Reject:	0%
Rep. Rate:	Auto	Freq.:	1.0Mhz
Filter:	Broadband	Mode:	Fullwave
Voltage:	Max	Other:	N/A
Ax. Gain (dB):	50.0	Circ. Gain (dB):	50.0

10 Screen Div. = 4.53" in. of Sound Path

Linearity Report No.: L-07-008

Calibration Block

Cal. Block No.: VGB-33

Thickness: 2.580" Dia.: 0

Cal. Blk. Temp.: 70° Temp. Tool: 1075BGCY

Comp. Temp.: 70° Temp. Tool: 1075BGCY

Search Unit

Serial No.: 97-733

Manufacturer: RTD

Size: 2(20X34) Shape: Rectangular

Freq.: 1.0 MHZ Style: TRL1-AUST

Exam Angle: 45° # of Elements: Dual

Mode: Long

Measured Angle: 45°

Wedge Style: Integral

Search Unit Cable

Type: RG-174 (DUAL)

Length: 12' No. Conn.: 0

Scan Coverage

Upstream ☐ Downstream ☑ Scan dB: 56.0

CW ☑ CCW ☑ Scan dB: 56.0

Exam Surface: O.D

Surface Condition: Contour Ground

Cal. Checks	Time	Date
Initial Cal.	0645	9/22/2008
Inter. Cal.	1027	9/22/2008
Inter. Cal.	1047	9/22/2008
Inter. Cal.	N/A	
Final Cal.	1510	9/22/2008

Couplant

Cal. Batch: 06120

Type: SoundSafe

Mfg.: SONOTECH

Exam Batch: 06120

Type: SoundSafe

Mfg.: SONOTECH

Reference Block

Serial No.:

Type: N/A

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1/4 T	55%	2.0	.886"
1/2 T	80%	4.0	1.740"
3/4 T	60%	6.0	2.730"
1 T Notch	40%	8.2	3.912"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A				

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

Results: NRI ☑ RI ☐ Geom ☐ None

Comments: CW & CCW Scans limited to the downstream side of weld.

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

Examiner	Level II-PDI	Signature	Date	Reviewer		Signature	Date
Knott, Brian D.		Brian D. Knott	9/22/2008	WAYNE L. THOMAS LTIII			10-02-08
Examiner	Level N/A	Signature	Date	Site Review		Signature	Date
N/A				KJ Hacker LTII		KJ Hack	10/3/08
Other	Level N/A	Signature	Date	ANII Review		Signature	Date
N/A						M Ahan	10/4/08

UT Calibration/Examination

ENCLOSURE R1-12

NAPS Unit 2 3rd interval Limited Exams

Docket No. 50-339

Serial No. 11-472

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UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	NDE-UT-705	Outage No.:	N2R19
Summary No.:	N2.R1.11.323	Procedure Rev.:	3	Report No.:	UT-08-035
Workscope:	ISI	Work Order No.:		Page:	2 of 3

Code: Sect. XI 1995 Ed./1996 Add. Cat./Item: R-A/R1.11 Location: C-LOOP

Drawing No.: 12050-WMKS-0109G-1 Description: Pump to Pipe weld

System ID: RC

Component ID: 12050-WMKS-0109G-1 / 27 1/2-RC-409 / 33 Size/Length: 1.5" / 85" Thickness/Diameter: 2.25" / 27.5"

Limitations: No upstream scan due to Pump to pipe configuration. Start Time: 1049 Finish Time: 1106

Instrument Settings

Serial No.:	040186603		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	13.85	Range:	6.24"
M'tl Cal/Vel:	.2250in/us	Pulser:	Square
Damping:	400Ohms	Reject:	0%
Rep. Rate:	Auto	Freq.:	1.0 Mhz
Filter:	Broadband	Mode:	Fullwave
Voltage:	Max	Other:	N/A
Ax. Gain (dB):	50.7	Circ. Gain (dB):	N/A

10 Screen Div. = 6.24" in. of Sound Path

Linearity Report No.: L-07-008

Calibration Block

Cal. Block No.:	VGB-33		
Thickness:	2.580"	Dia.:	0
Cal. Blk. Temp.:	70°	Temp. Tool:	1075BGCY
Comp. Temp.:	70°	Temp. Tool:	1075BGCY

Search Unit

Serial No.:	94-586		
Manufacturer:	RTD		
Size:	2(24X42)	Shape:	Rectangular
Freq.:	1.0 MHZ	Style:	TRL1-AUST
Exam Angle:	60°	# of Elements:	Dual
Mode:	Long		
Measured Angle:	60°		
Wedge Style:	Integral		

Search Unit Cable

Type: RG-174 (DUAL) Length: 12' No. Conn.: 0

Scan Coverage

Upstream ☐ Downstream ☑ Scan dB: 50.7

CW ☐ CCW ☐ Scan dB: N/A

Exam Surface: O.D.

Surface Condition: Contour Ground

Cal. Checks	Time	Date
Initial Cal.	0700	9/22/2008
Inter. Cal.	1049	9/22/2008
Inter. Cal.	1106	9/22/2008
Inter. Cal.	N/A	
Final Cal.	1515	9/22/2008

Couplant

Cal. Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.:

Type: N/A

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1/4 T	80%	2.0	1.097"
1/2 T	80%	4.0	2.672"
3/4 T	50%	6.0	3.761"
1 T Notch	50%	7.9	4.930"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A				

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

Results: NRI ☑ RI ☐ Geom ☐ None

Comments: None

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

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Knott, Brian D.	II-PDI	Brian D. Knott	9/22/2008	WAYNE L. THOMAS LEVEL III		10.02.08
Examiner	Level	Signature	Date	Site Review	Signature	Date
N/A	N/A			KJ Hacker LEVEL III		10/3/08
Other	Level	Signature	Date	ANII Review	Signature	Date
						10/4/08

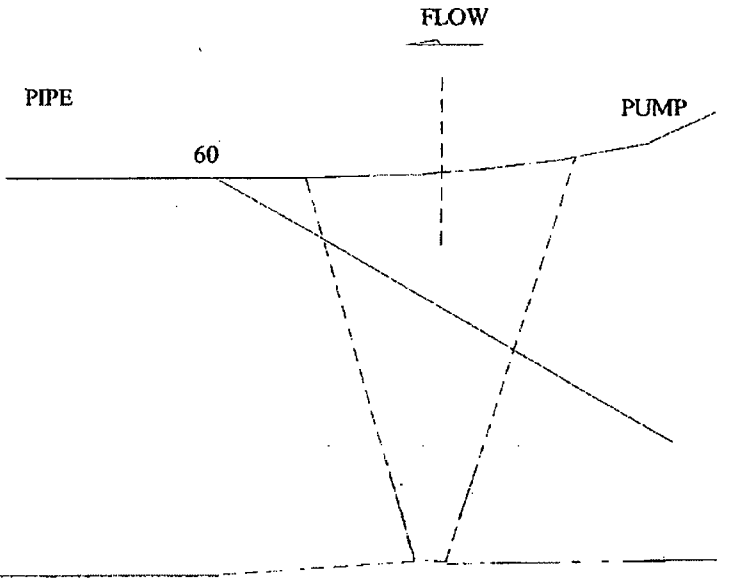
ENCLOSURE R1-12
NAPS Unit 2 3rd interval Limited Exams
Page 345 of 383
Docket No. 50-339
Serial No. 11-472

ENCLOSURE R1-12

Weld Number	33
Weld Thickness	2.25"
Weld Length	85"
Weld Width	1.5"

Report No: UT-08-035
Summary # N2.R1.11.323
Pg. 3 of 3
Prepared By: W.L. Thomas
Date: 10/2/2008

KJ Hack LIII 10/3/08



1.88 SQ. INCH TOTAL R-A EXAM VOLUME

EXAMINED 100% AXIAL SCAN VOLUME

EXAMINED 50% CIRC SCAN VOLUME DUE TO CONFIGURATION

75% OF TOTAL VOLUME EXAMINATION

50 + 100 = 150 / 200 = 75%

Examination Volume Dimensions - Height .75" Length 85" Width 2.5"

Coverage Summary				
	Required Scans (each has a weighing factor of 100 for complete coverage)			
ANGLE	Ax	Circ		
45 / 60	100%	50%		
			Code Coverage Total	75%
			Best Effort Coverage (Max 25%) Total	N/A

Notes:

1) Code Coverage refers to the maximum percentage of the required examination volume that is effectively examined with the qualified examination procedure.
2) Best Effort Coverage refers to the required examination volume past the weld centerline that is examined in the axial beam direction with an Appendix VIII demonstrated procedure for single sided coverage.

UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	NDE-UT-705	Outage No.:	N2R19
Summary No.:	N2.R1.11.326	Procedure Rev.:	3	Report No.:	UT-08-036
Workscope:	ISI	Work Order No.:		Page:	1 of 2

Code: Sect. XI 1995 Ed./1996 Add. Cat./Item: R-A/R1.11 Location: C-LOOP

Drawing No.: 12050-WMKS-0109G-2 Description: Branch Connection to pipe weld

System ID: RC

Component ID: 12050-WMKS-0109G-2 / 27 1/2-RC-409 / SW-49 Size/Length: 4" / 19" Thickness/Diameter: 2.58" / 27.5"

Limitations: Scans 2, 7, & 8 limited to Cold Leg side of Weld centerline No scan 5 Start Time: 1109 Finish Time: 1136

Instrument Settings

Serial No.:	040186603		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	12.02	Range:	4.533"
M'tl Cal/Vel:	.2238 in/us	Pulser:	square
Damping:	400 ohms	Reject:	0%
Rep. Rate:	auto	Freq.:	1.0 mhz
Filter:	Broadband	Mode:	Fullwave
Voltage:	Max	Other:	N/A
Ax. Gain (dB):	50.0	Circ. Gain (dB):	50.0

10 Screen Div. = 4.53" in. of Sound Path

Linearity Report No.: L-07-008

Calibration Block

Cal. Block No.:	VGB-33		
Thickness:	2.580"	Dia.:	0
Cal. Blk. Temp.:	70°	Temp. Tool:	1075BGCY
Comp. Temp.:	70°	Temp. Tool:	1075BGCY

Search Unit

Serial No.:	97-733		
Manufacturer:	RTD		
Size:	2(20X34)	Shape:	Retangular
Freq.:	1.0 MHZ	Style:	TRL1-AUST
Exam Angle:	45°	# of Elements:	Dual
Mode:	Long		
Measured Angle:	45°		
Wedge Style:	Integral		

Search Unit Cable

Type: RG-174 (DUAL) Length: 12 No. Conn.: 0

Scan Coverage

Upstream ☐ Downstream ☑ Scan dB: 56.0

CW ☑ CCW ☑ Scan dB: 56.0

Exam Surface: O.D

Surface Condition: Contour Ground

Cal. Checks	Time	Date
Initial Cal.	0645	9/22/2008
Inter. Cal.	1109	9/22/2008
Inter. Cal.	1136	9/22/2008
Inter. Cal.	N/A	
Final Cal.	1510	9/22/2008

Couplant

Cal. Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.:

Type: N/A

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1/4 T	55%	2.0	.886"
1/2 T	80%	4.0	1.740"
3/4 T	60%	6.0	2.730"
1 T Notch	40%	8.2	3.912"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A				

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

Results: NRI ☑ RI ☐ Geom ☐

Comments: None

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

Examiner	Level	Signature	Date
Knott, Brian D.	II-PDI	Brian D. Knott	9/22/2008
N/A	N/A		
N/A	N/A		

Reviewer	Signature	Date
WAYNE L. THOMAS LTH		10-02-08
Site Review	Signature	Date
RAYMOND T. STACK LTH	Raymond T. Stack	10-2-08
ANII Review	Signature	Date
	M Hess	10/3/08

ENCLOSURE R1-13
NAPS Unit 2 3rd interval Limited Exams
Docket No. 50-339
Serial No. 11-472
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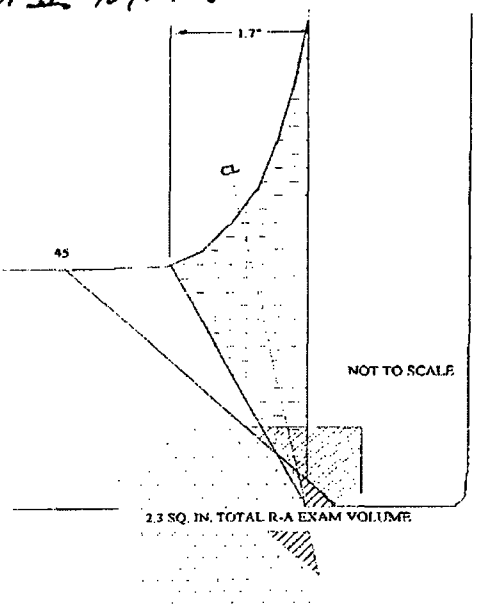
ENCLOSURE R1-13

Weld Number	SW-49
Weld Thickness	2.58"
Weld Length	19 "
Weld Width	1.7"

Report No: UT-08-036
Summary # N2.R1.11.326
Pg. 2 of 2
Prepared By: W.L. Thomas
Date: 10/2/2008

Brian D. Knott Lvl II 10/2/08

Raynel T Stack L III 10-2-08



EXAMINED 1.39 SQ. INCHES OF A TOTAL OF 1.50 SQ IN DS AX VOLUME
1.39 / 1.50 = 93% 93 + 100 = 193 / 2 = 96.5% DS AX VOLUME
EXAMINED 93% OF DS AX VOLUME FOR 50% OF WELD LENGTH AND 100% FOR REMAINING 50% OF WELD LENGTH

EXAMINED 0.05 SQ. IN. OF A TOTAL .8 SQ. IN. US AX VOLUME FOR 50% OF THE WELD LENG
100% FOR REMAINING 50% WELD LENGTH
.05 / .8 = 6% 6+100 = 106 / 200 = 53% BEST EFFORT US AX

.75 SQ IN NOT EXAMINED DS AX

45% DS CIRC EXAM COVERAGE DUE TO CONFIGURATION 0 + 0 + 96.5 + 45 = 141.4 / 4 = 35% 53 / 4 = 13%

Examination Volume Dimensions - Height .86" Length 19" Width 2.7"

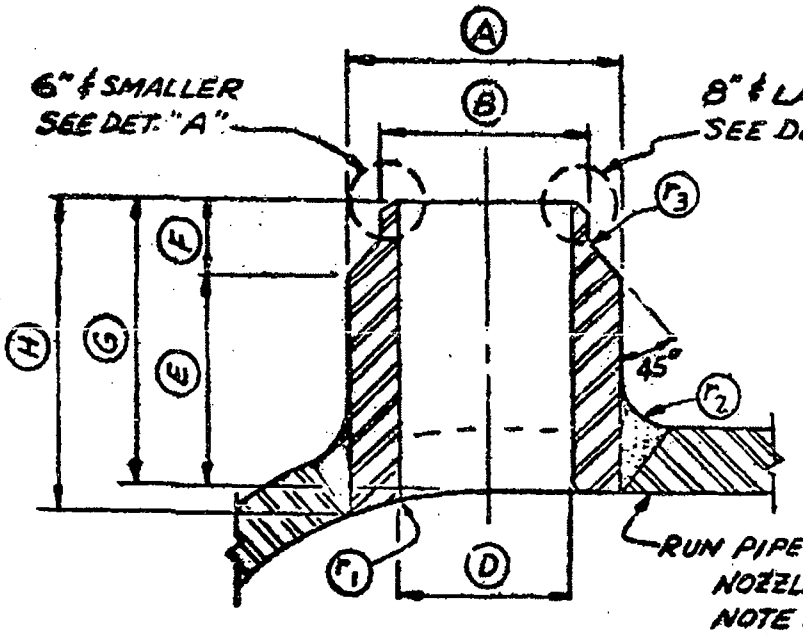
Coverage Summary				
	Required Scans (each has a weighing factor of 100 for complete coverage)			
ANGLE	UpSt - Ax	UpSt - Circ	DnSt- Ax	DnSt - Circ
45L	53% Best Effort	0%	97%	45%
			Code Coverage Total	35%
			Best Effort Coverage (Max 25%) Total	13%

Notes:

1) Code Coverage refers to the maximum percentage of the required examination volume that is effectively examined with the qualified examination procedure.
2) Best Effort Coverage refers to the required examination volume past the weld centerline that is examined in the axial beam direction with an Appendix VIII demonstrated procedure for single sided coverage.

ENCLOSURE R1-13

NO. REQ'D.	SIZE	℄ RUN TO END OF NOZ. ±1/8"	MACHINING DATA (INCHES)								NOM. SCH.	NOM. WALL THK.	(r1) MIN.	(r2) MIN.	(r3) MIN.
			(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)					
3	6" on 27½"	2'-2 3/16"	10.127	6.625	5.327	5.189	8 7/8	3 3/8	12½	13½	160	.718	.221	2.174	1.238



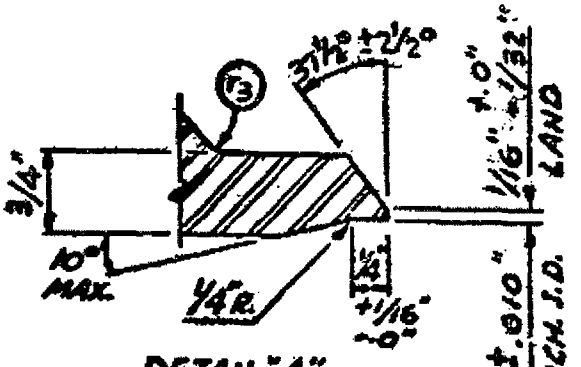
RUN PIPE TABLE		
NOM. I.D.	I.D.	O.D.
27½"	27.65"	32.072"
	27.43"	32.197"

NOZZLES FOR PLANT YRA ONLY.

NOTE:
FOR THERMAL SLEEVES, BORE THE (C) DIMENSION THE FULL LENGTH OF THE NOZZLE.

6" & LARGER NOZZLES

ALL MATL. A-182 F-316 STAINLESS STL. (0.20% MAX. COBALT)



DETAIL "A"
NOZZLE WELD BEVEL DETAIL
3/4" NOM. WALL THK. & LESS.

UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	NDE-UT-705	Outage No.:	N2R19
Summary No.:	N2.R1.11.327	Procedure Rev.:	3	Report No.:	UT-08-034
Workscope:	ISI	Work Order No.:		Page:	1 of 2

Code: Sect. XI 1995 Ed./1996 Add. Cat./Item: R-A/R1.11 Location: C-LOOP

Drawing No.: 12050-WMKS-0109G-2 Description: Pipe to Branch Connection weld

System ID: RC

Component ID: 12050-WMKS-0109G-2 / 29-RC-407 / SW-36 Size/Length: 2.2" / 50" Thickness/Diameter: 2.58" / 29"

Limitations: Scans 2, 7, & 8 limited to Hot Leg side of Weld centerline No scan 5 Start Time: 0948 Finish Time: 1015

Instrument Settings

Serial No.:	040186603		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	12.02	Range:	4.533"
M'tl Cal/Vel:	.2238 in/us	Pulser:	square
Damping:	400 ohms	Reject:	0%
Rep. Rate:	auto	Freq.:	1.0 mhz
Filter:	Broadband	Mode:	Fullwave
Voltage:	Max	Other:	N/A
Ax. Gain (dB):	50.0	Circ. Gain (dB):	50.0

10 Screen Div. = 4.53" in. of Sound Path

Linearity Report No.: L-07-008

Calibration Block

Cal. Block No.:	VGB-33		
Thickness:	2.580"	Dia.:	0
Cal. Blk. Temp.:	70°	Temp. Tool:	1075BGCY
Comp. Temp.:	70°	Temp. Tool:	1075BGCY

Search Unit

Serial No.:	97-733		
Manufacturer:	RTD		
Size:	2(20X34)	Shape:	Rectangular
Freq.:	1.0 MHZ	Style:	TRL1-AUST
Exam Angle:	45°	# of Elements:	Dual
Mode:	Long		
Measured Angle:	45°		
Wedge Style:	Integral		

Search Unit Cable

Type: RG-174 (DUAL) Length: 12' No. Conn.: 0

Scan Coverage

Upstream ☑ Downstream ☐ Scan dB: 56.0

CW ☑ CCW ☑ Scan dB: 56.0

Exam Surface: O.D

Surface Condition: Contour Ground

Cal. Checks	Time	Date
Initial Cal.	0645	09/22/2008
Inter. Cal.	0948	09/22/2008
Inter. Cal.	1015	09/22/2008
Inter. Cal.	N/A	
Final Cal.	1510	09/22/2008

Couplant

Cal. Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	06120
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.:

Type: N/A

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1/4 T	55%	2.0	.886"
1/2 T	80%	4.0	1.740"
3/4 T	60%	6.0	2.730"
1 T Notch	40%	8.2	3.912"

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A				

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

Results: NRI ☑ RI ☐ Geom ☐

Comments: None

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

Examiner	Level	Signature	Date	Reviewer		Signature	Date
Knott, Brian D.	II-PDI	Brian D. Knott	09/22/2008	DAYNE L. THOMAS LTII			10-02-08
Examiner	Level	Signature	Date	Site Review		Signature	Date
N/A	N/A			KJ Hacker LTII			10/3/08
Other	Level	Signature	Date	ANII Review		Signature	Date
N/A	N/A						10/4/08

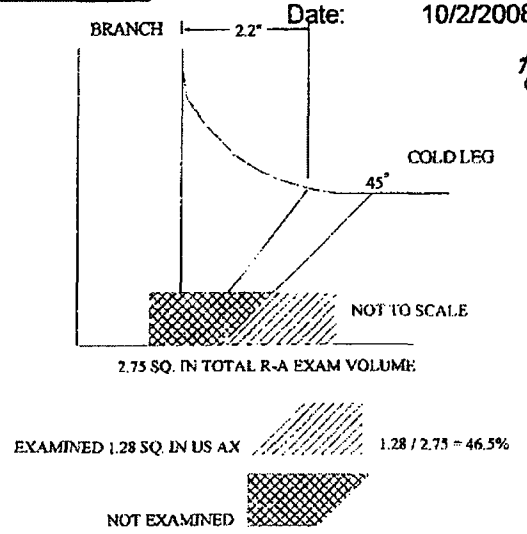
ENCLOSURE R1-14
NAPS Unit 2 3rd interval Limited Exams
Page 350 of 383
Docket No. 50-339
Serial No. 11-472

ENCLOSURE R1-14

Weld Number	SW-36
Weld Thickness	2.58"
Weld Length	50"
Weld Width	2.2"

Report No: UT-08-034
Summary # N2.R1.11.327
Pg. 2 of 2
Prepared By: W.L. Thomas
Date: 10/2/2008

10/3/08



100% COVERAGE OF THE EXAMINATION VOLUME IS LIMITED DUE TO BRANCH CONNECTION CONFIGURATION. AT THE HORIZONTAL CROSS SECTIONS THE EFFECTIVE ULTRASONIC BEAM COVERAGE IS LIMITED TO 46.5% OF THE CROSS SECTIONAL AREA FOR 50% OF THE WELD LENGTH. AT THE CURVED CROSS SECTIONS OF THE WELD, THE EFFECTIVE ULTRASONIC COVERAGE IS 100% FOR 50% OF THE WELD LENGTH. AXIAL SCAN COVERAGE = (46.5% 100%) / 2 = 73.2% AXIAL SCAN COVERAGE. CIRCUMFERENTIAL SCAN COVERAGE IS LIMITED DUE TO THE WELD CROWN / RADIUS FOR THE ENTIRE WELD LENGTH. CIRCUMFERENTIAL EXAMINATION COVERAGE = 0.825 SQ. IN. OF THE TOTAL EXAMINATION VOLUME OF 2.75 SQ. IN FOR 30% COVERAGE.

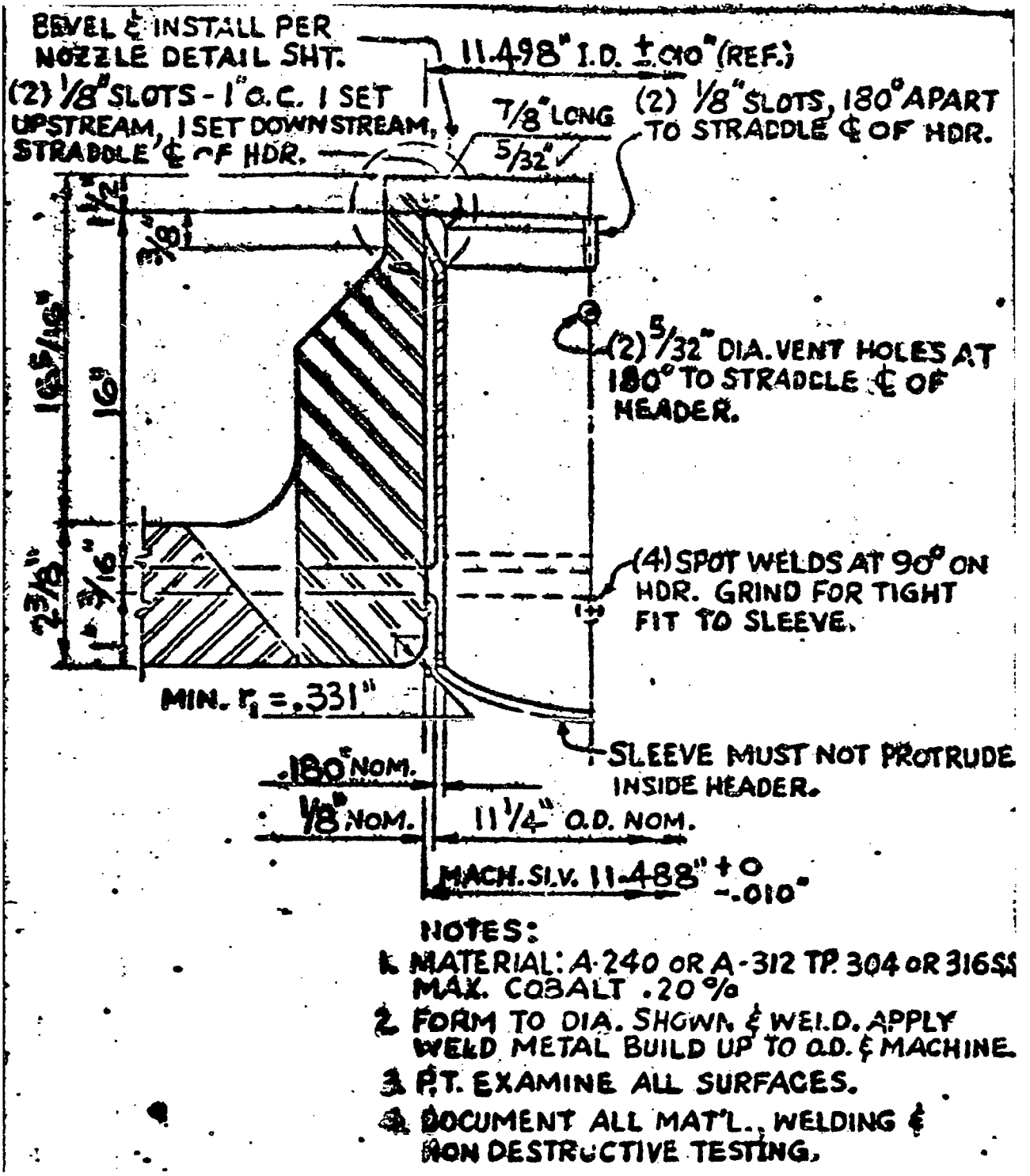
TOTAL CODE COVERAGE = (73.2% + 30%) / 2 = 51.6%

Examination Volume Dimensions - Height .86" Length 50" Width 3.2"

Coverage Summary				
	Required Scans (each has a weighing factor of 100 for complete coverage)			
ANGLE	Ax	Circ		
45	73%	30%		
			Code Coverage Total	52%
			Best Effort Coverage (Max 25%) Total	N/A

Notes:

1) Code Coverage refers to the maximum percentage of the required examination volume that is effectively examined with the qualified examination procedure.
2) Best Effort Coverage refers to the required examination volume past the weld centerline that is examined in the axial beam direction with an Appendix VIII demonstrated procedure for single sided coverage.


BEVEL & INSTALL PER NOZZLE DETAIL SHT.
11.498" I.D. ±.010" (REF.)
(2) 1/8" SLOTS - 1" O.C. 1 SET UPSTREAM, 1 SET DOWNSTREAM, STRADDLE ℄ OF HDR.
7/8" LONG
5/32"
(2) 1/8" SLOTS, 180° APART TO STRADDLE ℄ OF HDR.
1 1/2"
3/8"
16"
(2) 5/32" DIA. VENT HOLES AT 180° TO STRADDLE ℄ OF HEADER.
2 3/16"
1" 3/16"
(4) SPOT WELDS AT 90° ON HDR. GRIND FOR TIGHT FIT TO SLEEVE.
MIN. r1 = .331"
SLEEVE MUST NOT PROTRUDE INSIDE HEADER.
.180" NOM.
1/8" NOM.
11 1/4" O.D. NOM.
MACH. SI.V. 11.488" +0 -.010"
NOTES:
1. MATERIAL: A-240 OR A-312 TP. 304 OR 316SS MAX. COBALT .20%
2. FORM TO DIA. SHOWN & WELD. APPLY WELD METAL BUILD UP TO O.D. & MACHINE.
3. P.T. EXAMINE ALL SURFACES.
4. DOCUMENT ALL MAT'L., WELDING & NON DESTRUCTIVE TESTING.

ENCLOSURE R1-15

N2.R1.11.329

Dominion

Ultrasonic Examination Data Record

Interval: 3

UTRNO	Station	Unit	Drawing	Line	NDER
1311	NAPS	2	12050-WMKS-0110A-1	6"-RC-438-1502-Q1	05-006

Couplant	CalCheck1	CalCheck2	CalCheck3	WO / DCP	Procedure	Rev
01220	13:55				NDE-UT-810	1

Thermometer SerNo: 1070BGCY

Exam Data

UTRNO	RECTAG	mark/weld	Scan dB	Exam Area	Surface Condition	Temp	Partial	Single Side	Results
1311	4237	SW-9	*	**	GROUND	93	Yes	No	NRI

Comments:

* (45L - 43dB, FOCAL DEPTH 30mm, CONTOURED TO 9.5" Dia.), (60L -40.7dB, FOCAL DEPTH 25mm, CONTOURED TO 9.5" Dia.), (45S - 34dB, FOCAL DEPTH N/A, CONTOUR FLAT), (34L - 35dB, FOCAL DEPTH 39mm, CONTOURED TO 9.5" Dia.), (40S - 30dB, FOCAL DEPTH N/A, CONTOUR FLAT) ** - SEE ATTACHED COVERAGE PLOTS MAINTAINED A 5 - 20% BASELINE NOISE LEVEL THROUGHOUT EXAMS. CALIBRATION VERIFICATIONS WERE PERFORMED PRIOR TO EACH EXAM AND WERE SATISFACTORY.

UTRNO		Signature	Level	Method	Date	Activity
1311	Examined By:	PAUL R. WEEKS	DET	UT	10/06/2005	04/06/2006
1311	Examined By:	PAUL S. ANDERSON	DET	UT	10/06/2005	04/06/2006

Reviewed By: Level: III Date: 10/12/05

ANII Date 10/14/05
Initial ☐ Final ☑
HSB-CT

Interval: 3

Dominion Power Ultrasonic Calibration Data Record

UTRNO	Station	Unit	Procedure	Rev	Sizing Procedure	Rev	Couplant	CalBlock1	CBLKTKS	CBLKTemp
1311	NAPS	2	NDE-UT-810	1	NDE-UT-N/A		01220	02-5073292	4" Radius	95

CLbType	CLbLngth	#Connect	Simulator	AmpSwp	CalDate	CaLIn	CaLOut	CalBlock2	CBLKTKS2	CBLkTemp2
RG-174	6'	0	6039005	SEE COMMENTS	10/05/2005	8:10	17:30	02-5073289	8" Pipe Seg.	95

Thermometer SerNo 1070BGCY

Instrument Settings

UTRNO	MemLoc	XDUC SER	REJECT	dB	REF dB	RANGE	VELOCITY	ZERO	DELAY	FREQ	DISP MODE	PRR/PRF	PULSER	FILTER	ENERGY	DAMPING
ID																
1311	22	21HS-05001	0	37.1	0.0	3.4	0.230	7.335	N/A	2	FULLWAVE	AUTO	SQUARE	0.8-3.0	MAX	400
1581																
1311	23	22GM-05001	0	36.7	0.0	5.001	0.230	9.443	N/A	2	FULLWAVE	AUTO	SQUARE	0.8-3.0	MAX	400
1582																
1311	26	00P3JK	0	24.5	0.0	4.00	0.123	5.596	N/A	2	FULLWAVE	AUTO	SQUARE	0.8-3.0	MAX	400
1583																
1311	24	21HU-05001	0	30.5	0.0	3.544	0.230	8.417	N/A	2	FULLWAVE	AUTO	SQUARE	0.8-3.0	MAX	400
1584																
1311	25	00VBYF	0	22.4	0.0	4.00	0.123	5.706	N/A	2	FULLWAVE	AUTO	SQUARE	0.8-3.0	MAX	400
1585																

Xducer Data

UTRNO	ID	SerialNo	Manuf	Model	Size	Frequency	Nom Angle	Measured Angle	Wave Mode	Shape	No. Elements
				Wedge Type		Wedge Length	Wedge Width	Wedge Nose			
1311	1487	21HS-05001	Sigma	SDA2 45L	2(18X10)	2	45 DEG	45 DEG	LONG	RECT	2
				INTEGRAL		1.2"	1.2"	0.6"			
1311	1488	22GM-05001	Sigma	SDA2 60L	2(25X15)	2	60 DEG	60 DEG	LONG	RECT	2
				INTEGRAL		1.5"	1.5"	0.8"			
1311	1489	00P3JK	KB-AEROTECH	Comp-G	0.375"	1.5 MHZ	45 DEG	45 DEG	SHEAR	ROUND	1
				MSWQC		0.75"	0.55"	0.35"			
1311	1490	21HU-05001	Sigma	SDA1.5 34L	2(25X15)	1.5	34 DEG	34 DEG	LONG	RECT	2
				INTEGRAL		1.5"	1.5"	0.6"			
1311	1491	00VBYF	KB-AEROTECH	Comp-G	0.375"	1.5 MHZ	40 DEG	40 DEG	SHEAR	ROUND	1
				MSWQC		0.8"	0.55"	0.4"			

Vertical Beam Spread

UTRNO		Signature	Level	Method	Date	Activity
1311	Calibrated By	PAUL R. WEEKS	DET	UT	10/07/2005	04/07/2006
1311	Calibrated By	PAUL S. ANDERSON	DET	UT	10/07/2005	04/07/2006

ANII Date 11/4/05
Initial ☐ Final ☐
HSB-CT

ENCLOSURE R1-15

Serial No. 11-472
Docket No. 50-339
NAPS Unit 2 3rd Interval Limited Exams
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Interval: 3

Dominion Power Ultrasonic Calibration Data Record

Instrument						Calibration Data										
UTRNO	SHAC	Inst. Serial	Inst. Model	Inst. Manuf	ID	UTRNO	Blk	XDID	IS ID	Direction	CaLType	Point	Reflector	Position	Amplitude	Sweep
1311	200	040182503	Epoch 4	Panametrics	1585	1311	1	1487	1581	AX	DET	1	1.25" SDH	N/A	80	5.04
1311	200	040182503	Epoch 4	Panametrics	1584	1311	1	1488	1582	AX	DET	1	1.25" SDH	N/A	80%	5.6
1311	200	040182503	Epoch 4	Panametrics	1583	1311	1	1489	1583	AX	DET	1	1.25" SDH	N/A	80%	4.3
1311	200	040182503	Epoch 4	Panametrics	1582	1311	2	1490	1584	CIRC	DET	1	1.25" SDH	N/A	80%	4.6
1311	200	040182503	Epoch 4	Panametrics	1581	1311	2	1491	1585	CIRC	DET	1	1.25" SDH	N/A	80%	5

UTRNO		Signature	Level	Method	Date	Activity
1311	Calibrated By	PAUL R. WEEKS	DET	UT	10/07/2005	04/07/2006
1311	Calibrated By	PAUL S. ANDERSON	DET	UT	10/07/2005	04/07/2006

ANII _____ Date 11/14/05
Initial ☐ Final ☑
HSB-CT

ENCLOSURE R1-15

Serial No. 11-472
Docket No. 50-339
NAPS Unit 2 3rd interval Limited Exams
Page 355 of 383

ENCLOSURE R1-15

Dominion
UT Partial Record

UTRNO	RECTAG	Drawing	Line	Mark/weld	Procedure	Rev
1311	4237	12050-WMKS-0110A-1	6"-RC-438-1502-Q1	SW-9	NDE-UT-810	1

XDucer Serial	Weld Width	Exam Angle	SU Length	SU Width	SU Nose	Percent
21HS-05001	1.9"	45 DEG	1.2"	1.2"	0.6"	*** %

Area Not Examined

SEE PROFILE AND COVERAGE SHEET

Reason

COMPONENT CONFIGURATION

Comments

*** SEE COVERAGE SHEET

Cross Section Sketch

Axial Scan Coverage = 69%

Circ. Scan Coverage = 58%

Composite Coverage = 63.5%

[signature] 10/20/05

Evaluation

Signature	Level	DATE
[signature] PAUL S.ANDERSON	DET	10/06/2005

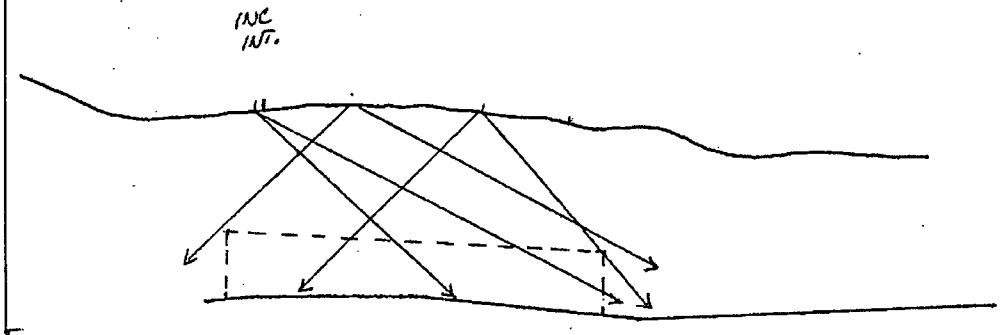
Reviewed By: [signature] **Level:** III **Date:** 10/12/05

ANII [signature] Date 11/14/05
Initial ☐ Final ☐
HSB-CT

SW-4

UTR NO: 13-11

Code Coverage
Axial Scan



DIAMETER 25.1 21.8

WELD WIDTH - 1.9"

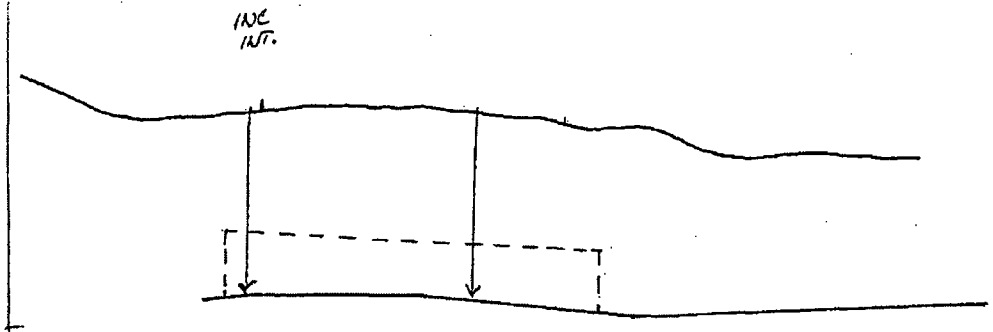
Coverage
45 = 69%
60 = 7%

Prepared by: Tim R Weeks
JJ Hack 10/20/05

SW-C

UTR NO: 311

Code Coverage
Circ Scan



NOZZLE

DIAMETER 25.1 21.8

WELD WIDTH - 1.9"

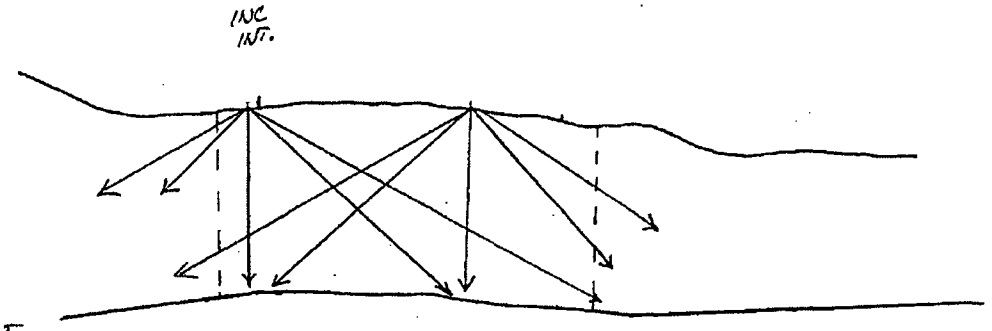
Coverage
CIRC = 58%

Prepared by: Paul K Weeks
KJ Hacker 10/20/05

SW-C

UTR ID: 1311

PROCEDURAL COVERAGE



DIAMETER 25.1 21.8

WELD WIDTH - 1.9"

Coverage -
45 = 70%
60 = 56%
CIRC = 58%

Prepared by: Paul R Weeks
KJ Hacker 10/20/05

Dominion

North Anna Unit 2 or Surry Unit 1 and Unit 2
VT-2 Visual Examination Report

(no remote visual aids such as boroscopes)

VPAP-1103 • Attachment 15 — Page 1 of 2

1. Station [✓] North Anna [ ] Surry	Unit [ ] 1 [✓] 2	System Reactor Coolant	Repair / Replacement No. (When Applicable) N/A
2. Test Procedure Number VPAP-1103 Rev. 10		Type of Test Leak	DCP No. / Work Order No. NDE-R 05-006
3. Examination Date 10/3/05			4. ANII Hold Point? [ ] Yes [✓] No
5. [ ] Remote (no visual aids) Must be between 6' and 9' 9"		[✓] Direct Must be less than or equal to 6'	

6. At the inspection location, characters on visual test card / card standard can be seen at the distance required for either remote or direct examination as applicable. Supplemental lighting may be used.
[✓] Accept [ ] Reject Note: If rejected, examination shall not be performed, contact ISI/NDE.

7. Component Inspected / RECTAG # if applicable WECO SW-9 ON 6"-RC-438-1502-Q1	Drawing / Revision No. 12050 WMKS-0110A-1
8. Pressure Test Zone(s) Inspected / Area Inspected N/A	9. Hold Time (Hours / Minutes) N/A

10. Checklist

For statements a through f, mark the applicable selection for each condition.
If the statement is true, mark "Reject". If the statement is not true, mark "Accept". If the statement does not apply, mark "N/A".
Note: Checklist item (e) if rejected requires Plant Issue (Deviation) per DNAP-1004, all other rejected checklist conditions requires Plant Issue (Deviation) be issued.

a. Leakage from non-insulated components	[✓] Accept	[ ] Reject	[ ] N/A
b. Leakage from components with leakage limiting devices, in excess of permissible levels	[ ] Accept	[ ] Reject	[✓] N/A
c. Leakage from insulated components or inaccessible components that will require finding the leakage source	[ ] Accept	[ ] Reject	[✓] N/A
d. Areas of general corrosion of a component resulting from leakage	[✓] Accept	[ ] Reject	[ ] N/A
e. Discoloration or accumulated residues on surfaces of components, insulation, or floor area that may be evidence of borated water leakage (wet or dry)	[✓] Accept	[ ] Reject	[ ] N/A
f. Leakage or flow test results from buried components in excess of limits	[ ] Accept	[ ] Reject	[✓] N/A

11. Comments (Additional space on back) Illuminators (e.g., flashlight), instruments (e.g., mirror), equipment, tools, etc. used shall be noted in comments section.

Flashlight used during inspection

12. Method of Examination

13. Start Pressure (2400 Hours) N/A	Time Interval (Hours/Minutes) N/A	Acceptance Criteria (N/A Block 13 if not pressure loss method.) N/A
End Pressure (2400 Hours) N/A	Pressure Loss Rate N/A	

14. Pressure Gauge Identification (N/A if not hydro or pneumatic test.) N/A		Pressure Gauge Identification N/A	
Calibration Date N/A	Calibration Due Date N/A	Calibration Date N/A	Calibration Due Date N/A

15. Examiner (Print Name) Brenton R. Baker	Examiner (Signature)	Certification Level II	Exam Date 10/3/05
~~16. Dominion Reviewer (Print Name) (mark N/A if examiner is not a vendor or contractor examiner)~~	Dominion Reviewer (Signature)		Certification Level
17. ANII (Signature) (NOT REQUIRED – NON-CODE EXAM)			Date

Note: Provide any comments concerning visual aids needed, scaffolding, insulation removal or weld preparation in block 11 of this form.
Key: DCP-Design Change Package; VT-Visual Testing; ISI-Inservice Inspection;
ANII-Authorized Nuclear Inservice Inspection

Form No. 730516 (Jan 2005)

ENCLOSURE R1-16

N2.R1.11.330

Dominion

Interval: 3

Ultrasonic Examination Data Record

UTRNO	Station	Unit	Drawing	Line	NDER
1308	NAPS	2	12050-WMKS-0110A-1	6"-RC-439-1502-Q1	05-006

Couplant	CalCheck1	CalCheck2	CalCheck3	WO / DCP	Procedure	Rev
01220	13:55				NDE-UT-810	1

Thermometer SerNo: 1070BGCY

Exam Data

UTRNO	RECTAG	mark/weld	Scan dB	Exam Area	Surface Condition	Temp	Partial	Single Side	Results
1308	4219	SW-17	*	**	GROUND	93	Yes	No	NRI

Comments:

* (45L - 43dB, FOCAL DEPTH 30mm, CONTOURED TO 9.5" Dia.), (60L -40.7dB, FOCAL DEPTH 25mm, CONTOURED TO 9.5" Dia.), (45S - 34dB, FOCAL DEPTH N/A, CONTOUR FLAT), (34L - 35dB, FOCAL DEPTH 39mm, CONTOURED TO 9.5" Dia.), (40S - 30dB, FOCAL DEPTH N/A, CONTOUR FLAT) ** - SEE ATTACHED COVERAGE PLOTS MAINTAINED A 5 - 20% BASELINE NOISE LEVEL THROUGHOUT EXAMS. CALIBRATION VERIFICATIONS WERE PERFORMED PRIOR TO EACH EXAM AND WERE SATISFACTORY.

UTRNO		Signature	Level	Method	Date	Activity
1308	Examined By:	PAUL R. WEEKS	DET	UT	10/06/2005	04/06/2006
1308	Examined By:	PAUL S. ANDERSON	DET	UT	10/06/2005	04/06/2006

Reviewed By: KJ Hacker Level: III Date: 10/12/05

ANII [signature] Date 11/14/05
Initial ☐ Final ☑
HSB-CT

Interval: 3

Dominion Power Ultrasonic Calibration Data Record

UTRNO	Station	Unit	Procedure	Rev	Sizing Procedure	Rev	Couplant	CalBlock1	CBLKTKS	CBLKTemp
1308	NAPS	2	NDE-UT-810	1	NDE-UT-N/A		01220	02-5073292	4" Radius	95

CLbType	CLbLngth	#Connect	Simulator	AmpSwp	CalDate	CaLIn	CaLOut	CalBlock2	CBLKTKS2	CBLkTemp2
RG-174	6'	0	6039005	SEE COMMENTS	10/05/2005	8:10	17:30	02-5073289	8" Pipe Seg.	95

Thermometer SerNo 1070BGCY

Instrument Settings

UTRNO	MemLoc	XDUC SER	REJECT	dB	REF dB	RANGE	VELOCITY	ZERO	DELAY	FREQ	DISP MODE	PRR/PRF	PULSER	FILTER	ENERGY	DAMPING
ID																
1308	22	21HS-05001	0	37.1	0.0	3.4	0.230	7.335	N/A	2	FULLWAVE	AUTO	SQUARE	0.8-3.0	MAX	400
1571																
1308	23	22GM-05001	0	36.7	0.0	5.001	0.230	9.443	N/A	2	FULLWAVE	AUTO	SQUARE	0.8-3.0	MAX	400
1572																
1308	26	00P3JK	0	24.5	0.0	4.00	0.123	5.956	N/A	2	FULLWAVE	AUTO	SQUARE	0.8-3.0	MAX	400
1574																
1308	24	21HV-05001	0	30.5	0.0	3.544	0.230	8.417	N/A	2	FULLWAVE	AUTO	SQUARE	0.8-3.0	MAX	400
1576																
1308	24	00VBYF	0	22.4	0.0	4	0.123	5.706	N/A	1.5	FULLWAVE	AUTO	SQUARE	0.8-3.0	MAX	400
1580																

Xducer Data

UTRNO	ID	SerialNo	Manuf	Model	Size	Frequency	Nom Angle	Measured Angle	Wave Mode	Shape	No. Elements
				Wedge Type		Wedge Length	Wedge Width	Wedge Nose			
1308	1476	21HS-05001	Sigma	SDA2 45L	2(18X10)	2	45 DEG	45 DEG	LONG	RECT	2
				INTEGRAL		1.2"	1.2"	0.6"			
1308	1477	22GM-05001	Sigma	SDA2 60L	2(25X15)	2	60 DEG	60 DEG	LONG	RECT	2
				INTEGRAL		1.5"	1.5"	0.8"			
1308	1479	00P3JK	KB-AEROTECH	Comp-G	0.375"	1.5 MHZ	45 DEG	45 DEG	SHEAR	ROUND	1
				MSWQC		0.8"	0.55"	0.3"			
1308	1481	21HV-05001	Sigma	SDA2 40L	2(25X15)	2	34 DEG	34 DEG	LONG	RECT	2
				INTEGRAL		1.5"	1.5"	0.6"			
1308	1485	00VBYF	KB-AEROTECH	Comp-G	0.375"	1.5 MHZ	40 DEG	40 DEG	SHEAR	ROUND	1
				MSWQC		0.8"	0.55"	0.4"			

Vertical Beam Spread

UTRNO		Signature	Level	Method	Date	Activity
1308	Calibrated By	PAUL R. WEEKS	DET	UT	10/06/2005	04/06/2006
1308	Calibrated By	PAUL S. ANDERSON	DET	UT	10/06/2005	04/06/2006

ANII MK Date 11/4/05
Initial ☐ Final ☐
HSB-CT

ENCLOSURE R1-16

NAPS Unit 2 3rd interval Limited Exams
Docket No. 50-339
Serial No. 11-472

Interval: 3

Dominion Power Ultrasonic Calibration Data Record

Instrument						Calibration Data										
UTRNO	SHAC	Inst. Serial	Inst. Model	Inst. Manuf	ID	UTRNO	Blk	XDID	IS ID	Direction	CaLType	Point	Reflector	Position	Amplitude	Sweep
1308	200	040182503	Epoch 4	Panametrics	1580	1308	1	1476	1571	AX	DET	1	1.25" SDH	N/A	80%	5.0
1308	200	040182503	Epoch 4	Panametrics	1576	1308	1	1477	1572	AX	DET	1	1.25" SDH	N/A	80%	5.6
1308	200	040182503	Epoch 4	Panametrics	1574	1308	1	1479	1574	AX	DET	1	1.25" SDH	N/A	80%	4.3
1308	200	040182503	Epoch 4	Panametrics	1572	1308	2	1481	1576	CIRC	DET	1	1.25" SDH	N/A	80%	4.6
1308	200	040182503	Epoch 4	Panametrics	1571	1308	2	1485	1580	CIRC	DET	1	1.25" SDH	N/A	80%	5

UTRNO		Signature	Level	Method	Date	Activity
1308	Calibrated By	PAUL R. WEEKS	DET	UT	10/06/2005	04/06/2006
1308	Calibrated By	PAUL S. ANDERSON	DET	UT	10/06/2005	04/06/2006

ANII _____ Date 11/4/05
Initial ☐ Final ☐
HSB-CT

ENCLOSURE R1-16

Serial No. 11-472
Docket No. 50-339
NAPS Unit 2 3rd interval Limited Exams
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ENCLOSURE R1-16

Dominion
UT Partial Record

UTRNO	RECTAG	Drawing	Line	Mark/weld	Procedure	Rev
1308	4219	12050-WMKS-0110A-1	6"-RC-439-1502-Q1	SW-17	NDE-UT-811	1

XDucer Serial	Weld Width	Exam Angle	SU Length	SU Width	SU Nose	Percent
21HS-05001	1.9"	45 DEG	1.2"	1.2"	0.6"	***%

Area Not Examined

SEE ATACHED COVERAGE PLOTS

Reason

COMPONENT CONFIGURATION

Comments

*** SEE ATTACHED

Cross Section Sketch

Axial Scan Coverage = 54%

Circ. Scan Coverage = 52%

Composite Coverage = 53%

KJHacker 10/20/05

Evaluation

Signature	Level	DATE
PAUL S.ANDERSON	DET	10/06/2005

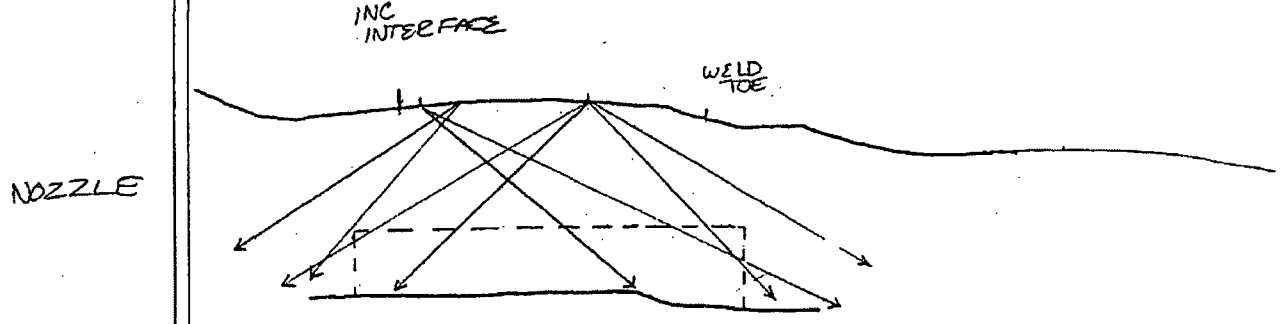
Reviewed By: KJHacker **Level:** III **Date:** 10/12/05

ANII [signature] Date 11/14/05
Initial ☐ Final ☐
HSB-CT

C SW-17

UTRNO: 308

Code Coverage
Axial Scan



Coverage
45 = 54%
60 = 5%

Prepared by: Paul R Weeks

KJ Hacker 10/20/05

C SW-17

UTRNO 1308

Code Coverage

CIRC. SCANS

Coverage

Circ = 52%

Prepared by: Paul R Weeks

KJHacker 10/20/05

UTRNO 1308

SW-17

Procedural Coverage

Coverage

45 = 62%

60 = 42%

CIRC = 52%

Prepared by: Paul R Weeks

KJ Hacker 10/20/05

ENCLOSURE R1-16

Serial No. 11-472
Docket No. 50-339
NAPS Unit 2 3rd interval Limited Exams
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Dominion

North Anna Unit 2 or Surry Unit 1 and Unit 2
VT-2 Visual Examination Report
(no remote visual aids such as boroscopes)

VPAP-1103 - Attachment 15 Page 1 of 2

1. Station [X] North Anna [ ] Surry	Unit [ ] 1 [X] 2	System RC	Repair / Replacement No. (When Applicable) Leak N/A
2. Test Procedure Number VPAP-1103 Rev. 10		Type of Test Leak	DCP No. / Work Order No. NDER-05-006
3. Examination Date 10/3/05			4. ANII Hold Point? [ ] Yes [X] No
5. [ ] Remote (no visual aids) Must be between 6' and 9' 9"		[X] Direct Must be less than or equal to 6'	
6. At the inspection location, characters on visual test card / card standard can be seen at the distance required for either remote or direct examination as applicable. Supplemental lighting may be used. [X] Accept [ ] Reject Note: If rejected, examination shall not be performed, contact ISI/NDE.			
7. Component Inspected / RECTAG # if applicable WELD SW-17 ON 6"-RC-439-1502-Q1			Drawing / Revision No. 12050 WMKS-0110A-1
8. Pressure Test Zone(s) Inspected / Area Inspected N/A			9. Hold Time (Hours / Minutes) N/A

10. Checklist

For statements a through f, mark the applicable selection for each condition.
If the statement is true, mark "Reject". If the statement is not true, mark "Accept". If the statement does not apply, mark "N/A".
Note: Checklist item (e) if rejected requires Plant Issue (Deviation) per DNAP-1004, all other rejected checklist conditions requires Plant Issue (Deviation) be issued.

a. Leakage from non-insulated components	[X] Accept	[ ] Reject	[ ] N/A
b. Leakage from components with leakage limiting devices, in excess of permissible levels	[ ] Accept	[ ] Reject	[X] N/A
c. Leakage from insulated components or inaccessible components that will require finding the leakage source	[ ] Accept	[ ] Reject	[X] N/A
d. Areas of general corrosion of a component resulting from leakage	[X] Accept	[ ] Reject	[ ] N/A
e. Discoloration or accumulated residues on surfaces of components, insulation, or floor area that may be evidence of borated water leakage (wet or dry)	[X] Accept	[ ] Reject	[ ] N/A
f. Leakage or flow test results from buried components in excess of limits	[ ] Accept	[ ] Reject	[X] N/A

11. Comments (Additional space on back) Illuminators (e.g., flashlight), instruments (e.g., mirror), equipment, tools, etc. used shall be noted in comments section.
Flashlight used during inspection

12. Method of Examination

13. Start Pressure (2400 Hours) N/A	Time Interval (Hours/Minutes) N/A	Acceptance Criteria (N/A Block 13 if not pressure loss method.) N/A
End Pressure (2400 Hours) N/A	Pressure Loss Rate N/A	

14. Pressure Gauge Identification (N/A if not hydro or pneumatic test.) N/A		Pressure Gauge Identification N/A	
Calibration Date N/A	Calibration Due Date N/A	Calibration Date N/A	Calibration Due Date N/A

15. Examiner (Print Name) Brenda R. Baker	Examiner (Signature) [signature]	Certification Level II	Exam Date 10/3/05
16. Dominion Reviewer (Print Name) (mark N/A if examiner is not a vendor or contractor examiner)	Dominion Reviewer (Signature)		Certification Level
17. ANII (Signature) (NOT REQUIRED – NON-CODE EXAM)			Date

Note: Provide any comments concerning visual aids needed, scaffolding, insulation removal or weld preparation in block 11 of this form.
Key: DCP-Design Change Package; VT-Visual Testing; ISI-Inservice Inspection;
ANII-Authorized Nuclear Inservice Inspection

Form No. 730516 (Jan 2005)

ENCLOSURE R1-17

N2, R1.11, 367

Dominion
ULtrasonic Examination Data Record

Interval: 3

UTRNO	Station	Unit	Drawing	Line	NDER
967	NAPS	2	12050-WMKS-RC-E-1A.2	29"-RC-401-2501R-Q1	02-001

Couplant	CalCheck1	CalCheck2	CalCheck3	WO / DCP	Procedure	Rev
98220					NDE-UT-705	2

Thermometer SerNo: 212880

Exam Data

UTRNO	RECTAG	mark/weld	Scan dB	Exam Area	Surface Condition	Temp	Partial	Single Side	Results
967	7444	N-SE29 IN.	*	ATT-2	GROUND	56	Yes	No	NRI

Comments:

* SCAN DB FOR 34 DEGREE AND 45 DEGREE EXAMINATIONS WAS REFERENCE PLUS 12 DB.

UTRNO		SSN	Signature	Level	Method	Date	Activity
967	Examined By:	197-38-9893	ROBERT SISTEK Robert Sistek	II	UT	10/1/02	4/1/03
967	Examined By:	254-54-4297	SAM DRIGANS Sam Drigans	II	UT	10/1/02	4/1/03

FINAL REVIEW
H.S.B
10/3/02
M.M. GRACE

Reviewed By: Raymond J Stucker Level: III Date: 10-2-02

Interval: 3

Dominion Power Ultrasonic Calibration Data Record

UTRNO	Station	Unit	Procedure	Rev	Sizing Procedure	Rev	Couplant	CalBlock	CBLKTKS	CBLKTemp
967	NAPS	2	NDE-UT-705	2	NDE-UT-N/A		98220	VRA-30	41"ODX15.5"X5"	70

CLbType	CLbLngth	#Connect	Simulator	AmpSwp	CalDate	CaLIn	CaLOut	CalBlock2	CBLKTKS2	CBLkTemp2
RG-174 (2)	20'	0			9/30/02	10:30	16:00			

Thermometer SerNo 212880

Instrument Settings

UTRNO	McmLoc	CalNo	CAL BLK	REJECT	dB	REF dB	RANGE	VELOCITY	ZERO	DELAY	FREQ	FILTER	ENERGY	DAMPING
967	23	311	VRA-30	0 %	50.2	+ 0.0dB	.865 in.	.2409 in/us	12.90 us	NA	NA	STD	PULSER HIGH	400
967	23	312	VRA-30	0 %	52.3	+ 0.0dB	.883 in..	.2242in/us	13.84 us	NA	NA	STD	PULSER HIGH	400
967	23	313	VRA-30	0 %	63.6	+ 0.0dB	.884 in	.2574 in/us	9.834 us	NA	NA	STD	PULSER HIGH	400

Xducer Data

UTRNO	CalNo	SerialNo	Manuf	Model	Size	Frequency	Angle	Wedge Type	Wedge Length	Wedge Width	Wedge Nose
967	311	005949	KB-AEROTECH	Comp	1.0"	1.0MHZ	45	SWS DUAL	1.8	1.25	0.9
967	311	00594B	KB-AEROTECH	Comp	1.0"	1.0MHZ	45	SWS DUAL	1.8	1.25	0.9
967	312	0064RB	KB-AEROTECH	Comp	1.0"	1.0MHZ	45	SWS DUAL	1.8	1.25	0.9
967	312	0064R9	KB-AEROTECH	Comp	1.0"	1.0MHZ	45	SWS DUAL	1.8	1.25	0.9
967	313	96-939	RTD	TRL	2(24X42)	1MHZ	34L	INTERGAL	2.1	2.1	1.1

Vertical Beam Spread

Instrument

UTRNO	SHAC	Inst. Serial	Inst. Model	Inst. Manuf	CalNo
967	65	98318711	2300	Panametrics	312
967	65	98318711	2300	Panametrics	311
967	65	98318711	2300	Panametrics	313

Calibration Data

UTRNO	CalNo	Direction	CalType	Point	Reflector	Position	Amplitude	Sweep
967	311	2/5	DET	1	1/4T SDH		120%	2
967	311	2/5	DET	2	1/2T SDH		160%	4
967	311	2/5	DET	3	3/4T SDH		80%	6
967	311	2/5	DET	4	ID NOTCH		45%	8.2
967	312	7/8	DET	1	1/4T SDH		253%	2
967	312	7/8	DET	2	3/4T SDH		80%	6
967	312	7/8	DET	3	ID NOTCH		24%	8.2
967	313	2/5	DET	1	1/4T SDH		40%	2
967	313	2/5	DET	2	1/2T SDH		80%	4
967	313	2/5	DET	3	3/4T SDH		80%	6

UTRNO		SSN	Signature	Level	Method	Date	Activity
967	Calibrated By	197-38-9893	ROBERT SISTEK	II	UT	10/1/02	3/30/03
967	Calibrated By	254-54-4297	SAM DRIGANS	II	UT	10/1/02	3/26/03

FINAL REV
H.S.B
10/3/02
M.M. GRP

VIRGINIA POWER
RTS
10-2-02
NDE Review

ENCLOSURE R1-17

Serial No. 11-472
Docket No. 50-339
NAPS Unit 2 3rd Interval Limited Exams
Page 370 of 383

Interval: 3

Dominion Power Ultrasonic Calibration Data Record

967	313	2/5	DET	4	ID NOTCH		40%	8.3



UTRNO		SSN	Signature	Level	Method	Date	Activity
967	Calibrated By	197-38-9893	ROBERT SISTEK	II	UT	10/1/02	3/30/03
967	Calibrated By	254-54-4297	SAM DRIGANS	II	UT	10/1/02	3/26/03

FINAL REVIEW
H.S.B
10/3/02

ENCLOSURE R1-17

Serial No. 11-472
Docket No. 50-339
NAPS Unit 2 3rd Interval Limited Exams
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ENCLOSURE R1-17

Dominion
UT Partial Record

UTRNO	RECTAG	Drawing	Line	Mark/weld	Procedure	Rev
967	7444	12050-WMKS-RC-E-1A.2	29"-RC-401-2501R-Q1	N-SE29 IN.	NDE-UT-705	2

CalNo	Weld Width	Exam Angle	SU Length	SU Width	SU Nose	Percent
311	1.4"	45	1.8	1.25	0.9	80%%

Area Not Examined

SEE SKETCH.

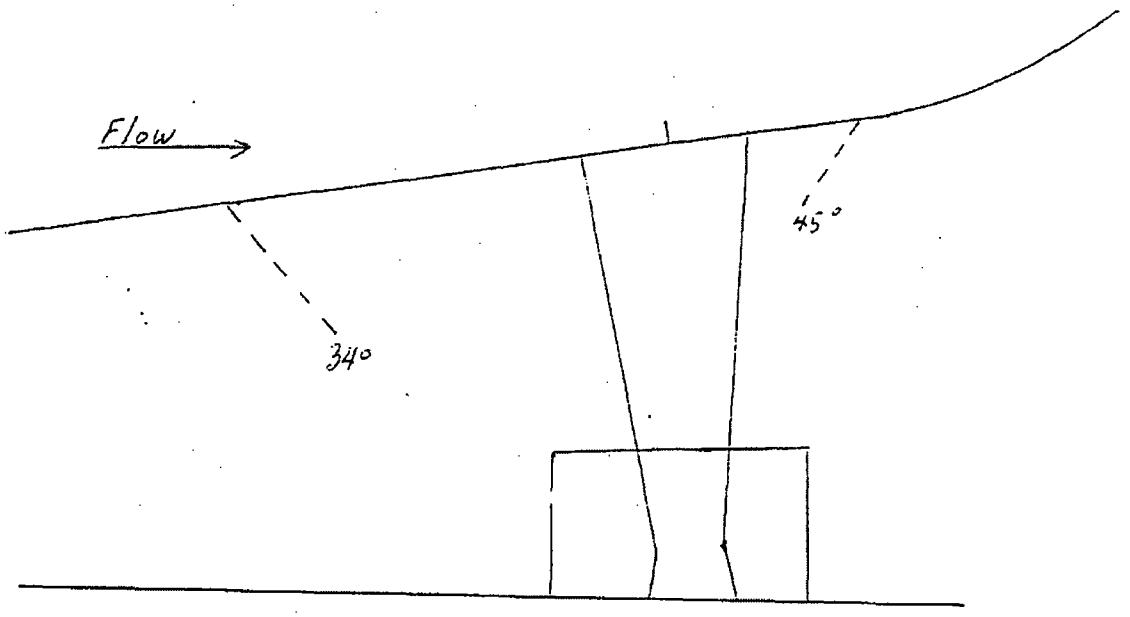
Reason

NOZZLE RADIUS ADJACENT TO SAFE END WELD.

Comments

The 2 scan was limited to approximately 22% coverage due to joint configuration at the safe end to nozzle weld area. Scans 5, 7, and 8 achieved 100 % coverage.

Cross Section Sketch



Evaluation

Due to joint configuration, coverage of 100% of examination volume could not be achieved. The weld was examined to the maximum extent practical. This was achieved by using a combination of 34 and 45 degree angle scans.

SSN	Signature	Level	DATE
254-54-4297	SAM DRIGANS	II	10/1/02

Sam Drigans

SAM REVIEW
MK
H.S.B
10/3/02
MM GRACE

Reviewed By: Ragel T Stark Level: III Date: 10-2-02

ENCLOSURE R1-18

Dominion
ULtrasonic Examination Data Record

N2,R1,I1,368

Interval: 3

UTRNO	Station	Unit	Drawing	Line	NDER
968	NAPS	2	12050-WMKS-RC-E-1A.2	31"-RC-402-2501R-Q1	02-001

Couplant	CalCheck1	CalCheck2	CalCheck3	WO / DCP	Procedure	Rev
98220					NDE-UT-705	2

Thermometer SerNo: 212880

Exam Data

UTRNO	RECTAG	mark/weld	Scan dB	Exam Area	Surface Condition	Temp	Partial	Single Side	Results
968	7445	N-SE31 IN.	*	ATT-2	GROUND	56	Yes	No	NRI

Comments:

SCAN DB FOR 34 AND 45 DEGREE EXAMINATIONS WAS REFERENCE PLUS 12 DB.

UTRNO		SSN	Signature	Level	Method	Date	Activity
968	Examined By:	197-38-9893	ROBERT SISTEK Robert Sistek	II	UT	10/1/02	4/1/03
968	Examined By:	254-54-4297	SAM DRIGANS Sam Drigans	II	UT	10/1/02	4/1/03

FINAL REVIEW
RGS
10/3/02

Reviewed By: Lloyd T Stark Level: III Date: 10-2-02

Interval: 3

Dominion Power Ultrasonic Calibration Data Record

UTRNO	Station	Unit	Procedure	Rev	Sizing Procedure	Rev	Couplant	CalBlock	CBLKTKS	CBLKTemp
968	NAPS	2	NDE-UT-705	2	NDE-UT-NA		98220	VRA-30	41"ODX15.5"X5"	70

CLbType	CLbLngth	#Connect	Simulator	AmpSwp	CalDate	CaLIn	CaLOut	CalBlock2	CBLKTKS2	CBLkTemp2
RG-174(2)	20'	0			9/30/02	10:30	16:00			

Thermometer SerNo 212880

Instrument Settings

UTRNO	MemLoc	CalNo	CAL BLK	REJECT	dB	REF dB	RANGE	VELOCITY	ZERO	DELAY	FREQ	FILTER	ENERGY	DAMPING
968	23	311	VRA-30	0 %	50.2	+ 0.0dB	.865 in	.2409in/us	12.90 us	NA	NA	STD	PULSER HIGH	400
968	23	312	VRA-30	0 %	52.3	+ 0.0dB	.883 in	.2242in/us	13.84 us	NA	NA	STD	PULSER HIGH	400
968	23	313	VRA-30	0 %	63.6	+ 0.0dB	.884 in	.2574 in/us	9.834 us	NA	NA	STD	PULSER HIGH	400

Xducer Data

UTRNO	CalNo	SerialNo	Manuf	Model	Size	Frequency	Angle	Wedge Type	Wedge Length	Wedge Width	Wedge Nose
968	311	00594B	KB-AEROTECH	Comp	1.0"	1.0MHZ	45	SWS DUAL	1.8	1.25	.9
968	311	005949	KB-AEROTECH	Comp	1.0"	1.0MHZ	45	SWS DUAL	1.8	1.25	.9
968	312	0064R9	KB-AEROTECH	Comp	1.0"	1.0MHZ	45	SWS DUAL	1.8	1.25	.9
968	312	0064RB	KB-AEROTECH	Comp	1.0"	1.0MHZ	45	SWS DUAL	1.8	1.25	.9
968	313	96-939	RTD	TRL	2(24X42)	1MHZ	34	INTERGAL	2.1	2.1	1.1

Vertical Beam Spread

Instrument

UTRNO	SHAC	Inst. Serial	Inst. Model	Inst. Manuf	CalNo
968	65	98318711	2300	Panametrics	313
968	65	98318711	2300	Panametrics	312
968	65	98318711	2300	Panametrics	311

Calibration Data

UTRNO	CalNo	Direction	Cal.Type	Point	Reflector	Position	Amplitude	Sweep
968	311	2/5	DET	1	1/4T SDH		120%	2
968	311	2/5	DET	2	1/2T SDH		160%	4
968	311	2/5	DET	3	3/4T SDH		80%	6
968	311	2/5	DET	4	ID NOTCH		45%	8.2
968	312	7/8	DET	1	1/4T SDH		253%	2
968	312	7/8	DET	2	3/4T SDH		80%	6
968	312	7/8	DET	3	ID NOTCH		24%	8.2
968	313	2/5	DET	1	1/4T SDH		40%	2
968	313	2/5	DET	2	1/2T SDH		80%	4
968	313	2/5	DET	3	3/4T SDH		80%	6

UTRNO		SSN	Signature	Level	Method	Date	Activity
968	Calibrated By	254-54-4297	SAM DRIGANS Sam Drigans	II	UT	10/1/02	4/1/03
968	Calibrated By	197-38-9893	ROBERT SISTEK Robert Sistek	II	UT	10/1/02	4/1/03

FINAL REVIEW
H.S.B
10/3/02
M.M. GRACE

RTS 10-2-02 NDE REVIEW

ENCLOSURE R1-18

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Interval: 3

Dominion Power Ultrasonic Calibration Data Record

968	313	2/5	DET	4	ID NOTCH		40%	8.3

RTS 10-2-02 NDE REVIEW

UTRNO		SSN	Signature	Level	Method	Date	Activity
968	Calibrated By	254-54-4297	SAM DRIGANS Sam Drigans	II	UT	10/1/02	4/1/03
968	Calibrated By	197-38-9893	ROBERT SISTEK Robert Sistek	II	UT	10/1/02	4/1/03

REVIEW MK 11:53 10/3/02 ASM. CHIEF

ENCLOSURE R1-18

Serial No. 11-472
Docket No. 50-339
NAPS Unit 2 3rd interval Limited Exams
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ENCLOSURE R1-18

Dominion
UT Partial Record

UTRNO	RECTAG	Drawing	Line	Mark/weld	Procedure	Rev
968	7445	12050-WMKS-RC-E-1A.2	31"-RC-402-2501R-Q1	N-SE31 IN.	NDE-UT-705	2

CalNo	Weld Width	Exam Angle	SU Length	SU Width	SU Nose	Percent
311	1.4	45	1.8	1.25	.9	80%%

Area Not Examined

SEE SKETCH

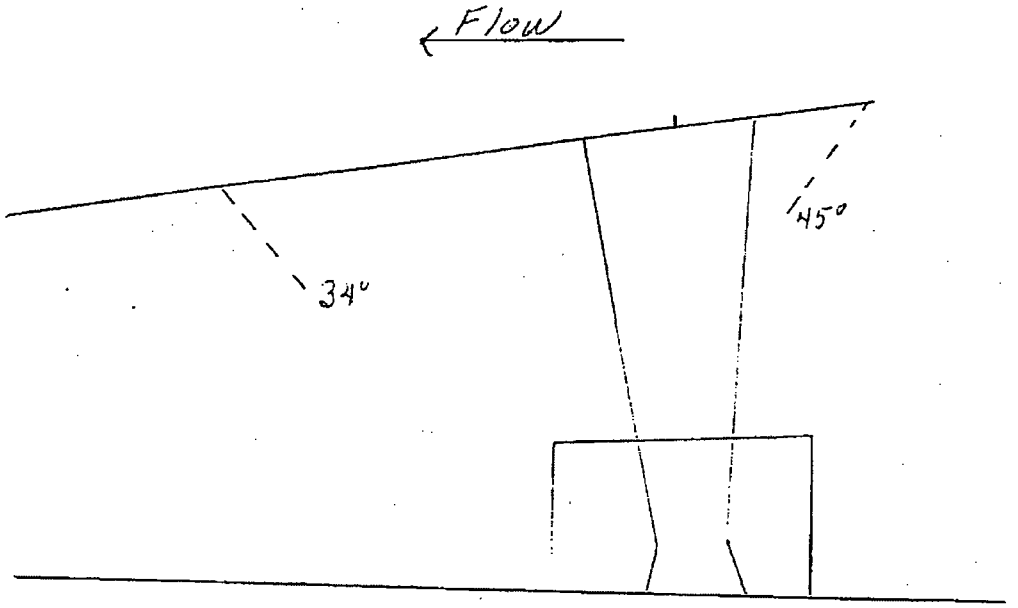
Reason

NOZZLE RADIUS ADJACENT TO SAFE END WELD.

Comments

The 5 scan was limited to approximately 22% coverage due to joint configuration at the safe end to nozzle weld area. Scans 2, 7, and 8 achieved 100% coverage each.

Cross Section Sketch



Evaluation

Due to joint configuration, coverage of 100% of examination volume could not be achieved. The weld was examined to the maximum extent practical. This was achieved by using a combination of 34 and 45 degree angle scans.

SSN	Signature	Level	DATE
254-54-4297	SAM DRIGANS	II	10/1/02

Sam Drigans

FINAL REVIEW
MN
H.S.B
10/3/02
MRS GRACE

Reviewed By: Rajal T Stark Level: III Date: 10-2-02

UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	NDE-UT-705	Outage No.:	N2R20
Summary No.:	N2.R1.11.376	Procedure Rev.:	3	Report No.:	UT-10-098
Workscope:	ISI	Work Order No.:	59101919553	Page:	1 of 4

Code: Sect. XI 1995ed/96 Add | Cat./Item: R-A/R1.11 | Location: B-LOOP

Drawing No.: 12050-WMKS-0109F-1 | Description: "B" Loop Pipe to Valve Weld

System ID: RC

Component ID: 12050-WMKS-0109F-1 / 27 1/2-RC-406 / 22 | Size/Length: 1.5" / 102.0" | Thickness/Diameter: 2.58" / 27.5"

Limitations: Single sided due to configuration | Start Time: 1045 | Finish Time: 1200

Instrument Settings

Serial No.:	081624211		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	10.89 us	Range:	4.67 In
M'U Cal/Vel:	0.2222 in/us	Pulser:	Square
Damping:	400 Ω	Reject:	0%
Rep. Rate:	Auto	Freq.:	1.0 mhz
Filter:	0.8 - 3.0	Mode:	Fullwave
Voltage:	Max	Other:	N/A
Ax. Gain (dB):	N/A	Circ. Gain (dB):	48.6

10 Screen Div. = 4.67 in. of Sound Path

Linearity Report No.: L-10-010

Calibration Block

Cal. Block No.: VGB-33

Thickness: 2.580" | Dia.: 0

Cal. Blk. Temp.: 69° | Temp. Tool: 07

Comp. Temp.: 68° | Temp. Tool: 07

Search Unit

Serial No.: 97-733

Manufacturer: RTD

Size: 2(20X34) | Shape: Retangular

Freq.: 1.0 MHZ | Style: TRL1-AUST

Exam Angle: 45° | # of Elements: Dual

Mode: Longitudinal

Measured Angle: 45°

Wedge Style: Integral

Search Unit Cable

Type: RG-174

Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☐ Downstream ☐ Scan dB: N/A

CW ☑ CCW ☑ Scan dB: 54.6

Exam Surface: OD

Surface Condition: Ground

Cal. Checks	Time	Date
Initial Cal.	0830	03/29/2010
Inter. Cal.	1045	03/29/2010
Inter. Cal.		
Inter. Cal.		
Final Cal.	1330	03/29/2010

Couplant

Cal. Batch: 07220

Type: SoundSafe

Mfg.: SONOTECH

Exam Batch: 07220

Type: SoundSafe

Mfg.: SONOTECH

Reference Block

Serial No.: 05-6535

Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1/4T Hole	40	2.0	0.94
1/2T Hole	80	4.0	1.90
3/4T Hole	60	6.0	2.83
ID Notch	30	8.0	3.73

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
30.6	2" Radius	60	4.3	2.00

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

Results: NRI ☑ RI ☐ Geom ☐

Comments: ID Notch at 80% at +9 dB
Circ Cal / Exam

Percent Of Coverage Obtained > 90%: No | Reviewed Previous Data: N/A

Examiner	Level II-PDI	Signature	Date	Reviewer		Signature	Date
Tolosky, Ryan J			03/29/2010	W.L. THOMAS			4.5.10
Examiner	Level II-PDI	Signature	Date	Site Review		Signature	Date
Roehl, Adam L.			03/29/2010	Jeff Odegard			4/8/10
Other	Level N/A	Signature	Date	ANII Review		Signature	Date
N/A							11 Apr 2010

ENCLOSURE R1-19
Serial No. 11-472
Docket No. 50-339
NAPS Unit 2 3rd Interval Limited Exams
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UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	NDE-UT-705	Outage No.:	N2R20
Summary No.:	N2.R1.11.376	Procedure Rev.:	3	Report No.:	UT-10-098
Workscope:	ISI	Work Order No.:	59101919553	Page:	2 of 4

Code: Sect. XI 1995ed/96 Add | Cat./Item: R-A/R1.11 | Location: B-LOOP

Drawing No.: 12050-WMKS-0109F-1 | Description: "B" Loop Pipe to Valve Weld

System ID: RC

Component ID: 12050-WMKS-0109F-1 / 27 1/2-RC-406 / 22 | Size/Length: 1.5" / 102.0" | Thickness/Diameter: 2.58" / 27.5"

Limitations: Single sided due to configuration | Start Time: 1045 | Finish Time: 1200

Instrument Settings

Serial No.:	081624211		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	13.94 us	Range:	4.47 In
M'tl Cal/Vel:	0.2222 in/us	Pulser:	Square
Damping:	400 Ω	Reject:	0%
Rep. Rate:	Auto	Freq.:	1.0 mhz
Filter:	0.3 - 8.0	Mode:	Fullwave
Voltage:	450 V	Other:	N/A
Ax. Gain (dB):	47.0	Circ. Gain (dB):	N/A

10 Screen Div. = 4.47 in. of Sound Path

Linearity Report No.: L-10-010

Calibration Block

Cal. Block No.:	VGB-33		
Thickness:	2.580"	Dia.:	0
Cal. Blk. Temp.:	69°	Temp. Tool:	07
Comp. Temp.:	68°	Temp. Tool:	07

Search Unit

Serial No.:	97-734		
Manufacturer:	RTD		
Size:	2(24X42)	Shape:	Retangular
Freq.:	1.0 MHZ	Style:	TRL1-AUST
Exam Angle:	45°	# of Elements:	Dual
Mode:	Longitudinal		
Measured Angle:	45°		
Wedge Style:	Integral		

Search Unit Cable

Type: RG-174 | Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☑ Downstream ☐ Scan dB: 53.0

CW ☐ CCW ☐ Scan dB: N/A

Exam Surface: OD

Surface Condition: Ground

Cal. Checks	Time	Date
Initial Cal.	0833	03/29/2010
Inter. Cal.	1110	03/29/2010
Inter. Cal.		
Inter. Cal.		
Final Cal.	1332	03/29/2010

Couplant

Cal. Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH
Exam Batch:	07220
Type:	SoundSafe
Mfg.:	SONOTECH

Reference Block

Serial No.: 05-6535 | Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1/4T Hole	40	2.0	0.86
1/2T Hole	80	4.0	1.75
3/4T Hole	60	6.0	2.70
ID Notch	40	8.0	3.57

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
29	2" Radius	60	4.5	2.0

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

Results: NRI ☑ RI ☐ Geom ☐

Comments: ID Notch to 80% at +6 dB.
Axial Cal / Exam.

Percent Of Coverage Obtained > 90%: No | Reviewed Previous Data: N/A

Examiner	Level II-PDI	Signature	Date	Reviewer	Signature	Date
Tolosky, Ryan J			03/29/2010	W.L. THOMAS		4.5.10
Examiner	Level II-PDI	Signature	Date	Site Review	Signature	Date
Roehl, Adam L.			03/29/2010	Jeff Odegard		4/8/10
Other	Level N/A	Signature	Date	ANII Review	Signature	Date
N/A						11 Apr 2010

ENCLOSURE R1-19
NAPS Unit 2 3rd Interval Limited Exams
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Docket No. 50-339
Serial No. 11-472

UT Calibration/Examination

Dominion

Site/Unit:	NAPS / 2	Procedure:	NDE-UT-705	Outage No.:	N2R20
Summary No.:	N2.R1.11.376	Procedure Rev.:	3	Report No.:	UT-10-098
Workscope:	ISI	Work Order No.:	59101919553	Page:	3 of 4

Code: Sect. XI 1995ed/96 Add | Cat./Item: R-A/R1.11 | Location: B-LOOP

Drawing No.: 12050-WMKS-0109F-1 | Description: "B" Loop Pipe to Valve Weld

System ID: RC

Component ID: 12050-WMKS-0109F-1 / 27 1/2-RC-406 / 22 | Size/Length: 1.5" / 102.0" | Thickness/Diameter: 2.58" / 27.5"

Limitations: Single sided due to configuration | Start Time: 1045 | Finish Time: 1200

Instrument Settings

Serial No.:	081624211		
Manufacturer:	Panametrics		
Model:	EPOCH 4		
Delay:	18.10 us	Range:	5.68 in
M'tl Cal/Vel:	0.2335 in/us	Pulser:	Square
Damping:	400 Ω	Reject:	0%
Rep. Rate:	Auto	Freq.:	1.0 mhz
Filter:	0.8 - 3.0	Mode:	Fullwave
Voltage:	Max	Other:	N/A
Ax. Gain (dB):	49.0	Circ. Gain (dB):	N/A

10 Screen Div. = 5.68 in. of Sound Path

Linearity Report No.: L-10-010

Calibration Block

Cal. Block No.:	VGB-33		
Thickness:	2.580"	Dia.:	0
Cal. Blk. Temp.:	69°	Temp. Tool:	07
Comp. Temp.:	68°	Temp. Tool:	07

Search Unit

Serial No.:	94-584		
Manufacturer:	RTD		
Size:	2(24X42)	Shape:	Retangular
Freq.:	1.0 MHZ	Style:	TRL1-AUST
Exam Angle:	60°	# of Elements:	Dual
Mode:	Longitudinal		
Measured Angle:	60°		
Wedge Style:	Integral		

Search Unit Cable

Type: RG-174 | Length: 6' | No. Conn.: 0

Scan Coverage

Upstream ☑ Downstream ☐ Scan dB: 55.0

CW ☐ CCW ☐ Scan dB: N/A

Exam Surface: OD

Surface Condition: Ground

Cal. Checks	Time	Date
Initial Cal.	0900	03/29/2010
Inter. Cal.	1136	03/29/2010
Inter. Cal.		
Inter. Cal.		
Final Cal.	1336	03/29/2010

Couplant

Cal. Batch: 07220

Type: SoundSafe

Mfg.: SONOTECH

Exam Batch: 07220

Type: SoundSafe

Mfg.: SONOTECH

Reference Block

Serial No.: 05-6535

Type: SS Rompus Block

Axial Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1/4T Hole	60	2.0	1.13
1/2T Hole	80	4.0	2.27
3/4T Hole	60	6.0	3.40
ID Notch	50	8.0	4.40

Circumferential Orientated Search Unit

Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
N/A			

Reference/Simulator Block

Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
49.0	2" Radius	80	3.5	2.00

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

Results: NRI ☑ RI ☐ Geom ☐

Comments: ID Notch at 80% at +5 dB
Axial Cal / Exam

Percent Of Coverage Obtained > 90%: No | Reviewed Previous Data: N/A

Examiner	Level II-PDI	Signature	Date	Reviewer	Signature	Date
Tolosky, Ryan J			03/29/2010	W.L. THOMAS		4.5.10
Examiner	Level II-PDI	Signature	Date	Site Review	Signature	Date
Roehl, Adam L.			03/29/2010	Jeff Odegard		4/8/10
Other	Level N/A	Signature	Date	ANII Review	Signature	Date
N/A						11 Apr 2010

ENCLOSURE R1-19
NAPS Unit 2 3rd interval Limited Exams
Docket No. 50-339
Serial No. 11-472
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ENCLOSURE R1-19

Supplemental Report

Dominion

Report No.: UT-10-098

Page: 4 of 4

Summary No.: N2.R1.11.376

Examiner: Tolosky, Ryan J RT Level: II-PDI Reviewer: W.L. Thomas Date: 4.5.10

Examiner: Roehl, Adam L. ARL Level: II-PDI Site Review: Jeff Odegard JGO Date: 4/8/10

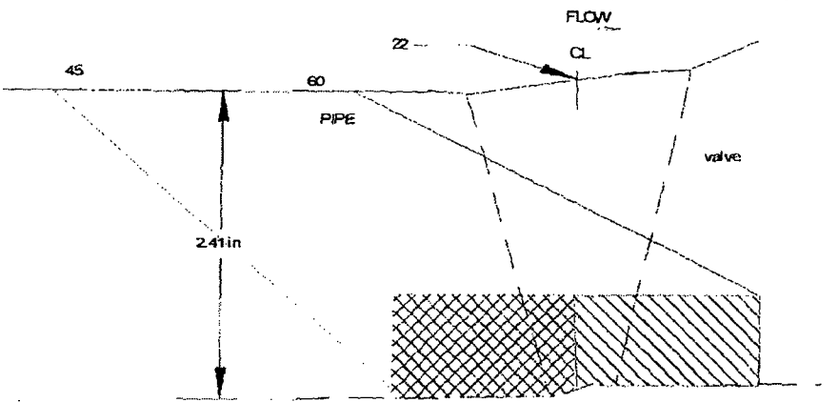
Other: N/A Level: N/A ANII Review: M Hue Date: 11 April 10

Comments:

Weld Number	22
Weld Thickness	2.4"
Weld Length	102"
Weld Width	1.5"

Prepared By: W.L. Thomas
Date: 4/3/2010

Sketch or Photo:



Not to Scale

Examination Volume Dimensions - Height .8" Length 102" Width 2.5"

Coverage Summary				
	Required Scans (each has a weighing factor of 100 for complete coverage)			
ANGLE	UpSt-Ax	UpSt-Circ	DnSt-Ax	DnSt-Circ
45		100%		0%
45/60	100%		100% Best Effort	
			Code Coverage Total	50%
			Best Effort Coverage (Max 25%) Total	25%

Notes:

1) Code Coverage refers to the maximum percentage of the required examination volume that is effectively examined with the qualified examination procedure.
2) Best Effort Coverage refers to the required examination volume past the weld centerline that is examined in the axial beam direction with an Appendix VIII demonstrated procedure for single sided coverage.

ENCLOSURE R1-19

Dominion

Supplemental Report

Report No.: UT-07-193

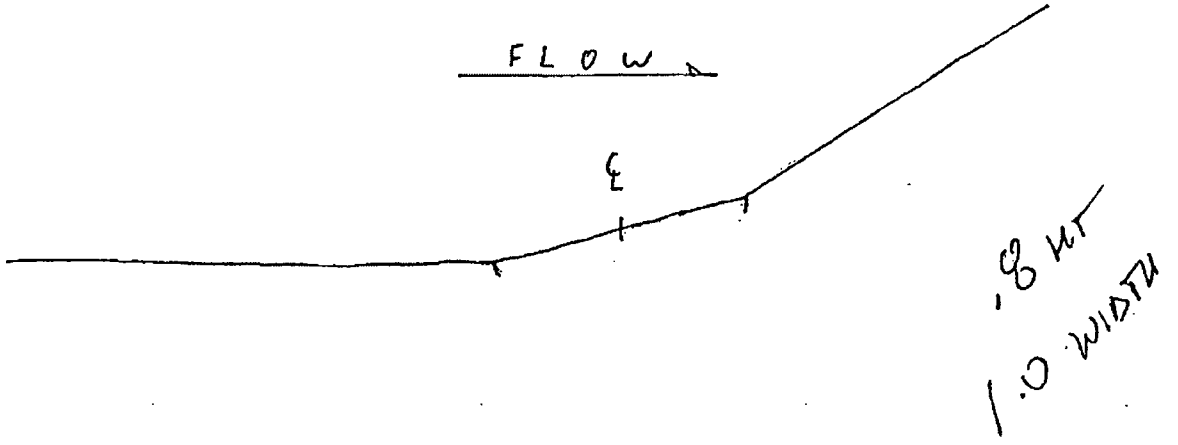
Page: 3 of 6

Summary No.: N1.R1.11.033

Examiner:	Sistek, Robert P RPS	Level:	II-PDI	Reviewer:	Raymond Stark	Date:	9-28-07
Examiner:	Crothers, Simon P. SC	Level:	II-PDI	Site Review:	N/A	Date:	
Other:	N/A	Level:	N/A	ANII Review:		Date:	

Comments:

WELD PROFILE





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7.0 DURATION OF PROPOSED ALTERNATIVE

This proposed alternative in this request if approved will be applicable for the third 10 year ISI interval for NAPS 2 which ended December 13, 2010.

8.0 PRECEDENTS

Similar relief was granted in the Second Inservice Inspection (ISI) Interval, as follows:

1. Relief Request Partial-1, NRC Letter dated 5/14/2002 (TAC No. MB4084)
2. Relief Request NDE-19, NRC Letter dated 8/8/1995 (TAC No. M89740)
3. Relief Request NDE-20, NRC Letter dated 8/8/1995 (TAC No. M89740)
4. Relief Request NDE-28, NRC Letter dated 10/10/1996 (TAC Nos. M95201 and M95202)
5. Relief Request NDE-29, NRC Letter dated 10/10/1996 (TAC Nos. M95201 and M95202)
6. Relief Request NDE-30, NRC Letter dated 10/10/1996 (TAC Nos. M95201 and M95202)
7. Relief Request NDE-33, NRC Letter dated 7/29/1997 (TAC No. M98276)
8. Relief Request NDE-40, NRC Letter dated 2/2/1999 (TAC No. MA3697)
9. Relief Request NDE-41, NRC Letter dated 2/2/1999 (TAC No. MA3697)
10. Relief Request NDE-44, NRC Letter dated 11/21/2000 (TAC No. MA8833)
11. Relief Request NDE-45, NRC Letter dated 11/21/2000 (TAC No. MA8833)

North Anna Power Station Unit 1 Third 10-Year Limited Exams Relief Request N1-I3-PRT-004 was granted for similar limited examinations in NRC Letter dated 1/7/2011 (TAC Nos. ME3333. ME5136, ME5137, ME5138, ME5139, ME5140, and ME5141).

9.0 REFERENCES

1. ASME Code Section XI, 1995 Edition with 1996 Addenda.
2. Relief Request PRT-001, NRC Letter dated 9/18/2007 (TAC No. MD4935)
3. Relief Request CMP-020, NRC Letter dated 11/13/2003 (TAC No. MB7515)
4. ASME Code Case N-460, "Alternative Examination Coverage for Class 1 and Class 2 Welds"