Entergy

Entergy Nuclear Operations, Inc.
Palisades Nuclear Plant
27780 Blue Star Memorial Highway
Covert, MI 49043-9530
Tel 269 764 2000

Jeffery A. Hardy
Regulatory Assurance Manager

PNP 2016-052

November 30, 2016

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

SUBJECT: Relief Request Number RR 4-25 Impracticality – Limited Coverage Examinations During the Fourth 10-year Inservice Inspection Interval

Palisades Nuclear Plant
Docket 50-255
Renewed Facility Operating License No. DPR-20

Reference: 1. Nuclear Management Company, LLC letter to Nuclear Regulatory Commission, *4th Interval Inservice Inspection Plan,* dated June 12, 2006 (ADAMS Accession Number ML061710302)

Dear Sir or Madam:

Pursuant to Title 10 of the Code of Federal Regulations (CFR) 50.55a(g)(6)(i), Entergy Nuclear Operations, Inc. (ENO) hereby requests Nuclear Regulatory Commission (NRC) authorization for the Palisades Nuclear Plant (PNP) of relief request number RR 4-25 for limited coverage examinations during the fourth 10-year inservice inspection (ISI) interval.

Pursuant to 10 CFR 50.55a(g)(5)(iii) the basis for the determination of impracticality is being submitted to the NRC within 12 months after the expiration of the 120-month inspection interval. The fourth 10-year inservice inspection (ISI) interval ended on December 12, 2015 and complied with the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (BPV), Section XI, 2001 Edition through the 2003 Addenda (Reference 1).

The attached relief request identifies weld locations for which less than the required examination coverage was obtained due to interference or geometry. The information provided in the attachment demonstrates the limitations experienced, at each weld location, when attempting to comply with the code required examination coverage.

Summary of Commitments

This letter contains no new commitments and no revised commitments.

Sincerely,

JAH/jpm

Enclosure: 10 CFR 50.55a, Relief Request Number RR 4-25, Relief Request in Accordance with 10 CFR 50.55a(g)(5)(iii), Inservice Inspection Impracticality

cc: Administrator, Region III, USNRC
Project Manager, Palisades, USNRC
Resident Inspector, Palisades, USNRC

PNP 2016-052

ENCLOSURE

10 CFR 50.55a

Relief Request Number RR 4-25

Relief Request in Accordance with 10 CFR 50.55a(g)(5)(iii)

Inservice Inspection Impracticality

32 pages follow

1. American Society of Mechanical Engineers (ASME) Code Component(s) Affected

The welds and components with limited examinations included this relief request, RR 4-25, are identified in Table 1 below.

Table 1

Examination Category	Item Number (No.)	Component Identification (ID)	Code Class
B-A	B1.11	RPV Circumferential Weld 10-112	1
B-B	B2.12	PZR Weld 2-982A	1
B-J	B9.11	ESS-12-SIS-1A1-10	1
B-J	B9.11	ESS-12-SIS-1B1-13	1
B-J	B9.11	ESS-12-SIS-1B1-14	1
B-J	B9.11	ESS-6-SIS-1A1-13	1
B-J	B9.11	ESS-6-SIS-1B1-14	1
B-J	B9.31	PCS-30-RCL-1B-10/12	1
B-J	B9.31	PCS-42-RCL-1H-3/12	1
B-K	B10.30	1A-S-A	1
B-K	B10.30	1A-S-B	1
B-K	B10.30	1A-S-C	1
B-K	B10.30	1A-S-D	1
B-L-1	B12.10	1B-02	1
R-A[1]	R1.11	PCS-4-PRS-1P2-3	1
R-A[1]	R1.11	PCS-4-PRS-1P2-4	1
R-A[1]	R1.16	ESS-6-SIS-1B1-13	1

[1]Entergy Nuclear Operations, Inc. (ENO) implemented at Palisades Nuclear Plant (PNP) a risk informed program in accordance with Code Case N-716-1 in the third period of the 4th interval (Reference 5).

Unit/Inspection Interval: Palisades Nuclear Plant (PNP) / Fourth 10-Year ISI Interval
December 13, 2006 – December 12, 2015

2. Applicable Code Edition and Addenda

The code of record for the fourth 10-year inservice inspection (ISI) interval at the Palisades Nuclear Plant (PNP) is the 2001 Edition through the 2003 Addenda of the ASME Boiler and Pressure Vessel Code (BPV), Section XI, *Rules for Inservice Inspection of Nuclear Power*

Plant Components, as conditioned by 10 CFR 50.55a. The Appendix VIII, Supplement 11, *Qualification Requirements for Full Structural Overlaid Wrought Austenitic Piping Welds*, requirements and use of the performance demonstration initiative (PDI) requirements at PNP are in accordance with the 2001 Edition of Section XI as conditioned by 10 CFR 50.55a(b)(2).

Additionally, the PNP Code of Record is supplemented by the following ASME Section XI Code Cases as required and modified by 10 CFR 50.55a(g)(6)(ii)(D), 50.55a(g)(6)(ii)(E), and 50.55a(g)(6)(ii)(F):

- Code Case N-729-1, *Alternative Examination Requirements for PWR Reactor Vessel Upper Heads with Nozzles Having Pressure-Retaining Partial Penetration Welds Section XI, Division 1*

- Code Case N-722-1, *Additional Examinations for PWR Pressure Retaining Welds in Class 1 Components Fabricated with Alloy 600/82/182 Materials Section XI, Division 1*

- Code Case N-770-1, *Alternative Examination Requirements and Acceptance Standards for Class 1 PWR Piping and Vessel Nozzle Butt Welds Fabricated with UNS N06082 or UNS W86182 Weld Filler Material With or Without Application of Listed Mitigation Activities Section XI, Division 1*

3. Applicable Code Requirement

Throughout this request, as clarified by Code Case N-460, *Alternative Examination Coverage for Class 1 and Class 2 Welds Section XI, Division 1*, when "essentially 100%" is stated it is understood to mean greater than 90% coverage of the required examination volume, or surface area, as applicable.

Examination Category: B-A, *Pressure Retaining Welds in Reactor Vessel*

Table IWB-2500-1, Examination Category B-A, Item No. B1.11 requires a volumetric examination depicted in Figure IWB-2500-1 for essentially 100% of the weld area.

Examination Category B-B, *Pressure Retaining Welds in Vessels Other than Reactor Vessels*

Table IWB-2500-1, Examination Category B-B, Item No. B2.12 requires a volumetric examination depicted in Figure IWB-2500-2 for essentially 100% of the weld area.

Examination Category: B-J, *Pressure Retaining Welds in Piping*

Table IWB-2500-1, Examination Category B-J, Item No. B9.11 requires a volumetric and surface examination of the volumes and surfaces depicted in Figure IWB-2500-8 for essentially 100% of the weld area.

Table IWB-2500-1, Examination Category B-J, Item No. B9.31 requires a volumetric and surface examination of the volumes and surfaces depicted in Figure IWB-2500-9, -10, and -11 for essentially 100% of the weld area.

Note: Code Case N-663 (Reference 3) has been applied, eliminating the surface examinations required by Table IWB-2500-1, Examination Category B-J, Item Nos. B9.11 and B9.31.

Examination Category: B-K, *Welded Attachments for Vessels, Piping, Pumps, and Valves*

Table IWB-2500-1, Examination Category B-K, Item No. B10.30 requires a surface examination as depicted in Figure IWB-2500-13, -14, and -15 for essentially 100% of the weld area.

Examination Category: B-L-1, *Pressure Retaining Welds in Pump Casings*

Table IWB-2500-1, Examination Category B-L-1, Item No. B12.10 requires a VT-1, Visual examination, of the weld surfaces depicted in Figure IWB-2500-16 for essentially 100% of the weld area.

Note: Examination Category B-L-1 does not require a surface examination for component ID 1B-02.

Examination Category: R-A, from Code Case N-716-1 (Reference 4)

Code Case N-716-1, Table 1, Examination Category R-A, Item Nos. R1.11 and R1.16 require a volumetric examination of the volumes depicted in Figures IWB-2500-8(c) and IWB-2500-9, 10, and 11 with the additional requirements from the table's applicable notes as described below:

Item Nos. R1.11 and R1.16:

Note 1: The area of the examination volume shown in Figure IWB-2500-8(c) shall be increased by enough distance [approximately ½ inch] to include each side of the base metal thickness transition or counter bore transition.

Note 3: In part, requires essentially 100% of the examination location to be examined.

Item No. R1.16:

Note 7: In accordance with the Owner's existing programs, such as primary water stress corrosion cracking (PWSCC), intergranular stress corrosion cracking (IGSCC), microbiological induced corrosion (MIC), or flow-accelerated corrosion (FAC) inspection programs, for degradation mechanisms as described in Table 2 of the Code Case.

Note: Examination Category R-A, Item Nos. R1.11 and R1.16, Code Case N-716-1 also does not require a surface examination.

4. Impracticality of Compliance

10 CFR 50.55a(g)(5)(iii) states, in part, that licensees may determine that conformance with certain code requirements is impractical and that the licensee shall notify the U.S. Nuclear Regulatory Commission (NRC or Commission) and submit information in support of the determination. Determination of impracticality in accordance with this section must be based on the demonstrated limitations experienced when attempting to comply with the code requirements during the inservice inspection interval for which the request is being submitted. Requests for relief made in accordance with this section must be submitted to the NRC no later than 12 months after the expiration of the initial 120-month inspection interval or subsequent 120-month inspection interval for which relief is sought.

Pursuant to 10 CFR 50.55a(g)(5)(iii) described above, relief is requested because ENO has determined that compliance with the code requirements of achieving essentially 100% coverage of the welds and items listed in this request is impractical. This determination is based on actual demonstrated limitations experienced when attempting to comply with the code requirements in the performance of the examinations listed in this relief request.

The construction permit for PNP was issued on March 14, 1967, before the effective date of implementation for ASME Section XI, thus the plant was not designed to meet the requirements for ISI. Details for all examination access restrictions and reductions in required examination coverage are provided in Attachment 1.

When examined, the welds and items listed in this relief request did not receive the required code coverage due to their access restrictions and/or design configurations. These conditions resulted in limitations that prohibited obtaining essentially 100% examination coverage of the required examination volume or area, but when this situation occurred, 100% of the accessible volume of the welds and items were examined.

Examination Category: B-A, *Pressure Retaining Welds in Reactor Vessel*

Item No. B1.11

- RPV Circumferential Weld 10-112 is a Class 1, pressure retaining reactor vessel lower shell to lower head circumferential weld. Exam is limited due to interference with the reactor vessel core stabilizing lugs, core stop lugs and flow skirt.

Examination Category: B-B, *Pressure Retaining Welds in Vessels Other than Reactor Vessels*

Item No. B2.12

- PZR Weld 2-982A is a Class 1, primary coolant system (PCS), pressure retaining vessel weld, lower shell long seam located at 300 degrees in the pressurizer. The

examination is limited to 8 inches from the shell bevel to the proximity of the permanent insulation.

Examination Category: B-J, *Pressure Retaining Welds in Piping*

Item No. B9.11

- EES-12-SIS-1A1-10, ESS-12-SIS-1B1-13, and ESS-12-SIS-1B1-14 are Class 1, nominal pipe size (NPS) 12 welds in the low pressure safety injection (LPSI) system connecting a stainless steel tee to a stainless steel valve. Due to the configuration of the valve and the product form of the valve, examination is limited to single-sided from the tee side only.

- ESS-6-SIS-1A1-13 is a Class 1, NPS 6 weld in the LPSI system connecting a stainless steel Tee to a stainless steel elbow. Due to the configuration of the tee, examination is limited to single-sided from the elbow side only.

- ESS-6-SIS-1B1-14 is a Class 1, NPS 6 weld in the LPSI system connecting a stainless steel pipe to a stainless steel Tee. Due to the configuration of the tee, examination is limited to single-sided from the pipe side only.

Examination Category: B-J, *Pressure Retaining Welds in Piping*

Item No. B9.31

- PCS-30-RCL-1B-10/12 is a Class 1, NPS 12 to NPS 30 branch connection weld in the cold leg of the PCS. The examination is limited due to the configuration and the permanent insulation obstructions.

- PCS-42-RCL-1H-3/12 is a Class 1, NPS 12 to NPS 42 branch connection weld in the hot leg of the PCS. The examination is limited due to the configuration and the permanent insulation obstructions.

Examination Category: B-K, *Welded Attachments for Vessels, Piping, Pumps, and Valves*

Item No. B10.30

- 1A-S-A, 1A-S-B, 1A-S-C, and 1A-S-D are welded supports on the P-50A, primary coolant pump casing. The welded sides of the supports are inaccessible to due permanent insulation obstructions.

Examination Category: B-L-1, *Pressure Retaining Welds in Pump Casings*

Item No. B12.10

- 1B-02 is a Class 1 pump case weld in P-50B, Primary Coolant Pump. The examination surface area is limited due to interference from permanent insulation support structure, grating, adjacent piping, and a radiological hot spot.

Examination Category: R-A

Item No. R1.11

- PCS-4-PRS-1P2-3 and PCS-4-PRS-1P2-4 are Class 1, NPS 4 welds in the PCS connecting a pipe to a fitting. The welds are identified by the N-716-1 (Reference 4) risk informed program as high safety significant (HSS) with a degradation mechanism of thermal transients (TT). The examination is limited to single-sided due to the configuration of the fitting.

Examination Category: R-A

Item No. B1.16

- ESS-6-SIS-1B1-13 is a Class 1, NPS 6 weld in the LPSI system connecting an elbow to a pipe. The weld is identified by the N-716-1 (Reference 4) risk informed program as HSS with a degradation mechanism of IGSCC. Examination is limited due the configuration of the elbow.

5. Burden Caused by Compliance

To obtain the code required examination volume or coverage of the subject welds would require significant modifications to PNP welded components and fittings. The components and fittings associated with the subject welds are standard design items meeting typical national standards that specify required configurations and dimensions. To replace these items with items of alternate configurations to enhance examination coverage would require unique design and fabrication. Because these items are in the Class 1 boundaries and form part of the PCS pressure boundary, their redesign and fabrication would be an extensive effort. In addition to obtaining the non-standard items, their installation into the Class 1 boundaries is also a significant effort requiring disassembly of portions of the PCS boundary.

Radiographic Testing (RT) is not a desired option because RT is limited in the ability to detect service induced flaws. Additionally, the water must be drained from the systems where radiography is performed. This increases operational risk through prolonged system restoration times and increased station exposure due to increased general radiation dose rates over a much broader area than in the area of the weld being examined.

Overall, it is not possible to obtain examination coverage of greater than 90% of the required code examination volume or area for the welds and items in this request without extensive design modifications. Examinations have been performed to the maximum extent possible.

The examination techniques used for each weld or item in this relief request were reviewed to determine if additional coverage could be achieved by improving those techniques, and none

could be identified, thus reconfirming that the examinations have been performed to the maximum extent possible. Therefore, ENO has determined that obtaining essentially 100% coverage is not feasible and is impractical without adding the additional burdens consisting of significant redesign work, increased radiation exposure, and/or an increased potential to damage the plant or the component itself.

6. Proposed Alternative and Basis for Use

Proposed Alternative

In lieu of the ASME BPV Section XI essentially 100 percent volumetric examination, ENO proposes limited examination coverage for the subject welds achieved by ultrasonic testing (UT), surface liquid penetrant testing (PT), or visual testing (VT) as listed in Attachment 1.

Basis for Use

ENO performed inservice examinations of selected welds and items in accordance with the requirements of 10 CFR 50.55a, plant technical specifications, and the ASME BPV Section XI, 2001 edition through the 2003 Addenda, including Appendix VIII requirements in accordance with the 2001 edition of Section XI and applicable PDI requirements. When a component was found to have condition(s), which limit the examination volume, ENO is required to submit this information to the enforcement and regulatory authorities having jurisdiction at the plant site. This relief request has been written to address areas where these conditions exist and where the required amount of coverage is reduced below that required by ASME BPV Section XI and the NRC.

10 CFR 50.55a(g)(4) recognizes that throughout the service life of a nuclear power facility, components which are classified as ASME Code Class 1, Class 2, and Class 3 must meet the requirements set forth in the ASME Code to the extent practical within the limitations of design, geometry and materials of construction of the welds and items described in Attachment 1.

ENO performed the examinations to the extent possible. There is no plant-specific or known industry operating experience regarding failure of welds in similar service.

The welds subject to this request are located within the reactor containment building. During outages, system engineers perform walk-downs of systems inside containment. This walk-down is performed to look for evidence of boron accumulation as well as system abnormalities that could affect plant performance. Also, an ASME BPV Section XI system pressure test and VT-2 (visual testing), is performed each refueling outage.

PCS leakage is limited by PNP Technical Specifications Section 3.4.13, *PCS Operational Leakage*, to no pressure boundary leakage, 1 gpm of unidentified leakage and 10 gpm of identified leakage.

All inservice examinations were performed by personnel certified in accordance with IWA-2300, *Qualifications of Nondestructive Examination Personnel*, of the 2001 Edition with

the 2003 Addenda of the ASME BPV Section XI Code. Additionally, personnel performing ultrasonic examination are qualified in accordance with ASME BPV Section XI, Appendix VIII, of the 2001 Edition as conditioned by 10 CFR 50.55a.

The UT techniques for each weld were reviewed to determine if additional coverage could be achieved. PNP's procedures require the examiner to make an attempt to achieve complete coverage by using alternative techniques such as using a smaller transducer wedge thus reducing the distance from the exit point to the front of the wedge, changing angles or reducing the search unit element size. Any alternative equipment is required to be in compliance with the limits specified in the qualified procedure. Alternate techniques were investigated at the time when it was discovered that essentially 100% coverage could not be obtained.

For welds in austenitic materials examined in accordance with Appendix VIII, Supplement 2, *Qualification Requirements for Wrought Austenitic Piping Welds*, the ASME code required examination coverage is limited when the weld can only be scanned in the axial direction from one side. Therefore, Attachment 1, Table 1 only reports code coverage.

The Performance Demonstration Qualification Summary (PDQS) for the qualified Electric Power Research Institute (EPRI) procedure, PDI-UT-2, *PDI Generic Procedure for the Ultrasonic Examination of Austenitic Pipe Welds PDI-UT-2*, in part states, the austenitic single side qualification documented on this summary demonstrates application of best available technology, but do not meet the requirements of 10 CFR 50.55a(b)(2)(xvi)(B). It should be noted that UT was performed through the weld to obtain the maximum possible code examination volume and, as shown in Attachment 1, the theoretical beam path extends into the far side for the examinations performed. While the coverage is not included in the code coverage of Attachment 1, Table 1, the techniques employed for the single side examination are noted as a best effort examination in the examination coverage summary for each individual weld. The coverage obtained was the maximum practical. Therefore, the UT examinations conducted using the Appendix VIII, Supplement 2, qualified procedure, provide reasonable assurance for the detection of flaws on the far side of welds where the ultrasonic beam has been transmitted even though not presently qualified.

For Component ID 1B-02, which is P-50B, primary coolant pump, pump casing weld in Examination Category B-L-1, it is noted that this Examination Category was deleted in the 2008 Addenda of ASME Section XI, which is also approved in 10 CFR 50.55a without any stated conditions. Examination of Component ID 1B-02 will not be required in the successive interval.

7. Duration of Proposed Alternative

This relief request is applicable to the PNP Fourth 10-year ISI Interval which began on December 13, 2006 and ended on December 12, 2015.

8. Precedents

Industry requests for relief due to impracticality associated with limited examinations are common and are typically filed by licensees. Examples of recent NRC relief request authorizations that are in accordance with the guidance in Reference 1 are:

1. NRC letter to Duke Energy Carolinas, LLC, *Oconee Nuclear Station, Units 1, 2, and 3 – Relief from the Requirements of the ASME Code (Relief Request Nos. 15-ON-002 and 15-ON-003, Fourth 10-Year Inservice Inspection Interval) (CAC Nos. MF6506, MF6507, and MF6511)*, dated July 22, 2016 (ADAMS Accession Number ML16197A011)

2. NRC letter to Exelon Generation Company, LLC, *Dresden Nuclear Power Station, Units 2 and 3 - Request I4R-17 Relief from the Requirements of the ASME Code (CAC Nos. MF3352 AND MF3353)*, dated October 30, 2015 (ADAMS Accession Number ML15265A164)

3. NRC letter to PSEG Nuclear, LLC, Salem Nuclear Generating Station, Unit No. 2 – Relief from the Requirements of the ASME Code (TAC No. MF4591), dated July 28, 2015 (Adams Accession Number ML15195A495)

9. References

1. NRC presentation, *Coverage Relief Requests NDEIC – January 13-15, 2015*, dated January 13, 2015, (Adams Accession Number ML15013A266)

2. American Society of Mechanical Engineers, Boiler and Pressure Vessel Code, Section XI, Code Case N-460, *Alternative Examination Coverage for Class 1 and Class 2 Welds, Section XI, Division 1*

3. American Society of Mechanical Engineers, Boiler and Pressure Vessel Code, Section XI, Code Case N-663, *Alternative Requirements for Classes 1 and 2 Surface Examinations, Section XI, Division 1*

4. American Society of Mechanical Engineers, Boiler and Pressure Vessel Code, Section XI, Code Case N-716-1, *Alternative Piping Classification and Examination Requirements, Section XI, Division 1*

5. Entergy Nuclear Operations, Inc., letter to the NRC, *Palisades – Notification of Intent to Utilize ASME Code Case N-716-1*, dated September 9, 2015 (ADAMS Accession Number ML15253A003)

10. Attachment

Attachment 1: Examination Limitation Details

PNP 2016-052

ENCLOSURE

10 CFR 50.55a

Relief Request Number RR 4-25

Relief Request in Accordance with 10 CFR 50.55a(g)(5)(iii)

Inservice Inspection Impracticality

ATTACHMENT 1

Examination Limitation Details

1. Introduction

This attachment contains a table (Table 1), and figures (Figures A through Y) that are used to depict the limitations and calculations for obtained coverage, materials and product forms, with ultrasonic examination angles and wave forms used, and the examination results for the welds and items associated with this relief request.

Table 1

Component Information

Exam Cat	Item No.	Component ID	Item Description	Material 1 and Product Form	Material 2 and Product Form	Examination Code Coverage Obtained	Examination Limitations and Results
B-A	B1.11	RPV Circumferential Weld 10-112	Reactor Pressure Vessel shell Circ weld to bottom head (Fig, A and B)	SA-302-B Plate	SA-302-B Plate	UT = 77.72%	RPV Circumferential Weld 10-112 is a Class 1, pressure retaining reactor vessel lower shell to lower head circ weld. Exam is limited due to interference with the core stabilizing lugs, core stop lugs and flow skirt. The 45L and 45S degree axial scans recorded 2 indications.
B-B	B2.12	PZR Weld 2-982A	Pressurizer Lower Shell Long Weld at 300 Deg (Fig. C)	A-533 Gr. B Cl. 1 Plate	A-533 Gr. B Cl. 1 Plate	UT = 66.6%	PZR Weld 2-982A is a Class 1, primary coolant system, pressure retaining vessel weld, lower shell long seam, located radially at 300 degrees. Exam is limited to 8 inches from the shell bevel to the proximity of the permanent insulation. No recordable indications.
B-J	B9.11	ESS-12-SIS-1A1-10	Tee to Valve CK3101 (Fig. D)	ASTM A-403, WP-316 or ASTM A-182, F-316 Fitting	18-8 SMO Valve	UT = 50%	ESS-12-SIS-1A1-10 is a Class 1, nominal pipe size (NPS) 12 weld in the low pressure safety injection system connecting a stainless steel Tee to a stainless steel valve. Due to the configuration of the valve and the product form of the valve, examination is limited to single-sided from the Tee side only. No recordable indications.

Table 1							
Component Information							
Exam Cat	**Item No.**	**Component ID**	**Item Description**	**Material 1 and Product Form**	**Material 2 and Product Form**	**Examination Code Coverage Obtained**	**Examination Limitations and Results**
B-J	B9.11	ESS-12-SIS-1B1-13	Valve CK3117 to Tee (Fig. E)	18-8 SMO Valve	ASTM A-403, WP-316 or ASTM A-182, F-316 Fitting	UT = 50%	ESS-12-SIS-1B1-13 is a Class 1, NPS 12 weld in the low pressure safety injection system connecting a stainless steel Tee to a stainless steel valve. Due to the configuration of the valve and the product form of the valve, examination is limited to single-sided from the Tee side only. No recordable indications.
B-J	B9.11	ESS-12-SIS-1B1-14	Tee to Valve CK3116 (Fig. F)	ASTM A-403, WP-316 or ASTM A-182, F-316 Fitting	18-8 SMO Valve	UT = 50%	ESS-12-SIS-1B1-14 is a Class 1, NPS 12 weld in the low pressure safety injection system connecting a stainless steel Tee to a stainless steel valve. Due to the configuration of the valve and the product form of the valve, examination is limited to single-sided from the Tee side only. No recordable indications.
B-J	B9.11	ESS-6-SIS-1A1-13	Elbow to Tee (Fig. G)	ASTM A-403, WP-316 or ASTM A-182, F-316 Fitting	ASTM A-403, WP-316 or ASTM A-182, F-316 Fitting	UT = 50%	ESS-6-SIS-1A1-13 is a Class 1, NPS 6 weld in the low pressure safety injection system connecting a stainless steel Tee to a stainless steel elbow. Due to the configuration of the Tee, examination is limited to single-sided from the elbow side only. No recordable indications.
B-J	B9.11	ESS-6-SIS-1B1-14	Pipe to Tee (Fig. H)	A-376. Type 316 Pipe	A-403, WP-316 or A-182, F-316 Fitting	UT = 50%	ESS-6-SIS-1B1-14 is a Class 1, NPS 6 weld in the low pressure safety injection system connecting a stainless steel pipe to a stainless steel Tee. Due to the configuration of the Tee, examination is limited to single-sided from the pipe side only. No recordable indications.
B-J	B9.31	PCS-30-RCL-1B-10/12	Branch Connection (Fig. I)	SA-264 clad with stainless steel Pipe	SA-508-64, CL 1. Forging	UT = 68%	PCS-30-RCL-1B-10/12 is a Class 1, NPS 12 to NPS-30 branch connection weld in the cold leg of the primary coolant system. The examination is limited due to the configuration and permanent insulation obstructions. No recordable indications.

Table 1							
Component Information							
Exam Cat	**Item No.**	**Component ID**	**Item Description**	**Material 1 and Product Form**	**Material 2 and Product Form**	**Examination Code Coverage Obtained**	**Examination Limitations and Results**
B-J	B9.31	PCS-42-RCL-1H-3/12	Branch Connection (Fig. J)	SA-264 clad with stainless steel Pipe	SA-508-64, CL 1. Forging	UT = 85%	PCS-42-RCL-1H-3/12 is a Class 1, NPS 12 to NPS 42 branch connection weld in the hot leg of the primary coolant system. The examination is limited due to the configuration and permanent insulation obstructions. No recordable indications.
B-K	B10.30	1A-S-A	Welded Pump Support (Fig. K)	ASTM A-351 Gr. CFM 8 Ann. Pump Case	Not Specified	PT = 83%	1A-S-A is a welded support on the P-50A primary coolant pump casing. The welded sides of support are inaccessible to due permanent insulation obstructions. No recordable indications.
B-K	B10.30	1A-S-B	Welded Pump Support (Fig. L)	ASTM A-351 Gr. CFM 8 Ann. Pump Case	Not Specified	PT = 58%	1A-S-B is a welded support on the P-50A primary coolant pump casing. The welded sides of support are inaccessible to due permanent insulation obstructions. No recordable indications.
B-K	B10.30	1A-S-C	Welded Pump Support (Fig. M)	ASTM A-351 Gr. CFM 8 Ann. Pump Case	Not Specified	PT = 83%	1A-S-C is a welded support on the P-50A primary coolant pump casing. The welded sides of support are inaccessible to due permanent insulation obstructions. No recordable indications.
B-K	B10.30	1A-S-D	Welded Pump Support (Fig. N)	ASTM A-351 Gr. CFM 8 Ann. Pump Case	Not Specified	PT = 58%	1A-S-D is a welded support on the P-50A primary coolant pump casing. The welded sides of support are inaccessible to due permanent insulation obstructions. No recordable indications.
B-L-1	B12.10	1B-02	Pump Casing Welds (Fig. O)	ASTM A-351 Gr. CFM 8 Ann. Pump Case	ASTM A-351 Gr. CFM 8 Ann. Pump Case	VT-1 = 14%	1B-02 is a Class 1 pump case weld in primary coolant pump P-50B. The examination surface area is limited due to interference from permanent insulation support structure, grating, adjacent piping, and a radiological hot spot. No recordable indications.

Table 1							
Component Information							
Exam Cat	**Item No.**	**Component ID**	**Item Description**	**Material 1 and Product Form**	**Material 2 and Product Form**	**Examination Code Coverage Obtained**	**Examination Limitations and Results**
R-A	R1.11	PCS-4-PRS-1P2-3	Pipe to Fitting (Fig. P)	ASME SA-376, Type 316 Pipe	ASME SA-182, F-316 Flange	UT = 50%	PCS-4-PRS-1P2-3 is a Class 1, NPS 4 weld in the primary coolant system connecting a pipe to a fitting. The welds are identified by ASME code case N-716-1 risk informed program as High Safety Significant (HSS) with a degradation mechanism of thermal transients (TT). The examination is limited to single-sided due to the configuration of the fitting. No recordable indications.
R-A	R1.11	PCS-4-PRS-1P2-4	Fitting to Pipe (Fig. Q)	ASME SA-182, F-316 Flange	ASME SA-376, Type 316 Pipe	UT = 50%	PCS-4-PRS-1P2-4 is a Class 1, NPS 4 weld in the primary coolant system connecting a pipe to a fitting. The welds are identified by the ASME code case N-716-1 risk informed program as HSS with a degradation mechanism of TT. The examination is limited to single-sided due to the configuration of the fitting. No recordable indications.
R-A	R1.16	ESS-6-SIS-1B1-13	Elbow to Pipe (Fig. R)	ASTM A-403, WP-316 or ASTM A-182, F-316 Fitting	ASTM A-376 Type 316 Pipe	UT = 80%	ESS-6-SIS-1B1-13 is a Class 1, NPS 6 weld in the low pressure safety injection system connecting an elbow to pipe. The weld is identified by ASME code case N-716-1 risk informed program as HSS with a degradation mechanism of IGSCC. Examination is limited due the configuration of the elbow. Axial scans located radially at 60 and 70 degrees recorded indications of root geometry.

Figure A

Examination Category: B-A

Item No. B1.11

Component ID: RPV Circumferential Weld 10-112 (#4 below)

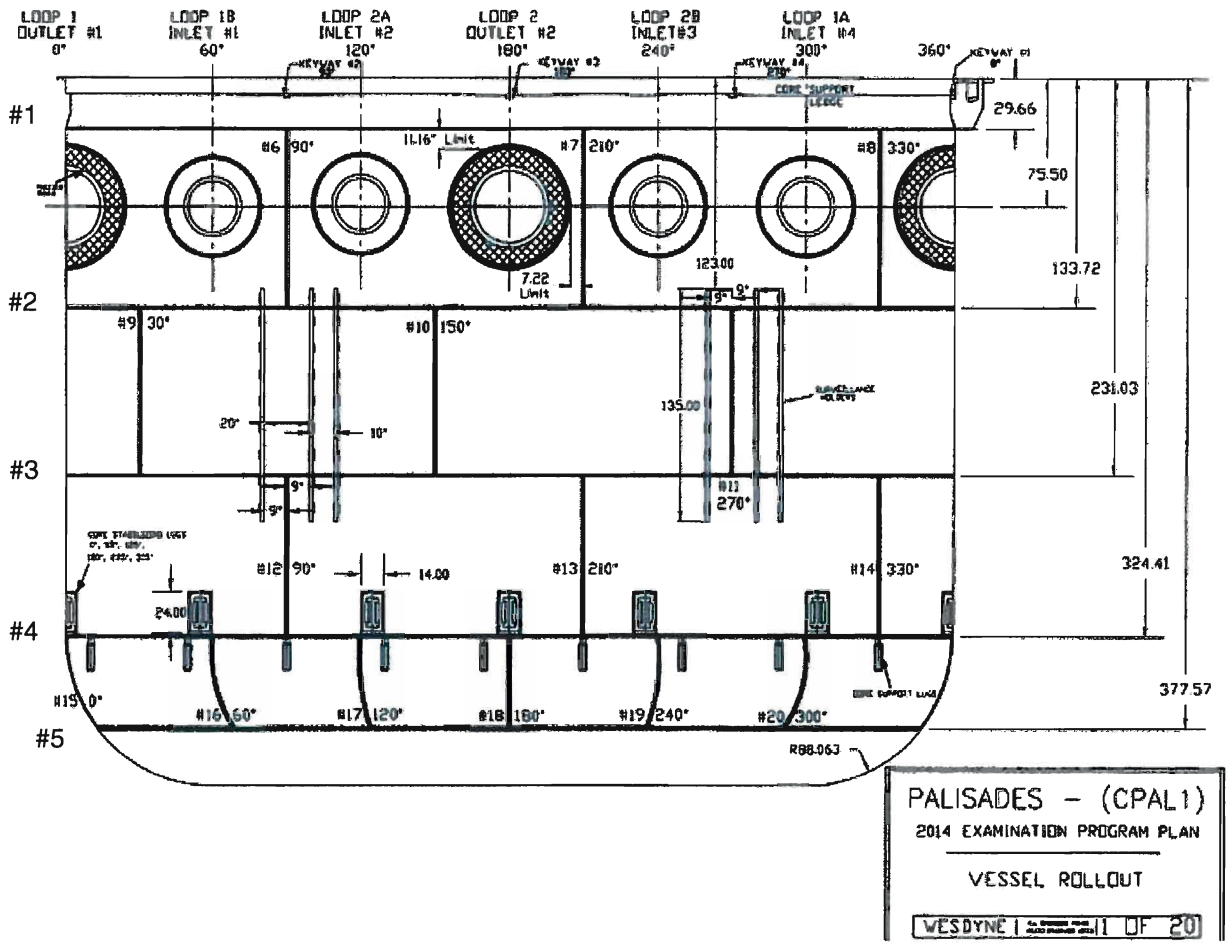


Figure B

Examination Category: B-A

Item No. B1.11

Component ID: RPV Circumferential Weld 10-112

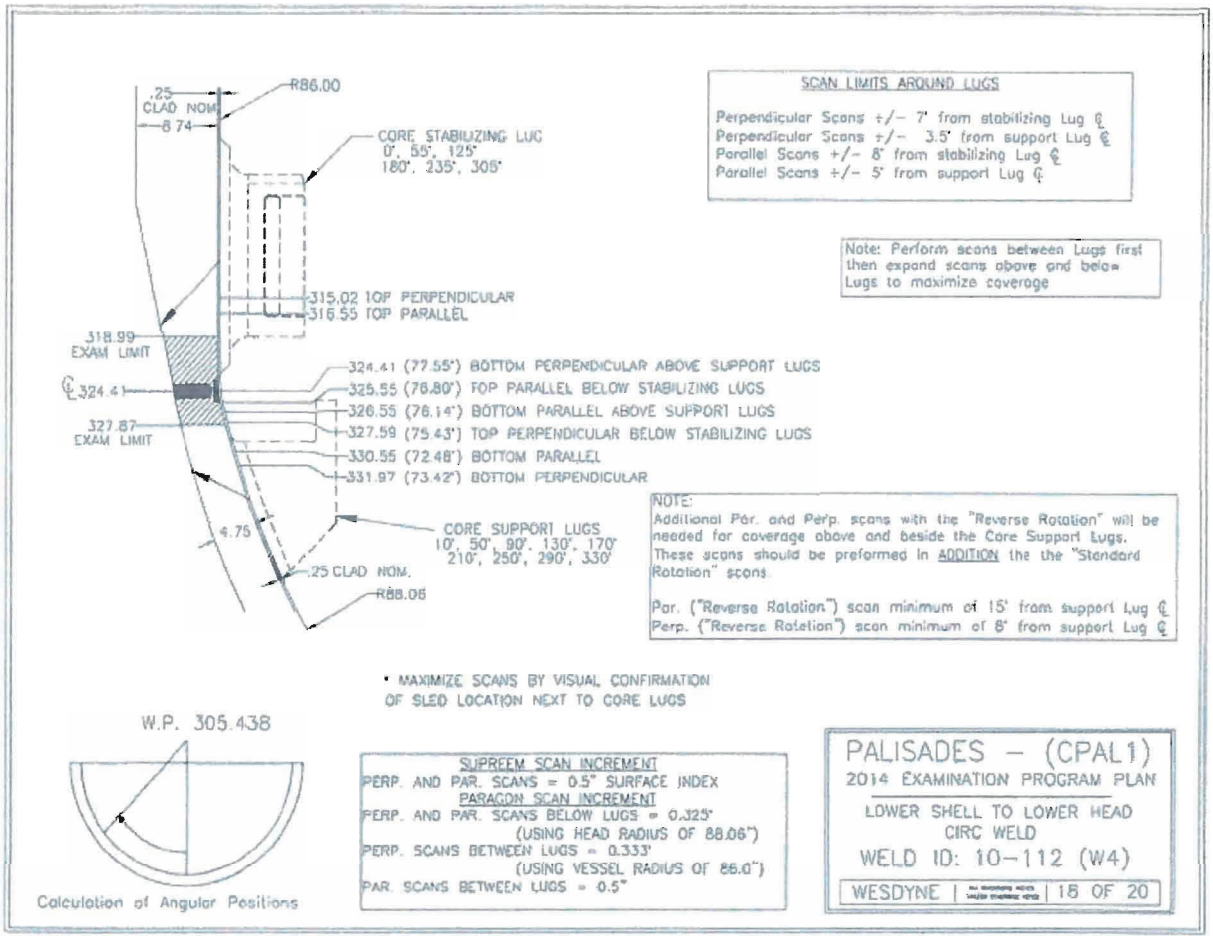
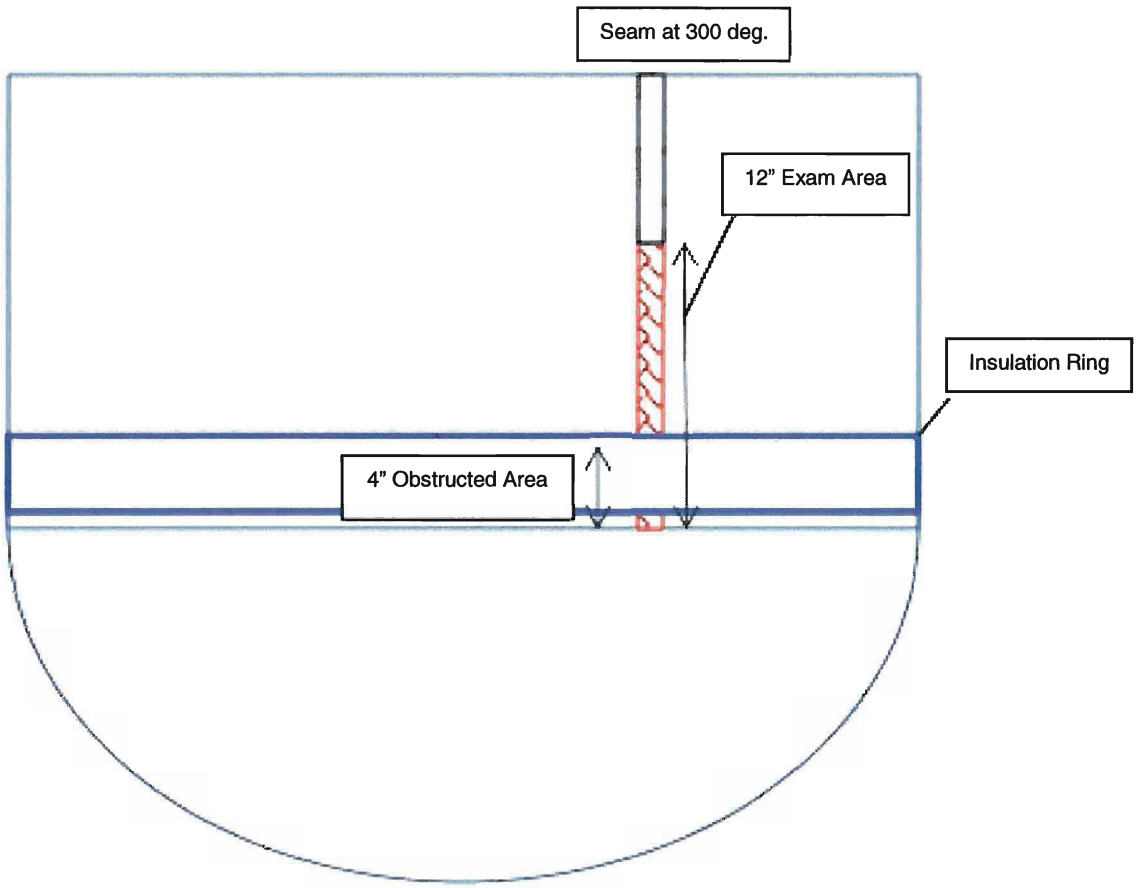


Figure C

Examination Category: B-B

Item No. B2.12

Component ID: PZR Weld 2-982A



CRV coverage = 100% for the 8" from the beveled edge to the permanent insulation ring

Figure D

Examination Category: B-J

Item No. B9.11

Component ID: ESS-12-SIS-1A1-10

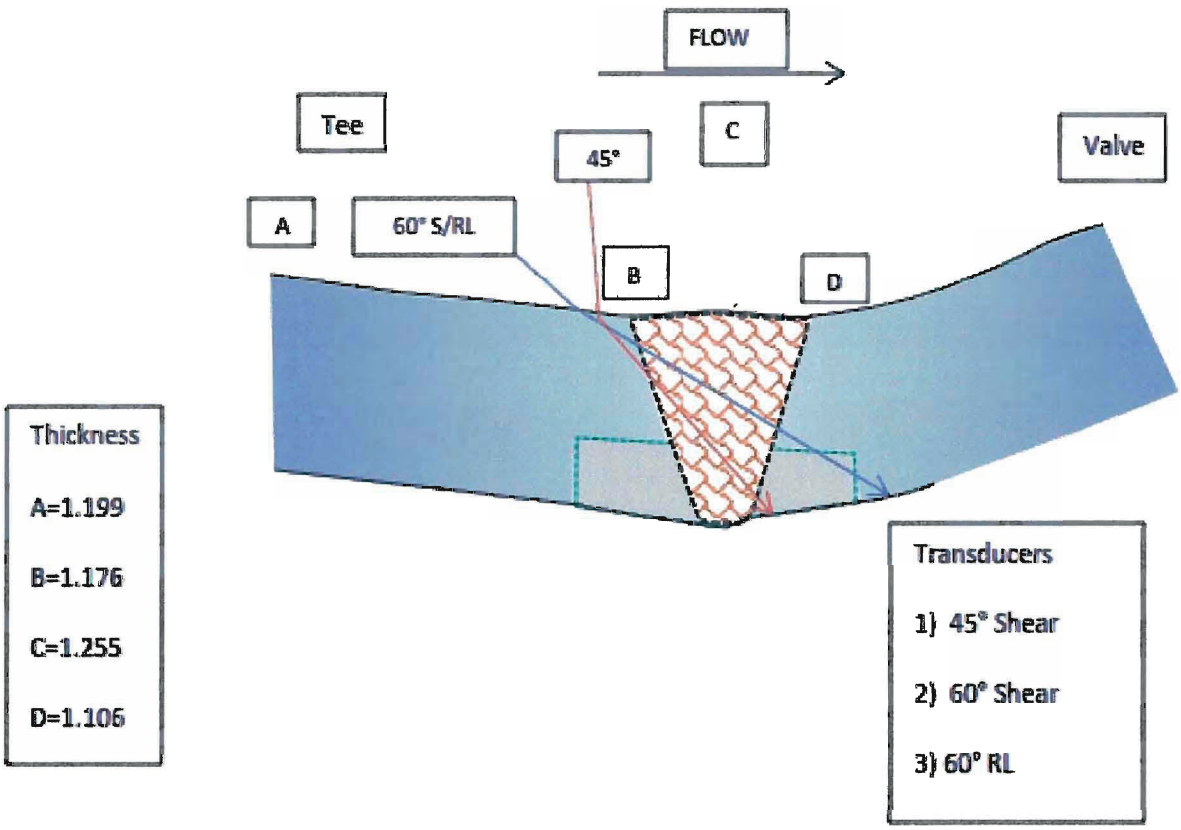


Figure E

Examination Category: B-J

Item No. B9.11

Component ID: ESS-12-SIS-1B1-13

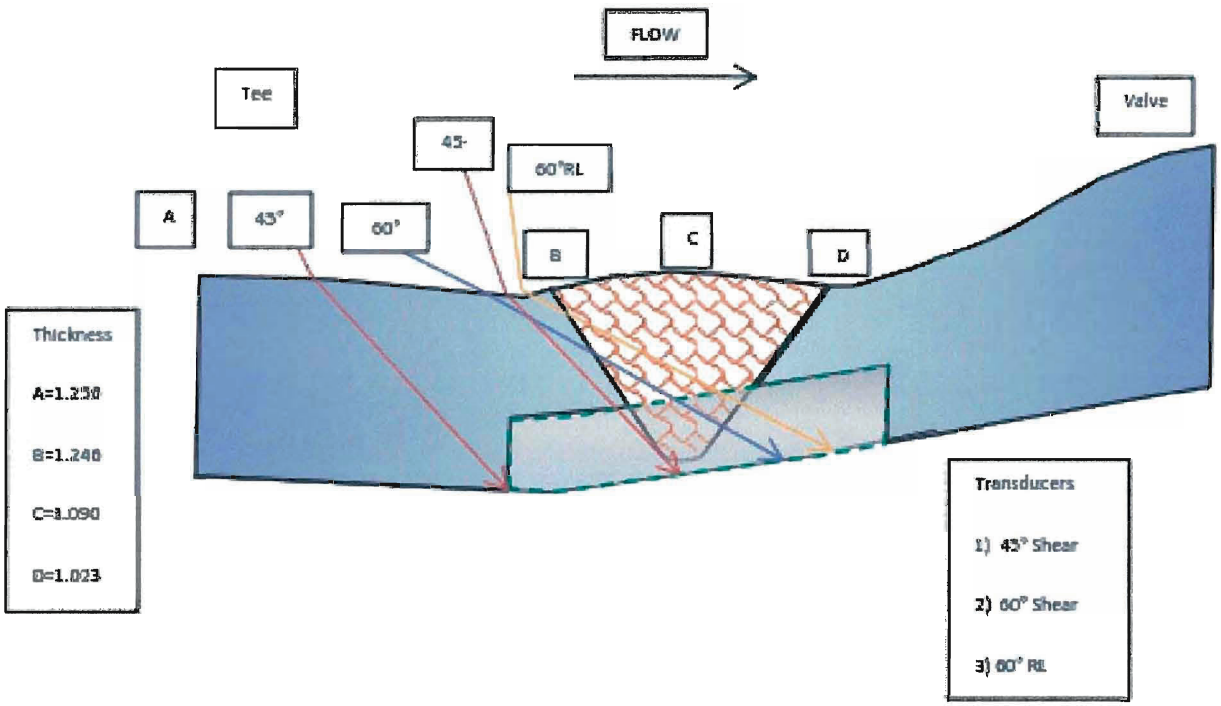


Figure F

Examination Category: B-J

Item No. B9.11

Component ID: ESS-12-SIS-1B1-14

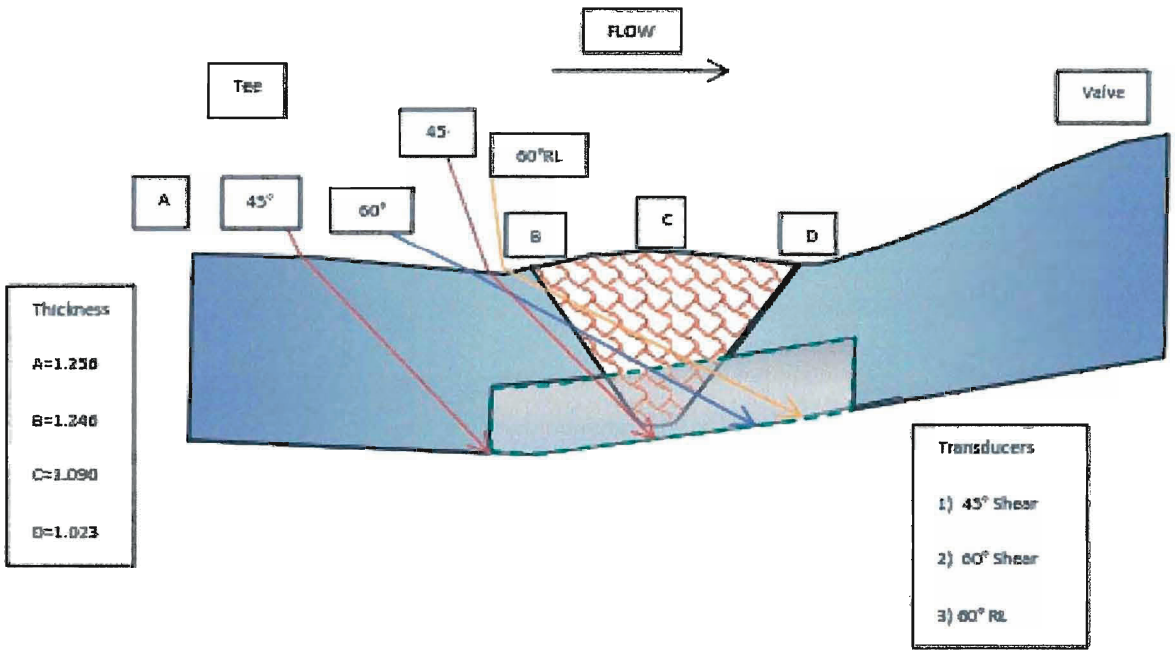


Figure G

Examination Category: B-J

Item No. B9.11

Component ID: ESS-6-SIS-1A1-13

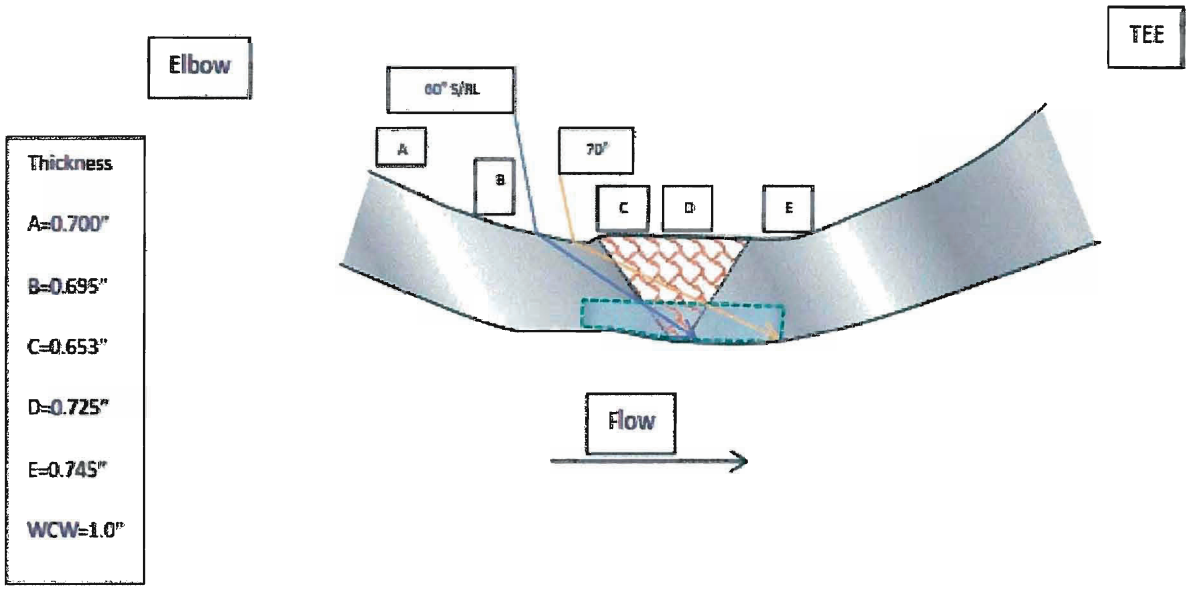


Figure H

Examination Category: B-J

Item No. B9.11

Component ID: ESS-6-SIS-1B1-14

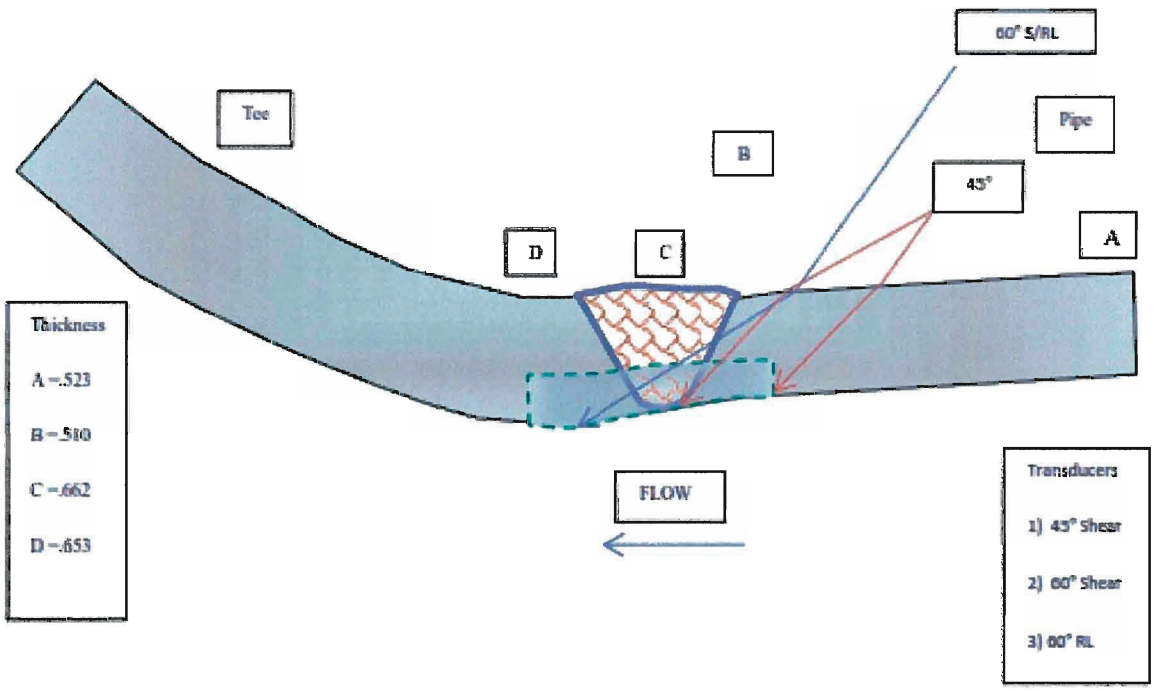


Figure I

Examination Category: B-J

Item No. B9.31

Component ID: PCS-30-RCL-1B-10/12

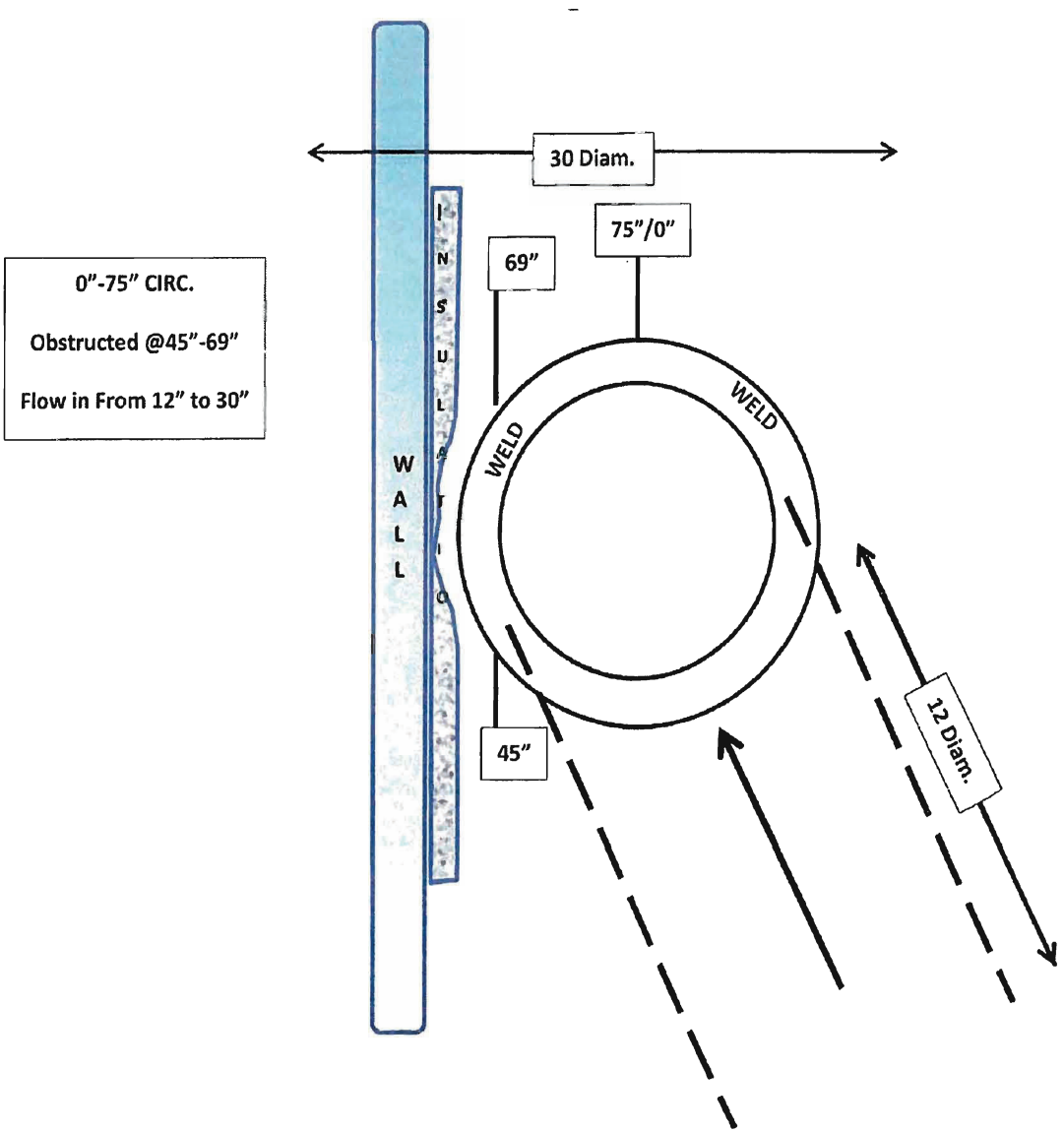


Figure J

Examination Category: B-J

Item No. B9.31

Component ID: PCS-42-RCL-1H-3/12

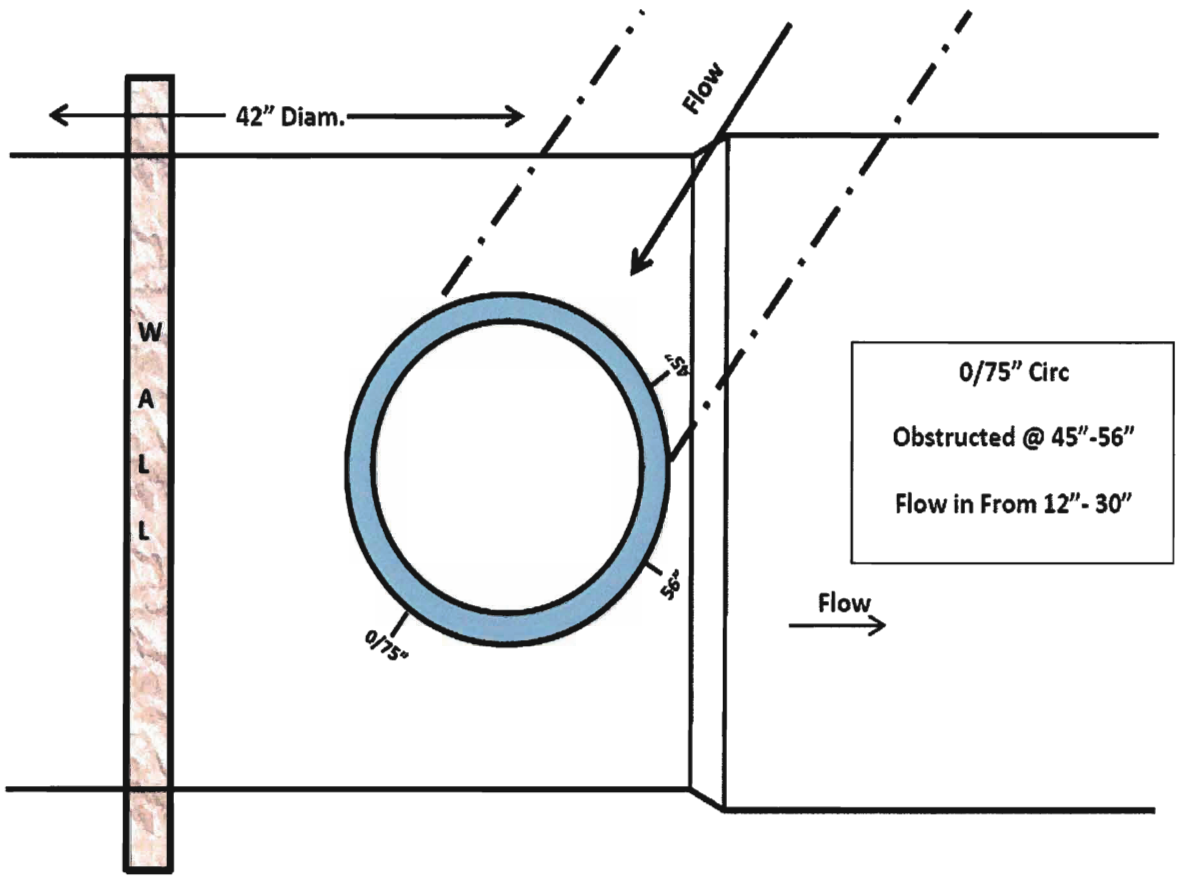
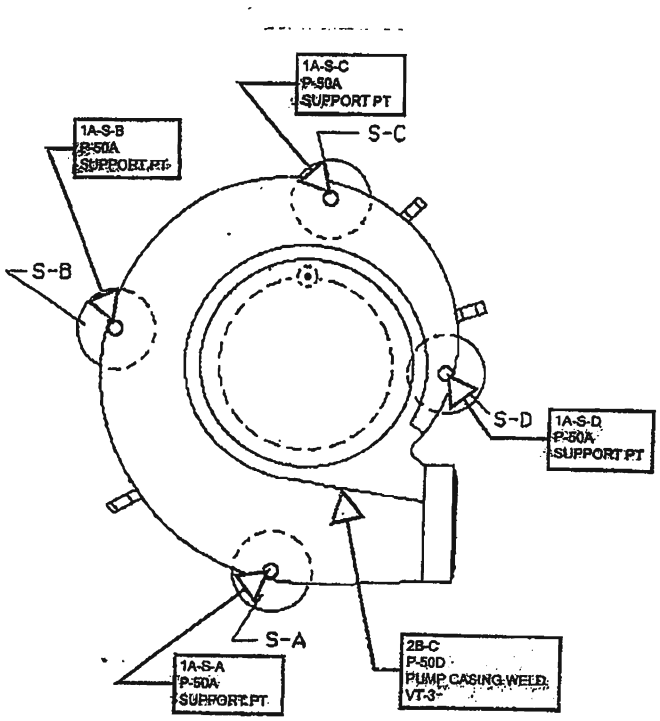


Figure K

Examination Category: B-K

Item No. B10.30

Component ID: 1A-S-A



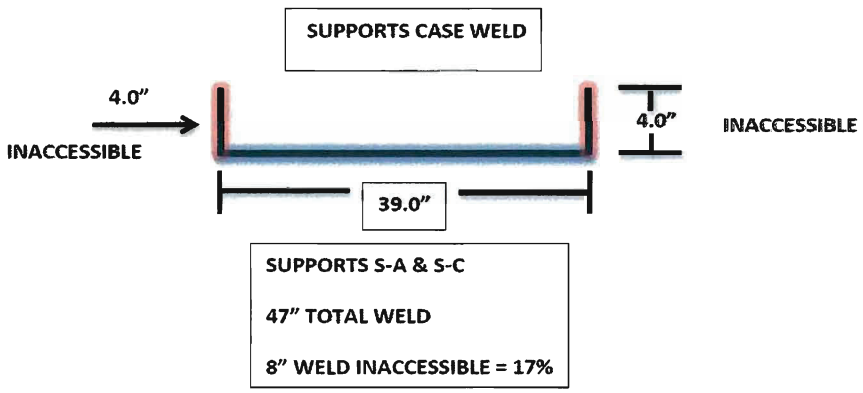
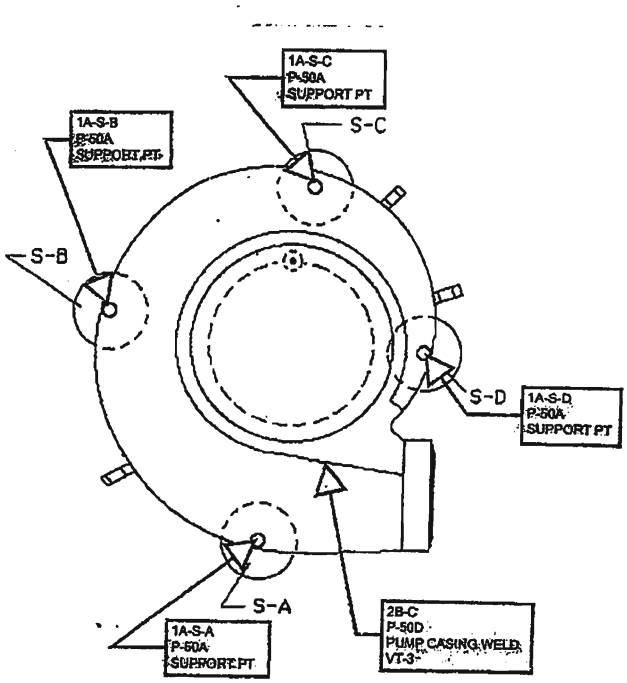


Figure L

Examination Category: B-K

Item No. B10.30

Component ID: 1A-S-B



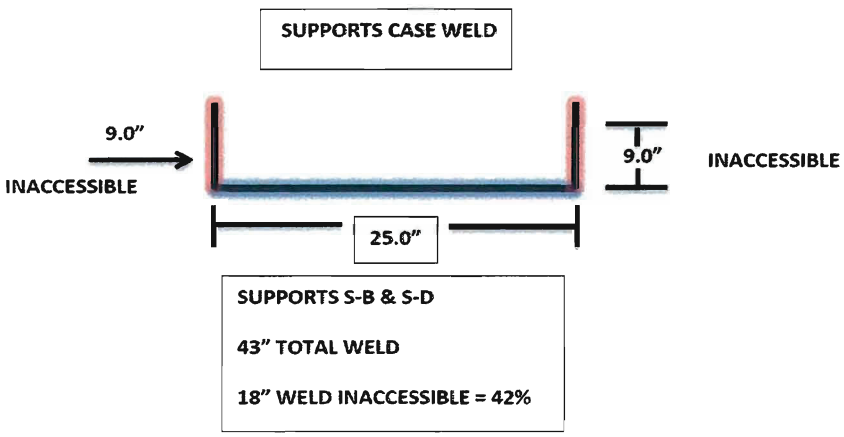
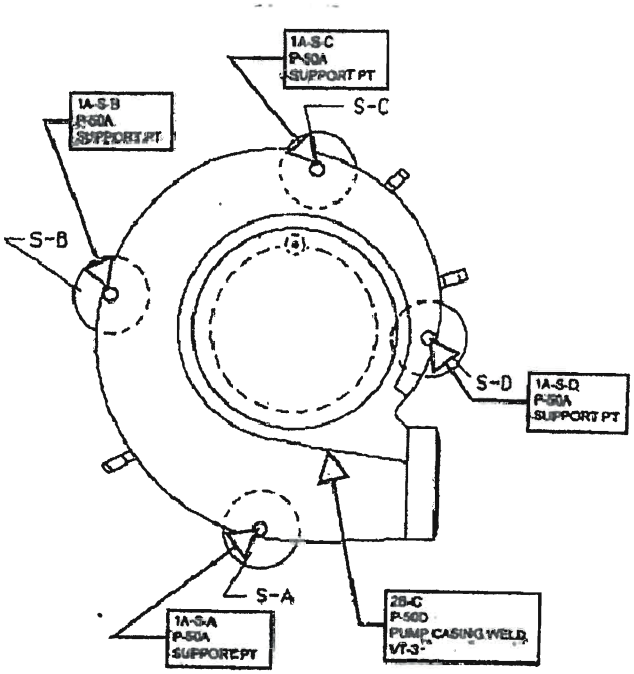


Figure M

Examination Category: B-K

Item No. B10.30

Component ID: 1A-S-C



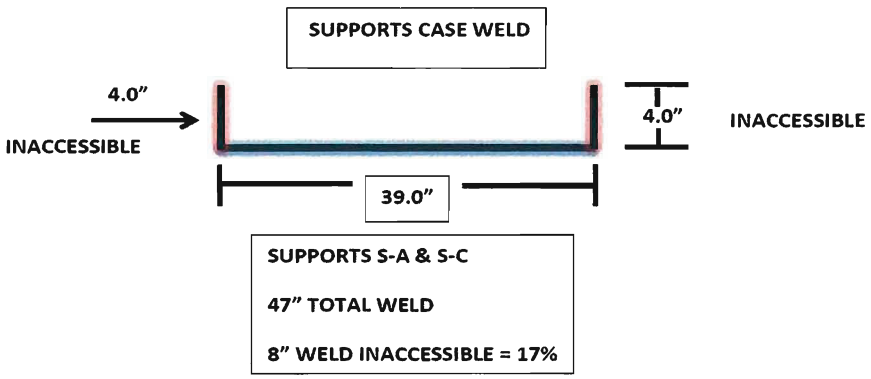
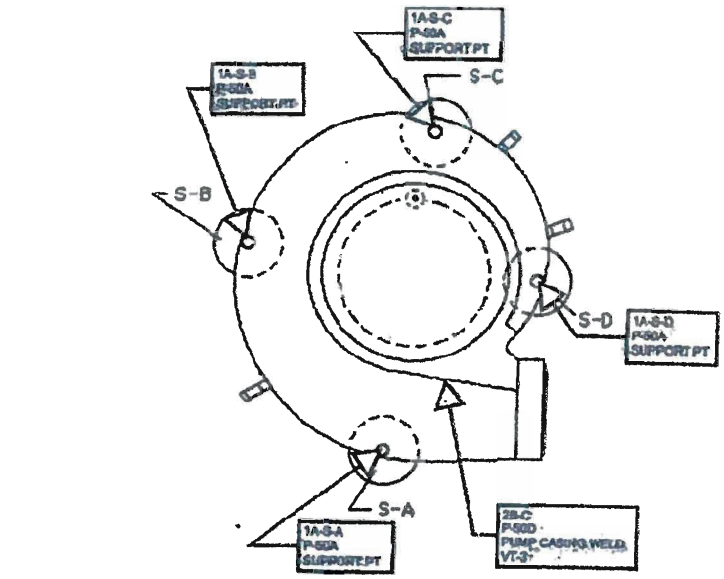


Figure N

Examination Category: B-K

Item No. B10.30

Component ID: 1A-S-D



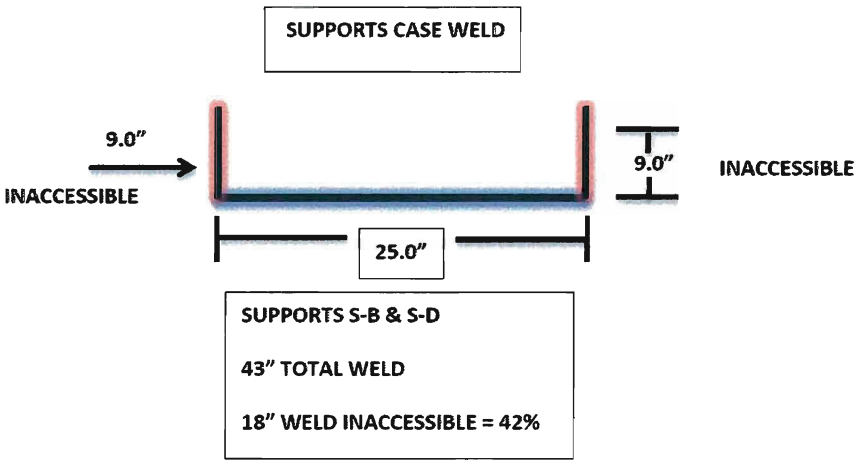
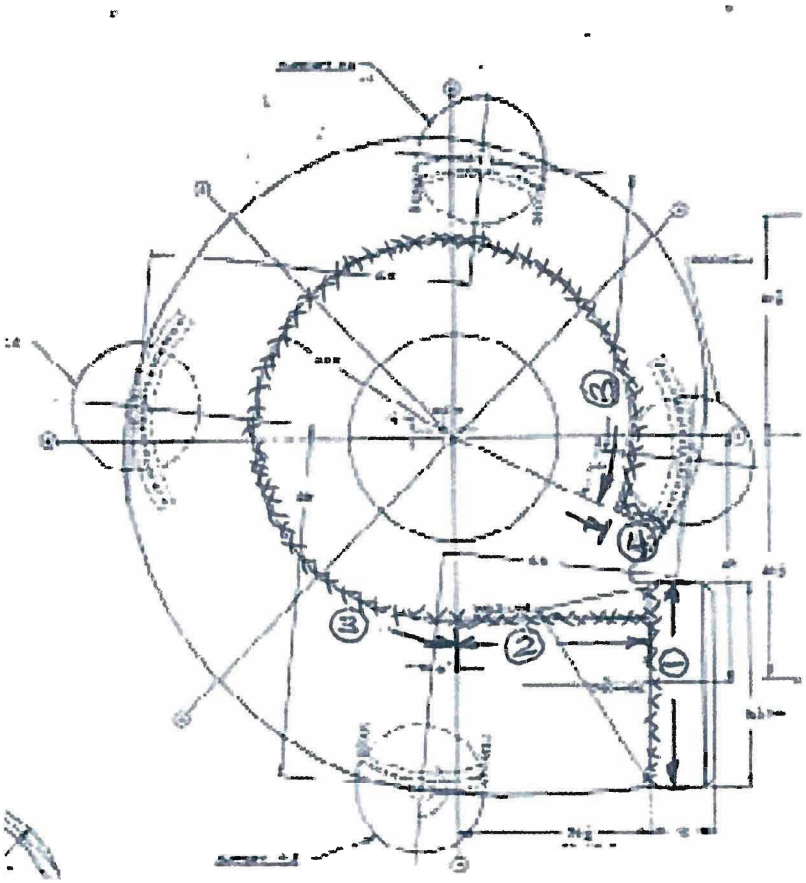


Figure O

Examination Category: B-L-1

Item No. B12.10

Component ID: 1B-02



1. Nozzle-Case, 36.25 Dia. = 114 inches
2. Straight Case, 34 inches ea. = 68 inches
3. Scroll, 84 inches Dia. – 295 degrees, 216 inches ea. = 432 inches
4. Scroll, Top to Bottom = 38 inches

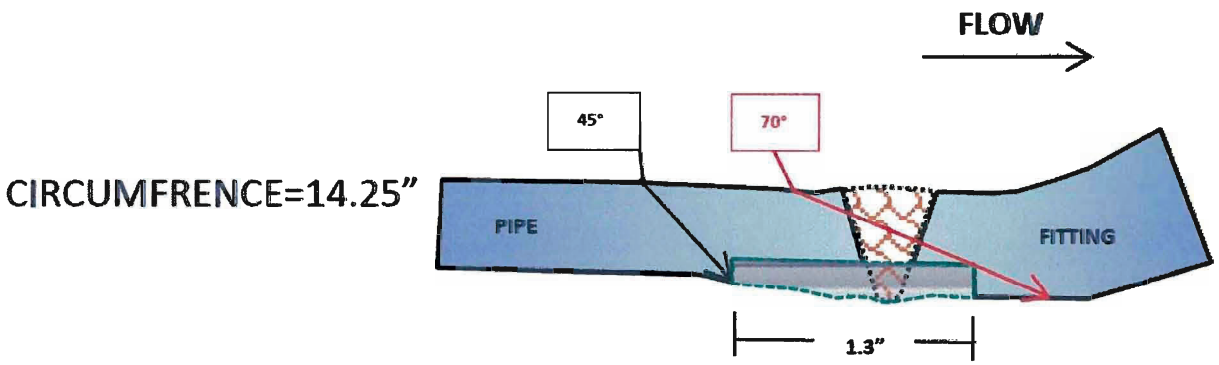
Pump Case Total Weld: 114 in. + 68 in. + 432 in. + 38 in. = 652 inches

Figure P

Examination Category: R-A

Item No. R1.11

Component ID: PCS-4-PRS-1P2-3



VOLUME=14.25"x1.3"x.062"=1.15in^3

SCAN1 = 100%

SCAN2 = 0%

WCW=0.75"

SCAN3 = 100%

WCH=.062"

SCAN4 = 0%

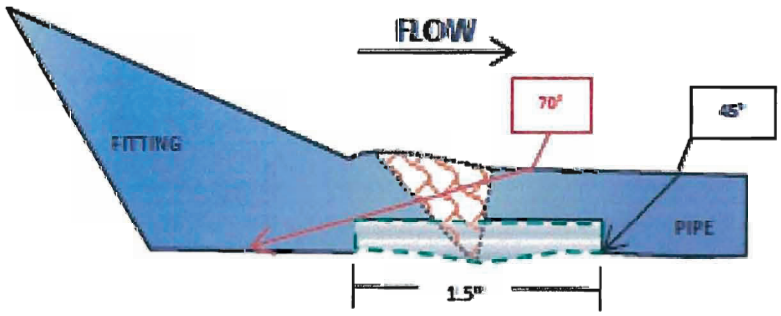
COVERAGE OBTAINED = 50%

Figure Q

Examination Category: R-A

Item No. R1.11

Component ID: PCS-4-PRS-1P2-4



Circumference = 14.25"

VOLUME=14.25"x1.3"x0.19"=4.06in^3

SCAN1 = 100%

SCAN2 = 0%

SCAN3 = 100%

SCAN4 = 0%

COVERAGE OBTAINED= 50%

WCW=0.75"

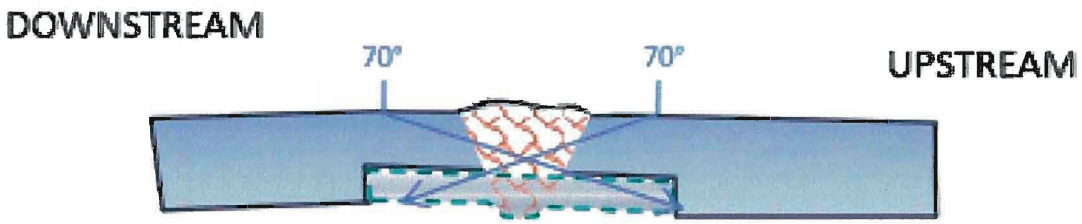
WCH=.062"

Figure R

Examination Category: R-A

Item No. R1.16

Component ID: ESS-6-SIS-1B1-13



AREA EXAMINED =0.390 in^2

AREA NOT EXAMINED=0.149in^2

PERCENT OF LOWER ⅓ EXAMINED =61.0% (2 DIRECTIONS)

PERCENT OF LOWER ⅓ EXAMINED = 38.0% (1 DIRECTIONS) =19%

PERCENT of TOTAL ⅓ EXAMINED VOLUME = 80%