

April 21, 2014

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

Serial No. 14-050
NAPS/JHL 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-I4-LMT-002 – FOURTH INTERVAL
PERIOD 1 LIMITED EXAMINATIONS

Pursuant to 10 CFR 50.55a(g)(5)(iii), Virginia Electric and Power Company (Dominion) requests relief for limited examination coverage (i.e., less than 90% weld coverage achieved, due to physical interferences that prohibited attaining full weld coverage) obtained during the inservice inspection (ISI) examinations at North Anna Power Station Unit 2 during the first period of the fourth ten-year ISI interval. These examinations were performed to meet the requirements of the 2004 Edition of ASME Section XI with No Addenda and the Risk-Informed/Safety-Based Inservice Inspection (RIS B) Program Plan based on Code Case N-716.

Relief Request N2-I4-LMT-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 information provided in the attachment, please contact Mr. Thomas Shaub at (804) 273-2763.

Very truly yours,



M. D. Sartain
Vice President - Nuclear Engineering

Attachment:

ASME Section XI Inspection Program Relief Request N2-I4-LMT-002 Fourth Interval
Period Limited Examinations

Commitments made in this letter: None

AD47
NRR

cc: U.S. Nuclear Regulatory Commission
Region II
Marquis One Tower
245 Peachtree Center Ave, NE
Suite 1200
Atlanta, Georgia 30303

Mr. J. E. Reasor, Jr.
Old Dominion Electric Cooperative
Innsbrook Corporate Center
4201 Dominion Blvd.
Suite 300
Glen Allen, Virginia 23060

NRC Senior Resident Inspector
North Anna Power Station

Ms. M. C. Barillas
NRC Project Manager
U. S. Nuclear Regulatory Commission
One White Flint North
Mail Stop O-8 G9A
11555 Rockville Pike
Rockville, Maryland 20852

Dr. V. Sreenivas
NRC Project Manager
U. S. Nuclear Regulatory Commission
One White Flint North
Mail Stop O-8 G9A
11555 Rockville Pike
Rockville, Maryland 20852

ATTACHMENT

N2-I4-LMT-002
UNIT 2 FOURTH INTERVAL PERIOD 1 LIMITED EXAMS

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

Serial No. 14-050
Docket No. 50-339
NAPS Unit 2 4th Interval 1st Period Limited Exams

[THIS PAGE INTENTIONALLY LEFT BLANK]

N2-14-LMT-002
UNIT 2 FOURTH INTERVAL PERIOD 1 LIMITED EXAMS

CONTENTS

1.0	ASME CODE COMPONENT(S) AFFECTED	5
2.0	APPLICABLE CODE EDITION AND ADDENDA	5
3.0	APPLICABLE CODE REQUIREMENT	5
A1	Pressurizer Nozzle-To-Vessel Welds.....	7
4.A1	IMPRACTICALITY OF COMPLIANCE	
5.A1	BURDEN CAUSED BY COMPLIANCE	
6.A1	PROPOSED ALTERNATIVE AND BASIS FOR USE	
B1	Head Circumferential Welds	27
4.B1	IMPRACTICALITY OF COMPLIANCE	
5.B1	BURDEN CAUSED BY COMPLIANCE	
6.B1	PROPOSED ALTERNATIVE AND BASIS FOR USE	
B2	Nozzle-to-Shell Welds	39
4.B2	IMPRACTICALITY OF COMPLIANCE	
5.B2	BURDEN CAUSED BY COMPLIANCE	
6.B2	PROPOSED ALTERNATIVE AND BASIS FOR USE	
R1	Elements Subject To Thermal Fatigue	47
4.R1	IMPRACTICALITY OF COMPLIANCE	
5.R1	BURDEN CAUSED BY COMPLIANCE	
6.R1	PROPOSED ALTERNATIVE AND BASIS FOR USE	
R2	Elements Not Subject To A Degradation Mechanism	61
4.R2	IMPRACTICALITY OF COMPLIANCE	
5.R2	BURDEN CAUSED BY COMPLIANCE	
6.R2	PROPOSED ALTERNATIVE AND BASIS FOR USE	
7.0	DURATION OF PROPOSED ALTERNATIVE	86
8.0	PRECEDENTS	86
9.0	REFERENCES	86

ENCLOSURES

Enclosure A1-1, 12050-WMKS-RC-E-2 / 10 Data Report.....	9
Enclosure A1-2, 12050-WMKS-RC-E-2 / 14 Data Report.....	17
Enclosure B1-1, 12050-WMKS-SI-TK-2 / 2-SI-TK-2 / 1 Data Report.....	28
Enclosure B2-1, 12050-WMKS-SI-TK-2 / 2-SI-TK-2 / 3 Data Report.....	41
Enclosure R1-1, 12050-WMKS-0103BN / 6-RC-420 / 2B Data Report.....	50
Enclosure R1-2, 12050-WMKS-0103CB / 3-RC-615 / 7 Data Report	55

Enclosure R2-1, 12050-WMKS-0101A-4 / 32-SHP-459 / SW-5 (BPL 343) Data Report.. 64
Enclosure R2-2, 12050-WMKS-0103AG / 6-RC-416 / 4 Data Report..... 74
Enclosure R2-3, 12050-WMKS-0111W / 3-CH-814 / 6A Data Report..... 80

TABLES

Table 1, Repetitive/Duplicative Requests Requested in Accordance
with 10 CFR 50.55a(g)(5)(iii), Inservice Inspection Impracticality 6

N2-I4-LMT-002
UNIT 2
FOURTH INTERVAL PERIOD 1 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 fourth 10-year inservice inspection (ISI) interval and the ISI program is the 2004 Edition of Section XI with no Addenda (Reference 1). NAPS 2 fourth interval started December 14, 2010 and ends December 13, 2020.

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.

The risk-informed welds described in this request are governed by the Risk-Informed / Safety-Based Inservice Inspection (RI-ISI) Program Plan that was approved by the NRC for North Anna Power Station Unit 2 in a letter dated January 21, 2011. The welds are assigned category R-A, Item R1.11 or R1.20, and require ultrasonic examination. The North Anna Unit 2 RI-ISI Program, in accordance with Request For Alternative N2-I4-RI-001, applies the requirements of ASME Code Case N-716, "Alternative Piping Classification and Examination Requirements." The Item R1.11 elements are considered subject to Thermal Fatigue as the most likely degradation mechanism. The Item R1.20 elements are considered not subject to a degradation mechanism. Limited examinations in this request are in accordance with section 3.3.2 of approved request N2-I4 RI-001, approved by NRC letter dated January 21, 2011 (TAC No. ME3450).

Table 1 (Page 1 of 1)
Repetitive/Duplicative Requests

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 FOR	7. DURATION OF PROPOSED ALTERNATIVE
A1	Pressurizer Nozzle-To-Vessel Welds		Exam Category B-D Item No. B3.110	See Paragraph 4.A1	See Paragraph 5.A1	See Paragraph 6.A1	See Paragraph 7
		12050-WMKS-RC-E-2 / 10		56.6% Volumetric Coverage			
		12050-WMKS-RC-E-2 / 14		56.7% Volumetric Coverage			
B1	Head Circumferential Welds		Exam Category C-A Item No. C1.20	See Paragraph 4.B1	See Paragraph 5.B1	See Paragraph 6.B1	See Paragraph 7
		12050-WMKS-SI-TK-2 / 2-SI-TK-2 / 1		87.6% Volume Coverage			
B2	Nozzle-to-Shell Weld		Exam Category C-B Item No. C2.21	See Paragraph 4.B2	See Paragraph 5.B2	See Paragraph 6.B2	See Paragraph 7
		12050-WMKS-SI-TK-2 / 2-SI-TK-2 / 3		27.4% Volume Coverage			
R1	Elements Subject to Thermal Fatigue		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-0103BN / 6-RC-420 / 2B		75% Volume Coverage			
		12050-WMKS-0103CB / 3-RC-615 / 7		50% Volume Coverage			
R2	Elements Not Subject to a Degradation Mechanism		Exam Category R-A Item No. R1.20	See Paragraph 4.R2	See Paragraph 5.R2	See Paragraph 6.R2	See Paragraph 7
		12050-WMKS-0101A-4 / 32-SHP-459 / SW-5 (BPL 343)		75% Volume Coverage			
		12050-WMKS-0103AG / 6-RC-416 / 4		75% Volume Coverage			
		12050-WMKS-0111W / 3-CH-814 / 6A		42.3% Volume Coverage			

A1. Pressurizer Nozzle-To-Vessel Welds

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 Pressurizer Nozzle-To-Vessel Welds, ASME Section XI Category B-D, Item No. B3.110. 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.

<u>Mark/Weld #</u>	<u>Line #</u>	<u>Scan Coverage %</u>	<u>Enclosure</u>
10	2-RC-E-2	56.6%	A1-1
14	2-RC-E-2	56.7%	A1-2

Weld 10, a safety valve nozzle, is limited to 56.6% due to nozzle geometry and because the cladding prevents extended V-path. Refer to Enclosure A1-1 for coverage details of the limitations experienced. Third interval relief for weld 10 was granted per Request N2-I3-PRT-002-A5 at 56.6% coverage. Second interval relief for weld 10 exam limitations was granted in Request NDE-19 at 72% coverage (different NDE guidelines for coverage calculations).

Weld 14, the spray nozzle, is limited to 56.7% due to the weld location in relation to the nozzle. Refer to Enclosure A1-2 for coverage details of the limitations experienced. Third interval relief for weld 14 was granted per Request N2-I3-PRT-002-A5 at 56.7% coverage. Second interval relief for weld 14 exam limitations was granted in Request NDE-20 at 56.6% coverage.

The subject pressurizer nozzle-to-vessel welds are constructed of SA-508 Class 2, a P-Number 3, Group Number 3 carbon steel material, with austenitic stainless steel inside diameter cladding and stainless steel inserts. The welds extend the full thickness of the pressurizer vessel. Pressurizer upper and lower heads are fabricated from SA-533 Grade A, Class 2 carbon steel. The existing nozzle to pressurizer upper and lower heads are welded with low alloy steel filler, essentially the same as the nozzle material. The subject pressurizer nozzles have a minimum thickness of 2.5 inches with 0.19 inch cladding. These nozzles are of the "set-in" design which essentially makes the welds concentric rings aligned parallel with the nozzle axes in the through-wall direction of the pressurizer vessel. This design geometry limits ASME Code-required UT angle beam examinations to be performed primarily from the vessel side of the welds.

Although UT scans were primarily limited to the vessel side only, studies have found that inspections conducted through carbon steel are equally effective whether the ultrasonic waves have only to propagate through the base metal, or have to also propagate through the carbon steel weldment. Therefore, due to the fine-grained carbon steel microstructures, it is expected that the UT techniques employed would have detected structurally significant flaws that may have occurred on either side of the subject welds.

Although Dominion considers it is impractical to meet the ASME Code-required 100% volumetric examination coverage for the subject pressurizer nozzle-to-vessel welds due to nozzle configuration, it is believed that the coverage obtained would have identified significant service-induced degradation. The examinations performed also provide a reasonable assurance of structural integrity of the subject welds.

5.A1 BURDEN CAUSED BY COMPLIANCE

The ASME Code requires that the volumetric examination be conducted from both sides of these pressure retaining welds, however, the design configurations limit access for UT scanning primarily to the vessel side of the welds. In order to effectively increase the examination coverage, the nozzle-to-vessel welds would require design modifications or replacement. This is considered a burden making the ASME Code volumetric examination requirements impractical, which 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 accepted 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 performed 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.

UT examinations were conducted using ASME Code, Section V, Article 4, techniques and included 0-degree longitudinal, and 45- and 60- degree shear waves from the vessel side. The examination volumes included the weld and base materials near the inside surface of the weld joint, which are typically the highest regions of stress, and where the expected degradation sources to be manifested should they occur. 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. No recordable indications were identified during these examinations. The physical configuration of each nozzle limits the effectiveness of alternative or advanced technologies from increasing the examination coverage for this configuration.

Enclosures A1-1 and A1-2 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 A1 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).

UT Calibration/Examination



Site/Unit: NAPS / 2
 Summary No.: N2.B3.110.001
 Workscope: ISI

Procedure: ER-AA-NDE-UT-702
 Procedure Rev.: 4
 Work Order No.: 59102532605/NDER13-079

Outage No.: N2R22
 Report No.: UT-13-009
 Page: 1 of 3

Code: 2004 Edition Cat./Item: B-D/B3.110 Location: PZR 291
 Drawing No.: 12050-WMKS-RC-E-2 Description: Nozzle to Vessel weld
 System ID: RC
 Component ID: 12050-WMKS-RC-E-2 / 2-RC-E-2 / 10 Size/Length: 2.0" / 45.0" Thickness/Diameter: 3.29" / 8.0"
 Limitations: Limited due to nozzle configuration. Start Time: 0755 Finish Time: 0810

Instrument Settings
 Serial No.: 091639803 Manufacturer: Panametrics
 Model: EPOCH 4 Linearity: L-13-006
 Delay: 1.412 us Range: 5.0"
 M'tl Cal/Vel: .2333 in/us Pulse: Square
 Damping: 400 Ohms Reject: 0%
 Rep. Rate: Auto Freq.: 2.0 MHz
 Filter: .8 - 3.0 Mode: Fullwave
 Voltage: Medium Other: N/A

Search Unit
 Serial No.: M18206SP Manufacturer: KBA
 Size: 0.75" Model: Gamma
 Freq.: 2.25 MHZ Center Freq.: N/A
 Exam Angle: 0 Squint Angle: N/A
 Measured Angle: N/A Mode: Long.
 Exit Point: N/A # of Elements: 1
 Config.: Single Focus: N/A
 Shape: Round Contour: N/A
 Wedge Style: N/A

Cal. Checks	Time	Date
Initial Cal.	0827	4/13/2013
Inter. Cal.	0755	4/13/2013
Inter. Cal.	N/A	
Inter. Cal.	0810	4/13/2013
Final Cal.	1041	4/13/2013

Axial Orientated Search Unit			
Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1/4 T	80	1.8	.912"
1/2 T	80	3.9	1.921"
3/4 T	55	5.8	2.914"
B/W	100 +	8.5	4.264"
N/A			

Ax. Gain (dB): 1.0 Circ. Gain (dB): N/A
10 Screen Div. = 5.0 in. of Sound Path

Search Unit Cable
 Type: RG 174 Length: 12' No. Conn.: 0

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

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

Calibration Block
 Cal. Block No.: VGB-21
 Thickness 4.0" Dia.: 0
 Cal. Blk. Temp. 73 Temp. Tool: 1070BGCY
 Comp. Temp. 71 Temp. Tool: 1070BGCY

Scan Coverage
 Upstream Downstream Scan dB: 19.0
 CW CCW Scan dB: 19.0
 Exam Surface: OD
 Surface Condition: Ground Smooth

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

Reference/Simulator Block				
Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
1.0	FSDH	50	1.5	.719"
N/A				

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

Comments: Refer to previous data report #1077 dated 5/9/04 for coverage calculations.

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Vanruler, Chris	II	<i>Chris Vanruler</i>	4/13/2013	WL THOMAS	<i>WL Thomas</i>	4.15.13
Hacker, Jonathon	III	<i>Jonathon Hacker</i>	4/13/2013	Robert Davies	<i>Robert Davies</i>	4/16/13
Other	N/A			ANII Review	<i>M Le</i>	5/2/13

ENCLOSURE A1-1

NAPS Unit 2 4th Interval 1st Period Limited Exams
Page 9 of 86

Serial No. 14-050
Docket No. 50-339



UT Calibration/Examination

Site/Unit: NAPS / 2
 Summary No.: N2.B3.110.001
 Workscope: ISI

Procedure: ER-AA-NDE-UT-702
 Procedure Rev.: 4
 Work Order No.: 59102532605/NDER13-079

Outage No.: N2R22
 Report No.: UT-13-009
 Page: 2 of 3

Code: 2004 Edition Cat./Item: B-D/B3.110 Location: PZR 291
 Drawing No.: 12050-WMKS-RC-E-2 Description: Nozzle to Vessel weld
 System ID: RC
 Component ID: 12050-WMKS-RC-E-2 / 2-RC-E-2 / 10 Size/Length: 2.0" / 45.0" Thickness/Diameter: 3.28" / 8.0"
 Limitations: Limited due to nozzle configuration. Start Time: 0812 Finish Time: 0832

Instrument Settings
 Serial No.: 091639803 Manufacturer: Panametrics Model: EPOCH 4 Linearity: L-13-006
 Delay: 11.94 us Range: 7.4" M/I Cal/Vel: .1268 in/us Pulser: Square Damping: 400 Ohms Rep. Rate: Auto Filter: .8 - 3.0 Voltage: Medium

Search Unit
 Serial No.: 00Y5K7 Manufacturer: KBA Model: Comp-G
 Size: .5" X 1.0" Freq.: 2.25 MHZ Center Freq.: N/A Exam Angle: 45 Squint Angle: N/A Measured Angle: 45 Mode: Shear
 Exit Point: .6" # of Elements: 1 Config.: Single Focus: N/A Shape: Rectangular Contour: N/A Wedge Style: SWS

Cal. Checks	Time	Date
Initial Cal.	0636	4/13/2013
Inter. Cal.	0812	4/13/2013
Inter. Cal.	N/A	
Inter. Cal.	0832	4/13/2013
Final Cal.	1042	4/13/2013

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

Axial Orientated Search Unit			
Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1/4 T	80	1.9	1.398"
1/2 T	50	3.8	2.795"
3/4 T	35	5.7	4.215"
ID Notch	15	8.7	6.422"
5/4 T	20	9.5	7.020"

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
24.0	FSDH	40	1.5	1.085"
N/A				

Ax. Gain (dB): 24.0 Circ. Gain (dB): N/A
10 Screen Div. = 7.4 in. of Sound Path Type: RG 174 Length: 12' No. Conn.: 0
Calibration Block
 Cal. Block No. VGB-21 Upstream Downstream Scan dB: 38.0
 Thickness 4.0" Dia.: 0 CW CCW Scan dB: 38.0
 Cal. Blk. Temp. 73 Temp. Tool: 1070BGCY Exam Surface: OD
 Comp. Temp. 71 Temp. Tool: 1070BGCY Surface Condition: Ground Smooth
 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

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

Comments: None

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Vanruler, Chris	II	<i>[Signature]</i>	4/13/2013	W.L. Thomas	<i>[Signature]</i>	4.15.13
Hacker, Jonathon	III	<i>[Signature]</i>	4/13/2013	Raymond T. Stack	<i>[Signature]</i>	5/1/13
Other	N/A			AM He	<i>[Signature]</i>	5/2/13

UT Calibration/Examination

ENCLOSURE A1-1

NAPS Unit 2 4th Interval 1st Period Limited Exams
 Page 10 of 86

Serial No. 14-050
 Docket No. 50-339

UT Calibration/Examination



Dominion

Site/Unit: NAPS / 2
 Summary No.: N2.B3.110.001
 Workscope: ISI

Procedure: ER-AA-NDE-UT-702
 Procedure Rev.: 4
 Work Order No.: 59102532605/NDER13-079

Outage No.: N2R22
 Report No.: UT-13-009
 Page: 3 of 3

Code: 2004 Edition Cal./Item: B-D/B3.110 Location: PZR 291
 Drawing No.: 12050-WMKS-RC-E-2 Description: Nozzle to Vessel weld
 System ID: RC
 Component ID: 12050-WMKS-RC-E-2 / 2-RC-E-2 / 10 Size/Length: 2.0" / 45.0" Thickness/Diameter: 3.29" / 8.0"
 Limitations: Limited due to nozzle configuration. Start Time: 0834 Finish Time: 0850

Instrument Settings
 Serial No.: 091639803 Manufacturer: Panametrics
 Model: EPOCH 4 Linearity: L-13-006
 Delay: 15.12 us Range: 10.1"
 M'l Cal/Vel: .1268 in/us Pulsar: Square
 Damping: 400 Ohms Reject: 0%
 Rep. Rate: Auto Freq.: 2.0 MHz
 Filter: .8 - 3.0 Mode: Fullwave
 Voltage: Medium Other: N/A

Search Unit
 Serial No.: 00Y5K6 Manufacturer: KBA
 Size: .5" X 1.0" Model: Comp-G
 Freq.: 2.25 MHZ Center Freq.: N/A
 Exam Angle: 60 Squint Angle: N/A
 Measured Angle: 60 Mode: Shear
 Exit Point: .7" # of Elements: 1
 Config.: Single Focus: N/A
 Shape: Retangular Contour: N/A
 Wedge Style: SWS

Cal. Checks	Time	Date
Initial Cal.	0640	4/13/2013
Inter. Cal.	0834	4/13/2013
Inter. Cal.	N/A	
Inter. Cal.	0850	4/13/2013
Final Cal.	1043	4/13/2013

Axial Orientated Search Unit			
Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1/4 T	80	1.9	1.934"
1/2 T	40	3.9	3.979"
3/4 T	30	5.9	5.940"
ID Notch	13	8.7	8.746"
5/4 T	10	9.8	9.877"

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

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

Ax. Gain (dB): 30.0 Circ. Gain (dB): N/A
10 Screen Div. = 10.1 in. of Sound Path

Search Unit Cable
 Type: RG 174 Length: 12' No. Conn.: 0

Calibration Block
 Cal. Block No.: VGB-21
 Thickness: 4.0" Dia.: 0
 Cal. Blk. Temp.: 73 Temp. Tool: 1070BGCY
 Comp. Temp.: 71 Temp. Tool: 1070BGCY

Scan Coverage
 Upstream Downstream Scan dB: 44.0
 CW CCW Scan dB: 48.0
 Exam Surface: OD
 Surface Condition: Ground Smooth

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

Reference/Simulator Block				
Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
30.0	FSDH	40	1.5	1.479"
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
Vanruler, Chris	II	<i>CVR</i>	4/13/2013	W.L. Thomas	<i>W.L. Thomas</i>	4.15.13
Hacker, Jonathon	III	<i>JH</i>	4/13/2013	Raymond T. Stack	<i>Raymond T. Stack</i>	5/1/13
Other	N/A			ANIR Review	<i>M Heo</i>	5/2/13

UT Calibration/Examination

ENCLOSURE A1-1

NAPS Unit 2 4th Interval 1st Period Limited Exams
 Page 11 of 86

Serial No. 14-050
 Docket No. 50-339

ENCLOSURE A1-1

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
Complant	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	Examined By:	Signature	Level	Method	Date	Activity
1077	<i>David Tucker</i>	DAVID TUCKER	II	UT	05/09/2004	11/10/2004

Reviewed By: <i>Randy Stack</i>	Level: <i>III</i>	Date: <i>5-17-04</i>
---------------------------------	-------------------	----------------------

ANII *AV* Date *5/22/04*
 Initial Final
 HSB-CT

ENCLOSURE A1-1



PERCENT VOLUME BY SCAN DIRECTION

DRAWING 12050-UMKS-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%

Ronald A. Stahl
 Virginia Power NDE Level III

5-17-04
 Date

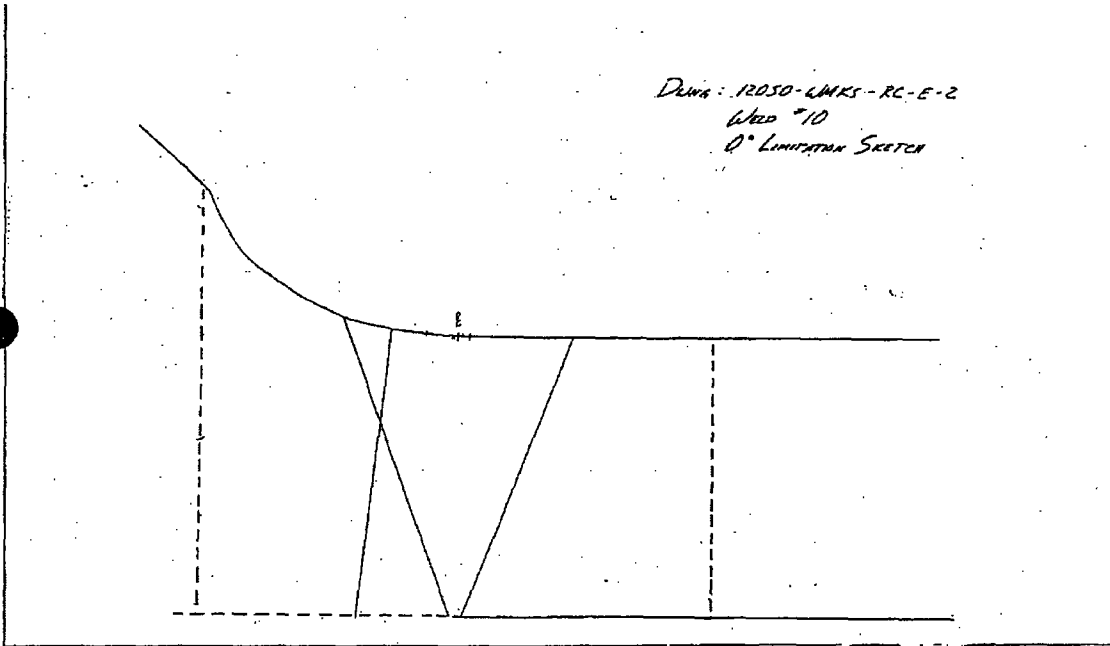
ANII *MA* Date *5/22/04*
 Initial Final
 HSB-CT

ENCLOSURE A1-1

**Dominion
 UT Partial Record**

UTRNO	RECTAG	Drawing	Line	Mark/weld	Procedure	Rev
1077	5949	12050-WMKS-RC-B-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 COVERED. 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 <i>[Signature]</i>	II	5/9/04

Reviewed By: <i>[Signature]</i>	Level: <i>[Signature]</i>	Date: 5-17-04
---------------------------------	---------------------------	---------------

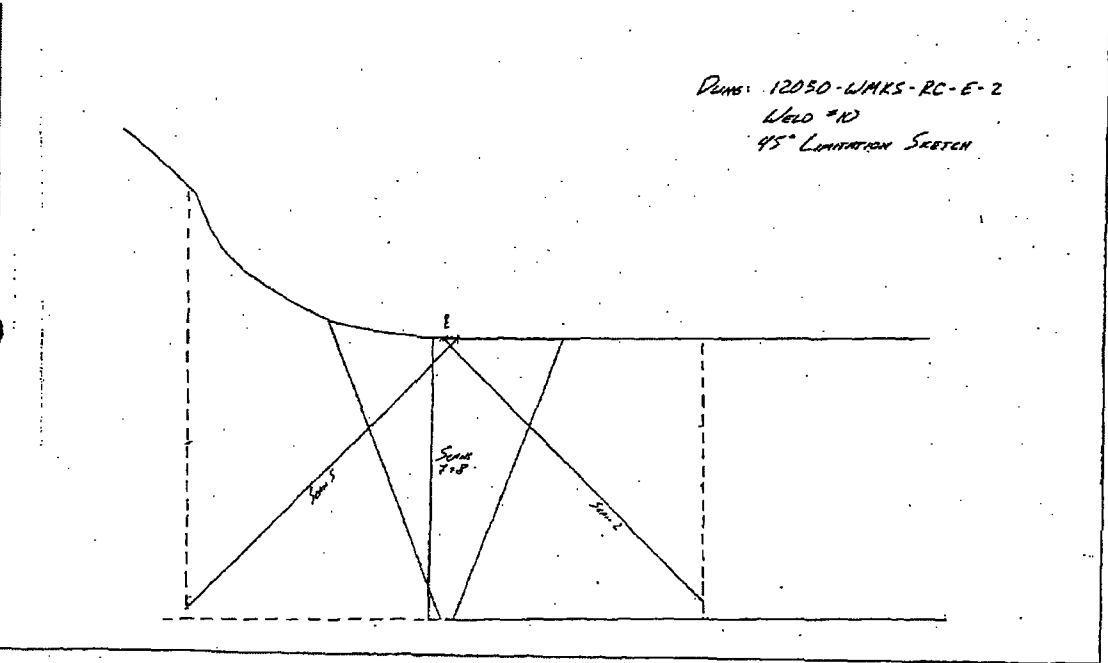
ANII *[Signature]* Date *5/17/04*
 Initial Final
 HSB-CT

ENCLOSURE A1-1

**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 COVERED. 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.

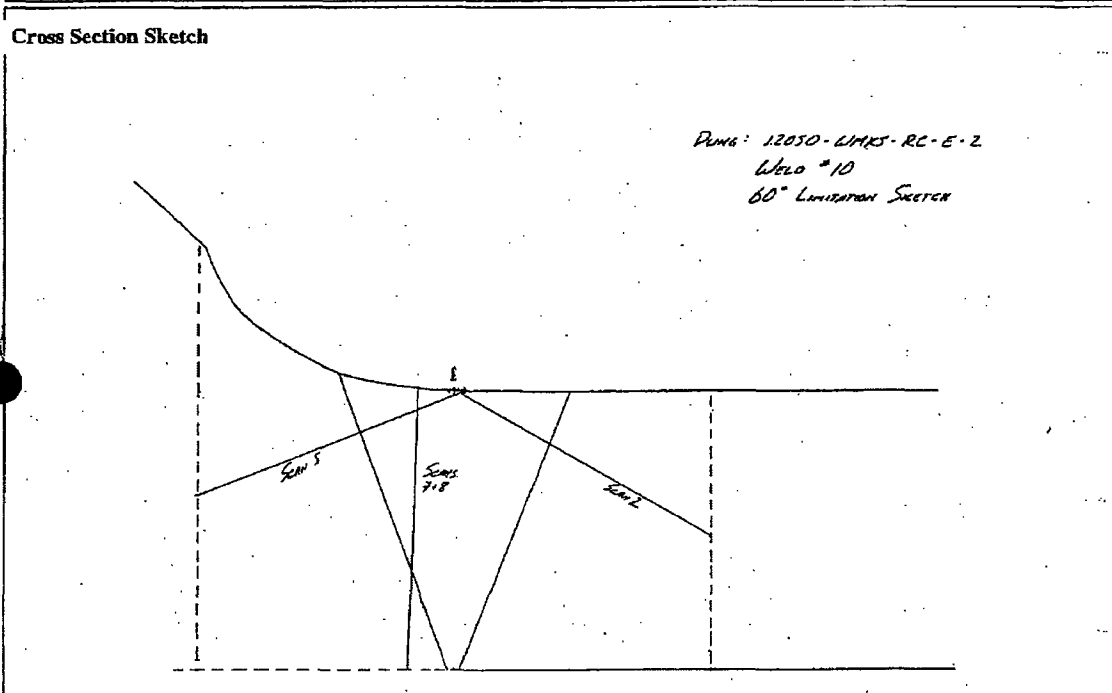
Signature <i>David K. Tucker</i>	Level II	DATE 5/9/04
--	--------------------	-----------------------

Reviewed By: *[Signature]* Level: *[Signature]* Date: 5-17-04

ANII *[Signature]* Date *5/22/04*
Initial Final
HSB-CT

ENCLOSURE A1-1

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 COVERED. SEE COVERAGE WORKSHEET FOR SPECIFIC SCAN PERCENTAGES.						



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 <i>David K. Tucker</i>	II	5/9/04

Reviewed By: <i>Raymond J. Stuck</i>	Level: <i>II</i>	Date: <i>5-17-04</i>
--------------------------------------	------------------	----------------------

ANII *mtk* Date *5/22/04*
 Initial Final
 HSB-CT



UT Calibration/Examination

Site/Unit: NAPS / 2 Procedure: ER-AA-NDE-UT-702 Outage No.: N2R22
 Summary No.: N2.B3.110.005 Procedure Rev.: 4 Report No.: UT-13-003
 Workscope: ISI Work Order No.: 59102532605/NDER13-079 Page: 1 of 3

Code: 2004 Edition Cat./Item: B-D/B3.110 Location: PZR 291

Drawing No.: 12050-WMKS-RC-E-2 Description: Nozzle to Vessel Weld

System ID: RC

Component ID: 12050-WMKS-RC-E-2 / 2-RC-E-2 / 14 Size/Length: 2.0" / 45.0" Thickness/Diameter: 3.29" / 8.0"

Limitations: Limited due to nozzle configuration. Start Time: 0856 Finish Time: 0904

Instrument Settings		Search Unit		Cal. Checks			Axial Orientated Search Unit			
Serial No.:	<u>091639803</u>	Serial No.:	<u>M18206SP</u>	Initial Cal.	<u>0627</u>	<u>4/13/2013</u>	Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
Manufacturer:	<u>Panametrics</u>	Manufacturer:	<u>KBA</u>	Inter. Cal.	<u>0856</u>	<u>4/13/2013</u>	<u>1/4 T</u>	<u>80</u>	<u>1.8</u>	<u>.912"</u>
Model:	<u>EPOCH 4</u> Linearity: <u>L-13-006</u>	Size:	<u>0.75"</u> Model: <u>Gamma</u>	Inter. Cal.	<u>N/A</u>		<u>1/2 T</u>	<u>80</u>	<u>3.9</u>	<u>1.921"</u>
Delay:	<u>1.412 us</u> Range: <u>5.0"</u>	Freq.:	<u>2.25 MHz</u> Center Freq.: <u>N/A</u>	Inter. Cal.	<u>0904</u>	<u>4/13/2013</u>	<u>3/4 T</u>	<u>55</u>	<u>5.8</u>	<u>2.914"</u>
Mtl Cal/Vel:	<u>.2333 in/us</u> Pulsar: <u>Square</u>	Exam Angle:	<u>0</u> Squint Angle: <u>N/A</u>	Final Cal.	<u>1041</u>	<u>4/13/2013</u>	<u>B/W</u>	<u>100 +</u>	<u>8.5</u>	<u>4.264"</u>
Damping:	<u>400 Ohms</u> Reject: <u>0%</u>	Measured Angle:	<u>N/A</u> Mode: <u>Long.</u>	Couplant			<u>N/A</u>			
Rep. Rate:	<u>Auto</u> Freq.: <u>2.0 MHz</u>	Exit Point:	<u>N/A</u> # of Elements: <u>1</u>	Cal. Batch:	<u>07220</u>	Circumferential Orientated Search Unit				
Filter:	<u>.8 - 3.0</u> Mode: <u>Fullwave</u>	Config.:	<u>N/A</u> Focus: <u>N/A</u>	Type:	<u>SoundSafe</u>	Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path	
Voltage:	<u>Medium</u> Other: <u>N/A</u>	Shape:	<u>Round</u> Contour: <u>N/A</u>	Mfg.:	<u>SONOTECH</u>	<u>N/A</u>				
Ax. Gain (dB):	<u>1.0</u> Circ. Gain (dB): <u>N/A</u>	Wedge Style:	<u>N/A</u>	Exam Batch:	<u>07220</u>	Reference/Simulator Block				
<u>10</u> Screen Div. = <u>5.0</u> in. of <u>Sound Path</u>		Search Unit Cable		Type:	<u>SoundSafe</u>	Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
		Type:	<u>RG 174</u> Length: <u>12'</u> No. Conn.: <u>0</u>	Mfg.:	<u>SONOTECH</u>	<u>1.0</u>	<u>F8DH</u>	<u>50</u>	<u>1.5</u>	<u>.719"</u>
		Scan Coverage		Type:	<u>SONOTECH</u>	<u>N/A</u>				
Cal. Block No.:	<u>VGB-21</u>	Upstream <input checked="" type="checkbox"/> Downstream <input checked="" type="checkbox"/> Scan dB: <u>19.0</u>		Reference Block			Reference/Simulator Block			
Thickness:	<u>4.0"</u> Dia.: <u>0</u>	CW <input checked="" type="checkbox"/> CCW <input checked="" type="checkbox"/> Scan dB: <u>19.0</u>		Serial No.:	<u>05-6998</u>					
Cal. Blk. Temp.:	<u>73</u> Temp. Tool: <u>1070BGCY</u>	Exam Surface: <u>OD</u>		Type:	<u>CS Rompus Block</u>					
Comp. Temp.:	<u>71</u> Temp. Tool: <u>1070BGCY</u>	Surface Condition: <u>Ground Smooth</u>		Comments: Refer to previous data report #1077 dated 5/9/04 for coverage calculations.						
Recordable Indication(s):	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (If Yes, Ref. Attached Ultrasonic Indication Report.)									
Results:	NRI <input checked="" type="checkbox"/> RI <input type="checkbox"/> Geom <input type="checkbox"/>									
Percent Of Coverage Obtained > 90%:	<u>No</u>	Reviewed Previous Data:	<u>Yes</u>							

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Vanruler, Chris	II	<i>[Signature]</i>	4/13/2013	W.L. Thomas	<i>[Signature]</i>	4-15-13
Hacker, Jonathon	III	<i>[Signature]</i>	4/13/2013	Robert Davies	<i>[Signature]</i>	4/16/13
Other	N/A	<i>[Signature]</i>		ANII Review	<i>[Signature]</i>	4/16/13

ENCLOSURE A1-2

NAPS Unit 2 4th Interval 1st Period Limited Exams
Page 17 of 86

Serial No. 14-050
Docket No. 50-339

UT Calibration/Examination



Site/Unit: NAPS / 2 **Procedure:** ER-AA-NDE-UT-702 **Outage No.:** N2R22
Summary No.: NZ.B3.110.005 **Procedure Rev.:** 4 **Report No.:** UT-13-003
Workscope: ISI **Work Order No.:** 59102532605/NDER13-079 **Page:** 2 of 3

Code: 2004 Edition **Cat./Item:** B-D/B3.110 **Location:** PZR 291
Drawing No.: 12050-WMKS-RC-E-2 **Description:** Nozzle to Vessel Weld
System ID: RC
Component ID: 12050-WMKS-RC-E-2 / 2-RC-E-2 / 14 **Size/Length:** 2.0" / 45.0" **Thickness/Diameter:** 3.29" / 8.0"
Limitations: Limited due to nozzle configuration. **Start Time:** 0906 **Finish Time:** 0924

Instrument Settings		Search Unit		Cal. Checks			Axial Orientated Search Unit				
Serial No.:	091639803	Serial No.:	00Y5K7	Initial Cal.	0636	4/13/2013	Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path	
Manufacturer:	Panometrics	Manufacturer:	KBA	Inter. Cal.	0906	4/13/2013	1/4 T	80	1.9	1.398"	
Model:	EPOCH 4	Model:	Comp-G	Inter. Cal.	N/A		1/2 T	50	3.8	2.795"	
Linearity:	L-13-008	Size:	.5" X 1.0"	Inter. Cal.	0924	4/13/2013	3/4 T	35	5.7	4.215"	
Delay:	11.94 us	Center Freq.:	N/A	Final Cal.	1042	4/13/2013	ID Notch	15	8.7	6.422"	
Range:	7.4"	Exam Angle:	45	Couplant			5/4 T	20	9.5	7.020"	
M'd Cal/Vel:	.1268 in/us	Squint Angle:	N/A	Cal. Batch:	07220	Circumferential Orientated Search Unit					
Damping:	400 Ohms	Measured Angle:	45	Type:	SoundSafe	Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path		
Rep. Rate:	Auto	Mode:	Shear	Mfg.:	SONOTECH	N/A					
Filter:	.8 - 3.0	Exit Point:	.6"	Exam Batch:	07220	Reference/Simulator Block					
Voltage:	Medium	# of Elements:	1	Type:	SoundSafe	Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path	
Ax. Gain (dB):	24.0	Config.:	Single	Mfg.:	SONOTECH	24.0	FSDH	40	1.5	1.085"	
Circ. Gain (dB):	N/A	Focus:	N/A	Reference Block			N/A				
Screen Div. =	7.4	Shape:	Rectangular	Serial No.:	05-6998						
in. of	Sound Path	Contour:	N/A	Type:	CS Rompus Block						
Calibration Block		Wedge Style:	SWS								
Cal. Block No.:	VGB-21	Search Unit Cable									
Thickness	4.0"	Type:	RG 174								
Dia.:	0	Length:	12'								
Cal. Blk. Temp.:	73	No. Conn.:	0								
Temp. Tool:	1070BGCY	Scan Coverage									
Comp. Temp.:	71	Upstream <input checked="" type="checkbox"/>	Downstream <input checked="" type="checkbox"/>								
Temp. Tool:	1070BGCY	Scan dB:	38.0								
Exam Surface:	OD	CW <input checked="" type="checkbox"/>	CCW <input checked="" type="checkbox"/>								
Surface Condition:	Ground Smooth	Scan dB:	38.0								
Recordable Indication(s):	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Reference Block									
Results:	NRI <input checked="" type="checkbox"/> RI <input type="checkbox"/> Geom <input type="checkbox"/>	Serial No.:									
Percent Of Coverage Obtained > 90%:	No	Type:									
Reviewed Previous Data:	Yes	CS Rompus Block									
Comments: None											

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Vanruler, Chris	II	<i>Chris Vanruler</i>	4/13/2013	W.L. Thomas	<i>W.L. Thomas</i>	4/15/13
Hacker, Jonathon	III	<i>Jonathon Hacker</i>	4/13/2013	Robert Davies	<i>Robert Davies</i>	4/16/13
N/A	N/A			ANII Review	<i>M He</i>	4/24/13 5/2/13

UT Calibration/Examination

ENCLOSURE A1-2

NAPS Unit 2 4th Interval 1st Period Limited Exams
Page 18 of 86

Serial No. 14-050
Docket No. 50-339

UT Calibration/Examination



Site/Unit: NAPS / 2 **Procedure:** ER-AA-NDE-UT-702 **Outage No.:** N2R22
Summary No.: N2.B3.110.005 **Procedure Rev.:** 4 **Report No.:** UT-13-003
Workscope: ISI **Work Order No.:** 59102532605/NDER13-079 **Page:** 3 of 3

Code: 2004 Edition **Cal./Item:** B-D/B3.110 **Location:** PZR 291
Drawing No.: 12050-WMKS-RC-E-2 **Description:** Nozzle to Vessel Weld
System ID: RC
Component ID: 12050-WMKS-RC-E-2 / 2-RC-E-2 / 14 **Size/Length:** 2.0" / 45.0" **Thickness/Diameter:** 3.29" / 8.0"
Limitations: Limited due to nozzle configuration. **Start Time:** 0925 **Finish Time:** 0947

Instrument Settings		Search Unit		Cal. Checks			Axial Orientated Search Unit						
Serial No.:	<u>091639803</u>	Serial No.:	<u>00Y5K6</u>	Initial Cal.	<u>0840</u>	<u>4/13/2013</u>	Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path			
Manufacturer:	<u>Panametrics</u>	Manufacturer:	<u>KBA</u>	Inter. Cal.	<u>0925</u>	<u>4/13/2103</u>	<u>1/4 T</u>	<u>80</u>	<u>1.9</u>	<u>1.934"</u>			
Model:	<u>EPOCH 4</u> Linearity: <u>L-13-006</u>	Size:	<u>.5" X 1.0"</u> Model: <u>Comp-G</u>	Inter. Cal.	<u>N/A</u>		<u>1/2 T</u>	<u>40</u>	<u>3.9</u>	<u>3.979"</u>			
Delay:	<u>15.12 us</u> Range: <u>10.1"</u>	Freq.:	<u>2.25 MHz</u> Center Freq.: <u>N/A</u>	Inter. Cal.	<u>0947</u>	<u>4/13/2013</u>	<u>3/4 T</u>	<u>30</u>	<u>5.9</u>	<u>5.940"</u>			
M/I Cal/Vel:	<u>.1268 in/us</u> Pulsar: <u>Square</u>	Exam Angle:	<u>60</u> Squint Angle: <u>N/A</u>	Final Cal.	<u>1043</u>	<u>4/13/2013</u>	ID Notch	<u>13</u>	<u>8.7</u>	<u>8.746"</u>			
Damping:	<u>400 Ohms</u> Reject: <u>0%</u>	Measured Angle:	<u>60</u> Mode: <u>Shear</u>	Couplant			<u>5/4 T</u>	<u>10</u>	<u>9.8</u>	<u>9.877"</u>			
Rep. Rate:	<u>Auto</u> Freq.: <u>2.0 MHz</u>	Exit Point:	<u>.7"</u> # of Elements: <u>1</u>	Cal. Batch:	<u>07220</u>		Circumferential Orientated Search Unit						
Filler:	<u>.8 - 3.0</u> Mode: <u>Fullwave</u>	Config.:	<u>Single</u> Focus: <u>N/A</u>	Type:	<u>SoundSafe</u>		Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path			
Voltage:	<u>Medium</u> Other: <u>N/A</u>	Shape:	<u>Rectangular</u> Contour: <u>N/A</u>	Mfg.:	<u>SONOTECH</u>		<u>N/A</u>						
Ax. Gain (dB):	<u>30.0</u> Circ. Gain (dB): <u>N/A</u>	Wedge Style:	<u>SWS</u>	Exam Batch:	<u>07220</u>								
<u>10</u> Screen Div. = <u>10.1</u> In. of <u>Sound Path</u>		Search Unit Cable		Type:	<u>SoundSafe</u>								
		Type:	<u>RG 174</u> Length: <u>12'</u> No. Conn.: <u>0</u>	Mfg.:	<u>SONOTECH</u>								
		Calibration Block											
		Scan Coverage											
Cal. Block No.:	<u>VGB-21</u>	Upstream <input checked="" type="checkbox"/>	Downstream <input checked="" type="checkbox"/>	Scan dB:	<u>44.0</u>		Reference/Simulator Block						
Thickness:	<u>4.0"</u> Dia.: <u>0</u>	CW <input checked="" type="checkbox"/>	CCW <input checked="" type="checkbox"/>	Scan dB:	<u>48.0</u>		Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path		
Cal. Blk. Temp.:	<u>73</u> Temp. Tool: <u>1070BGCY</u>	Exam Surface:	<u>OD</u>			Serial No.:	<u>05-6998</u>		<u>30.0</u>	<u>FSDH</u>	<u>40</u>	<u>1.5</u>	<u>1.479"</u>
Comp. Temp.:	<u>71</u> Temp. Tool: <u>1070BGCY</u>	Surface Condition:	<u>Ground Smooth</u>			Type:	<u>CS Rompus Block</u>		<u>N/A</u>				
Recordable Indication(s):	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (If Yes, Ref. Attached Ultrasonic Indication Report.)												
Results:	<u>NRI</u> <input checked="" type="checkbox"/>	<u>RI</u> <input type="checkbox"/>	<u>Geom</u> <input type="checkbox"/>	Comments: <u>None</u>									
Percent Of Coverage Obtained > 90%:	<u>No</u>		Reviewed Previous Data:	<u>Yes</u>									

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Vanruler, Chris	II	<i>Chris Vanruler</i>	4/13/2013	W. Thomas	<i>W. Thomas</i>	4/15/13
Hacker, Jonathon	III	<i>Jonathon Hacker</i>	4/13/2013	Robert Davies	<i>Robert Davies</i>	4/16/13
N/A	N/A			ANII Review	<i>M.H.C.</i>	5/2/13

ENCLOSURE A1-2

NAPS Unit 2 4th Interval 1st Period Limited Exams
Page 19 of 86

Serial No. 14-050
Docket No. 50-339

ENCLOSURE A1-2

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
Complant	CalCheck1	CalCheck2	CalCheck3	WO / DCP		Procedure	Rev
01220						NDB-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	Examined By:	Signature	Level	Method	Date	Activity
1077	<i>David Tucker</i>	DAVID TUCKER	II	UT	05/09/2004	11/10/2004

Reviewed By: *Paul J. Stock* Level: *III* Date: *5-17-04*

ANII *MT* Date *5/17/04*
 Initial Final
 HSB-CT

ENCLOSURE A1-2



PERCENT VOLUME BY SCAN DIRECTION

DRAWING 12050-LMKS-RC-E-2WELD # 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%

Roy J. Smith
 Virginia Power NDE Level III

5-17-04
 Date

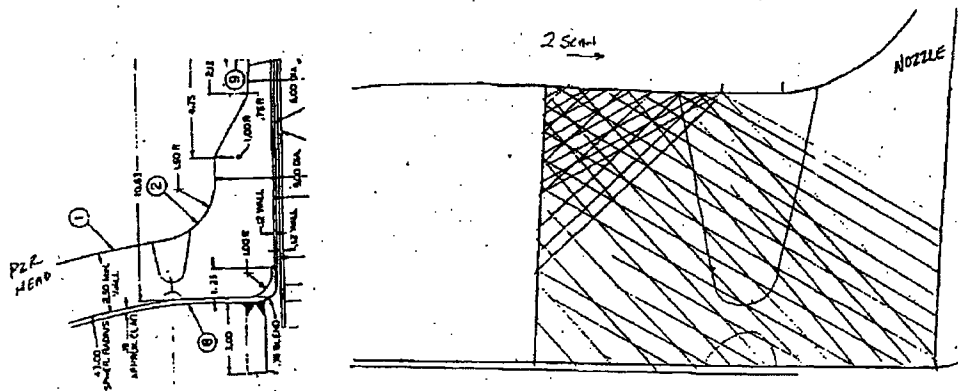
ANII MS Date 5/22/04
 Initial Final
 HSB-CT

ENCLOSURE A1-2

**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 *David K. Tucker* II 5/9/04

Reviewed By:	Level:	Date:
--------------	--------	-------

Royal J. Stuck II 5-17-04

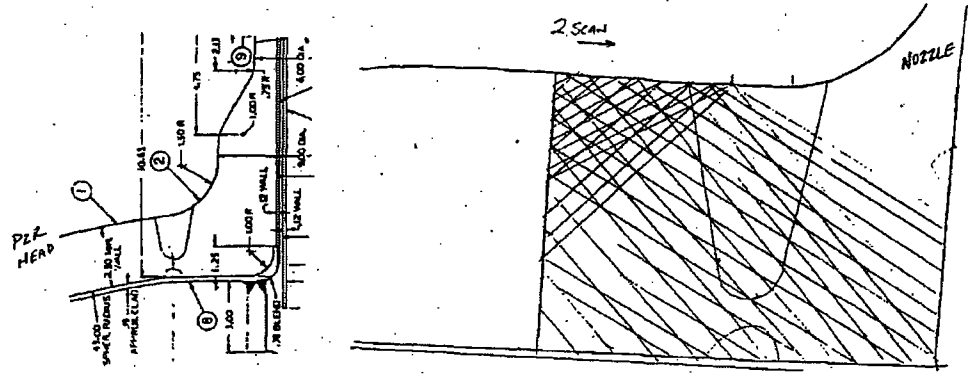
ANII *AK* Date *5/22/04*
 Initial Final
 HSB-CT

ENCLOSURE A1-2

**Dominion
 UT Partial Record**

UTRNO	RECTAG	Drawing	Line	Mark/weld	Procedure	Rev
1077	5953	12050-WMKS-RC-E-2	2-RC-E-2	14	NDB-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 <i>David K. Tucker</i>	II	5/9/04

Reviewed By: <i>Roy G. Stuck</i>	Level: <i>HSB</i>	Date: <i>5-17-04</i>
----------------------------------	-------------------	----------------------

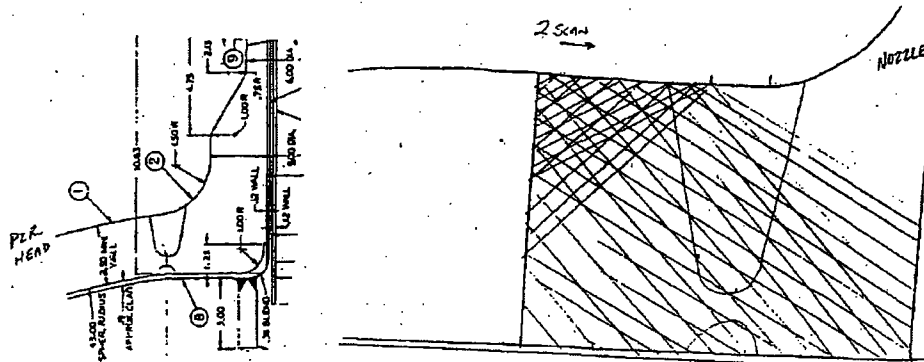
ANII *msk* Date *5/17/04*
 Initial Final
 HSB-CT

ENCLOSURE A1-2

**Dominion
 UT Partial Record**

UTRNO	RECTAG	Drawing	Line	Mark/weld	Procedure	Rev
1077	5953	12050-WMKS-RC-B-2	2-RC-B-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
<i>David K. Tucker</i>	II	5/9/04

Reviewed By: <i>Ronald J. Stark</i>	Level: <i>III</i>	Date: <i>5-17-04</i>
-------------------------------------	-------------------	----------------------

ANII *mk* Date *5/20/04*
 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	0.1239	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/ns	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	1.53	.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	61.610444233522
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	45.45924961672

Instrument						Calibration Data									
UTRNO	SHAC	Inst. Serial	Inst. Model	Inst. Manuf	CalNo	UTRNO	CalNo	Direction	CaLType	Point	Reflector	Position	Amplitude	Sweep	
1077	153	040182503	EPOCH 4	R.D.TECH INST.	549	1077	103	2,5,7,8	DET	1	1/4TSDH	1.15"	80%	2.0	
1077	153	040182503	EPOCH 4	R.D.TECH INST.	103	1077	103	2,5,7,8	DET	2	1/2TSDH	2.25"	50%	4.0	
1077	153	040182503	EPOCH 4	R.D.TECH INST.	104	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 1077 Calibrated By David Tucker Signature David Tucker Level II Method UT Date 05/09/2004 Activity 11/07/2004

ANII MN Date 5/17/04
 Initial Final
 HSB-CT

Reviewed By: Ronald A. Haddock Level: III Date: 5-17-04

ENCLOSURE A1-2

NAPS Unit 2 4th Interval 1st Period Limited Exams
 Page 25 of 86

Serial No. 14-050
 Docket No. 50-339

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 <i>David K Tucker</i>	II	UT	05/09/2004	11/07/2004

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

Reviewed By: <i>Ronald F. [Signature]</i>	Level: <i>III</i>	Date: <i>5-17-04</i>
---	-------------------	----------------------

ENCLOSURE A1-2

NAPS Unit 2 4th Interval 1st Period Limited Exams
Page 26 of 86

Serial No. 14-050
Docket No. 50-339

B1. Head Circumferential 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 vessel to head circumferential weld. This requirement is considered impractical due to weld configuration, including supports, thermocouples, and weld profile.

Ultrasonic examination of the full 165 inches of weld length of the lower head circumferential weld on the boron injection tank is limited to 87.6 percent due to four supports obstructing eight inches of weld length each, two installed thermocouples obstructing 1.8 inches each, and 0.9 inches obstructed by the weld profile. Refer to Enclosure B1-1 for coverage details for the vessel to head circumferential weld (weld # 1). Examination was performed to the extent possible.

5.B1 BURDEN CAUSED BY COMPLIANCE

Destruction of the component, including removal of welded supports and thermocouples, would be necessary to perform 100% of the Code required examination as written in the 2004 ASME Section XI Code with No Addenda and is contrary to the intent of the Code.

6.B1 PROPOSED ALTERNATIVE AND BASIS

It is proposed that the examinations already completed in the fourth interval at reduced coverage be accepted as meeting the Code requirements. The limited volumetric examination performed 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.

One other component in category C-A, Item No. C1.20, on the boron injection tank, is scheduled for examination during the current interval.

The examinations were performed using standard ASME Section V, Article 4 UT techniques. Manual scanning was performed for these examinations.

Enclosure B1-1 includes the complete Ultrasonic Examination Data Record for the Category C-A, Item C1.20, 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 limitation locations. The wave modality and insonification angles are also included. No recordable indications were identified during the examination.

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".



UT Calibration/Examination

Site/Unit: NAPS / 2
 Summary No.: N2.C1.20.010
 Workscope: ISI

Procedure: ER-AA-NDE-UT-702
 Procedure Rev.: 4
 Work Order No.: 59102532605/NDER13-079

Outage No.: N2R22
 Report No.: UT-13-010
 Page: 1 of 10

Code: 2004 Edition Cat./Item: C-A/C1.20 Location: AUX 244
 Drawing No.: 12050-WMKS-SI-TK-2 Description: Head to Shell Weld
 System ID: SI
 Component ID: 12050-WMKS-SI-TK-2 / 2-SI-TK-2 / 1 Size/Length: 2.3" / 165" Thickness/Diameter: 2.6" / 52.75"
 Limitations: See Attached Start Time: 13:00 Finish Time: 13:26

Instrument Settings		Search Unit		Cal. Checks	Time	Date	Axial Orientated Search Unit			
Serial No.:	<u>040186603</u>	Serial No.:	<u>M18207SP</u>	Initial Cal.	<u>0840</u>	<u>4/12/2013</u>	Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
Manufacturer:	<u>Panametrics</u>	Manufacturer:	<u>KBA</u>	Inter. Cal.	<u>1300</u>	<u>4/12/2013</u>	<u>1/4 T</u>	<u>70</u>	<u>1.8</u>	<u>.556"</u>
Model:	<u>EPOCH 4</u>	Size:	<u>0.75"</u>	Inter. Cal.	<u>N/A</u>		<u>1/2 T</u>	<u>80</u>	<u>4.0</u>	<u>1.180"</u>
Linearity:	<u>L-13-011</u>	Model:	<u>Gamma</u>	Inter. Cal.	<u>1328</u>	<u>4/12/2013</u>	<u>3/4 T</u>	<u>70</u>	<u>6.0</u>	<u>1.805"</u>
Delay:	<u>1.377</u>	Exam Angle:	<u>0</u>	Final Cal.	<u>1650</u>	<u>4/12/2013</u>	<u>BW</u>	<u>100+</u>	<u>8.2</u>	<u>2.480</u>
Range:	<u>3.0"</u>	Squint Angle:	<u>N/A</u>	Couplant						
Freq.:	<u>2.25 MHz</u>	Measured Angle:	<u>N/A</u>	Mode:	<u>Long.</u>					
Center Freq.:	<u>N/A</u>	Mode:	<u>Long.</u>	Cal. Batch:	<u>07220</u>					
Pulsar:	<u>Square</u>	Exit Point:	<u>N/A</u>	Type:	<u>SoundSafe</u>					
Reject:	<u>0%</u>	# of Elements:	<u>1</u>	Mfg.:	<u>SONOTECH</u>					
Exam Angle:	<u>0</u>	Config.:	<u>Single</u>	Exam Batch:	<u>07220</u>					
Squint Angle:	<u>N/A</u>	Focus:	<u>N/A</u>	Type:	<u>SoundSafe</u>					
Measured Angle:	<u>N/A</u>	Shape:	<u>Round</u>	Mfg.:	<u>SONOTECH</u>					
Mode:	<u>Fullwave</u>	Contour:	<u>N/A</u>	Reference Block						
Other:	<u>N/A</u>	Wedge Style:	<u>N/A</u>	Serial No.:	<u>05-6998</u>					
Ax. Gain (dB):	<u>5.8</u>	Search Unit Cable		Type:	<u>CS Rompus Block</u>					
Circ. Gain (dB):	<u>N/A</u>	Type:	<u>RG 174</u>	Reference/Simulator Block						
Screen Div. =	<u>3.0</u>	Length:	<u>12'</u>	Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path		
In. of	<u>Sound Path</u>	No. Conn.:	<u>0</u>	<u>5.8</u>	<u>.75" SDH</u>	<u>52</u>	<u>2.4</u>	<u>.723"</u>		
Cal. Block No.	<u>VRA-27</u>	Scan Coverage		<u>N/A</u>						
Thickness	<u>2.478"</u>	Upstream <input checked="" type="checkbox"/>	Downstream <input checked="" type="checkbox"/>							
Dia.:	<u>0</u>	Scan dB:	<u>11.8</u>							
Cal. Blk. Temp.	<u>89</u>	CW <input type="checkbox"/>	CCW <input type="checkbox"/>							
Temp. Tool:	<u>1079BGCY</u>	Scan dB:	<u>N/A</u>							
Comp. Temp.	<u>85</u>	Exam Surface:	<u>OD</u>							
Temp. Tool:	<u>1079BGCY</u>	Surface Condition:	<u>Contour Ground</u>							
Recordable Indication(s):	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	(If Yes, Ref. Attached Ultrasonic Indication Report.)								
Results:	NRI <input checked="" type="checkbox"/> RI <input type="checkbox"/> Geom <input type="checkbox"/>	Comments: <u>None</u>								
Percent Of Coverage Obtained > 90%:	No <input type="checkbox"/> Reviewed Previous Data:	Yes <input type="checkbox"/>								

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Currao, Jeffrey T	<u>II-PDI</u>		<u>4/12/2013</u>	<u>W.L. THOMAS</u>		<u>04/29/13</u>
N/A	<u>N/A</u>			Site Review		<u>5.1.2013</u>
N/A	<u>N/A</u>			ANII Review		<u>5/2/13</u>

UT Calibration/Examination

ENCLOSURE B1-1

NAPS Unit 2 4th Interval 1st Period Limited Exams
Page 28 of 86

Serial No. 14-050
Docket No. 50-339

UT Calibration/Examination



Dominion

Site/Unit: NAPS / 2
 Summary No.: N2.C1.20.010
 Workscope: ISI

Procedure: ER-AA-NDE-UT-702
 Procedure Rev.: 4
 Work Order No.: 59102532605/NDER13-079

Outage No.: N2R22
 Report No.: UT-13-010
 Page: 2 of 10

Code: 2004 Edition Cat./Item: C-A/C1.20 Location: AUX 244
 Drawing No.: 12050-WMKS-SI-TK-2 Description: Head to Shall Weld
 System ID: SI
 Component ID: 12050-WMKS-SI-TK-2 / 2-SI-TK-2 / 1 Size/Length: 2.3" / 165" Thickness/Diameter: 2.6" / 52.75"
 Limitations: See Attached Start Time: 13:27 Finish Time: 14:27

Instrument Settings
 Serial No.: 040186603
 Manufacturer: Panametrics
 Model: EPOCH 4 Linearity: L-13-011
 Delay: 12.25 Range: 4.371"
 M'tl Cal/Vel: .1277 Pulsar: Square
 Damping: 400 Reject: 0%
 Rep. Rate: Auto Freq.: 2.0 MHz
 Filter: .8 - 3.0 Mode: Fullwave
 Voltage: Max Other: N/A

Search Unit
 Serial No.: 00Y5K7
 Manufacturer: KBA
 Size: .5" X 1.0" Model: Comp-G
 Freq.: 2.25 MHz Center Freq.: N/A
 Exam Angle: 45 Squint Angle: N/A
 Measured Angle: 47 Mode: Shear
 Exit Point: .7" # of Elements: 1
 Config.: Single Focus: N/A
 Shape: Rectangular Contour: N/A
 Wedge Style: SWS

Cal. Checks	Time	Date
Initial Cal.	0841	4/12/2013
Inter. Cal.	1327	4/12/2013
Inter. Cal.	N/A	
Inter. Cal.	1427	4/12/2013
Final Cal.	1651	4/12/2013

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

Axial Orientated Search Unit			
Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1/4 T	80	2.0	.859"
1/2 T	70	4.0	1.745"
3/4 T	50	6.0	2.617"
ID Notch	40	8.0	3.488"
5/4 T	35	10.0	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
23.5	.75" SDH	52	2.6	1.136"
N/A				

Ax. Gain (dB): 23.5 Circ. Gain (dB): N/A
10 Screen Div. = 4.371 in. of Sound Path
Calibration Block
 Cal. Block No.: VRA-27
 Thickness 2.478" Dia.: 0
 Cal. Blk. Temp. 89 Temp. Tool: 1079BG CY
 Comp. Temp. 85 Temp. Tool: 1079BG CY
Scan Coverage
 Upstream Downstream Scan dB: 37.5
 CW CCW Scan dB: 37.5
 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: Yes

Reference Block
 Serial No.: 05-8998
 Type: CS Rompus Block

Comments: None

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Currao, Jeffrey T	II-PDI		4/12/2013	WAYNE THOMAS		4-27-13
N/A	N/A			DEANUS P. STRICKLAND		5-1-2013
N/A	N/A					5/2/13

UT Calibration/Examination

ENCLOSURE B1-1

NAPS Unit 2 4th Interval 1st Period Limited Exams
 Page 29 of 86

Serial No. 14-050
 Docket No. 50-339

UT Calibration/Examination



Dominion

Site/Unit: NAPS / 2
 Summary No.: N2.C1.20.010
 Workscope: ISI

Procedure: ER-AA-NDE-UT-702
 Procedure Rev.: 4
 Work Order No.: 59102532605/NDER13-079

Outage No.: N2R22
 Report No.: UT-13-010
 Page: 3 of 10

Code: 2004 Edition Cat./Item: C-NC1.20 Location: AUX 244
 Drawing No.: 12050-WMKS-SI-TK-2 Description: Head to Shell Weld
 System ID: SI
 Component ID: 12050-WMKS-SI-TK-2 / 2-SI-TK-2 / 1 Size/Length: 2.3" / 165" Thickness/Diameter: 2.6" / 52.75"
 Limitations: See Attached Start Time: 14:28 Finish Time: 15:36

Instrument Settings		Search Unit		Cal. Checks			Axial Orientated Search Unit				
Serial No.:	<u>040186803</u>	Serial No.:	<u>00Y5K6</u>	Cal. Checks	Time	Date	Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path	
Manufacturer:	<u>Panametrics</u>	Manufacturer:	<u>KBA</u>	Initial Cal.	<u>0842</u>	<u>4/12/2013</u>					
Model:	<u>EPOCH 4</u> Linearity: <u>L-13-011</u>	Size:	<u>.5" X 1.0"</u> Model: <u>Comp-G</u>	Inter. Cal.	<u>1428</u>	<u>4/12/2013</u>	<u>1/4 T</u>	<u>80</u>	<u>2.0</u>	<u>1.152"</u>	
Delay:	<u>15.55</u> Range: <u>5.948"</u>	Freq.:	<u>2.25 MHz</u> Center Freq.: <u>N/A</u>	Inter. Cal.	<u>N/A</u>		<u>1/2 T</u>	<u>45</u>	<u>4.0</u>	<u>2.360"</u>	
M'tl Cal/Vel:	<u>.1275</u> Pulsar: <u>Square</u>	Exam Angle:	<u>60</u> Squint Angle: <u>N/A</u>	Inter. Cal.	<u>1536</u>	<u>4/12/2013</u>	<u>3/4 T</u>	<u>27</u>	<u>6.0</u>	<u>3.948"</u>	
Damping:	<u>400</u> Reject: <u>0%</u>	Measured Angle:	<u>60</u> Mode: <u>Shear</u>	Final Cal.	<u>1652</u>	<u>4/12/2013</u>	<u>ID Notch</u>	<u>21</u>	<u>8.0</u>	<u>4.755"</u>	
Rep. Rate:	<u>Auto</u> Freq.: <u>2.0 MHz</u>	Exit Point:	<u>.65"</u> # of Elements: <u>1</u>	Couplant			<u>5/4 T</u>	<u>15</u>	<u>10.0</u>	<u>N/A</u>	
Filter:	<u>.8 - 3.0</u> Mode: <u>Fullwave</u>	Config.:	<u>Single</u> Focus: <u>N/A</u>	Cal. Batch:	<u>07220</u>		Circumferential Orientated Search Unit				
Voltage:	<u>Max</u> Other: <u>N/A</u>	Shape:	<u>Rectangular</u> Contour: <u>N/A</u>	Type:	<u>SoundSafe</u>		Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path	
Ax. Gain (dB):	<u>27.2</u> Circ. Gain (dB): <u>N/A</u>	Wedge Style:	<u>SWS</u>	Mfg.:	<u>SONOTECH</u>						
<u>10</u> Screen Div. = <u>5.948</u> in. of <u>Sound Path</u>		Search Unit Cable		Exam Batch:	<u>07220</u>		<u>N/A</u>				
		Type:	<u>RG 174</u> Length: <u>12'</u> No. Conn.: <u>0</u>	Type:	<u>SoundSafe</u>						
		Calibration Block		Mfg.:	<u>SONOTECH</u>						
		Scan Coverage		Reference Block			Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
Cal. Block No.:	<u>VRA-27</u>	Upstream <input checked="" type="checkbox"/>	Downstream <input checked="" type="checkbox"/>	Scan dB:	<u>41.2</u>		<u>27.2</u>	<u>.75" SDH</u>	<u>37</u>	<u>2.5</u>	<u>1.483"</u>
Thickness:	<u>2.478"</u> Dia.: <u>0</u>	CW <input checked="" type="checkbox"/>	CCW <input checked="" type="checkbox"/>	Scan dB:	<u>41.2</u>		<u>N/A</u>				
Cal. Blk. Temp.:	<u>89</u> Temp. Tool: <u>1079BG CY</u>	Exam Surface:	<u>OD</u>			Reference/Simulator Block					
Comp. Temp.:	<u>85</u> Temp. Tool: <u>1079BG CY</u>	Surface Condition:	<u>Contour Ground</u>			Serial No.:	<u>05-6998</u>		Type:	<u>CS Rompus Block</u>	
Recordable Indication(s):	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (If Yes, Ref. Attached Ultrasonic Indication Report.)										
Results:	NRI <input checked="" type="checkbox"/> RI <input type="checkbox"/> Geom <input type="checkbox"/>										
Percent Of Coverage Obtained > 90%:	<u>No</u>	Reviewed Previous Data:	<u>Yes</u>		Comments: <u>None</u>						

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Currao, Jeffrey T	II-PDI	<i>Jeffrey Currao</i>	4/12/2013	W.L. Thomas	<i>W.L. Thomas</i>	04/29/13
N/A	N/A			Site Review		
Other	N/A			Dennis P. Strickland	<i>Dennis P. Strickland</i>	5.1.2013
N/A	N/A			ANII Review	<i>M. Lee</i>	5/2/13

UT Calibration/Examination

ENCLOSURE B1-1

NAPS Unit 2 4th Interval 1st Period Limited Exams
 Page 30 of 86

Serial No. 14-050
 Docket No. 50-339

UT Calibration/Examination



Dominion

Site/Unit: NAPS / 2
 Summary No.: N2.C1.20.010
 Workscope: ISI

Procedure: ER-AA-NDE-JT-702
 Procedure Rev.: 4
 Work Order No.: 59102532605/NDER13-079

Outage No.: N2R22
 Report No.: UT-13-010
 Page: 4 of 10

Code: 2004 Edition Cat./Item: C-A/C1.20 Location: AUX 244
 Drawing No.: 12050-WMKS-SI-TK-2 Description: Head to Shell Weld
 System ID: SI
 Component ID: 12050-WMKS-SI-TK-2 / 2-SI-TK-2 / 1 Size/Length: 2.3" / 165" Thickness/Diameter: 2.6" / 52.75"
 Limitations: See Attached Start Time: 08:50 Finish Time: 09:30

Instrument Settings		Search Unit		Cal. Checks			Axial Orientated Search Unit				
Serial No.:	<u>040186603</u>	Serial No.:	<u>G06268</u>	Initial Cal.	<u>0810</u>	<u>4/15/2013</u>	Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path	
Manufacturer:	<u>Panametrics</u>	Manufacturer:	<u>KBA</u>	Inter. Cal.	<u>0850</u>	<u>4/15/2013</u>	<u>1/4 T</u>	<u>80</u>	<u>1.9</u>	<u>.56</u>	
Model:	<u>EPOCH 4</u> Linearly: <u>L-13-011</u>	Size:	<u>0.375"</u> Model: <u>Gamma</u>	Inter. Cal.	<u>N/A</u>		<u>1/2 T</u>	<u>40</u>	<u>3.9</u>	<u>1.18</u>	
Delay:	<u>1.27</u> Range: <u>3.0</u>	Freq.:	<u>2.25 MHZ</u> Center Freq.: <u>N/A</u>	Inter. Cal.	<u>0930</u>	<u>4/15/2013</u>	<u>3/4 T</u>	<u>21</u>	<u>6.0</u>	<u>1.81</u>	
M/I Cal/Vol:	<u>.2329</u> Pulsar: <u>Square</u>	Exam Angle:	<u>0</u> Squint Angle: <u>N/A</u>	Final Cal.	<u>1210</u>	<u>4/15/2013</u>	<u>BW</u>	<u>60</u>	<u>8.2</u>	<u>2.48</u>	
Damping:	<u>400</u> Reject: <u>0%</u>	Measured Angle:	<u>N/A</u> Mode: <u>Long</u>	Couplant			Circumferential Orientated Search Unit				
Rep. Rate:	<u>Auto</u> Freq.:	Exit Point:	<u>N/A</u> # of Elements: <u>1</u>	Cal. Batch:	<u>07220</u>		Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path	
Filler:	<u>B-3.0</u> Mode: <u>Fullwave</u>	Config.:	<u>Single</u> Focus: <u>N/A</u>	Type:	<u>SoundSafe</u>		<u>N/A</u>				
Voltage:	<u>High</u> Other: <u>N/A</u>	Shape:	<u>Round</u> Contour: <u>N/A</u>	Mfg.:	<u>SONOTECH</u>						
Ax. Gain (dB):	<u>11</u> Circ. Gain (dB): <u>N/A</u>	Wedge Style:	<u>N/A</u>	Exam Batch:	<u>07220</u>						
<u>10</u> Screen Div. = <u>3.0</u> in. of <u>Sound Path</u>		Search Unit Cable		Type:	<u>SoundSafe</u>						
		Type:	<u>RG-174</u> Length: <u>6'</u> No. Conn.: <u>0</u>	Mfg.:	<u>SONOTECH</u>						
		Calibration Block									
		Cal. Block No.:	<u>VRA-27</u>	Reference Block			Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
		Thickness:	<u>2.478"</u> Dia.: <u>0</u>	Serial No.:	<u>05-5560</u>		<u>11</u>	<u>.7 SDH</u>	<u>56</u>	<u>2.4</u>	<u>.72</u>
		Cal. Blk. Temp.:	<u>74</u> Temp. Tool: <u>1074BGCY</u>	Type:	<u>CS Rompus Block</u>		<u>N/A</u>				
		Comp. Temp.:	<u>81</u> Temp. Tool: <u>1074BGCY</u>								
		Exam Surface:	<u>OD</u>								
		Surface Condition:	<u>Contour Ground</u>								
Recordable Indication(s):	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	(If Yes, Ref. Attached Ultrasonic Indication Report.)									
Results:	<u>NRI</u> <input checked="" type="checkbox"/> <u>RI</u> <input type="checkbox"/> <u>Geom</u> <input type="checkbox"/>	Comments: <u>Used to maximize coverage.</u>									
Percent Of Coverage Obtained > 90%:	<u>No</u>	Reviewed Previous Data:	<u>Yes</u>								

Examiner	Level	II-PDI	Signature	Date	Reviewer	Signature	Date
<u>Currao, Jeffrey T</u>	<u>N/A</u>	<u>N/A</u>	<u>[Signature]</u>	<u>4/15/2013</u>	<u>WANE THOMAS</u>	<u>[Signature]</u>	<u>4.29.13</u>
<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>[Signature]</u>		<u>DENNIS P. STRICKLAND</u>	<u>[Signature]</u>	<u>5.1.2013</u>
<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>[Signature]</u>		<u>ANIL Review</u>	<u>[Signature]</u>	<u>5/2/13</u>

UT Calibration/Examination

ENCLOSURE B1-1

NAPS Unit 2 4th Interval 1st Period Limited Exams Page 31 of 86

Serial No. 14-050
Docket No. 50-339



UT Calibration/Examination

Site/Unit: NAPS / 2 Procedure: ER-AA-NDE-UT-702 Outage No.: N2R22
 Summary No.: N2.C1.20.010 Procedure Rev.: 4 Report No.: UT-13-010
 Workscope: ISI Work Order No.: 59102532805/NDER13-079 Page: 5 of 10

Code: 2004 Edition Cat./Item: C-AVC1.20 Location: AUX 244
 Drawing No.: 12050-WMKS-SI-TK-2 Description: Head to Shelf Weld
 System ID: SI
 Component ID: 12050-WMKS-SI-TK-2 / 2-SI-TK-2 / 1 Size/Length: 2.3" / 165" Thickness/Diameter: 2.6" / 52.75"
 Limitations: See Attached Start Time: 09:31 Finish Time: 10:28

Instrument Settings		Search Unit		Cal. Checks			Axial Orientated Search Unit				
Serial No.:	<u>040186603</u>	Serial No.:	<u>00H45N</u>	Initial Cal.	<u>0611</u>	<u>4/15/2013</u>	Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path	
Manufacturer:	<u>Panametrics</u>	Manufacturer:	<u>KBA</u>	Inter. Cal.	<u>0931</u>	<u>4/15/2013</u>	<u>1/4 T</u>	<u>80</u>	<u>2.0</u>	<u>.819</u>	
Model:	<u>EPOCH 4</u> Linearity: <u>L-13-011</u>	Size:	<u>0.50"</u> Model: <u>Comp-G</u>	Inter. Cal.	<u>N/A</u>		<u>1/2 T</u>	<u>60</u>	<u>4.0</u>	<u>1.688</u>	
Delay:	<u>6.420</u> Range: <u>4.133</u>	Freq.:	<u>2.25 MHZ</u> Center Freq.: <u>N/A</u>	Inter. Cal.	<u>1028</u>	<u>4/15/2013</u>	<u>3/4 T</u>	<u>40</u>	<u>6.0</u>	<u>2.497</u>	
M'd Cal/Vel:	<u>.1280</u> Pulsar: <u>Square</u>	Exam Angle:	<u>45</u> Squint Angle: <u>N/A</u>	Final Cal.	<u>1211</u>	<u>4/15/2013</u>	ID Notch	<u>30</u>	<u>8.4</u>	<u>3.464</u>	
Damping:	<u>400</u> Reject: <u>0%</u>	Measured Angle:	<u>45</u> Mode: <u>Shear</u>	Couplant			<u>5/4 T</u>	<u>20</u>	<u>10.0</u>	<u>N/A</u>	
Rep. Rate:	<u>Auto</u> Freq.: <u>2.0</u>	Exit Point:	<u>.35</u> # of Elements: <u>Single</u>	Cal. Batch:	<u>07220</u>		Circumferential Orientated Search Unit				
Filter:	<u>.8-3.0</u> Mode: <u>Fullwave</u>	Config.:	<u>Single</u> Focus: <u>N/A</u>	Type:	<u>SoundSafe</u>		Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path	
Voltage:	<u>High</u> Other: <u>N/A</u>	Shape:	<u>Round</u> Contour: <u>N/A</u>	Mfg.:	<u>SONOTECH</u>		<u>N/A</u>				
Ax. Gain (dB):	<u>15</u> Circ. Gain (dB): <u>N/A</u>	Wedge Style:	<u>MSWQC</u>	Exam Batch:	<u>07220</u>						
<u>10</u> Screen Div. = <u>4.133</u> in. of <u>Sound Path</u>		Search Unit Cable		Type:	<u>SoundSafe</u>						
		Type:	<u>RG 174</u> Length: <u>6'</u> No. Conn.: <u>0</u>	Mfg.:	<u>SONOTECH</u>						
		Scan Coverage									
Cal. Block No.:	<u>VRA-27</u>	Upstream:	<input checked="" type="checkbox"/>	Reference Block			Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
Thickness:	<u>2.478"</u> Dia.: <u>0</u>	CW:	<input checked="" type="checkbox"/> CCW: <input checked="" type="checkbox"/> Scan dB: <u>29</u>	Serial No.:	<u>05-5560</u>		<u>15</u>	<u>.7 SHD</u>	<u>64</u>	<u>2.5</u>	<u>1.03</u>
Cal. Blk. Temp.:	<u>74</u> Temp. Tool: <u>1074BGCY</u>	Exam Surface:	<u>OD</u>	Type:	<u>CS Rompus Block</u>		<u>N/A</u>				
Comp. Temp.:	<u>81</u> Temp. Tool: <u>1074BGCY</u>	Surface Condition:	<u>Contour Ground</u>								
Recordable Indication(s):	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (If Yes, Ref. Attached Ultrasonic Indication Report.)										
Results:	<u>NRI</u> <input checked="" type="checkbox"/> <u>RI</u> <input type="checkbox"/> <u>Geom</u> <input type="checkbox"/>										
Percent Of Coverage Obtained > 90%:	<u>No</u>	Reviewed Previous Data:	<u>Yes</u>								

Comments: Used to maximize coverage.

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Currao, Jeffrey T	II-PDI	<i>[Signature]</i>	<u>4/15/2013</u>	Wayne Thomas	<i>[Signature]</i>	<u>4-29-13</u>
Examiner	Level	Signature	Date	Site Review	Signature	Date
N/A	N/A			DEANIS P. FRICKLAND	<i>[Signature]</i>	<u>5-1-2013</u>
Other	Level	Signature	Date	ANII Review	Signature	Date
N/A	N/A				<i>[Signature]</i>	

UT Calibration/Examination

ENCLOSURE B1-1
NAPS Unit 2 4th Interval 1st Period Limited Exams
Page 32 of 86

Serial No. 14-050
Docket No. 50-339
Page 32 of 86

UT Calibration/Examination



Dominion

Site/Unit: NAPS / 2
 Summary No.: NZ.C1.20.010
 Workscope: ISI

Procedure: ER-AA-NDE-UT-702
 Procedure Rev.: 4
 Work Order No.: 59102532605/NDER13-079

Outage No.: N2R22
 Report No.: UT-13-010
 Page: 6 of 10

Code: 2004 Edition Cat./Item: C-A/C1.20 Location: AUX 244
 Drawing No.: 12050-WMKS-SI-TK-2 Description: Head to Shell Weld
 System ID: SI
 Component ID: 12050-WMKS-SI-TK-2 / 2-SI-TK-2 / 1 Size/Length: 2.3" / 185" Thickness/Diameter: 2.6" / 52.75"
 Limitations: Yes Start Time: 10:29 Finish Time: 11:09

Instrument Settings		Search Unit		Cal. Checks			Axial Orientated Search Unit								
Serial No.:	<u>040186603</u>	Serial No.:	<u>00F1DL</u>	Cal. Checks	Time	Date	Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path					
Manufacturer:	<u>Panametrics</u>	Manufacturer:	<u>KBA</u>	Initial Cal.	<u>0612</u>	<u>4/15/2013</u>									
Model:	<u>EPOCH 4</u> Linearly: <u>L-13-011</u>	Size:	<u>0.50"</u> Model: <u>Comp-G</u>	Inter. Cal.	<u>1029</u>	<u>4/15/2013</u>	<u>1/4 T</u>	<u>80</u>	<u>2.0</u>	<u>1.175</u>					
Delay:	<u>8.199</u> Range: <u>5.81</u>	Freq.:	<u>2.25 MHZ</u> Center Freq.: <u>N/A</u>	Inter. Cal.	<u>N/A</u>		<u>1/2 T</u>	<u>40</u>	<u>4.0</u>	<u>2.343</u>					
M'II Cal/Vel:	<u>.1273</u> Pulsar: <u>Square</u>	Exam Angle:	<u>60</u> Squint Angle: <u>N/A</u>	Inter. Cal.	<u>1109</u>	<u>4/15/2013</u>	<u>3/4 T</u>	<u>22</u>	<u>6.0</u>	<u>3.493</u>					
Damping:	<u>400</u> Reject: <u>0%</u>	Measured Angle:	<u>58</u> Mode: <u>Shear</u>	Final Cal.	<u>12:12</u>	<u>4/15/2013</u>	ID Notch	<u>13</u>	<u>8.3</u>	<u>4.781</u>					
Rep. Rate:	<u>Auto</u> Freq.: <u>2.0</u>	Exit Point:	<u>.35"</u> # of Elements: <u>Single</u>	Couplant							<u>5/4 T</u>	<u>11</u>	<u>10.0</u>	<u>N/A</u>	
Filter:	<u>.8-3.0</u> Mode: <u>Fullwave</u>	Config.:	<u>Single</u> Focus: <u>N/A</u>	Cal. Batch:	<u>07220</u>						Circumferential Orientated Search Unit				
Voltage:	<u>High</u> Other: <u>N/A</u>	Shape:	<u>Round</u> Contour: <u>N/A</u>	Type:	<u>SoundSafe</u>						Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path	
Ax. Gain (dB):	<u>21.5</u> Circ. Gain (dB): <u>N/A</u>	Wedge Style:	<u>MSWQC</u>	Mfg.:	<u>SONOTECH</u>										
<u>10</u> Screen Div. = <u>5.81</u> in. of <u>Sound Path</u>		Search Unit Cable		Exam Batch:	<u>07220</u>										
		Type:	<u>RG 174</u> Length: <u>6'</u> No. Conn.: <u>0</u>	Type:	<u>SoundSafe</u>										
		Calibration Block		Mfg.:	<u>SONOTECH</u>										
		Cal. Block No.:	<u>VRA-27</u>	Reference Block											
		Thickness:	<u>2.478"</u> Dia.: <u>0</u>	Serial No.:	<u>05-5560</u>						Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
		Cal. Blk. Temp.:	<u>74</u> Temp. Tool: <u>1074BGY</u>	Type:	<u>CS Rompus Block</u>						<u>21.5</u>	<u>.7 SDH</u>	<u>31</u>	<u>2.4</u>	<u>1.42</u>
		Comp. Temp.:	<u>81</u> Temp. Tool: <u>1074BGY</u>								<u>N/A</u>				
		Recordable Indication(s):	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (If Yes, Ref. Attached Ultrasonic Indication Report.)												
		Results:	NRI <input checked="" type="checkbox"/> RI <input type="checkbox"/> Geom <input type="checkbox"/>												
		Percent OI Coverage Obtained > 90%:	<u>No</u> Reviewed Previous Data: <u>Yes</u>												
Comments: <u>Used to maximize coverage</u>															

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Currao, Jeffrey T	II-PDI	<i>[Signature]</i>	4/15/2013	W.L. Thomas	<i>[Signature]</i>	04/29/13
N/A	N/A			DENNIS P. STRICKLAND	<i>[Signature]</i>	5.1.2013
N/A	N/A			ANII Review	<i>[Signature]</i>	5/2/13

UT Calibration/Examination

ENCLOSURE B4-1

NAPS Unit 2 4" Interval 1st Period Limited Exams
Page 33 of 86

Serial No. 14-050
Docket No. 50-339

ENCLOSURE B1-1

Supplemental Report



Report No.: UT-13-010
 Page: 7 of 10

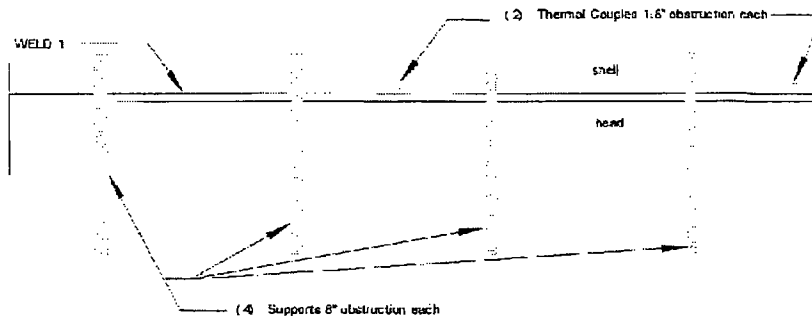
Summary No.: N2.C1.20.010

Examiner: Currao, Jeffrey T *J. Currao* Level: II-PDI Reviewer: W.L. THOMAS *W.L. Thomas* Date: 04.29.13
 Examiner: N/A Level: N/A Site Review: DENNIS P. STRICKLAND *D.P. Strickland* Date: 5.1.2013
 Other: N/A Level: N/A ANII Review: MA *MA* Date: 5/2/13

Comments:

LIMITATION 360° DUE TO WELD PROFILE 0.9" WIDTH

Sketch or Photo:



8 SQ. IN. X 165" TOTAL WELD LENGTH = 1,320 CUBIC IN.
TOTAL REQUIRED EXAMINATION VOLUME = 1,320 CUBIC INCHES

0° IS LIMITED FOR 1.16 SQ. IN. X 165" LENGTH = 191.4 CUBIC IN. DUE TO CONFIGURATION.
TOTAL LIMITATION FOR 0° = 191.4 CUBIC IN. / 1,320 = 0.145 X 100 = 14.5%. EXAMINED 85.5%.

CIRC SCAN EXAMINATION OF WELD METAL = 100%
 4.24 SQ. IN. REQUIRED FOR BASE METAL CIRC SCAN EXAMINATION X 165" LENGTH = 699.6 CUBIC IN.
TOTAL REQUIRED CIRC EXAM BASE METAL = 699.6 CUBIC IN.

NO EXAM FOR 32" DUE TO SUPPORTS X 1.16 SQ. IN = 37.1 CUBIC IN.
37.1 / 699.6 = 0.053 X 100 = 5.3%. TOTAL CIRC SCAN BASE METAL EXAMINED - 94.7%

4.24 SQ. IN. REQUIRED FOR BASE METAL AX SCAN EXAMINATION X 165" LENGTH - 699.6 CUBIC IN.

NO EXAM BASE METAL AX DIRECTION 0.11 SQ. IN. X 129.4" LENGTH DUE TO CONFIGURATION = 14.23 CUBIC IN.
 NO EXAM BASE METAL AX DIR. 0.32 SQ. IN. X 35.6" LENGTH DUE TO SUPPORTS AND THERMAL COUPLES = 11.4 CUBIC IN.
14.23 + 11.4 = 25.63 / 699.6 = 0.037 X 100 = 3.7%. TOTAL EXAMINED BASE METAL AX SCAN = 96.3%

TOTAL REQUIRED WELD METAL = 3.76 SQ. IN X 165" LENGTH = 620.4 CUBIC IN.

ENCLOSURE B1-1

Supplemental Report



Report No.: UT-13-010

Page: 8 of 10

Summary No.: N2.C1.20.010

Examiner:	<u>Currao, Jeffrey T</u>	Level:	<u>II-PDI</u>	Reviewer:	<u>W.L. Thomas</u>	Date:	<u>04/29/13</u>
Examiner:	<u>N/A</u>	Level:	<u>N/A</u>	Site Review:	<u>Dennis P. Strickland</u>	Date:	<u>5-1-2013</u>
Other:	<u>N/A</u>	Level:	<u>N/A</u>	ANII Review:	<u>M.H.</u>	Date:	<u>5/2/13</u>

Comments:

Sketch or Photo:

TOTAL REQUIRED EXAMINATION VOLUME FOR 45/60 DEG WELD METAL SHELL SIDE = 620.4 CUBIC IN.

EXAMINED 2.34 SQ. IN. X 129.4" LENGTH = 302.8 CUBIC IN. DUE TO CONFIGURATION

EXAMINED 1.43 SQ. IN X 35.6" LENGTH = 50.9 CUBIC IN. DUE TO SUPPORTS AND THERMAL COUPLES

TOTAL AREA EXAMINED = 353.7 / 620.4 = 0.57 X 100 = 57% SHELL SIDE 45°.

EXAMINED 2.74 SQ. IN. X 129.4 LENGTH = 354.6 CUBIC IN. DUE TO CONFIGURATION

EXAMINED .89 SQ. IN. X 35.6" LENGTH = 31.7 CUBIC IN. DUE TO SUPPORTS AND THERMAL COUPLES

TOTAL AREA EXAMINED = 386.3 / 620.4 = 0.622 X 100 = 62.2% SHELL SIDE 60°.

EXAMINED 3.6 SQ. IN. X 165" LENGTH = 594 CUBIC IN. DUE TO CONFIGURATION.

TOTAL AREA EXAMINED = 594 / 620.4 = 0.957 X 100 = 95.7% HEAD SIDE 45°.

EXAMINED 3.64 SQ. IN. X 165" LENGTH = 600.6 CUBIC IN. DUE CONFIGURATION.

TOTAL AREA EXAMINED = 600.6 / 620.4 = 0.968 X 100 = 96.8% HEAD SIDE 60°.

ENCLOSURE B1-1

Supplemental Report



Report No.: UT-13-010

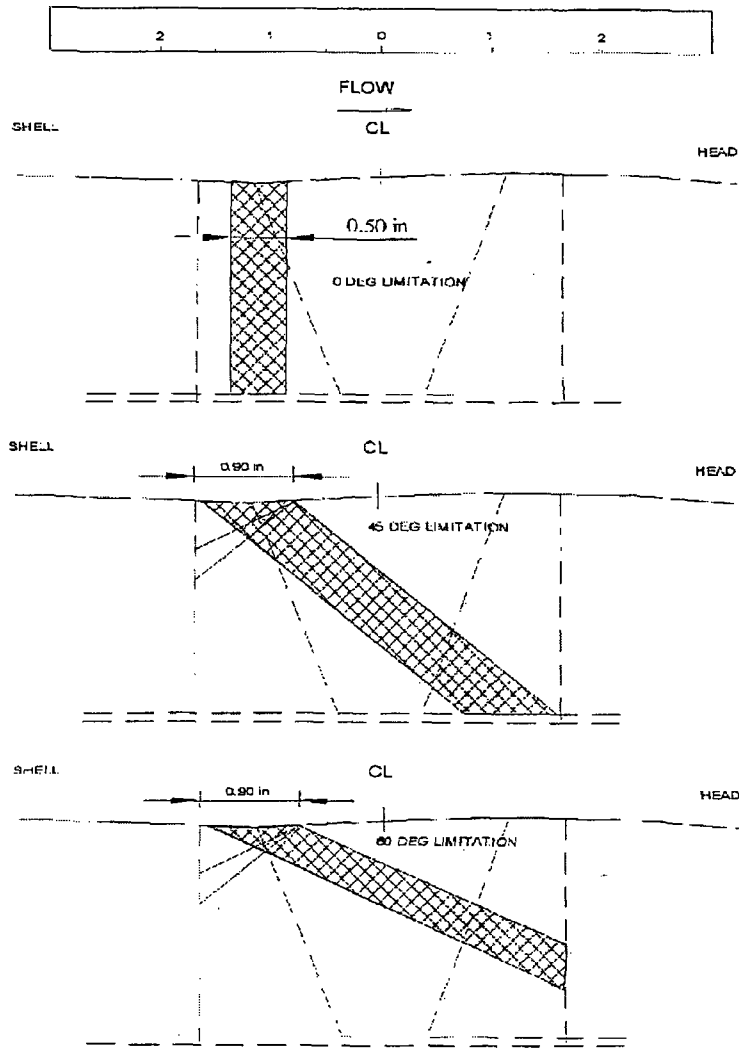
Page: 9 of 10

Summary No.: N2.C1.20.010

Examiner: <u>Currao, Jeffrey T</u>	Level: <u>II-PDI</u>	Reviewer: <u>W.L. Thomas</u>	Date: <u>04/29/13</u>
Examiner: <u>N/A</u>	Level: <u>N/A</u>	Site Review: <u>D. STRICKLAND</u>	Date: <u>5.1.2013</u>
Other: <u>N/A</u>	Level: <u>N/A</u>	ANII Review: <u>M.A.</u>	Date: <u>5/2/13</u>

Comments:

Sketch or Photo:



ENCLOSURE B1-1



Report No: UT-13-010

Summary # N2.C1.20.010

Pg. 10 of 10

Prepared by: W. Thomas *WT*

Date: 4/29/2013

Weld Number 1
 Thickness 2.6" - .175" CLAD

Weld Width 2.3"
 Weld Length 165"

COVERAGE TABLE			
ANGLE	SCAN AREA	DIRECTION	% COVERAGE
0	BASE AND WELD METAL	HEAD/SHELL	85.5
45,60	BASE METAL	CW/CCW	94.7
45,60	BASE METAL	HEAD/SHELL	96.3
45	WELD METAL	HEAD	95.7
45	WELD METAL	SHELL	57
45	WELD METAL	CW/CCW	100
60	WELD METAL	HEAD	96.8
60	WELD METAL	SHELL	62.2
60	WELD METAL	CW/CCW	100

TOTAL 788.2 / 9 = 87.6%

ANI / ANI *MA*
 HSB GS
 Reviewed 5/2/13

Examination Volume Dimensions - Height 2.425" Length 165" Width 3.3"

Coverage Summary				
Required Scans (each has a weighing factor of 100 for complete coverage)				
ANGLE	UpSt-Ax	UpSt-Circ	DnSt-Ax	DnSt-Circ
SEE TABLE				
Code Coverage Total				87.6%
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.

Dominion P. [Signature]
 5-1-2013

THIS PAGE INTENTIONALLY LEFT BLANK

B2. Nozzle-to-Shell Welds

4.B2 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 weld on the boron injection tank is limited to 27.4% 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 B2-1 for coverage details for weld # 3. Examination was performed to the extent possible.

5.B2 BURDEN CAUSED BY COMPLIANCE

Destruction of the component, requiring a completely different design, would be necessary to perform 100% of the Code required examination as written in the 2004 ASME Section XI Code with No 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 accepted as meeting the Code requirements. The limited volumetric examination performed 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 are scheduled to be examined in Category C-B, Item No. C2.21, in the fourth ISI inspection interval on similar nozzle welds. Previous examinations at these locations obtained full coverage. Third interval relief for the examination of weld #3 was granted in request N2-I3-PRT-002, Section B1, for essentially the same examination coverage of 30.5%.

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 B2-1 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 B2-1.

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.



Dominica

Site/Unit: NAPS / 2
Summary No.: N2.C2.21.007
Workscope: ISI

Procedure: ER-AA-NDE-UT-702
Procedure Rev.: 4
Work Order No.: 59102532605/NDER13-079

Outage No.: N2R22
Report No.: UT-13-011
Page: 1 of 5

UT Calibration/Examination

Code: 2004 Edition 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 / 2-SI-TK-2 / 3 Size/Length: 1.25" / 33" Thickness/Diameter: 2.13" / 10"
Limitations: Limited Due to Configuration Start Time: 10:25 Finish Time: 10:39

Instrument Settings
Serial No.: 040186603
Manufacturer: Panametrics
Model: EPOCH 4 Linearity: L-13-011
Delay: 1.377 Range: 3.0"
M'tl Cal/Vel: .2329 Pulsar: Square
Damping: 400Ω Reject: 0%
Rep. Rate: Auto Freq.: 2.0 MHz
Filter: .8 - 3.0 Mode: Fullwave
Voltage: Low Other: N/A

Search Unit
Serial No.: M18207SP
Manufacturer: KBA
Size: 0.75" Model: Gamma
Freq.: 2.25 MHz Center Freq.: N/A
Exam Angle: 0° Squint Angle: N/A
Measured Angle: N/A Mode: Long.
Exit Point: N/A # of Elements: 1
Config.: Single Focus: N/A
Shape: Round Contour: N/A
Wedge Style: N/A

Cal. Checks	Time	Date
Initial Cal.	08:40	4/12/2013
Inter. Cal.	10:25	4/12/2013
Inter. Cal.	N/A	
Inter. Cal.	10:39	4/12/2013
Final Cal.	14:00	4/12/2013

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

Axial Orientated Search Unit			
Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1/4 T	70	1.8	.556"
1/2 T	80	4.0	1.180"
3/4 T	70	6.0	1.805"
BW	100+	8.3	2.493"

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
5.8	.75" SDH	52	2.4	.723"
N/A				

Ax. Gain (dB): 5.8 Circ. Gain (dB): N/A
10 Screen Div. = 3.0 in. of Sound Path

Calibration Block
Cal. Block No.: VRA-27
Thickness: 2.478" Dia.: 0
Cal. Blk. Temp.: 89 Temp. Tool: 1073BGCY
Comp. Temp.: 94 Temp. Tool: 1073BGCY

Search Unit Cable
Type: RG 174 Length: 12' No. Conn.: 0
Scan Coverage
Upstream Downstream Scan dB: 11.8
CW CCW Scan dB: N/A
Exam Surface: OD
Surface Condition: As Welded

Reference Block
Serial No.: 05-5898
Type: CS Rompus Block

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
Currao, Jeffrey T	II-PDI	<i>Jeffrey Currao</i>	4/12/2013	W.L. Thomas	<i>W.L. Thomas</i>	4.22.13
N/A	N/A		4/12/2013	Jeff Godegard	<i>Jeff Godegard</i>	4/23/13
N/A	N/A			ANII Review	<i>M He</i>	4/26/13

ENCLOSURE B2-1

NAPS Unit 2 4th Interval 1st Period Limited Exams
Page 41 of 86

Serial No. 14-050
Docket No. 50-339



UT Calibration/Examination

Site/Unit: NAPS / 2
 Summary No.: N2.C2.21.007
 Workscope: ISI

Procedure: ER-AA-NDE-UT-702
 Procedure Rev.: 4
 Work Order No.: 59102532805/NDER13-079

Outage No.: N2R22
 Report No.: UT-13-011
 Page: 2 of 5

Code: 2004 Edition 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 / 2-SI-TK-2 / 3 Size/Length: 1.25" / 33" Thickness/Diameter: 2.13" / 10"
 Limitations: Limited Due to Configuration Start Time: 10:40 Finish Time: 10:54

Instrument Settings
 Serial No.: D40188803 Manufacturer: Panametrics Model: EPOCH 4 Linearity: L-13-011
 Delay: 12.25 Range: 4.371" MFI Cal/Vel: .1277 Pulser: Square Damping: 400Ω Reject: 0% Rep. Rate: Auto Freq.: 2.0 MHz Filter: .8 - 3.0 Mode: Fullwave Voltage: Max Other: N/A

Search Unit
 Serial No.: 00Y5K7 Manufacturer: KBA Size: .5" X 1.0" Model: Comp-G
 Freq.: 2.25 MHz Center Freq.: N/A Exam Angle: 45° Squint Angle: N/A Measured Angle: 45° Mode: Shear Exit Point: .7" # of Elements: 1 Config.: Single Focus: N/A Shape: Rectangular Contour: N/A Wedge Style: SWS

Cal. Checks	Time	Date
Initial Cal.	08:41	4/12/2013
Inter. Cal.	10:40	4/12/2013
Inter. Cal.	N/A	
Inter. Cal.	10:54	4/12/2013
Final Cal.	14:01	4/12/2013

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

Search Unit Cable
 Type: RG 174 Length: 12' No. Conn.: 0

Calibration Block
 Cal. Block No.: VRA-27 Thickness: 2.478" Dia.: 0 Cal. Blk. Temp.: 89 Temp. Tool: 1073BGCY Comp. Temp.: 94 Temp. Tool: 1073BGCY
Scan Coverage
 Upstream Downstream Scan dB: 37.5
 CW CCW Scan dB: 37.5
 Exam Surface: OD Surface Condition: As Welded

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	80	2.0	.859"	
1/2 T	70	4.0	1.745"	
3/4 T	50	6.0	2.617"	
ID Notch	40	8.0	3.486"	
5/4 T	35	10.0	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
23.5	.75" SDH	52	2.6	1.058"
N/A				

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

Comments: None

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Currao, Jeffrey T	II-PDI	<i>[Signature]</i>	4/12/2013	W.L. Thomas	<i>[Signature]</i>	4-22-13
N/A	N/A		4/12/2013	Jeff Odegard	<i>[Signature]</i>	4/23/13
N/A	N/A			ANII Review	<i>[Signature]</i>	4/26/13

UT Calibration/Examination

ENCLOSURE B2-1

NAPS Unit 2 4th Interval 1st Period Limited Exams
 Page 42 of 86

Serial No.: 14-050
 Docket No.: 50-339



UT Calibration/Examination

Site/Unit: NAPS / 2
 Summary No.: N2.C2.21.007
 Workscope: ISI

Procedure: ER-AA-NDE-UT-702
 Procedure Rev.: 4
 Work Order No.: 59102532605/NDER13-079

Outage No.: N2R22
 Report No.: UT-13-011
 Page: 3 of 5

Code: 2004 Edition Cal./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 / 2-SI-TK-2 / 3 Size/Length: 1.25" / 33" Thickness/Diameter: 2.13" / 10"
 Limitations: Limited Due to Configuration Start Time: 10:55 Finish Time: 11:16

Instrument Settings
 Serial No.: 040186603
 Manufacturer: Panametrics
 Model: EPOCH 4 Linearity: L-13-011
 Delay: 15.55 Range: 5.948"
 M'd Cal/Vel: .1275 Pulser: Square
 Damping: 400Ω Reject: 0%
 Rep. Rate: Auto Freq.: 2.0 MHz
 Filter: .8 - 3.0 Mode: Fullwave
 Voltage: Max Other: N/A

Search Unit
 Serial No.: 00Y5K6
 Manufacturer: KBA
 Size: .5" X 1.0" Model: Comp-G
 Freq.: 2.25 MHz Center Freq.: N/A
 Exam Angle: 60° Squint Angle: N/A
 Measured Angle: 60° Mode: Shear
 Exit Point: .65" # of Elements: 1
 Config.: Single Focus: N/A
 Shape: Rectangular Contour: N/A
 Wedge Style: SWS

Cal. Checks	Time	Date
Initial Cal.	08:42	4/12/2013
Inter. Cal.	10:55	4/12/2013
Inter. Cal.	N/A	
Inter. Cal.	11:16	4/12/2013
Final Cal.	14:02	4/12/2013

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

Ax. Gain (dB): 27.2 Circ. Gain (dB): N/A
10 Screen Div. = 5.948 in. of Sound Path Type: RG 174 Length: 12' No. Conn.: 0

Calibration Block
 Cal. Block No.: VRA-27
 Thickness: 2.478" Dia.: 0
 Cal. Blk. Temp.: 89 Temp. Tool: 1074BGCY
 Comp. Temp.: 94 Temp. Tool: 1074BGCY

Scan Coverage
 Upstream Downstream Scan dB: 41.2
 CW CCW Scan dB: 41.2
 Exam Surface: OD
 Surface Condition: As Welded

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	80	2.0	1.152"
1/2 T	45	4.0	2.360"
3/4 T	27	6.0	3.546"
ID Notch	21	8.0	4.755"
5/4 T	15	10.0	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
27.2	.75" SDH	37	2.5
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
Currao, Jeffrey T	II, RDI	<i>[Signature]</i>	4/12/2013	W.L. Thomas	<i>[Signature]</i>	4/22/13
N/A	N/A		4/12/2013	Jeffery T. Currao	<i>[Signature]</i>	4/23/13
N/A	N/A			ANII Review	<i>[Signature]</i>	4/26/13

UT Calibration/Examination

ENCLOSURE B2-1

NAPS Unit 2 4th Interval 1st Period Limited Exams
 Page 43 of 86

Serial No.: 14-050
 Docket No.: 50-339
 Page 43 of 86

ENCLOSURE B2-1

Supplemental Report



Report No.: UT-13-011

Page: 4 of 5

Summary No.: N2.C2.21.007

Examiner: Currao, Jeffrey T *JTC* Level: II-PDI

Reviewer: W.L. Thomas *WLT* Date: 4-22-13

Examiner: N/A Level: N/A

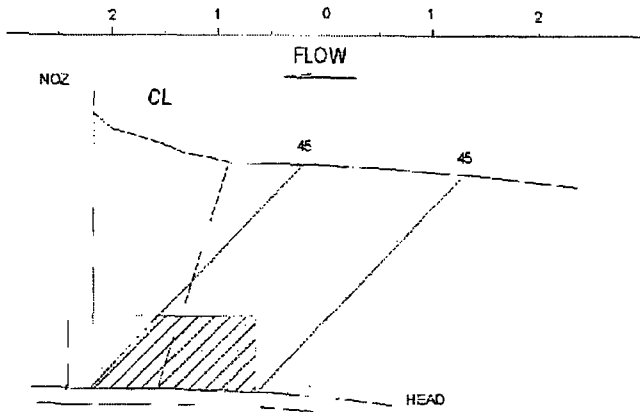
Site Review: Jeff Odgaard Date: 4/23/13

Other: N/A Level: N/A

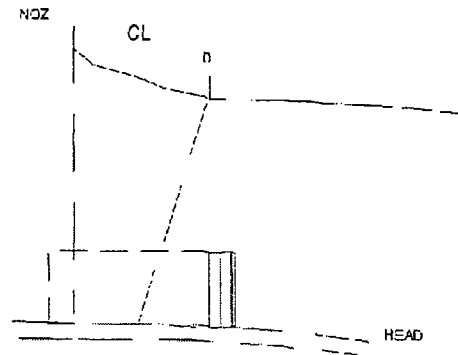
ANII Review: M.H.C. Date: 4/26/13

Comments:

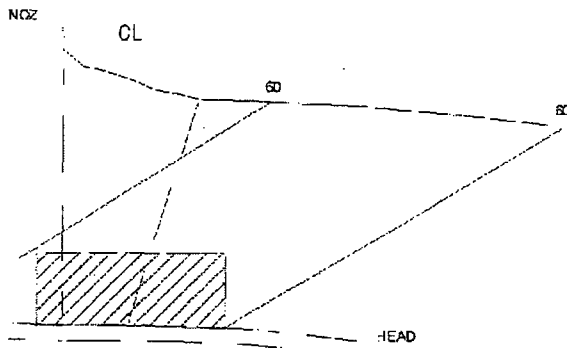
Sketch or Photo:



0.65' HT X 1.75' WIDTH = 1.16 SQ. IN. TOTAL REQUIRED VOLUME
 EXAMINED 0.33 SQ. IN. US SIDE 45 AX
 $0.33 / 1.16 = 0.28 \times 100 = 28\%$ LIMITATION. EXAMINED 72% US SIDE 45 AX



EXAMINED 0.17 SQ. IN. 0 DEG.
 $0.17 / 1.16 = 0.15 \times 100 = 15\%$



EXAMINED 00% OF THE REQUIRED VOLUME US SIDE AX DIRECTION

ENCLOSURE B2-1



Report No: UT-13-011
Summary # N2.C2.21.007
Pg. 5 of 5
Prepared by: W. Thomas *[Signature]*
Date: 4/22/2013

Weld Number 3 Weld Width 1.25"
Thickness 2.13" - 0.15" (CLAD) Weld Length 33"

ANGLE	SCAN DIRECTION	SCAN %
0°	AXIAL	15
45°	AXIAL	72
45°	AXIAL	0
45°	CIRC	15
45°	CIRC	15
60°	AXIAL	100
60°	AXIAL	0
60°	CIRC	15
60°	CIRC	15

TOTAL 247
247 / 9 = 27.4%

ANI / ANII *[Signature]*
HSB GS
Reviewed 4/26/13

Examination Volume Dimensions - Height 0.66" Length 33" Width 1.75"

Coverage Summary				
Required Scans (each has a weighing factor of 100 for complete coverage)				
ANGLE	UpSt-Ax	UpSt-Circ	DnSt-Ax	DnSt-Circ
SEE ABOVE				
Code Coverage Total				27.4%
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.

ENCLOSURE B2-1

Magnetic Particle Examination



Dominion

Site/Unit: NAPS / 2 Procedure: ER-AA-NDE-MT-200 Outage No.: N2R22
 Summary No.: N2.C2.21.007 Procedure Rev.: 4 Report No.: MT-13-001
 Workscope: ISI Work Order No.: 59102532605/NDER13-079 Page: 1 of 1

Code: 2004 Edition 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 / 2-SI-TK-2 / 3 Mat./Thickness: CS / 2.13"

Limitations: None

Light Meter Mfg.: AEMC Instruments Serial No.: 1044HMCY Illumination: 227 fc

Temp. Tool Mfg.: AEMC Instruments Serial No.: 1066BGCY Surface Temp.: 101 °F

Resolution: Not Used

Lift Block Serial No.: MT-34 Surface Condition: As Welded

Lo/Wo Location: N/A Field Orientation: Perpendicular & Parallel

Magnetic Particle Material
 Brand: MAGNAFLUX Wet Dry Mixed: Yes Applied By: Dusting
 Type: 8A Red Visible No Spraying
 Batch No.: 10D044 Fluorescent With: _____ Flooding

Equipment: PARKER B310 Serial No.: 3228

Head Shot N/A Amperes Fixed Spacing AC DC

Adj. Spacing 4 - 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
N/A						

Comments:
None

Results: NRI RI Eval

Percent Of Coverage Obtained > 90%: 100% Reviewed Previous Data: Yes Exam Time: 1515

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Wertman, Justin	II	<i>[Signature]</i>	4/11/2013	W.L. Thomas	<i>[Signature]</i>	4.22.13
Examiner	Level	Signature	Date	Site Review	Signature	Date
Hacker, Jonathon	II	<i>[Signature]</i>	4/11/2013	Jeff Odegaard	<i>[Signature]</i>	4/23/13
Other	Level	Signature	Date	ANII Review	Signature	Date
N/A	N/A	<i>[Signature]</i>			<i>[Signature]</i>	4/23/13

R1. Risk-Informed Piping Welds Subject to Thermal Fatigue

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 and configuration for these components.

Weld	Line #	Scan Coverage %	Enclosure	Exam ^{Note 1}	Exam Date	Page	Angle	Mode	Frequency
2B	6"-RC-420	75% + 4% BE	R1-1	Up/CW/CCW	9/26/2011	50	45°	Shear	2.25MHZ
				Up/CW/CCW		51	60°	Shear	2.25MHZ
				Dwn		52	60°	Longitudinal	2.0MHZ
7	3"-RC-615	50% + 9% BE	R1-2	Up/CW/CCW	4/13/2013	55	45°	Shear	5.0MHZ
				Up/CW/CCW		56	60°	Shear	5.0MHZ
				Up		57	70°	Shear	5.0MHZ
				Down		58	70°	Shear	2.25MHZ
NOTES:									
1	Up	Axial scan on the upstream side of weld							
	Dwn	Axial scan on the downstream side of weld							
	CW	Circumferential scan in the clock-wise direction							
	CCW	Circumferential scan in the counter clock-wise direction							

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. Also included are scan plots for each of the examinations showing the piping configuration and percent coverage for each individual scan. No recordable indications were identified for any of these examinations.

Weld 2B (6"-RC-420), Reactor Coolant System Class 1, was a single-sided examination due to the nozzle to pipe configuration, limiting upstream scans. The weld is at the nozzle from Low Head Safety Injection into the Reactor Coolant cold leg (27 ½"-RC-409). Additional “Best Effort” (non-Code) scan with a 60 degree Longitudinal search unit obtained additional 4% total coverage of the downstream side of the weld. Additionally, liquid penetrant examination (LP) was performed with no identified indications. 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 minimum tensile strength.

Weld 7 (3"-RC-615), Reactor Coolant System Class 1, was a single-sided examination due to the pipe to valve configuration, limiting upstream scans. The weld is on the Reactor Coolant drain line off the crossover leg at valve 2-RC-HCV-2557A. Additional “Best Effort” (non-Code) scan with a 70 degree shear search unit obtained additional 9%

total coverage of the downstream side of the weld. Weld 7 in Line# 3"-RC-615, 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 minimum tensile strength.

The NAPS 2 Risk-Informed ISI Program is based on ASME Code Case N-716 as identified in approved request N2-I4-RI-001. These limitations have been evaluated as acceptable, with no impact on risk analysis, and no further actions necessary to provide reasonable assurance of pressure boundary leak tightness. Both of these welds are included in the Class 1 pressure boundary, receiving visual examinations at the beginning of each refueling outage as part of the Boric Acid Corrosion Control Program and VT-2 visual examinations at the end of the refueling outage once operating pressure and temperature is achieved before unit startup.

Both of these weld examinations were single-sided, but additional non-Code coverage was obtained (Best Effort Coverage) on the critical inside surface volume of both the weld and heat-affected area. These are additional measures that provide reasonable assurance that these welds are structurally sound. An effective examination program must include selections from different piping configurations, as well as selections from piping configurations categorized with different degradation mechanisms.

5.R1 BURDEN CAUSED BY COMPLIANCE

The physical configuration of these welds, nozzle to pipe and pipe to valve, confines inspection capabilities. Detailed sketches of the limitations and inspection areas achieved have been provided. No further actions can enable better examination coverage without destroying the component.

6.R1 PROPOSED ALTERNATIVE AND BASIS

These welds were selected as they are determined High Safety Significant with possible active degradation mechanisms. Selections were made based on plant specific operating experience or history of examination, weld repairs, random selection across different pipe sizes and configurations, and radiation concerns. These welds were selected, in part, because previous Section XI examination history exists. Comparison of examination results over time is critical to detect service induced degradation. Inspection of these particular welds are considered the best choice for meaningful examination results.

It is proposed that the examinations already completed at the reduced coverage be accepted for meeting the Code requirements. 100% of the pipe to valve welds were volumetrically examined from one side. No indications were discovered. The limited volumetric examinations performed 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. 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.

The purpose of the inservice inspection (ISI) program is to assure the structural and pressure-retaining integrity of safety-related nuclear power plant components in

accordance with the rules of the ASME Section XI Code and the requirements of 10 CFR 50.55a. Although Dominion could select only weld locations where greater than 90% examination coverage is possible (when available based on selection criteria), meeting the purpose of the Code requires selecting a mix of not only piping-to-piping welds (where essentially 100% coverage is more likely), but also piping-to-valve welds, piping-to-pump welds, piping-to-vessel welds, socket welds, nozzle-to-pipe welds, etc. The ASME Code allows only 50% Code coverage for single-sided examinations, and in cases other than most piping-to-piping welds, the majority of weld examinations are considered single-sided examinations.

UT Calibration/Examination



Site/Unit: NAPS / 2 Procedure: ER-AA-NDE-UT-802 Outage No.: N2R21
 Summary No.: N2.R1.11.267 Procedure Rev.: 1 Report No.: UT-11-046
 Workscope: ISI Work Order No.: 59102346783 Page: 1 of 4

Code: 2004 Edition 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: 1.10" / 21.0" Thickness/Diameter: 0.718" / 6.0"
 Limitations: Single side exam due to configuration. Start Time: 1350 Finish Time: 1410

Instrument Settings		Search Unit		Cal. Checks			Axial Orientated Search Unit					
Serial No.:	<u>040182503</u>	Serial No.:	<u>00VJBX</u>	Cal. Checks	Time	Date	Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path		
Manufacturer:	<u>Panametrics</u>	Manufacturer:	<u>KBA</u>	Initial Cal.	<u>0710</u>	<u>09/26/2011</u>	1.0" Notch	<u>80%</u>	<u>8.0</u>	<u>1.440"</u>		
Model:	<u>EPOCH 4</u> Linearity: <u>L-11-015</u>	Size:	<u>0.375"</u> Model: <u>Comp-G</u>	Inter. Cal.	<u>1350</u>	<u>09/26/2011</u>	N/A					
Delay:	<u>5.605 µs</u>	Range:	<u>1.800"</u>	Inter. Cal.	<u>1410</u>	<u>09/26/2011</u>						
M'tl Cal/Vel:	<u>0.1234 In/µs</u>	Freq.:	<u>2.25 Mhz.</u> Center Freq.: <u>N/A</u>	Inter. Cal.	<u>N/A</u>							
Damping:	<u>400 Ohms</u>	Exam Angle:	<u>45°</u> Squint Angle: <u>N/A</u>	Final Cal.	<u>1550</u>	<u>09/26/2011</u>						
Rep. Rate:	<u>Auto.</u>	Measured Angle:	<u>46°</u> Mode: <u>Shear</u>	Couplant			Circumferential Orientated Search Unit					
Filter:	<u>0.8 - 3.0</u>	Exit Point:	<u>0.25"</u> # of Elements: <u>1</u>	Cal. Batch:	<u>07220</u>		Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path		
Voltage:	<u>Max.</u>	Config.:	<u>Single</u> Focus: <u>N/A</u>	Type:	<u>SoundSafe</u>		N/A					
		Shape:	<u>Round</u> Contour: <u>N/A</u>	Mfg.:	<u>SONOTECH</u>							
		Wedge Style:	<u>MSWQC</u>	Exam Batch:	<u>07220</u>							
Ax. Gain (dB):	<u>8.2</u> Circ. Gain (dB): <u>N/A</u>	Search Unit Cable		Type:	<u>SoundSafe</u>							
<u>10</u> Screen Div. = <u>1.800</u> In. of <u>Sound Path</u>		Type:	<u>RG 174</u> Length: <u>6'</u> No. Conn.: <u>0</u>	Mfg.:	<u>SONOTECH</u>							
Calibration Block		Scan Coverage		Reference Block			Reference/Simulator Block					
Cal. Block No.:	<u>10876</u>	Upstream <input checked="" type="checkbox"/>	Downstream <input type="checkbox"/>	Scan dB: <u>20.2</u>	Serial No.:	<u>05-8258</u>		Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
Thickness:	<u>2.25"</u> Dia.: <u>Flat</u>	CW <input checked="" type="checkbox"/>	CCW <input checked="" type="checkbox"/>	Scan dB: <u>26.2</u>	Type:	<u>SS Rompus Block</u>		<u>8.2</u>	<u>FSDH</u>	<u>20%</u>	<u>5.9</u>	<u>1.060"</u>
Cal. Blk. Temp.:	<u>71°</u> Temp. Tool: <u>07</u>	Exam Surface:	<u>OD</u>					N/A				
Comp. Temp.:	<u>82°</u> Temp. Tool: <u>07</u>	Surface Condition:	<u>Contour Ground</u>									
Recordable Indication(s):	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	(If Yes, Ref. Attached Ultrasonic Indication Report.)										
Results:	Accept <input checked="" type="checkbox"/> Reject <input type="checkbox"/> Geom <input type="checkbox"/>	Comments: <u>Circ. scans performed on Upst. and Dnst. sides of the weld. For T & C see previous data report # UT-08-030.</u>										
Percent Of Coverage Obtained > 80%:	No	Reviewed Previous Data:	Yes									

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Knott, Brian D	Level II-PDI	<i>Brian D. Knott</i>	09/26/2011	W.L. Thomas	<i>W.L. Thomas</i>	10-12-11
Zollner, Brian D	Level II-PDI	<i>Brian D. Zollner</i>	09/26/2011	Jeff Odegaard	<i>Jeff Odegaard</i>	10/13/11
Other	Level N/A			ANII Review	<i>M. Mc</i>	10/16/11

UT Calibration/Examination



Site/Unit: NAPS / 2
 Summary No.: N2.R1.11.267
 Workscope: ISI

Procedure: ER-AA-NDE-UT-802
 Procedure Rev.: 1
 Work Order No.: 59102346793

Outage No.: N2R21
 Report No.: UT-11-046
 Page: 2 of 4

Code: 2004 Edition 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: 1.10" / 21.0" Thickness/Diameter: 0.718" / 6.0"

Limitations: Single side exam due to configuration. Start Time: 1411 Finish Time: 1437

Instrument Settings		Search Unit		Cal. Checks			Axial Orientated Search Unit				
Serial No.:	<u>040182503</u>	Serial No.:	<u>01CLN0</u>	Cal. Checks	Time	Date	Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path	
Manufacturer:	<u>Panametrics</u>	Manufacturer:	<u>KBA</u>	Initial Cal.	<u>0726</u>	<u>09/26/2011</u>	1.0" Notch	<u>80%</u>	<u>8.0</u>	<u>1.743"</u>	
Model:	<u>EPOCH 4</u> Linearity: <u>L-11-015</u>	Size:	<u>0.375"</u> Model: <u>Comp-G</u>	Inter. Cal.	<u>1411</u>	<u>09/26/2011</u>	N/A				
Delay:	<u>7.195 µs</u> Range: <u>2.180"</u>	Freq.:	<u>2.25 Mhz.</u> Center Freq.: <u>N/A</u>	Inter. Cal.	<u>1437</u>	<u>09/26/2011</u>					
M'll Cal/Vel:	<u>0.1265 In/µs</u> Pulsar: <u>Square</u>	Exam Angle:	<u>60°</u> Squint Angle: <u>N/A</u>	Inter. Cal.	<u>N/A</u>						
Damping:	<u>400 Ohms</u> Reject: <u>0%</u>	Measured Angle:	<u>59°</u> Mode: <u>Shear</u>	Final Cal.	<u>1558</u>	<u>09/26/2011</u>					
Rep. Rate:	<u>Auto.</u> Freq.: <u>2.0 Mhz.</u>	Exit Point:	<u>0.25"</u> # of Elements: <u>1</u>	Couplant			Circumferential Orientated Search Unit				
Filter:	<u>0.8 - 3.0</u> Mode: <u>Fullwave</u>	Config.:	<u>Single</u> Focus: <u>N/A</u>	Cal. Batch:	<u>07220</u>		Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path	
Voltage:	<u>Max.</u> Other: <u>N/A</u>	Shape:	<u>Round</u> Contour: <u>N/A</u>	Type:	<u>SoundSafe</u>		N/A				
Ax. Gain (dB):	<u>24.0</u> Circ. Gain (dB): <u>N/A</u>	Wedge Style:	<u>MSWQC</u>	Mfg.:	<u>SONOTECH</u>						
10. Screen Div. =	<u>2.180</u> in. of <u>Sound Path</u>	Search Unit Cable		Exam Batch:	<u>07220</u>						
Calibration Block		Type:	<u>RG 174</u> Length: <u>6'</u> No. Conn.: <u>0</u>	Type:	<u>SoundSafe</u>						
Cal. Block No.:	<u>10876</u>	Scan Coverage		Mfg.:	<u>SONOTECH</u>						
Thickness:	<u>2.25"</u> Dia.: <u>Flat</u>	Upstream <input checked="" type="checkbox"/> Downstream <input type="checkbox"/> Scan dB: <u>36.0</u>		Reference Block			Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
Cal. Blk. Temp.:	<u>71°</u> Temp. Tool: <u>07</u>	CW <input checked="" type="checkbox"/> CCW <input checked="" type="checkbox"/> Scan dB: <u>42.0</u>		Serial No.:	<u>05-8258</u>		24.0	FSDH	45%	6.7	1.458"
Comp. Temp.:	<u>82°</u> Temp. Tool: <u>07</u>	Exam Surface: <u>OD</u>		Type:	<u>SS Rompus Block</u>		N/A				
Recordable Indication(s):	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (If Yes, Ref. Attached Ultrasonic Indication Report.)	Surface Condition: <u>Contour Ground</u>									
Results:	Accept <input checked="" type="checkbox"/> Reject <input type="checkbox"/> Geom <input type="checkbox"/>										
Percent Of Coverage Obtained > 90%:	<u>No</u>	Reviewed Previous Data:	<u>Yes</u>	Comments: Effective coverage using the 60° search unit has been verified by the presence of the weld root response during the required scans. Circ. Scans performed Upst.							

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Knott, Brian D	II-PDI	<i>Brian D. Knott</i>	09/26/2011	W. L. Thomas	<i>W. L. Thomas</i>	10-12-11
Examiner	Level	Signature	Date	Site Review	Signature	Date
Zollner, Brian D	II-RDI	<i>Brian D. Zollner</i>	09/26/2011	Jeff Odegaard	<i>Jeff Odegaard</i>	10/13/11
Other	Level	Signature	Date	ANII Review	Signature	Date
N/A	N/A				<i>[Signature]</i>	10/16/11

UT Calibration/Examination

ENCLOSURE R1-1

NAPS Unit 2 4th Interval 1st Period Limited Exams Page 51 of 86

Serial No. 14-050
Docket No. 50-339

UT Calibration/Examination



Site/Unit: NAPS / 2 Procedure: ER-AA-NDE-UT-802 Outage No.: N2R21
 Summary No.: N2.R1.11.267 Procedure Rev.: 1 Report No.: UT-11-048
 Workscope: ISI Work Order No.: 59102346793 Page: 3 of 4

Code: 2004 Edition 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: 1.10" / 21.0" Thickness/Diameter: 0.718" / 6.0"
 Limitations: Single side exam due to configuration. Start Time: 1439 Finish Time: 1444

Instrument Settings		Search Unit		Cal. Checks			Axial Orientated Search Unit				
Serial No.:	<u>040182503</u>	Serial No.:	<u>08-108</u>	Cal. Checks	Time	Date	Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path	
Manufacturer:	<u>Panametrics</u>	Manufacturer:	<u>RTD</u>	Initial Cal.	<u>0759</u>	<u>09/26/2011</u>	<u>1.0" Notch</u>	<u>80%</u>	<u>8.0</u>	<u>1.935"</u>	
Model:	<u>EPOCH 4</u> Linearity: <u>L-11-015</u>	Size:	<u>2(8X14)</u> Model: <u>TRL2-AUST</u>	Inter. Cal.	<u>1438</u>	<u>09/26/2011</u>	<u>N/A</u>				
Delay:	<u>8.935 µs</u> Range: <u>2.420"</u>	Freq.:	<u>2.0 Mhz.</u> Center Freq.: <u>N/A</u>	Inter. Cal.	<u>1445</u>	<u>09/26/2011</u>					
M'U Cal/Vol:	<u>0.2323 In/µs</u> Pulsar: <u>Square</u>	Exam Angle:	<u>60°</u> Squint Angle: <u>3°</u>	Inter. Cal.	<u>N/A</u>						
Damping:	<u>400 Ohms</u> Reject: <u>0%</u>	Measured Angle:	<u>59°</u> Mode: <u>Longitudinal</u>	Final Cal.	<u>1606</u>	<u>09/26/2011</u>					
Rep. Rate:	<u>Auto.</u> Freq.:	Exit Point:	<u>0.35"</u> # of Elements: <u>2</u>	Couplant							
Filter:	<u>0.8 - 3.0 Mhz</u> Mode: <u>Fullwave</u>	Config.:	<u>D-SBS</u> Focus: <u>FD.0.6"</u>	Cal. Batch:	<u>07220</u>						
Voltage:	<u>Max.</u> Other: <u>N/A</u>	Shape:	<u>Retangular</u> Contour: <u>Flat</u>	Type:	<u>SoundSafe</u>						
Ax. Gain (dB):	<u>42.3</u> Circ. Gain (dB): <u>N/A</u>	Wedge Style:	<u>Integral</u>	Mfg.:	<u>SONOTECH</u>						
<u>10</u> Screen Div. = <u>2.420</u> in. of <u>Sound Path</u>	Type:	<u>RG 174</u> Length: <u>6'</u> No. Conn.: <u>0</u>	Search Unit Cable	Exam Batch:	<u>07220</u>						
Calibration Block				Type:	<u>SoundSafe</u>						
Cal. Block No.:	<u>10876</u>	Scan Coverage		Mfg.:	<u>SONOTECH</u>						
Thickness:	<u>2.25"</u> Dia.: <u>Flat</u>	Upstream <input type="checkbox"/> Downstream <input checked="" type="checkbox"/>	Scan dB: <u>42.3</u>	Reference Block							
Cal. Blk. Temp.:	<u>71°</u> Temp. Tool: <u>07</u>	CW <input type="checkbox"/> CCW <input type="checkbox"/>	Scan dB: <u>N/A</u>	Serial No.:	<u>05-8258</u>						
Comp. Temp.:	<u>82°</u> Temp. Tool: <u>07</u>	Exam Surface:	<u>OD</u>	Type:	<u>SS Rompius Block</u>						
Recordable Indication(s):	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Surface Condition:	<u>Contour Ground</u>	Reference/Simulator Block							
Results: Accept <input checked="" type="checkbox"/> Reject <input type="checkbox"/> Geom <input type="checkbox"/>	(If Yes, Ref. Attached Ultrasonic Indication Report.)			Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path			
Percent Of Coverage Obtained > 90%:	<u>No</u>	Reviewed Previous Data:	<u>Yes</u>	<u>37.9</u>	<u>FSDH</u>	<u>80%</u>	<u>6.0</u>	<u>1.456"</u>			
				N/A							
				Comments: Utilized for coverage on nozzle side of weld.							

ENCLOSURE R1-1

NAPS Unit 2 4th Interval 1st Period Limited Exams Page 52 of 86

Serial No. 14-050
Docket No. 50-339

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Knott, Brian D.	II-PDI	<i>Brian D. Knott</i>	09/26/2011	W.L. Thomas	<i>W.L. Thomas</i>	10/12/11
Zollner, Brian D.	II-PDI	<i>Brian D. Zollner</i>	09/26/2011	Jeff Olegard	<i>Jeff Olegard</i>	10/13/11
Other	N/A			ANII Review	<i>[Signature]</i>	10/16/11

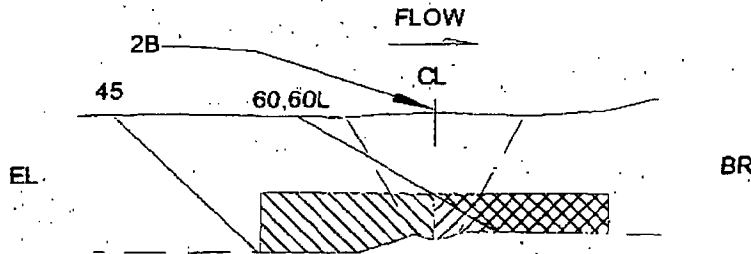
ENCLOSURE R1-1





Dominion


Report No: UT-11-046
 Summary # N2.R1.11.267
 Pg. 4 of 4
 Prepared By: W.L. Thomas
 Date: 10/12/2011

Weld Number	2B
Thickness	.724"
Weld Length	21"
Weld Width	1.1"



 1.05" WIDTH X .241" HT = .25 SQ. IN. = REQUIRED VOLUME US SIDE
 EXAMINED 100% OF THE REQUIRED VOLUME US SIDE.

 EXAMINED .04 SQ IN. OF THE REQUIRED .25 SQ. IN. DS SIDE AX DIR BEST EFFORT.
 $.04 / .25 = 0.16 \times 100 = 16\%$. BEST EFFORT BRANCH SIDE AX DIRECTION.

 NO EXAM .21 SQ IN. OR 84% AX DIRECTION DS SIDE
 CIRC EXAM DS SIDE WAS NOT LIMITED.

ANII  Date 10/16/11
 Initial Final
 HSB-CT

Examination Volume Dimensions - Height 0.241 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
45/60	100%	100%		100%
60L			*16%	
Code Coverage Total				75%
* Best Effort Coverage (Max 25%) Total				4%

Notes:

- Code Coverage refers to the maximum percentage of the required examination volume that is effectively examined with the qualified examination procedure.
- 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 R1-1

Liquid Penetrant Examination



Site/Unit: NAPS / 2 Procedure: ER-AA-NDE-PT-300 Outage No.: N2R21
 Summary No.: N2.R1.11.267 Procedure Rev.: 6 Report No.: PT-11-029
 Workscope: OWN Work Order No.: 59102358434 Page: 1 of 1
 Code: 2004 Edition 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: 3/4" / 20.8"
 Limitations: None

Light Meter Mfg.: AEMC Instruments Serial No.: AEMC-4 Illumination: 144 fc
 Temp. Tool Mfg.: AEMC Instruments Serial No.: 1071BGCY Surface Temp.: 82 °F
 Comparator Block Temp.: Side A: N/A °F Side B: N/A °F Resolution: Not Used
 Lo/Wo Location: N/A Surface Condition: Contour Ground

	Cleaner	Penetrant	Remover	Developer
Brand	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX
Type	SKC-S	SKL-SP1	SKC-S	SKD-S2
Batch No.	09L08K	09J07K	09L08K	06C05K
Time	Evap. 3 Minutes	Dwell 10 Minutes	Evap. 0 Minutes	Develop 10 Minutes
Time Exam Started: 0251		Time Exam Completed: 0333		

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

Comments:
 Flashlight used for illumination.

Results: Accept Reject Eval NDER 11-170
 Percent Of Coverage Obtained > 90%: Yes Reviewed Previous Data: N/A

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Mix, Bridget	II	<i>Bridget Mix</i>	9/20/2011	N/A		
Examiner	Level	Signature	Date	Site Review	Signature	Date
Porter III, Robert E.	II	<i>Robert Porter</i>	9/20/2011	DEWIS P. STRICKLAND	<i>Devis Strickland</i>	9/20/11
Other	Level	Signature	Date	ANII Review	Signature	Date
N/A	N/A			N/A		

UT Calibration/Examination



Site/Unit: NAPS / 2
 Summary No.: N2.R1.11.437
 Workscope: ISI

Procedure: ER-AA-NDE-UT-802
 Procedure Rev.: 2
 Work Order No.: _____

Outage No.: N2R22
 Report No.: UT-13-016
 Page: 1 of 6

Code: 2004 Edition Cat./Item: R-AR1.11 Location: A loop
 Drawing No.: 12050-WMKS-0103CB Description: Pipe-to-valve
 System ID: RC
 Component ID: 12050-WMKS-0103CB / 3-RC-615 / 7 Size/Length: 0.90" / 11.0" Thickness/Diameter: 0.438" / 3.0"
 Limitations: Single sided exam due to downstream valve 2-RC-HCV-2557A. Start Time: 0132 Finish Time: 0145

Instrument Settings
 Serial No.: 01XK03
 Manufacturer: Krautkramer
 Model: USN 60 SW Linearity: L-13-009
 Delay: 3.9644 µs Range: 1.250"
 M'tl Cal/Vel: 0.1241 in/µs Pulsar Type: Square
 Damping: 500 Ohms Reject: 0%
 PRF: Auto High SU Freq.: 5.0 MHZ
 Frequency: 5.0 MHz Rectify: Fullwave
 Voltage: 450 Pulse Width: 100

Search Unit
 Serial No.: 01CP6Y
 Manufacturer: KBA
 Model: Comp-G
 Size: 0.25"
 Freq.: 5.0 MHZ Center Freq.: N/A
 Exam Angle: 45° Squint Angle: N/A
 Measured Angle: 44° Mode: Shear
 Exit Point: 0.15" # of Elements: 1
 Config.: Single Focus: N/A
 Shape: Round Contour: N/A
 Wedge Style: MSWQC

Cal. Checks	Time	Date
Initial Cal.	2050	4/12/2013
Inter. Cal.	0132	4/13/2013
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	0306	4/13/2013

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

Search Unit Cable
 Type: RG-174 Length: 8.0' No. Conn.: 0
Scan Coverage
 Upstream Downstream Scan dB: 36.5
 CW CCW Scan dB: 36.5
 Exam Surface: OD
 Surface Condition: Ground

Reference Block
 Serial No.: 05-6533
 Type: SS Rompus Block

Axial Orientated Search Unit				
Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path	
0.5" Notch	80%	5.8	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
18.5	SDH	70%	8.4	1.046"

Ax. Gain (dB): 18.5 Circ. Gain (dB): N/A
10 Screen Div. = 1.250 in. of Sound Path
Calibration Block
 Cal. Block No. 10873
 Thickness 2.25" Dia.: 0
 Cal. Blk. Temp. 71° Temp. Tool: 07
 Comp. Temp. 87° 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: N/A

Comments: None

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Zollner, Brian D	II-PDI	<i>Brian Zollner</i>	4/13/2013	W.L. Thomas	<i>W.L. Thomas</i>	4-22-13
N/A	N/A			Site Review	<i>Jeff Odgaard</i>	4/29/13
N/A	N/A			ANII Review	<i>M.H.</i>	4/30/13

UT Calibration/Examination

ENCLOSURE R1-2

NAPS Unit 2 4th Interval 1st Period Limited Exams
 Page 55 of 86

Serial No. 14-050
 Docket No. 50-339



UT Calibration/Examination

Site/Unit: NAPS / 2 Procedure: ER-AA-NDE-UT-802 Outage No.: N2R22
 Summary No.: N2.R1.11.437 Procedure Rev.: 2 Report No.: UT-13-018
 Workscope: ISI Work Order No.: _____ Page: 2 of 6

Code: 2004 Edition Cat./Item: R-A/R1.11 Location: A loop
 Drawing No.: 12050-WMKS-0103CB Description: Pipe-to-valve
 System ID: RC
 Component ID: 12050-WMKS-0103CB / 3-RC-615 / 7 Size/Length: 0.90" / 11.0" Thickness/Diameter: 0.438" / 3.0"
 Limitations: Single sided exam due to downstream valve 2-RC-HCV-2557A. Start Time: 0146 Finish Time: 0155

Instrument Settings		Search Unit		Cal. Checks			Axial Orientated Search Unit				
Serial No.:	<u>01XK03</u>	Serial No.:	<u>01CP6X</u>	Cal. Checks	Time	Date	Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path	
Manufacturer:	<u>Krautkramer</u>	Manufacturer:	<u>KBA</u>	Initial Cal.	<u>2112</u>	<u>4/12/2013</u>	0.5" Notch	<u>80%</u>	<u>5.4</u>	<u>0.940"</u>	
Model:	<u>USN 80 SW</u> Linearity: <u>L-13-009</u>	Size:	<u>0.25"</u> Model: <u>Comp-G</u>	Inter. Cal.	<u>0146</u>	<u>4/13/2013</u>					
Delay:	<u>5.2169 µs</u> Range: <u>1.750"</u>	Freq.:	<u>5.0 MHZ</u> Center Freq.: <u>N/A</u>	Inter. Cal.	<u>N/A</u>						
M/I Cal/Vel:	<u>0.1241 in/µs</u> Pulsar Type: <u>Square</u>	Exam Angle:	<u>60°</u> Squint Angle: <u>N/A</u>	Inter. Cal.	<u>N/A</u>						
Damping:	<u>500 Ohms</u> Rejct: <u>0%</u>	Measured Angle:	<u>81°</u> Mode: <u>Shear</u>	Final Cal.	<u>0307</u>	<u>4/13/2013</u>					
PRF:	<u>Auto High</u> SU Freq.: <u>5.0 MHZ</u>	Exit Point:	<u>0.16"</u> # of Elements: <u>1</u>	Couplant							
Frequency:	<u>5.0 MHZ</u> Rectify: <u>Fullwave</u>	Config.:	<u>Single</u> Focus: <u>N/A</u>	Cal. Batch:	<u>07220</u>						
Voltage:	<u>450</u> Pulse Width: <u>100</u>	Shape:	<u>Round</u> Contour: <u>N/A</u>	Type:	<u>SoundSafe</u>						
Ax. Gain (dB):	<u>35.0</u> Circ. Gain (dB): <u>N/A</u>	Wedge Style:	<u>MSWQC</u>	Mfg.:	<u>SONOTECH</u>						
<u>10</u> Screen Div. = <u>1.750</u> In. of <u>Sound Path</u>	Search Unit Cable		Exam Batch:	<u>07220</u>							
Cal. Block No.:	<u>10873</u>	Type:	<u>RG-174</u> Length: <u>6.0'</u> No. Conn.: <u>0</u>	Type:	<u>SoundSafe</u>						
Thickness:	<u>2.25"</u> Dia.: <u>0</u>	Scan Coverage	Upstream <input checked="" type="checkbox"/> Downstream <input type="checkbox"/> Scan dB: <u>47.0</u>	Mfg.:	<u>SONOTECH</u>						
Cal. Blk. Temp.:	<u>71°</u> Temp. Tool: <u>07</u>	CW <input checked="" type="checkbox"/> CCW <input checked="" type="checkbox"/> Scan dB: <u>47.0</u>	Exam Surface:	Reference Block							
Comp. Temp.:	<u>67°</u> Temp. Tool: <u>07</u>	Surface Condition: <u>Ground</u>	Surface Condition: <u>Ground</u>	Serial No.:	<u>05-6533</u>						
Recordable Indication(s):	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (If Yes, Ref. Attached Ultrasonic Indication Report.)	Exam Surface:	<u>OD</u>	Type:	<u>SS Rompus Block</u>						
Results:	<u>NRI</u> <input checked="" type="checkbox"/> <u>RI</u> <input type="checkbox"/> <u>Geom</u> <input type="checkbox"/>	Surface Condition:	<u>Ground</u>	Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path	Reference/Simulator Block		
Percent Of Coverage Obtained > 90%:	<u>No</u>	Reviewed Previous Data:	<u>N/A</u>	35.0	<u>SDH</u>	<u>45%</u>	<u>8.6</u>	<u>1.499"</u>			

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	Signature	Date	Reviewer	Signature	Date
Zollner, Brian D	<u>II-001</u>	<u>Brian D Zollner</u>	<u>4/13/2013</u>	<u>W.L. THOMAS</u>	<u>[Signature]</u>	<u>4-22-13</u>
Examiner	Level <u>N/A</u>	Signature	Date	Site Review	Signature	Date
N/A	N/A			<u>Jeff Odegaard</u>	<u>[Signature]</u>	<u>4/29/13</u>
Other	Level <u>N/A</u>	Signature	Date	ANII Review	Signature	Date
N/A	N/A				<u>[Signature]</u>	<u>4/30/13</u>

ENCLOSURE R1-2

NAPS Unit 2 4th Interval 1st Period Limited Exams
Page 56 of 86

Serial No. 14-050
Docket No. 50-339

UT Calibration/Examination



Site/Unit: NAPS / 2 Procedure: ER-AA-NDE-UT-802 Outage No.: N2R22
 Summary No.: N2.R1.11.437 Procedure Rev.: 2 Report No.: UT-13-016
 Workscope: ISI Work Order No.: _____ Page: 3 of 6

Code: 2004 Edition Cat./Item: R-AR1.11 Location: A loop
 Drawing No.: 12050-WMKS-0103CB Description: Pipe-to-valve
 System ID: RC
 Component ID: 12050-WMKS-0103CB / 3-RC-615 / 7 Size/Length: 0.90" / 11.0" Thickness/Diameter: 0.438" / 3.0"
 Limitations: Single sided exam due to downstream valve 2-RC-HCV-2557A. Start Time: 0156 Finish Time: 0204

Instrument Settings
 Serial No.: 01XK03 Manufacturer: Krautkramer Model: USN 80 SW Linearity: L-13-009 Delay: 6.4231 µs M'll Cal/Vel: 0.1241 in/µs Damping: 500 Ohms PRF: Auto High Frequency: 5.0 MHZ Voltage: 450
 Range: 2.560" Pulsar Type: Square Reclify: Fullwave Pulse Width: 100
 Ax. Gain (dB): 46.0 Circ. Gain (dB): N/A
10 Screen Div. = 2.560 in. of Sound Path

Search Unit
 Serial No.: 00FP0J Manufacturer: KBA Size: 0.25" Model: Comp-G Freq.: 5.0 MHZ Center Freq.: N/A Exam Angle: 70° Squint Angle: N/A Measured Angle: 70° Mode: Shear Exit Point: 0.30" # of Elements: 1 Config.: Single Focus: N/A Shape: Round Contour: N/A Wedge Style: MSWQC
 Search Unit Cable Type: RG-174 Length: 6.0' No. Conn.: 0

Calibration Block
 Cal. Block No.: 10873 Thickness: 2.25" Dia.: 0 Cal. Blk. Temp.: 71° Temp. Tool: 07 Comp. Temp.: 67° Temp. Tool: 07
 Upstream Downstream Scan dB: 46.0 CW CCW Scan dB: N/A Exam Surface: OD Surface Condition: Ground

Scan Coverage
 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.	<u>2126</u>	<u>4/12/2013</u>
Inter. Cal.	<u>0156</u>	<u>4/13/2013</u>
Inter. Cal.	<u>N/A</u>	
Inter. Cal.	<u>N/A</u>	
Final Cal.	<u>0309</u>	<u>4/13/2013</u>

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
<u>0.5" Notch</u>	<u>80%</u>	<u>5.7</u>	<u>1.445"</u>
Circumferential Orientated Search Unit			
Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
<u>N/A</u>			
Reference/Simulator Block			
Gain dB	Reflector	Signal Amplitude %	Sweep Division
<u>46.0</u>	<u>SDH</u>	<u>85%</u>	<u>3.7</u>

Comments: None

Examiner	Level	II-PPR	Signature	Date	Reviewer	Signature	Date
<u>Zollner, Brian D</u>	<u>N/A</u>		<u>Brian D Zollner</u>	<u>4/13/2013</u>	<u>W.L. Thomas</u>	<u>[Signature]</u>	<u>4-22-13</u>
<u>N/A</u>	<u>N/A</u>				<u>Jeff Odegard</u>	<u>[Signature]</u>	<u>4/29/13</u>
<u>N/A</u>	<u>N/A</u>				<u>M.H. [Signature]</u>	<u>[Signature]</u>	<u>4/30/13</u>

UT Calibration/Examination

ENCLOSURE R1-2

NAPS Unit 2 4th Interval 1st Period Limited Exams Page 57 of 86

Serial No. 14-050
Docket No. 50-339
Page 57 of 86

UT Calibration/Examination



Dominion

Site/Unit: NAPS / 1 2
 Summary No.: N2.R1.11.437
 Workscope: ISI

Procedure: ER-AA-NDE-UT-802
 Procedure Rev.: 2
 Work Order No.: _____

Outage No.: N2R22
 Report No.: UT-13-016
 Page: 4 of 6

Code: 2004 Edition Cat./Item: R-A/R1.11 Location: A loop
 Drawing No.: 12050-WMKS-0103CB Description: Pipe-to-valve
 System ID: RC
 Component ID: 12050-WMKS-0103CB / 3-RC-615 / 7 Size/Length: 0.90" / 11.0" Thickness/Diameter: 0.438" / 3.0"
 Limitations: Single sided exam due to downstream valve 2-RC-HCV-2557A. Start Time: 0205 Finish Time: 0211

Instrument Settings
 Serial No.: 01XK03 Manufacturer: Krautkramer Model: USN 60 SW Linearity: L-13-009 Delay: 6.3834 µs Range: 2.560" M'll Cal/Vel: 0.1241 in/s Pulsar Type: Square Damping: 500 Ohms Reject: 0% PRF: Auto High SU Freq.: 2.25 MHZ Frequency: 2.25 MHZ Rectify: Fullwave Voltage: 450 Pulse Width: 220

Search Unit
 Serial No.: 01CWK5 Manufacturer: KBA Size: 0.25" Model: Comp-G Freq.: 2.25 MHZ Center Freq.: N/A Exam Angle: 70° Squint Angle: N/A Measured Angle: 68° Mode: Shear Exit Point: 0.20" # of Elements: 1 Config.: Single Focus: N/A Shape: Round Contour: N/A Wedge Style: MSWQC

Cal. Checks	Time	Date
Initial Cal.	2152	4/12/2013
Inter. Cal.	0205	4/13/2013
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	0311	4/13/2013

Axial Orientated Search Unit			
Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
0.5" Notch	80%	5.3	1.352"

Ax. Gain (dB): 48.0 Circ. Gain (dB): N/A
10 Screen Div. = 2.56 in. of Sound Path Type: RG-174 Length: 6.0' No. Conn.: 0

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

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

Calibration Block
 Cal. Block No. 21588 Thickness 3" Dia.: 0 Cal. Blk. Temp. 71° Temp. Tool: 07 Comp. Temp. 67° Temp. Tool: 07

Scan Coverage
 Upstream Downstream Scan dB: 48.0 CW CCW Scan dB: N/A Exam Surface: OD Surface Condition: Ground

Reference Block
 Serial No.: 05-6533 Type: SS Rompus Block

Reference/Simulator Block				
Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
38.0	SDH	50%	3.2	0.816"

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

Comments: Utilized for best effort coverage on the downstream (valve) side of the weld.

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Zollner, Brian D	II-PDI	<i>Brian Zollner</i>	4/13/2013	W. Thomas	<i>W. Thomas</i>	4-22-13
N/A	N/A			Jeff Odgaard	<i>Jeff Odgaard</i>	4/29/13
N/A	N/A			ANII Review	<i>M. H.</i>	4/30/13

UT Calibration/Examination

ENCLOSURE R1-2

NAPS Unit 2 4" Interval 1st Period Limited Exams
 Page 58 of 86

Serial No. 14-050
 Docket No. 50-339

ENCLOSURE R1-2

Supplemental Report



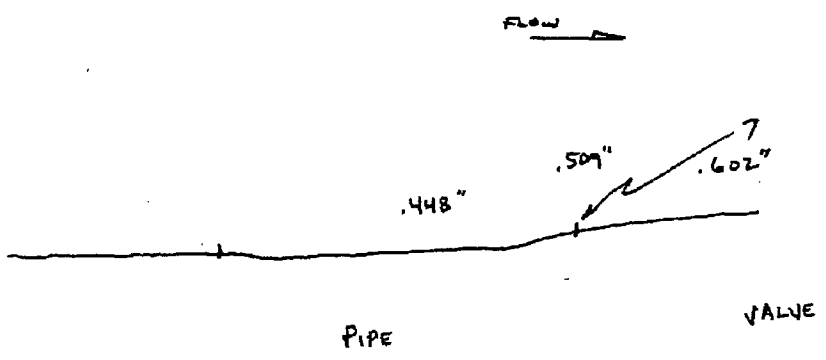
Report No.: UT-13-016
Page: 5 of 6

Summary No.: N2.R1.11.437

Examiner: <u>Zollner, Brian D</u> <i>BZ</i>	Level: <u>II-PDI</u>	Reviewer: <u>W.L. Thomas</u> <i>WLT</i>	Date: <u>4-22-13</u>
Examiner: <u>N/A</u>	Level: <u>N/A</u>	Site Review: <u>Jeff Odegaard</u> <i>JO</i>	Date: <u>4-29-13</u>
Other: <u>N/A</u>	Level: <u>N/A</u>	ANII Review: <u>MHC</u>	Date: <u>4/30/13</u>

Comments: T + C

Sketch or Photo:

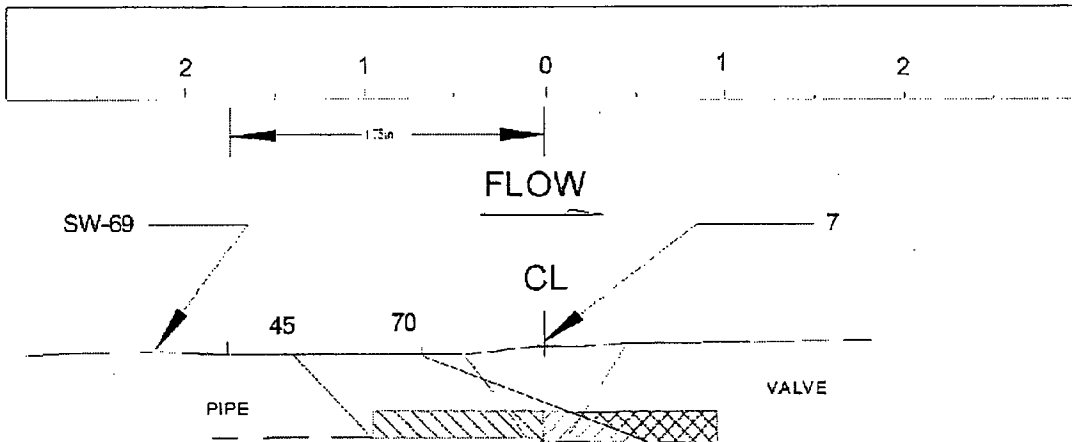


ENCLOSURE R1-2



Report No: UT-13-016
Summary # N2.R1.11.437
Pg. 6 of 6
Prepared by: W. Thomas
Date: 4/22/2013

Weld Number	7	Weld Width	0.90"
Thickness	0.448"	Weld Length	11"



0.149" HEIGHT X 0.95" WIDTH = 0.14 SQ. IN.
TOTAL REQUIRED VOLUME = 0.14 SQ. IN.

EXAMINED 100% OF THE REQUIRED VOLUME US SIDE

EXAMINED 0.05 SQ. IN. BEST EFFORT
 $0.05 / .14 = 0.36 \times 100 = 36\%$ BEST EFFORT DS SIDE AX DIRECTION

NO EXAMINATION DS SIDE AX DIRECTION = 64%

ANI / ANII *MA*
HSB GS/
Reviewed 4/30/13

Examination Volume Dimensions - Height 0.149" Length 11" Width 1.9"

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%
70	100%			
70 2.25 Mhz			*36%	
Code Coverage Total				50%
100+100+0+36=236/4=59			*Best Effort Coverage (Max 25%) Total	9%

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.

R2. Risk-Informed Piping Welds Not Subject To A Degradation Mechanism

4.R2 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.

Weld	Line #	Scan Coverage %	Enclosure	Exam ^{Note 1}	Exam Date	Page	Angle	Mode	Frequency
SW-5 (BPL 343)	32"-SHP-459	75%	R2-1	Up/CW/CCW	9/24/2011	64	45°	Shear	2.25MHZ
				Up/CW/CCW		65	60°	Shear	2.25MHZ
				Up		66	70°	Shear	2.25MHZ
4	6"-RC-416	75% + 5% BE	R2-2	Up/CW/CCW	9/21/2011	74	45°	Shear	2.25MHZ
				Up/CW/CCW		75	60°	Shear	2.25MHZ
				Up		76	70°	Shear	2.25MHZ
				Down		77	60°	Longitudinal	2.0MHZ
6A	3"-CH-814	42.3% + 1.5% BE	R2-3	Down/CW/CCW	4/18/2013	80	45°	Shear	2.25MHZ
				Down/CW/CCW		81	60°	Shear	2.25MHZ
				Down		82	70°	Shear	2.25MHZ
				Up		83	60°	Longitudinal	2.0MHZ
NOTES:									
1	Up	Axial scan on the upstream side of weld							
	Dwn	Axial scan on the downstream side of weld							
	CW	Circumferential scan in the clock-wise direction							
	CCW	Circumferential scan in the counter clock-wise direction							

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 R1.20, examination included in this request. Each report includes details of the UT scanning apparatus, including transducer size, frequency, angle, wave modality and insonification angles. Also included are scan plots for each of the examinations showing the piping configuration and percent coverage for each individual scan.

Weld SW-5 (32"-SHP-459), Main Steam System Non-Classed, is a Main Steam pipe to header weld. The configuration is a mitered shop weld from 32-inch piping to the horizontal 40-inch Main Steam header. The 32-inch piping is carbon steel, A155EFW, CLI, CMS 75, and the 40-inch header is carbon steel, A155EFW, CLI, KC 70. Full coverage was obtained at the tops and bottoms of the welds, but limitations existed at the sides where the angle between the pipe and the header is at right angles. This weld is a non-class weld included as a high safety significant, break exclusion region, RIS_B location requiring >90% coverage per request N2-I4-RI-001, and as such is included in this request. The UT examination identified two recordable indications: 1) The first indication evaluated as acceptable per ASME Section XI Table IWB-3514-1, and 2) The

second identified as Inner Diameter Geometry. Beam plots, profiles, along with UT signals were used to characterize the geometrical condition of weld SW-5. The indications were evaluated using the Indication Classification guidance of the Appendix VIII qualified procedure utilized for the examination. Augmented magnetic particle examination was also performed at this location with no reportable indications identified.

Weld 4 (6"-RC-416), Reactor Coolant System Class 1, 45 degree elbow to branch connection weldolet, is a seamless stainless steel elbow to stainless steel weldolet. This weld is 1,500 lb., A-403-WP316 Schedule 160 seamless stainless steel fitting, 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 minimum tensile strength, and the weldolet is A-403-WP316 stainless steel. Coverage is limited because of the pipe to weldolet configuration, limiting the examination mostly to the upstream side. The cast nozzle configuration permits a weldolet side circumferential scan. Seventy-five percent Code coverage was obtained. An additional 15 percent Best Effort (non-Code) coverage was obtained with a 60 degree longitudinal search unit from the downstream (valve) side.

Weld 6A (3"-CH-814), Chemical and Volume Control System Class 1, is a 3-inch check valve to elbow weld in the pressurizer auxiliary spray piping. This weld connects A403-WP316 Sch 160 components, 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 minimum tensile strength. Coverage is limited because of the single-sided weld to a valve and the configuration of the adjacent elbow, permitting only downstream examination. Allowable Code coverage is limited to no more than 50 percent.

The NAPS 2 Risk-Informed ISI Program is based on ASME Code Case N-716 as identified in approved request N2-I4-RI-001. These limitations have been evaluated as acceptable, with no impact on risk analysis, and no further actions necessary to provide reasonable assurance of pressure boundary leak tightness. Welds 4 and 6A are included in the Class 1 pressure boundary, receiving visual examinations at the beginning of each refueling outage as part of the Boric Acid Corrosion Control Program and VT-2 visual examinations at the end of the refueling outage once operating pressure and temperature is achieved before unit startup. The Main Steam System weld received complete surface examination (magnetic particle) as it is included in the augmented inspection program for Main Steam System Postulated Break Locations and the associated line is regularly walked down during normal operator rounds.

These weld examinations were limited due to configuration, but additional non-Code coverage was obtained (Best Effort Coverage) on the critical inside surface volume of both the weld and heat-affected area. These additional measures provide reasonable assurance that these welds are structurally sound. An effective examination program must include selections from different piping configurations, as well as selections from piping configurations categorized with different degradation mechanisms.

5.R2 BURDEN CAUSED BY COMPLIANCE

The purpose of nondestructive examination (NDE) is to perform inspections without destroying the component. The physical configuration of these welds, pipe to header, elbow to weldolet, and valve to elbow, limits inspection capabilities.

Detailed sketches of the limitations and inspection areas achieved have been provided. No further actions can enable better examination coverage.

6.R2 PROPOSED ALTERNATIVE AND BASIS

These welds were selected as part of the High Safety Significant population; however, no active degradation mechanism has been identified for them. Selections were made based on plant specific operating experience or history of examination, weld repairs, random selection across different pipe sizes and configurations, and radiation concerns. Welds were selected, in part, because previous Section XI examination history exists in some cases. Comparison of examination results over time is critical to detect service induced degradation. Inspection of these particular welds are considered the best choices for meaningful examination results.

It is proposed that the examinations already completed at the reduced coverage be accepted for meeting the Code requirements. 100% of the pipe to valve welds were volumetrically examined from one side. Although two recordable indications were identified, no unacceptable indications were discovered. The limited volumetric examinations performed 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. 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.

The purpose of the inservice inspection (ISI) program is to assure the structural and pressure-retaining integrity of safety-related nuclear power plant components in accordance with the rules of the ASME Section XI Code and the requirements of 10 CFR 50.55a. Although Dominion could select only weld locations where greater than 90% examination coverage is possible (when available based on selection criteria), meeting the purpose of the Code requires selecting a mix of not only piping-to-piping welds (where essentially 100% coverage is more likely), but also piping-to-valve welds, piping-to-pump welds, piping-to-vessel welds, socket welds, nozzle-to-pipe welds, etc. The ASME Code allows only 50% Code coverage for single-sided examinations, and in cases other than most piping-to-piping welds, the majority of weld examinations are considered single-sided examinations.

UT Calibration/Examination



Site/Unit: NAPS / 2 Procedure: ER-AA-NDE-UT-801 Outage No.: N2R21
 Summary No.: N2.R1.20.0020 Procedure Rev.: 2 Report No.: UT-11-034
 Workscope: ISI Work Order No.: 59102348793 Page: 1 of 7

Code: ASME 2004 Ed. Cat./Item: R-A/R1.20 Location: MER-2
 Drawing No.: 12050-WMKS-0101A-4 Description: Pipe to Header
 System ID: SHP
 Component ID: 12050-WMKS-0101A-4 / 32'-SHP-459 / SW-5 (BPL 343) Size/Length: 1.8" / 108" Thickness/Diameter: 1.195"/32"
 Limitations: Single sided exam due to Pipe to Header configuration. Start Time: 1503 Finish Time: 1620

Instrument Settings		Search Unit		Cal. Checks			Axial Orientated Search Unit				
Serial No.:	<u>081624211</u>	Serial No.:	<u>01CXBJ</u>	Cal. Checks	Time	Date	Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path	
Manufacturer:	<u>Panametrics</u>	Manufacturer:	<u>KBA</u>	Initial Cal.	<u>1428</u>	<u>09/24/2011</u>	<u>1.5" Notch</u>	<u>80%</u>	<u>6.4</u>	<u>2.129"</u>	
Model:	<u>EPOCH 4</u> Linearity: <u>L-11-014</u>	Size:	<u>0.5"</u> Model: <u>Comp-G</u>	Inter. Cal.	<u>1503</u>	<u>09/24/2011</u>	<u>N/A</u>				
Delay:	<u>6.185 us</u>	Range:	<u>3.386"</u>	Inter. Cal.	<u>N/A</u>						
M/U Cal/Vel:	<u>0.1271 in/us</u>	Freq.:	<u>2.25 Mhz</u> Center Freq.: <u>N/A</u>	Inter. Cal.	<u>N/A</u>						
Damping:	<u>400 Ohms</u>	Exam Angle:	<u>45°</u> Squint Angle: <u>N/A</u>	Final Cal.	<u>1732</u>	<u>09/24/2011</u>					
Rep. Rate:	<u>Auto</u>	Measured Angle:	<u>45°</u> Mode: <u>Shear</u>	Couplant:							
Filter:	<u>0.8-3.0</u>	Exit Point:	<u>0.5"</u> # of Elements: <u>1</u>	Cal. Batch:	<u>07220</u>						
Voltage:	<u>Max</u>	Config.:	<u>Single</u> Focus: <u>N/A</u>	Type:	<u>SoundSafe</u>						
		Shape:	<u>Round</u> Contour: <u>N/A</u>	Mfg.:	<u>SONOTECH</u>						
		Wedge Style:	<u>MSWQC</u>	Exam Batch:	<u>07220</u>						
Ax. Gain (dB):	<u>2.3</u> Circ. Gain (dB): <u>2.3</u>	Search Unit Cable:		Type:	<u>SoundSafe</u>						
<u>10</u> Screen Div. = <u>3.366</u> In. of <u>Sound Path</u>		Type:	<u>RG 174</u> Length: <u>6'</u> No. Conn.: <u>0</u>	Mfg.:	<u>SONOTECH</u>						
Calibration Block		Scan Coverage		Reference Block							
Cal. Block No.:	<u>10874</u>	Upstream <input checked="" type="checkbox"/>	Downstream <input type="checkbox"/>	Scan dB: <u>20.3</u>	Reference Block						
Thickness:	<u>2.25"</u> Dia.: <u>0</u>	CW <input checked="" type="checkbox"/>	CCW <input checked="" type="checkbox"/>	Scan dB: <u>20.3</u>	Serial No.:	<u>05-6998</u>					
Cal. Blk. Temp.:	<u>72°</u> Temp. Tool: <u>1066BGCY</u>	Exam Surface:	<u>OD</u>		Type:	<u>CS Rompus Block</u>					
Comp. Temp.:	<u>75°</u> Temp. Tool: <u>1066BGCY</u>	Surface Condition:	<u>Contour Ground</u>								
Recordable Indication(s):	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	(If Yes, Ref. Attached Ultrasonic Indication Report.)									
Results:	Accept <input checked="" type="checkbox"/> Reject <input type="checkbox"/> Geom <input type="checkbox"/>	Comments: <u>None</u>									
Percent Of Coverage Obtained > 90%:	<u>No</u>	Reviewed Previous Data:	<u>Yes</u>								

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Kilpela, Jamie	II-PDI	<i>[Signature]</i>	<u>09/24/2011</u>	W.L. THOMAS	<i>[Signature]</i>	<u>09/30/11</u>
España, Leonel	III	<i>[Signature]</i>	<u>09/24/2011</u>	RAYMOND T. STACK	<i>[Signature]</i>	<u>10/4/11</u>
Other	N/A	Signature	Date	ANI Review	Signature	Date
N/A					<i>[Signature]</i>	<u>10/11/11</u>

ENCLOSURE R2-1

NAPS Unit 2 4th Interval 1st Period Limited Exams

Serial No. 14-050
Docket No. 50-339
Page 64 of 86



UT Calibration/Examination

Site/Unit: NAPS / 2 Procedure: ER-AA-NDE-UT-801 Outage No.: N2R21
 Summary No.: N2.R1.20.0020 Procedure Rev.: 2 Report No.: UT-11-034
 Workscope: ISI Work Order No.: 59102346793 Page: 2 of 7

Code: ASME 2004 Ed. Cat./Item: R-A/R1.20 Location: MER-2
 Drawing No.: 12050-WMKS-0101A-4 Description: Pipe to Header
 System ID: SHP
 Component ID: 12050-WMKS-0101A-4 / 32'-SHP-489 / SW-5 (BPL 343) Size/Length: 1.8" / 108" Thickness/Diameter: 1.195"/32"
 Limitations: Single sided exam due to Pipe to Header configuration. Start Time: 0839 Finish Time: 1008

Instrument Settings		Search Unit		Cal. Checks		Axial Orientated Search Unit				
Serial No.:	<u>081624211</u>	Serial No.:	<u>01CXBN</u>	Initial Cal.	<u>0700</u>	<u>09/25/2011</u>	Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
Manufacturer:	<u>Panametrics</u>	Manufacturer:	<u>KBA</u>	Inter. Cal.	<u>0839</u>	<u>09/25/2011</u>	<u>1.5" Notch</u>	<u>80%</u>	<u>5.7</u>	<u>2.703"</u>
Model:	<u>EPOCH 4</u>	Linearity:	<u>L-11-014</u>	Inter. Cal.	<u>N/A</u>		<u>N/A</u>			
Delay:	<u>8.378 us</u>	Range:	<u>4.78"</u>	Inter. Cal.	<u>N/A</u>					
M'd Cal/Vel:	<u>0.1278 In/us</u>	Freq.:	<u>2.25 Mhz</u>	Final Cal.	<u>1211</u>	<u>09/25/2011</u>				
Damping:	<u>400 Ohms</u>	Center Freq.:	<u>N/A</u>	Couplant						
Rep. Rate:	<u>Auto</u>	Exam Angle:	<u>60°</u>	Cal. Batch:	<u>07220</u>					
Filter:	<u>0.8-3.0</u>	Squint Angle:	<u>N/A</u>	Type:	<u>SoundSafe</u>					
Voltage:	<u>Max</u>	Measured Angle:	<u>60°</u>	Mfg.:	<u>SONOTECH</u>					
		Mode:	<u>Shear</u>	Exam Batch:	<u>07220</u>					
		Exit Point:	<u>0.5"</u>	Type:	<u>SoundSafe</u>					
		# of Elements:	<u>1</u>	Mfg.:	<u>SONOTECH</u>					
		Config.:	<u>Single</u>	Reference Block						
		Focus:	<u>N/A</u>	Serial No.:	<u>05-6998</u>					
		Shape:	<u>Round</u>	Type:	<u>CS Romplus Block</u>					
		Contour:	<u>N/A</u>	Reference/Simulator Block						
		Wedge Style:	<u>MSWQC</u>	Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path		
		Search Unit Cable		<u>21.0</u>	<u>SDH</u>	<u>85%</u>	<u>3.2</u>	<u>1.491"</u>		
		Type:	<u>RG 174</u>	<u>N/A</u>						
		Length:	<u>6'</u>							
		No. Conn.:	<u>0</u>							
		Scan Coverage								
		Upstream <input checked="" type="checkbox"/>	Downstream <input type="checkbox"/>							
		Scan dB:	<u>33.0</u>							
		CW <input checked="" type="checkbox"/>	CCW <input checked="" type="checkbox"/>							
		Scan dB:	<u>33.0</u>							
		Exam Surface:	<u>OD</u>							
		Surface Condition:	<u>Contour Ground</u>							
		Recordable Indication(s):	<u>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></u> (If Yes, Ref. Attached Ultrasonic Indication Report.)							
		Results:	<u>Accept <input checked="" type="checkbox"/> Reject <input type="checkbox"/> Geom <input type="checkbox"/></u>	Comments: <u>Effective coverage using the 60° search unit has been verified by the presence of the weld root response during the required scans.</u>						
		Percent Of Coverage Obtained > 90%:	<u>No</u>							
		Reviewed Previous Data:	<u>Yes</u>							

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Kilpela, Jamie	II-PDI	<i>[Signature]</i>	09/25/2011	W.L. Thomas	<i>[Signature]</i>	9/30/11
Espana, Leonel	III	<i>[Signature]</i>	09/25/2011	Raymond T. Strick	<i>[Signature]</i>	10/4/11
N/A	N/A	<i>[Signature]</i>		M. H. [Signature]	<i>[Signature]</i>	10/17/11

ENCLOSURE R2-1

NAPS Unit 2 4th Interval 1st Period Limited Exams Page 65 of 86

Serial No. 14-050
Docket No. 50-339

UT Calibration/Examination



Site/Unit: NAPS / 2 Procedure: ER-AA-NDE-UT-801 Outage No.: N2R21
 Summary No.: N2.R1.20.0020 Procedure Rev.: 2 Report No.: UT-11-034
 Workscope: ISI Work Order No.: 59102348793 Page: 3 of 7

Code: ASME 2004 Ed. Cat./Item: R-A/R1.20 Location: MER-2
 Drawing No.: 12050-WMKS-0101A-4 Description: Pipe to Header
 System ID: SHP
 Component ID: 12050-WMKS-0101A-4 / 32'-SHP-459 / SW-5 (BPL 343) Size/Length: 1.6" / 108" Thickness/Diameter: 1.195"/32"
 Limitations: Single sided exam due to Pipe to Header configuration. Start Time: 1010 Finish Time: 1118

Instrument Settings
 Serial No.: 081624211 Manufacturer: Panametrics Model: EPOCH 4 Linearity: L-11-014 Delay: 9.573 us M'tl Cal/Vol: 0.1272 In/us Damping: 400 Ohms Rep. Rate: Auto Filter: 0.8-3.0 Voltage: Max
 Range: 6.959" Pulse: Square Reject: 0% Freq.: 2.00 Mhz Mode: Fullwave Other: N/A
 Search Unit
 Serial No.: 00F1DF Manufacturer: KBA Size: 0.50" Model: Comp-G Freq.: 2.25 Mhz Center Freq.: N/A Exam Angle: 70° Squint Angle: N/A Measured Angle: 71° Mode: Shear Exit Point: 0.53" # of Elements: 1 Config.: Single Focus: N/A Shape: Round Contour: N/A Wedge Style: MSWQC

Ax. Gain (dB): 32.0 Circ. Gain (dB): N/A
10 Screen Div. = 6.959 in. of Sound Path.
Calibration Block
 Cal. Block No.: 10874 Thickness: 2.25" Dia.: 0 Cal. Blk. Temp.: 72° Temp. Tool: 1066BG CY Comp. Temp.: 75° Temp. Tool: 1066BG CY
Scan Coverage
 Upstream Downstream Scan dB: 38.0 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: Accept Reject Geom
 Percent Of Coverage Obtained > 80%: No Reviewed Previous Data: Yes

Cal. Checks	Time	Date
Initial Cal.	0702	09/25/2011
Inter. Cal.	1010	09/25/2011
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	1213	09/25/2011

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
1.5" Notch	80%	7.0	4.867
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
26	NSDH	40%	1.5
N/A			

Comments: 70° search unit utilized for best effort Interrogation of far side of weld.

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Kilpela, Jamie	II-PDI	<i>[Signature]</i>	09/25/2011	W.L. THOMAS	<i>[Signature]</i>	9/30/11
Espana, Leonel	III	<i>[Signature]</i>	09/25/2011	RAYMOND T. STACK	<i>[Signature]</i>	10/4/11
Other	N/A			ANM Review	<i>[Signature]</i>	10/17/11

UT Calibration/Examination

ENCLOSURE R2-1

NAPS Unit 2 4" Interval 1st Period Limited Exams Page 66 of 86

Serial No. 14-050
Docket No. 50-339

ENCLOSURE R2-1

Supplemental Report



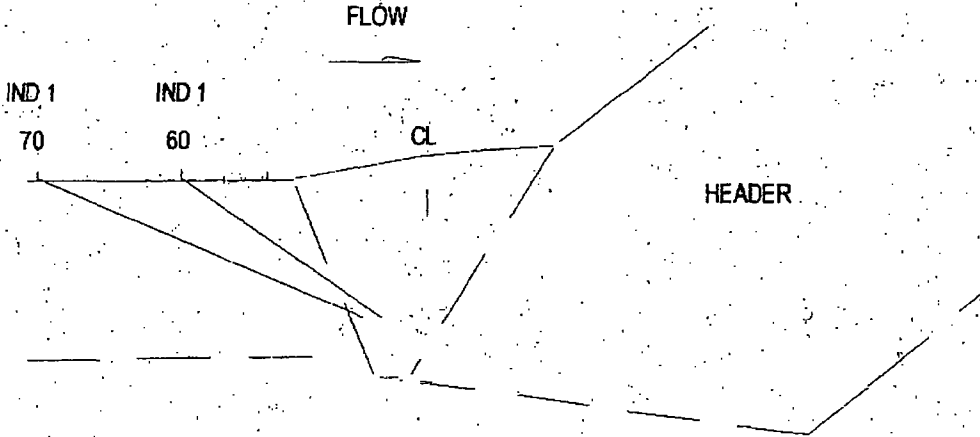
Report No.: UT-11-034
Page: 4 of 7

Summary No.: N2.R1.20.0020

Examiner: <u>Kilpela, Jamie</u>	Level: <u>II-PDI</u>	Reviewer: <u>W.L. Thomas</u>	Date: <u>09-30-11</u>
Examiner: <u>Espana, Leonel</u>	Level: <u>III</u>	Site Review: <u>Raymond J. Stack</u>	Date: <u>10/4/11</u>
Other: <u>N/A</u>	Level: <u>N/A</u>	ANII Review: <u>M. H. e.</u>	Date: <u>10/12/11</u>

Comments:

Sketch or Photo:



ENCLOSURE R2-1

Supplemental Report



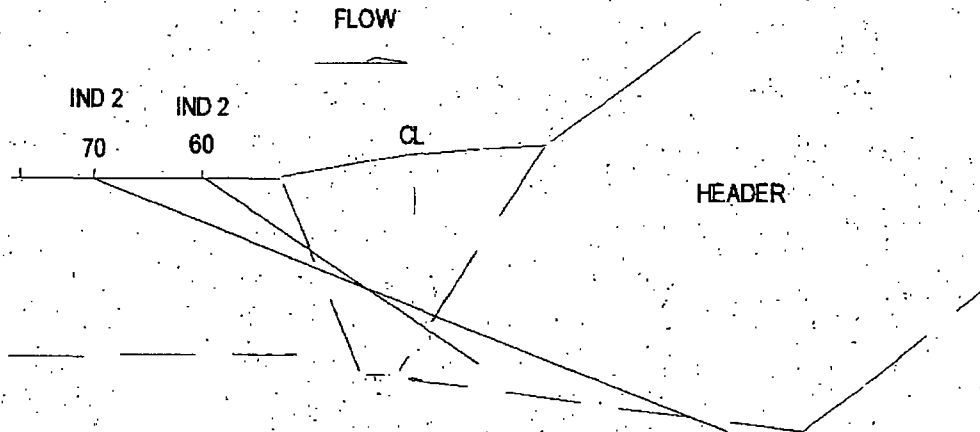
Report No.: UT-11-034
Page: 5 of 7

Summary No.: N2.R1.20.0020

Examiner: <u>Kilpela, Jamie</u>	<u>[Signature]</u>	Level: <u>II-PDI</u>	Reviewer: <u>W.L. THOMAS</u>	<u>[Signature]</u>	Date: <u>07-30-11</u>
Examiner: <u>Espana, Leonel</u>	<u>[Signature]</u>	Level: <u>III</u>	Site Review: <u>RAYMOND T. STRICK</u>	<u>[Signature]</u>	Date: <u>10/4/11</u>
Other: <u>N/A</u>		Level: <u>N/A</u>	ANII Review: <u>[Signature]</u>		Date: <u>10/7/11</u>

Comments: ID GEO 360 INT [Signature]
11-30-11

Sketch or Photo:

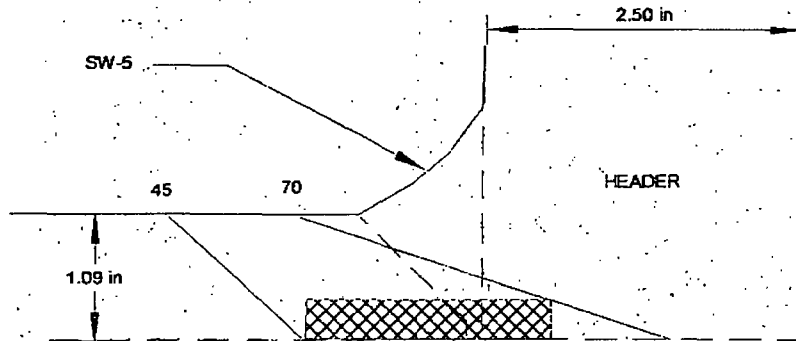


ENCLOSURE R2-1



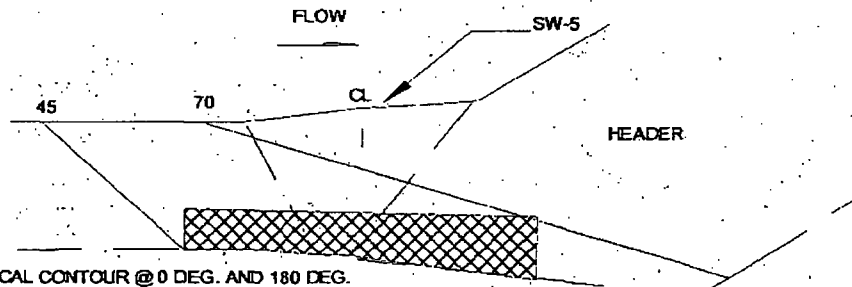
Report No: UT-11-034
 Summary # N2.R1.20 0020
 Pg. 6 of 7
 Prepared By: W.L. Thomas
 Date: 9/30/2011

Weld Number	SW-5
Thickness	1.09"
Weld Length	108"
Weld Width	1.8"



TYPICAL CONTOUR @ 90 DEG. AND 270 DEG.

ANII MLV Date 10/2/11
 Initial Final
 HSB-CT



TYPICAL CONTOUR @ 0 DEG. AND 180 DEG.

Examination Volume Dimensions - Height .365" Length 108" Width 2.8"

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%		100%	
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.



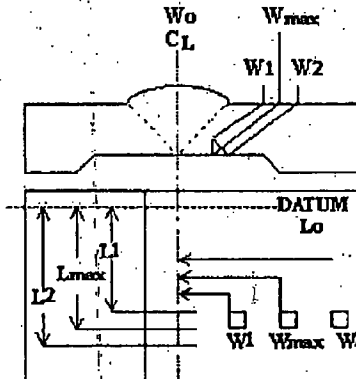
Ultrasonic Indication Report

Site/Unit: NAPS / 2 Procedure: ER-AA-NDE-UT-801 Outage No.: N2R21
 Summary No.: N2.R1.20.0020 Procedure Rev.: 2 Report No.: UT-11-034
 Workscope: ISI Work Order No.: 59102346793 Page: 7 of 7

Search Unit Angle: 60/70 °
 Wo Location: Weld Centerline
 Lo Location: TDC

- Piping Welds
- Ferritic Vessels $\geq 2"$
- 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 (Backward)



Comments:

Angle	Indication No.	% Of DAC	W Max		Forward Of Max		Backward Of Max		L1 Of Max	L Max	L2 Of Max	RBR Amp.	Remarks
			W	MP	W1	MP	W2	MP					
60°	1	80%FSH	1.77"	1.83"					53.13"	54.0"	54.25"		See flaw evaluation report UT-11-055.
60°	2	80%FSH	1.45"	2.117"					*	50.0"	*		* I.D. Geometry seen 380° Intermittently.
70°	1	100%FSH	2.8"	2.47"					53.13"	53.5"	54.0"		Same as 60° Ind No. 1. See report UT-11-055.
70°	2	250%REF	2.2"	4.57"					*	93.25"	*		* I.D. Geometry seen 380° Intermittently.

Examiner	Level	II-PDI	Signature	Date	Reviewer	Signature	Date
Kilpela, Jamie			<i>[Signature]</i>	09/24/2011	W.L. Thomas	<i>[Signature]</i>	9/30/11
Examiner	Level	III	Signature	Date	Site Review	Signature	Date
Espana, Leonel			<i>[Signature]</i>	09/24/2011	RAYMOND T. STICK	<i>[Signature]</i>	10/4/11
Other	Level	N/A	Signature	Date	ANII Review	Signature	Date
N/A					<i>[Signature]</i>	<i>[Signature]</i>	10/17/11

Additional - UT Indication Data <Edit From Setup>

ENCLOSURE R2-1

NAPS Unit 2 4th Interval 1st Period Limited Exams
Page 70 of 86

Serial No. 14-050
Docket No. 50-339

UT Calibration/Examination



Site/Unit: NAPS / 2 Procedure: ER-AA-NDE-UT-803 Outage No.: N2R21
 Summary No.: N2.R1.20.0020 Procedure Rev.: 1 Report No.: UT-11-085
 Workscope: ISI (AUG) Work Order No.: 59102346793 Page: 1 of 2

Code: ASME 2004 Ed. Cat./Item: R-A/R1.20 Location: MER-2
 Drawing No.: 12050-WMKS-0101A-4 Description: Pipe to Header
 System ID: SHP
 Component ID: 12050-WMKS-0101A-4 / 32-SHP-459 / SW-5 (BPL 343) Size/Length: 1.8" / 108.0" Thickness/Diameter: 1.095" / 32.0"
 Limitations: None Start Time: 1200 Finish Time: 1210

Instrument Settings				Search Unit				Cal. Checks			Axial Orientated Search Unit				
Serial No.:	<u>040186603</u>	Manufacturer:	<u>Panametrica</u>	Serial No.:	<u>00H304</u>	Manufacturer:	<u>KBA</u>	Initial Cal.	<u>0950</u>	<u>09/27/2011</u>	Calibration Reflector	Signal Amplitude %	Sweep Division	Depth	
Model:	<u>EPOCH 4</u>	Linearity:	<u>L-11-018</u>	Size:	<u>0.375"</u>	Model:	<u>Comp-G</u>	Inter. Cal.	<u>1200</u>	<u>09/27/2011</u>	<u>0.75" Hole</u>	<u>80%</u>	<u>3.7</u>	<u>0.75"</u>	
Delay:	<u>6.347 us</u>	Range:	<u>4.000"</u>	Freq.:	<u>5.0 Mhz.</u>	Center Freq.:	<u>N/A</u>	Inter. Cal.	<u>1210</u>	<u>09/27/2011</u>	<u>1.0" Hole</u>	<u>50%</u>	<u>5.0</u>	<u>1.0"</u>	
M'il Cal/Vel:	<u>0.1265 in/us</u>	Pulser:	<u>Square</u>	Exam Angle:	<u>60°</u>	Squint Angle:	<u>N/A</u>	Inter. Cal.	<u>N/A</u>		<u>N/A</u>				
Damping:	<u>400 Ohms</u>	Reject:	<u>0%</u>	Measured Angle:	<u>60°</u>	Mode:	<u>Shear</u>	Final Cal.	<u>1230</u>	<u>09/27/2011</u>					
Rep. Rate:	<u>Auto.</u>	Freq.:	<u>5.0 Mhz.</u>	Exit Point:	<u>0.3"</u>	# of Elements:	<u>1</u>	Couplant							
Filter:	<u>3.0-6.0</u>	Mode:	<u>Fullwave</u>	Config.:	<u>Single</u>	Focus:	<u>N/A</u>	Cal. Batch:	<u>07220</u>						
Voltage:	<u>Max.</u>	Other:	<u>N/A</u>	Shape:	<u>Round</u>	Contour:	<u>N/A</u>	Type:	<u>SoundSafe</u>						
				Wedge Style:	<u>MSWQC</u>			Mfg.:	<u>SONOTECH</u>						
				Search Unit Cable				Exam Batch:	<u>07220</u>						
				Type:	<u>RG 174</u>	Length:	<u>6'</u>	Type:	<u>SoundSafe</u>						
				Scan Coverage				Mfg.:	<u>SONOTECH</u>						
				Upstream <input checked="" type="checkbox"/>	Downstream <input type="checkbox"/>	Scan dB:	<u>28.0</u>	Reference Block							
				CW <input type="checkbox"/>	CCW <input type="checkbox"/>	Scan dB:	<u>N/A</u>	Serial No.:	<u>05-5560</u>						
				Exam Surface:	<u>OD</u>			Type:	<u>CS Rompus Block</u>						
				Surface Condition:	<u>Ground Smooth</u>			Reference/Simulator Block							
				Recordable Indication(s):	<u>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></u> (If Yes, Ref. Attached Ultrasonic Indication Report.)			Gain dB	Reflector	Signal Amplitude %	Sweep Division	Depth			
				Results:	<u>Accept <input checked="" type="checkbox"/> Reject <input type="checkbox"/> Geom <input type="checkbox"/></u>			<u>N/A</u>							
				Percent Of Coverage Obtained > 90%:	<u>N/A</u>			Comments: <u>Procedure ER-AA-NDE-803 sizing techniques were used as a guide to obtain a thru wall dimension of the indication to enable IWB-3500 evaluation.</u>							
				Reviewed Previous Data:	<u>Yes</u>										

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Thomas, Wayne L.	III-PDI		09/27/2011	N/A		
N/A	N/A			Site Review		10/4/11
N/A	N/A			AMI Review		10/7/11

ENCLOSURE R2-1

NAPS Unit 2 4th Interval 1st Period Limited Exams Page 71 of 86

Serial No. 14-050
Docket No. 50-339

ENCLOSURE R2-1

Supplemental Report



Report No.: UT-11-055
 Page: 2 of 2

Summary No.: N2.R1.20.0020

Examiner: Thomas, Wayne L. Level: III-PDI Reviewer: N/A Date: _____
 Examiner: N/A Level: N/A Site Review: Raymond J. Stack PDB Date: 10/5/11
 Other: N/A Level: N/A ANII Review: M.H. Date: 10/7/11

Comments: Flaw evaluation of indication # 1 from "UT" report # UT-11-034.

FLAW EVALUATION

INDICATION #1 FROM UT REPORT # UT-11-034

Sketch or Photo:

INDICATION # 1 L MAX = 50", SWEEP = 4 DIV. REMAINING LIGAMENT DOES NOT APPLY.

MEASURED T = 1.15"

MEASURED ANGLE: 60°

LENGTH: 1.125"

2a: 0.07 IND IS SUBSURFACE.

a : 0.035 / 1.125 = .03 = a/l

S = 1.15 - .83 = 0.32

MINIMUM

MAXIMUM

TOTAL

DEPTH
0.76"
0.83"
0.070"

a / t

.035 / 1.15 = .030 x 100 = 3% actual thru wall

.03 = aspect ratio

ACTUAL = 3%

ALLOW = 10.8%

INDICATION # 1 IS ACCEPTABLE PER ASME SECTION XI TABLE IWB-3514-1.

NOTE: THE MOST CONSERVATIVE % WAS USED. NO LINEAR INTERPOLATION WAS REQUIRED. NO SIGNIFICANT CHANGE NOTED IN LENGTH OR AMPLITUDE SINCE THE PREVIOUS TWO EXAMS IN 1989 OR 2002. INDICATION PRESENCE WAS VERIFIED WITH 0 DEGREE PROBE.

ENCLOSURE R2-1

Magnetic Particle Examination



Site/Unit: NAPS / 2 Procedure: ER-AA-NDE-MT-200 Outage No.: N2R21
Summary No.: N2.R1.20.0020 Procedure Rev.: 4 Report No.: MT-11-003
Workscope: AUG Work Order No.: 59102346793 Page: 1 of 1

Code: ASME 2004 Ed. Cat./Item: R-A/R1.20 Location: MER-2
Drawing No.: 12050-WMKS-0101A-4 Description: Pipe to Header
System ID: SHP
Component ID: 12050-WMKS-0101A-4 / 32'-SHP-459 / SW-5 (BPL 343) Mat./Thickness: C/S / 1.25"
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-34 Surface Condition: Ground Smooth
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.: 17868
Head Shot N/A Amperes Fixed Spacing AC DC
Adj. Spacing 3.0-8.0 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
N/A						

Comments:
Character Card # DOM-2009-0300.

Results: Accept Reject Eval

Percent Of Coverage Obtained > 90%: Yes Reviewed Previous Data: N/A Exam Time: 1300-1328

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Espana, Leonel	II	<i>[Signature]</i>	09/24/2011	W.L. Thomas	<i>[Signature]</i>	9.30.11
N/A	N/A			Robert Davies	<i>[Signature]</i>	9/30/11
N/A	N/A			ANII Review	<u>NA</u>	

UT Calibration/Examination



Site/Unit: NAPS / 2 Procedure: ER-AA-NDE-UT-802 Outage No.: N2R21
 Summary No.: N2.R1.20.0039 Procedure Rev.: 1 Report No.: UT-11-028
 Workscope: ISI Work Order No.: 59102346793 Page: 1 of 6

Code: ASME 2004 Ed. Cat./Item: R-A/R1.20 Location: A Loop
 Drawing No.: 12050-WMKS-0103AG Description: 45 degree elbow to branch connection
 System ID: RC
 Component ID: 12050-WMKS-0103AG / 6-RC-416 / 4 Size/Length: 1.30" / 20.8" Thickness/Diameter: 0.718" / 6.0"
 Limitations: Single side exam due to configuration. Start Time: 1517 Finish Time: 1525

Instrument Settings		Search Unit		Cal. Checks			Axial Orientated Search Unit				
Serial No.:	<u>040182503</u>	Serial No.:	<u>00VJBX</u>	Initial Cal.	<u>0935</u>	<u>09/21/2011</u>	Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path	
Manufacturer:	<u>Panametrics</u>	Manufacturer:	<u>KBA</u>	Inter. Cal.	<u>1453</u>	<u>09/21/2011</u>	<u>1.0" Notch</u>	<u>80%</u>	<u>7.0</u>	<u>1.423"</u>	
Model:	<u>EPOCH 4</u> Linearity: <u>L-08-008</u>	Size:	<u>0.375"</u> Model: <u>Comp-G</u>	Inter. Cal.	<u>N/A</u>		<u>N/A</u>				
Delay:	<u>5.605 µs</u>	Freq.:	<u>2.25 Mhz.</u> Center Freq.: <u>N/A</u>	Inter. Cal.	<u>N/A</u>						
M'tl Cal/Vel:	<u>0.1234 in/µs</u>	Exam Angle:	<u>45°</u> Squint Angle: <u>N/A</u>	Final Cal.	<u>1722</u>	<u>09/21/2011</u>					
Damping:	<u>400 Ohms</u>	Measured Angle:	<u>45°</u> Mode: <u>Shear</u>	Couplant			Circumferential Orientated Search Unit				
Rep. Rate:	<u>Auto.</u>	Exit Point:	<u>0.30"</u> # of Elements: <u>1</u>	Cal. Batch:	<u>07220</u>		Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path	
Filter:	<u>0.8 - 3.0 Mhz</u>	Config.:	<u>Single</u> Focus: <u>N/A</u>	Type:	<u>SoundSafe</u>		<u>N/A</u>				
Voltage:	<u>Max.</u>	Shape:	<u>Round</u> Contour: <u>N/A</u>	Mfg.:	<u>SONOTECH</u>						
Ax. Gain (dB):	<u>8.2</u> Circ. Gain (dB): <u>N/A</u>	Wedge Style:	<u>MSWQC</u>	Exam Batch:	<u>07220</u>						
<u>10</u> Screen Div. = <u>2.040</u>	In. of <u>Sound Path</u>	Search Unit Cable		Type:	<u>SoundSafe</u>						
Calibration Block		Scan Coverage		Mfg.:	<u>SONOTECH</u>						
Cal. Block No.:	<u>10876</u>	Upstream <input checked="" type="checkbox"/> Downstream <input type="checkbox"/>	Scan dB: <u>26.2</u>	Reference Block			Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
Thickness:	<u>2.25"</u> Dia.: <u>Flat</u>	CW <input checked="" type="checkbox"/> CCW <input checked="" type="checkbox"/>	Scan dB: <u>26.2</u>	Serial No.:	<u>05-8535</u>		<u>8.2</u>	<u>FSDH</u>	<u>20%</u>	<u>5.1</u>	<u>1.035"</u>
Cal. Blk. Temp.:	<u>70°</u> Temp. Tool: <u>07</u>	Exam Surface:	<u>OD</u>	Type:	<u>SS Rompus Block</u>		<u>N/A</u>				
Comp. Temp.:	<u>78°</u> Temp. Tool: <u>07</u>	Surface Condition:	<u>Contour Ground</u>								
Recordable Indication(s):	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	(If Yes, Ref. Attached Ultrasonic Indication Report.)									
Results:	Accept <input checked="" type="checkbox"/> Reject <input type="checkbox"/> Geom <input type="checkbox"/>	Comments: <u>No Axial exams were performed on the Downstream side of the weld.</u>									
Percent Of Coverage Obtained > 90%:	<u>No</u>	Reviewed Previous Data:	<u>Yes</u>								

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Knott, Brian D	II-PDI	<i>Brian D. Knott</i>	09/21/2011	W.L. Thomas	<i>W.L. Thomas</i>	9-24-11
Zollner, Brian D	II-PDI	<i>Brian D. Zollner</i>	09/21/2011	Jeff Obergard	<i>Jeff Obergard</i>	09/23/11
Other	N/A			ANII Review	<i>[Signature]</i>	10/16/11

ENCLOSURE R2-2

NAPS Unit 2 4th Interval 1st Period Limited Exams
Page 74 of 86

Serial No. 14-050
Docket No. 50-339

UT Calibration/Examination



Site/Unit: NAPS / 2 Procedure: ER-AA-NDE-UT-802 Outage No.: N2R21
 Summary No.: N2.R1.20.0039 Procedure Rev.: 1 Report No.: UT-11-028
 Workscope: ISI Work Order No.: 59102346793 Page: 2 of 8

Code: ASME 2004 Ed. Cat./Item: R-A/R1.20 Location: A Loop
 Drawing No.: 12050-WMKS-0103AG Description: 45 degree elbow to branch connection
 System ID: RC
 Component ID: 12050-WMKS-0103AG / 6-RC-416 / 4 Size/Length: 1.30" / 20.8" Thickness/Diameter: 0.718" / 6.0"
 Limitations: Single side exam due to configuration. Start Time: 1549 Finish Time: 1556

Instrument Settings		Search Unit		Cal. Checks			Axial Orientated Search Unit				
Serial No.:	<u>040182503</u>	Serial No.:	<u>01CLN0</u>	Cal. Checks	Time	Date	Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path	
Manufacturer:	<u>Panametrics</u>	Manufacturer:	<u>KBA</u>	Initial Cal.	<u>0946</u>	<u>09/21/2011</u>	<u>1.0" Notch</u>	<u>80%</u>	<u>7.0</u>	<u>1.805"</u>	
Model:	<u>EPOCH 4</u> Linearity: <u>L-11-015</u>	Size:	<u>0.375"</u> Model: <u>Comp-G</u>	Inter. Cal.	<u>1526</u>	<u>09/21/2011</u>	<u>N/A</u>				
Delay:	<u>7.195 µs</u> Range: <u>2.580"</u>	Freq.:	<u>2.25 Mhz.</u> Center Freq.: <u>N/A</u>	Inter. Cal.	<u>N/A</u>						
M'tl Cal/Vel:	<u>0.1265 in/µs</u> Pulsar: <u>Square</u>	Exam. Angle:	<u>60°</u> Squint Angle: <u>N/A</u>	Inter. Cal.	<u>N/A</u>						
Damping:	<u>400 Ohms</u> Reject: <u>0%</u>	Measured Angle:	<u>60°</u> Mode: <u>Shear</u>	Final Cal.	<u>1723</u>	<u>09/21/2011</u>					
Rep. Rate:	<u>Auto.</u> Freq.:	Exit Point:	<u>0.25"</u> # of Elements: <u>1</u>	Couplant			Circumferential Orientated Search Unit				
Filter:	<u>0.8 - 3.0 Mhz</u> Mode: <u>Fullwave</u>	Config.:	<u>Single</u> Focus: <u>N/A</u>	Cal. Batch:	<u>07220</u>		Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path	
Voltage:	<u>Max.</u> Other: <u>N/A</u>	Shape:	<u>Round</u> Contour: <u>N/A</u>	Type:	<u>SoundSafe</u>		<u>N/A</u>				
Ax. Gain (dB):	<u>24.8</u> Circ. Gain (dB): <u>N/A</u>	Wedge Style:	<u>MSWQC</u>	Mfg.:	<u>SONOTECH</u>						
<u>10</u> Screen Div. = <u>2.580</u> in. of <u>Sound Path</u>	Type: <u>RG 174</u> Length: <u>6'</u> No. Conn.: <u>0</u>	Search Unit Cable		Exam Batch:	<u>07220</u>						
Calibration Block	Scan Coverage	Reference Block		Type:	<u>SoundSafe</u>						
Cal. Block No.:	<u>10878</u>	Serial No.:	<u>05-8535</u>	Mfg.:	<u>SONOTECH</u>						
Thickness:	<u>2.25"</u> Dia.: <u>Flat</u>	Type:	<u>SS Rompus Block</u>				Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
Cal. Blk. Temp.:	<u>70°</u> Temp. Tool: <u>07</u>	Upstream <input checked="" type="checkbox"/>	Downstream <input type="checkbox"/>	Scan dB: <u>30.8</u>			<u>24.8</u>	<u>FSDH</u>	<u>54%</u>	<u>5.8</u>	<u>1.450"</u>
Comp. Temp.:	<u>78°</u> Temp. Tool: <u>07</u>	CW <input checked="" type="checkbox"/>	CCW <input checked="" type="checkbox"/>	Scan dB: <u>30.8</u>			<u>N/A</u>				
Recordable Indication(s):	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Exam Surface:	<u>OD</u>	Surface Condition:	<u>Contour Ground</u>						
Results:	Accept <input checked="" type="checkbox"/> Reject <input type="checkbox"/> Geom <input type="checkbox"/>	(If Yes, Ref. Attached Ultrasonic Indication Report.)									
Percent Of Coverage Obtained > 90%:	<u>No</u>	Reviewed Previous Data:	<u>Yes</u>	Comments: <u>Effective coverage using the 60° search unit has been verified by the presence of the weld root response during the required scans. No Ax. Scans on the DNST</u>							

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Knott, Brian D.	II-PDI	<i>Brian D. Knott</i>	09/21/2011	W.L. Thomas	<i>W.L. Thomas</i>	9.24.11
Zollner, Brian D	II-PDI	<i>Brian D. Zollner</i>	09/21/2011	KFC Odegaard	<i>KFC Odegaard</i>	10/13/11
Other	N/A			ANII Review	<i>[Signature]</i>	10/16/11

ENCLOSURE R2-2

NAPS Unit 2nd Interval 1st Period Limited Exams
Page 75 of 86

Serial No. 14-050
Docket No. 50-339

UT Calibration/Examination



Site/Unit: NAPS / 2
 Summary No.: N2.R1.20.0039
 Workscope: ISI

Procedure: ER-AA-NDE-UT-802
 Procedure Rev.: 1
 Work Order No.: 59102346793

Outage No.: N2R21
 Report No.: UT-11-028
 Page: 3 of 6

Code: ASME 2004 Ed. Cat./Item: R-A/R1,20 Location: A Loop
 Drawing No.: 12050-WMKS-0103AG Description: 45 degree elbow to branch connection
 System ID: RC
 Component ID: 12050-WMKS-0103AG / 6-RC-416 / 4 Size/Length: 1.30" / 20.8" Thickness/Diameter: 0.718" / 6.0"
 Limitations: Single side exam due to configuration. Start Time: 1557 Finish Time: 1604

Instrument Settings
 Serial No.: 040182503 Manufacturer: Panametrics Model: EPOCH 4 Linearity: L-11-015
 Delay: 8.495 µs Range: 4.400" M'll Cal/Vol: 0.1290 in/µs Pulser: Square Damping: 400 Ohms Rep. Rate: Auto. Filter: 0.8 - 3.0 Mhz Voltage: Max.
 Search Unit
 Serial No.: 00VBBK Manufacturer: KBA Size: 0.375" Model: Comp-G
 Freq.: 2.25 Mhz. Center Freq.: N/A Exam Angle: 70° Squint Angle: N/A Measured Angle: 71° Mode: Shear
 Exit Point: 0.35" # of Elements: 1 Config.: Single Focus: N/A Shape: Round Contour: N/A
 Wedge Style: MSWQC

Cal. Checks	Time	Date
Initial Cal.	1002	09/21/2011
Inter. Cal.	1557	09/21/2011
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	1726	09/21/2011

Axial Orientated Search Unit			
Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1.0" Notch	80%	7.0	3.080"
N/A			

Ax. Gain (dB): 30.4 Circ. Gain (dB): N/A
10 Screen Div. = 4.400 in. of Sound Path Type: RG 174 Length: 6' No. Conn.: 0

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

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

Calibration Block
 Cal. Block No.: 10878 Thickness: 2.25" Dia.: Flat Cal. Blk. Temp.: 70° Temp. Tool: 07 Comp. Temp.: 78° Temp. Tool: 07
Scan Coverage
 Upstream Downstream Scan dB: 36.4 CW CCW Scan dB: N/A
 Exam Surface: OD Surface Condition: Contour Ground

Reference Block
 Serial No.: 05-6535 Type: SS Rompus Block

Reference/Simulator Block				
Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
25.9	NSDH	80%	2.2	0.960"
N/A				

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

Results: Accept Reject Geom Comments: None

Percent Of Coverage Obtained > 80%: No Reviewed Previous Data: Yes

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Knott, Brian D.	II-PDI	<i>Brian D. Knott</i>	09/21/2011	W.L. Thomas	<i>W.L. Thomas</i>	9.24.11
Zollner, Brian D.	II-PDI	<i>Brian D. Zollner</i>	09/21/2011	Jeff Odgaard	<i>Jeff Odgaard</i>	10/13/11
N/A	N/A			ANII Review	<i>[Signature]</i>	10/16/11

ENCLOSURE R2-2

NAPS Unit 2 4th Interval 1st Period Limited Exams
 Page 76 of 86

Serial No. 14-050
 Docket No. 50-339

UT Calibration/Examination



Site/Unit: NAPS / 2 Procedure: ER-AA-NDE-UT-802 Outage No.: N2R21
 Summary No.: N2.R1.20.0039 Procedure Rev.: 1 Report No.: UT-11-028
 Workscope: ISI Work Order No.: 59102346793 Page: 4 of 6

Code: ASME 2004 Ed. Cat./Item: R-A/R1.20 Location: A Loop
 Drawing No.: 12050-WMKS-0103AG Description: 45 degree elbow to branch connection
 System ID: RC
 Component ID: 12050-WMKS-0103AG / 6-RC-416 / 4 Size/Length: 1.30" / 20.8" Thickness/Diameter: 0.718" / 6.0"
 Limitations: Single side exam due to configuration. Start Time: 1606 Finish Time: 1612

Instrument Settings
 Serial No.: 040182503 Manufacturer: Panametrics
 Model: EPOCH 4 Linearity: L-11-015
 Delay: 9.085 μ s Range: 2.830"
 M'll Cal/Val: 0.2331 In/ μ s Pulsar: Square
 Damping: 400 Ohms Reject: 0%
 Rep. Rate: Auto. Freq.: 2.0 Mhz.
 Filter: 0.8-3.0 Mhz Mode: Fullwave
 Voltage: Max. Other: N/A

Search Unit
 Serial No.: 06-108 Manufacturer: RTD
 Size: 2(8X14) Model: TRL2-AUST
 Freq.: 2.0 Mhz. Center Freq.: N/A
 Exam Angle: 60° Squint Angle: 3°
 Measured Angle: 61° Mode: Longitudinal
 Exit Point: 0.35" # of Elements: 2
 Config.: D-SBS Focus: FD.0.6"
 Shape: Rectangular Contour: FLAT
 Wedge Style: Integral

Cal. Checks	Time	Date
Initial Cal.	1041	09/21/2011
Inter. Cal.	1605	09/21/2011
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	1730	09/21/2011

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

Axial Orientated Search Unit			
Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1.0" SDH	80%	7.0	1.981"
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
32.7	FSDH	80%	5.4	1.523"
N/A				

Ax. Gain (dB): 38.3 Circ. Gain (dB): N/A
10 Screen Div. = 2.830 In. of Sound Path
Calibration Block
 Cal. Block No.: 21588 Upstream Downstream Scan dB: 38.3
 Thickness: 3" Dia.: Flat CW CCW Scan dB: N/A
 Cal. Blk. Temp.: 70° Temp. Tool: 07 Exam Surface: OD
 Comp. Temp.: 78° Temp. Tool: 07 Surface Condition: Contour Ground
 Recordable Indication(s): Yes No (If Yes, Ref. Attached Ultrasonic Indication Report.)
 Results: Accept Reject Geom

Reference Block
 Serial No.: 05-8535
 Type: SS Rompus Block

Comments: Utilized for coverage on nozzle side of weld.

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

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Knott, Brian D.	II-PDI	<i>Brian D. Knott</i>	09/21/2011	W.L. Thomas	<i>W.L. Thomas</i>	9-24-11
Zollner, Brian D	II-PDI	<i>Brian D. Zollner</i>	09/21/2011	Jeff Oddegard	<i>Jeff Oddegard</i>	10/13/11
Other	N/A			ANII Review	<i>M. He</i>	10/16/11

ENCLOSURE R2-2

NAPS Unit 2 4th Interval 1st Period Limited Exams Page 77 of 86

Serial No. 14-050

Docket No. 50-339

ENCLOSURE R2-2

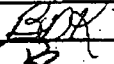
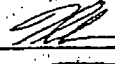



Supplemental Report



Report No.: UT-11-028

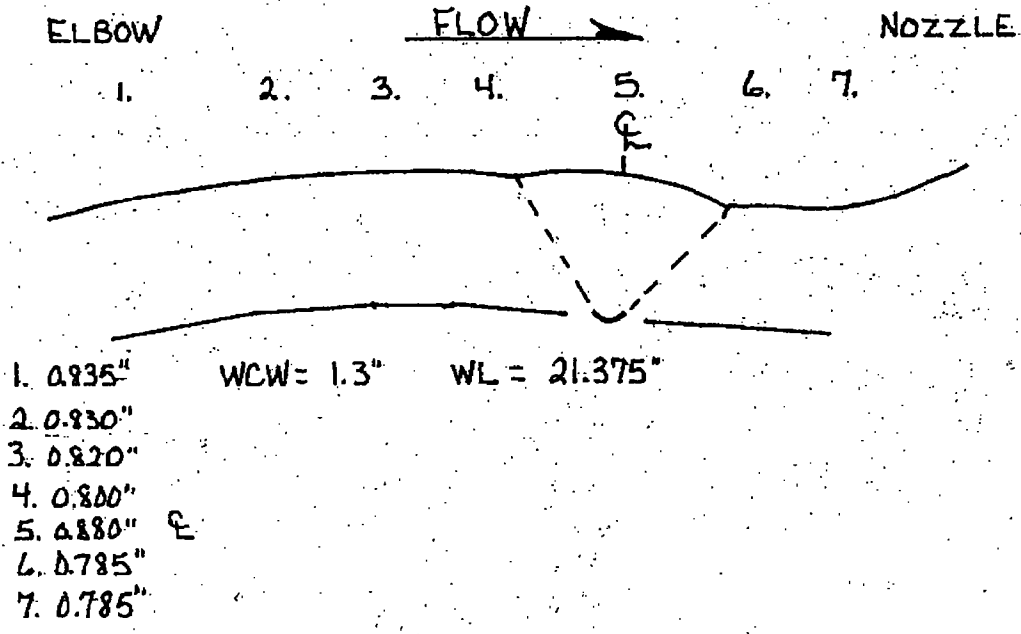
Page: 5 of 6

Summary No.: N2.R1.20.0039

Examiner: <u>Knott, Brian D.</u> 	Level: <u>II-PDI</u>	Reviewer: <u>WL Thomas</u> 	Date: <u>9-24-11</u>
Examiner: <u>Zollner, Brian D.</u> 	Level: <u>II-PDI</u>	Site Review: <u>J.P. Oleson</u> 	Date: <u>10/17/11</u>
Other: <u>N/A</u>	Level: <u>N/A</u>	ANII Review: <u>M.A.E.</u> 	Date: <u>10/26/11</u>

Comments:

Sketch or Photo:

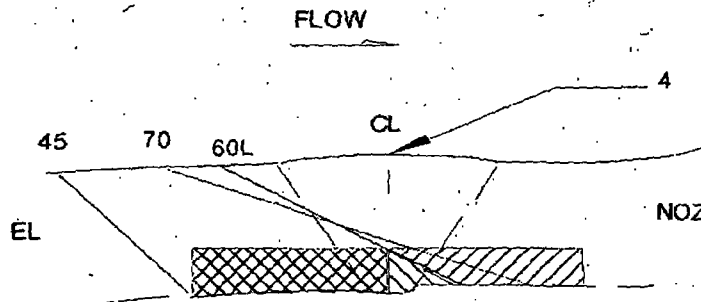


ENCLOSURE R2-2



Report No: UT-11-028
 Summary # N2.R1.20.0039
 Pg. 6 of 6
 Prepared By: W.L. Thomas
 Date: 9/24/2011

Weld Number	4
Thickness	.832"
Weld Length	20.8"
Weld Width	1.3"



EXAMINED 100% REQUIRED VOLUME US SIDE



EXAMINED .06 SQ. IN. OF THE REQUIRED .32 SQ IN. VOLUME
 $.06 / .32 = .187 \times 100 = 19\%$ BEST EFFORT DS SIDE



NO EXAM .26 SQ IN. DS SIDE

AXIAL DIRECTION $.26 / .32 = 81\%$ NO EXAM

ANII MA Date 10/16/11
 Initial Final
 HSB-CT

Examination Volume Dimensions - Height .277" Length 20.8" Width 2.3"

Coverage Summary				
Required Scans (each has a weighing factor of 100 for complete coverage)				
ANGLE	UpSt-Ax	UpSt-Circ	DnSt-Ax	DnSt-Circ
45/60/70	100%	100%		100%
60L			*19%	
Code Coverage Total				75%
* Best Effort Coverage (Max 25%) Total				5%

Notes:

- Code Coverage refers to the maximum percentage of the required examination volume that is effectively examined with the qualified examination procedure.
- 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

Site/Unit: NAPS / 2
 Summary No.: N2.R1.20.0818
 Workscope: ISI

Procedure: ER-AA-NDE-UT-802
 Procedure Rev.: 2
 Work Order No.: 59102532605/NDER13-079

Outage No.: N2R22
 Report No.: UT-13-025
 Page: 1 of 8

Code: 2004 Edition Cat./Item: R-A/R1.20 Location: PZR 262
 Drawing No.: 12050-WMKS-0111W Description: Valve to Elbow
 System ID: CH
 Component ID: 12050-WMKS-0111W / 3-CH-814 / 6A Size/Length: 1.2" / 13" Thickness/Diameter: .620" / 3"
 Limitations: Limitations due to config. Start Time: 10:25 Finish Time: 10:33

Instrument Settings		Search Unit		Cal. Checks			Axial Orientated Search Unit				
Serial No.:	<u>040186603</u>	Serial No.:	<u>01CWK4</u>	Initial Cal.	<u>07:00</u>	<u>4/18/2013</u>	Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path	
Manufacturer:	<u>Panametrics</u>	Manufacturer:	<u>KBA</u>	Inter. Cal.	<u>10:25</u>	<u>4/18/2013</u>	<u>1.0" Notch</u>	<u>80</u>	<u>8.0</u>	<u>1.399</u>	
Model:	<u>EPOCH 4</u> Linearity: <u>L-13-011</u>	Size:	<u>0.25"</u> Model: <u>Comp-G</u>	Inter. Cal.	<u>10:33</u>	<u>4/18/2013</u>	<u>N/A</u>				
Delay:	<u>4.483</u> Range: <u>1.75"</u>	Freq.:	<u>2.25 MHZ</u> Center Freq.: <u>N/A</u>	Inter. Cal.	<u>N/A</u>						
M'll Cal/Vel:	<u>.1232</u> Pulse: <u>Square</u>	Exam Angle:	<u>45°</u> Squint Angle: <u>N/A</u>	Final Cal.	<u>12:01</u>	<u>4/18/2013</u>					
Damping:	<u>400Ω</u> Reject: <u>0%</u>	Measured Angle:	<u>45°</u> Mode: <u>Shear</u>	Couplant			Circumferential Orientated Search Unit				
Rep. Rate:	<u>Auto</u> Freq.: <u>2.0 Mhz</u>	Exit Point:	<u>.175"</u> # of Elements: <u>1</u>	Cal. Batch:	<u>07220</u>		Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path	
Filter:	<u>.8-3.0</u> Mode: <u>fullwave</u>	Config.:	<u>Single</u> Focus: <u>N/A</u>	Type:	<u>SoundSafe</u>		<u>N/A</u>				
Voltage:	<u>Max</u> Other: <u>N/A</u>	Shape:	<u>Round</u> Contour: <u>N/A</u>	Mfg.:	<u>SONOTECH</u>						
Ax. Gain (dB):	<u>13.8</u> Circ. Gain (dB): <u>N/A</u>	Wedge Style:	<u>MSWQC</u>	Exam Batch:	<u>07220</u>						
<u>10</u> Screen Div. = <u>1.75</u> in. of <u>Sound Path</u>		Search Unit Cable	Type: <u>RG-174</u> Length: <u>6'</u> No. Conn.: <u>0</u>	Type:	<u>SoundSafe</u>						
Calibration Block		Scan Coverage		Mfg.:	<u>SONOTECH</u>		Reference/Simulator Block				
Cal. Block No.:	<u>10873</u>	Upstream <input type="checkbox"/> Downstream <input checked="" type="checkbox"/>	Scan dB: <u>25.8</u>	Serial No.:	<u>05-6535</u>		Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
Thickness:	<u>2.25"</u> Dia.: <u>0</u>	CW <input checked="" type="checkbox"/> CCW <input checked="" type="checkbox"/>	Scan dB: <u>25.8</u>	Type:	<u>SS Rompus Block</u>		<u>25.8</u>	<u>.7 SDH</u>	<u>75</u>	<u>6.0</u>	<u>1.045</u>
Cal. Blk. Temp.:	<u>74°</u> Temp. Tool: <u>1076BGCY</u>	Exam Surface:	<u>OD</u>					<u>N/A</u>			
Comp. Temp.:	<u>79°</u> Temp. Tool: <u>1076BGCY</u>	Surface Condition:	<u>Contour Ground</u>								
Recordable Indication(s):	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (If Yes, Ref. Attached Ultrasonic Indication Report.)					Reference/Simulator Block					
Results:	NRI <input checked="" type="checkbox"/> RI <input type="checkbox"/> Geom <input type="checkbox"/>					Gain dB Reflector Signal Amplitude % Sweep Division Sound Path					
Percent Of Coverage Obtained > 90%:	<u>No</u> Reviewed Previous Data: <u>N/A</u>					<u>25.8</u> <u>.7 SDH</u> <u>75</u> <u>6.0</u> <u>1.045</u>					
								Comments: <u>Limited Scan 2" in the introdose of elbow Ax and Cir.scans</u>			

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Currao, Jeffrey T	II-PDI	<i>[Signature]</i>	4/18/2013	W.L. Thomas	<i>[Signature]</i>	4.27.13
N/A	N/A			Raymond T. Stack	<i>[Signature]</i>	5/1/13
N/A	N/A			ANII Review	<i>[Signature]</i>	5/2/13

UT Calibration/Examination

ENCLOSURE R2-3

NAPS Unit 2 4" Interval 1st Period Limited Exams
 Page 80 of 86

Serial No. 14-050
 Docket No. 50-339

UT Calibration/Examination



Dominion

Site/Unit: NAPS / 2 Procedure: ER-AA-NDE-UT-802 Outage No.: N2R22
 Summary No.: N2.R1.20.0818 Procedure Rev.: 2 Report No.: UT-13-025
 Workscope: ISI Work Order No.: 59102532605/NDER13-079 Page: 2 of 6

Code: 2004 Edition Cat./Item: R-A/R1.20 Location: PZR 262
 Drawing No.: 12050-WMKS-0111W Description: Valve to Elbow
 System ID: CH
 Component ID: 12050-WMKS-0111W / 3-CH-814 / 6A Size/Length: 1.2" / 13" Thickness/Diameter: .620" / 3"
 Limitations: Limitations due to config. Start Time: 10:34 Finish Time: 10:40

Instrument Settings		Search Unit		Cal. Checks			Axial Orientated Search Unit				
Serial No.:	<u>040186603</u>	Serial No.:	<u>01CWK3</u>	Initial Cal.	<u>07:01</u>	<u>4/18/2013</u>	Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path	
Manufacturer:	<u>Panametrics</u>	Manufacturer:	<u>KBA</u>	Inter. Cal.	<u>10:34</u>	<u>4/18/2013</u>	<u>1.0" notch</u>	<u>80</u>	<u>6.8</u>	<u>1.706"</u>	
Model:	<u>EPOCH 4</u> Linearity: <u>L-13-011</u>	Size:	<u>0.25"</u> Model: <u>Comp-G</u>	Inter. Cal.	<u>10:40</u>	<u>4/18/2013</u>	<u>N/A</u>				
Delay:	<u>5.455</u> Range: <u>2.5"</u>	Freq.:	<u>2.25 MHZ</u> Center Freq.: <u>N/A</u>	Inter. Cal.	<u>N/A</u>						
M'd Cal/Val:	<u>.1232</u> Pulsar: <u>Square</u>	Exam Angle:	<u>60°</u> Squint Angle: <u>N/A</u>	Final Cal.	<u>12:02</u>	<u>4/18/2013</u>					
Damping:	<u>400Ω</u> Reject: <u>0%</u>	Measured Angle:	<u>60°</u> Mode: <u>Shear</u>	Couplant							
Rep. Rate:	<u>Auto</u> Freq.: <u>2.0 Mhz</u>	Exit Point:	<u>.2"</u> # of Elements: <u>1</u>	Cal. Batch:	<u>07220</u>						
Filter:	<u>.8-3.0</u> Mode: <u>Shear</u>	Config.:	<u>Single</u> Focus: <u>N/A</u>	Type:	<u>SoundSafe</u>						
Voltage:	<u>Max</u> Other: <u>N/A</u>	Shape:	<u>Round</u> Contour: <u>N/A</u>	Mfg.:	<u>SONOTECH</u>						
Ax. Gain (dB): <u>30.3</u> Circ. Gain (dB): <u>N/A</u>				Circumferential Orientated Search Unit							
10 Screen Div. = <u>2.5</u> in. of <u>Sound Path</u>				Reference/Simulator Block							
Type: <u>RG-174</u> Length: <u>6'</u> No. Conn.: <u>0</u>				Serial No.:	<u>05-6535</u>						
Calibration Block				Reference Block							
Cal. Block No.:	<u>10873</u>			Upstream	<input type="checkbox"/>	Downstream	<input checked="" type="checkbox"/>	Scan dB:	<u>36.3</u>		
Thickness	<u>2.25"</u>	Dia.:	<u>0</u>	CW	<input checked="" type="checkbox"/>	CCW	<input checked="" type="checkbox"/>	Scan dB:	<u>36.3</u>		
Cal. Blk. Temp.	<u>74°</u>	Temp. Tool:	<u>1076BGCY</u>	Exam Surface:	<u>OD</u>						
Comp. Temp.	<u>79°</u>	Temp. Tool:	<u>1076BGCY</u>	Surface Condition:	<u>Contour Ground</u>						
Recordable Indication(s): Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (If Yes, Ref. Attached Ultrasonic Indication Report.)											
Results: NRI <input checked="" type="checkbox"/> RI <input type="checkbox"/> Geom <input type="checkbox"/>											
Percent Of Coverage Obtained > 90%: <u>No</u> Reviewed Previous Data: <u>N/A</u>											
Comments: Limited scan in intradose 2" both Ax and Cir Scan. Effective coverage using the 60° search unit has been verified by the presence of the weld root response											

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Currao, Jeffrey T	<u>II-PDI</u>	<i>[Signature]</i>	<u>4/18/2013</u>	<u>W.L. Thomas</u>	<i>[Signature]</i>	<u>4/27/13</u>
<u>N/A</u>	<u>N/A</u>		<u>4/18/2013</u>	<u>Raymond T. Stack</u>	<i>[Signature]</i>	<u>5/1/13</u>
<u>N/A</u>	<u>N/A</u>			<u>ANI/Review</u>	<i>[Signature]</i>	<u>5/2/13</u>

ENCLOSURE R2-3

NAPS Unit 2 4" Interval 1" Period Limited Exams
Page 81 of 86

Serial No. 14-050
Docket No. 50-339

UT Calibration/Examination



Dominion

Site/Unit: NAPS / 2
 Summary No.: N2.R1.20.0818
 Workscope: ISI

Procedure: ER-AA-NDE-UT-802
 Procedure Rev.: 2
 Work Order No.: 59102532605/NDER13-079

Outage No.: N2R22
 Report No.: UT-13-025
 Page: 3 of 6

Code: 2004 Edition Cat./Item: R-AR1.20 Location: PZR 262
 Drawing No.: 12050-WMKS-0111W Description: Valve to Elbow
 System ID: CH
 Component ID: 12050-WMKS-0111W / 3-CH-814 / 6A Size/Length: 1.2" / 13" Thickness/Diameter: .620" / 3"
 Limitations: Limited Due to Config. Start Time: 10:41 Finish Time: 10:47

Instrument Settings		Search Unit		Cal. Checks			Axial Orientated Search Unit			
Serial No.:	<u>040186603</u>	Serial No.:	<u>01CWK2</u>	Cal. Checks	Time	Date	Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
Manufacturer:	<u>Panametrics</u>	Manufacturer:	<u>KBA</u>	Initial Cal.	<u>07:03</u>	<u>4/18/2013</u>	1.0" Notch	<u>80</u>	<u>8.3</u>	<u>2.569"</u>
Model:	<u>EPOCH 4</u> Linearity: <u>L-13-011</u>	Size:	<u>0.25"</u> Model: <u>Comp-G</u>	Inter. Cal.	<u>10:41</u>	<u>4/18/2013</u>	N/A			
Delay:	<u>7.008</u> Range: <u>3.1"</u>	Freq.:	<u>2.25 MHZ</u> Center Freq.: <u>N/A</u>	Inter. Cal.	<u>10:47</u>	<u>4/18/2013</u>				
M'tl Cal/Vel:	<u>.1232</u> Pulsar: <u>Square</u>	Exam Angle:	<u>70°</u> Sqrnt Angle: <u>N/A</u>	Inter. Cal.	<u>N/A</u>					
Damping:	<u>400Ω</u> Reject: <u>0%</u>	Measured Angle:	<u>67°</u> Mode: <u>Shear</u>	Final Cal.	<u>12:03</u>	<u>4/18/2013</u>				
Rep. Rate:	<u>Auto</u> Freq.: <u>2.0</u>	Exit Point	<u>.4"</u> # of Elements: <u>Single</u>	Couplant						
Filter:	<u>.8-3.0</u> Mode: <u>Fullwave</u>	Config.:	<u>Single</u> Focus: <u>N/A</u>	Cal. Batch:	<u>07220</u>					
Voltage:	<u>Max</u> Other: <u>N/A</u>	Shape:	<u>Round</u> Contour: <u>N/A</u>	Type:	<u>SoundSafe</u>					
Ax. Gain (dB):	<u>39.4</u> Circ. Gain (dB): <u>N/A</u>	Wedge Style:	<u>MSWQC</u>	Mfg.:	<u>SONOTECH</u>					
<u>10</u> Screen Div. = <u>3.1</u> In. of <u>Sound Path</u>		Search Unit Cable		Exam Batch:	<u>07220</u>					
		Type:	<u>RG-174</u> Length: <u>6'</u> No. Conn.: <u>0</u>	Type:	<u>SoundSafe</u>					
		Scan Coverage		Mfg.:	<u>SONOTECH</u>					
Cal. Block No.	<u>10873</u>	Upstream <input type="checkbox"/> Downstream <input checked="" type="checkbox"/>	Scan dB: <u>39.4</u>	Circumferential Orientated Search Unit						
Thickness	<u>2.25"</u> Dia.: <u>0</u>	CW <input type="checkbox"/> CCW <input type="checkbox"/>	Scan dB: <u>N/A</u>	Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path			
Cal. Blk. Temp.	<u>74°</u> Temp. Tool: <u>1076BGY</u>	Exam Surface:	<u>OD</u>	N/A						
Comp. Temp.	<u>79°</u> Temp. Tool: <u>1076BGY</u>	Surface Condition:	<u>Contour Ground</u>							
Recordable Indication(s):	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	(If Yes, Ref. Attached Ultrasonic Indication Report.)								
Results:	<u>NRI</u> <input checked="" type="checkbox"/> <u>RI</u> <input type="checkbox"/> <u>Geom</u> <input type="checkbox"/>	Comments: <u>limited for 2" in the Intradose for the Ax Scan.</u>								
Percent Of Coverage Obtained > 90%:	<u>No</u>	Reviewed Previous Data:	<u>N/A</u>	Reference/Simulator Block						
				Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path		
				<u>27.4</u>	<u>.3" SDH</u>	<u>40</u>	<u>2.8</u>	<u>.859"</u>		
				<u>N/A</u>						

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Currao, Jeffrey T	II-PDI	<i>[Signature]</i>	4/18/2013	W.L. Thomas	<i>[Signature]</i>	4/27/13
N/A	N/A		4/18/2013	Raymond T. Stack	<i>[Signature]</i>	5/1/13
Other	N/A			ANY Review	<i>[Signature]</i>	
N/A	N/A				<i>[Signature]</i>	

ENCLOSURE R2-3
 NAPS Unit 2 4th Interval 1st Period Limited Exams
 Page 82 of 86
 Serial No. 14-050
 Docket No. 50-339

UT Calibration/Examination



Site/Unit: NAPS / 2 **Procedure:** ER-AA-NDE-UT-802 **Outage No.:** N2R22
Summary No.: N2.R1.20.0818 **Procedure Rev.:** 2 **Report No.:** UT-13-025
Workscope: ISI **Work Order No.:** 59102532605/NDER13-079 **Page:** 4 of 6

Code: 2004 Edition **Cat./Item:** R-A/R1.20 **Location:** PZR 262
Drawing No.: 12050-WMKS-0111W **Description:** Valve to Elbow
System ID: CH
Component ID: 12050-WMKS-0111W / 3-CH-814 / 6A **Size/Length:** 1.2" / 13" **Thickness/Diameter:** .620" / 3"
Limitations: Limited due to Config. **Start Time:** 10:48 **Finish Time:** 10:53

Instrument Settings
Serial No.: 040186603 **Manufacturer:** Panametrics
Model: EPOCH 4 **Linearity:** L-13-011
Delay: 5.855 **Range:** 2.5"
M'll Cal/Vel: .2488 **Pulser:** Square
Damping: 400Ω **Reject:** 0%
Rep. Rate: Auto **Freq.:** 2.0
Filter: .8-3.0 **Mode:** Fullwave
Voltage: Max **Other:** N/A

Search Unit
Serial No.: 22K0-10001 **Manufacturer:** Sigma
Size: 2(14x8) **Model:** SDA2
Freq.: 2.0 MHZ **Center Freq.:** 1.990
Exam Angle: 60° **Squint Angle:** N/A
Measured Angle: 60° **Mode:** Longitudinal
Exit Point: 0.375 **# of Elements:** 2
Config.: D-SBS **Focus:** FD.54"
Shape: Rectangular **Contour:** RA2.0"
Wedge Style: Integral

Cal. Checks	Time	Date
Initial Cal.	07:04	4/18/2013
Inter. Cal.	10:48	4/18/2013
Inter. Cal.	10:53	4/18/2013
Inter. Cal.	N/A	
Final Cal.	12:04	4/18/2013

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

Axial Orientated Search Unit			
Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
.75" SDH	80	6.0	1.496"
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
37.3	.75"SDH	80	6.0	1.496"
N/A				

Ax. Gain (dB): 37.3 **Circ. Gain (dB):** N/A
10 Screen Div. = 2.5 in. of **Sound Path** **Type:** RG-174 **Length:** 6' **No. Conn.:** 0
Calibration Block
Cal. Block No.: 26446 **Scan Coverage**
Thickness 3.0905" **Dia.:** 4.5 **Upstream** **Downstream** **Scan dB:** 37.3
Cal. Bik. Temp. 72° **Temp. Tool:** 1076BGCY **CW** **CCW** **Scan dB:** N/A
Comp. Temp. 79° **Temp. Tool:** 1076BGCY **Exam Surface:** OD
Surface Condition: Contour Ground
Recordable Indication(s): **Yes** **No** (If Yes, Ref. Attached Ultrasonic Indication Report.)
Results: **NRI** **RI** **Geom**

Reference Block
Serial No.: 26446
Type: 1/4 Radius Cal Bik (I/W)

Comments: Limited 4" in Intrados of Elbow.

Percent Of Coverage Obtained > 90%: No **Reviewed Previous Data:** N/A

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Currao, Jeffrey T	IK/PDI	<i>[Signature]</i>	4/18/2013	W.L. THOMAS	<i>[Signature]</i>	4/27/13
N/A	N/A		4/18/2013	Raymond T. Stack	<i>[Signature]</i>	5/1/13
N/A	N/A			ANII Review	<i>[Signature]</i>	

ENCLOSURE R2-3

NAPS Unit 2 4" Interval 1st Period Limited Exams
Page 83 of 86

Serial No. 14-050
Docket No. 50-339

ENCLOSURE R2-3

Supplemental Report



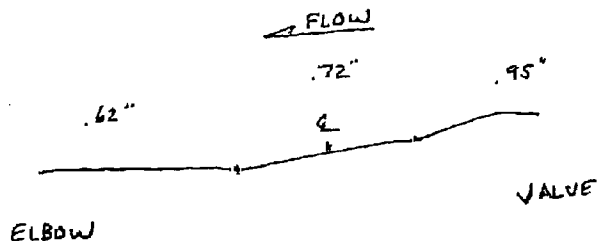
Report No.: UT-13-025
Page: 5 of 6

Summary No.: NZ.R1.20.0818

Examiner: <u>Currao, Jeffrey T</u> <i>JTC</i>	Level: <u>II-PDI</u>	Reviewer: <u>W.L. Thomas</u> <i>WLT</i>	Date: <u>04.27.13</u>
Examiner: <u>N/A</u>	Level: <u>N/A</u>	Site Review: <u>Raymond T. Stack</u> <i>RTS</i>	Date: <u>5/1/13</u>
Other: <u>N/A</u>	Level: <u>N/A</u>	ANII Review: <u>M.A.</u>	Date: <u>5/2/13</u>

Comments:

Sketch or Photo:



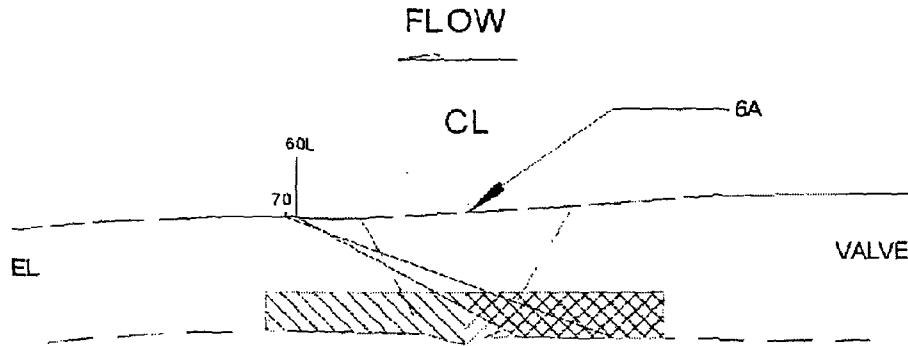
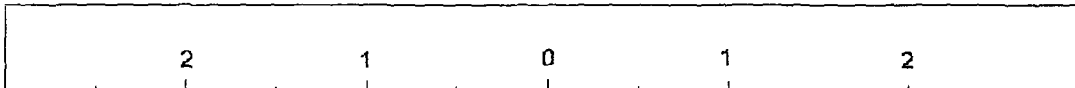
ENCLOSURE R2-3



Report No: UT-13-025
 Summary # N2.R1.20.0818
 Pg. 6 of 6
 Prepared by: W. Thomas
 Date: 4/27/2013

RES 5/1/13

Weld Number	6A	Weld Width	1.2"
Thickness	0.620"	Weld Length	13"



.207" HT X 1.1" WIDTH = 0.228 SQ. IN. X 13" LENGTH = 2.96 CU. IN.
 2.96 CU. IN. REQUIRED VOLUME US AND DS SIDES
 EXAMINED 0.02 SQ. IN. US SIDE AX DIRECTION FOR 9"
 0.02 X 9" LENGTH = 0.18 CUBIC IN BEST EFFORT US SIDE
 $.18 / 2.96 = 0.06 \times 100 = 6\%$

ANI / ANII *MA*
 HSB GS
 Reviewed *5/2/13*

NO EXAM 94% US SIDE AX DIRECTION

EXAMINED 11" DS SIDE AX AND CIRC DIRECTION 11 / 13 = 0.846 X 100 84.6%

Examination Volume Dimensions - Height 0.207" Length 13" Width 2.2"

Coverage Summary				
Required Scans (each has a weighing factor of 100 for complete coverage)				
ANGLE	UpSt-Ax	UpSt-Circ	DnSt-Ax	DnSt-Circ
45/60		0%		84.6%
70	0%		84.6%	
60L	*6%			
Code Coverage Total				42.3%
84.6+84.6+0+6=175.2/4=43.8				*Best Effort Coverage (Max 25%) Total
				1.5%

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.

7.0 DURATION OF PROPOSED ALTERNATIVE

The proposed alternatives in this request if approved will be applicable for the fourth 10 year ISI interval for NAPS 2 which ends December 13, 2020.

8.0 PRECEDENTS

Similar relief was granted in the Third Inservice Inspection (ISI) Interval, as follows:

1. Request N2-I3-PRT-002-A5 granted for limited coverage for ASME Section XI Exam category B-D, Item No. B3.110 items.
2. Request N2-I3-PRT-002-B1 granted for limited coverage for ASME Section XI Exam category C-B, Item No. C2.21 items.
3. Request N2-I3-PRT-002-R1 granted for limited coverage for Risk-Informed examinations on weld 2B (6"-RC-420).

Although Fourth Interval Risk-Informed selections are different from those for the Third Interval, alternative requests were granted for examinations in similar locations with the same service conditions as identified in requests N1-I3-PRT-004-R1 and N2-I3-PRT-002-R1.

North Anna Power Station Unit 1 was granted similar alternative requests for Fourth Interval First Period Limitations in request N1-I4-LMT-001.

9.0 REFERENCES

1. ASME Code Section XI, 2004 Edition with No Addenda.
2. Request N1-I3-PRT-004, NRC Letter dated 1/7/2011 (TAC Nos. ME3333, ME5136, ME5137, ME5138, ME5139, ME5140, and ME5141)
3. Request N2-I3-PRT-002, NRC Letter dated 8/17/2012 (TAC No. ME7180)
4. Request N1-I4-LMT-001, NRC Letter dated 8/13/2013 (TAC No. ME9913)
5. ASME Code Case N-460, "Alternative Examination Coverage for Class 1 and Class 2 Welds"