

10 CFR 50.55a

NMP2-19-2708

September 24, 2019

U.S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555-0001

Nine Mile Point Nuclear Station, Unit 2  
Renewed Facility Operating License No. NPF-69  
NRC Docket No. 50-410

Subject: End of Interval Relief Request Associated with the Third Ten-Year Inservice Inspection (ISI) Interval

In accordance with 10 CFR 50.55a, "Codes and standards," paragraph (g)(5)(iii), Exelon Generation Company, LLC (Exelon), is requesting relief from the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components." This relief request applies to the third ten-year Inservice Inspection (ISI) interval, which concluded on October 5, 2018, for the Nine Mile Point Nuclear Station, Unit 2. The third ten-year ISI interval complied with the ASME Boiler and Pressure Vessel Code, Section XI, 2004 Edition with no Addenda.

There are no regulatory commitments in this letter.

Exelon requests approval of this relief request by September 24, 2020.

If you have any questions concerning this letter, please contact Tom Loomis at (610) 765-5510.

Respectfully,



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David T. Gudger  
Acting Director - Licensing  
Exelon Generation Company, LLC

- Attachments: 1) Relief Request 2ISI-014  
2) Nine Mile Point Nuclear Station Unit 2 Third Inservice Inspection Interval Limited Coverage Non-Destructive Examination Reports

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cc: Regional Administrator, Region I, USNRC  
USNRC Senior Resident Inspector, NMP  
Project Manager USNRC, NMP  
A. L. Peterson, NYSERDA

**Attachment 1**  
**Relief Request 2ISI-014**

**ATTACHMENT 1**  
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**1. ASME Code Component(s) Affected**

Code Class:	1 & 2
Reference:	IWB-2500, Table IWB-2500-1, IWC-2500, Table IWC-2500-1, ASME Code Case N-460, ASME Code Case N-578-1, Table 1, ASME Code Case N-716, Table 1.
Examination Category:	B-A, B-O, C-A, R-A
Item Number:	B1.40, B14.10, C1.10, R1.11, R1.16, R1.20
Description:	Limited Examination Coverage
Component Number:	See Table 2ISI-014.1 for a list of Component ID's

**2. Applicable Code Edition and Addenda**

The third 10-year interval of the Nine Mile Point Nuclear Station, Unit 2 Inservice Inspection (ISI) Program was based on the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," 2004 Edition with No Addenda.

The Nine Mile Point Nuclear Station, Unit 2 maintains the responsibility to ensure examinations were performed in accordance with the requirements of ASME Section XI, Appendix VIII, "Performance Demonstration for Ultrasonic Examination Systems," as amended and mandated by 10 CFR 50.55a and as modified by the Performance Demonstration Initiative (PDI) Program description. In the case of limited examinations, efforts were made to obtain additional examination coverage. Table 2ISI-014.1 identifies whether each listed best effort examination was performed in accordance with the requirements of ASME Section XI, Appendix VIII.

**3. Applicable Code Requirements**

The extent of examination requirement for Examination Category B-A, Item Number B1.40, per Table IWB-2500-1, requires a volumetric and surface examination for the closure head-to-flange weld of essentially 100% of the weld length.

The extent of examination requirement for Examination Category B-O, Item Number B14.10, per Table IWB-2500-1, requires a volumetric or surface examination of the pipe-to-pipe welds and pipe-to-flange-welds in Control Rod Drive (CRD) housings.

The extent of examination requirement for Examination Category C-A, Item Number C1.10, per Table IWC-2500-1, requires a volumetric examination for the flange-to-shell weld of essentially 100% of the weld length.

The RI-ISI Program in accordance with ASME Code Case N-578-1 was implemented at the beginning of the third ISI interval through the middle of the second period per Relief Request 2ISI-007, which included outages N2R12 and N2R13. Relief Request 2ISI-007 (ML080250410) was submitted and then was approved by the NRC in a Safety Evaluation Report dated December 1, 2008 (ML083190494) in order to utilize EPRI Topical Report (TR) 112657, Rev. B-A, as supplemented by ASME Code Case N-578-1.



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The RI-ISI Program was updated to comply with ASME Code Case N-716 per Relief Request 2ISI-011 (ML12306A088). This Code Case was implemented during the middle of the second period of the third ISI interval, which included outages N2R14, N2R15, and N2R16. Relief Request 2ISI-011 was approved in a Safety Evaluation Report dated October 24, 2013 (ML13290A172).

The extent of examination requirement for Examination Category R-A, Item Numbers R1.11 and R1.16, per Table 1 of ASME Code Case N-578-1 and Table 1 of ASME Code Case N-716, requires a volumetric examination of essentially 100% of the length of the Risk Informed Inservice Inspection (RI-ISI) weld.

Nine Mile Point Nuclear Station, Unit 2 adopted ASME Code Case N-460 ("Alternative Examination Coverage for Class 1 and Class 2 Welds, Section XI, Division 1"), which defines "essentially 100%" as greater than 90% coverage of the examination volume or surface area, as applicable. The 90% minimum coverage was applied to all surface and volumetric examinations required by ASME Section XI.

**4. Impracticality of Compliance**

In accordance with 10 CFR 50.55a(g)(5)(iii), relief is requested on the basis that conformance with these ASME Section XI requirements is impractical since conformance would require extensive structural modifications to the component or surrounding structure.

Due to the original design of these components, Nine Mile Point Nuclear Station, Unit 2 is unable to satisfy the ASME Section XI requirements to perform a surface or volumetric examination to the extent required for welds and welded attachments (greater than 90% of the volume or area) due to physical component configuration, interference from permanent plant equipment, single-sided access, etc. Nine Mile Point Nuclear Station, Unit 2 would incur significant engineering, material, and installation costs to perform such modifications without a compensating increase in the level of quality and safety. Therefore, relief is requested on the basis that the ASME Section XI requirements to examine these components are impractical.

During outages, when situations were identified where coverage was an issue, Nine Mile Point Nuclear Station, Unit 2 personnel reviewed the systems for alternatives. For the RI-ISI weld population, Examination Category R-A welds, submitted in this relief request, a case by case review was performed to determine whether additional or alternative welds could have been examined to supplement the reduced volumetric coverage examination. It was determined that there were no other welds to select that would have resulted in better coverage. This determination was made based on comparison of configurations, delta core damage frequency (CDF) values, the systems involved, and inspection history.

Table 2ISI-014.1 provides a summary of the examination limitations for each component for which relief is requested. The tables also indicate the outage the component was examined, the coverage percentage obtained for each component, and other pertinent

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design information. This table is the cumulative list of the limited ASME Section XI examinations performed during the third ISI interval. Attachment 2 provides coverage plots which were extracted from the non-destructive examination (NDE) summary sheets that detail the examination limitations.

Based on the above explanation, Nine Mile Point Nuclear Station, Unit 2 requests relief to perform examinations without achieving ASME Section XI compliance coverage when the required coverage is impractical.

**5. Burden Caused by Compliance**

Compliance with the applicable ASME Section XI volumetric and surface examination requirements can only be accomplished by redesigning and refabricating the subject and/or surrounding components. Based on this, the ASME Section XI requirements are deemed impractical in accordance with 10 CFR 50.55a(g)(5)(iii).

**6. Proposed Alternative and Basis for Use**

Nine Mile Point Nuclear Station, Unit 2 has performed the ASME Section XI required examinations to the maximum extent practical (Code Coverage), or best effort, which are documented in Table 2ISI-014.1. Due to the physical interferences causing these limitations, there are no alternative examination techniques currently available to increase coverage. There were no cases in any of the listed examination where the component's outside diameter surface features (i.e., weld crowns, weld shrinkage, surface roughness, etc.) could have been conditioned to obtain the required coverage without major modification to the components.

Periodic system pressure tests that include VT-2 visual examinations will continue to be performed in accordance with ASME Section XI, Examination Category B-P, for Class 1 pressure retaining welds and components during each refueling outage, and Examination Category C-H for Class 2 pressure retaining welds and components each inspection period of Table IWB-2500-1 and Table IWC-2500-1, as well as, any applicable system pressure testing augmented examination programs. The absence of any observed leakage provides additional assurance that the structural integrity of the subject components will be maintained throughout the remainder of the interval.

As a minimum, all components received the required volumetric or surface examinations and will continue to be conducted to the maximum extent practical due to limited or lack of access as required by the ASME Section XI ISI Program, the RI-ISI Program, or other applicable augmented examination programs such as the Nine Mile Point Nuclear Station, Unit 2 IGSCC Program.

**7. Duration of Proposed Alternative**

Relief is requested for the third ISI interval for Nine Mile Point Nuclear Station, Unit 2.

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**8. Precedents**

The following similar end of interval impracticality relief requests have been previously authorized by the NRC:

- Watts Bar Nuclear Plant, Unit 1 second ISI interval Relief Request 1-ISI-21 was authorized per NRC Safety Evaluation Report dated April 12, 2019 (ADAMS Accession No. ML19071A009).
- Limerick Generating Station, Units 1 and 2 third ISI interval Relief Request I3R-23 was authorized per NRC Safety Evaluation Report dated August 7, 2018 (ADAMS Accession No. ML18192C172).
- Surry Power Station Unit 2 fourth ISI interval Relief Requests related to limited coverage examinations in the fourth 10-year ISI interval were authorized per NRC Safety Evaluation Report dated February 17, 2017 (ADAMS Accession No. ML16365A118).

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**Table 2ISI-014.1**  
**Nine Mile Point Nuclear Station, Unit 2**  
**List of Components with Limited Examination Coverage**

Component ID	Weld Description (System) <sup>1</sup>	Exam Requirements (Figure No.) and Method	Class / Exam Category / Item Number	Outage Examined	Material of Construction	Diameter / Line No. / Thickness	Normal Operating Conditions (Pressure / Temperature)	Exam Angle / Frequency (MHz) / Mode	Actual Coverage	Appendix VIII Qualified Exam	Remarks
2RPV-CRDH001A (N2-ISI-068800)	CRD 18-03 Pipe-to-Flange Weld (RPV)	IWB-2500-18 Surface (PT)	1 B-O B14.10	N2R12	Weld: Austenitic Stainless Steel SS 304	4.0" RPV 0.365"	1016 psi - Pressure 550 degrees - Temperature	N/A / N/A / N/A	43%	No	The examination was limited due to inherent obstructions caused by adjoining components. Disassembly of the CRD mechanisms does not facilitate additional coverage for the required surface examination areas and redesign of the CRD mechanisms to provide access is not practical. (Att. 2 - Pg. Nos. 2 - 3)  Location CRD 18-03. Limitation due to vertical tubing. Need to open insulation access panels.
2RPV-CRDH001B (N2-ISI-068900)	CRD 18-03 Pipe-to-Pipe Weld (RPV)	IWB-2500-18 Surface (PT)	1 B-O B14.10	N2R12	Weld: Austenitic Stainless Steel SS 304	4.0" RPV 0.365"	1016 psi - Pressure 550 degrees - Temperature	N/A / N/A / N/A	80%	No	The examination was limited due to inherent obstructions caused by adjoining components. Disassembly of the CRD mechanisms does not facilitate additional coverage for the required surface examination areas and redesign of the CRD mechanisms to provide access is not practical. (Att. 2 - Pg. Nos. 4 - 5)  Location CRD 18-03. Limitation due to vertical tubing. Need to open insulation access panels.

Note:

- The following systems and their abbreviations are listed here: High Pressure Core Spray (CSH), Low Pressure Core Spray (CSL), Reactor Building (Drywell) Equipment Drains (DER), Reactor Core Isolation Cooling (ICS), Reactor Pressure Vessel Instrumentation (ISC), Reactor Recirculation (RCS), Reactor Pressure Vessel (RPV), Reactor Pressure Vessel Closure Head (RPVCH), Standby Liquid Control (SLS), and Reactor Water Cleanup (WCS)

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2RPV-CRDH004A (N2-ISI-069400)	CRD 30-03 Pipe-to-Flange Weld (RPV)	IWB-2500-18 Surface (PT)	1 B-O B14.10	N2R12	Weld: Austenitic Stainless Steel SS 304	4.0" RPV 0.365"	1016 psi - Pressure 550 degrees - Temperature	N/A / N/A / N/A	43%	No	The examination was limited due to inherent obstructions caused by adjoining components. Disassembly of the CRD mechanisms does not facilitate additional coverage for the required surface examination areas and redesign of the CRD mechanisms to provide access is not practical. (Att. 2 - Pg. Nos. 6 - 7)  Location CRD 30-03. Limitation due to vertical tubing. Need to open insulation access panels.
2RPV-CRDH004B (N2-ISI-069500)	CRD 30-03 Pipe-to-Pipe (RPV)	IWB-2500-18 Surface (PT)	1 B-O B14.10	N2R12	Weld: Austenitic Stainless Steel SS 304	4.0" RPV 0.365"	1016 psi - Pressure 550 degrees - Temperature	N/A / N/A / N/A	75%	No	The examination was limited due to inherent obstructions caused by adjoining components. Disassembly of the CRD mechanisms does not facilitate additional coverage for the required surface examination areas and redesign of the CRD mechanisms to provide access is not practical. (Att. 2 - Pg. Nos. 8 - 10)  Location CRD 30-03. Limitation due to vertical tubing. Need to open insulation access panels.

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2WCS-09-05-FW014 (N2-ISI-208400)	Sweep-O-Let-to-Pipe (WCS)	IWB-2500-8(c), IWB-2500-9, 10, & 11 Volumetric (UT)	1 R-A R1.16	N2R12	Weld: Austenitic Stainless Steel SA 312 TP 316L - piping to SA 182 F316L - sweep-o-let (fitting) (6000 lb)	4.0" 2WCS-004-92-1 0.337"	1037 psi - Pressure 552 degrees - Temperature	45° / 2.25 / Shear 70° / 2.25 / Shear 0° / 4.0 / Long	50%	Yes	The examination was limited due to sweep-o-let-to-pipe configuration (single-sided examination coverage) on upstream side. (Att. 2 - Pg. No. 11)
2WCS-09-05-FW015 (N2-ISI-208600)	Sweep-O-Let-to-Pipe Suction (WCS)	IWB-2500-8(c), IWB-2500-9, 10, & 11 Volumetric (UT)	1 R-A R1.16	N2R12	Weld: Austenitic Stainless Steel SA 312 TP 316L - piping to SA 182 F316L - sweep-o-let (fitting) (6000 lb)	4.0" 2WCS-004-98-1 0.337"	1037 psi - Pressure 552 degrees - Temperature	0° / 4.0 / Long 45° / 2.25 / Shear 70° / 2.25 / Shear	50%	Yes	The examination was limited due to sweep-o-let-to-pipe configuration (single-sided examination coverage). (Att. 2 - Pg. No. 12)
2RPV-CRDH005A (N2-ISI-069600)	CRD 34-03 Pipe-to-Flange Weld (RPV)	IWB-2500-18 Surface (PT)	1 B-O B14.10	N2R13	Weld: Austenitic Stainless Steel SS 304	4.0" RPV 0.365"	1016 psi - Pressure 550 degrees - Temperature	N/A / N/A / N/A	63.8%	No	The examination was limited due to inherent obstructions caused by adjoining components. Disassembly of the CRD mechanisms does not facilitate additional coverage for the required surface examination areas and redesign of the CRD mechanisms to provide access is not practical. (Att. 2 - Pg. No. 13)

Note:

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2RPV-CRDH005B (N2-ISI-069700)	CRD 34-03 Pipe-to-Pipe Weld (RPV)	IWB-2500-18 Surface (PT)	1 B-O B14.10	N2R13	Weld: Austenitic Stainless Steel SS 304	4.0" RPV 0.365"	1016 psi - Pressure 550 degrees - Temperature	N/A / N/A / N/A	63.8%	No	The examination was limited due to inaccessibility. Disassembly of the CRD mechanisms does not facilitate additional coverage for the required surface examination areas and redesign of the CRD mechanisms to provide access is not practical. (Att. 2 - Pg. No. 14)
2RPV-CRDH038A (N2-ISI-076200)	CRD 34-59, Pipe-to-Flange Weld (RPV)	IWB-2500-18 Surface (PT)	1 B-O B14.10	N2R13	Weld: Austenitic Stainless Steel SS 304	4.0" RPV 0.365"	1016 psi - Pressure 550 degrees - Temperature	N/A / N/A / N/A	85.1%	No	The examination was limited due to inherent obstructions caused by adjoining components. Disassembly of the CRD mechanisms does not facilitate additional coverage for the required surface examination areas and redesign of the CRD mechanisms to provide access is not practical. (Att. 2 - Pg. No. 15)
2RPV-CRDH038B (N2-ISI-076300)	CRD 34-59, Pipe-to-Pipe (RPV)	IWB-2500-18 Surface (PT)	1 B-O B14.10	N2R13	Weld: Austenitic Stainless Steel SS 304	4.0" RPV 0.365"	1016 psi - Pressure 550 degrees - Temperature	N/A / N/A / N/A	74.4%	No	The examination was limited due to inaccessibility. Disassembly of the CRD mechanisms does not facilitate additional coverage for the required surface examination areas and redesign of the CRD mechanisms to provide access is not practical. (Att. 2 - Pg. No. 16)

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2RHS*E1A,H W101A (N2-ISI-536000)	*E1A Flange-to-Shell (RHS)	IWC-2500-1 Volumetric (UT)	2 C-A C1.10	N2R13	Weld: Ferritic Steel SA 516 GR70 to SA 105	50.0" 2RHS-020- 185-2 0.9"	320 psi - Pressure 388 degrees - Temperature	45° / 2.25 / Shear 70° / 2.25 / Shear	83.8%	Yes	The examination was limited due to the configuration of the flange and the adjacent weld. (Att. 2 - Pg. Nos. 17 - 19)  Includes essentially 100% of the weld length.
2SLS-88A- FW042A (N2-ISI-158500)	Pipe-to- Weld-O-Let (SLS)	IWB-2500-8(c), IWB-2500-9, 10, & 11 Volumetric (UT)	1 R-A R1.11	N2R13	Weld: Austenitic Stainless Steel SA 106 GR B - piping to SA 105 - weld-o-let (fitting) (6000 lb)	3.0" 2SLS-002- 89-1 0.688"	1240 psi - Pressure 560 degrees - Temperature	45° / 5.0 / Shear 60° / 5.0 / Shear 70° / 5.0 / Shear	73% 64%	Yes	The examination was limited due to pipe-to-weld-o-let configuration. (Att. 2 - Pg. Nos. 20 - 21)  73% RI-ISI coverage obtained and 64% procedure extended coverage obtained.
2RPV-AG (N2-ISI-047800)	Closure Head-to- Flange Weld (RPVCH)	IWB-2500-5 Volumetric (UT) and Surface (PT/MT)	1 B-A B1.40	N2R14	Weld: Ferritic Steel CS	21.3" RPV Head to Flange Weld 3.125"	1016 psi - Pressure 550 degrees - Temperature	65° / 2.25 / Long 10° through 75° / 2.25 / Long	80.25%	Yes	The examination was limited due to head-to-flange weld configuration. (Att. 2 - Pg. Nos. 22 - 27)  Essentially 100% coverage was achieved for the surface examination.
2ISC-322B- SW005 (N2-ISI-150100)	Tee-to- Reducer (ISC)	IWB-2500-8(c), IWB-2500-9, 10, & 11 Volumetric (UT)	1 R-A R1.11	N2R15	Weld: Austenitic Stainless Steel SS to SS	2.0" 2ISC-002- RPV-1 0.46"	1035 psi - Pressure 550 degrees - Temperature	30° / 5.0 / Shear 45° / 5.0 / Shear	85.5%	Yes	The examination was limited due to the code plate. (Att. 2 - Pg. No. 28)

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Component ID	Weld Description (System) <sup>1</sup>	Exam Requirements (Figure No.) and Method	Class / Exam Category / Item Number	Outage Examined	Material of Construction	Diameter / Line No. / Thickness	Normal Operating Conditions (Pressure / Temperature)	Exam Angle / Frequency (MHz) / Mode	Actual Coverage	Appendix VIII Qualified Exam	Remarks
2SLS-88A-FW013A (N2-ISI-156700)	Valve *V10-to-Reducer (SLS)	IWB-2500-8(c), IWB-2500-9, 10, & 11 Volumetric (UT)	1 R-A R1.11	N2R15	Weld: Austenitic Stainless Steel SA 403 WP316L - valve to SA 403 WP316L - reducer (Sch 80)	2.0" 2SLS-150-88-1 0.344"	1340 psi - Pressure 560 degrees - Temperature	45° / 5.0 / Shear 70° / 2.25 / Shear 70° / 5.0 / Shear	50%	Yes	The examination was limited due to valve-to-reducer configuration. (Att. 2 - Pg. Nos. 29 - 30)
2SLS-88A-FW015 (N2-ISI-157100)	Pipe-to-Tee (SLS)	IWB-2500-8(c), IWB-2500-9, 10, & 11 Volumetric (UT)	1 R-A R1.11	N2R15	Weld: Austenitic Stainless Steel SA 312 TP 316L - piping to SA 403 WP 316L - tee	2.0" 2SLS-150-88-1 0.344"	1340 psi - Pressure 560 degrees - Temperature	0° / 4.0 / Long 45° / 5.0 / Shear 70° / 5.0 / Shear 70° / 2.25 / Shear	89%	Yes	The examination was limited due to pipe-to-tee configuration. (Att. 2 - Pg. No. 31)
2WCS-09-05-SW024 (N2-ISI-213900)	Tee-to-Pipe (WCS)	IWB-2500-8(c), IWB-2500-9, 10, & 11 Volumetric (UT)	1 R-A R1.11 & R1.16	N2R15	Weld: Austenitic Stainless Steel SA 312 TP 316L - piping to SA 403 WP 316L - tee	4.0" 2WCS-004-80-1 0.337"	1037 psi - Pressure 552 degrees - Temperature	45° / 2.25 / Shear 70° / 2.25 / Shear	89.79%	Yes	The examination was limited due to tee-to-pipe configuration. Axial scanning restricted from the tee side for 3.0" at the radius of tee. (Att. 2 - Pg. No. 32)
2WCS-09-05-SW025 (N2-ISI-214300)	Pipe-to-Flange (WCS)	IWB-2500-8(c), IWB-2500-9, 10, & 11 Volumetric (UT)	1 R-A R1.11 & R1.16	N2R15	Weld: Austenitic Stainless Steel SA 312 TP 316L - piping to SA 182 F316L - flange (1500 lb)	4.0" 2WCS-004-80-1 0.337"	1037 psi - Pressure 552 degrees - Temperature	45° / 2.25 / Shear 70° / 2.25 / Shear	75%	Yes	The examination was limited due to pipe-to-flange configuration (single-sided examination coverage). (Att. 2 - Pg. No. 33)

**Note:**

- The following systems and their abbreviations are listed here: High Pressure Core Spray (CSH), Low Pressure Core Spray (CSL), Reactor Building (Drywell) Equipment Drains (DER), Reactor Core Isolation Cooling (ICS), Reactor Pressure Vessel Instrumentation (ISC), Reactor Recirculation (RCS), Reactor Pressure Vessel (RPV), Reactor Pressure Vessel Closure Head (RPVCH), Standby Liquid Control (SLS), and Reactor Water Cleanup (WCS)

**ATTACHMENT 1**  
**10 CFR 50.55a Relief Request 2ISI-014**  
**Proposed Alternative in Accordance with 10 CFR 50.55a(g)(5)(iii)**  
**--Inservice Inspection Impracticality--**  
**Revision 0**  
**(Page 11 of 12)**

**Table 2ISI-014.1**  
**Nine Mile Point Nuclear Station, Unit 2**  
**List of Components with Limited Examination Coverage**

Component ID	Weld Description (System) <sup>1</sup>	Exam Requirements (Figure No.) and Method	Class / Exam Category / Item Number	Outage Examined	Material of Construction	Diameter / Line No. / Thickness	Normal Operating Conditions (Pressure / Temperature)	Exam Angle / Frequency (MHz) / Mode	Actual Coverage	Appendix VIII Qualified Exam	Remarks
2WCS-09-05-SW032 (N2-ISI-216700)	Tee-to-Pipe (WCS)	IWB-2500-8(c), IWB-2500-9, 10, & 11 Volumetric (UT)	1 R-A R1.11 & R1.16	N2R15	Weld: Austenitic Stainless Steel SA 312 TP 316L - piping to SA 403 WP 316L - tee	4.0" 2WCS-004-60-1 0.337"	1037 psi - Pressure 552 degrees - Temperature	45° / 2.25 / Shear 70° / 2.25 / Shear	89.79%	Yes	The examination was limited due to the branch connection on upstream side for 6". (Att. 2 - Pg. No. 34)
2WCS-09-05-SW033 (N2-ISI-217100)	Pipe-to-Flange (WCS)	IWB-2500-8(c), IWB-2500-9, 10, & 11 Volumetric (UT)	1 R-A R1.11 & R1.16	N2R15	Weld: Austenitic Stainless Steel SA 312 TP 316L - piping to SA 182 F316L - flange (1500 lb)	4.0" 2WCS-004-60-1 0.377"	1037 psi - Pressure 552 degrees - Temperature	45° / 2.25 / Shear 70° / 2.25 / Shear	50%	Yes	The examination was limited due to pipe-to-flange configuration (one-sided examination coverage). (Att. 2 - Pg. No. 35)
2RCS-64-00-FWA07 (N2-ISI-168200)	Pipe-to-Valve *HYV17A (RCS)	IWB-2500-8(c), IWB-2500-9, 10, & 11 Volumetric (UT)	1 R-A R1.16	N2R16	Weld: Austenitic Stainless Steel SS to SS	24.0" 2RCS-024-2-1 1.3"	1251 psi - Pressure 550 degrees - Temperature	45° / 1.5 / Shear 60° / 2.0 / Long	50%	Yes	The examination was limited due to pipe-to-valve configuration (single-sided examination coverage). Examined upstream side of valve HYV17A only due to configuration. (Att. 2 - Pg. No. 36 - 38)
2RPV-KC23 (N2-ISI-011600)	CSL Nozzle N5 Safe End-to-Safe End Extension (CSL)	IWB-2500-8(c), IWB-2500-9, 10, & 11 Volumetric (UT)	1 R-A R1.16	N2R16	Weld: Ferritic Steel CS/INC/CS	10.0" 2CSL-010-13-1 0.75"	1042 psi - Pressure 537 degrees - Temperature	45° / 1.5 / Phased Array Half Path 30° / 1.5 / Phased Array Half Path 40° / 1.5 / Phased Array Half Path	80.3% 70.4%	Yes	The examination was limited due to nozzle safe end-to-safe end extension configuration. (Att. 2 - Pg. Nos. 39 - 42)  80.3% RI-ISI coverage obtained and 70.4% procedure extended coverage obtained.

Note:

- The following systems and their abbreviations are listed here: High Pressure Core Spray (CSH), Low Pressure Core Spray (CSL), Reactor Building (Drywell) Equipment Drains (DER), Reactor Core Isolation Cooling (ICS), Reactor Pressure Vessel Instrumentation (ISC), Reactor Recirculation (RCS), Reactor Pressure Vessel (RPV), Reactor Pressure Vessel Closure Head (RPVCH), Standby Liquid Control (SLS), and Reactor Water Cleanup (WCS)

**ATTACHMENT 1**  
**10 CFR 50.55a Relief Request 2ISI-014**  
**Proposed Alternative in Accordance with 10 CFR 50.55a(g)(5)(iii)**  
**--Inservice Inspection Impracticability--**  
**Revision 0**  
**(Page 12 of 12)**

**Table 2ISI-014.1**  
**Nine Mile Point Nuclear Station, Unit 2**  
**List of Components with Limited Examination Coverage**

Component ID	Weld Description (System) <sup>1</sup>	Exam Requirements (Figure No.) and Method	Class / Exam Category / Item Number	Outage Examined	Material of Construction	Diameter / Line No. / Thickness	Normal Operating Conditions (Pressure / Temperature)	Exam Angle / Frequency (MHz) / Mode	Actual Coverage	Appendix VIII Qualified Exam	Remarks
2RPV-KC32 (N2-ISI-006100)	CSH N16 Safe End-to-Safe End Extension (CSH)	IWB-2500-8(c), IWB-2500-9, 10, & 11 Volumetric (UT)	1 R-A R1.16	N2R16	Weld: Ferritic Steel SB 166 - safe end to SA 508 - extension	10.0" 2CSH-010-27-1 0.90"	1050 psi - Pressure 550 degrees - Temperature	45° / 1.5 / Phased Array Half Path 30° / 1.5 / Phased Array Half Path 40° / 1.5 / Phased Array Half Path	81.6% 80.3%	Yes	The examination was limited due to nozzle safe end-to-safe end extension configuration. (Att. 2 - Pg. Nos. 43 - 46)  81.6% RI-ISI coverage obtained and 80.3% procedure extended coverage obtained.
2DER-07A-FW002 (N2-ISI-012000)	Valve *MOV128-to-Pipe (DER)	IWB-2500-8(c), IWB-2500-9, 10, & 11 Volumetric (UT)	1 R-A R1.20	N2R16	Weld: Ferritic Steel SA 106 GR B - Piping to SA 105 - valve (3000 lb)	2.0" 2DER-002-7-1 0.218"	1030 psi - Pressure 550 degrees- Temperature	45° / 5.0 / Shear 60° / 5.0 / Shear 70° / 5.0 / Shear 0° / 4.0 / Long	33%	Yes	The examination was limited due to valve-to-pipe configuration (one-sided examination coverage). Downstream obstructed by valve, pipe clamp 1.7" upstream of WCL. (Att. 2 - Pg. Nos. 47 - 48)

Note:

- The following systems and their abbreviations are listed here: High Pressure Core Spray (CSH), Low Pressure Core Spray (CSL), Reactor Building (Drywell) Equipment Drains (DER), Reactor Core Isolation Cooling (ICS), Reactor Pressure Vessel Instrumentation (ISC), Reactor Recirculation (RCS), Reactor Pressure Vessel (RPV), Reactor Pressure Vessel Closure Head (RPVCH), Standby Liquid Control (SLS), and Reactor Water Cleanup (WCS)

**Attachment 2**

**Nine Mile Point Nuclear Station Unit 2 Third Inservice Inspection Interval  
Limited Coverage Non-Destructive Examination Reports**

# Liquid Penetrant Examination

Site/Unit: NMP / 2 Procedure: NDEP-PT-3.00 Outage No.: N2RFO12  
 Summary No.: 068800 Procedure Rev.: 1701 Report No.: PT-10-010  
 Workscope: ISI Work Order No.: C081919800-100 Page: 1 of 2  
 Code: ASME Section XI 2004 Edition Cat./Item: B-O/B14.10 Location: RCA  
 Drawing No.: ISI-COM-037 Description: CRD 18-03 Pipe-to-Flange Weld  
 System ID: CRD P1 III 4/10  
 Component ID: 2RPV-CRDH001A Mat./Thickness: SS 304  
 Limitations: Limited due to adjoining components.

Light Meter Mfg.: N/A Serial No.: N/A Illumination: N/A  
 Temp. Tool Mfg.: EXTECH Serial No.: QA-NDE-T-090 Surface Temp.: 83 °F  
 Comparator Block Temp.: Side A: N/A °F Side B: N/A °F Resolution: 0.044" Character Card  
 Lo/Wo Location: N/A Surface Condition: Smooth

	Cleaner	Penetrant	Remover	Developer
Brand	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX
Type	SKC-S	SKL-SP	SKC-S	SKD-S2
Batch No.	05B01K	94F13K	05B01K	00J14K
Time	Evap. 5 mins.	Dwell 10 mins.	Evap. 5 mins.	Develop 10 mins.
Time Exam Started:		11:45	Time Exam Completed:	12:45

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

Comments:

See attached sketch for limitations.

Results: Accept ☒ Reject ☐ Eval ☐

Percent Of Coverage Obtained > 90%: No - 43%

Reviewed Previous Data: Yes

Examiner Level II	Signature	Date	Reviewer	Signature	Date
Woodring, Ryan A.	<i>Ryan Woodring</i>	4/16/2010	Lancaster, Phillip, NDE Level III	<i>Phillip Lancaster</i>	4/20/10
Examiner Level N/A	Signature	Date	Site Review	Signature	Date
N/A			Peterson, Patrick M.	<i>Patrick Peterson</i>	4/20/10
Other Level N/A	Signature	Date	ANII Review	Signature	Date
N/A			Yaeger, William J.	<i>William J. Yaeger</i>	4-20-10



## Supplemental Report

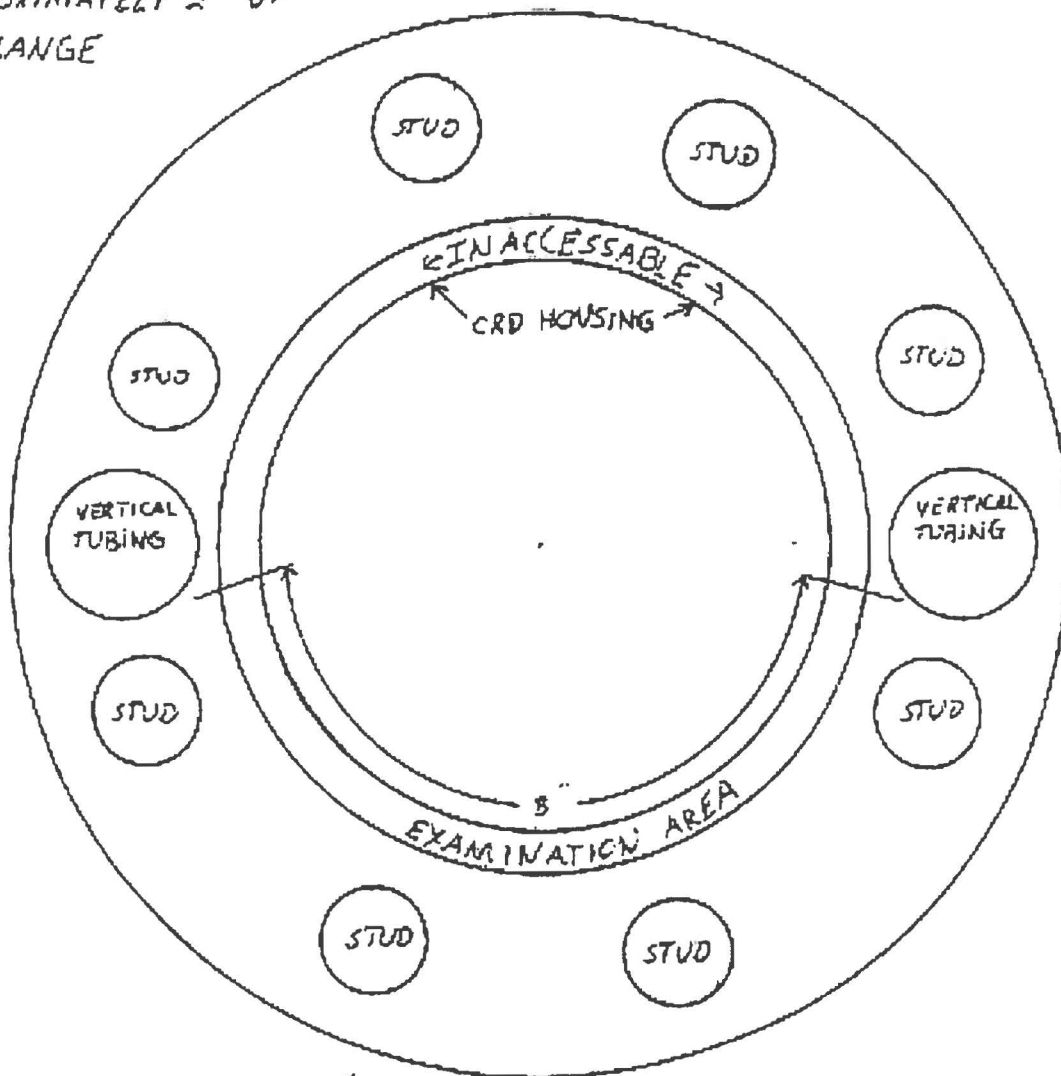
Report No.: PT-10-010

Page: 2 of 2

Summary No.: 068800

Sketch or Photo: S:\Common\QI-NDE\QI-NDE\N2R12\Datasheet Scanned Images\2RPV-CRDH-001A.jpg

WELD 2RPV-CRDH-001A  
IS APPROXIMATELY 2" UP  
FROM FLANGE



TOTAL AREA = 18.66"  
AREA EXAMINED = 8" (43%)

# Liquid Penetrant Examination

Site/Unit: NMP / 2 Procedure: NDEP-PT-3.00 Outage No.: N2RFO12  
Summary No.: 068900 Procedure Rev.: 1701 Report No.: PT-10-011  
Workscope: ISI Work Order No.: C081919800-100 Page: 1 of 2  
Code: ASME Section XI 2004 Edition Cat./Item: B-O/B14.10 Location: RCA  
Drawing No.: ISI-COM-037 Description: CRD 18-03 Pipe-to-Pipe Weld  
System ID: CRD P1-III 4/20/10  
Component ID: 2RPV-CRDH001B Mat./Thickness: SS 304 / N/A  
Limitations: Limited due to adjoining components.

Light Meter Mfg.: N/A Serial No.: N/A Illumination: N/A  
Temp. Tool Mfg.: EXTECH Serial No.: QA-NDE-T-090 Surface Temp.: 83 °F  
Comparator Block Temp.: Side A: N/A °F Side B: N/A °F Resolution: 0.044" Character Card  
Lo/Wo Location: N/A Surface Condition: Smooth

	Cleaner	Penetrant	Remover	Developer
Brand	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX
Type	SKC-S	SKL-SP	SKC-S	SKD-S2
Batch No.	05B01K	94F13K	05B01K	00J14K
Time	Evap. 5 mins.	Dwell 10 mins.	Evap. 5 mins.	Develop 10 mins.
Time Exam Started:		11:45	Time Exam Completed:	12:45

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

Comments:

See attached sketech for limitations.

Results: Accept ☒ Reject ☐ Eval ☐

Percent Of Coverage Obtained > 90%: No - 80%

Reviewed Previous Data: Yes

Examiner	Level II	Signature	Date	Reviewer	Signature	Date
Woodring, Ryan A.		<i>Ryan Woodring</i>	4/16/2010	Lancaster, Phillip, NDE Level III	<i>Phillip Lancaster</i>	4/20/10
Examiner	Level N/A	Signature	Date	Site Review	Signature	Date
N/A				Peterson, Patrick M. Ctr	<i>Patrick Peterson</i>	4/20/10
Other	Level N/A	Signature	Date	ANII Review	Signature	Date
N/A				Yaeger, William J.	<i>William Yaeger</i>	4-20-10



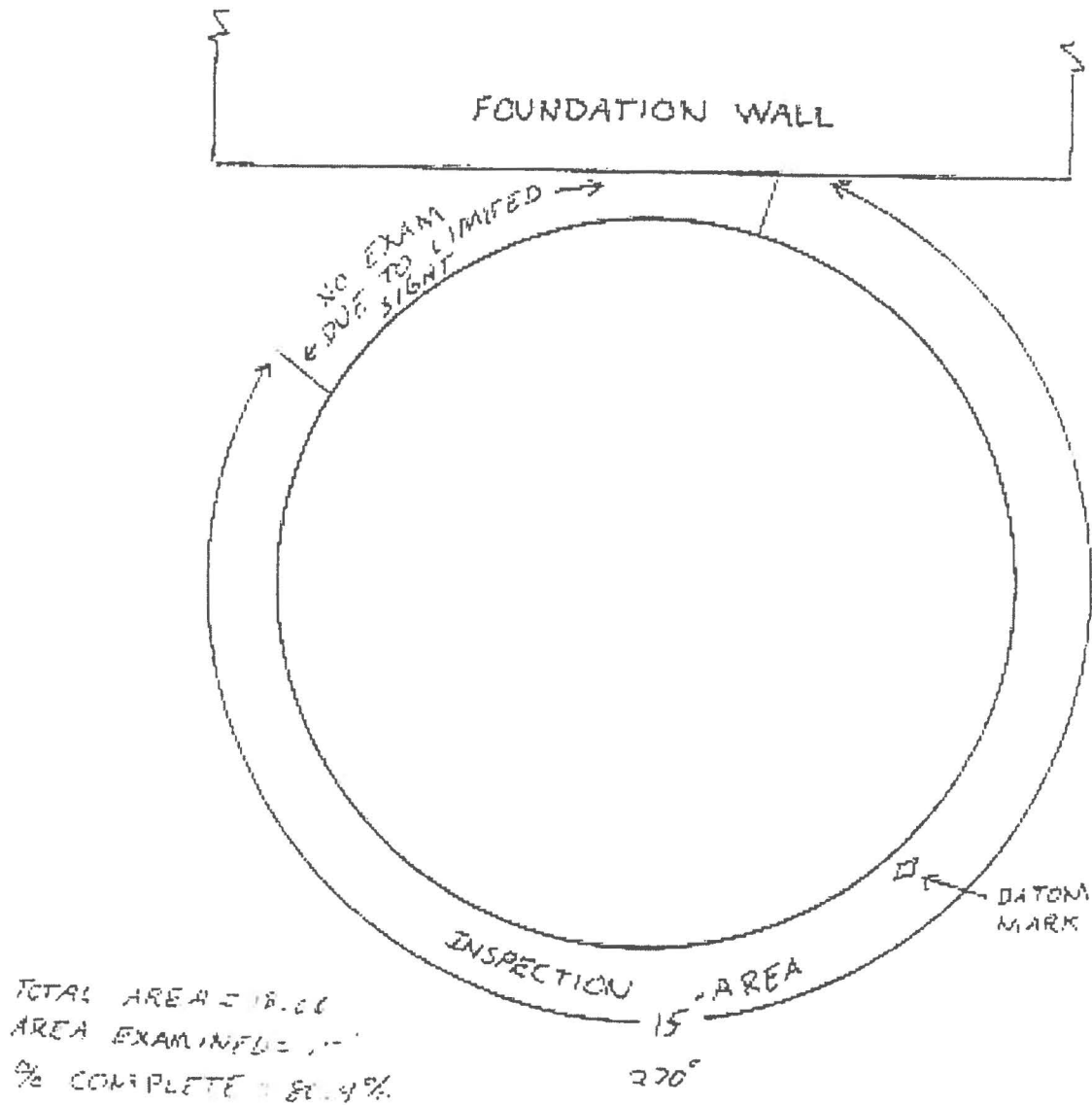
## Supplemental Report

Report No.: PT-10-011

Page: 2 of 2

Summary No.: 068900

Sketch or Photo: S:\Common\QI-NDE\QI-NDE\N2R12\Datasheet Scanned Images\2RPV-CRDH-001B.jpg







## Liquid Penetrant Examination

Site/Unit: NMP / 2 Procedure: NDEP-PT-3.00 Outage No.: N2RFO12  
Summary No.: 069400 Procedure Rev.: 1701 Report No.: PT-10-012  
Workscope: ISI Work Order No.: C081919800-100 Page: 1 of 2  
Code: ASME Section XI 2004 Edition Cat./Item: B-O/B14.10 Location: RCA  
Drawing No.: ISI-COM-037 Description: CRD 30-03 Pipe-to-Flange Weld  
System ID: CRD PL. III 4/20/10  
Component ID: 2RPV-CRDH004A Mat./Thickness: SS 304  
Limitations: Limited due to adjoining components.

Light Meter Mfg.: N/A Serial No.: N/A Illumination: N/A  
Temp. Tool Mfg.: EXTECH Serial No.: QA-NDE-T-090 Surface Temp.: 83 °F  
Comparator Block Temp.: Side A: N/A °F Side B: N/A °F Resolution: 0.044" Character Card  
Lo/Wo Location: N/A Surface Condition: Smooth

	Cleaner	Penetrant	Remover	Developer
Brand	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX
Type	SKC-S	SKL-SP	SKC-S	SKD-S2
Batch No.	05B01K	94F13K	05B01K	00J14K
Time	Evap. 5 mins.	Dwell 10 mins.	Evap. 5 mins.	Develop 10 mins.
Time Exam Started: 11:45		Time Exam Completed: 12:45		

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

Comments:

See attached sketech for limitations.

Results: Accept ☒ Reject ☐ Eval ☐

Percent Of Coverage Obtained > 90%: No - 43%

Reviewed Previous Data: Yes

Examiner	Level	II	Signature	Date	Reviewer	Signature	Date
Woodring, Ryan A.			<i>Ryan Woodring</i>	4/16/2010	Lancaster, Phillip, NDE Level III	<i>Phillip Lancaster</i>	4/20/10
Examiner	Level	N/A	Signature	Date	Site Review	Signature	Date
N/A			<i>[Signature]</i>		Peterson, Patrick M. Ltd	<i>[Signature]</i>	4/20/10
Other	Level	N/A	Signature	Date	ANII Review	Signature	Date
N/A					Yaeger, William J.	<i>William J. Yaeger</i>	4-20-10



## Supplemental Report

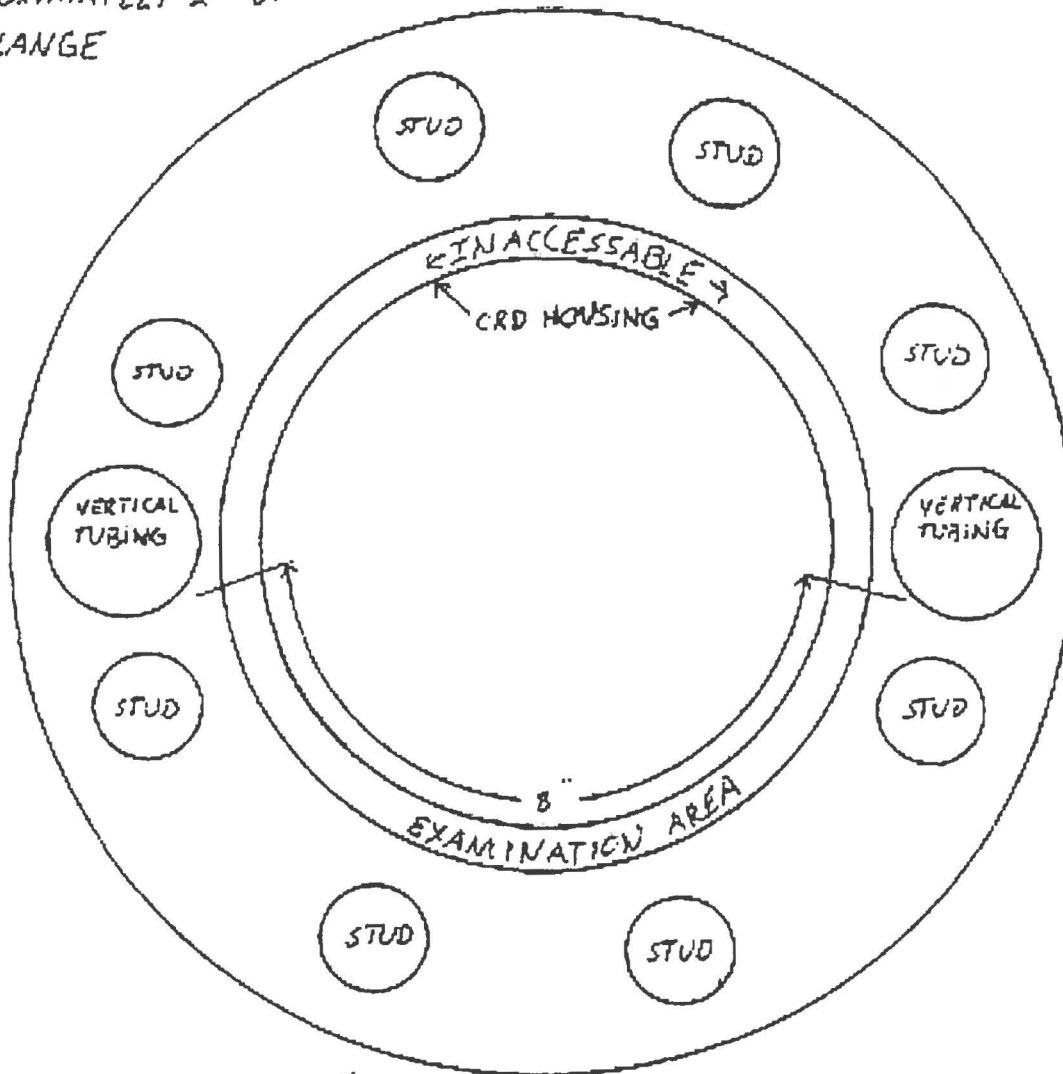
Report No.: PT-10-012

Page: 2 of 2

Summary No.: 069400

Sketch or Photo: S:\Common\QI-NDE\QI-NDE\N2R12\Datasheet Scanned Images\2RPV-CRDH-004A.JPG

WELD 2RPV-CRDH-004A  
IS APPROXIMATELY 2" UP  
FROM FLANGE



TOTAL AREA = 18.66"  
AREA EXAMINED = 8" (43%)

# Liquid Penetrant Examination

Site/Unit: NMP / 2 Procedure: NDEP-PT-3.00 Outage No.: N2RFO12  
Summary No.: 069500 Procedure Rev.: 1701 Report No.: PT-10-013  
Workscope: ISI Work Order No.: C081919800-100 Page: 1 of 3  
Code: ASME Section XI 2004 Edition Cat./Item: B-O/B14.10 Location: RCA  
Drawing No.: ISI-COM-037 Description: CRD 30-03 Pipe-to-Pipe  
System ID: CRD P. 30 4/20/10  
Component ID: 2RPV-CRDH004B Mat./Thickness: SS 304  
Limitations: Limited due to adjoining components.

Light Meter Mfg.: N/A Serial No.: N/A Illumination: N/A  
Temp. Tool Mfg.: EXTECH Serial No.: QA-NDE-T-090 Surface Temp.: 83 °F  
Comparator Block Temp.: Side A: N/A °F Side B: N/A °F Resolution: 0.044" Character Card  
Lo/Wo Location: N/A Surface Condition: Smooth

	Cleaner	Penetrant	Remover	Developer
Brand	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX
Type	SKC-S	SKL-SP	SKC-S	SKD-S2
Batch No.	05B01K	94F13K	05B01K	00J14K
Time	Evap. 5 mins.	Dwell 10 mins.	Evap. 5 mins.	Develop 10 mins.
Time Exam Started:		11:45	Time Exam Completed:	12:45

Indication No.	Loc L	Loc W	Diameter	Length	Type R/L	Remarks
1	3.1"	0.6"	0.10"	N/A	Rounded	Verified previous indication.

Comments:

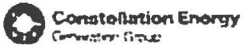
See attached sketch for limitations and indication layout.

Results: Accept ☒ Reject ☐ Eval ☐

Percent Of Coverage Obtained > 90%: No - 75%

Reviewed Previous Data: Yes

Examiner	Level II	Signature	Date	Reviewer	Signature	Date
Woodring, Ryan A.		<i>Ryan Woodring</i>	4/16/2010	Lancaster, Phillip, NDE Level III	<i>Phillip Lancaster</i>	4/20/10
Examiner	Level N/A	Signature	Date	Site Review	Signature	Date
N/A				Peterson, Patrick M. LTR	<i>Patrick Peterson</i>	4/20/10
Other	Level N/A	Signature	Date	ANII Review	Signature	Date
N/A				Yaeger, William J.	<i>William Yaeger</i>	4-20-10



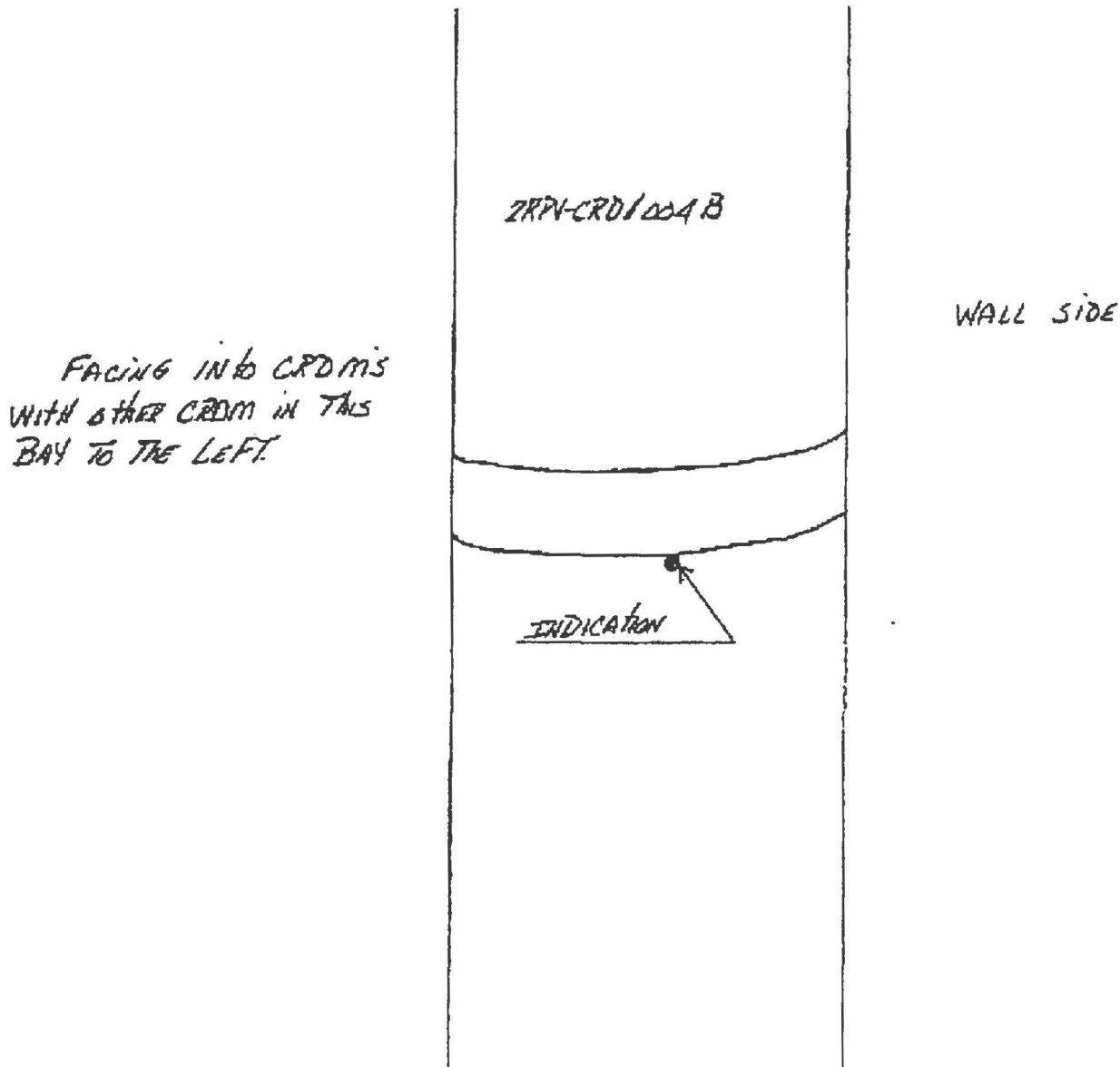
## Supplemental Report

Report No.: PT-10-013

Page: 2 of 3

Summary No.: 069500

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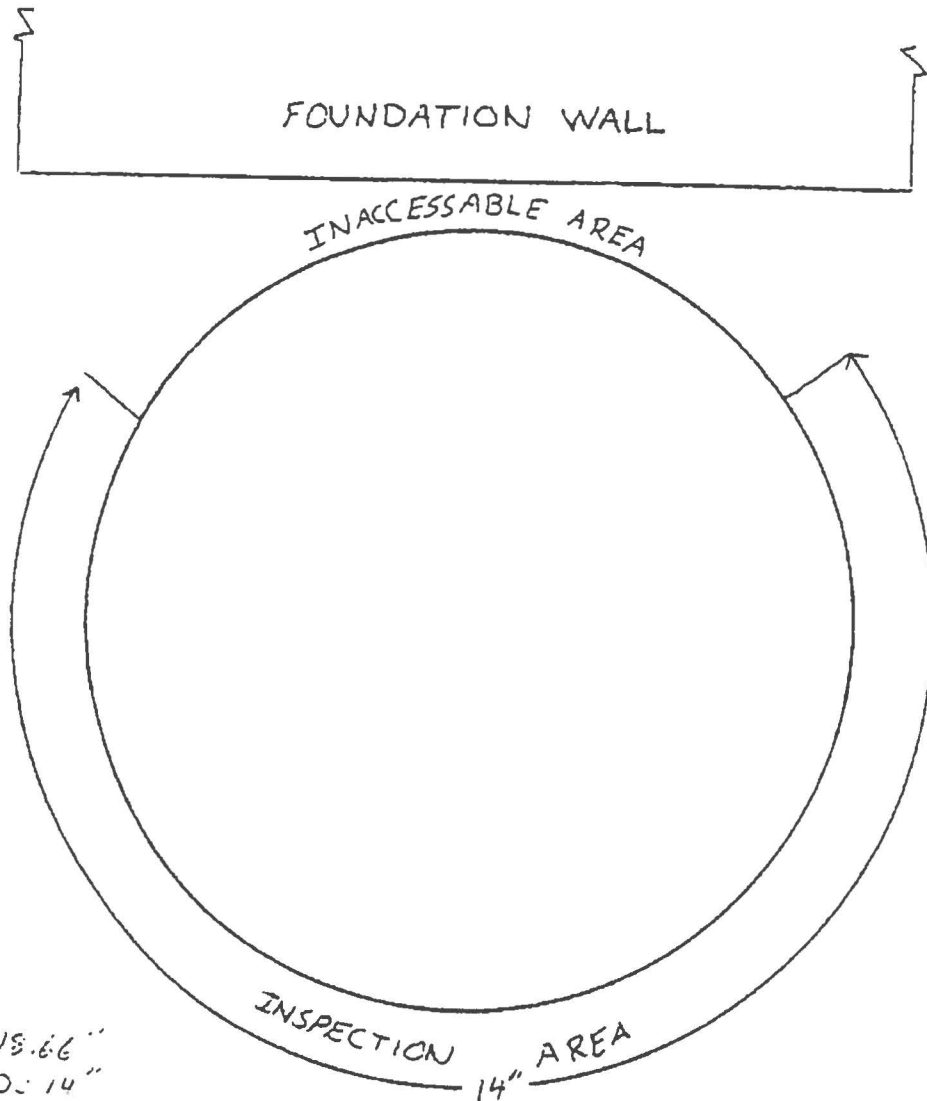
## Supplemental Report

Report No.: PT-10-013

Page: 3 of 3

Summary No.: 069500

Sketch or Photo: S:\Common\QI-NDE\QI-NDE\N2R12\Datasheet Scanned Images\2RPV-CRDH-004B-limitation.jpg



TOTAL AREA = 18.66"  
AREA EXAMINED = 14"  
% COMPLETE = 75%



## Supplemental Report

Report No.: UT-10-014

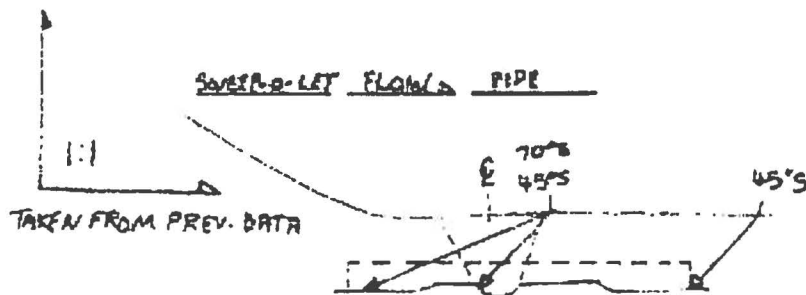
Page: 4 of 4

Summary No.: 208400

Examiner: Huhe, Troy <u>Ty Huhe</u>	Level: <u>II-PDI</u>	Reviewer: <u>Phil Lencore</u>	Date: <u>4/11/10</u>
Examiner: <u>N/A</u>	Level: <u>N/A</u>	Site Review: <u>Boeson, Patrick M.</u>	Date: <u>4/12/10</u>
Other: <u>N/A</u>	Level: <u>N/A</u>	ANII Review: <u>William J. Yule</u>	Date: <u>4-12-10</u>

Comments: Exams performed to maintain 5% to 20% ID roll. Circ exams performed on both sides of base material and weld crown with skew angles to examine the additional required exam volume. 0° exam performed to locate counterbore. Counterbore located as previously recorded. See sketch. Increased exam volume due to RI-ISI requirements. See attached coverage plot.  
Single sided exam due to component configuration = 50% coverage.

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2WCS - 09 - 05 - FW 014



## Supplemental Report

Report No.: UT-10-012

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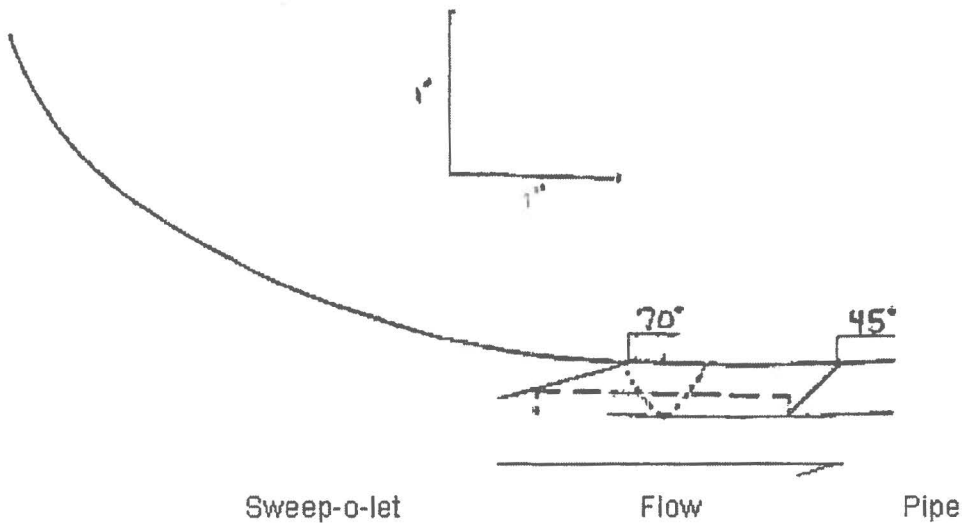
Summary No.: 208600

Examiner: <u>Mahoney, Patrick</u>	Level: <u>II-PDI</u>	Reviewer: <u>Lancaster, Phillip, NDE Level I</u>	Date: <u>4/16/2010</u>
Examiner: <u>N/A</u>	Level: <u>N/A</u>	Site Review: <u>Cilento, Joseph, NDE Level III</u>	Date: <u>4/16/2010</u>
Other: <u>N/A</u>	Level: <u>N/A</u>	ANII Review: <u>Yaeger, William J.</u>	Date: <u>4/17/2010</u>

Comments: **Single sided examination due to configuration (50% Coverage Achieved).**

Sketch or Photo: O:\Outage Data\Nine Mile\Datasheet Scanned Images\2WCS-09-05-FW015.jpg

2WCS-09-05-FW015





## Liquid Penetrant Examination

Site/Unit: NMP / 2 Procedure: NDEP-PT-3.00 Outage No.: N2RFO13  
Summary No.: 069600 Procedure Rev.: 1800 Report No.: ISI-PT-12-007  
Workscope: ISI Work Order No.: C90959883 Page: 1 of 1  
Code: ASME Section XI 2004 Edition Cat./Item: B-O/B14.10 Location: Drywell, Under Vessel  
Drawing No.: ISI-COM-037 Description: CRD 34-03 Pipe-to-Flange Weld  
System ID: RPV  
Component ID: 2RPV-CRDH005A Mat./Thickness: SS / NA  
Limitations: Approximately 63.8% Coverage Due to Obstructions

Light Meter Mfg.: N/A Serial No.: N/A Illumination: N/A  
Temp. Tool Mfg.: EXTECH Serial No.: QA-NDE-T-092 Surface Temp.: 77.2 °F  
Comparator Block Temp.: Side A: N/A °F Side B: N/A °F Resolution: 0.044" Character Card  
Lo/Wo Location: N/A Surface Condition: As-Welded

	Cleaner	Penetrant Visible <input checked="" type="checkbox"/> Fluorescent <input type="checkbox"/>	Remover	Developer
Brand	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX
Type	SKC-S	SKL-SP	SKC-S	SKD-S2
Batch No.	10C01K	94F13K	10C01K	05J05K
Time	Evap. 5	Dwell 10	Evap. 5	Develop 10
Time Exam Started: 1137		Time Exam Completed: 1220		

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

Comments:

Limited exam due to obstructions (Insert and Withdraw lines, Shoot-out Steel, Cables, etc). Coverage included approximately 12 linear inches of weld. The circumference of this pipe is approximately 18.8".

Results: Accept ☒ Reject ☐ Eval ☐

Percent Of Coverage Obtained > 90%: No / 63.8%

Reviewed Previous Data: Yes

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Benson, Michael	III	<i>Michael Benson</i>	5/5/2012	N/A		
Examiner	Level	Signature	Date	Site Review	Signature	Date
N/A	N/A			Stauffer, Janet K	<i>Janet K Stauffer</i>	7/9/12
Other	Level	Signature	Date	ANII Review	Signature	Date
N/A	N/A			Caracas, Roger	<i>Roger Caracas</i>	5/8/12





## Liquid Penetrant Examination

Site/Unit: NMP / 2 Procedure: NDEP-PT-3.00 Outage No.: N2RFO13  
Summary No.: 069700 Procedure Rev.: 1800 Report No.: ISI-PT-12-005  
Workscope: ISI Work Order No.: C90959883 Page: 1 of 1  
Code: ASME Section XI 2004 Edition Cat./Item: B-O/B14.10 Location: Drywell, Under Vessel  
Drawing No.: ISI-COM-037 Description: CRD 34-03 Pipe-to-Pipe Weld  
System ID: RPV  
Component ID: 2RPV-CRDH005B Mat./Thickness: SS/ NA  
Limitations: 63.8% Due to Inaccessibility

Light Meter Mfg.: N/A Serial No.: N/A Illumination: N/A  
Temp. Tool Mfg.: EXTECH Serial No.: QA-NDE-T-092 Surface Temp.: 77.2 °F  
Comparator Block Temp.: Side A: N/A °F Side B: N/A °F Resolution: 0.044" Character Card  
Lo/Wo Location: N/A Surface Condition: As-Welded

	Cleaner	Penetrant Visible <input checked="" type="checkbox"/> Fluorescent <input type="checkbox"/>	Remover	Developer
Brand	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX
Type	SKC-S	SKL-SP	SKC-S	SKD-S2
Batch No.	10C01K	94F13K	10C01K	05J05K
Time	Evap. 5	Dwell 10	Evap. 5	Develop 10
Time Exam Started: 1248		Time Exam Completed: 1330		

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

Comments:

Limited Exam due to inaccessibility. Coverage included approximately 12 linear inches of weld. Circumference of this piping approximately 18.8".

Results: Accept ☒ Reject ☐ Eval ☐ N/A  
Percent Of Coverage Obtained > 90%: No / 63.8% Reviewed Previous Data: Yes

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Benson, Michael	III	<i>Michael Benson</i>	5/5/2012	N/A		
Examiner	Level	Signature	Date	Site Review	Signature	Date
N/A	N/A			Stauffer, Janet K	<i>Janet K Stauffer</i>	5/8/12
Other	Level	Signature	Date	ANII Review	Signature	Date
N/A	N/A			Charles Rose	<i>Charles Rose</i>	5/8/12



## Liquid Penetrant Examination

Site/Unit: NMP / 2 Procedure: NDEP-PT-3.00 Outage No.: N2RFO13  
Summary No.: 076200 Procedure Rev.: 1800 Report No.: ISI-PT-12-008  
Workscope: ISI Work Order No.: C90959883 Page: 1 of 1

Code: ASME Section XI 2004 Edition Cat./Item: B-O/B14.10 Location: Drywell, Under Vessel  
Drawing No.: ISI-COM-037 Description: CRD 34-59, Pipe-to-Flange Weld  
System ID: RPV  
Component ID: 2RPV-CRDH038A Mat./Thickness: SS / NA  
Limitations: 85.1% Coverage of weld due to obstructions  
*on 5/10/12*

Light Meter Mfg.: N/A Serial No.: N/A Illumination: N/A  
Temp. Tool Mfg.: EXTECH Serial No.: QA-NDE-T-092 Surface Temp.: 77 °F  
Comparator Block Temp.: Side A: N/A °F Side B: N/A °F Resolution: 0.044" Character Card  
Lo/Wo Location: N/A Surface Condition: As-Welded

	Cleaner	Penetrant Visible <input checked="" type="checkbox"/> Fluorescent <input type="checkbox"/>	Remover	Developer
Brand	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX
Type	SKC-S	SKL-SP	SKC-S	SKD-S2
Batch No.	10C01K	94F13K	10C01K	05J05K
Time	Evap. 5	Dwell 10	Evap. 5	Develop 10
Time Exam Started: 1340		Time Exam Completed: 1440		

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

Comments:

Limited Exam due to obstructions ( insert and withdraw lines ) Coverage included approximately 16 linear inches of weld.  
The circumference of this piping is approximately 18.8".

Results: Accept ☒ Reject ☐ Eval ☐ N/A  
Percent Of Coverage Obtained > 90%: No / 85.1% Reviewed Previous Data: Yes

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Benson, Michael	III	<i>Michael Benson</i>	5/5/2012	N/A		
Examiner	Level	Signature	Date	Site Review	Signature	Date
N/A	N/A			Stauffer, Janet K	<i>Janet K Stauffer</i>	5/8/12
Other	Level	Signature	Date	ANII Review	Signature	Date
N/A	N/A			CHARLES ROSS	<i>Charles Ross</i>	5/8/12



## Liquid Penetrant Examination

Site/Unit: NMP / 2 Procedure: NDEP-PT-3.00 Outage No.: N2RFO13  
Summary No.: 076300 Procedure Rev.: 1800 Report No.: ISI-PT-12-006  
Workscope: ISI Work Order No.: C90959883 Page: 1 of 1  
Code: ASME Section XI 2004 Edition Cat./Item: B-O/B14.10 Location: Drywell, Under Vessel  
Drawing No.: ISI-COM-037 Description: CRD 34-59, Pipe-to-Pipe  
System ID: RPV  
Component ID: 2RPV-CRDH038B Mat./Thickness: SS / NA  
Limitations: 74.4% Coverage of weld due to inaccessibility

Light Meter Mfg.: N/A Serial No.: N/A Illumination: N/A  
Temp. Tool Mfg.: EXTECH Serial No.: QA-NDE-T-092 Surface Temp.: 77.2 °F  
Comparator Block Temp.: Side A: N/A °F Side B: N/A °F Resolution: 0.044" Character Card  
Lo/Wo Location: N/A Surface Condition: As-Welded

	Cleaner	Penetrant Visible <input checked="" type="checkbox"/> Fluorescent <input type="checkbox"/>	Remover	Developer
Brand	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX	MAGNAFLUX
Type	SKC-S	SKL-SP	SKC-S	SKD-S2
Batch No.	10C01K	94F13K	10C01K	05J05K
Time	Evap. 5	Dwell 10	Evap. 5	Develop 10
Time Exam Started: 1340		Time Exam Completed: 1430		

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

Comments:

Limited exam due to inaccessibility. Coverage included approximately 14 linear inches of weld. Circumference of this piping is approximately 18.8"

Results: Accept ☒ Reject ☐ Eval ☐ N/A  
Percent Of Coverage Obtained > 90%: No / 74.4% Reviewed Previous Data: Yes

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Herold, John F	IIL	<i>[Signature]</i>	5/5/2012	N/A		
Examiner	Level	Signature	Date	Site Review	Signature	Date
N/A	N/A			<i>Stauffer Janet K</i>	<i>Janet K Stauffer</i>	5/8/12
Other	Level	Signature	Date	ANII Review	Signature	Date
N/A	N/A			<i>Charles Rose</i>	<i>[Signature]</i>	5/8/12



## Supplemental Report

Report No. ISI-UT-12-039

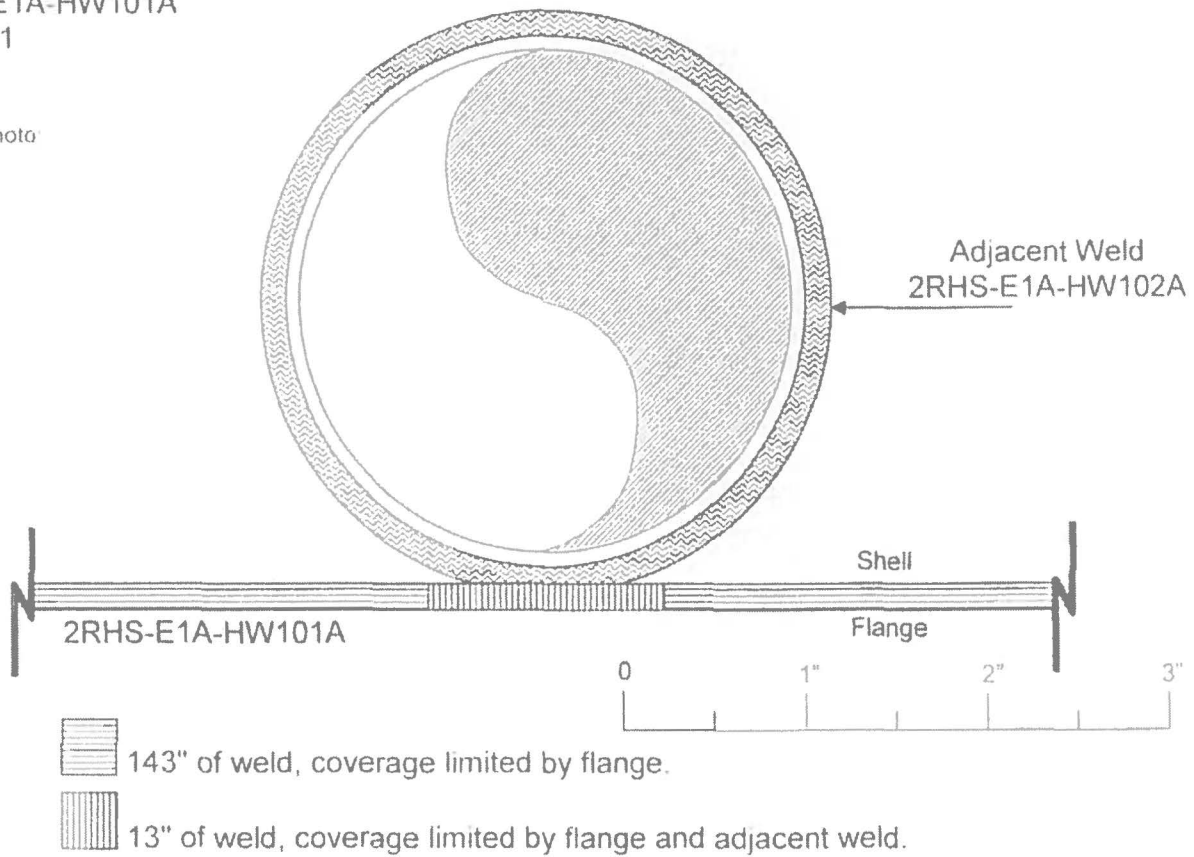
Page 2 of 4

Summary No. 536000

Examiner: Salley, Michael <i>MS</i>	Level: II-PDI	Reviewer: <i>Vauffer, Janet K QM</i>	Date: <i>4/29/12</i>
Examiner: Crothers, Simon P. <i>SC</i>	Level: III	Site Review: <i>Cicciotto, J.J. Q</i>	Date: <i>4-24-12</i>
Other: Jones, Kelvin <i>KJ</i>	Level: TRN	ANII Review: <i>[Signature]</i>	Date: <i>5/2/12</i>

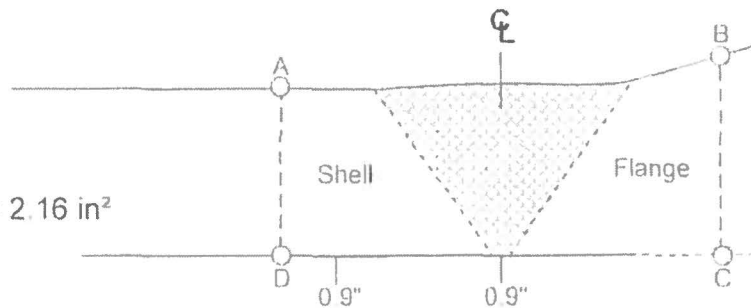
Comments:  
2RHS-E1A-HW101A  
Sketch 1

Sketch or Photo



### Weld Details

- Weld Length = 156"
- Weld Crown Width = 1.4" (typical)
- Exam area (ABCD): (2.4" x 0.9") = 2.16 in<sup>2</sup>
- Code Figure: IWC-2500-1





## Supplemental Report

Report No. ISI-UT-12-039


Page 3 of 4

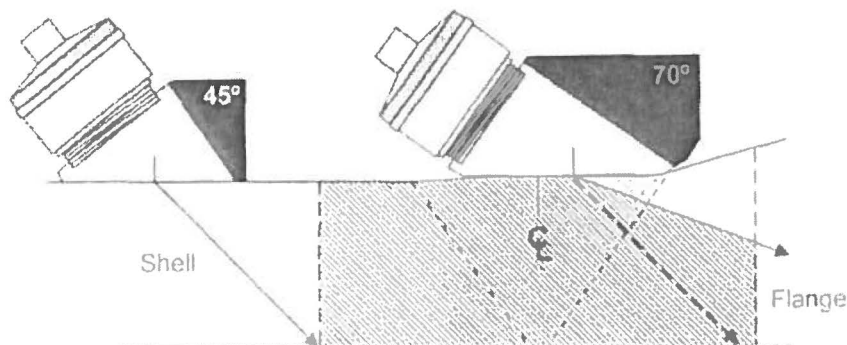
Summary No. 536000

Examiner: <u>Salley, Michael</u> <i>MS</i>	Level: <u>II-PDI</u>	Reviewer: <u>Smelter, Tanel, K. J.</u>	Date: <u>4/29/12</u>
Examiner: <u>Crothers, Simon P.</u> <i>SC</i>	Level: <u>III</u>	Site Review: <u>CROXTON, J. J.</u>	Date: <u>4/29/12</u>
Other: <u>Jones, Kelvin</u> <i>KJ</i>	Level: <u>TRN</u>	ANII Review: <u>Crothers</u>	Date: <u>5/2/12</u>

Comments:  
2RHS-E1A-HW101A  
Sketch 2



Sketch or Photo

 Axial coverage  
limited by flange  
143" of 156"

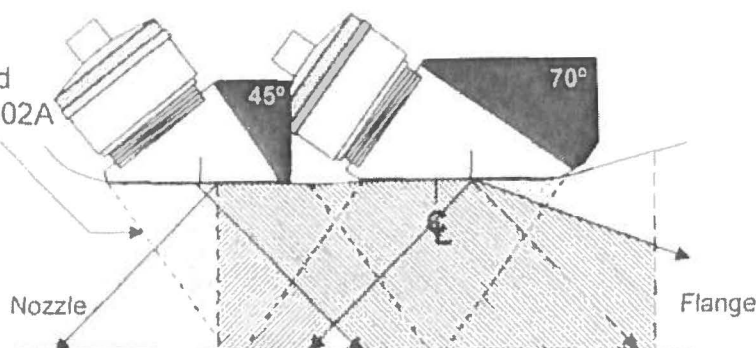


- Exam area = 2.16 in<sup>2</sup>
- Examined:  $2.16 - (1.0" \times 0.5")/2 = 1.91 \text{ in}^2$
- $1.91 / 2.16 = 88.4\%$
- $88.4\% \times (143" \text{ of } 156") = 81\%$



 Axial coverage  
limited by flange and  
adjacent weld.  
 13" of 156"

Adjacent Weld  
2RHS-E1A-HW102A



- Exam area = 2.16 in<sup>2</sup>
- Examined:  $2.16 - (1.0" \times 0.5")/2 - (0.3" \times 0.15")/2 = 1.89 \text{ in}^2$
- $1.89 / 2.16 = 87.5\%$
- $87.5\% \times (13" \text{ of } 156") = 7.3\%$

Total Axial Coverage:  $81\% + 7.3\% = \underline{88.3\%}$



## Supplemental Report

Report No. ISI-UT-12-039


Page 4 of 4

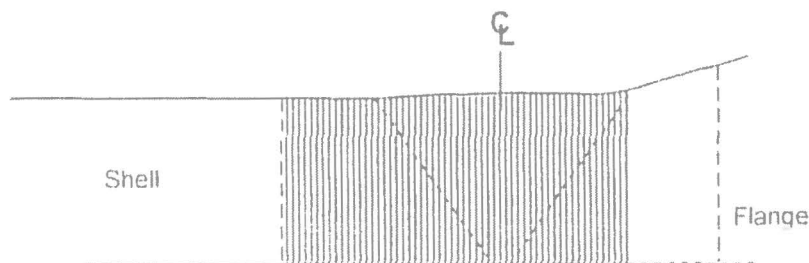
Summary No. 536000

Examiner: <u>Salley, Michael</u> <u>MS</u>	Level: <u>II-PDI</u>	Reviewer: <u>Stauffer, Janet</u>	Date: <u>4/24/12</u>
Examiner: <u>Crothers, Simon P.</u> <u>SC</u>	Level: <u>III</u>	Site Review: <u>CILCRO, J.J.</u>	Date: <u>4-29-12</u>
Other: <u>Jones, Kelvin</u> <u>KJ</u>	Level: <u>TRN</u>	ANII Review: <u>CJL</u>	Date: <u>5/2/12</u>

Comments  
**2RHS-E1A-HW101A**  
**Sketch 3**

Sketch or Photo:

 Circ coverage  
limited by flange.  
156" of 156"



- Exam area = 2.16 in<sup>2</sup>
- Examined: (1.9 x 0.9) = 1.71 in<sup>2</sup>
- 1.71 / 2.16 = 79.2%



### Coverage Calc:

- Axial Coverage: 88.3%
- Circ Coverage: 79.2%
- Total Coverage: (88.3 + 79.2)/2 = 83.8%



## Supplemental Report

Report No.: ISI-UT-12-082

Page: 2 of 5

Summary No.: 158500

Examiner: Crothers, Simon P. SC Level: III

Reviewer: James Russell G. RST Date: 5-7-12

Examiner: Jones, Kelvin KJ Level: TRN

Site Review: Cilento, Joseph, Level III QC Date: 5-7-12

Other: N/A Level: N/A

ANII Review: Rose, Charles CR Date: 5/7/12

### Comments:

2SLS-88A-FW042A

Sketch 1: Code Coverage

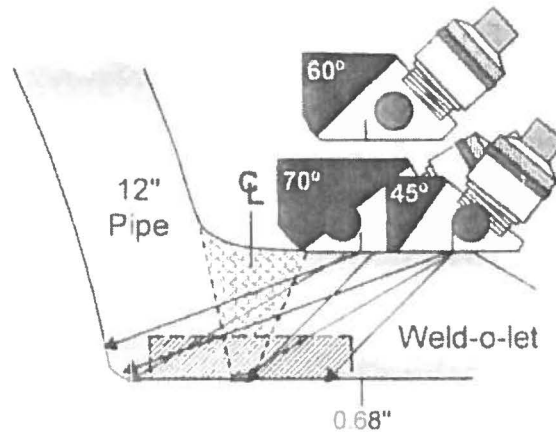
Sketch of Photo:  Code Coverage: Axial

#### Exam Area:

- $(1.1" \times 0.23") = 0.25 \text{ in}^2$

#### Examined:

- $0.25 - (0.05 \times 0.15)/2 - (0.15 \times 0.15)/2 = 0.24 \text{ in}^2$
- $0.24 / 0.25 = \underline{96\%}$



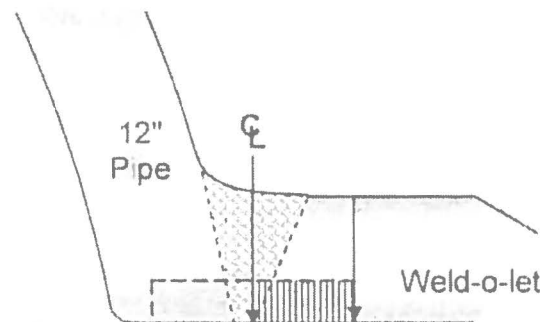
 Code Coverage: Circ

#### Exam Area:

- $(1.1" \times 0.23") = 0.25 \text{ in}^2$

#### Examined:

- $(0.55 \times 0.23) = 0.125 \text{ in}^2$
- $0.125 / 0.25 = \underline{50\%}$



#### Code Coverage Calc:

- Axial = 96%
- Circ = 50%
- Total =  $(96 + 50)/2 = \underline{73\%}$





## Supplemental Report

Report No.: ISI-UT-12-082

Page: 3 of 5

Summary No.: 158500

Examiner: <u>Crothers, Simon P. SC</u>	Level: <u>III</u>	Reviewer: <u>Jones, Russel E. RAS</u>	Date: <u>5-7-12</u>
Examiner: <u>Jones, Kelvin KS</u>	Level: <u>TRN</u>	Site Review: <u>Cilento, Joseph, Level III</u>	Date: <u>5-7-12</u>
Other: <u>N/A</u>	Level: <u>N/A</u>	ANII Review: <u>Rose, Charles</u>	Date: <u>5/7/12</u>

Comments:

2SLS-88A-FW042A

Sketch 2: R-A Coverage

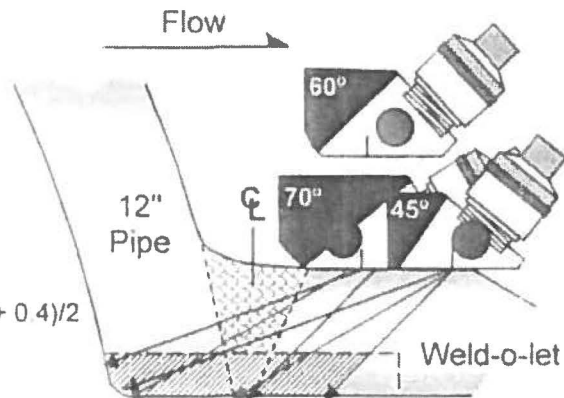
Sketch or Photo: R-A Coverage: Axial

Exam Area:

- $(1.6" \times 0.23") = 0.37 \text{ in}^2$

Examined:

- $0.37 - (0.05 \times 0.15)/2 - (0.05 \times 0.3)/2 - 0.23(0.2 + 0.4)/2 = 0.29 \text{ in}^2$
- $0.29 / 0.37 = 78\%$



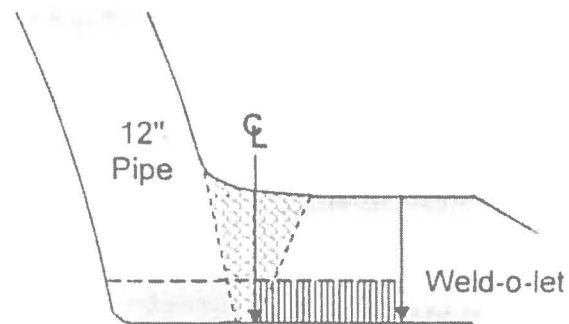
R-A Coverage: Circ

Exam Area:

- $(1.6" \times 0.23") = 0.37 \text{ in}^2$

Examined:

- $(0.8 \times 0.23) = 0.185 \text{ in}^2$
- $0.185 / 0.37 = 50\%$



R-A Coverage Calc:

- Axial = 78%
- Circ = 50%
- Total =  $(78 + 50)/2 = 64\%$





ISI-VE-14-001



Structural Integrity Associates, Inc.

## NDE EXAMINATION SUMMARY

EXAMINATION REPORT # ISI-VE-14-001

SI PROJECT #

1301218

Customer: CENG	Site: NMP	Unit: 2	Outage: N2R14
System: RPV	Component: Closure Head-to-Flange		Weld ID: 2RPV-AG
Examination Procedure:	PDI-UT-12 Rev. D (SI-UT-192, Rev. 1)		
Code Edition and Addenda:	ASME Section XI 2004, No Addenda		
Examination Record(s):	NMP2-14-2RPV-AG		
Calibration Data Sheet(s):	NMP2-14-CAL-005 NMP2-14-CAL-006		
Indication Evaluation Sheet(s):	N/A		
Coverage Data Sheet(s):	2RPV-AG Coverage		
Examination Scan Plan(s):	2RPV-AG Scan Plan		
Percent Coverage Achieved:	Axial Scan Coverage: 96.5%		
	Circ Scan Coverage: 64%		
	Total Coverage: 80.25%		
<p><b>Summary:</b></p> <p>Weld # 2RPV-AG was examined using PDI-UT-12 Rev. D (SI-UT-192, Rev. 1) on 3/30/2014. Ultrasonic examination meets the requirements of ASME BP&amp;V Code, Section XI, Appendix VIII, 2004 Edition, No Addenda.</p> <p>No indications were recorded.</p> <p>See coverage data sheet for coverage estimate details.</p>			

Examiner:	Richard C. May	Level:	II	Date:	3-30-14
Examiner:	N/A	Level:	N/A	Date:	N/A
SI Review:	John Hayden	Level:	III	Date:	04/04/14
Utility Review:	Russell E. Jones	Level:	III	Date:	4/6/14
ANR Review:	Charles Rosa			Date:	4/7/14
SITE REVIEW:	J. J. CILONITO				4-6-14

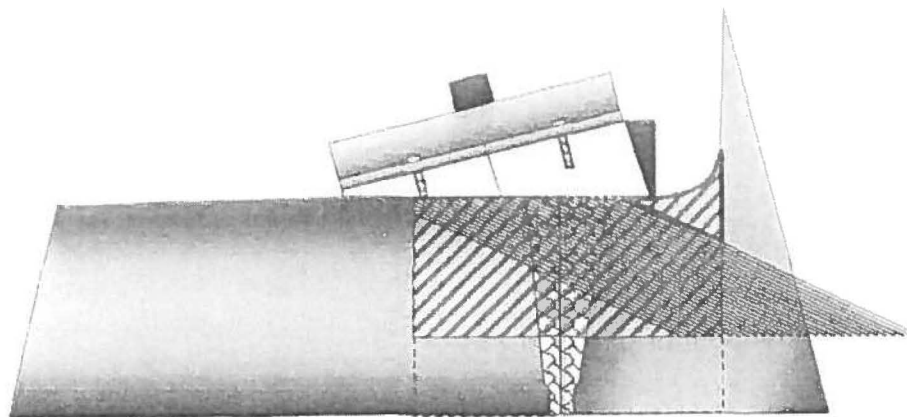
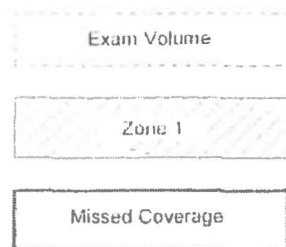


**Structural Integrity Associates**

Nine Mile Point Nuclear Station Unit 2  
2RPV-AG Coverage

ISI-VE-14-001

**PHASED ARRAY ULTRASONIC EXAMINATION COVERAGE**  
2RPV-AG Head-to-Flange In-Service (ISI) Axial Scan Examination Volume Layout



ISI examination of Zone 1 of the Head-to-Flange weld and base material on each side of the weld for a distance of  $\frac{1}{2}t$  from the toe of the weld was conducted for the entire circumferential length of the weld.

Coverage limitations due to Head-to-Flange configuration for the full circumferential length of the weld.

Above drawing is not full scale.

Estimated Zone 1 Axial (perpendicular to weld) Coverage = 93%	
<u>Exam Volume</u>	
Zone 1 thickness = 2"	
Zone 1 width = Weld Width + $\frac{1}{2}t \times 2 = (1.22" + (1.56" \times 2)) = 4.34"$	
Zone 1 Area = Thickness x Width = 8.68in <sup>2</sup>	
Volume of Missed Coverage = 0.6in <sup>2</sup>	
Volume Coverage = $(8.68\text{in}^2 - 0.6\text{in}^2) / 8.68\text{in}^2 = 0.93 \times 100\% = 93\%$	

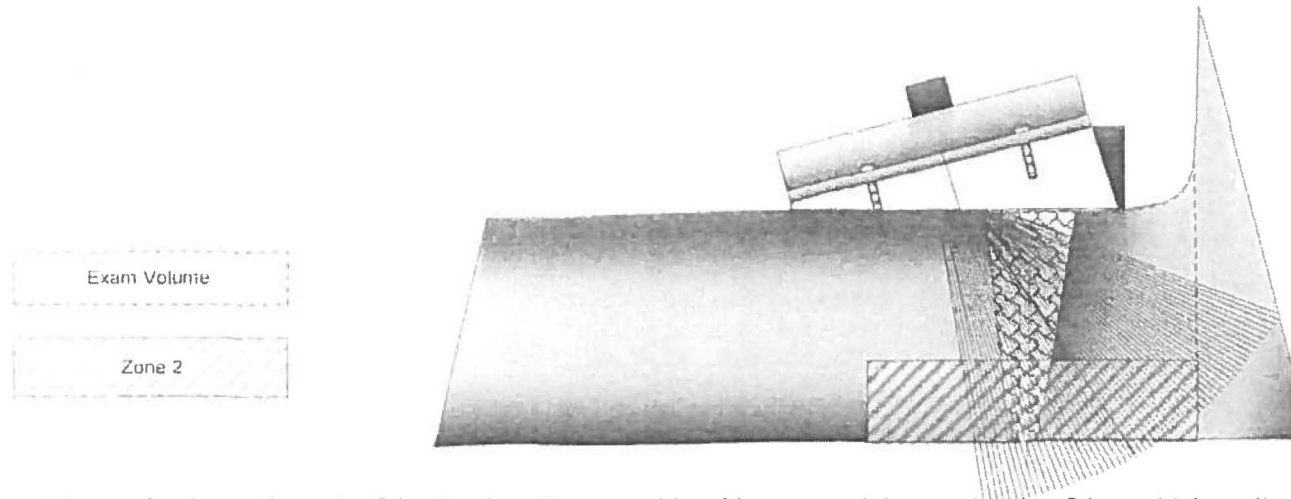


**Structural Integrity Associates**

Nine Mile Point Nuclear Station Unit 2  
2RPV-AG Coverage

ISI-VE-14-001

**PHASED ARRAY ULTRASONIC EXAMINATION COVERAGE**  
2RPV-AG Head-to-Flange In-Service (ISI) Axial Scan Examination Volume Layout (Cont.)



ISI examination of Zone 2 of the Head-to-Flange weld and base material on each side of the weld for a distance of  $\frac{1}{2}t$  from the toe of the weld was conducted for the entire circumference of the weld.

Coverage limitations due to head-to-flange configuration for the full circumferential length of the weld.

Above drawing is not full scale.

Estimated Zone 2 Axial (perpendicular to weld) Coverage = 100%

Exam Volume

Zone 2 thickness = 1.125"

Zone 2 width = Weld Width +  $1/2t \times 2 = (1.22" + (1.56" \times 2)) = 4.34"$

Zone 2 Area = Thickness x Width = 4.88in<sup>2</sup>

Volume of Missed Coverage = 0 in<sup>2</sup>

Volume Coverage =  $(4.88\text{in}^2 - 0\text{in}^2) / 4.88\text{in}^2 = 1.0 \times 100\% = 100\%$

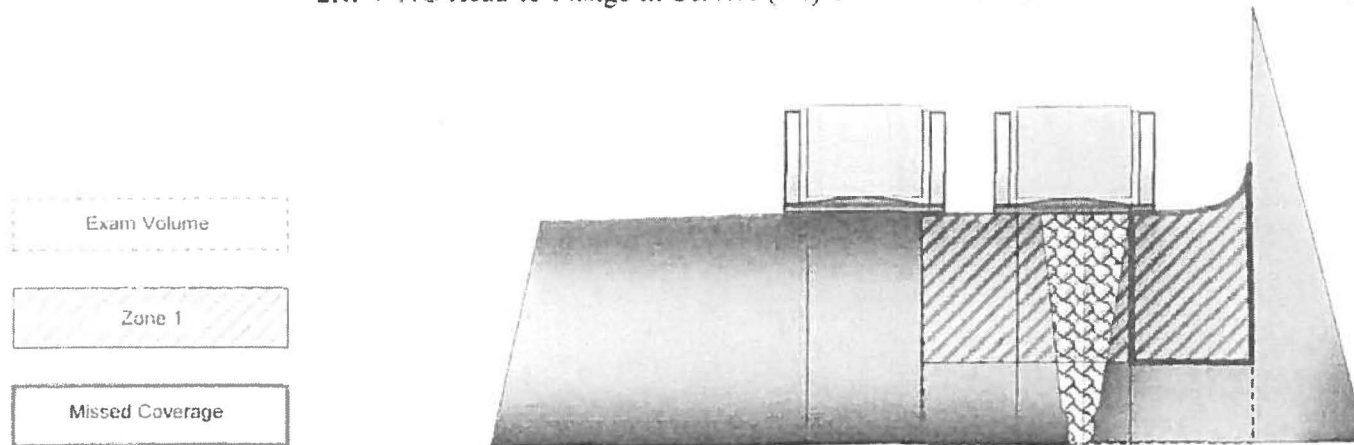


**Structural Integrity Associates**

Nine Mile Point Nuclear Station Unit 2  
2RPV-AG Coverage

ISI-VE-14-001

**PHASED ARRAY ULTRASONIC EXAMINATION COVERAGE**  
2RPV-AG Head-to-Flange In-Service (ISI) Circumferential Scan Examination Volume Layout



ISI examination of Zone 1 of the Head-to-Flange weld and base material on each side of the weld for a distance of  $\frac{1}{2}t$  from the toe of the weld was conducted for the entire circumference of the weld.

Both Circumferential scans (3) and (4) had coverage limitations due to head-to-flange configuration which prevented scanning closest to the flange of the examination volume for the full circumferential length of the weld.

Above drawing is not full scale.

Estimated Zone 1 Circumferential coverage = 62%	
<u>Exam Volume</u>	
Zone 1 thickness = 2"	
Zone 1 width = Weld Width + $\frac{1}{2}t \times 2 = (1.22" + (1.56" \times 2)) = 4.34"$	
Zone 1 Area = Thickness x Width = 8.68in <sup>2</sup>	
Volume of Missed Coverage = 3.25in <sup>2</sup>	
Volume Coverage = $(8.68\text{in}^2 - 3.25\text{in}^2) / 8.68\text{in}^2 = .62 \times 100\% = 62\%$	

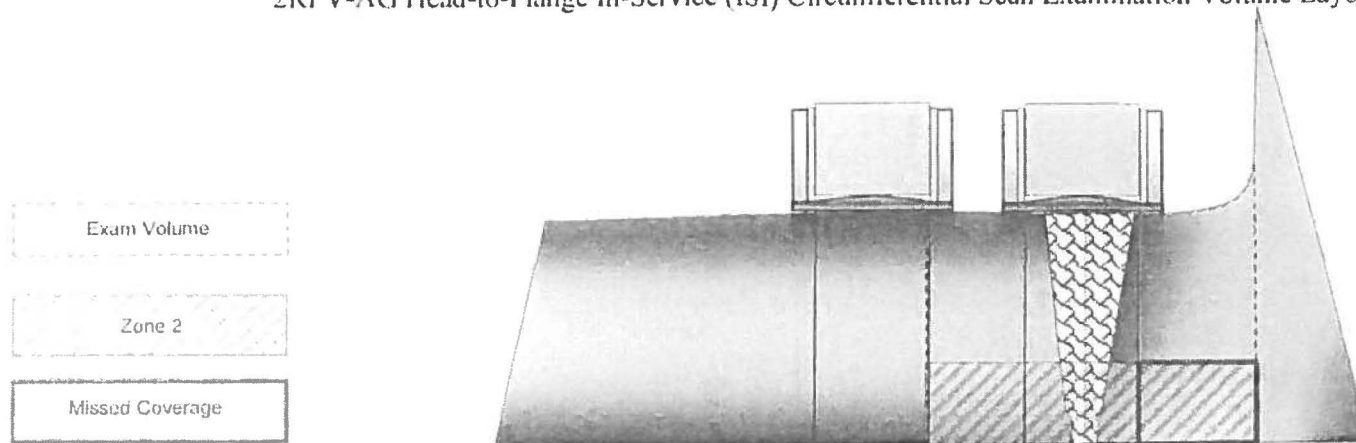


**Structural Integrity Associates**

Nine Mile Point Nuclear Station Unit 2  
2RPV-AG Coverage

ISI-VE-14-001

**PHASED ARRAY ULTRASONIC EXAMINATION COVERAGE**  
2RPV-AG Head-to-Flange In-Service (ISI) Circumferential Scan Examination Volume Layout (cont.)



ISI examination of Zone 2 of the Head-to-Flange weld and base material on each side of the weld for a distance of  $\frac{1}{2}t$  from the toe of the weld was conducted for the entire circumference of the weld.

Both Circumferential scans (3) and (4) had coverage limitations due to head-to-flange configuration which prevented scanning closest to the flange of the examination volume for the full circumferential length of the weld.

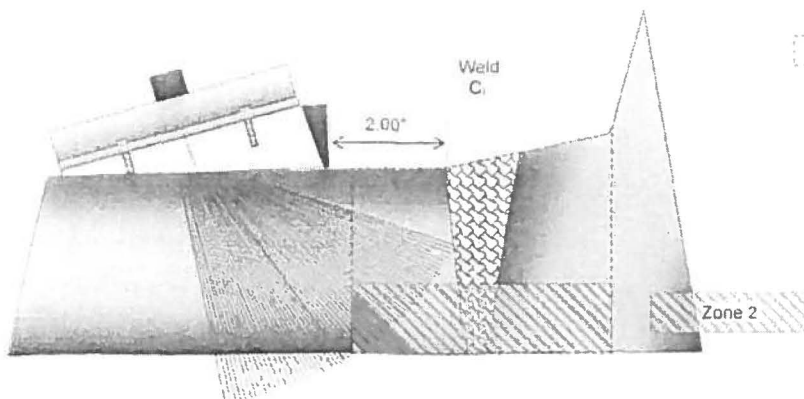
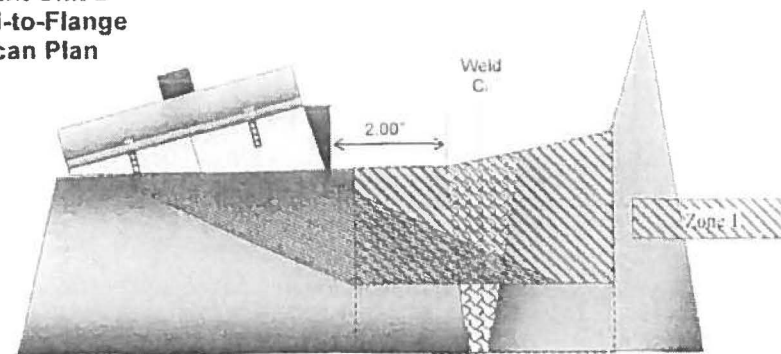
Above drawing is not full scale.

Estimated Zone 2 Circumferential coverage = 66%	
	<u>Exam Volume</u>
Zone 2 thickness = 1.125"	
Zone 2 width = Weld Width + $\frac{1}{2}t \times 2 = (1.22" + (1.56" \times 2)) = 4.34"$	
Zone 2 Area = Thickness x Width = 4.88in <sup>2</sup>	
Volume of Missed Coverage = 1.65in <sup>2</sup>	
Volume Coverage = $(4.88\text{in}^2 - 1.65\text{in}^2) / 4.88\text{in}^2 = .66 \times 100\% = 66\%$	

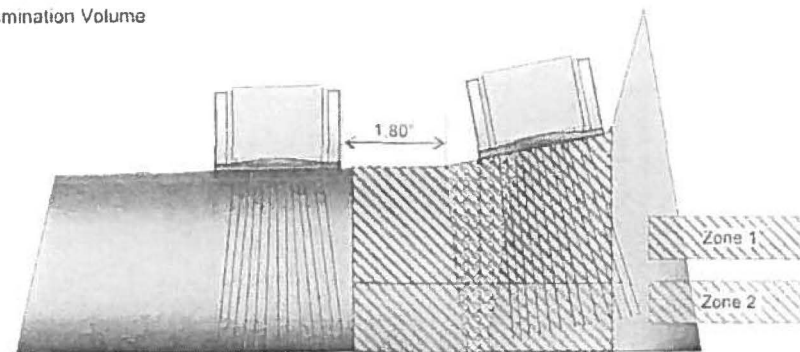


Examination Data		
Date:	3-30-2014	
Examiners:	Richard C. May	
Start Time:	1135	
Finish Time:	1400	
Examination Temperature	Thermometer S/N	Cal. Due:
74°	285533	11-13-14
Axial Zero Datum		Circ Zero Datum
Weld Centerline		0 Stamp @ #1 Stud Hole

**Nine Mile Point Unit 2  
RPV Top Head-to-Flange  
2RPV-AG Scan Plan**



Examination Volume



Wedge Model	Examination Angle	Probe Skew	Scan Surface	Scan Direction	Wedge Radius	Min R	Max R	Min MP	Max MP	Max Misorientation	Exam Volume %	Examination Sensitivity (dB)
360-141-072	65°	Manual	Vessel	Perpendicular to Weld	Flat	2.0	N/A	N/A	N/A	N/A	Zone 1	33.5
360-141-072	10° to 75°	Manual	Vessel	Perpendicular to Weld	Flat	2.0	N/A	N/A	N/A	N/A	Zone 2	35
360-141-072	65°	Manual	Vessel	Circumferential	Flat	1.8	N/A	N/A	N/A	N/A	Zone 1	33.5
360-141-072	10° to 75°	Manual	Vessel	Circumferential	Flat	1.8	N/A	N/A	N/A	N/A	Zone 2	35

Exelon

## Supplemental Report

Report No.: ISI-UT-16-039

Page: 3 of 3

Summary No.: 150100

Examiner: Reisewitz, Jack JAR

Level: II-PDI

Reviewer: Siever, Theodore, Level III

Date: 4-25-16

Examiner: N/A

Level: N/A

Site Review: GINDER, TODD M

Date: 4-25-16

Other: N/A

Level: N/A

ANII Review: Niznik, Dean S.

Date: 4-27-16

Comments: No obstructions UPST of weld. 100% coverage achieved during axial and cir. scans. DNST axial scan obstructed by 4.0 in. long code plate: 4.0 in. + 0.500 in. (Transducer Wedge Width) = 4.5 in. not scanned. 3.25 in. was scanned. 3.25/7.75 Circ. = 42% coverage achieved for DNST axial scan. Full coverage achieved for DNST circ. scan.

Pipe Circ UPST=8.125 in.

UPST Axial: 100%

DNST Axial: 42%

TTL Ax/Circ. Coverage = 342%

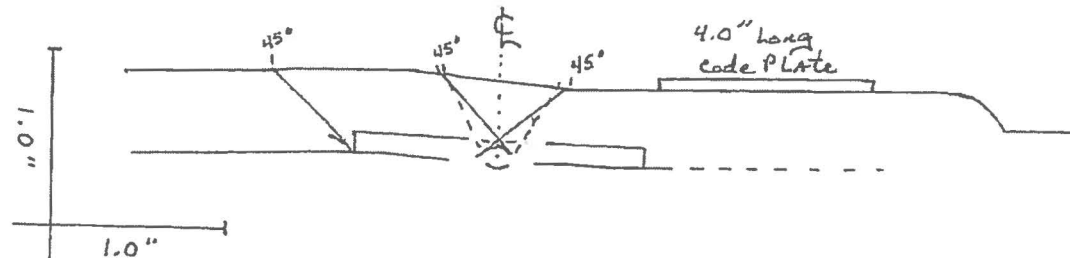
Pipe Circ DNST=7.75 in.

UPST Circ: 100%

DNST Circ: 100%

Coverage Achieved=342/400 = 85.5%

Sketch or Photo:



# UT Calibration/Examination

Site/Unit:	NMP / 2	Procedure:	GEH-PDI-UT-2	Outage No.:	N2RFO15
Summary No.:	156700	Procedure Rev.:	8	Report No.:	ISI-UT-16-031
Workscope:	ISI	Work Order No.:	C92744622-40	Page:	2 of 4

---

Code:	ASME Section XI 2004 Edition	Cat /Item	R-A/R1.11	Location:	PC - El. 308'
Drawing No.:	88-A	Description	Valve "V10-to-Reducer"		
System ID:	SLS				
Component ID:	2SLS-88A-FW013A	Size/Length:	0.35 in. / 6.25 in.	Thickness/Diameter:	0.344 in. / 2.0 in.
Limitations:	Valve to Reducer configuration	Start Time:	1305	Finish Time:	1320

<b>Instrument Settings</b> Serial No.: 0206PX Manufacturer: GEIT Model: USN-60SW Linearity: L-16-008 Delay: 7.7184 µsec. Range: 2.5 in. M'tl Cal/Vel: 0.1221 in/µsec. Pulser Type: Square Damping: 500 Ohms Reject: 0% PRF: Auto High SU Freq.: 2.25 MHz Frequency: 2.25 MHz Rectify: Fullwave Voltage: 450 V Pulse Width: 220 ns Gate Mode: N/A Display Delay: N/A Ax. Gain (dB) 51.9 Circ. Gain (dB): N/A 1 Screen Div. = 0.25 in. of Sound Path		<b>Search Unit</b> Serial No.: SB0046 Manufacturer: GEIT Size: 0.25 in. Model: MSWQC Freq. 2.25 MHz Center Freq.: N/A Exam Angle: 70° Squint Angle: N/A Measured Angle: 68° Mode: Shear Exit Point 0.25 in. # of Elements: 1 Config.: Single Focus: N/A Shape: Round Contour: N/A Wedge Style: MSWQC Search Unit Cable Type: RG-174 Length: 6 ft. No. Conn. 0		<table border="1"> <tr> <th>Cal. Checks</th> <th>Time</th> <th>Date</th> </tr> <tr> <td>Initial Cal.</td> <td>1151</td> <td>4/15/2016</td> </tr> <tr> <td>Inter. Cal.</td> <td>1305</td> <td>4/15/2016</td> </tr> <tr> <td>Inter. Cal.</td> <td>N/A</td> <td></td> </tr> <tr> <td>Inter. Cal.</td> <td>N/A</td> <td></td> </tr> <tr> <td>Final Cal.</td> <td>1425</td> <td>4/15/2016</td> </tr> </table>	Cal. Checks	Time	Date	Initial Cal.	1151	4/15/2016	Inter. Cal.	1305	4/15/2016	Inter. Cal.	N/A		Inter. Cal.	N/A		Final Cal.	1425	4/15/2016	<table border="1"> <tr> <th colspan="4">Axial Oriented Search Unit</th> </tr> <tr> <th>Calibration Reflector</th> <th>Signal Amplitude %</th> <th>Sweep Division</th> <th>Sound Path</th> </tr> <tr> <td>0.5 in. Notch</td> <td>80</td> <td>5.1</td> <td>1.3 in.</td> </tr> <tr> <td>N/A</td> <td></td> <td></td> <td></td> </tr> <tr> <td>N/A</td> <td></td> <td></td> <td></td> </tr> <tr> <td>N/A</td> <td></td> <td></td> <td></td> </tr> <tr> <td>N/A</td> <td></td> <td></td> <td></td> </tr> </table>	Axial Oriented Search Unit				Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path	0.5 in. Notch	80	5.1	1.3 in.	N/A				N/A				N/A				N/A			
Cal. Checks	Time	Date																																																	
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<b>Calibration Block</b> Cal. Block No.: 12-1181 Thickness 0.5 in.-2.0 in. Dia.: Flat Cal Blk Temp. 82° Temp Tool: 0003091668 Comp. Temp. 87° Temp. Tool: 0003091668 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"/> Info <input type="checkbox"/>		<b>Scan Coverage</b> Upstream <input type="checkbox"/> Downstream <input checked="" type="checkbox"/> Scan dB: 51.9 CW <input type="checkbox"/> CCW <input type="checkbox"/> Scan dB: N/A Exam Surface: O.D. Surface Condition: Ground		<b>Couplant</b> Cal. Batch: 00325 Type: ULTRAGEL II Mfg.: SONOTECH Exam Batch: 00325 Type: ULTRAGEL II Mfg.: SONOTECH	<table border="1"> <tr> <th colspan="4">Circumferential Oriented Search Unit</th> </tr> <tr> <th>Calibration Reflector</th> <th>Signal Amplitude %</th> <th>Sweep Division</th> <th>Sound Path</th> </tr> <tr> <td>N/A</td> <td></td> <td></td> <td></td> </tr> <tr> <td>N/A</td> <td></td> <td></td> <td></td> </tr> <tr> <td>N/A</td> <td></td> <td></td> <td></td> </tr> <tr> <td>N/A</td> <td></td> <td></td> <td></td> </tr> </table>	Circumferential Oriented Search Unit				Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path	N/A				N/A				N/A				N/A																									
Circumferential Oriented Search Unit																																																			
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N/A																																																			
		<b>Reference Block</b> Serial No.: 94-6005 Type: Rompas 304 SS		<table border="1"> <tr> <th colspan="5">Reference/Simulator Block</th> </tr> <tr> <th>Gain dB</th> <th>Reflector</th> <th>Signal Amplitude %</th> <th>Sweep Division</th> <th>Sound Path</th> </tr> <tr> <td>36.9</td> <td>NSDH</td> <td>80</td> <td>3.2</td> <td>0.8 in.</td> </tr> <tr> <td>N/A</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>N/A</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	Reference/Simulator Block					Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path	36.9	NSDH	80	3.2	0.8 in.	N/A					N/A																										
Reference/Simulator Block																																																			
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36.9	NSDH	80	3.2	0.8 in.																																															
N/A																																																			
N/A																																																			

Percent Of Coverage Obtained > 90%: No-50% Reviewed Previous Data: Yes

Comments: No recordable indications. No counterbore detected. 70° was utilized on DNST side due to component configuration.

Examiner	Level	III-PDI	Signature	Date	Reviewer	Signature	Date
Hilborn, Mark R.			<i>M. Hilborn</i>	4/15/2016	Siever, Theodore, Level III	<i>Ed Siever</i>	4-22-16
Examiner	Level	N/A	Signature	Date	Site Review	Signature	Date
N/A					TODD M. GINDER	<i>Todd M. Ginder</i>	4/23/16
Other	Level	N/A	Signature	Date	ANII Review	Signature	Date
N/A					Niznik, Dean S.	<i>Dean Niznik</i>	4-25-16





## Supplemental Report

Report No.: ISI-UT-16-031

Page: 4 of 4

Summary No.: 156700

Examiner: Hilborn, Mark R. *MHR*

Level: III-PDI

Reviewer: Siever, Theodore, Level III

Date: 4/22/2016

Examiner: N/A

Level: N/A

Site Review: Ginder, Todd M. *TMG*

Date: 4/23/2016

Other: N/A

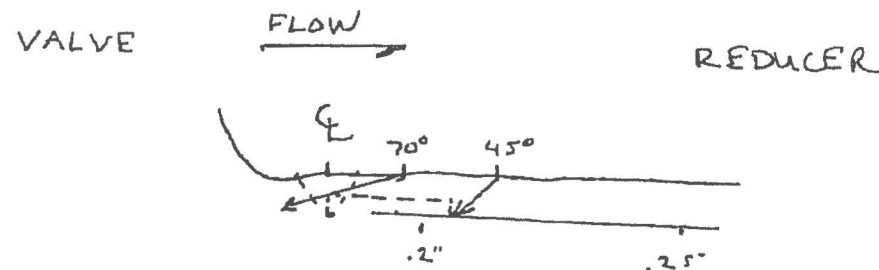
Level: N/A

ANII Review: Niznik, Dean S. *DN*

Date: 4-25-16

Comments: Previous Data: W 1-6.24-06-0014 (2006)

Sketch or Photo:





## Supplemental Report

Report No.: ISI-UT-16-046

Page: 5 of 5

Summary No.: 157100

Examiner: Hilborn, Mark R. *MRH*

Level: III-PDI

Reviewer: Siever, Theodore, Level III *TS*

Date: 4-22-16

Examiner: N/A

Level: N/A

Site Review: ~~N/A~~ GINDER TODD M. *JMG*

Date: 4-24-16

Other: N/A

Level: N/A

ANII Review: Niznik, Dean S. *DSN*

Date: 4-25-16

Comments: Examination limited due to pipe to tee configuration on DNST side of weld CW from 1.75 in. to 4.5 in.

Exam area in.<sup>2</sup> = 1.35 in. x 6.25 in. = 8.44 in.

UPST = 100%

Coverage achieved = 89%

Inaccessible area = 1.35 in x 2.75 in. = 3.7 in.

DNST = 56%

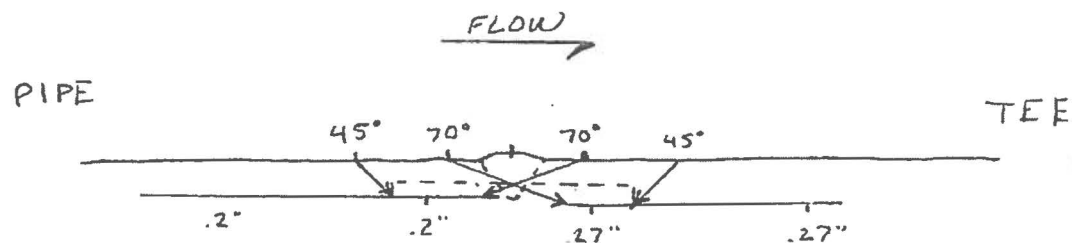
Scanned area = 1.35 in. x 3.5 in. = 4.73 in.

CW = 100%

Percent achieved on DNST - 56.0%

CCW = 100%

Sketch or Photo:





## Supplemental Report

Report No.: ISI-UT-16-057

Page: 3 of 3

Summary No.: 213900

Examiner: Bullen, James, M Level: II-PDI

Reviewer: Siever, Theodore, Level III Date: 4-24-16

Examiner: N/A Level: N/A

Site Review: GINDER, TODD Date: 4-24-16

Other: N/A Level: N/A

ANII Review: Niznik, Dean S. Date: 4-27-16

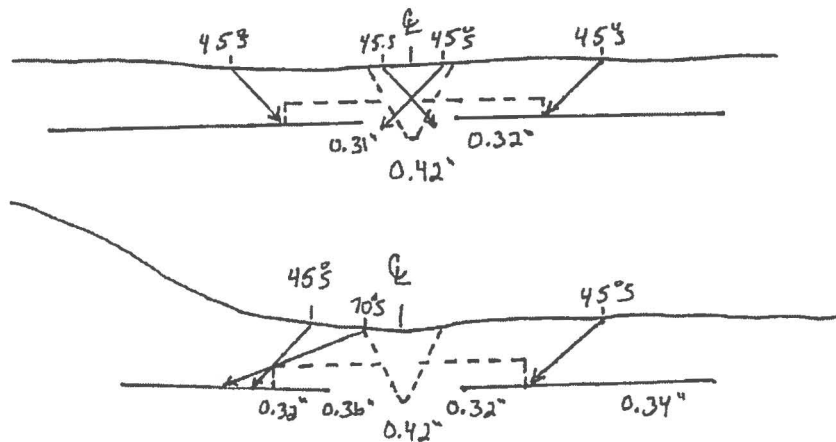
### Comments:

**2WCS-09-05-SW024**

1.  $8.7 + 14.7 = 59.18 = 14.796\%$
  2. 25%
  3. 25%
  4. 25%
- = 89.79%

Weld Length 14.7"  
Intradose limitation area = 3.0"

Tee Flow → Pipe





## Supplemental Report

Report No.: ISI-UT-16-056

Page: 3 of 3

Summary No.: 214300

Examiner:	<u>Bullen, James, M.</u>	Level:	<u>II-PDI</u>	Reviewer:	<u>Siever, Theodore, Level III</u>	Date:	<u>4-25-16</u>
Examiner:	<u>N/A</u>	Level:	<u>N/A</u>	Site Review:	<u>CILENTO, J. J.</u>	Date:	<u>4-26-16</u>
Other:	<u>N/A</u>	Level:	<u>N/A</u>	ANII Review:	<u>Niznik, Dean S.</u>	Date:	<u>4-27-16</u>

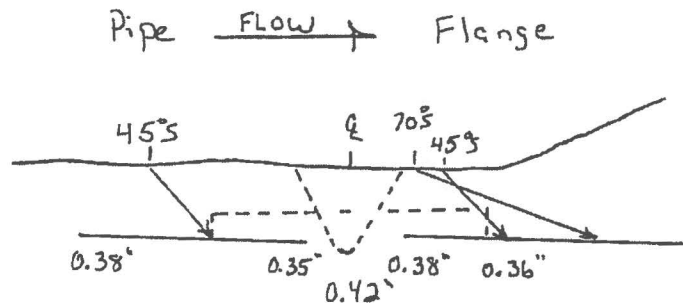
### Comments:

Profile not to scale. 2WCS-09-05-SW025

Weld Length

14.7"

1. 25%
  2. 0%
  3. 25%
  4. 25%
- = 75%





## Supplemental Report

Report No.: ISI-UT-16-064

Page: 3 of 3

Summary No.: 216700

Examiner: <u>Huhe, Troy</u> <i>T.H.</i>	Level: <u>II-PDI</u>	Reviewer: <u>Siever, Theodore, Level III</u> <i>T.S.</i>	Date: <u>4/25/2016</u>
Examiner: <u>N/A</u>	Level: <u>N/A</u>	Site Review: <u>CILANTO, J.J. UT-III</u>	Date: <u>5-2-16</u>
Other: <u>N/A</u>	Level: <u>N/A</u>	ANII Review: <u>Niznik, Dean S.</u> <i>D.S.</i>	Date: <u>5-3-16</u>

Comments:

WCS-09-05-SW032

1  $8.7 \div 14.7 = 59.18 = 14.796\%$

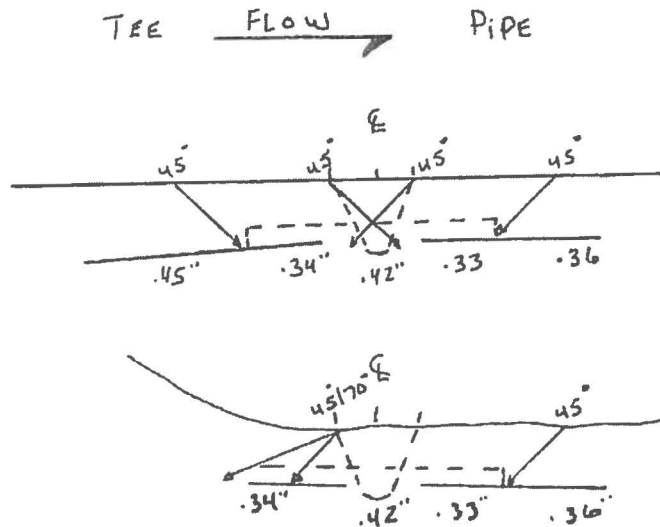
2 25%

3 25%

4 25%

= 89.796%

Weld Length 14.7"  
Intradose limitation area 3.0"





## Supplemental Report

Report No.: ISI-UT-16-065

Page: 3 of 3

Summary No.: 217100

Examiner: Huhe, Troy <u>T. Huhe</u>	Level: <u>II-PDI</u>	Reviewer: <u>Siever, Theodore, Level III</u>	Date: <u>4-26-16</u>
Examiner: <u>N/A</u>	Level: <u>N/A</u>	Site Review: <u>CILMRO, J.J. UT-10</u>	Date: <u>5-2-16</u>
Other: <u>N/A</u>	Level: <u>N/A</u>	ANII Review: <u>Niznik, Dean S.</u>	Date: <u>5-3-16</u>

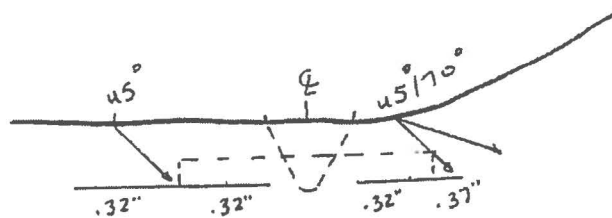
Comments:

WCS-09-05-SW033

1	25%
2	0%
3	12.5%
4	12.5%
	=50%

Weld Length	14.7"
Intradose limitation area	3.0"

PIPE   FLOW   FLANGE



## UT Calibration/Examination

Site/Unit: NMP / 2  
 Summary No.: N2-ISI-168200  
 Workscope: AUG

Procedure: EP-AA-335-031  
 Procedure Rev.: 8  
 Work Order No.: C93460274-085

Outage No.: N2R16  
 Report No.: ISI-UT-18-025  
 Page: 2 of 4

Code: ASME Sect XI, 2004Ed Cat./Item: R-A/R1.16 Location: 249' DW  
 Drawing No.: ISI-064-000-002 Description: Pipe-to-Valve \*HYV17A  
 System ID: ISI-RCS  
 Component ID: 2RCS-64-00-FWA07 Size/Length: 1.85" / 75" Thickness/Diameter: 1.317" / 24"  
 Limitations: Single sided; examined U/S side of valve HYV17A only due to configuration Start Time: 1736 Finish Time: 1817

**Instrument Settings**  
 Serial No.: 02554H Manufacturer: GEIT Model: USN-60SW Linearity: L-18-009 Delay: 12.1309 Range: 4.0" M'll Cal/Vel: 0.2367 Pulsar Type: Square Damping: 500 Ohms Reject: 0% PRF: Auto High SU Freq.: 2.0 Frequency: 2.0 MHz Rectify: Fullwave Voltage: 450 Pulse Width: 250 Gate Mode: Peak Display Delay: 0.000 Ax. Gain (dB): 56 Circ. Gain (dB): N/A  
 1 Screen Div. = 0.4 in. of Sound Path

**Search Unit**  
 Serial No.: 00-991 Manufacturer: RTD Size: 2(15x25)mm Model: 60 TRL2-Aust Freq.: 2.0 Center Freq.: N/A Exam Angle: 60° Squint Angle: 8° Measured Angle: 60° Mode: Long. Exit Point 0.70" # of Elements: 2 Config.: Dual (SBS) Focus: FD25 Shape: Rect. Contour: Flat Wedge Style: Integral

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

Cal. Checks	Time	Date
Initial Cal.	1648	5/3/2018
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Inter. Cal.	N/A	
Final Cal.	1845	5/3/2018

**Couplant**  
 Cal. Batch: 12125  
 Type: ULTRAGEL II  
 Mfg.: MAGNAFLUX  
 Exam Batch: 12125  
 Type: ULTRAGEL II  
 Mfg.: MAGNAFLUX

Axial Oriented Search Unit			
Calibration Reflector	Signal Amplitude %	Sweep Division	Sound Path
1.5" ID Notch	83%	6.8	2.705"
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A

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

Reference/Simulator Block				
Gain dB	Reflector	Signal Amplitude %	Sweep Division	Sound Path
56	NSDH	40%	2.5	0.609"
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A

**Calibration Block**  
 Cal. Block No. CAL-PDI-009 Upstream ☒ Downstream ☐ Scan dB: 70  
 Thickness 0.5" - 2.0" Dia.: Flat CW ☐ CCW ☐ Scan dB: N/A  
 Cal. Blk. Temp. N/A Temp. Tool: N/A Exam Surface: O.D.  
 Comp. Temp. N/A Temp. Tool: N/A Surface Condition: Flush  
 Recordable Indication(s): Yes ☐ No ☒ (If Yes, Ref. Attached Ultrasonic Indication Report.)  
 Results: Accept ☒ Reject ☐ Info

**Reference Block**  
 Serial No.: 94-6005  
 Type: SS

Comments: UT of component 2RCS-64-00-FWA07; Pipe-to-Valve \*HYV17A

Percent Of Coverage Obtained > 90%: No-50% Reviewed Previous Data: Yes

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Valden, Paul	II	<i>Paul Valden</i>	5/3/2018	Jul Setzer	<i>Jul Setzer</i>	5-4-18
N/A	N/A			Michael Salley	<i>Michael Salley</i>	5-4-18
Other	N/A			ANN Review	<i>Jon Morris</i>	5-6-18

# Supplemental Report

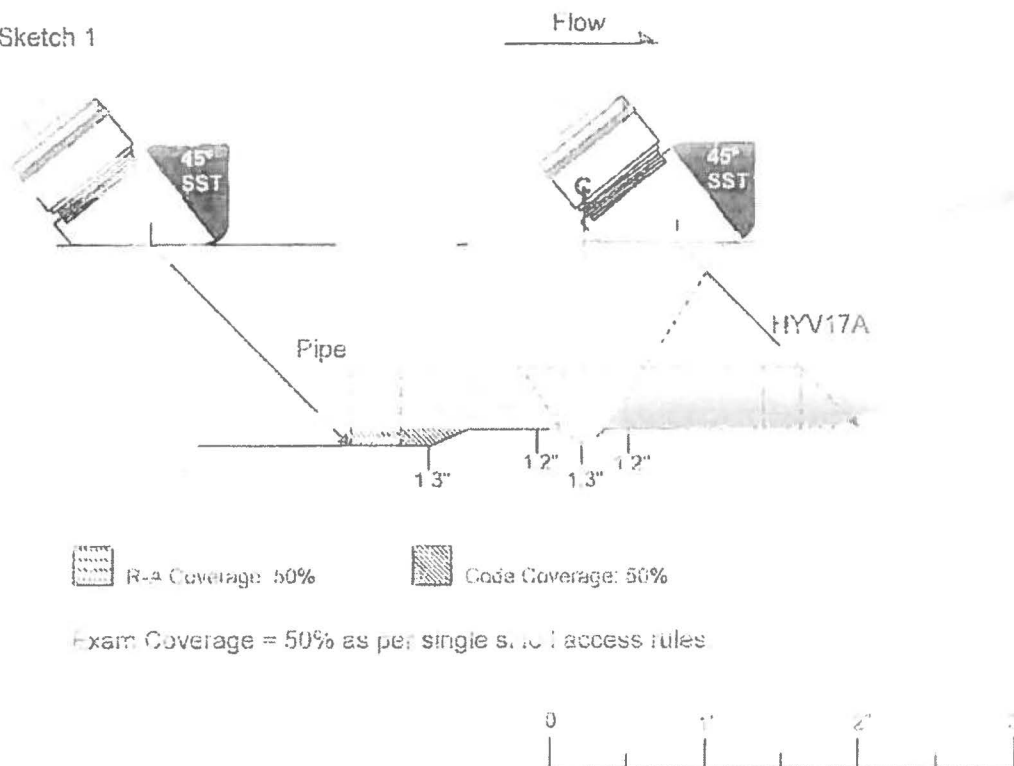
Report No.: ISI-UT-18-025

Page: 3 of 4

Summary No.: N2-ISI-168200

Sketch or Photo: O:\Outage Data\Nine Mile\N2RFO16\ISI\Sketches\2RCS-64-00-FWA07 (2).JPG

Sketch 1



- Axial Exam: Scanned across flush weld crown while maintaining probe contact.
- Circ Exam: Scanned US and on weld crown.
- Counterbore US: Located 1" from weld centerline.
- Counterbore DS: None detected
- WCW = 1.85"
- Profile constructed from data sheet #1766-159, dated 4/30/86

with GEH LEVEL III Coverage *[Signature]* 5/4/18



# Supplemental Report

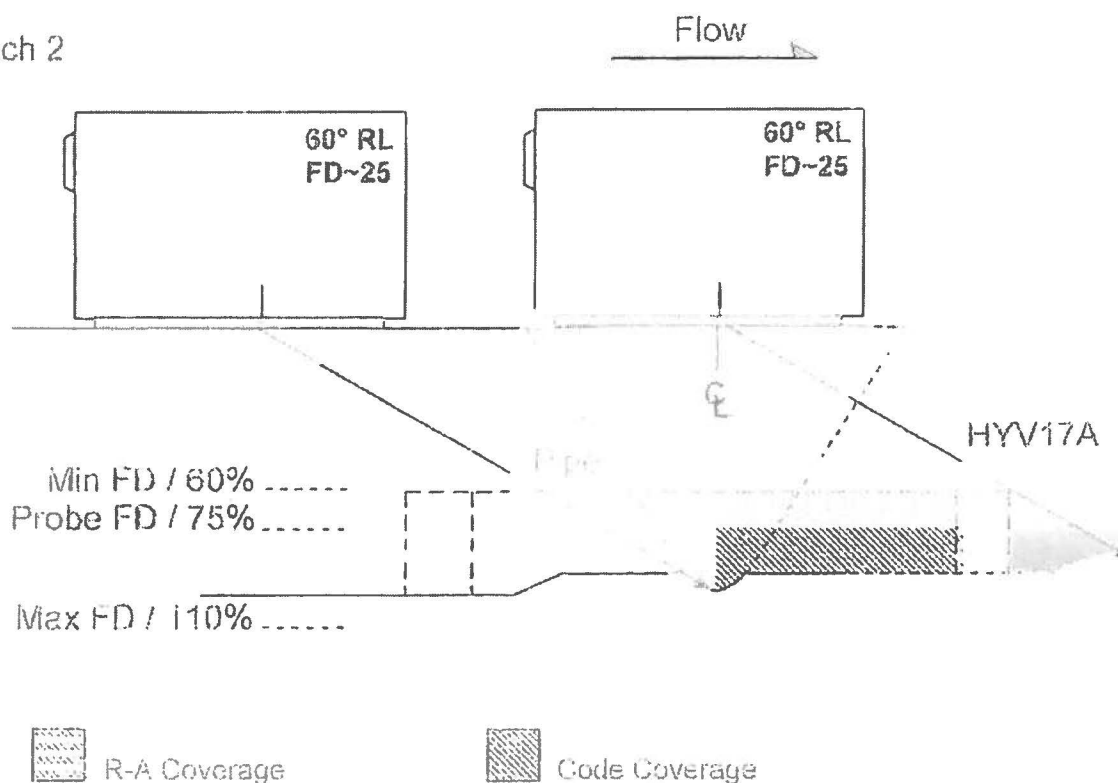
Report No.: ISI-UT-18-025

Page: 4 of 4

Summary No.: N2-ISI-168200

Sketch or Photo: O:\Outage Data\Nine Mile\N2RFO16\ISI\Sketches\2RCS-64-00-FWA07 (1).JPG

Sketch 2



Far side of weld examined as per single side / access rules - No coverage credit taken





## NDE SUMMARY

ISI Report No.:	ISI-VE-18-003	SI Project No.:	#1600586
ISI Summary No.:	N2-ISI-011600		

<b>Customer:</b> Exelon	<b>Site:</b> Nine Mile Point	<b>Unit:</b> 2	<b>Outage:</b> N2R16
<b>System:</b> LP Core Spray	<b>Component:</b> 2RPV-KC23 (N5) LP Core Spray		<b>Weld Number:</b> 2RPV-KC23
<b>Examination Procedure:</b>	SI-UT-218, Rev. 0		
<b>ASME Section XI Edition / Addenda:</b>	ASME Section XI 2004, No Addenda		
<b>Examination Record:</b>	NMP2-18-AUT-003		
<b>Calibration Data Sheets:</b>	NMP-18-CAL-013, NMP-18-CAL-014, NMP-18-CAL-015		
<b>Indication Evaluation Sheet:</b>	N/A		
<b>Coverage Data Sheet:</b>	NMP2-18-AUT-003		
<b>Examination Scan Plan:</b>	2RPV-KC23 N5 Scan Plan		
<b>Exam Coverage Achieved:</b>	Risked-Informed Coverage: 80.3% Procedure Extended Coverage: 70.4%		

### Summary:

No Indications associated with IGSCC were noted in the examination volume.

Intermittent (360°) ID geometry and weld interface noise were observed.

See coverage data sheet for coverage estimate details.

2RPV-KC23 (N5) LP Core Spray DM weld was examined using SI-UT-218, Rev. 0 on 04/24/2018.

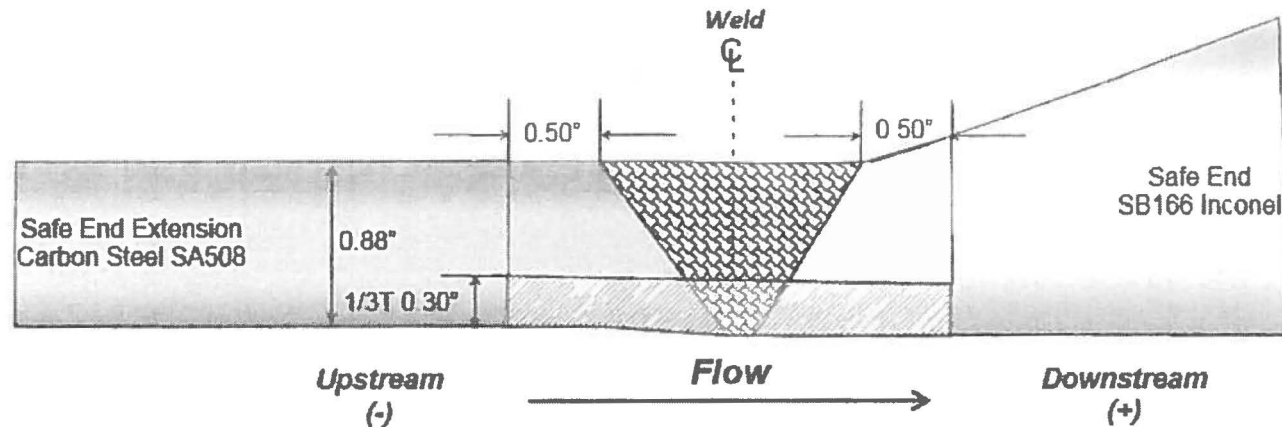
Examination meets the requirements of ASME BP&V Code, Section XI, 2004 Edition, no addenda with risk-informed program.

<b>Examiner:</b> Wade Holloway		<b>Level:</b> III	<b>Date:</b> 04/26/2018
<b>Examiner:</b> Joshua Sheeran		<b>Level:</b> III	<b>Date:</b> 04/26/18
<b>SI Review:</b> John J. Hayden		<b>Level:</b> III	<b>Date:</b> 04/26/18
<b>Exelon Review:</b> J. J. CILENTO		<b>Level:</b> III	<b>Date:</b> 4-27-18
<b>ANII Review:</b> Jon Morris			<b>Date:</b> 4-30-18

# PHASED ARRAY ULTRASONIC EXAMINATION RECORD

## N5 Safe End-to-Extension

### General Configuration

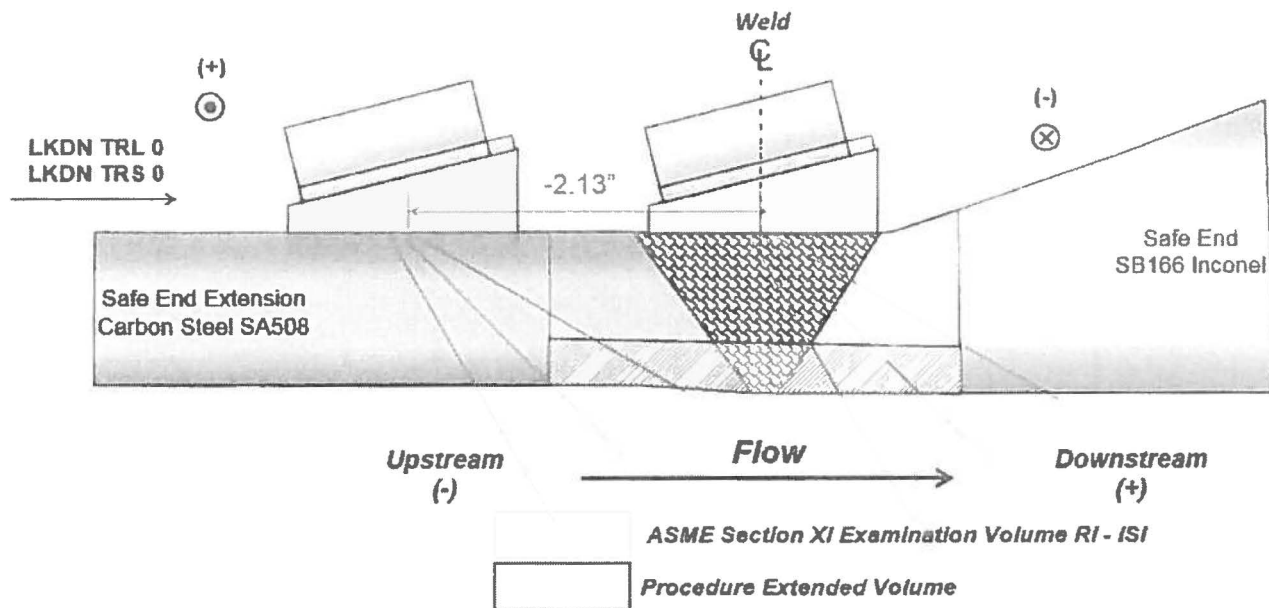

ASME Section XI Examination Volume RI - ISI

Procedure Extended Volume

# **PHASED ARRAY ULTRASONIC EXAMINATION RECORD**

**N5 Safe End-to-Extension**

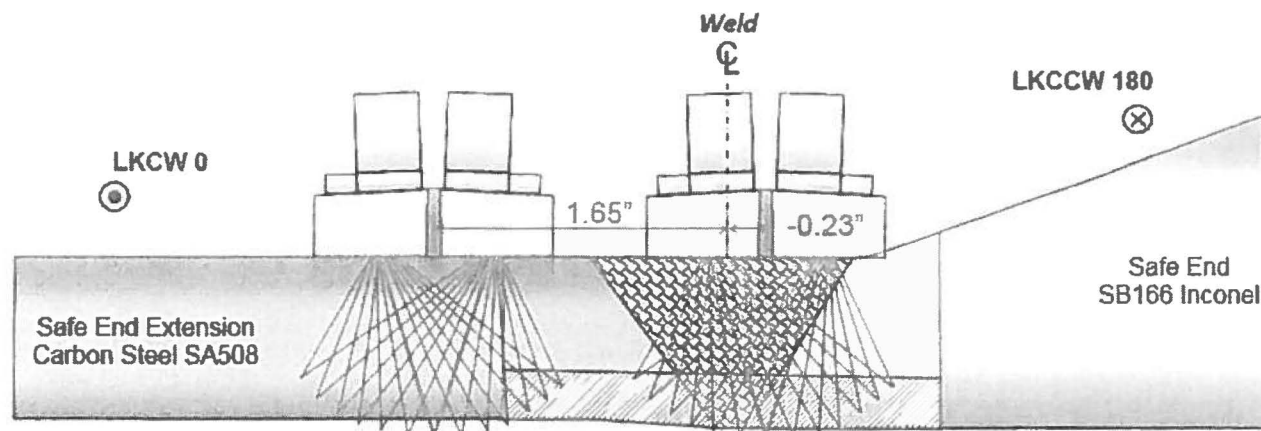
**Axial Examination Coverage**



# PHASED ARRAY ULTRASONIC EXAMINATION RECORD

## N5 Safe End-to-Extension

### Circumferential Examination Coverage



Upstream  
(+)

Flow

Downstream  
(-)



ASME Section XI Examination Volume RI - ISI

Procedure Extended Volume

### Note:

The examination beam skew paths shown above in blue represent the actual beam skew angles generated by the ultrasonic technique.

However, only the beam skew paths shown in red are qualified by the procedure for examination coverage.



Structural Integrity Associates, Inc.

## NDE SUMMARY

ISI Report No.:	ISI-VE-18-001	SI Project No.:	#1600586
ISI Summary No.:	N2-ISI-006100		

Customer: Exelon	Site: Nine Mile Point	Unit: 2	Outage: N2R16
System: HP Core Spray	Component: 2RPV-KC32 N16 HP Core Spray		Weld Number: 2RPV-KC32
Examination Procedure:	SI-UT-218, Rev. 0		
ASME Section XI Edition / Addenda:	ASME Section XI 2004, No Addenda		
Examination Record:	NMP2-18-AUT-004		
Calibration Data Sheets:	NMP-18-CAL-016, NMP-18-CAL-017, NMP-18-CAL-018		
Indication Evaluation Sheet:	N/A		
Coverage Data Sheet:	NMP2-18-AUT-004		
Examination Scan Plan:	2RPV-KC32 N16 Scan Plan		
Exam Coverage Achieved:	Risked-Informed Coverage: 81.6% Procedure Extended Coverage: 80.3%		

### Summary:

No Indications associated with IGSCC were noted in the examination volume.

Intermittent (360°) ID geometry and weld interface noise were observed.

See coverage data sheet for coverage estimate details.

2RPV-KC32 (N16) HP Core Spray DM weld was examined using SI-UT-218, Rev. 0 on 04/24/2018 and 04/25/18.

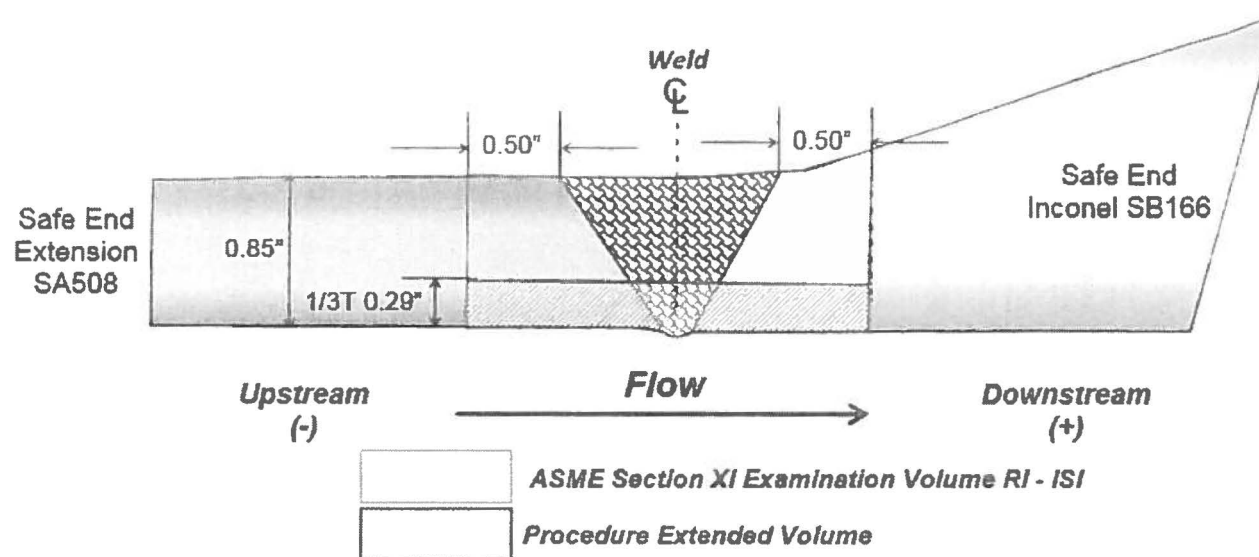
Examination meets the requirements of ASME BP&V Code, Section XI, 2004 Edition, no addenda with risk-informed program.

<b>Examiner:</b> Wade Holloway		<b>Level:</b> III	<b>Date:</b> 4/26/2018
<b>Examiner:</b> Joshua Sheeran		<b>Level:</b> III	<b>Date:</b> 04/26/18
<b>SI Review:</b> John J. Hayden		<b>Level:</b> III	<b>Date:</b> 04/26/18
<b>Exelon Review:</b> J.J. CILENTO		<b>Level:</b> III	<b>Date:</b> 4-27-18
<b>ANII Review:</b> Jon Morris			<b>Date:</b> 4-30-18

# **PHASED ARRAY ULTRASONIC EXAMINATION RECORD**

## **N16 Safe End-to-Extension**

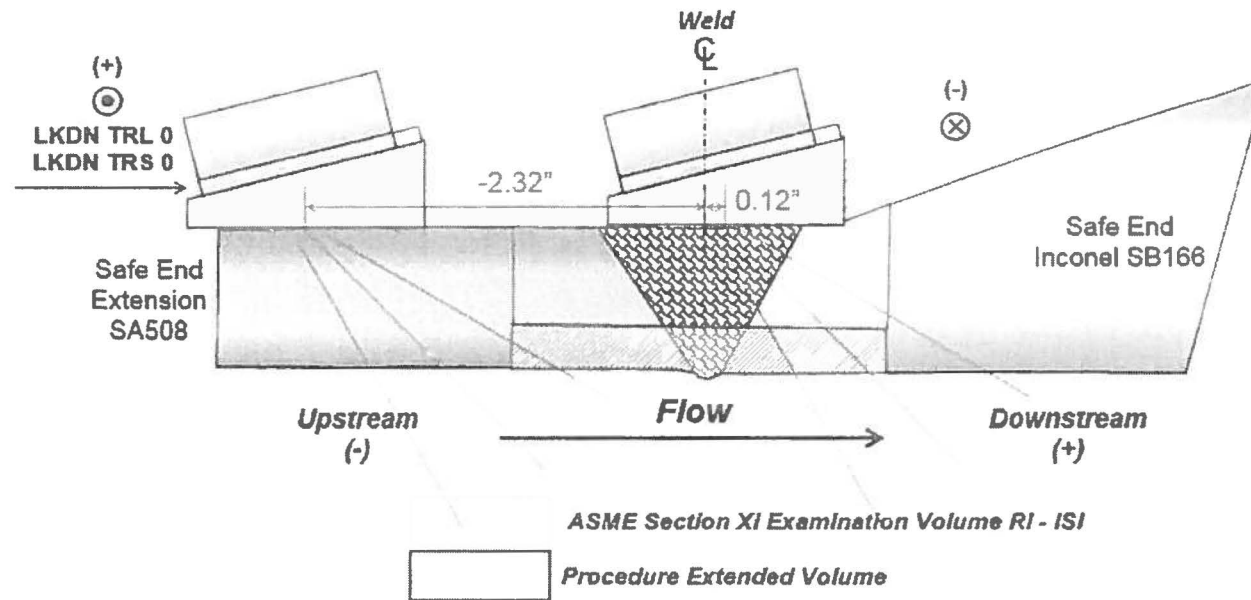
### **General Configuration**



**PHASED ARRAY ULTRASONIC EXAMINATION RECORD**

**N16 Safe End-to-Extension**

**Axial Examination Coverage**

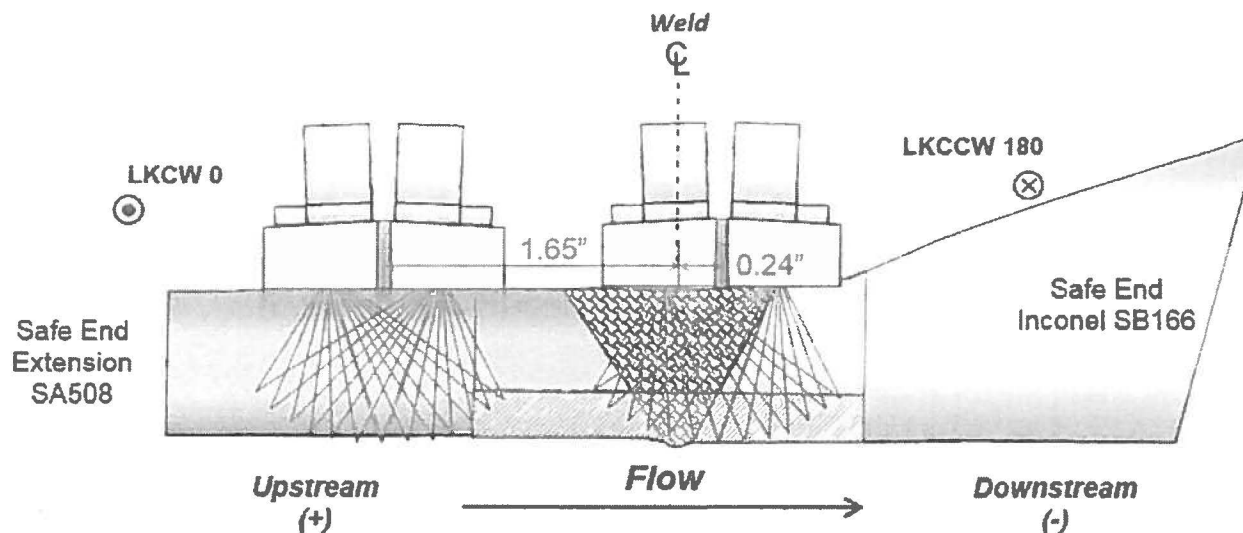




# **PHASED ARRAY ULTRASONIC EXAMINATION RECORD**

## **N16 Safe End-to-Extension**

### **Circumferential Examination Coverage**



### **Note:**

The examination beam skew paths shown above in blue represent the actual beam skew angles generated by the ultrasonic technique.

However, only the beam skew paths shown in red are qualified by the procedure for examination coverage.



## Supplemental Report

Report No.: ISI-UT-18-002

Page: 5 of 6

Summary No.: N2-ISI-012000

Examiner: Kunze, Paul R.

Examiner: N/A

Other: N/A

Level: II

Level: N/A

Level: N/A

Reviewer: JWS

Site Review: Michael S. G. P. P.

ANII Review: J

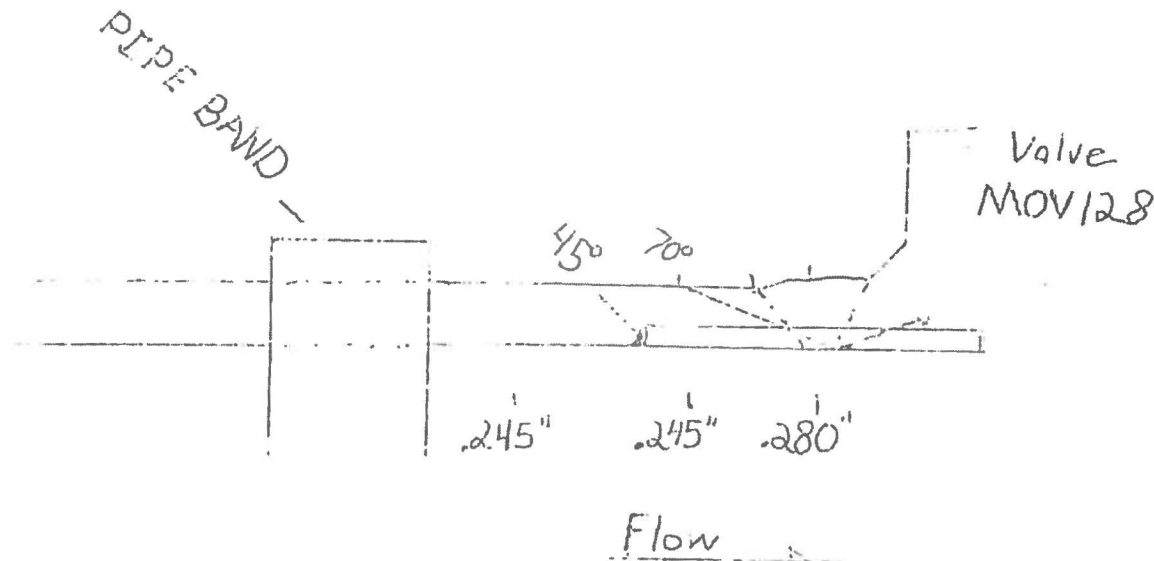
Date: 5-2-18

Date: 5-3-18

Date: 5-6-18

Comments: 2DER-07A-FW002

Sketch or Photo: O:\Outage Data\Nine Mile\N2RFO16\ISI\Sketches\2DER-07A-FW002.jpg





## Supplemental Report

Report No.: ISI-UT-18-002

Page: 6 of 6

Summary No.: N2-ISI-012000

Examiner: Kunze, Paul R.

Examiner: N/A

Other: N/A

Level: II

Level: N/A

Level: N/A

Reviewer: JWS

Site Review: Michael Bailey mly

ANII Review: 9

Date: 5-2-18

Date: 5-3-18

Date: 5-6-18

Comments: 2DER-07A-FW002

Sketch or Photo: O:\Outage Data\Nine Mile\N2RFO16\ISI\Sketches\2DER-07A-FW002 (1).jpg

Area required to scan

$$.08 \times 1.5 = 0.48$$

Scan Direction

Coverage

DN Stream Direction	$0.08 \times 0 = 0.00$
UP Stream Direction	$(.08 \times .90) + (.3 \times .08 \times .5) = 0.084$
CCW Direction	$0.08 \times 0.5 = 0.04$
CW Direction	$0.08 \times 0.5 = 0.04$

Area Scanned 0.16

*All dimensions in sq.in.*

Area Scanned Total = 33%