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PSEG
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United States Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

INSERVICE INSPECTION PROGRAM RELIEF REQUESTS
S2-I2-RR-B01 AND S2-I2-RR-C01
SALEM GENERATING STATION – UNIT 2
FACILITY OPERATING LICENSE DPR-75
DOCKET NOS. 50-311

Pursuant to 10CFR50.55a(g)(5)(iii), PSEG Nuclear (PSEG) hereby requests NRC approval of the following requests associated with the Second Ten Year Inservice Inspection (ISI) Interval for Salem Unit 2. ISI relief requests S2-I2-RR-B01 (Attachment 1) and S2-I2-RR-C01 (Attachment 2) address examination limitations for exams performed in accordance the requirements of the American Society of Mechanical Engineering (ASME) Boiler and Pressure Vessel Code, Section XI for Class 1 and Class 2 components, respectively.

The Salem Unit 2, Second Ten-Year Interval ISI examinations were performed in accordance with the requirements of ASME Boiler and Pressure Vessel Code Section XI 1986 Edition Article IWB-2500 to the extent practical. Coverage for certain weld examinations conducted during the Second Ten-Year Interval was less than required in ASME Section XI.

PSEG has determined that conformance with these requirements is impractical for Salem Unit 2. Information supporting this determination is provided in Attachments 1 and 2 in accordance with 10 CFR 50.55a(g)(5)(iii).

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Should you have any questions regarding this request, please contact Mr. Paul Duke at 856-339-1466.

Sincerely,

Thomas P. Joyce
Site Vice President
Salem Generating Station

Attachments:

1. ISI Relief Request S2-I2-RR-B01
2. ISI Relief Request S2-I2-RR-C01
3. Supporting Documentation

C Mr. S. Collins, Administrator – Region I
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U. S. Nuclear Regulatory Commission
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USNRC Senior Resident Inspector – Salem (X24)

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10 CFR 50.55a Request Number: S2-I2-RR-B01
Relief Request in Accordance with 10 CFR 50.55a(g)(5)(iii)
Inservice Inspection Impracticality

NOTE:
Salem Unit 2 – Second Ten-Year Interval Inservice Inspection (ISI) inservice inspection examinations was conducted between May 10, 1992 (start) and November 23, 2003 (end). This interval excludes 26 months and 21 days (6/8/95 – 8/29/97) for an extended shutdown and less 7 months and 16 days to coincide with end of refueling outage per IWA-2430 (d).

ASME Code Components Affected

Code Class	1
Reference:	IWB-2500
Examination Categories:	B-A, B-B, B-D, B-F, B-G-1, B-J, and B-K-1
Item Numbers:	See Table 1
Description:	Volumetric and surface examination coverage
Component Number:	See Table 1

Applicable Code Edition and Addenda

The code of record for Salem Unit 2 ISI Program is Section XI of the ASME Code, 1986 Edition

Applicable Code Requirement

Salem Unit 2 Second Ten-Year Interval Inservice Inspection (ISI) inservice inspection examinations were performed in accordance with the requirements of ASME Boiler and Pressure Vessel Code Section XI, 1986 Edition Article IWB-2500 to the extent practical. Table IWB-2500-1 defines examination requirements for Class 1 components. The table contains information associated with the identification of components to be examined by nondestructive examination; this includes the applied nondestructive examination (NDE) method, acceptance standard, and extent of exam coverage and exam frequency.

In addition, 10CFR50.55a was revised effective November 22, 1999 (64FR51370) to require expedited implementation of Appendix VIII, "Performance Demonstration for Ultrasonic Examination Systems," of the ASME Code, Section XI, 1995 Edition with the 1996 Addenda. These requirements affected both Class 1 and 2 bolting, piping system welds, and reactor pressure vessel nondestructive examinations.

ASME, Section XI, 1986 Edition, requires volumetric and/or surface and visual examinations be performed upon components and welds identified within Table IWB-2500-1 Exam Categories B-A, B-B, B-D, B-F, B-G-1, B-J, and B-K-1.

A. Exam Category B-A Pressure Retaining Welds in Reactor Vessels

Section XI Exam Category B-A required volumetric weld examinations be performed upon the accessible length of one beltline region circumferential and longitudinal weld (Item Numbers B1.11 and B1.12 respectively); closure head circumferential and meridional welds (Item Numbers B1.21 and B1.22 respectively) and the associated reactor pressure vessel flange welds (Items B1.30 and B1.40).

B. Exam Category B-B Pressure Retaining Welds in Vessels Other Than Reactor Vessels

Section XI Exam Category B-B required volumetric weld examinations be performed essentially 100% of the weld length upon circumferential and 12 inches of intersecting longitudinal pressure retaining welds, as necessary within various pressure vessels. The examinations may be limited to one vessel among the group of vessels performing a similar function.

C. Exam Category B-D Full Penetration Welds of Nozzles in Vessels- Inspection Program B

Section XI Exam Category B-D required volumetric examinations be performed upon all nozzle to vessel welds and nozzle inside radius sections.

D. Exam Categories B-J, and B-F Pressure Retaining Piping Welds

Section XI Exam Categories B-J, and B-F required surface and volumetric weld examinations be performed upon welds greater than or equal to 4 inches in diameter.

Piping long seams were conducted in accordance with the requirements of ASME Section XI Code Case N-524, Alternative Examination Requirements for Longitudinal Welds in Class 1 and 2 Piping.

E. Exam Category B-G-1 Pressure Retaining Bolting, Greater than 2 Inches in Diameter

Section XI Exam Category B-G-1 required volumetric examinations be performed upon studs greater than 2 inches in diameter.

F. Exam Category B-K Welded Integral Attachments

PSEG Nuclear conducted welded integral attachment weld exams in accordance with the requirements imposed by ASME Section XI Code Case N-509, Alternative Rules for the Selection and Examination of Class 1, 2 and 3 Integrally Welded Attachments. Category B-K, Integral Attachments for Class 1 Vessels, Piping, and Pumps and Valves require surface examinations be conducted.

Table 1 contains detailed information related to the explanation of those components demonstrating inadequate code exam coverage extent due to inaccessibility, physical limitation or obstruction.

Basis for Relief:

Pursuant to 10CFR50.55a(g)(5)(iii), relief is requested from ASME XI examination requirements for the performance of the following bolting, piping and vessel welds due to exam limitations. The table herein identifies those inservice inspection nondestructive examinations contained within the Salem Unit 2 ISI Program Long Term Plan for the second Ten-Year Interval whose NDE exams were found to be inaccessible, physically limited or partially obstructed and therefore not capable of fully meeting code coverage requirements for examination extent. Attachment 3 provides additional descriptive details (sketches, illustrations, and/or drawings) for these components.

Subject components contained herein have received inservice inspection NDE examinations to the "extent practical" within the limitations of design, geometry and materials of construction of the components as allowed by Code. These components have also undergone necessary volumetric examination by radiography and/or surface examinations during fabrication, in accordance with approved construction/fabrication code requirements providing adequate assurance for the structural integrity of the components prior to plant operation. In addition, these components have been subjected to a visual examination for leakage after completion of each refueling outage.

PSEG Nuclear (PSEG) utilizes approved technical procedures written in accordance to applicable ASME Code section/paragraph criterion for area/volume requirements. Plant procedures require the documentation of the location and cause of the limitation.

A. Exam Category B-A Pressure Retaining Welds in Reactor Vessels

See table 1, attached to identify specific component information and explanation of the limitation(s) encountered.

Full Code required coverage is impractical for the identified subject components since the Reactor Pressure Vessel (RPV) would require design modifications that would impose a significant burden to PSEG. PSEG has elected to examine the subject components to the extent practical and has determined them to be acceptable with no observed signs of degradation. In addition, other RPV welds

have been examined to the extent required by the Code and also found to be acceptable with no observed signs of degradation. Also, VT-2 visual examinations performed in conjunction with system pressure testing after each refueling outage found these welds to be acceptable with no leakage observed.

B. Exam Category B-B Pressure Retaining Welds in Vessels Other Than Reactor Vessels

See table 1, attached to identify specific component information and explanation of the limitation(s) encountered.

Full Code required coverage is impractical for the subject components since these vessels would require design modifications that would impose a significant burden to PSEG. PSEG has examined these component welds to the extent practical and determined them to be acceptable with no observed signs of degradation. In addition, other similar vessel welds have been examined to the extent required by the Code and also found to be acceptable with no observed signs of degradation. Also, VT-2 visual examinations performed in conjunction with system pressure testing after each refueling outage found these welds to be acceptable with no leakage observed.

C. Exam Category B-D Full Penetration Welds of Nozzles in Vessels- Inspection Program B

See table 1, attached to identify specific component information and explanation of the limitation(s) encountered.

Full Code required coverage is impractical for the subject components since the nozzle identified within the table would require design modifications that would impose a significant burden to PSEG. PSEG has examined these component welds to the extent practical and determined them to be acceptable with no observed signs of degradation. In addition, other similar vessel welds have been examined to the extent required by the Code and also found to be acceptable with no observed signs of degradation. Also, VT-2 visual examinations performed in conjunction with system pressure testing after each refueling outage found these welds to be acceptable with no leakage observed.

D. Exam Category B-J and B-F Pressure Retaining Piping Welds

See table 1, attached to identify specific component information and explanation of the limitation(s) encountered.

Required Code coverage is impractical for the subject welds since the piping system would require design modifications that would impose a significant burden to PSEG. PSEG has examined these welds to the extent practical and determined them to be acceptable with no observed signs of degradation. In

addition, other similar piping welds have been examined to the extent required by the Code and also found to be acceptable with no observed signs of degradation. Also, VT-2 visual examinations performed in conjunction with system pressure testing after each refueling outage found these welds to be acceptable with no leakage observed.

Code required volumetric examinations are conducted by ultrasonic examination from both the upstream and downstream directions of piping welds. Ultrasonic examination of certain terminal ends and structural discontinuities are considered to be impractical due to their configuration and material acoustic properties.

The EPRI Performance Demonstration Initiative (PDI) is in agreement with the NRC's September 22, 1999 Final Rule regarding single side access for piping. The Final Rule requires if access is available, austenitic steel welds shall be scanned in each of the four directions (parallel and perpendicular to the weld) where required. PDI has not been able to qualify a single side examination procedure technique that is capable of demonstrating equivalency for a two-sided examination procedure technique on austenitic piping welds. Current technology is not capable of reliably detecting or sizing flaws on the far side of an austenitic weld for configurations common to nuclear applications. Ultrasonic examination of ferritic steel welds requires scanning in the two axial scan directions. Circumferential scanning is required in the remaining two directions only when axial indications were noted during preservice inspections. Coverage credit may be taken for single side exams on ferritic piping. However, for austenitic piping, a procedure must be qualified with flaws on the inaccessible side of the weld.

As stated earlier, current technology is not capable of reliably detecting or sizing flaws on the far side of austenitic weld for configurations common to US nuclear applications. To demonstrate that the best available technology was applied, PDI provides a best effort qualification instead of a complete single sided qualification. PDI Performance Demonstration Qualification Summary (PDQS) austenitic piping certificates list the limitation that single side examination is performed on a best effort basis. When performing single side access of austenitic stainless steel piping welds the best available techniques are used from the accessible side of the weld, as qualified through the PDI.

When the examination area is limited to one side of an austenitic weld, examination coverage does not comply with 10CFR50.55a(b)(2)(xv)(A) or the ASME Section XI requirements and proficiency demonstrations do not comply with 10CFR50.55a(b)(2)(xvi) and full coverage credit may not be claimed. PSEG considers exams accessed from a single side of an austenitic piping welds to be fully examined to the extent practical.

E. Exam Category B-G-1 Pressure Retaining Bolting, Greater than 2 Inches in Diameter

See table 1, attached to identify specific component information and explanation of the limitation(s) encountered.

Full Code required coverage is impractical for the subject components since access to some bolting is obstructed. This would require design modifications and would impose a significant burden. PSEG has examined several of these components contained within the same location and determined them to be acceptable with no observed signs of degradation. Also, similar bolting located on other pumps has been examined to the extent required by the Code and also found to be acceptable with no observed signs of degradation. In addition, a VT-2 visual examination is performed upon each stud in conjunction with the system pressure testing after each refueling outage. This bolting has been found to be acceptable with no leakage observed. Further, a visual examination is conducted of each installed stud to ensure no physical damage that may have resulted from the presence of boric acid and has been found to be acceptable with no damage observed.

F. Exam Category B-K Welded Integral Attachments

See table 1, attached to identify specific component information and explanation of the limitation(s) encountered.

Full Code required coverage is impractical for the subject welds since the integral attachment would require design modifications and would impose a significant burden Nuclear. In addition, removal of the component support attached to pump would result in the need to redesign the system's configuration in order to achieve access to the area obstructed. PSEG has examined these welds to the extent practical and determined them to be acceptable with no observed signs of degradation. In addition, other similar vessel welds have been examined to the extent required by the Code and also found to be acceptable with no observed signs of degradation. In addition, VT-2 visual examinations performed in conjunction with system pressure testing after each refueling outage found these welds to be acceptable with no leakage observed.

Alternative Examination

PSEG performed NDE examinations upon the components identified in the exam categories below using the current state of the art techniques as demonstrated through the EPRI PDI Program to the extent practical.

A. Exam Category B-A Pressure Retaining Welds in Reactor Vessels

Where the component would not allow an ultrasonic angle beam examination from both sides of the weld, the following was be performed using the best available technology as demonstrated through the EPRI PDI program:

- Similar metal welds were examined to the extent practical using personnel and techniques qualified and demonstrated through the EPRI PDI, as necessary.
- System pressure test examinations were performed per ASME XI requirements.

B. Exam Category B-B Pressure Retaining Welds in Vessels Other Than Reactor Vessels

Where the component would not allow an ultrasonic angle beam examination from both sides of the weld, the following were be performed using the best available technology as demonstrated through the EPRI PDI program:

- Similar metal welds were examined to the extent practical using personnel and techniques qualified and demonstrated through the EPRI PDI, as necessary.
- System pressure test examinations were performed per ASME XI requirements.

C. Exam Category B-D Full Penetration Welds of Nozzles in Vessels- Inspection Program B

Where the component would not allow an ultrasonic angle beam examination from both sides of the weld or upon the nozzle inner radius section, the following were performed using the best available technology as demonstrated through the EPRI PDI program:

- Similar metal welds and inner radius sections were examined to the extent practical using personnel and techniques qualified and demonstrated through the EPRI PDI, as necessary.

- System pressure test examinations were performed per ASME XI requirements.

D. Exam Category B-J, and B-F Pressure Retaining Piping Welds

Where the component would not allow an ultrasonic angle beam examination for axial scans (upstream and downstream), the following were performed using the best available technology as demonstrated through the EPRI PDI program:

- Similar metal welds were examined in at least one axial direction and two circumferential scans adjacent to the weld and upon the weld using personnel and techniques qualified and demonstrated through the EPRI PDI program for single sided access relating to the material type to be examined.

- Austenitic-to-Inconel dissimilar metal welds were examined in at least one axial direction and two circumferential scans adjacent to the weld and upon the weld using personnel and techniques qualified and demonstrated through the EPRI PDI program for single sided access relating to the material type to be examined.

- The code required surface and system pressure test examinations were performed per ASME XI requirements.

- The PSEG Risk Informed Inservice Inspection (RI-ISI) Program in accordance with the NRC approved EPRI approved methodology for both Salem Units Class 1 and 2 systems. During the conduct of RI-ISI program preparation, PSEG considered the non-selection of those components that have been deemed inaccessible, physically limited or partially obstructed portions provided the NRCs approved RI-ISI EPRI methodology allowed.

E. Exam Category B-G-1 Pressure Retaining Bolting, Greater than 2 Inches in Diameter

NDE personnel utilized the single side access straight beam ultrasonic exam technique having been satisfactory demonstrated at the PDI. PSEG has since elected to perform straight beam (0- degree) examinations from the accessible surface of the studs using PDI qualified individuals to perform these exams.

Surface and system pressure test examinations were performed per ASME XI requirements

F. Exam Category B-K Welded Integral Attachments

These examinations were performed in accordance with the requirements of ASME Section XI 1986 Edition to the extent practical. System pressure test examinations were performed per ASME XI requirements.

ASME Code Case N-568, Alternative Examination Requirements for Welded Attachments, was applied. As an alternative to the examination requirements of B-K (pre-1995 Addenda examination Categories B-H and B-K-1), Code Case N-568 indicates examination of a welded attachment that is obstructed by a component support or portion of a component support may be limited to the accessible portion of the welded attachment. Disassembly of the component support or portion of the component support is not required.

Applicability

This Relief Request is applicable to the following:

- Salem Unit 2 – Second Ten-Year Inservice Inspection Interval

Precedents

The NRC approved a similar request for the Salem Unit 1 second 10-year interval in Reference 1.

References

1. "Salem Nuclear Generating Station, Unit No. 1 - Relief from ASME Code Requirements Related to the Salem Inservice Inspection Program, Relief Request S1-RR-B01 and S1-RR-C01 (TAC NO. MB3811)," dated January 16, 2003

Table 1
2nd Inservice Inspection Ten Year Interval NDE Exam Limitations

Sum#	Component ID	Description	Post- RI-ISI ASME Cat	Pre RI-ISI ASME Cat	Post RI-ISI ASME Item #	Pre- RI-ISI ASME Item #	ASME Class	System	Current NDE	Limited NDE Exam	Code Coverage Achieved	UT Exam Type	Exam Date	Photo/ Sketch No.*	Required Examination Volume	Limitation Description
000400	2-RPV-3442A	LOWER SHELL AT 60 DEG.	B-A	B-A	B1.12	B1.12	1	RC	M-UT	UT	81%	45s, 45RL	4/18/02	215, 215A, 215B, 216, 217, 218	IWB-2500-1	UT exam was conducted using 45-degree shear and longitudinal wave transducers. The exams completed were limited to approximately 81% code required coverage due to the core barrel support lugs attached to the reactor vessel shell. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.
000500	2-RPV-3442B	LOWER SHELL AT 180 DEG.	B-A	B-A	B1.12	B1.12	1	RC	M-UT	UT	81%	45s, 45RL	4/18/02	215A, 215B, 219, 220, 221, 222	IWB-2500-1	UT exam was conducted using 45-degree shear and longitudinal wave transducers. The exams completed were limited to approximately 81% code required coverage due to the core barrel support lugs attached to the reactor vessel shell. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.
000600	2-RPV-3442C	LOWER SHELL AT 300 DEG.	B-A	B-A	B1.12	B1.12	1	RC	M-UT	UT	81%	45s, 45RL	4/18/02	215A, 215B, 223, 224, 225, 226	IWB-2500-1	UT exam was conducted using 45-degree shear and longitudinal wave transducers. The exams completed were limited to approximately 81% code required coverage due to the core barrel support lugs attached to the reactor vessel shell. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.
002600	2-RPVCH-6446B	DOLLAR PLATE	B-A	B-A	B1.21	B1.21	1	RC	UT	UT	67%	0, 45s, 60s	10/28/94	45, 46, 47, 266A, 266B	IWB-2500-3	UT exam was conducted using 0, 45, 60 degree shear wave transducers. The exam completed was limited to 67% code required coverage due to CRD Penetrations interferences interfering with scanning. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

* These sketches refer to Attachment 3, Pages 1 through 323

Sum#	Component ID	Description	Post- RI-ISI ASME Cat	Pre RI-ISI ASME Cat	Post RI-ISI ASME Item #	Pre- RI-ISI ASME Item #	ASME Class	System	Current NDE	Limited NDE Exam	Code Coverage Achieved	UT Exam Type	Exam Date	Photo/ Sketch No.*	Required Examination Volume	Limitation Description
002000	2-RPVCH-1446A	MERIDIONAL WELD AT 300 DEG	B-A	B-A	B1.22	B1.22	1	RC	UT	UT	31%	0, 45s, 60s	10/28/94	33, 34, 266A, 266B	IWB-2500-3	UT exam was conducted using 0, 45, 60 degree shear and longitudinal wave transducers. The exam completed was limited to 31% code required coverage due to CRD Penetrations and Shroud Support Ring interferences interfering with scanning. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.
002100	2-RPVCH-1446B	MERIDIONAL WELD AT 0 DEG.	B-A	B-A	B1.22	B1.22	1	RC	UT	UT	26%	0, 45s, 60s	10/28/94	35, 36, 266A, 266B	IWB-2500-3	UT exam was conducted using 0, 45, 60 degree shear and longitudinal wave transducers. The exam completed was limited to 26% code required coverage due to CRD Penetrations and Shroud Support Ring and Lifting Lug interferences interfering with scanning. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.
002200	2-RPVCH-1446C	MERIDIONAL WELD AT 60 DEG.	B-A	B-A	B1.22	B1.22	1	RC	UT	UT	35%	0, 45s, 60s	10/28/94	37, 38, 266A, 266B	IWB-2500-3	UT exam was conducted using 0, 45, 60 degree shear and longitudinal wave transducers. The exam completed was limited to 35% code required coverage due to CRD Penetrations and Shroud Support Ring interferences interfering with scanning. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.
002300	2-RPVCH-1446D	MERIDIONAL WELD AT 120 DEG	B-A	B-A	B1.22	B1.22	1	RC	UT	UT	35%	0, 45s, 60s	10/28/94	39, 40, 266A, 266B	IWB-2500-3	UT exam was conducted using 0, 45, 60 degree shear and longitudinal wave transducers. The exam completed was limited to 35% code required coverage due to CRD Penetrations and Shroud Support Ring and Lifting Lug interferences interfering with scanning. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

* These sketches refer to Attachment 3, Pages 1 through 323

Sum#	Component ID	Description	Post- RI-ISI ASME Cat	Pre RI-ISI ASME Cat	Post RI-ISI ASME Item #	Pre- RI-ISI ASME Item #	ASME Class	System	Current NDE	Limited NDE Exam	Code Coverage Achieved	UT Exam Type	Exam Date	Photo/ Sketch No.*	Required Examination Volume	Limitation Description
002400	2-RPVCH-1446E	MERIDIONAL WELD AT 180 DEG	B-A	B-A	B1.22	B1.22	1	RC	UT	UT	36%	0, 45s, 60s	10/28/94	41, 42, 266A, 266B	IWB-2500-3	UT exam was conducted using 0, 45, 60 degree shear and longitudinal wave transducers. The exam completed was limited to 36% code required coverage due to CRD Penetrations and Shroud Support Ring interferences interfering with scanning. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.
002500	2-RPVCH-1446F	MERIDIONAL WELD AT 240 DEG	B-A	B-A	B1.22	B1.22	1	RC	UT	UT	54%	0, 45s, 60s	10/28/94	43, 44, 266A, 266B	IWB-2500-3	UT exam was conducted using 0, 45, 60 degree shear and longitudinal wave transducers. The exam completed was limited to 54% code required coverage due to CRD Penetrations and Shroud Support Ring and Lifting Lug interferences interfering with scanning. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.
001300	2-RPV-1443A	MERIDIONAL WELD AT 270 DEG	B-A	B-A	B1.22	B1.22	1	RC	M-UT	UT	88%	45s, 45RL	4/18/02	227, 227A, 227B, 227C, 228, 229, 230, 231	IWB-2500-3	UT exam was conducted using 45-degree shear and longitudinal wave transducers. The exam completed was limited to 88% code required coverage due to instrumentation tubes interfering with scanning. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.
001500	2-RPV-1443C	MERIDIONAL WELD AT 30 DEG.	B-A	B-A	B1.22	B1.22	1	RC	M-UT	UT	88%	45s, 45RL	4/18/02	232, 233, 234, 235, 236	IWB-2500-3	UT exam was conducted using 45-degree shear and longitudinal wave transducers. The exam completed was limited to 88% code required coverage due to instrumentation tubes interfering with scanning. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

* These sketches refer to Attachment 3, Pages 1 through 323

Sum#	Component ID	Description	Post- RI-ISI ASME Cat	Pre RI-ISI ASME Cat	Post RI-ISI ASME Item #	Pre- RI-ISI ASME Item #	ASME Class	System	Current NDE	Limited NDE Exam	Code Coverage Achieved	UT Exam Type	Exam Date	Photo/ Sketch No.*	Required Examination Volume	Limitation Description
001600	2-RPV-1443D	MERIDIONAL WELD AT 90 DEG.	B-A	B-A	B1.22	B1.22	1	RC	M-UT	UT	72%	45s, 45RL	4/18/02	227A, 227B, 227C, 237, 238, 239	IWB-2500-3	UT exam was conducted using 45-degree shear and longitudinal wave transducers. The exam completed was limited to 72% code required coverage due to instrumentation tubes interfering with scanning. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.
002700	2-RPV-7442	VESSEL TO FLANGE	B-A	B-A	B1.30	B1.30	1	RC	M-UT	UT	82%	45s, 45RL	4/18/02	240, 240A, 241, 242, 243, 244, 256, 257, 258, 259, 260, 261, 262, 262A, 263, 264, 265	IWB-2500-4	UT exam was conducted using 45-degree shear and longitudinal wave transducers. The exam completed was limited to 82% code required coverage due to OD configuration associated with the taper of the reactor vessel flange. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.
002800	2-RPVCH-6446A	HEAD TO FLANGE	B-A	B-A	B1.40	B1.40	1	RC	UT - MT	UT	79%	45s, 60s	4/17/02	266, 266A, 266B, 267, 268, 269, 270, 270A, 270B, 270C, 270D, 270E, 270F, 270G	IWB-2500-5	UT exam was conducted using 45-degree shear and longitudinal wave transducers. The exam completed was limited to 79% code required coverage due to OD configuration associated with the reactor vessel closure head and flange. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed. Closure head was replaced 2R14 with monoblock design (Spring 2005).
061700	4-PS-1231-11PS-1 THRU 4	PIPE SUPPORT	B-K	B-K	B10.20	B10.20	1	RC	PT - UT	PT	50%	N/A	4/30/99	127, 128	IWB-2500-8	PT exam was conducted of this component. The PT exam was limited to 50% because of a permanently installed component support that obstructed the exam. The bottom of the pipe support weld was inaccessible due to a permanent obstruction from the fixed pipe clamp. A system pressure test was also completed with no unacceptable indications observed.

* These sketches refer to Attachment 3, Pages 1 through 323

Sum#	Component ID	Description	Post- RI-ISI ASME Cat	Pre RI-ISI ASME Cat	Post RI-ISI ASME Item #	Pre- RI-ISI ASME Item #	ASME Class	System	Current NDE	Limited NDE Exam	Code Coverage Achieved	UT Exam Type	Exam Date	Photo/ Sketch No.*	Required Examination Volume	Limitation Description
251200	22-PMP-LUGS 1,2,3	PUMP LUGS	B-K	B-K	B10.30	B10.30	1	RC	PT	PT	67%	N/A	4/6/93	8, 9, 10, 11	IWB-2500-15	PT exam was performed of this component. The liquid penetrant examination completed was partially limited to 67% of the achieved code required coverage being limited due to s portion of the lugs being hidden within the pump support structure. No unacceptable indications were observed. A system pressure test was also completed with no recordable indications observed.
251300	21-PMP-LUGS 1,2,3	PUMP LUGS	B-K	B-K	B10.30	B10.30	1	RC	PT	PT	67%	N/A	4/6/93	12, 13, 14, 15	IWB-2500-15	PT exam was performed of this component. The liquid penetrant examination completed was partially limited to 67% of the achieved code required coverage being limited due to s portion of the lugs being hidden within the pump support structure. No unacceptable indications were observed. A system pressure test was also completed with no recordable indications observed.
010900	2-PZR-CIRC DUH	SHELL D TO UPPER HEAD	B-B	B-B	B2.11	B2.11	1	RC	UT	UT	37%	45s, 60s	4/11/02	283, 284, 285, 286	IWB-2500-1	UT exam was conducted using 45 and 60-degree shear wave transducers. The exam completed was limited to 37% code required coverage due to due to support ring clamped to the upper head of the pressurizer head. A total of 140° of the total circumference was accessible for examination. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.
010400	2-PZR-LONG D	LONGITUDINAL WELD SHELL D	B-B	B-B	B2.12	B2.12	1	RC	UT	UT	74%	45s 60s	9/7/96	84A, 84B, 85, 86, 87, 88	IWB-2500-2	UT exam was conducted using a 45 and 60-degree shear wave transducers. The exam completed was limited to 74% code required coverage. The UT exams conducted were limited due to a permanently installed insulation support bracket. The exam was limited between 0" to 9" with 9" to 13" being restricted due to permanently installed insulation brackets. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

* These sketches refer to Attachment 3, Pages 1 through 323

Sum#	Component ID	Description	Post- RI-ISI ASME Cat	Pre RI-ISI ASME Cat	Post RI-ISI ASME Item #	Pre- RI-ISI ASME Item #	ASME Class	System	Current NDE	Limited NDE Exam	Code Coverage Achieved	UT Exam Type	Exam Date	Photo/ Sketch No.*	Required Examination Volume	Limitation Description
011100	4-PSN-1231-IRS	SAFETY NOZZLE	B-D	B-D	B3.120	B3.120	1	RC	UT	UT	50%	53s	9/7/96	89, 89A, 89B, 90, 91, 92, 93	IWB-2500-7(b)	UT exam was conducted using a 53-degree shear wave transducer. The exam completed was limited to 50% code required coverage. The UT exam conducted was limited due to due to the permanent raised manufacturer ID #'s casted to the lower head. No exam could be performed from the vessel side between 0° and 180° due to the raised manufacturer ID #'s casted to the head. The exam was performed from 180° to 360°. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.
020800	31-STG-1220-IRS	OUTLET NOZZLE IRS	B-D	B-D	B3.140	B3.140	1	RC	UT	UT	80%	28RL, 38RL	10/24/94	311, 312, 313	IWB-2500-7(d)	UT exam was conducted using 28 and 38 degree refracted longitudinal wave transducers. The exam completed was limited to 80% code required coverage due to an installed insulation support ring. The exam surface is approximately 153.9" with the length of the limitation being 30". No exam could be performed between 15" ccw to 15" cw from datum zero. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.
021200	29-STG-1220-IRS	INLET NOZZLE IRS	B-D	B-D	B3.140	B3.140	1	RC	UT	UT	73%	28RL, 38RL	10/24/94	311, 312, 313	IWB-2500-7(d)	UT exam was conducted using 28 and 38 degree refracted longitudinal wave transducers. The exam completed was limited to 73% code required coverage due to an installed insulation support ring. The exam surface is approximately 154" with the length of the limitation being 73". No exam was able to be performed between 24" ccw to 15" cw from datum zero an insulation support lug located 77"cw to 79"cw with 2"W measurement. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

* These sketches refer to Attachment 3, Pages 1 through 323

Sum#	Component ID	Description	Post- RI-ISI ASME Cat	Pre RI-ISI ASME Cat	Post RI-ISI ASME Item #	Pre- RI-ISI ASME Item #	ASME Class	System	Current NDE	Limited NDE Exam	Code Coverage Achieved	UT Exam Type	Exam Date	Photo/ Sketch No.*	Required Examination Volume	Limitation Description
020700	31-STG-1230-IRS	OUTLET NOZZLE IRS	B-D	B-D	B3.140	B3.140	1	RC	UT	UT	81%	38RL, 28RL	5/12/99	311, 312, 313	IWB-2500-7(d)	UT exam was conducted using 38 and 28 degree refracted longitudinal wave transducers. The exam completed was limited to 81% code required coverage due to an installed insulation support brackets connected to the cast head that restricted scanning. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.
021100	29-STG-1230-IRS	INLET NOZZLE IRS	B-D	B-D	B3.140	B3.140	1	RC	UT	UT	75%	38RL, 28RL	5/12/99	311, 312, 313	IWB-2500-7(d)	UT exam was conducted using 38 and 28 degree refracted longitudinal wave transducers. The exam completed was limited to 75% code required coverage due to an installed insulation support brackets connected to the cast head that restricted scanning. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.
020600	31-STG-1240-IRS	OUTLET NOZZLE IRS	B-D	B-D	B3.140	B3.140	1	RC	UT	UT	85%	28RL, 38RL	4/23/02	311, 312, 313	IWB-2500-7(d)	UT exam was conducted using 28 and 38 degree longitudinal wave transducers. The exams completed was limited to 85% code required coverage due to due to the insulation support brackets attached to the steam generators lower head that interfered with scanning. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.
020900	31-STG-12R10-IRS	OUTLET NOZZLE IRS	B-D	B-D	B3.140	B3.140	1	RC	UT	UT	79%	28RL, 38RL	4/23/02	311, 312, 313	IWB-2500-7(d)	UT exam was conducted using 28 and 38 degree longitudinal wave transducers. The exams completed was limited to 79% code required coverage due to due to the insulation support brackets attached to the steam generators lower head that interfered with scanning. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

* These sketches refer to Attachment 3, Pages 1 through 323

Sum#	Component ID	Description	Post- RI-ISI ASME Cat	Pre RI-ISI ASME Cat	Post RI-ISI ASME Item #	Pre- RI-ISI ASME Item #	ASME Class	System	Current NDE	Limited NDE Exam	Code Coverage Achieved	UT Exam Type	Exam Date	Photo/ Sketch No.*	Required Examination Volume	Limitation Description
021000	29-STG-1240-IRS	INLET NOZZLE IRS	B-D	B-D	B3.140	B3.140	1	RC	UT	UT	86%	28RL, 38RL	4/23/02	311, 312, 313	IWB-2500-7(d)	UT exam was conducted using 28 and 38 degree longitudinal wave transducers. The exams completed was limited to 86% code required coverage due to due to the insulation support brackets attached to the steam generators lower head that interfered with scanning. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.
021300	29-STG-12R10-IRS	INLET NOZZLE IRS	B-D	B-D	B3.140	B3.140	1	RC	UT	UT	82%	28RL, 38RL	4/23/02	311, 312, 313	IWB-2500-7(a)	UT exam was conducted using 28 and 38 degree longitudinal wave transducers. The exams completed was limited to 82% code required coverage due to due to the insulation support brackets attached to the steam generators lower head that interfered with scanning. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.
003600	29-RCN-12R10	OUTLET NOZZLE AT 338 DEG.	B-D	B-D	B3.90	B3.90	1	RC	M-UT	M-UT	72%	45s, 45RL	12/19/02	271, 280, 281	IWB-2500-7(b)	UT exam was performed of this component using 45-degree shear and 45 degree refracted longitudinal wave transducers. The ultrasonic examination completed was partially limited to 72% of the code required converge being achieved due to the OD configuration of the nozzle protrusion (boss) that interfered with scanning. There were no unacceptable indications observed.
002900	29-RCN-1230	OUTLET NOZZLE AT 22 DEG.	B-D	B-D	B3.90	B3.90	1	RC	M-UT	UT	72%	45s, 45RL	12/19/02	271, 271A, 271B, 272, 273	IWB-2500-7(b)	UT exam was performed of this component using 45-degree shear and 45 degree refracted longitudinal wave transducers. The ultrasonic examination completed was partially limited to 72% of the code-required coverage being achieved due to the OD configuration of the nozzle protrusion (boss) that interfered with scanning. There were no unacceptable indications observed.

* These sketches refer to Attachment 3, Pages 1 through 323

Sum#	Component ID	Description	Post- RI-ISI ASME Cat	Pre RI-ISI ASME Cat	Post RI-ISI ASME Item #	Pre- RI-ISI ASME Item #	ASME Class	System	Current NDE	Limited NDE Exam	Code Coverage Achieved	UT Exam Type	Exam Date	Photo/ Sketch No.*	Required Examination Volume	Limitation Description
003300	29-RCN-1220	OUTLET NOZZLE AT 203 DEG.	B-D	B-D	B3.90	B3.90	1	RC	M-UT	UT	72%	45s, 45RL	12/19/02	271A, 271B, 277, 278, 279	IWB-2700-7(a)	UT exam was conducted using 45-degree shear and longitudinal wave transducers. The exam completed was limited to 72% code required coverage due to due to the OD configuration of the nozzle protrusion (boss). No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.
003200	29-RCN-1240	OUTLET NOZZLE AT 158 DEG.	B-D	B-D	B3.90	B3.90	1	RC	M-UT	UT	72%	45s, 45RL	12/19/02	271A, 271B, 274, 275, 276	IWB-2700-7(a)	UT exam was conducted using 45-degree shear and longitudinal wave transducers. The exam completed was limited to 72% code required coverage due to due to the OD configuration of the nozzle protrusion (boss). No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.
003100	29-RCN-1210	OUTLET NOZZLE AT 338 DEG.	B-D	B-D	B3.90	B3.90	1	RC	M-UT	UT	72%	45s, 45RL	12/19/02	271A, 271B, 280, 281	IWB-2700-7(a)	UT exam was conducted using 45-degree shear and longitudinal wave transducers. The exam completed was limited to 72% code required coverage due to due to the OD configuration of the nozzle protrusion (boss). No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.
011800	6-PR-1205-1	NOZZLE TO SAFE-END	R-A	B-F	R1.15-2	B5.40	1	RC	UT, PT	- UT	38%	30RL	10/14/00	298, 299, 300	IWB-2500-7(b)	UT exam was performed of this component using 30 degree refracted longitudinal wave transducer. The ultrasonic examination completed was partially limited to 38% of the code required converge being achieved due to the OD configuration of the nozzle to safe-end that did not lend itself to achieving full coverage from the upstream side when scanning was performed. There were no unacceptable indications observed. UT exam performed was best effort. This weld configuration does not contain Alloy 600, 82/182 weld material. A liquid penetrant examination and system pressure test was also completed with no recordable indications observed.

* These sketches refer to Attachment 3, Pages 1 through 323

Sum#	Component ID	Description	Post- RI-ISI ASME Cat	Pre RI-ISI ASME Cat	Post RI-ISI ASME Item #	Pre- RI-ISI ASME Item #	ASME Class	System	Current NDE	Limited NDE Exam	Code Coverage Achieved	UT Exam Type	Exam Date	Photo/ Sketch No.*	Required Examination Volume	Limitation Description
011820	6-PR-1203-1	NOZZLE TO SAFE-END	R-A	B-F	R1.15-2	B5.40	1	RC	UT, PT	- UT	86%	45s, 25s	4/21/99	300, 301, 302	IWB-2500-8	UT exam was conducted using 45, and 25-degree shear and refracted longitudinal wave transducer. The exam completed was limited to 86% code required coverage due to the exam being limited by the OD configuration of the nozzle and safe-end. This weld configuration does not contain Alloy 600 82/182 weld material.. No unacceptable indications were noted. A liquid penetrant test and system pressure test was also completed with no unacceptable indications observed.
011830	4-PR-1200-1	NOZZLE TO SAFE-END	R-A	B-F	R1.15-2	B5.40	1	RC	UT, PT	- UT	84%	45s	4/21/99	300, 303, 304	IWB-2500-8	On 4/21/99 a UT exam was conducted using 45-degree shear wave transducer. The exam completed was limited to 84% code required coverage due to the exam being limited by the OD configuration of the nozzle and safe-end. This weld configuration does not contain Alloy 600 82/182 weld material.. No unacceptable indications were noted. A liquid penetrant test and system pressure test was also completed with no unacceptable indications observed.
083300	29-RC-1210-5	ELBOW TO NOZZLE	R-A	B-F	R1.15-2	B5.70	1	RC	PT - UT	UT	67%	45s	10/28/94	305, 306, 312, 313, 315	IWB-2500-8	UT exam was conducted using 45 shear wave transducer. The exam completed was limited to 67% code required coverage due to no UT axial scan exam was performed from the upstream or the downstream side of the weld due to the elbow being fabricated from ASTM351-65 CF8M cast stainless steel whose acoustic properties is not conducive for ultrasonic examination and the OD configuration of the nozzle. A clockwise and counterclockwise exam was performed of the weld crown. No unacceptable indications were noted. A liquid penetrant and system pressure test was also completed with no unacceptable indications observed.

* These sketches refer to Attachment 3, Pages 1 through 323

Sum#	Component ID	Description	Post- RI-ISI ASME Cat	Pre RI-ISI ASME Cat	Post RI-ISI ASME Item #	Pre- RI-ISI ASME Item #	ASME Class	System	Current NDE	Limited NDE Exam	Code Coverage Achieved	UT Exam Type	Exam Date	Photo/ Sketch No.*	Required Examination Volume	Limitation Description
070000	31-RC-1240-1	NOZZLE TO ELBOW	R-A	B-F	R1.20-4	B5.70	1	RC	PT - UT	UT	50%	45s	10/28/94	312, 313, 315, 315B	IWB-2500-8	UT exam was conducted using 45-shear wave transducer. The exam completed was limited to 50% code required coverage due to no UT axial scan exam was performed from either the upstream or the downstream side of the weld due to the elbow being fabricated from ASTM351-65 CF8M cast stainless steel whose acoustic properties is not conducive for ultrasonic examination and the OD configuration of the nozzle. A clockwise and counterclockwise exam was performed of the weld crown. No unacceptable indications were noted. A liquid penetrant and system pressure test was also completed with no unacceptable indications observed.
072300	31-RC-1230-1	NOZZLE TO ELBOW	R-A	B-F	R1.20-4	B5.70	1	RC	UT	PT - UT	50%	45L	4/24/99	312, 313, 315, 315A, 317	IWB-2500-8	UT exam was conducted using 45 degree refracted longitudinal wave transducer. The exam completed was limited to 50% code required coverage due to no UT axial scan exam was performed from either the upstream or the downstream side of the weld due to the elbow being fabricated from ASTM351-65 CF8M cast stainless steel whose acoustic properties is not conducive for ultrasonic examination and the OD configuration of the nozzle. A clockwise and counterclockwise exam was performed of the weld crown. No unacceptable indications were noted. A liquid penetrant and system pressure test was also completed with no unacceptable indications observed.

* These sketches refer to Attachment 3, Pages 1 through 323

Sum#	Component ID	Description	Post- RI-ISI ASME Cat	Pre RI-ISI ASME Cat	Post RI-ISI ASME Item #	Pre- RI-ISI ASME Item #	ASME Class	System	Current NDE	Limited NDE Exam	Code Coverage Achieved	UT Exam Type	Exam Date	Photo/ Sketch No.*	Required Examination Volume	Limitation Description
074600	31-RC-1220-1	NOZZLE TO ELBOW	R-A	B-F	R1.20-4	B5.70	1	RC	PT - UT	UT	50%	45L	4/24/99	312, 313, 315, 316A, 317	IWB-2500-8	UT exam was conducted using 45 degree refracted longitudinal wave transducer. The exam completed was limited to 50% code required coverage due to no UT axial scan exam was performed from either the upstream or the downstream side of the weld due to the elbow being fabricated from ASTM351-65 CF8M cast stainless steel whose acoustic properties is not conducive for ultrasonic examination and the OD configuration of the nozzle. A clockwise and counterclockwise exam was performed of the weld crown. No unacceptable indications were noted. A liquid penetrant and system pressure test was also completed with no unacceptable indications observed.
076800	31-RC-1210-1	NOZZLE TO ELBOW	R-A	B-F	R1.20-4	B5.70	1	RC	PT - UT	UT	50%	45L	4/24/99	315, 315B, 317	IWB-2500-8	UT exam was conducted using 45 refracted longitudinal wave transducer. The exam completed was limited to 50% code required coverage due to no UT axial scan exam was performed from either the upstream or the downstream side of the weld due to the elbow being fabricated from ASTM351-65 CF8M cast stainless steel whose acoustic properties is not conducive for ultrasonic examination and the OD configuration of the nozzle. A clockwise and counterclockwise exam was performed of the weld crown. No unacceptable indications were noted. A liquid penetrant and system pressure test was also completed with no unacceptable indications observed.

* These sketches refer to Attachment 3, Pages 1 through 323

Sum#	Component ID	Description	Post- RI-ISI ASME Cat	Pre RI-ISI ASME Cat	Post RI-ISI ASME Item #	Pre- RI-ISI ASME Item #	ASME Class	System	Current NDE	Limited NDE Exam	Code Coverage Achieved	UT Exam Type	Exam Date	Photo/ Sketch No.*	Required Examination Volume	Limitation Description
080300	29-RC-1230-3	PIPE TO PIPE	R-A	B-J	R1.20-4	B9.11	1	RC	PT - UT	UT	90%	45s	4/6/93	1, 2	IWB-2500-8	UT exam was performed of this component using 45-degree shear wave transducer. The ultrasonic examination completed was partially limited to 90% of the code-required coverage being achieved due to branch connections between 37 3/4" to 41" and 104 1/2" to 1 1/2". that did not lend itself to achieving full coverage from the downstream side when scanning was performed. Scanning was performed across the weld to maximize achieved Code coverage. There were no unacceptable indications observed. No unacceptable indications were noted. This weld configuration does not contain Alloy 600, 82/182-weld material. A liquid penetrant examination and system pressure test was also completed with no recordable indications observed.
164000	10-SJ-1221-21	ELBOW TO PIPE	R-A	B-J	R1.20-4	B9.11	1	SJ	PT - UT	UT	83%	45s	4/12/93	3	IWB-2500-8	UT exam was performed of this component using 45-degree shear wave transducer. The ultrasonic examination completed was partially limited to 83% of the achieved code required coverage being limited from 13" to 21" on upstream side due to the curvature of the shortened inner radius of the elbow. Scanning was also performed across the weld to maximize achieved code coverage. No unacceptable indications were observed. A liquid penetrant examination and system pressure test was also completed with no recordable indications observed.
166000	8-SJ-1262-10	PIPE TO PIPE	R-A	B-J	R1.19-2	B9.11	1	SJ	PT - UT	UT	82%	45s	3/27/93	4, 4A, 4B	IWB-2500-8	UT exam was performed of this component using 45-degree shear wave transducer. The ultrasonic examination completed was partially limited to 82% of the achieved code required coverage being limited due to an installed pipe support (9PS) that restricted scanning to approximately 1 3/4" of the upstream side of the weld. No unacceptable indications were observed. A liquid penetrant examination and system pressure test was also completed

* These sketches refer to Attachment 3, Pages 1 through 323

Sum#	Component ID	Description	Post- RI-ISI ASME Cat	Pre RI-ISI ASME Cat	Post RI-ISI ASME Item #	Pre- RI-ISI ASME Item #	ASME Class	System	Current NDE	Limited NDE Exam	Code Coverage Achieved	UT Exam Type	Exam Date	Photo/ Sketch No.*	Required Examination Volume	Limitation Description
																with no recordable indications observed.
169450	8-SJ-1245-1	TEE TO VALVE 24RH27	R-A	B-J	R1.20-6	B9.11	1	SJ	PT - UT	UT	36%	45s	4/14/93	5, 6	IWB-2500-8	UT exam was performed of this component using 45-degree shear wave transducer. The ultrasonic examination completed was partially limited to 36% of the achieved code required coverage being limited due to the tee to valve configuration and the shortened radius of the tee between 9" to 18" and 23" TO 4". The exam was limited on the downstream side due to the OD configuration of the valve and the upstream side of the tee. No unacceptable indications were observed. A liquid penetrant examination and system pressure test was also completed with no recordable indications observed.
172500	6-SJ-1241-18	ELBOW TO PIPE	R-A	B-J	R1.20-4	B9.11	1	SJ	PT - UT	UT	90%	45s	4/3/93	7, 7A	IWB-2500-8	UT exam was performed of this component using 45-degree shear wave transducer. The ultrasonic examination completed was partially limited to 90% of the achieved code required coverage being limited due to close proximity of the adjacent weld # 19 located downstream. No unacceptable indications were observed. A liquid penetrant examination and system pressure test was also completed with no recordable indications observed.

* These sketches refer to Attachment 3, Pages 1 through 323

Sum#	Component ID	Description	Post- RI-ISI ASME Cat	Pre RI-ISI ASME Cat	Post RI-ISI ASME Item #	Pre- RI-ISI ASME Item #	ASME Class	System	Current NDE	Limited NDE Exam	Code Coverage Achieved	UT Exam Type	Exam Date	Photo/ Sketch No.*	Required Examination Volume	Limitation Description
076000	31-RC-1220-4	ELBOW TO PIPE	R-A	B-J	R1.20-4	B9.11	1	RC	PT - UT	UT	84%	45s	10/27/94	48, 49, 50	IWB-2500-8	UT exam was performed from the pipe side with no exam able to be conducted from the elbow side due to the elbow being fabricated from ASTM351-65 CF8M cast stainless steel whose acoustic properties is not conducive for ultrasonic examination. The exam completed was limited to 84% code required coverage. No unacceptable indications were noted. The downstream exam was limited between 55" to 62" due to a branch connection that interfered with scanning. A system pressure test was also completed with no unacceptable indications observed.
176350	6-SJ-1211-1R1	REDUCER TO VALVE 21SJ156	R-A	B-J	R1.16-5	B9.11	1	SJ	UT ,PT ,RT ,	UT	31%	45s	5/17/96	94, 95, 96	IWB-2500-8	UT exam was conducted using a 45-degree shear wave transducer. The exam completed was limited to 31% code required coverage. The UT exam conducted was limited due to the reducer to valve OD configuration. No unacceptable indications were noted. A liquid penetrant test and system pressure test was also completed with no unacceptable indications observed. 100% coverage was obtained as a result of the completed construction radiograph.
176400	6-SJ-1211-2R1	VALVE 21SJ156 TO PIPE	R-A	B-J	R1.20-4	B9.11	1	SJ	UT ,PT ,RT ,	UT	29%	45s	5/17/96	97, 98	IWB-2500-8	UT exam was conducted using a 45-degree shear wave transducer. The exam completed was limited to 29% code required coverage. The UT exam conducted was limited due to the reducer to valve OD configuration. No unacceptable indications were noted. A liquid penetrant test and system pressure test was also completed with no unacceptable indications observed. 100% coverage was obtained as a result of the completed construction radiograph.

* These sketches refer to Attachment 3, Pages 1 through 323

Sum#	Component ID	Description	Post- RI-ISI ASME Cat	Pre RI-ISI ASME Cat	Post RI-ISI ASME Item #	Pre- RI-ISI ASME Item #	ASME Class	System	Current NDE	Limited NDE Exam	Code Coverage Achieved	UT Exam Type	Exam Date	Photo/ Sketch No.*	Required Examination Volume	Limitation Description
054400	4-PR-1200-7	PIPE TO TEE	R-A	B-J	R1.20-4	B9.11	1	RC	PT - UT	UT	59%	45s, 45RL	5/3/99	124, 125, 126	IWB-2500-8	UT exam was conducted using 45-degree shear and refracted longitudinal wave transducers. The exam completed was limited to 59% code required coverage due to no UT exam being able to be performed from the downstream side due to the tee to valve configuration. In addition, the exam conducted from the upstream side was limited due to the radius of the tee. Scanned across weld to maximize achieved Code coverage. No unacceptable indications were noted. A liquid penetrant test and system pressure test was also completed with no unacceptable indications observed.
063000	4-PS-1231-20	VALVE 2PS28 TO PIPE	R-A	B-J	R1.20-4	B9.11	1	RC	PT - UT	UT	59%	45s, 45RL	5/17/99	129, 130, 131	IWB-2500-8	UT exam was conducted using 45-degree shear and refracted longitudinal wave transducer. The exam completed was limited to 59% code required coverage due to the UT exam being limited due to the upstream side valve's OD configuration that restricted scanning. UT scans were performed on and across the welds in both directions. No unacceptable indications were noted. A liquid penetrant test and system pressure test was also completed with no unacceptable indications observed.
063100	4-PS-1231-21	PIPE TO VALVE 2PS3	R-A	B-J	R1.20-4	B9.11	1	RC	PT - UT	UT	55%	45s, 45RL	5/17/99	132, 133, 134	IWB-2500-8	UT exam was conducted using 45 degree shear and refracted longitudinal wave transducer. The exam completed was limited to 55% code required coverage due to the UT exam being limited due to the upstream side valve's OD configuration that restricted scanning. UT scans were performed on and across the welds in both directions. No unacceptable indications were noted. A liquid penetrant test and system pressure test was also completed with no unacceptable indications observed.

* These sketches refer to Attachment 3, Pages 1 through 323

Sum#	Component ID	Description	Post- RI-ISI ASME Cat	Pre RI-ISI ASME Cat	Post RI-ISI ASME Item #	Pre- RI-ISI ASME Item #	ASME Class	System	Current NDE	Limited NDE Exam	Code Coverage Achieved	UT Exam Type	Exam Date	Photo/ Sketch No.*	Required Examination Volume	Limitation Description
168200	8-SJ-1252-9	PIPE TO PIPE	R-A	B-J	R1.20-4	B9.11	1	SJ	PT - UT	UT	86%	45s, 45RL	5/8/99	135, 136	IWB-2500-8	UT exam was conducted using 45-degree shear and refracted longitudinal wave transducer. The exam completed was limited to 86% code required coverage due to the UT exam being limited UT exam performed due two permanently welded pipe supports located on the downstream side of the weld that restricted scanning. The two pipe supports exist at 90° and 270° around the pipe for a total of 12". UT scans were performed on and across the welds in both directions. No unacceptable indications were noted. A liquid penetrant test and system pressure test was also completed with no unacceptable indications observed.
170850	6-SJ-1242-2	ELBOW TO VALVE 24SJ43	R-A	B-J	R1.20-4	B9.11	1	SJ	PT - UT	UT	62%	45s, 45RL	5/3/99	137, 138, 139	IWB-2500-8	UT exam was conducted using 45-degree shear and refracted longitudinal wave transducer. The exam completed was limited to 62% code required coverage due to the UT exam being limited due to the valve's OD configuration that restricted scanning. UT scans were performed on and across the welds in both directions. No unacceptable indications were noted. A liquid penetrant test and system pressure test was also completed with no unacceptable indications observed.
173300	6-SJ-1232-12	PIPE TO TEE	R-A	B-J	R1.20-6	B9.11	1	SJ	PT - UT	UT	61%	45s, 45RL	5/3/99	140, 141, 142	IWB-2500-8	UT exam was conducted using 45-degree shear and refracted longitudinal wave transducer. The exam completed was limited to 61% code required coverage due to the UT exam being limited due to the tee's OD configuration that restricted scanning. UT scans were performed on and across the welds in both directions. No unacceptable indications were noted. A liquid penetrant test and system pressure test was also completed with no unacceptable indications observed.

* These sketches refer to Attachment 3, Pages 1 through 323

Sum#	Component ID	Description	Post- RI-ISI ASME Cat	Pre RI-ISI ASME Cat	Post RI-ISI ASME Item #	Pre- RI-ISI ASME Item #	ASME Class	System	Current NDE	Limited NDE Exam	Code Coverage Achieved	UT Exam Type	Exam Date	Photo/ Sketch No.*	Required Examination Volume	Limitation Description
175600	6-SJ-1212-2	VALVE 21SJ43 TO PIPE	R-A	B-J	R1.20-6	B9.11	1	SJ	PT - UT	UT	61%	45s, 45RL	5/3/99	143, 144	IWB-2500-8	UT exam was conducted using 45 degree shear and refracted longitudinal wave transducer. The exam completed was limited to 62% code required coverage due to the UT exam being limited due to the valve's OD configuration that restricted scanning. UT scans were performed on and across the welds in both directions. No unacceptable indications were noted. A liquid penetrant test and system pressure test was also completed with no unacceptable indications observed.
084400	27.5-RC-1230-1	PUMP TO PIPE	R-A	B-J	R1.20-4	B9.11	1	RC	PT - UT	UT	49%	45s, 60s	10/16/00	173, 174	IWB-2500-8	UT exam was conducted using 45 and 60 degree shear wave transducer. The exam completed was limited to 49% code required coverage due to the UT exam being limited due to the OD configuration of the pump nozzle and the presence of a branch connection located downstream between 101" to 3" that restricted scanning. A liquid penetrant test and system pressure test was also completed with no unacceptable indications observed.
174300	6-RH-1231-16	ELBOW TO VALVE 23SJ156	R-A	B-J	R1.16-5	B9.11	1	RHR	PT - UT	UT	50%	45s	10/18/04	175, 176	IWB-2500-8	UT exam was conducted using 45 degree shear wave transducer. The exam completed was limited to 05% code required coverage due to the UT exam being limited due to the valve's OD configuration that restricted scanning. UT scans were performed on and across the welds in both directions. No unacceptable indications were noted. A liquid penetrant test and system pressure test was also completed with no unacceptable indications observed.
075800	31-RC-1220-4LU-1	LONGITUDINAL	B-J	B-J	B9.12	B9.12	1	RC	PT - UT	UT	0%	45s	10/28/94	315	IWB-2500-8	No UT exam was able to be conducted from the elbow side due to the elbow being fabricated from ASTM351-65 CF8M cast stainless steel whose acoustic properties is not conducive for ultrasonic examination. A PT exam of the long seam was performed in lieu of the UT exam because of the elbow's acoustic properties of the casting. No unacceptable indications were noted.

* These sketches refer to Attachment 3, Pages 1 through 323

Sum#	Component ID	Description	Post- RI-ISI ASME Cat	Pre RI-ISI ASME Cat	Post RI-ISI ASME Item #	Pre- RI-ISI ASME Item #	ASME Class	System	Current NDE	Limited NDE Exam	Code Coverage Achieved	UT Exam Type	Exam Date	Photo/ Sketch No.*	Required Examination Volume	Limitation Description
																A system pressure test was also completed with no unacceptable indications observed.
075900	31-RC-1220-4LU-O	LONGITUDINAL	B-J	B-J	B9.12	B9.12	1	RC	PT - UT	PT	0%	45s	10/28/94	315	IWB-2500-8	No UT exam was able to be conducted from the elbow side due to the elbow being fabricated from ASTM351-65 CF8M cast stainless steel whose acoustic properties is not conducive for ultrasonic examination. A PT exam of the long seam was performed in lieu of the UT exam because of the elbow's acoustic properties of the casting. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.
034500	3-CV-1241-13	VALVE 2CV80 TO ELBOW	R-A	B-J	R1.11-2	B9.21	1	CVC	PT - UT	UT	75%	45s, 70s	9/22/98	168, 169	IWB-2500-8	UT exam was conducted using 45 and 70-degree shear wave transducers. The exam completed was limited to 75% code required coverage due the upstream side of the weld due to the valve's OD configuration that interfered with scanning. Component selected as an augmented 88-08 exam. No unacceptable indications were noted. A liquid penetrant and system pressure test was also completed with no unacceptable indications observed.
036000	3-CV-1231-14	PIPE TO VALVE 2CV274	R-A	B-J	R1.11-5	B9.21	1	CVC	PT - UT	UT	75%	45s	10/11/00	172	IWB-2500-8	UT exam was conducted using 45-shear wave transducer. The exam completed was limited to 75% code required coverage due to the UT exam being limited due to the valve's OD configuration that restricted scanning. UT scans were performed on and across the welds in both directions. No unacceptable indications were noted. A liquid penetrant test and system pressure test was also completed with no unacceptable indications observed.

* These sketches refer to Attachment 3, Pages 1 through 323

Sum#	Component ID	Description	Post- RI-ISI ASME Cat	Pre RI-ISI ASME Cat	Post RI-ISI ASME Item #	Pre- RI-ISI ASME Item #	ASME Class	System	Current NDE	Limited NDE Exam	Code Coverage Achieved	UT Exam Type	Exam Date	Photo/ Sketch No.*	Required Examination Volume	Limitation Description
034600	3-CV-1241-14	ELBOW TO BRANCH CONNECTION	R-A	B-J	R1.11-2	B9.21	1	CVC	PT - UT	UT	75%	45s, 70s	10/14/00	170, 171	IWB-2500-11	UT exam was conducted using 45 and 70-degree shear wave transducers. The exam completed was limited to 75% code required coverage due to the OD configuration of the branch connection that interfered with scanning. No unacceptable indications were noted. A liquid penetrant test and system pressure test was also completed with no unacceptable indications observed.
085000	27.5-RC-1230-1BC-5	4 IN. BRANCH CONNECTION	R-A	B-J	R1.20-4	B9.31	1	RC	PT - UT	UT	55%	45s, 32s	11/7/94	51, 52, 53, 54	IWB-2500-8	UT exam was conducted using 45 and 32 degree shear wave transducers. The exam completed was limited to 55% code required coverage due to the exam being limited by a branch connection configuration. The exam was limited 1 1/2" W measurement due to the branch connection's OD configuration that interfered with scanning. No unacceptable indications were noted. A liquid penetrant and system pressure test was also completed with no unacceptable indications observed.
086800	27.5-RC-12R10-1BC-3	10 IN. BRANCH CONNECTION	R-A	B-J	R1.11-2	B9.31	1	RC	PT - UT	UT	56%	45s, 39s	11/7/94	55, 56, 57, 58, 59	IWB-2500-8	UT exam was conducted using 45 and 39 shear wave transducers. The exam completed was limited to 56% code required coverage due to the exam being limited by a branch connection configuration. The exam was limited 1 1/2" W measurement due to the branch connection's OD configuration that interfered with scanning. No unacceptable indications were noted. A liquid penetrant and system pressure test was also completed with no unacceptable indications observed.
086900	27.5-RC-12R10-1BC-4	4 IN. BRANCH CONNECTION	R-A	B-J	R1.20-4	B9.31	1	RC	PT - UT	UT	53%	45s, 32s	11/7/94	60, 61, 62, 63	IWB-2500-8	UT exam was conducted using 45 and 32 shear wave transducers. The exam completed was limited to 53% code required coverage due to the exam being limited by a branch connection configuration. The exam was limited 1 1/2" W measurement due to the branch connection's OD configuration that interfered with scanning. No unacceptable

* These sketches refer to Attachment 3, Pages 1 through 323

Sum#	Component ID	Description	Post- RI-ISI ASME Cat	Pre RI-ISI ASME Cat	Post RI-ISI ASME Item #	Pre- RI-ISI ASME Item #	ASME Class	System	Current NDE	Limited NDE Exam	Code Coverage Achieved	UT Exam Type	Exam Date	Photo/ Sketch No.*	Required Examination Volume	Limitation Description
																indications were noted. A liquid penetrant and system pressure test was also completed with no unacceptable indications observed.
040900	2-CV-1275-43	VALVE 2CV76 TO PIPE	R-A	B-J	R1.11-2	B9-40	1	CVC	PT - UT	UT	50%	45s	10/14/00	314, 314A	IWB-2500-8	UT exam was conducted using 45-degree shear wave transducer. The exam completed was limited to 50% code required coverage due to the exam limited to 3/8" W due to the close proximity of the downstream socket weld # 44 being too close that interfered with scanning. Component selected as an augmented 88-08 exam. No unacceptable indications were noted. A liquid penetrant and system pressure test was also completed with no unacceptable indications observed.
041000	2-CV-1275-44	PIPE TO BRANCH CONNECTION	R-A	B-J	R1.11-2	B9-40	1	CVC	PT - UT	UT	50%	45sw	10/14/00	316	IWB-2500-8	UT exam was conducted using 45-degree shear wave transducer. The exam completed was limited to 50% code required coverage due to the UT exam being limited due to 3/8" W due to adjacent downstream socket weld # 43 being too close and interfering with the scan. Component selected as an augmented 88-01 exam. No unacceptable indications were noted. A liquid penetrant test and system pressure test was also completed with no unacceptable indications observed

* These sketches refer to Attachment 3, Pages 1 through 323

10 CFR 50.55a Request Number: S2-I2-RR-C01
Relief Request in Accordance with 10 CFR 50.55a(g)(5)(iii)
Inservice Inspection Impracticality

NOTE:
Salem Unit 2 – Second Ten-Year Interval Inservice Inspection (ISI) inservice inspection examinations was conducted between May 10, 1992 (start) and November 23, 2003 (end). This interval excludes 26 months and 21 days (6/8/95 – 8/29/97) for an extended shutdown and less 7 months and 16 days to coincide with end of refueling outage per IWA-2430 (d).

ASME Code Components Affected

Code Class	2
Reference:	IWC-2500
Examination Categories:	C-A, C-B, C-F-1, C-F-2, and C-C
Item Numbers:	See Table 1
Description:	Volumetric and surface examination coverage
Component Number:	See Table 1

Applicable Code Edition and Addenda

The code of record for Salem Unit 2 ISI Program is Section XI of the ASME Code, 1986 Edition

Code Requirement:

Salem Unit 2 second Ten-Year Interval Inservice Inspection (ISI) inservice inspection examinations were performed in accordance with the requirements of ASME Boiler and Pressure Vessel Code Section XI, 1986 Edition Article IWC-2500 to the extent practical. Table IWC-2500-1 defines examination requirements for Class 2 components. The table contains information associated with the identification of components to be examined by nondestructive examination; this includes the applied nondestructive examination (NDE) method, acceptance standard, and extent of exam coverage and exam frequency.

In addition, 10CFR50.55a was revised effective November 22, 1999 (64FR51400) to require expedited implementation of Appendix VIII, "Performance Demonstration for Ultrasonic Examination Systems," of the ASME Code, Section XI, 1995 Edition with the 1996 Addenda. These requirements affected both Class 1 and 2 bolting, piping system welds, and reactor pressure vessel nondestructive examinations.

ASME, Section XI, 1986 Edition requires volumetric and/or surface and visual examinations be performed upon components and welds identified within Table IWC-2500-1 Exam Categories C-A, C-B, C-F-1 and C-F-2, and C-C.

A. Exam Category C-A Pressure Retaining Welds in Pressure Vessels

Section XI Exam Categories C-A requires volumetric weld examinations to be performed upon various pressure vessel shell circumferential, head and tube-sheet welds (Item Numbers C1.10, C1.11 and C1.12, respectively); closure head circumferential and meridional welds (Item Numbers B1.21 and B1.22, respectively) and the associated reactor pressure vessel flange welds (Items B1.30 and B1.40). The examinations may be limited to one vessel among the group of vessels performing a similar function.

B. Exam Category C-B Pressure Retaining Nozzle Welds in Vessels

Section XI Exam Categories C-B requires volumetric weld examinations to be performed upon pressure retaining nozzle to shell welds and nozzle inner radius sections contained within pressure vessels. The examinations may be limited to one vessel among the group of vessels performing a similar function.

C. Exam Category C-C Welded Integral Attachments

Section XI Exam Category C-C, Integral Attachments for Class 2 Vessels, Piping, and Pumps and Valves, requires surface examinations be conducted upon welded integral attachments attached to reactor coolant pump casings.

PSEG Nuclear (PSEG) conducted welded integral attachment weld exams in accordance with the requirements imposed by ASME Section XI Code Case N-509, Alternative Rules for the Selection and Examination of Class 1,2 and 3 Integrally Welded Attachments.

D. Exam Category C-F-1 and C-F-2 Pressure Retaining Piping Welds

PSEG conducted Class 2 piping exams in accordance with the requirements imposed by ASME Section XI Code Case N-408 Alternative Rules for Examination of Class 2 Piping Exam Categories C-F-1 and C-F-2. This code case required surface and volumetric weld examinations be performed upon welds greater than 4 inches in diameter and 0.375 inch thickness (Item C5.10) and greater than or equal to 2 inches in diameter but less than or equal to 4 inches (Item C5.20). In addition, it required surface exams of socket welds (Item C5.30). Pipe branch connections of branch piping greater than or equal to 2 inches in diameter received surface examination (Item C5.40).

Piping long seams were conducted in accordance with the requirements of Code Case N-524, Alternative Examination Requirements for Longitudinal Welds in Class 1 and 2 Piping.

Table 1 contains detailed information related to the explanation of those components demonstrating inadequate code exam coverage extent due to inaccessibility, physical limitation or obstruction.

Basis for Relief:

Pursuant to 10CFR50.55a(g)(5)(iii), relief is requested from ASME XI examination requirements for the performance of the following bolting, piping and vessel welds due to exam limitations. The table herein identifies those inservice inspection nondestructive examinations contained within the Salem Unit 2 ISI Program Long Term Plan for the Second Ten-Year Interval whose NDE exams were found to be inaccessible, physically limited or partially obstructed and therefore not capable of fully meeting code coverage requirements for examination extent. Attachment 3 provides additional descriptive details (sketches, illustrations, and/or drawings) for these components.

Subject components contained herein have received inservice inspection NDE examinations to the "extent practical" within the limitations of design, geometry and materials of construction of the components as allowed by Code. These components have also undergone necessary volumetric examination by radiography and/or surface examinations during fabrication, in accordance with approved construction/fabrication code requirements providing adequate assurance for the structural integrity of the components prior to plant operation. In addition, these components have been subjected to a visual examination for leakage after completion of each refueling outage.

PSEG utilizes approved technical procedures written in accordance to applicable ASME Code section/paragraph criterion for area/volume requirements. Plant procedures require the documentation of the location and cause of the limitation.

A. Exam Category C-A Pressure Retaining Welds in Pressure Vessels

See table 1, attached to identify specific component information and explanation of the limitation(s) encountered.

Full Code required coverage is impractical for the subject welds since the vessel would require design modifications that would impose a significant burden to PSEG. PSEG has examined these welds to the extent practical and determined them to be acceptable with no observed signs of degradation. In addition, other RPV welds have been examined to the extent required by the Code and also found to be acceptable with no observed signs of degradation. In addition, VT-2 visual examinations performed in conjunction with system pressure testing have found these welds to be acceptable with no leakage observed.

B. Exam Category C-B Pressure Retaining Nozzle Welds in Vessels

See table 1, attached to identify specific component information and explanation of the limitation(s) encountered.

Full Code required coverage is impractical for the subject welds since the vessel would require design modifications and would impose a significant burden to PSEG. PSEG has examined these welds to the extent practical and determined them to be acceptable with no observed signs of degradation. In addition, other similar vessel welds have been examined to the extent required by the Code and also found to be acceptable with no observed signs of degradation. In addition, VT-2 visual examinations performed in conjunction with system pressure testing have found these welds to be acceptable with no leakage observed.

C. Exam Category C-F-1 and C-F-2 Pressure Retaining Piping Welds

See table 1, attached to identify specific component information and explanation of the limitation(s) encountered.

Required Code coverage is impractical for the subject welds since the piping system would require design modifications and would impose a significant burden to PSEG. PSEG has examined these welds to the extent practical and determined them to be acceptable with no observed signs of degradation. In addition, other similar piping welds have been examined to the extent required by the Code and also found to be acceptable with no observed signs of degradation. Further, VT-2 visual examinations performed in conjunction with system pressure testing have found these welds to be acceptable with no leakage observed.

Code required volumetric examinations are conducted by ultrasonic examination from both the upstream and downstream directions of piping welds. Ultrasonic examination of certain terminal ends and structural discontinuities are considered to be impractical due to their configuration and material acoustic properties.

The EPRI Performance Demonstration Initiative (PDI) is in agreement with the NRCs September 22, 1999 Final Rule regarding single side access for piping. The Final Rule requires that if access is available, austenitic steel weld shall be scanned in each of the four directions (parallel and perpendicular to the weld) where required. PDI has not been able to qualify a single side examination procedure technique that is capable of demonstrating equivalency for a two-sided examination procedure technique on austenitic piping welds. Current technology is not capable of reliably detecting or sizing flaws on the far side of an austenitic weld for configurations common to nuclear applications. Ultrasonic examination of ferritic steel welds requires scanning in the two axial scan directions. Circumferential scanning is required in the remaining two directions only when axial indications were noted during preservice inspections. Coverage credit may

be taken for single side exams on ferritic piping. However, for austenitic piping, a procedure must be qualified with flaws on the inaccessible side of the weld.

As previously stated, current technology is not capable of reliably detecting or sizing flaws on the far side of austenitic weld for configurations common to US nuclear applications. To demonstrate that the best available technology was applied, PDI provides a best effort qualification instead of a complete single sided qualification. PDI Performance Demonstration Qualification Summary (PDQS) austenitic piping certificates list the limitation that single side examination is performed on a best effort basis. When performing single side access of austenitic stainless steel piping welds the best available techniques are used from the accessible side of the weld, as qualified through the PDI.

When the examination area is limited to one side of an austenitic weld, examination coverage does not comply with 10CFR50.55a(b)(2)(xv)(A) or the ASME Section XI requirements and proficiency demonstrations do not comply with 10CFR50.55a(b)(2)(xvi) and full coverage credit may not be claimed. PSEG considers exams accessed from a single side of an austenitic piping welds to be fully examined to the extent practical.

D. Exam Category C-C Welded Integral Attachments

See table 1, attached to identify specific component information and explanation of the limitation(s) encountered.

Full Code required coverage is impractical for the subject welds since the integral attachment would require design modifications and would impose a significant burden to PSEG. In addition, removal of the component support attached to pump would result in the need to redesign the system's configuration in order to achieve access to the area obstructed. PSEG has examined these welds to the extent practical and determined them to be acceptable with no observed signs of degradation. In addition, other similar vessel welds have been examined to the extent required by the Code and also found to be acceptable with no observed signs of degradation. Also, VT-2 visual examinations performed in conjunction with system pressure testing after each refueling outage found these welds to be acceptable with no leakage observed.

Alternative Examination:

PSEG performed NDE examinations upon the components identified in the exam categories below using the current state of the art techniques as demonstrated through the EPRI PDI Program to the extent practical.

A. Exam Category C-A Pressure Retaining Welds in Pressure Vessels

Where the component would not allow an ultrasonic angle beam examination from both sides of the weld, the following were performed using the best available technology as demonstrated through the EPRI PDI program:

- Similar metal welds, 100% of the required volume was examined to the extent practical using personnel and techniques qualified and demonstrated through the EPRI PDI, as necessary.

- The code required system pressure test examinations were performed per ASME XI requirements.

B. Exam Category C-B Pressure Retaining Nozzle Welds in Vessels

Where the component would not allow an ultrasonic angle beam examination from both sides of the weld, the following were performed using the best available technology as demonstrated through the EPRI PDI program:

- Similar metal welds, 100% of the required volume was examined to the extent practical using personnel and techniques qualified and demonstrated through the EPRI PDI, as necessary.

- The code required system pressure test examinations were performed per ASME XI requirements.

C. Exam Category C-F-1 and C-F-2 Pressure Retaining Piping Welds

Where the component would not allow an ultrasonic angle beam examination for axial scans (upstream and downstream), the following were performed using the best available technology as demonstrated through the EPRI PDI program:

- For similar metal welds, 100% of the required volume were examined in at least one axial direction and two circumferential scans adjacent to the weld and upon the weld were conducted by ultrasonic examination using personnel and techniques qualified and demonstrated through the EPRI PDI program for single sided access relating to the material type to be examined.

- For austenitic to Inconel dissimilar metal welds, 100% of the required volume were examined in at least one axial direction and two circumferential scans adjacent to the weld and upon the weld were conducted by ultrasonic examination using personnel and techniques qualified and demonstrated through the EPRI PDI program for single sided access relating to the material type to be examined.

- The code required surface and system pressure test examinations were performed per ASME XI requirements.

- PSEG has been approved to use Risk Informed Inservice Inspection (RI-ISI) Program in accordance with the NRC approved EPRI approved methodology for both Salem Units Class 1 and 2 systems. During the conduct of RI-ISI program preparation, PSEG considered the non-selection of those components that have been deemed inaccessible, physically limited or partially obstructed portions provided the NRCs approved RI-ISI EPRI methodology allowed.

D. Exam Category C-C Welded Integral Attachments

These examinations were performed in accordance with the requirements of ASME Section XI 1986 Edition to the extent practical. System pressure test examinations were performed per ASME XI requirements.

ASME Code Case N-568, Alternative Examination Requirements for Welded Attachments, was applied. As an alternative to the examination requirements of C-C and D-A (pre-1991 Addenda examination categories D-A, D-B and D-C), Code Case N-568 indicates examination of a welded attachment that is obstructed by a component support or portion of a component support may be limited to the accessible portion of the welded attachment. Disassembly of the component support or portion of the component support is not required.

Applicability

This Relief Request is applicable to the following:

- Salem Unit 2 – Second Ten-Year Inservice Inspection Interval

Precedents

The NRC approved a similar request for the Salem Unit 1 second 10-year interval in Reference 1.

References

1. "Salem Nuclear Generating Station, Unit No. 1 - Relief from ASME Code Requirements Related to the Salem Inservice Inspection Program, Relief Request S1-RR-B01 and S1-RR-C01 (TAC NO. MB3811)," dated January 16, 2003

Table 1
2nd Inservice Inspection Ten Year Interval NDE Exam Limitations

Sum#	Component ID	Description	Post- RI-ISI ASME Cat	Pre RI-ISI ASME Cat	Post RI-ISI ASME Item #	Pre- RI-ISI ASME Item #	ASME Class	System	Current NDE	Limited NDE Exam	Code Coverage Achieved	UT Exam Type	Exam Date	Photo/ Sketch No.*	Required Examination Volume	Limitation Description
700000	8-CS-2227-5	VALVE 21CS2 TO PIPE	R-A	C-F-1	R1.20-4	A-E<3/8	2	CS	PT - UT	UT	31%	45s, 70s	5/8/99	NONE	IWC-2500-7(b)	UT exam was conducted using a 45 and 70 degree shear wave transducer. The exam completed was limited to 31% code required coverage due to the UT exam being limited due to the valve's OD configuration that restricted scanning. UT scans were performed on and across the welds in both directions. No unacceptable indications were noted. A liquid penetrant test and system pressure test was also completed with no unacceptable indications observed.
275365	21-RHRHEX-1	FLANGE TO SHELL	C-A	C-A	C1.10	C1.10	2	RHR	MT - UT	UT	79%	0, 45s	4/12/93	23, 24, 24A, 24B, 24C	IWC-2500-1	UT exam was performed of this component using a 0 and 45-degree shear wave transducer. The ultrasonic examination completed was partially limited to 79% of the achieved code required coverage due to the inlet nozzle OD configuration between 110" to 6" and the configuration outlet nozzle OD configuration between 52" to 64". No unacceptable indications were observed. A magnetic particle (MT) and system pressure test was also completed with no recordable indications observed.

* These sketches refer to Attachment 3, Pages 1 through 323

Sum#	Component ID	Description	Post- RI-ISI ASME Cat	Pre RI-ISI ASME Cat	Post RI-ISI ASME Item #	Pre- RI-ISI ASME Item #	ASME Class	System	Current NDE	Limited NDE Exam	Code Coverage Achieved	UT Exam Type	Exam Date	Photo/ Sketch No.*	Required Examination Volume	Limitation Description
275370	21-RHRHEX-2	SHELL TO FLANGE	C-A	C-A	C1.10	C1.10	2	RHR	MT, UT	UT	20%	0, 45s	4/13/93	24B, 24C, 25, 25A, 26	IWC-2500-1	UT exam was performed of this component using a 0 and 45-degree shear wave transducer. The ultrasonic examination completed was partially limited to 20% of the achieved code required coverage due to the inlet nozzle OD configuration between 111" to 6" and the configuration outlet nozzle OD configuration between 53" to 65". No exam could also be performed between 12 1/2" to 47" and 70" to 105" due to the heat exchanger's support plate. No unacceptable indications were observed. A magnetic particle (MT) and system pressure test was also completed with no recordable indications observed.
275240	2-RCF-2	FLANGE TO SHELL	C-A	C-A	C1.10	C1.10	2	RC	UT	UT	61%	45s, 70s	4/12/99	145A, 150, 151, 152, 153, 154	IWC-2500-1	UT exam was conducted using 45 and 70 degree shear wave transducer. The exam completed was limited to 61% code required coverage due to the UT exam being limited due to a davit welded pad attachment connected to the reactor coolant filter that restricted scanning. UT scans were performed on and across the welds in both directions. The UT exam performed included 42.3" to 1.5 13.4" to 16" and 27.75" to 30.75" . No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.
275210	2-LHEX-1	FLANGE TO SHELL	C-A	C-A	C1.10	C1.10	2	CVC	UT	UT	42%	45s, 60s, 60RL	10/14/00	177, 178, 179, 180, 181	IWC-2500-1	UT exam was conducted using 45 and 60-degree shear wave transducer. The exam completed was limited to 42% code required coverage due to the exam being limited due to proximity of the nozzle and flange welds. No unacceptable indications were noted. A liquid penetrant test and system pressure test was also

* These sketches refer to Attachment 3, Pages 1 through 323

Sum#	Component ID	Description	Post- RI-ISI ASME Cat	Pre RI-ISI ASME Cat	Post RI-ISI ASME Item #	Pre- RI-ISI ASME Item #	ASME Class	System	Current NDE	Limited NDE Exam	Code Coverage Achieved	UT Exam Type	Exam Date	Photo/ Sketch No.*	Required Examination Volume	Limitation Description
																completed with no unacceptable indications observed. UT exam limited due to the configuration of t he flange and nozzle.
275030	2-CVCT-2	SHELL TO LOWER HEAD	C-A	C-A	C1.20	C1.20	2	CVC	UT	UT	71%	45s	4/5/93	16, 17, 18, 18A	IWC-2500-1	UT exam was performed of this component. The ultrasonic examination completed was partially limited to 71% of the achieved code required coverage due to four tank leg support plates welded to the vessel. No examination could be performed from 29 1/2" to 42 1/2", 99" to 112 1/2", 170" to 183" and 245 1/4" to 258 1/4". No unacceptable indications were observed. A system pressure test was also completed with no recordable indications observed.
275230	2-RCF-1	UPPER HEAD TO FLANGE	C-A	C-A	C1.20	C1.20	2	RC	UT	UT	68%	45s, 70s	4/14/99	145, 145A, 146, 147, 148, 149	IWC-2500-1	UT exam was conducted using 45 and 70 shear wave transducer. The exam completed was limited to 68% code required coverage due to the UT exam being limited due to the OD configuration of the reactor coolant filter flange and weld that restricted scanning. UT scans were performed on and across the welds in both directions. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

* These sketches refer to Attachment 3, Pages 1 through 323

Sum#	Component ID	Description	Post- RI-ISI ASME Cat	Pre RI-ISI ASME Cat	Post RI-ISI ASME Item #	Pre- RI-ISI ASME Item #	ASME Class	System	Current NDE	Limited NDE Exam	Code Coverage Achieved	UT Exam Type	Exam Date	Photo/ Sketch No.*	Required Examination Volume	Limitation Description
275250	2-RCF-3	SHELL TO LOWER HEAD	C-A	C-A	C1.20	C1.20	2	RC	UT	UT	53%	45s	4/12/99	145A, 155, 156, 157, 158, 159	IWC-2500-1	UT exam was conducted using 45 and 70 shear wave transducer. The exam completed was limited to 53% code required coverage due to the UT exam being limited due to our tank leg support plates welded to the reactor coolant filter shell that restricted scanning. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.
715180	2-BIT-A	LOWER HEAD	C-A	C-A	C1.20	C1.20	2	SJ	UT	UT	85%	45s, 60s	4/19/02	294, 295, 296, 297	IWC-2500-1	UT exam was conducted using 45 and 60 degree shear transducers. The exam completed was limited to 85% code required coverage due to the UT exam being limited due to the tank support legs attached to the vessel shell. restricted scanning. UT scans were performed on and across the welds in both directions. No unacceptable indications were noted. A liquid penetrant test and system pressure test was also completed with no unacceptable indications observed.
272900	21-STG-SDUH	SHELL D TO UPPER HEAD	C-A	C-A	C1.20	C1.20	2	RC	UT	UT	87%	45s, 60s	4/19/02	206A, 206B, 206C, 287, 288, 289, 290, 291, 292	IWC-2500-1	UT exam was conducted using 45 and 60-degree shear wave transducers. The exam completed was limited to 87% code required coverage due to the insulation support plates and welded pads attached to the head that interfered with scanning from 534" to 20", 165" to 205" and 350" to 390". No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

* These sketches refer to Attachment 3, Pages 1 through 323

Sum#	Component ID	Description	Post- RI-ISI ASME Cat	Pre RI-ISI ASME Cat	Post RI-ISI ASME Item #	Pre- RI-ISI ASME Item #	ASME Class	System	Current NDE	Limited NDE Exam	Code Coverage Achieved	UT Exam Type	Exam Date	Photo/ Sketch No.*	Required Examination Volume	Limitation Description
275310	2-RHE-2	SHELL TO TUBE SHEET	C-A	C-A	C1.30	C1.30	2	RHR	UT	UT	44%	45s	10/10/00	182, 183, 184, 185	IWC-2500-1	UT exam was conducted using 45 degree shear wave transducer. The exam completed was limited to 44% code required coverage due to presence of permanently installed component support connected to the regenerative heat exchanger that interferes with scanning. UT scans were performed on and across the welds in both directions. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.
275320	2-RHE-3	SHELL TO TUBE SHEET	C-A	C-A	C1.30	C1.30	2	RHR	UT	UT	33%	45s	10/19/00	186, 187, 188, 189	IWC-2500-1	On 10/19/00 a UT exam was conducted using 45-shear wave transducer. The exam completed was limited to 33% code required coverage due to presence of permanently installed component support plate connected to the regenerative heat exchanger that interferes with scanning. UT scans were performed on and across the welds in both directions. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.
715140	2-BIT-1	NOZZLE TO LOWER HEAD	C-B	C-B	C2.21	C2.21	2	SJ	UT - MT	UT	31%	0,45s, 60s	5/15/99	162, 163, 164, 165, 166, 167	IWC-2500-4(a)	UT exam was conducted using 0, 45, 60 degree shear and longitudinal wave transducers. The exam completed was limited to 31% code required coverage due to the OD configuration of the nozzle that interfered with scanning. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

* These sketches refer to Attachment 3, Pages 1 through 323

Sum#	Component ID	Description	Post- RI-ISI ASME Cat	Pre RI-ISI ASME Cat	Post RI-ISI ASME Item #	Pre- RI-ISI ASME Item #	ASME Class	System	Current NDE	Limited NDE Exam	Code Coverage Achieved	UT Exam Type	Exam Date	Photo/ Sketch No.*	Required Examination Volume	Limitation Description
275400	21-RHRHEX-OUT	NOZZLE-TO-SHELL WELD	C-B	C-B	C2.21	C2.21	2	RHR	PT - UT	UT	10%	45s, 60s, 60RL	10/16/00	190, 191, 192, 193, 194, 195	IWC-2500-4(b)	UT exam was conducted using 60 degree refracted longitudinal wave. and 45, 60 shear wave transducers. The exam completed was limited to 10% code required coverage due to presence of permanently installed component support plate connected to the regenerative heat exchanger that interferes with scanning. UT scans were performed on and across the welds in both directions. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed. UT exam limited due to the nozzle configuration and flange and support welds that interfere with scanning.
275410	21-RHRHEX-IN	NOZZLE-TO-SHELL WELD	C-B	C-B	C2.21	C2.21	2	RHR	PT - UT	UT	25%	45s, 60s	10/25/03	305, 306, 307, 308, 309, 310, 310A, 310B, 310C, 310D, 310E	IWC-2500-4(b)	UT exam was conducted using 45 and 60-degree shear wave transducer. The exam completed was limited to 25% code required coverage due to the exam being limited due to proximity of adjacent support plates and flange welds. No unacceptable indications were noted. A liquid penetrant test and system pressure test was also completed with no unacceptable indications observed.
275040	2-CVCT-2VS- (1-8) IA	VESSEL SUPPORT INTEGRAL ATTACHMENT	C-C	C-C	C3.10	C3.10	2	CVC	PT	PT	89%	N/A	4/5/93	18, 18A, 19	IWC-2500-5	PT exam was performed of this component. The liquid penetrant examination completed was partially limited to 89% of the achieved code required coverage being limited due to a permanently installed I beam support structure. The PT exam was unable to be performed for a 6" length due to support leg interferences. No unacceptable indications were observed. A system pressure test was also completed with no recordable indications observed.

* These sketches refer to Attachment 3, Pages 1 through 323

Sum#	Component ID	Description	Post- RI-ISI ASME Cat	Pre RI-ISI ASME Cat	Post RI-ISI ASME Item #	Pre- RI-ISI ASME Item #	ASME Class	System	Current NDE	Limited NDE Exam	Code Coverage Achieved	UT Exam Type	Exam Date	Photo/ Sketch No.*	Required Examination Volume	Limitation Description
275050	2-CVCT-2VS-3&4	VESSEL SUPPORT	C-C	C-C	C3.10	C3.10	2	CVC	PT	PT	89%	N/A	4/5/93	18, 18A, 20	IWC-2500-5	PT exam was performed of this component. The liquid penetrant examination completed was partially limited to 89% of the achieved code required coverage being limited due to a permanently installed I beam support structure. The PT exam was unable to be performed for a 6" length due to support leg interferences. No unacceptable indications were observed. A system pressure test was also completed with no recordable indications observed.
275060	2-CVCT-2VS-5&6	VESSEL SUPPORT	C-C	C-C	C3.10	C3.10	2	CVC	PT	PT	89%	N/A	4/5/93	18, 18A, 21	IWC-2500-5	PT exam was performed of this component. The liquid penetrant examination completed was partially limited to 89% of the achieved code required coverage being limited due to a permanently installed I beam support structure. The PT exam was unable to be performed for a 6" length due to support leg interferences. No unacceptable indications were observed. A system pressure test was also completed with no recordable indications observed.
275070	2-CVCT-2VS-7&8	VESSEL SUPPORT	C-C	C-C	C3.10	C3.10	2	CVC	PT	PT	89%	N/A	4/5/93	18, 18A, 22	IWC-2500-5	PT exam was performed of this component. The liquid penetrant examination completed was partially limited to 89% of the achieved code required coverage being limited due to a permanently installed I beam support structure. The PT exam was unable to be performed for a 6" length due to support leg interferences. No unacceptable indications were observed. A system pressure test was also completed with no recordable indications observed.

* These sketches refer to Attachment 3, Pages 1 through 323

Sum#	Component ID	Description	Post- RI-ISI ASME Cat	Pre RI-ISI ASME Cat	Post RI-ISI ASME Item #	Pre- RI-ISI ASME Item #	ASME Class	System	Current NDE	Limited NDE Exam	Code Coverage Achieved	UT Exam Type	Exam Date	Photo/ Sketch No.*	Required Examination Volume	Limitation Description
275358	2-RHE-1VS-1&2	VESSEL SUPPORT	C-C	C-C	C3.10	C3.10	2	RHR	PT	PT	50%	N/A	10/22/03	307, 308	IWC-2500-5(a)	PT exam was conducted of this component. The PT exam was limited to 50% because of weld #1 being partially inaccessible. A system pressure test was also completed with no unacceptable indications observed.
331095	14-BF-2211-Trunnions 11PL-11 and 11PI-12	TRUNNIONS	C-C	C-C	C3.20	C3.20	2	BF	MT	MT	80%	N/A	4/12/93	28, 29	IWC-2500-5(a)	MT exam was conducted. The exam completed was limited to 80% code required coverage being obtained due to 1 1/2" of the total 7 1/2" long weld not being able to be examined due to an adjacent pipe support interference (11PS). No unacceptable indications were observed. A system pressure test was also completed with no recordable indications observed.
330540	14-BF-2231-17PS	PIPE SUPPORT S-22	C-C	C-C	C3.20	C3.20	2	BF	MT	MT	50%	N/A	10/31/94	64, 65	IWC-2500-5(a)	MT exam was conducted of this component. The MT exam was limited to 50% because of pipe restraint in the area that prevented sufficient access to examine the weld in two directions. The MT exam of the lugs was unable to be examined from two directions due to a permanently installed restriction. A system pressure test was also completed with no unacceptable indications observed. MT exam limited due to close proximity of pipe restraint.
330560	14-BF-2231-18PS	PIPE SUPPORT	C-C	C-C	C3.20	C3.20	2	BF	MT	MT	50%	N/A	10/31/94	66, 66A	IWC-2500-5(a)	MT exam was conducted of this component. The MT exam was limited to 50% because of a permanently installed pipe collar in the area that prevented sufficient access to examine the weld in two directions. The MT exam of the lugs was unable to be examined from two directions due to a permanently installed restriction. A system pressure test was also completed with no unacceptable indications observed.

* These sketches refer to Attachment 3, Pages 1 through 323

Sum#	Component ID	Description	Post- RI-ISI ASME Cat	Pre RI-ISI ASME Cat	Post RI-ISI ASME Item #	Pre- RI-ISI ASME Item #	ASME Class	System	Current NDE	Limited NDE Exam	Code Coverage Achieved	UT Exam Type	Exam Date	Photo/ Sketch No.*	Required Examination Volume	Limitation Description
381070	34-MS-2241-242PL	PIPE LUG 242	C-C	C-C	C3.20	C3.20	2	MS	MT	MT	71%	N/A	11/11/94	70	IWC-2500-5(a)	MT exam was conducted of this component. The MT exam was limited to 71% because of a permanently installed beam that obstructed access to lug number 2. No exam could be performed from 11 1/2" to 18 1/8" due to the beam's proximity. The total weld length is 23". A complete MT exam was performed on lug number 1. A system pressure test was also completed with no unacceptable indications observed.
573383	12-RH-2252-38PS-1&2	PIPE SUPPORT	C-C	C-C	C3.20	C3.20	2	RHR	PT	PT	71%	N/A	11/15/94	80	IWC-2500-5(a)	PT exam was conducted of this component. The PT exam was limited to 71% because of a permanently installed component support that obstructed the exam. No exam could be performed from 20" to 28" due to the presence of the component support proximity. A system pressure test was also completed with no unacceptable indications observed.
573387	12-RH-2252-38PS-3	PIPE SUPPORT	C-C	C-C	C3.20	C3.20	2	RHR	PT	PT	71%	N/A	11/15/94	81	IWC-2500-5(a)	PT exam was conducted of this component. The PT exam was limited to 71% because of a permanently installed component support that obstructed the exam. No exam could be performed from 7 1/2" to 14" and 30" to 36 1/2" due to the presence of the adjacent piping interfering with the exam. A system pressure test was also completed with no unacceptable indications observed.

* These sketches refer to Attachment 3, Pages 1 through 323

Sum#	Component ID	Description	Post- RI-ISI ASME Cat	Pre RI-ISI ASME Cat	Post RI-ISI ASME Item #	Pre- RI-ISI ASME Item #	ASME Class	System	Current NDE	Limited NDE Exam	Code Coverage Achieved	UT Exam Type	Exam Date	Photo/ Sketch No.*	Required Examination Volume	Limitation Description
381120	32-MS-2231-1PS-2	WELDED INTEGRAL PIPE SUPPORT ATTACHMENT	C-C	C-C	C3.20	C3.20	2	MS	MT	MT	50%	N/A	1/17/96	102	IWC-2500-5(a)	MT exam was conducted of this component. The MT exam was limited to 50% because of the configuration of the lug that precluded examination of the lug in two directions. The MT exam was unable to be examined from two directions due to its configuration. There is no IWF support associated with this weld attachment. A system pressure test was also completed with no unacceptable indications observed. Component selected for MEB 3-1 Augmented Exam requirements.
381220	32-MS-2221-1PS-2	WELDED INTEGRAL PIPE SUPPORT ATTACHMENT	C-C	C-C	C3.20	C3.20	2	MS	MT	MT	50%	N/A	1/19/96	110	IWC-2500-5(a)	MT exam was conducted of this component. The MT exam was limited to 50% because of the configuration of the lug that precluded examination of the lug in two directions. The MT exam was unable to be examined from two directions due to its configuration. There is no IWF support associated with this weld attachment. A system pressure test was also completed with no unacceptable indications observed.
381320	32-MS-2211-1PS-2	WELDED INTEGRAL PIPE SUPPORT ATTACHMENT	C-C	C-C	C3.20	C3.20	2	MS	MT	MT	50%	N/A	1/19/96	114	IWC-2500-5(a)	MT exam was conducted of this component. The MT exam was limited to 50% because of the configuration of the lug that precluded examination of the lug in two directions. The MT exam was unable to be examined from two directions due to its configuration. There is no IWF support associated with this weld attachment. A system pressure test was also completed with no unacceptable indications observed.

* These sketches refer to Attachment 3, Pages 1 through 323

Sum#	Component ID	Description	Post- RI-ISI ASME Cat	Pre RI-ISI ASME Cat	Post RI-ISI ASME Item #	Pre- RI-ISI ASME Item #	ASME Class	System	Current NDE	Limited NDE Exam	Code Coverage Achieved	UT Exam Type	Exam Date	Photo/ Sketch No.*	Required Examination Volume	Limitation Description
381350	32-MS-2211-2PL-1 THRU 3	PIPE LUG	C-C	C-C	C3.20	C3.20	2	MS	MT	MT	84%	N/A	1/16/96	115, 116, 117	IWC-2500-5(a)	MT exam was conducted of this component. The MT exam was limited to 84% because of the configuration of the lug that precluded examination of the lug in two directions. The MT exam was unable to be examined from two directions due to its configuration. There is no IWF support associated with this weld attachment. A system pressure test was also completed with no unacceptable indications observed.
573055	12-RH-2252-5PL-1 THRU 6	PIPE LUG	C-C	C-C	C3.20	C3.20	2	RHR	PT	PT	33%	N/A	5/7/99	318	IWC-2500-5(a)	PT exam was conducted of this component. The PT exam was limited to 33% because the lugs 2, 3, 4, 5 due to inaccessibility. The inaccessible pipe lugs are located within a permanent piping penetration sleeve. A system pressure test was also completed with no unacceptable indications observed.
330645	14-BF-2221-3PL-1 THRU 8	2-FWG-22-17	C-C	C-C	C3.20	C3.20	2	BF	MT	MT	79%	N/A	4/6/02	293	IWC-2500-5(a)	MT exam was conducted of this component. The MT exam was limited to 79% because of other components in the area of the welded attachments that prevented sufficient access to examine the weld in two directions. The MT exam of the lugs was unable to be examined from two directions due to permanently installed restrictions being present. A system pressure test was also completed with no unacceptable indications observed

* These sketches refer to Attachment 3, Pages 1 through 323

Sum#	Component ID	Description	Post- RI-ISI ASME Cat	Pre RI-ISI ASME Cat	Post RI-ISI ASME Item #	Pre- RI-ISI ASME Item #	ASME Class	System	Current NDE	Limited NDE Exam	Code Coverage Achieved	UT Exam Type	Exam Date	Photo/ Sketch No.*	Required Examination Volume	Limitation Description
500010	12-PR-2201-1	CAP TO PIPE	R-A	C-F-1	R1.20-7	C5.11	2	RC	PT - UT	UT	78%	45s	4/7/93	31, 31A, 32	IWC-2500-7(a)	UT exam was conducted using a 45-degree shear wave transducer. The exam completed was limited to 78% code required coverage. No UT exam from the downstream side or upstream side between 10 3/4" to 14 1/4" and 26 3/4" to 31 3/4" due to installed pipe support. The edge of the pipe support clamp is 3/4" from the weld toe. Scanned across weld from the upstream side and from the downstream side on weld crown only. No unacceptable indications were noted. A liquid penetrant test and system pressure test was also completed with no unacceptable indications observed.
501800	14-RH-2212-1	VALVE 2RH2 TO PIPE	R-A	C-F-1	R1.20-6	C5.11	2	RHR	PT - UT	UT	87%	45s	11/9/94	72, 73, 74	IWC-2500-7(b)	UT exam was conducted using 45 degree shear wave transducer. The exam completed was limited to 87% code required coverage due to the UT exam being limited due to the upstream side valve's OD configuration that restricted scanning. UT scans were performed on and across the welds in both directions. No unacceptable indications were noted. A liquid penetrant test and system pressure test was also completed with no unacceptable indications observed.
570010	14-RH-2224-1	VALVE 22SJ44 TO ELBOW	R-A	C-F-1	R1.20-6	C5.11	2	RHR	PT - UT	UT	75%	45s	11/14/94	75, 76, 77	IWC-2500-7(b)	UT exam was conducted using 45 degree shear wave transducer. The exam completed was limited to 75% code required coverage due to the UT exam being limited due to the upstream side valve's OD configuration that restricted scanning. UT scans were performed on and across the welds in both directions. No unacceptable indications were noted. A liquid penetrant test and system pressure test was

* These sketches refer to Attachment 3, Pages 1 through 323

Sum#	Component ID	Description	Post- RI-ISI ASME Cat	Pre RI-ISI ASME Cat	Post RI-ISI ASME Item #	Pre- RI-ISI ASME Item #	ASME Class	System	Current NDE	Limited NDE Exam	Code Coverage Achieved	UT Exam Type	Exam Date	Photo/ Sketch No.*	Required Examination Volume	Limitation Description
																also completed with no unacceptable indications observed.
573380	12-RH-2252-38	PIPE TO PIPE	R-A	C-F-1	R1.20-4	C5.11	2	RHR	PT - UT	UT	67%	45s	11/15/94	78, 79	IWC-2500-7(b)	UT exam was conducted using 45-degree shear wave transducer. The exam completed was limited to 67% code required coverage due to the UT exam being limited UT exam due to welded plug and close proximity of adjacent piping that impedes access to scan the examination area to achieve full coverage. No UT exam could be performed from 7 1/2" to 14" and 30" to 36 1/2" due to the proximity of adjacent piping. In addition, the downstream side scan was limited 1 3/8" W from 38 11/16" to 40 1/8" due to a welded plug. No unacceptable indications were noted. A liquid penetrant test and system pressure test was also completed with no unacceptable indications observed.
503340	8-RH-2216-4R1	FLANGE TO VALVE 21RH10	R-A	C-F-1	R1.20-4	C5.11	2	RHR	PT - UT	UT	22%	45s	5/15/96	122, 123	IWC-2500-7(b)	UT exam was conducted using a 45-degree shear wave transducer. The exam completed was limited to 22% code required coverage. No UT exam was able to performed from either side of weld due to flange and valve OD configurations. No unacceptable indications were noted. A magnetic particle test and system pressure test was also completed with no unacceptable indications observed.

* These sketches refer to Attachment 3, Pages 1 through 323

Sum#	Component ID	Description	Post- RI-ISI ASME Cat	Pre RI-ISI ASME Cat	Post RI-ISI ASME Item #	Pre- RI-ISI ASME Item #	ASME Class	System	Current NDE	Limited NDE Exam	Code Coverage Achieved	UT Exam Type	Exam Date	Photo/ Sketch No.*	Required Examination Volume	Limitation Description
502580	8-RH-2273-18	VALVE 21RH12 TO TEE	R-A	C-F-1	R1.20-4	C5.11	2	RHR	PT - UT	UT	51%	45s, 70s	10/5/00	199, 200, 201	IWC-2500-7(b)	UT exam was conducted using 45 and 70 degree shear wave transducer. The exam completed was limited to 51% code required coverage due to the UT exam being limited due to the tee and valve's OD configurations that restricted scanning. UT scans were performed on and across the welds in both directions. No unacceptable indications were noted. A liquid penetrant test and system pressure test was also completed with no unacceptable indications observed.
707130	4-CV-2257-1	FLANGE TO PIPE	R-A	C-F-1	R1.20-6	C5.21	2	CVC	PT - UT	UT	86%	45s	10/21/94	82, 83, 84	IWC-2500-7(b)	UT exam was conducted using 45-degree shear wave transducer. The exam completed was limited to 86% code required coverage due to the UT exam being limited to the pipe side only due to the OD configuration of the flange located on the upstream side. Scanning was conducted on the weld in all directions to increase code coverage. No unacceptable indications were noted. A liquid penetrant test and system pressure test was also completed with no unacceptable indications observed.
707730	3-CV-2257-7	VALVE 2CV82 TO PIPE	R-A	C-F-1	R1.20-6	C5.21	2	CVC	PT, UT	UT	80%	45s	10/21/94	321, 322, 323	IWC-2500-7(b)	UT exam was conducted using 45-degree shear wave transducer. The exam completed was limited to 80% code required coverage due to the UT exam being limited due to the upstream side valve's OD configuration that restricted scanning. UT scans were performed on and across the welds in both directions. No unacceptable indications were noted. A liquid penetrant test and system pressure test was also completed with no unacceptable indications

* These sketches refer to Attachment 3, Pages 1 through 323

Sum#	Component ID	Description	Post- RI-ISI ASME Cat	Pre RI-ISI ASME Cat	Post RI-ISI ASME Item #	Pre- RI-ISI ASME Item #	ASME Class	System	Current NDE	Limited NDE Exam	Code Coverage Achieved	UT Exam Type	Exam Date	Photo/ Sketch No.*	Required Examination Volume	Limitation Description
																observed.
710140	3-CV-2255-9	VALVE 2CV70 TO PIPE	R-A	C-F-1	R1.20-6	C5.21	2	CVC	PT, UT	UT	31%	45s, 60s, 70s	5/23/99	160, 161	IWC-2500-7(b)	UT exam was conducted using 45, 60 and 70-degree shear wave transducer. The exam completed was limited to 31% code required coverage due to the UT exam being limited due to the OD configuration of the nozzle that restricted scanning. UT scans were performed on and across the welds in both directions. No unacceptable indications were noted. A liquid penetrant test and system pressure test was also completed with no unacceptable indications observed.
707320	4-CV-2257-16	VALVE 2CV53 TO ELBOW	R-A	C-F-1	R1.20-6	C5.21	2	CVC	PT, UT	UT	38%	45S, 70RL	10/20/00	205, 208	IWC-2500-7(b)	UT exam was conducted using 45-degree shear and 70 degree refracted longitudinal wave transducer. The exam completed was limited to 38% code required coverage due to the UT exam being limited due to the valve's OD configuration that restricted scanning. UT scans were performed on and across the welds in both directions. No unacceptable indications were noted. A liquid penetrant test and system pressure test was also completed with no unacceptable indications observed.
707620	3-CV-2259-14R1	VALVE 2CV55 TO PIPE	R-A	C-F-1	R1.20-6	C5.21	2	CVC	PT, UT	UT	39%	45S, 70S	10/5/00	202, 203, 204, 206 207	IWC-2500-7(b)	UT exam was conducted using 45 and 70-degree shear transducers. The exam completed was limited to 39% code required coverage due to the UT exam being limited due to the valve's OD configuration that restricted scanning. UT scans were performed on and across the welds in both directions. No unacceptable indications were noted. A liquid penetrant test and system pressure test was also completed with no unacceptable indications observed.

* These sketches refer to Attachment 3, Pages 1 through 323

Sum#	Component ID	Description	Post- RI-ISI ASME Cat	Pre RI-ISI ASME Cat	Post RI-ISI ASME Item #	Pre- RI-ISI ASME Item #	ASME Class	System	Current NDE	Limited NDE Exam	Code Coverage Achieved	UT Exam Type	Exam Date	Photo/ Sketch No.*	Required Examination Volume	Limitation Description
709960	3-CV-2256-6	PIPE TO VALVE 2CV73	R-A	C-F-1	R1.20-6	C5.21	2	CVC	PT, UT	UT	50%	45S, 70s	10/18/00	209, 210	IWC-2500-7(b)	UT exam was conducted using 45 and 70-degree shear transducers. The exam completed was limited to 50% code required coverage due to the UT exam being limited due to the valve's OD configuration that restricted scanning. UT scans were performed on and across the welds in both directions. No unacceptable indications were noted. A liquid penetrant test and system pressure test was also completed with no unacceptable indications observed.
710190	3-CV-2255-12	PIPE TO VALVE 2CV72	R-A	C-F-1	R1.20-6	C5.21	2	CVC	PT, UT	UT	50%	45S, 70s	10/18/00	213, 214	IWC-2500-7(b)	UT exam was conducted using 45 and 70-degree shear transducers. The exam completed was limited to 50% code required coverage due to the UT exam being limited due to the valve's OD configuration that restricted scanning. UT scans were performed on and across the welds in both directions. No unacceptable indications were noted. A liquid penetrant test and system pressure test was also completed with no unacceptable indications observed.
330930	14-BF-2211-2	PIPE TO ELBOW	R-A	C-F-2	R1.20-6	C5.51	2	BF	PT, UT	UT	84%	45s	4/2/93	27, 27A	IWC-2500-7	UT exam was performed of this component using a 45-degree shear wave transducer. The ultrasonic examination completed was partially limited to 84% of the achieved code required coverage due to a permanently installed column support lug located immediately adjacent to the weld that interferes with scanning. No unacceptable indications were observed. A magnetic particle (MT) and system pressure test was also completed with no recordable indications observed.

* These sketches refer to Attachment 3, Pages 1 through 323

Sum#	Component ID	Description	Post- RI-ISI ASME Cat	Pre RI-ISI ASME Cat	Post RI-ISI ASME Item #	Pre- RI-ISI ASME Item #	ASME Class	System	Current NDE	Limited NDE Exam	Code Coverage Achieved	UT Exam Type	Exam Date	Photo/ Sketch No.*	Required Examination Volume	Limitation Description
382140	30-MS-2211-9	PIPE TO ELBOW	R-A	C-F-2	R1.20-6	C5.51	2	MS	UT - MT	UT	90%	45s	4/13/93	27A, 30, 30A	IWC-2500-7(a)	UT exam was conducted using a 45-degree shear wave transducer. The exam completed was limited to 90% code required coverage from the upstream side due to a branch connection being located between 9/16" to 3 7/8" that limited scanning to 3 1/4". No unacceptable indications were noted. A magnetic particle test and system pressure test was also completed with no unacceptable indications observed.
380140	34-MS-2241-3	PIPE TO VALVE 24MS167	R-A	C-F-2	R1.20-6	C5.51	2	MS	UT - MT	UT	85%	45s	11/11/94	67, 67A, 69	IWC-2500-7(b)	UT exam was conducted using 45 and 32 shear wave transducers. The exam completed was limited to 85% code required coverage due to the UT exam being limited to between 7 1/2" W from 5" to 16", 87 1/2" to 103" due to multiple branch connections located on the main steam header. No unacceptable indications were noted. A magnetic particle and system pressure test was also completed with no unacceptable indications observed.
385510	6-MS-2211-13	TEE TO PIPE	R-A	C-F-2	R1.20-6	C5.51	2	MS	UT - MT	UT	73%	45s	11/17/94	71	IWC-2500-7(b)	UT exam was conducted using 45 degree shear wave transducer. The exam completed was limited to 73% code required coverage due to the UT exam being limited between 8 1/2" to 14 1/2" and 20" to 3 1/2" due to the OD configuration of the tee fitting's blend radius areas located on the upstream side. UT scans were performed on and across the welds in both directions. No unacceptable indications were noted. A magnetic particle and system pressure test was also completed with no unacceptable indications observed.

* These sketches refer to Attachment 3, Pages 1 through 323

Sum#	Component ID	Description	Post- RI-ISI ASME Cat	Pre RI-ISI ASME Cat	Post RI-ISI ASME Item #	Pre- RI-ISI ASME Item #	ASME Class	System	Current NDE	Limited NDE Exam	Code Coverage Achieved	UT Exam Type	Exam Date	Photo/ Sketch No.*	Required Examination Volume	Limitation Description
381055	32-MS-2241-3	ELBOW TO PIPE	R-A	C-F-2	R1.20-6	C5.51	2	MS	UT - MT	UT	85%	45s	1/13/96	99, 100, 101	IWB-2500-7(b)	UT exam was conducted using a 45-degree shear wave transducer. The exam completed was limited to 85% code required coverage. The UT exam conducted was limited due to a permanently installed welded pipe support from 18" to 26". No unacceptable indications were noted. A liquid penetrant test and system pressure test was also completed with no unacceptable indications observed. Component selected for MEB 3-1 Augmented Exam requirements.
381155	32-MS-2231-3	ELBOW TO PIPE	R-A	C-F-2	R1.20-6	C5.51	2	MS	UT - MT	UT	87%	45s	1/18/96	103, 103A, 105, 106	IWC-2500-7(b)	UT exam was conducted using a 45-degree shear wave transducer. The exam completed was limited to 87% code required coverage. The UT exam conducted was limited due to a welded pipe support from 49.25" to 2.75" partially covering the upstream side of the weld. No unacceptable indications were noted. A magnetic particle test and system pressure test was also completed with no unacceptable indications observed.
381175	34-MS-2231-1	PIPE TO PIPE	R-A	C-F-2	R1.20-6	C5.51	2	MS	UT, MT	UT	40%	45s, 60	1/24/96	107, 108, 109	IWC-2500-7(b)	UT exam was conducted using a 45 and 60-degree shear wave transducers. The exam completed was limited to 40% code required coverage. The UT exam conducted from the downstream side was limited due to a welded pipe support from 3" to 24". No unacceptable indications were noted. A magnetic particle test and system pressure test was also completed with no unacceptable indications observed.

* These sketches refer to Attachment 3, Pages 1 through 323

Sum#	Component ID	Description	Post- RI-ISI ASME Cat	Pre RI-ISI ASME Cat	Post RI-ISI ASME Item #	Pre- RI-ISI ASME Item #	ASME Class	System	Current NDE	Limited NDE Exam	Code Coverage Achieved	UT Exam Type	Exam Date	Photo/ Sketch No.*	Required Examination Volume	Limitation Description
381260	32-MS-2221-3	ELBOW TO PIPE	R-A	C-F-2	R1.20-6	C5.51	2	MS	UT, MT	UT	87%	0, 45s	1/20/96	111, 112, 113	IWC-2500-7(b)	UT exam was conducted using 0 longitudinal wave and 45 degree shear wave transducers. The exam completed was limited to 87% code required coverage. The UT exam conducted from the downstream and upstream sides were limited due to pads and pipe support. No unacceptable indications were noted. A magnetic particle test and system pressure test was also completed with no unacceptable indications observed.
381355	32-MS-2211-3	ELBOW TO PIPE	R-A	C-F-2	R1.20-6	C5.51	2	MS	MT, UT	UT	82%	45s	3/13/97	118, 119	IWC-2500-7(b)	UT exam was conducted using a 45-degree shear wave transducer. The exam completed was limited to 82% code required coverage. No UT scan was performed from the downstream side from 62.5" to 80.5" due to a permanent restraint interfering with scanning. No scan could be performed from the upstream direction from 94.5" to 7.5" due to branch connection. Also no scan was able to be performed from 74.5" to 78.5" due to a branch connection. No unacceptable indications were noted. A magnetic particle test and system pressure test was also completed with no unacceptable indications observed.
381370	34-MS-2211-1	PIPE TO PIPE	R-A	C-F-2	R1.20-6	C5.51	2	MS	MT, UT	UT	51%	45s	1/24/96	120, 121	IWC-2500-7(b)	UT exam was conducted using a 45-degree shear wave transducer. The exam completed was limited to 51% code required coverage. The UT exam was performed from the upstream side and limited between 22 1/2" to 27 1/2", 79" to 81", 88" to 90" and 93 3/4" to 7 1/4" due to seven pipe restraint bars measuring 1.45" for a total of 10.15". The restraint support partially covers the weld 360°. No unacceptable indications

* These sketches refer to Attachment 3, Pages 1 through 323

Sum#	Component ID	Description	Post- RI-ISI ASME Cat	Pre RI-ISI ASME Cat	Post RI-ISI ASME Item #	Pre- RI-ISI ASME Item #	ASME Class	System	Current NDE	Limited NDE Exam	Code Coverage Achieved	UT Exam Type	Exam Date	Photo/ Sketch No.*	Required Examination Volume	Limitation Description
																were noted. A magnetic particle test and system pressure test was also completed with no unacceptable indications observed.
384320	6-MS-2246-3	PIPE TO VALVE 24MS9	R-A	C-F-2	R1.20-6	C5.51	2	MS	MT, UT	UT	79%	45s	10/17/00	196, 197, 198	IWC-2500-7(b)	UT exam was conducted using 45-shear wave transducer. The exam completed was limited to 79% code required coverage due to the UT exam being limited due to the valve's OD configuration that restricted scanning. UT scans were performed on and across the welds in both directions. No unacceptable indications were noted. A magnetic particle test and system pressure test was also completed with no unacceptable indications observed.

* These sketches refer to Attachment 3, Pages 1 through 323

Relief Request: S2-I2-RR-B01, S2-I2-RR-C01
Second Ten-Year Interval Inservice Inspection NDE Exam Limitations
Salem Unit 2
Additional Descriptive Details
(sketches, illustrations, and/or drawings)

1	31	69	105	145	183
2	31A	70	106	145A	184
3	32	71	107	146	185
4	33	72	108	147	186
4A	34	73	109	148	187
4B	35	74	110	149	188
5	36	75	111	150	189
6	37	76	112	151	190
7	38	77	113	152	191
7A	39	78	114	153	192
8	40	79	115	153A	193
9	41	80	116	154	194
10	42	81	117	155	195
11	43	82	118	156	196
12	44	83	119	157	197
13	45	84	120	158	198
14	46	84A	121	159	199
15	47	84B	122	160	200
16	48	85	123	161	201
17	49	86	124	162	202
18	50	87	125	163	203
18A	51	88	126	164	204
19	52	89	127	165	205
20	53	89A	128	166	206
21	54	89B	129	167	206A
22	55	90	130	168	206B
23	56	91	131	169	206C
24	57	92	132	170	207
24A	58	93	133	171	208
24B	59	94	134	172	209
24C	60	95	135	173	210
25	61	96	136	174	213
25A	62	97	137	175	214
26	63	98	138	176	215
27	64	99	139	177	215A
27A	65	100	140	178	215B
28	66	101	141	179	216
29	66A	102	142	180	217
30	67	103	143	181	218
30A	67A	103A	144	182	219

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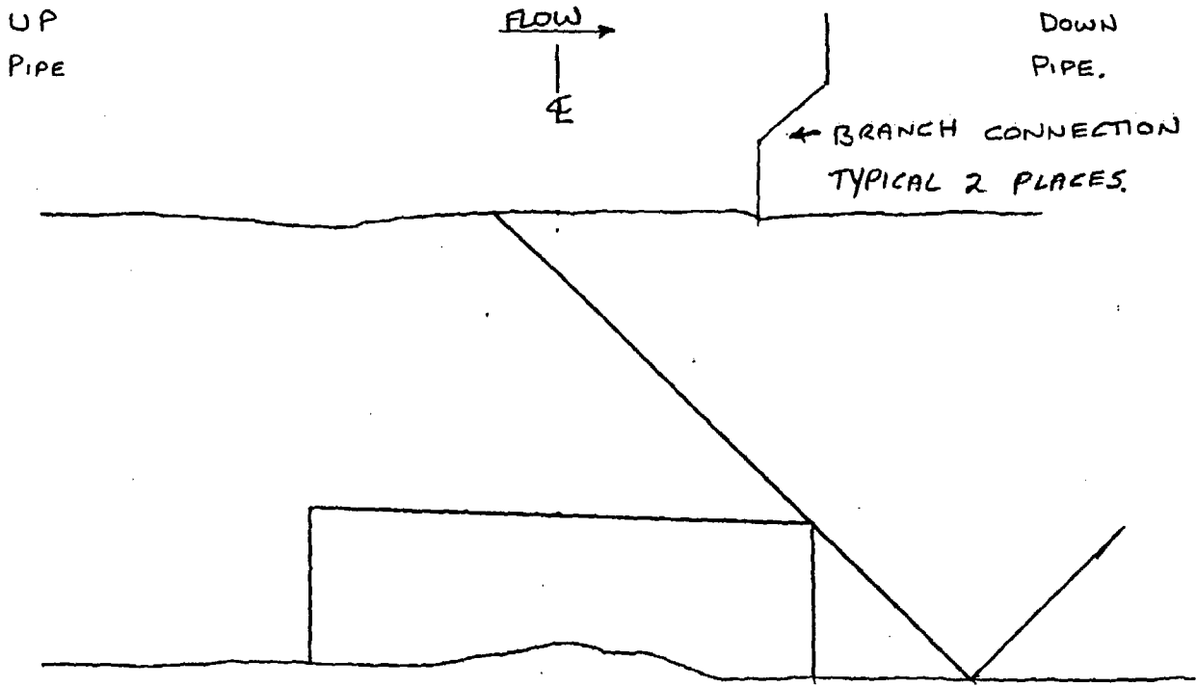


SALEM UNIT 2 17-5502
REACTOR COOLANT-29-RC-1230-3
VICTOR MORTON III 6 APR 93
FOR COVERAGE ONLY.
100% COVERAGE FROM OPPOSITE SIDE.

ANI I REVIEW
INITIAL
DATE 4/12/93

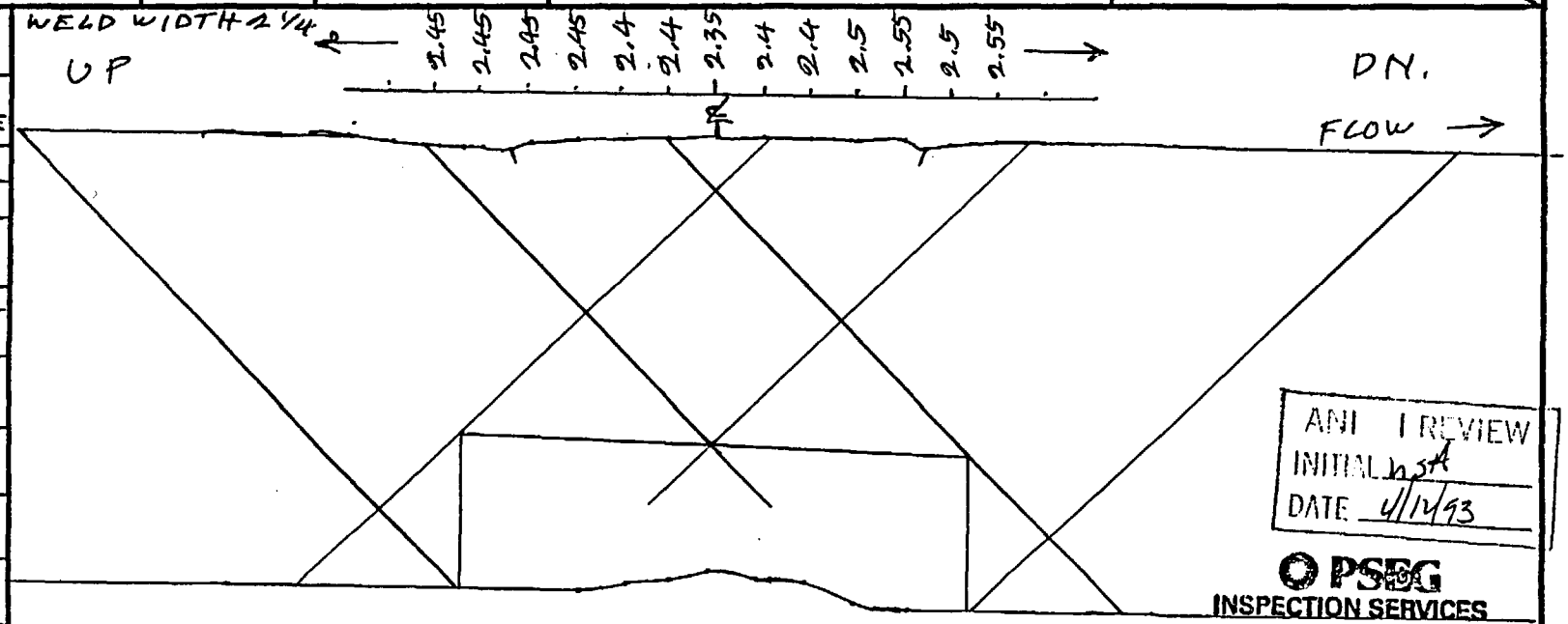
PSEG
INSPECTION SERVICES
Reviewed and Approved
4/7/93
N.D.E. SUPERVISOR

SwRI PROFILE AND THICKNESS INFORMATION RECORD

PROJECT NO:	SITE:	DATE: (DAY - MONTH - YEAR)	TIME (24 HR. CLOCK)	SHEET NO:
17-5502	Salem Generating Station, Unit 2	6 APRIL 93	INT. 0909 FINAL 1045	135087

EXAMINER	SNT LEVEL	THK. MEAS. REQ'D BY PROCEDURE	INSTRUMENT:	SERIAL NO:	COMPONENT ID:
K. KURTZ	II	No. SAM2 UT-3 REV 2 CHG 0 ICN ☒ N/A	SONIC MARK I ☐ OTHER 136 ☒	857K	29-RC-1230-3
EXAMINER	SNT LEVEL		COUPLANT: ULTRAGEL GLYCERINE ☐ WATER ☐ OTHER (SPECIFY) BATCH NO. 9092		REFERENCE BLK NO:
F. BRAUN	IT				37 SAM

SEARCH UNITS	
BRAND	MATERIAL ASSURANCE
SERIAL NO	E-105
SIZE	1/2"
FREQ. (MHz)	2.25
INSTRUMENT SETTINGS	
SCREEN SIZE	5"
DELAY	.017
MATL. CAL.	.219
RANGE	5"
REP. RATE	4KHZ
JACK USED	XMT
TRANS MODE	N/A



ANI REVIEW
INITIAL hsA
DATE 4/14/93

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INSPECTION SERVICES
Reviewed and Approved
WD 4/7/93
N.D.E. SUPERVISOR

*VS2, SS-15, ZZ-0082 ABOVE READINGS TAKEN AT L5"

45° Search Unit chosen for coverage using 2/8, 3/8, 5/8, 6/8 nodes.

° Search Unit chosen for coverage using _____ nodes.

NAME:	SNT LEVEL:
VICTOR MORTON	III

REVIEWED BY:	SNT LEVEL:	DATE:
Vic Morton	III	6 APR 93

SWRI FORM No. NDTR 17-135 (REV. 6/90)

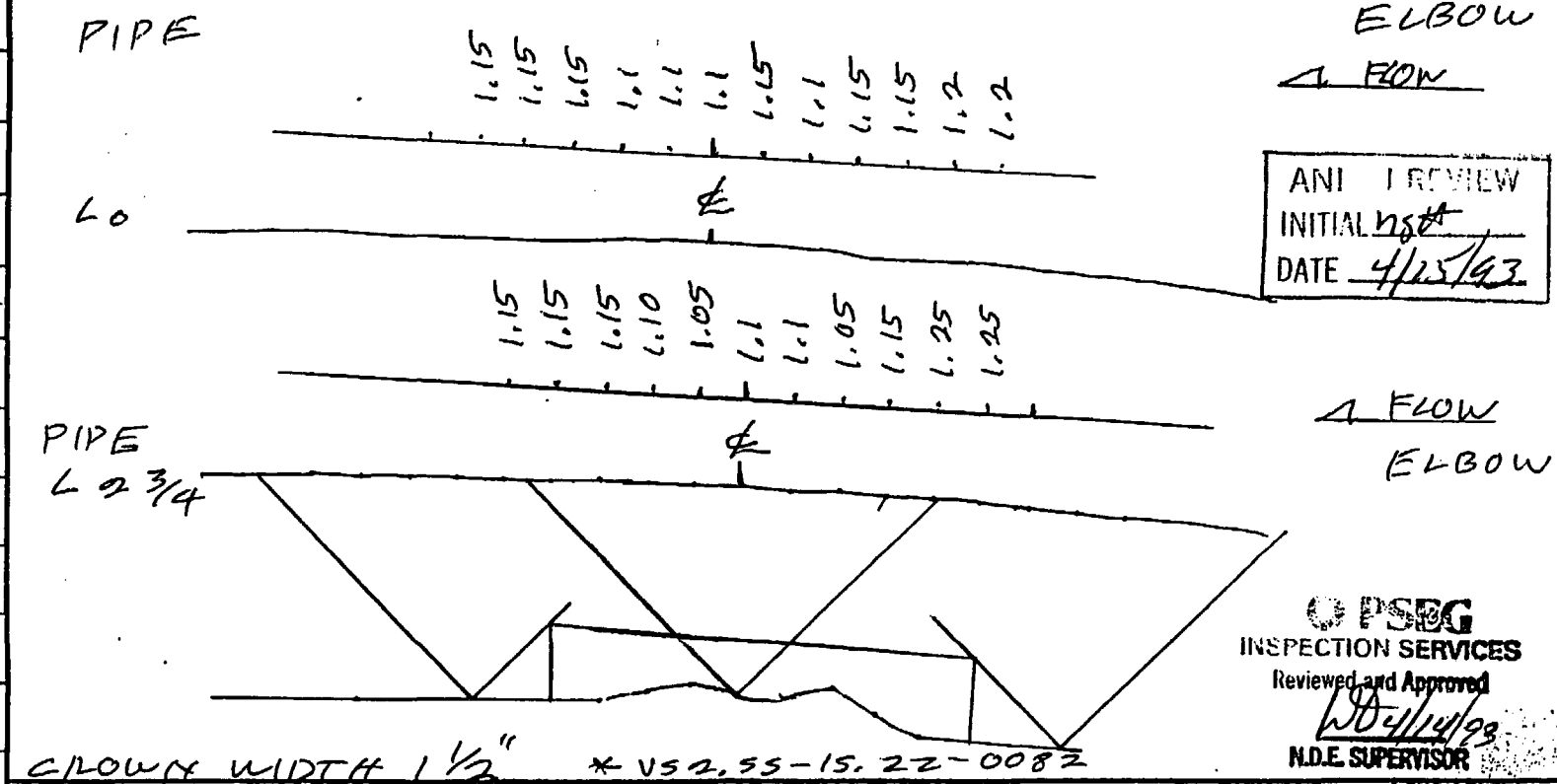
080 300

SwRI PROFILE AND THICKNESS INFORMATION RECORD

PROJECT NO:	SITE:	DATE: (DAY - MONTH - YEAR)	TIME (24 HR. CLOCK)	SHEET NO:
17-5502	Salem Generating Station, Unit 2	10 APRIL 93	INT. 0930 FINAL 1140	135134

EXAMINER	SNT LEVEL	THK. MEAS. REQ'D BY PROCEDURE	INSTRUMENT:	SERIAL NO:	COMPONENT ID:
K. KURTZ	II	No. SAM72 UT3	SONIC MARK I ☐ OTHER 136 ☑	857K	10 SJ 1221-21
EXAMINER	SNT LEVEL	REV 2 CHG 0 ICN ☑ N/A	COUPLANT: GLYCERINE ☐ WATER ☐ OTHER (SPECIFY) ULTRAGEL-BATCH 9092		REFERENCE BLK NO: 55113
F. BRAUN	IT				

SEARCH UNITS	
BRAND	SWRI
SERIAL NO	4024
SIZE	1/4
FREQ. (MHz)	2.25
INSTRUMENT SETTINGS	
SCREEN SIZE	2.5
DELAY	.058
MATL. CAL.	.220
RANGE	2.5
REP. RATE	4K
JACK USED	XMT
TRANS MODE	N/A



ANI REVIEW
INITIAL nst
DATE 4/15/93

PSEG
INSPECTION SERVICES
Reviewed and Approved
WD 4/14/93
N.D.E. SUPERVISOR

45 ° Search Unit chosen for coverage using 2/8, 3/8, 5/8, 7/8 nodes.

____ ° Search Unit chosen for coverage using ____ nodes.

NAME: VICTOR MORTON SNT LEVEL: III

REVIEWED BY: Vic Morton SNT LEVEL: III DATE: 12 APR 93

SWRI FORM No. NDTR 17-135 (REV. 6/90)

W

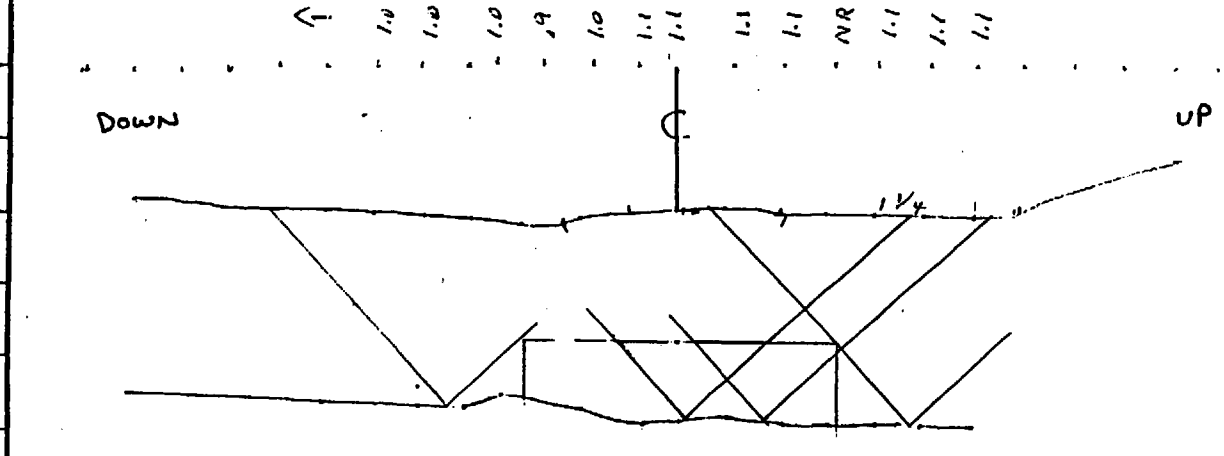
164000

SwRI PROFILE AND THICKNESS INFORMATION RECORD

PROJECT NO:	SITE:	DATE: (DAY - MONTH - YEAR)	TIME (24 HR. CLOCK)		SHEET NO:
17-5502	Salem Generating Station, Unit 2	26 MAR 93	INT. 0957	FINAL 1044	135006

EXAMINER	SNT LEVEL	THK. MEAS. REQ'D BY PROCEDURE	INSTRUMENT:	SERIAL NO:	COMPONENT ID:
W. HAWKINS	II	No. SAM2-UT3 REV 2 CHG 0 ICN ☒ N/A	SONIC MARK I ☐ OTHER 136 ☒	860K	855-1262-10
EXAMINER	SNT LEVEL		COUPLANT: GLYCERINE ☒ WATER ☐ OTHER (SPECIFY)		REFERENCE BLK NO:
W. BYLER	II				55 113

SEARCH UNITS	
BRAND	KBA GAMMA
SERIAL NO	C 30257
SIZE	1/4
FREQ. (MHz)	2.25
INSTRUMENT SETTINGS	
SCREEN SIZE	2
DELAY	0.193
MATL. CAL. VELOCITY	0.209
RANGE	2
REP. RATE	4 KHZ
JACK USED	RCV/XMT
TRANS MODE	DUAL



ANI I REVIEW
INITIAL UTA
DATE 4/5/93

PSEG
INSPECTION SERVICES
Reviewed and Approved
WD 3/30/93
N.D.E. SUPERVISOR

Flow
PIPE

PIPE

45 ° Search Unit chosen for coverage using 2/8 6/8 10/8 nodes.

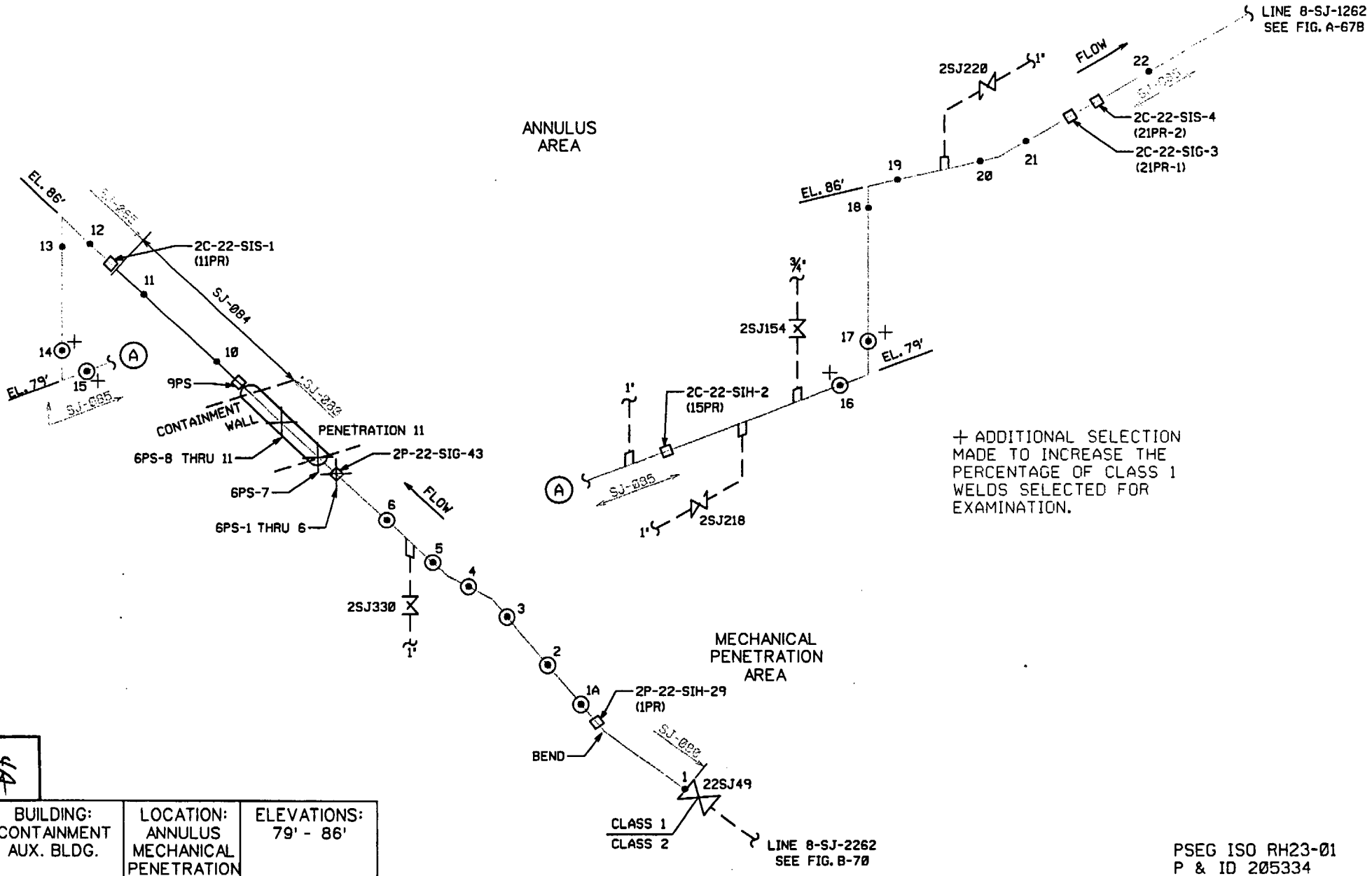
° Search Unit chosen for coverage using nodes.

NAME:	SNT LEVEL:
VICTOR MORTON	III

REVIEWED BY:	SNT LEVEL:	DATE:
[signature]	III	26 MAR 93

SWRI FORM No. NDTR 17-135 (REV. 6/90)

166000



44

BUILDING: CONTAINMENT AUX. BLDG.	LOCATION: ANNULUS MECHANICAL PENETRATION	ELEVATIONS: 79' - 86'

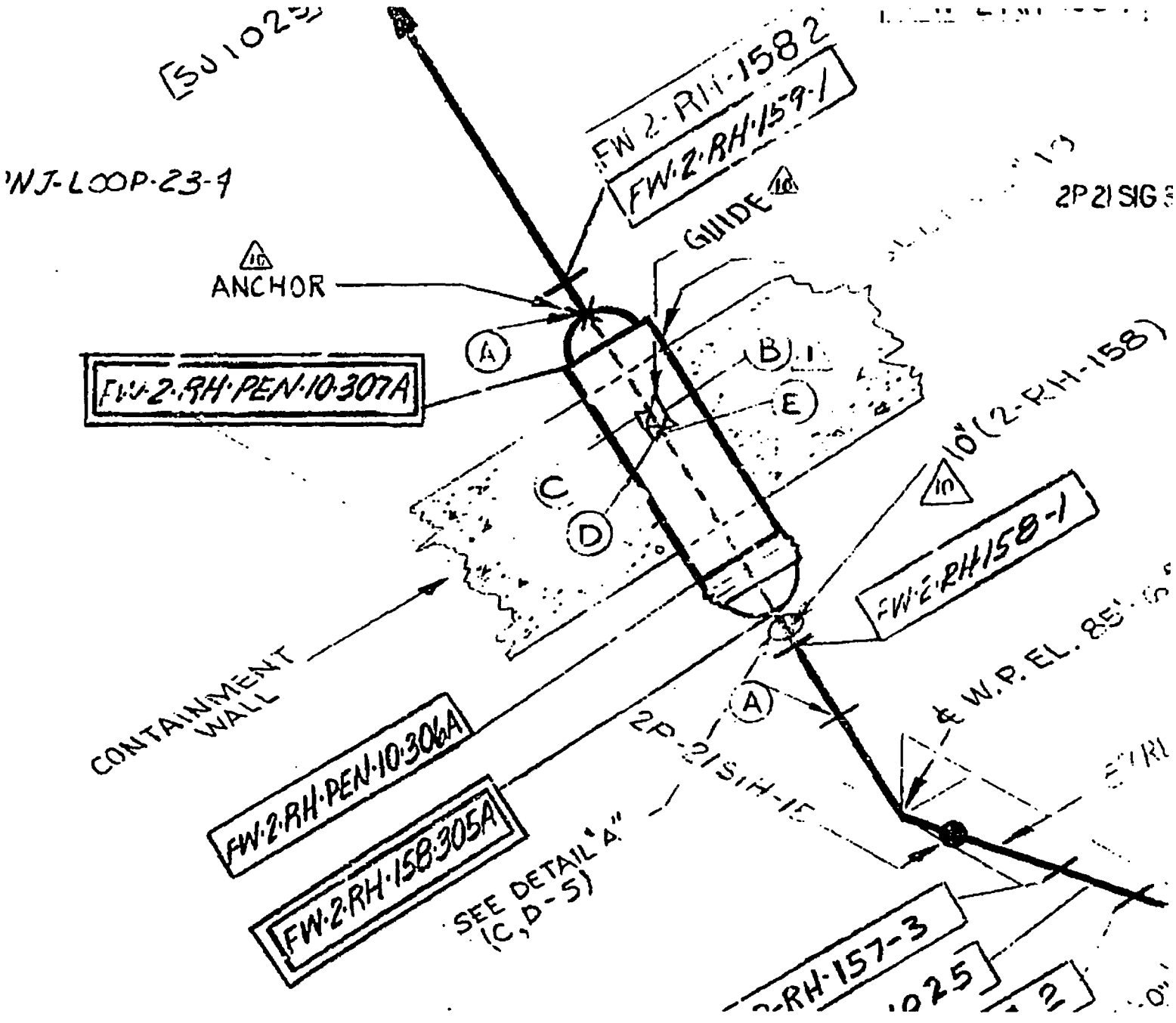
PSEG ISO RH23-01
P & ID 205334

ATTENTION: ANY REVISION TO THIS DRAWING SHALL BE MADE ONLY BY CAED

REV.	DATE	DESCRIPTION
1		REVISED PER ORDER No. 80038023.

PSEG Nuclear, LLC
SALEM NUCLEAR GENERATING STATION
UNIT 2 - WELD / HANGER IDENTIFICATION FIGURE
INSERVICE INSPECTION DRAWING

FIGURE: A-67A | REVISION: 1
SYSTEM: SAFETY INJECTION SYSTEM
LINE: 8-SJ-1262
THIRD 10 YEAR INSPECTION INTERVAL

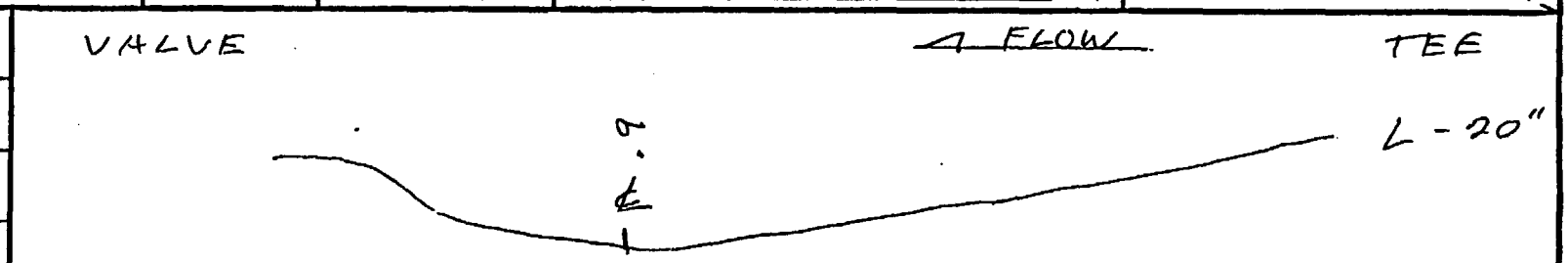

FW 2-RH-1582
FW-2-RH-159-1
GUIDE
ANCHOR
FW-2-RH-PEN-10-307A
A
B
C
D
E
10" (2-RH-158)
FW-2-RH-158-1
CONTAINMENT WALL
FW-2-RH-PEN-10-306A
FW-2-RH-158-305A
SEE DETAIL "A" (C, D-5)
& W.P. EL.
2P 21 SIG

SwRI PROFILE AND THICKNESS INFORMATION RECORD

PROJECT NO:	SITE:	DATE: (DAY - MONTH - YEAR)	TIME (24 HR. CLOCK)		SHEET NO:
17-5502	Salem Generating Station, Unit 2	13 APRIL 93	INT. 1420	FINAL 1650	135143

EXAMINER	SNT LEVEL	THK. MEAS. REQ'D BY PROCEDURE ✗ No. SAM 2 UT3 REV 2 CHG 0 ICN ☑ N/A	INSTRUMENT: SONIC MARK I ☐ OTHER 13C ☑	SERIAL NO:	COMPONENT ID:
K. KURTZ	II			857K	8-SJ-1245-1
EXAMINER	**SNT LEVEL**		COUPLANT: GLYCERINE ☐ WATER ☐ OTHER (SPECIFY) ULTRAGEL BATCH 9092		REFERENCE BLK NO:
F. BRAUN	IT				55113

SEARCH UNITS	
BRAND	SWRI
SERIAL NO	4024
SIZE	1/4
FREQ. (MHz)	2.25
INSTRUMENT SETTINGS	
SCREEN SIZE	2.5
DELAY	.051
MATL. CAL.	.224
RANGE	2.5
REP. RATE	4
JACK USED	XMT
TRANS MODE	N/A



AHI REVIEW
INITIAL nsA
DATE 4/15/93

PSEG INSPECTION SERVICES
Reviewed and Approved
WD 4/14/93
N.D.E. SUPERVISOR

NO BACK reflection for Thickness AT other Than centerline of weld. ✗✗
UNABLE TO DETERMINE FUSION LINES ✗✗
* VS2.55-15.22-0082

45 ° Search Unit chosen for coverage using 2/8 6/8 10/8 nodes.
____ ° Search Unit chosen for coverage using ____ nodes.

NAME: VICTOR MORTON
SNT LEVEL: III

REVIEWED BY: Vic Morton
SNT LEVEL: III
DATE: 14 APR 93

4

SWRI FORM No. NDTR 17-135 (REV. 6/90)

169450

LIMITATION REPORT

Project: 17-5502 Unit: SALEM UNIT 2

System: SAFETY INJECTION Weld No.: 8-SJ-1245-1

SURFACE EXAMINATIONS

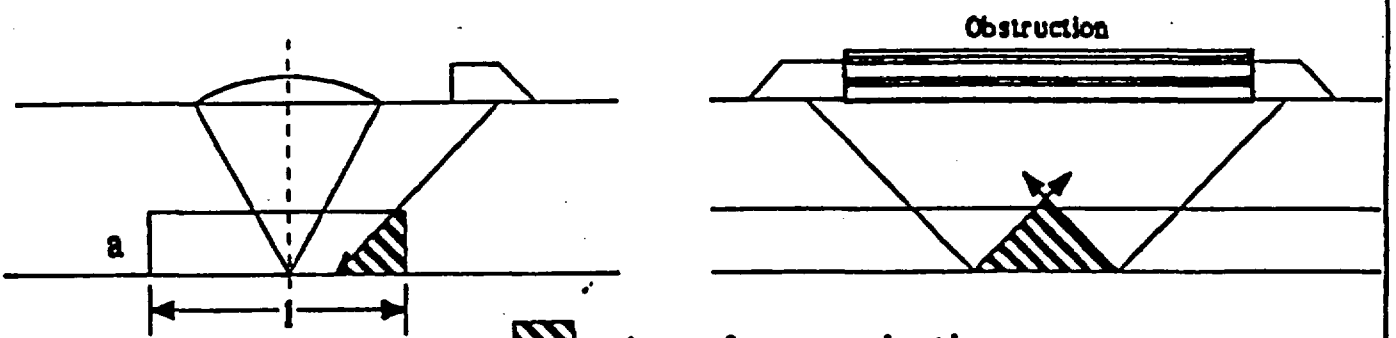
Area To Be Examined (Length x Width = A) A= N/A

Area Of Limitation (Length x Width = Al) Al=

Percentage of Coverage (A - Al/A) =

VOLUMETRIC EXAMINATIONS

Parallel ← Example → Transverse



= Area of no examination

1. Compute Area a x l	= Asq	N/A
2. Multiply Asq by Weld Length	= Vt (Volume Total)	27.75
3. Compute Area Not Covered	= a	N/A
4. Multiply "a" by Weld Length	= Vl (Volume Limited)	17.75
5. Percentage of Coverage	= (Vt - Vl/Vt)	36.03

NOTE: Compute in a similar manner for indications perpendicular to the weld.

Preparedby: VICTOR MORTON Reviewedby: Vic Morton

Date: 14 APR 93 Level: III Date: 14 APR 93 Level: III

Page 1 of 1

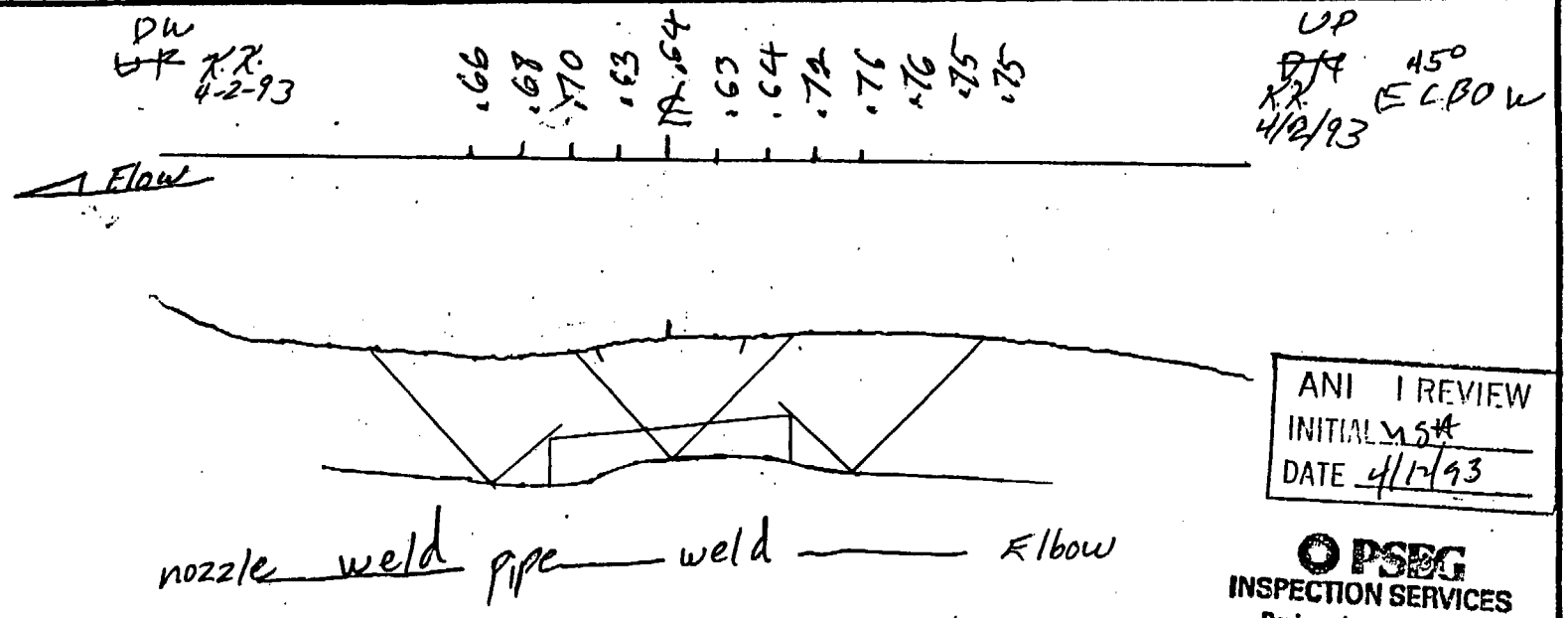
6

SwRI PROFILE AND THICKNESS INFORMATION RECORD

PROJECT NO: 17-5502	SITE: Salem Generating Station, Unit 2	DATE: (DAY - MONTH - YEAR) 2 APRIL 93	TIME (24 HR. CLOCK) INT. 1430 FINAL 1530	SHEET NO: 135050

EXAMINER: K. KURTZ	SNT LEVEL: II	THK. MEAS. REQ'D BY PROCEDURE No. SAM 2 UT 3 REV 2 CHG 0 ICN ☒ N/A	INSTRUMENT: SONIC MARK I ☐ OTHER 136 ☒	SERIAL NO: 857K	COMPONENT ID: 6-SJ1241-18
EXAMINER: F. BRAUN	SNT LEVEL: IT		COUPLANT: GLYCERINE ☐ WATER ☐ OTHER (SPECIFY) ULTRAGEL-BATCH #9012		REFERENCE BLK NO: K.K. 4/2/93 95 55113

SEARCH UNITS	
BRAND	AEROTECH
SERIAL NO	E11977
SIZE	1/4
FREQ. (MHz)	5 MHZ
INSTRUMENT SETTINGS	
SCREEN SIZE	2"
DELAY	.414
MATL. CAL.	.228
RANGE	2"
REP. RATE	4 KHZ
JACK USED	DUAL
TRANS MODE	BOTH



ANI REVIEW
INITIAL
DATE 4/12/93

PSEG INSPECTION SERVICES
Reviewed and Approved
4/6/93
N.D.E. SUPERVISOR

K.K. 4-2-93

WELD CROWN 3/4" ~~ARROW POINTING WRONG WAY~~

45 ° Search Unit chosen for coverage using 2/8, 6/8, 10/8 nodes.

° Search Unit chosen for coverage using _____ nodes.

NAME: VICTOR MORTON	SNT LEVEL: III	
REVIEWED BY: [signature]	SNT LEVEL: III	DATE: 3 APR 93

SWRI FORM No. NDTR 17-135 (REV. 6/90)

7

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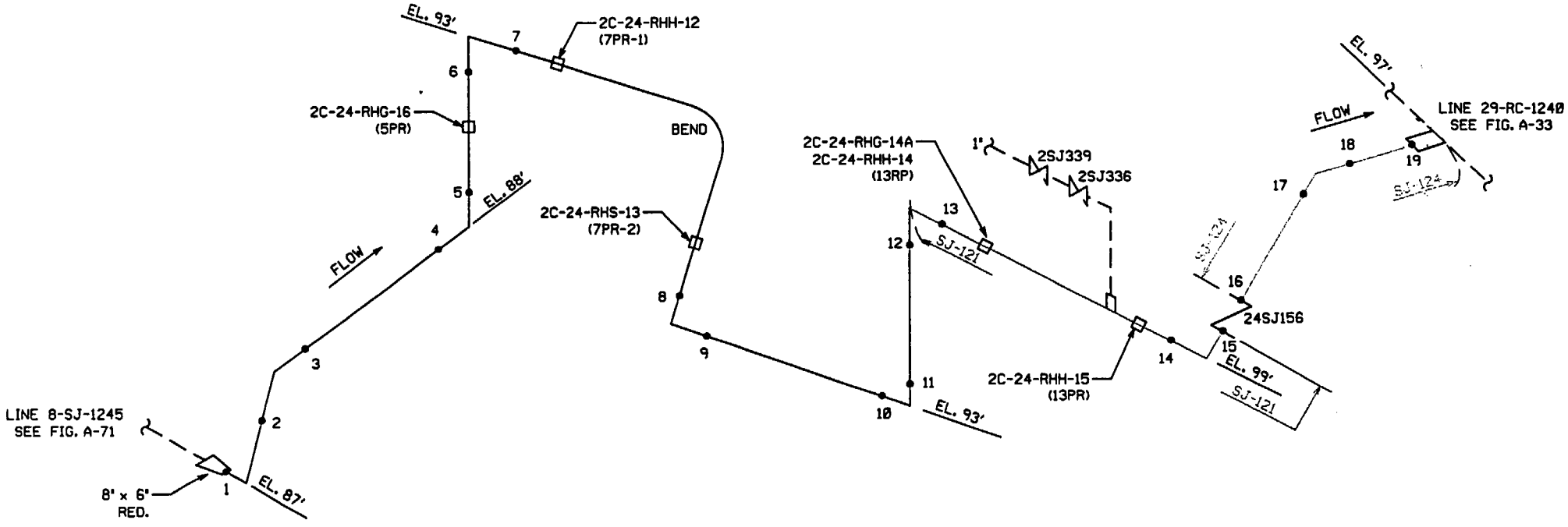

74

BUILDING: CONTAINMENT	LOCATION: BIOSHIELD	ELEVATIONS: 87' - 99'

PSEG ISO RH23-02
P & ID 205301, 205334

ATTENTION: ANY REVISION TO THIS DRAWING SHALL BE MADE ONLY BY CAED

REV.	DATE	DESCRIPTION
1		REVISED PER ORDER No. 80038023.

PSEG Nuclear, LLC
SALEM NUCLEAR GENERATING STATION
UNIT 2 - WELD / HANGER IDENTIFICATION FIGURE
INSERVICE INSPECTION DRAWING

FIGURE: A-74 | REVISION: 1
SYSTEM: SAFETY INJECTION SYSTEM
LINE: 6-SJ-1241
THIRD 10 YEAR INSPECTION INTERVAL

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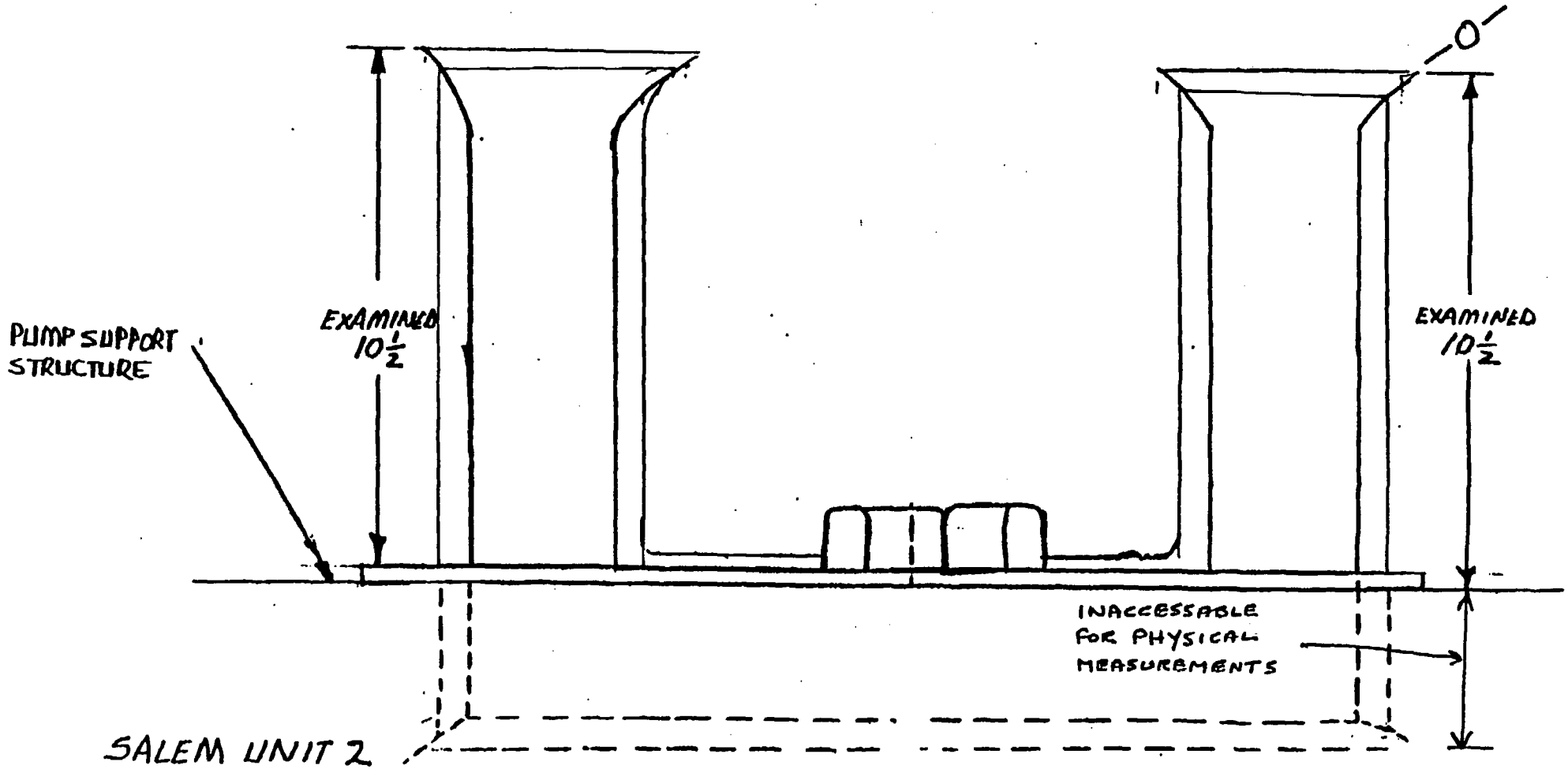
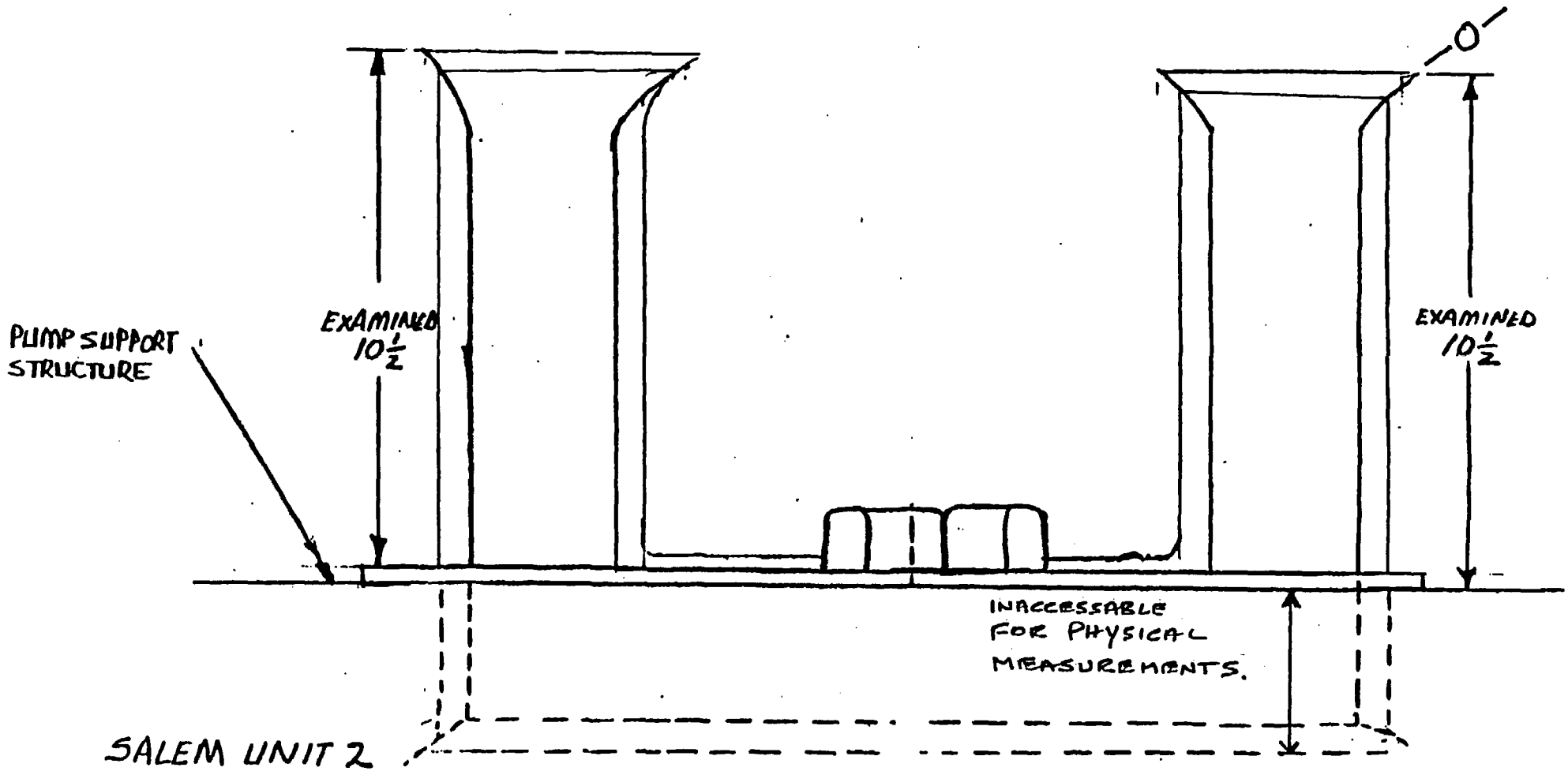


SALEM UNIT 2
REACTOR COOLANT PUMP 22PMP LG 1
REF. DATA RC. 110130

PSEG
INSPECTION SERVICES
Reviewed and Approved
4/6/93
N.D.E. SUPERVISOR

751200

8

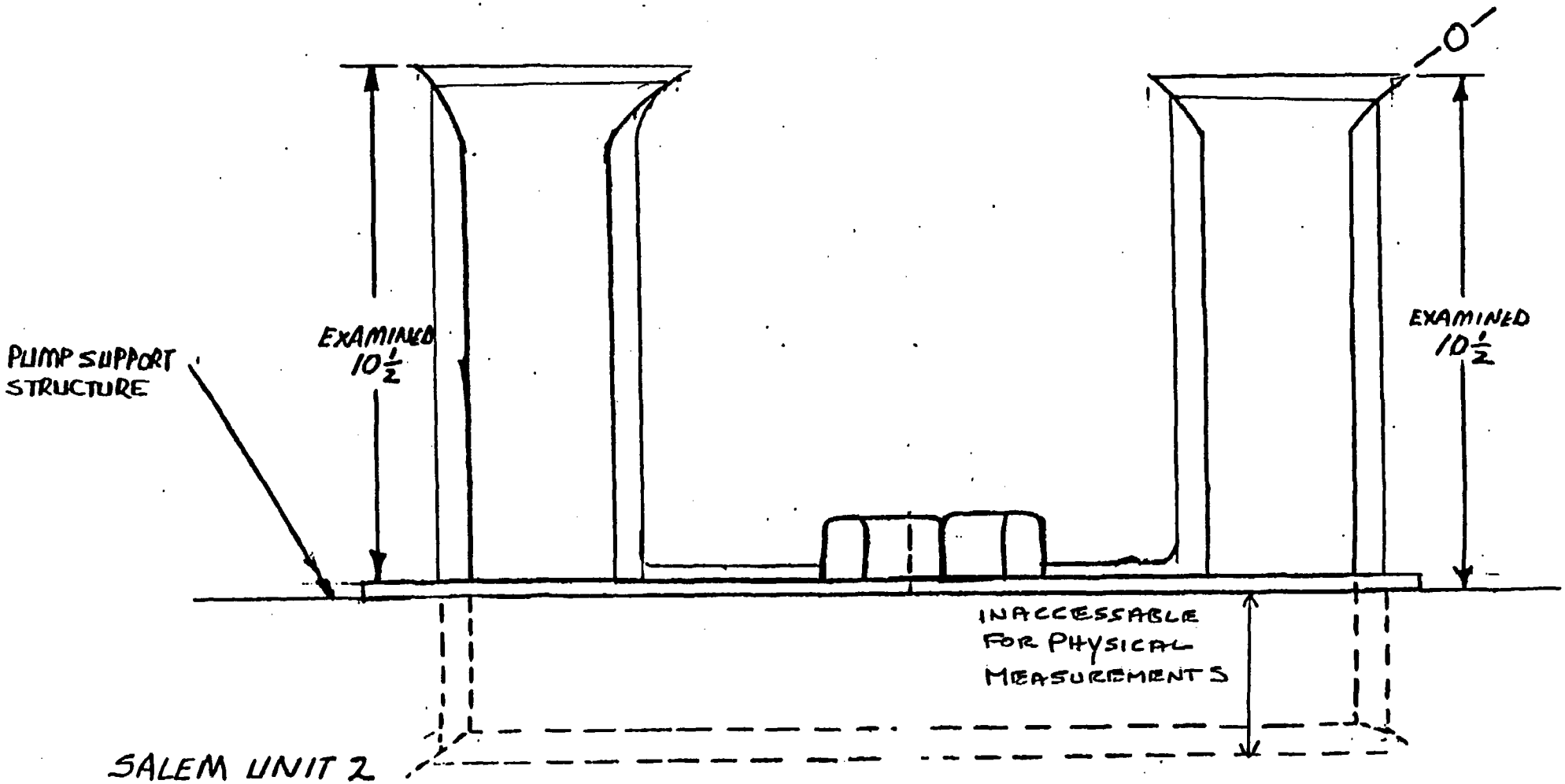


SALEM UNIT 2
REACTOR COOLANT PUMP 22-PMP LG 2
REF. DATA RIC. 110136

PSEG
INSPECTION SERVICES
Reviewed and Approved
WD 4/6/93
N.D.E. SUPERVISOR

9

251200



SALEM UNIT 2
REACTOR COOLANT PUMP 22 PMP LG 3
REF. DATA RC. 110132

PSEG
INSPECTION SERVICES
Reviewed and Approved
WD 4/6/93
N.D.E. SUPERVISOR

10

25/200

LIMITATION REPORT

Project: 17-5502 Unit: SALEM UNIT 2.

System: REACTOR COOLANT PUMP Weld No.: 22-PMP-LUGS 1,2,+3

SURFACE EXAMINATIONS

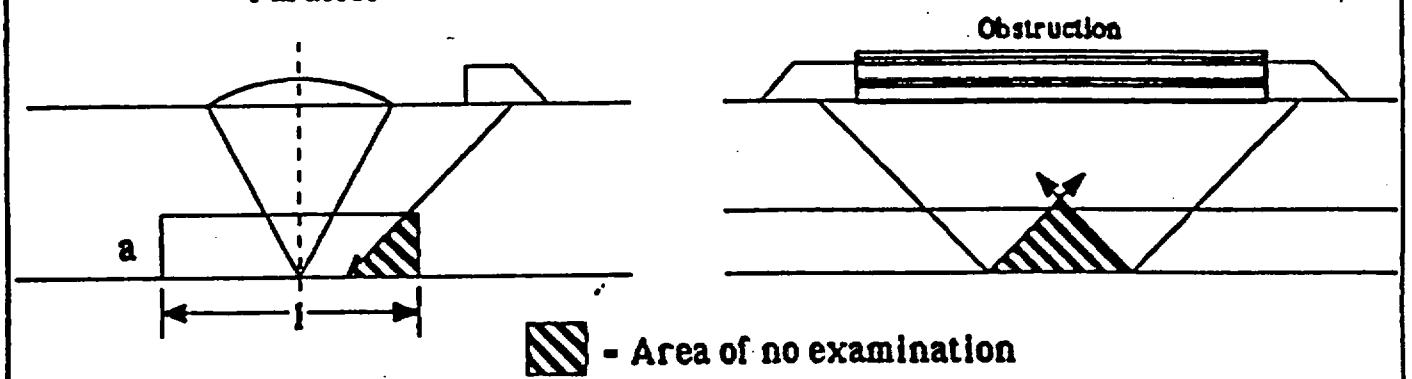
Area To Be Examined (Length x Width = A) A= SEE SKETCH

Area Of Limitation (Length x Width = A1) A1= " "

Percentage of Coverage (A - A1/A) = ≈67

VOLUMETRIC EXAMINATIONS

Parallel ← Example → Transverse



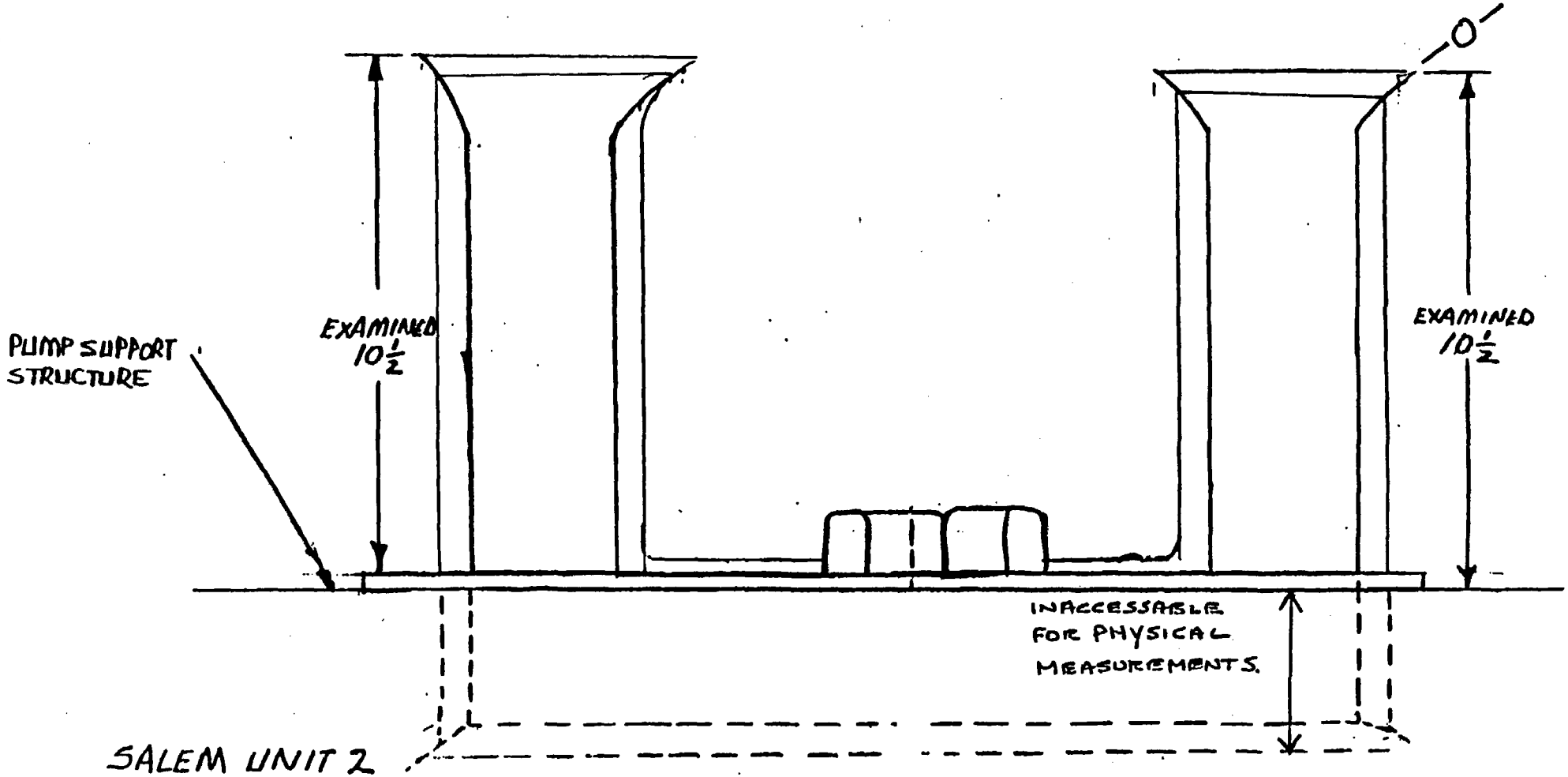
1. Compute Area a x l	= Asq	N/A
2. Multiply Asq by Weld Length	= Vt (Volume Total)	
3. Compute Area Not Covered	= a	
4. Multiply "a" by Weld Length	= Vl (Volume Limited)	
5. Percentage of Coverage	= (Vt - Vl/Vt)	

NOTE: Compute in a similar manner for indications perpendicular to the weld.

Preparedby: VICTOR MORTON Reviewedby: [signature] 11

Date: 6 APR 93 Level: III Date: 6 APR 93 Level: III

Page 1 of 1

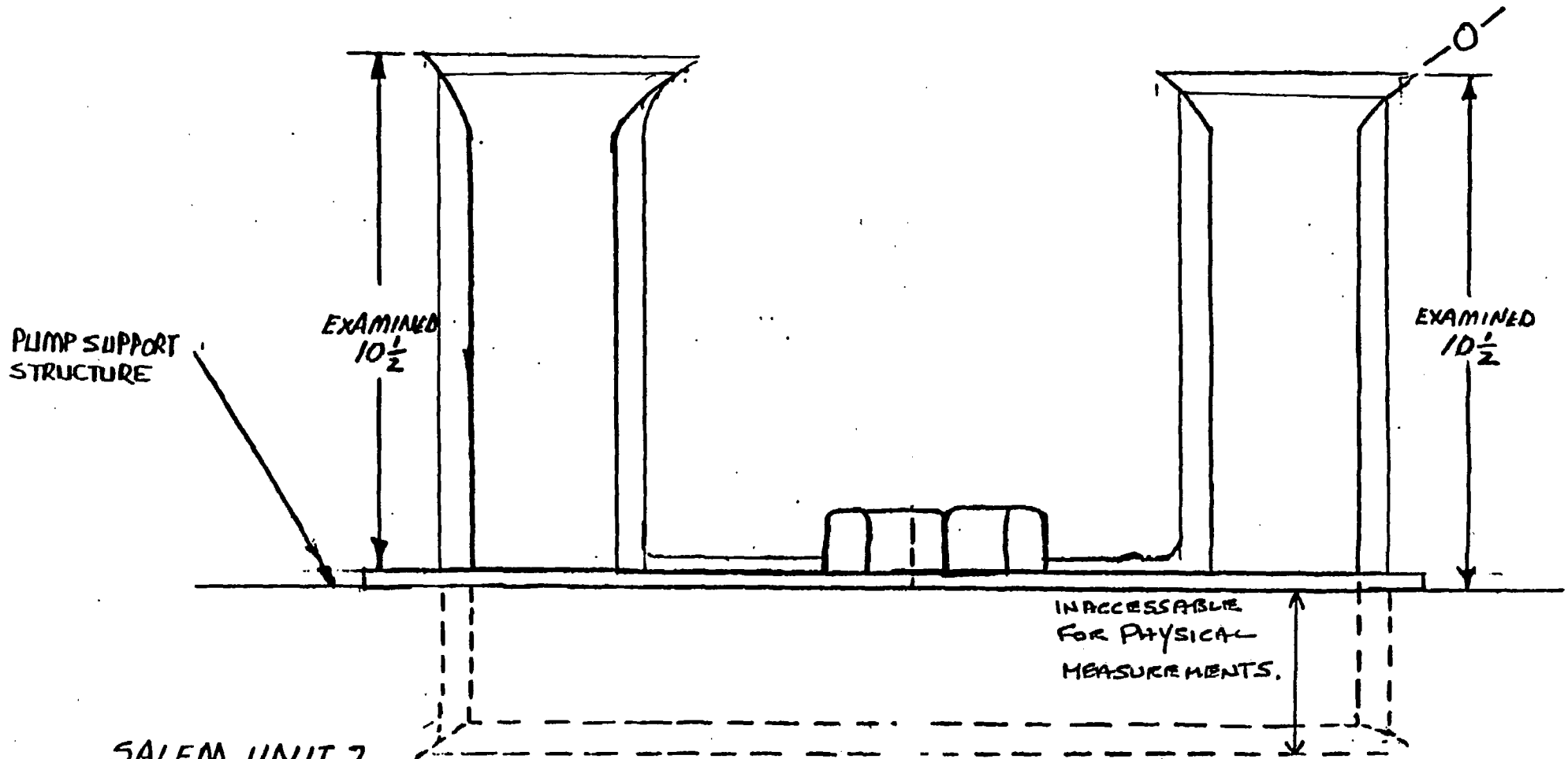


SALEM UNIT 2
REACTOR COOLANT PUMP 21 PMP LG 1
REF. DATA RIC. 110133

PSEG
INSPECTION SERVICES
Reviewed and Approved
WD 4/6/93
N.D.E. SUPERVISOR

12

12



SALEM UNIT 2

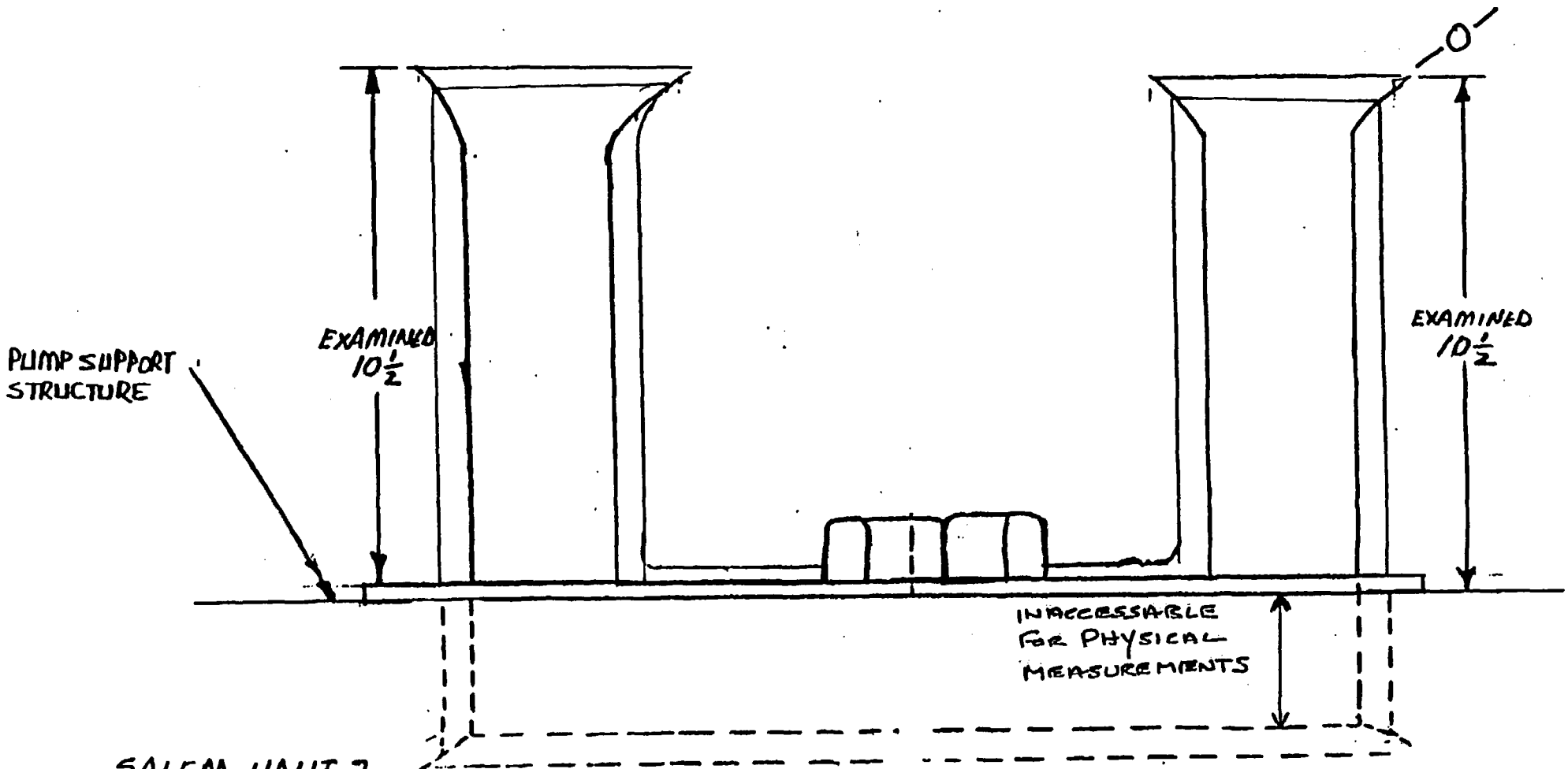
REACTOR COOLANT PUMP 21 PMP LG 2

REF. DATA REC. 110134

13

PSEG
INSPECTION SERVICES
Reviewed and Approved
WD 4/6/93
N.D.E. SUPERVISOR

251300



SALEM UNIT 2
REACTOR COOLANT PUMP 21 PMP. LG 3
REF. DATA RC. 110135

PSE&G
INSPECTION SERVICES
Reviewed and Approved
WD 4/6/93
N.D.E. SUPERVISOR

71

2512(1)

LIMITATION REPORT

Project: 17-5502 Unit: SALEM UNIT 2

System: REACTOR COOLANT PUMP Weld No.: 21-PMP-LUGS 1, 2 + 3.

SURFACE EXAMINATIONS

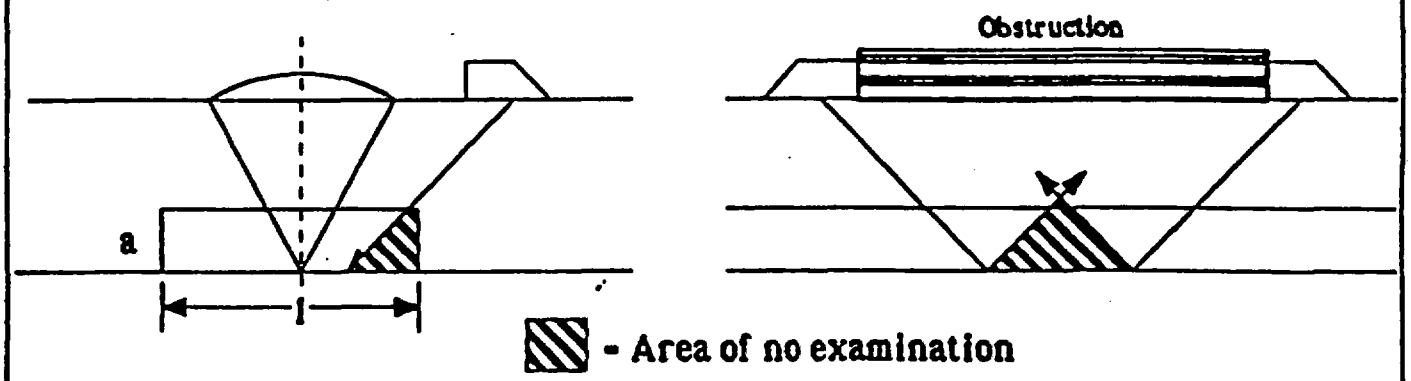
Area To Be Examined (Length x Width = A) A= SEE SKETCH

Area Of Limitation (Length x Width = A1) A1= " "

Percentage of Coverage (A - A1/A) = ≈67

VOLUMETRIC EXAMINATIONS

Parallel ← Example → Transverse



1. Compute Area a x l	= Asq	N/A
2. Multiply Asq by Weld Length	= Vt (Volume Total)	
3. Compute Area Not Covered	= a	
4. Multiply "a" by Weld Length	= Vl (Volume Limited)	
5. Percentage of Coverage	= (Vt - Vl/Vt)	

NOTE: Compute in a similar manner for indications perpendicular to the weld.

Preparedby: VICTOR MORTON Reviewedby: [signature]

Date: 6 APR 93 Level: III Date: 6 APR 93 Level: III

Page 1 of 1

15

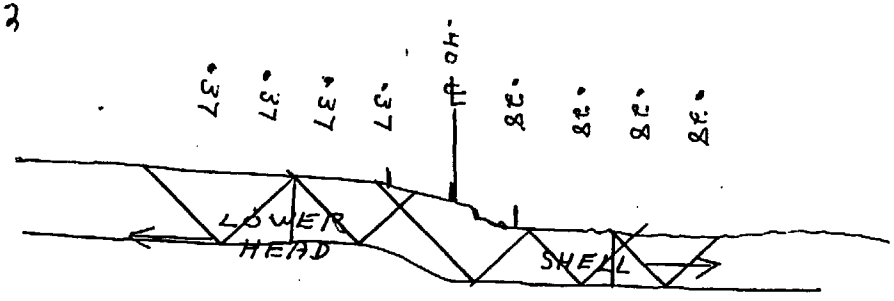
SwRI PROFILE AND THICKNESS INFORMATION RECORD

PROJECT NO:	SITE:	DATE: (DAY - MONTH - YEAR)	TIME (24 HR. CLOCK)		SHEET NO.
17-5502	Salem Generating Station, Unit 2	03 APR 93	INT. 1410	FINAL 1420	135066

EXAMINER	SNT LEVEL	THK. MEAS. REQ'D BY PROCEDURE	INSTRUMENT:	SERIAL NO:	COMPONENT ID:
L. VILLA	II	No. SAM2-UT49	SONIC MARK I ☐ OTHER 136 ☒	855 K	CVC 2-CVCT-2
EXAMINER	SNT LEVEL	REV 0 CHG 0 ICN * ☒ N/A	COUPLANT: GLYCERINE ☐ WATER ☐ OTHER (SPECIFY) ULTRAGEL II *		REFERENCE BLK NO:
M. COTTEN	II				SS DC 43

SEARCH UNITS	
BRAND	KBA GAMMA
SERIAL NO	C3c257
SIZE	1/4"
FREQ. (MHz)	2.25
INSTRUMENT SETTINGS	
SCREEN SIZE	1"
DELAY	0.270
MATL. CAL.	0.181
RANGE	1
REP. RATE	4 KHZ
JACK USED	RCV/XMT
TRANS MODE	DUAL

*BATCH 9092



ANI REVIEW
INITIAL N.S.A
DATE 4/12/93

PSEG
INSPECTION SERVICES
Reviewed and Approved
WD 4/6/93
N.D.E. SUPERVISOR

L LOCATION TAKEN AT 10"

*PSE&G VS2-SS-IS.ZZ-0088

115 ° Search Unit chosen for coverage using 4/8, 8/8, 12/8, 16/8 nodes.

____ ° Search Unit chosen for coverage using _____ nodes.

NAME:	SNT LEVEL:
VICTOR MORTON	III

REVIEWED BY:	SNT LEVEL:	DATE:
Vic Morton	III	5 APR 93

SWRI FORM No. NDTR 17-135 (REV. 6/90)

16

LIMITATION REPORT

Project: 17-5502 Unit: SALEM UNIT 2

System: C.V.C. TANK Weld No.: 2-CVCT-2

SURFACE EXAMINATIONS

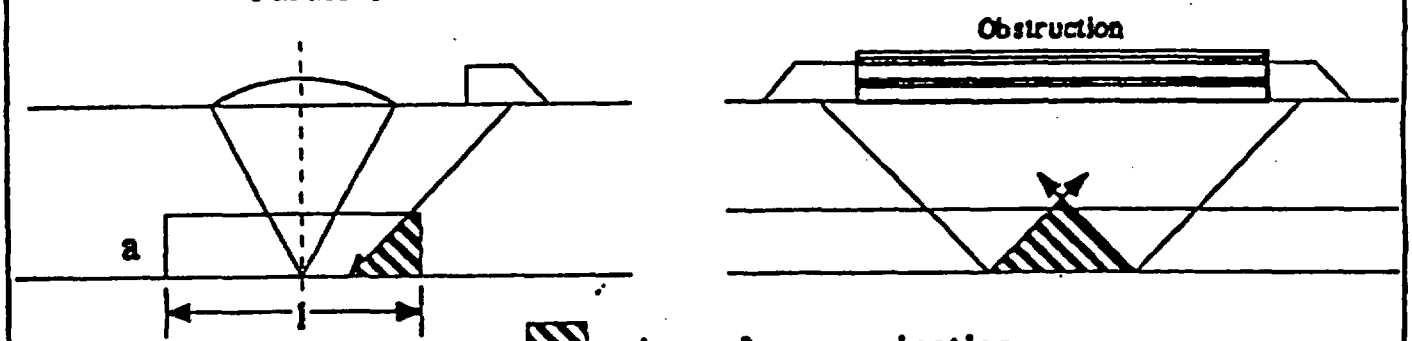
Area To Be Examined (Length x Width = A) A= N/A

Area Of Limitation (Length x Width = A1) A1= |

Percentage of Coverage (A - A1/A) = |

VOLUMETRIC EXAMINATIONS

Parallel ← Example → Transverse



= Area of no examination

1. Compute Area a x l	= Asq	.65
2. Multiply Asq by Weld Length	= Vt (Volume Total)	185.25
3. Compute Area Not Covered	= a	.65
4. Multiply "a" by Weld Length	= Vl (Volume Limited)	53.00
5. Percentage of Coverage	= (Vt - Vl/Vt)	71.39

NOTE: Compute in a similar manner for indications perpendicular to the weld.

Preparedby: Vic Morton Reviewedby: Vic [signature] 17

Date: 5 APR 93 Level: III Date: 5 APR 93 Level: III

Page 1 of 1

17

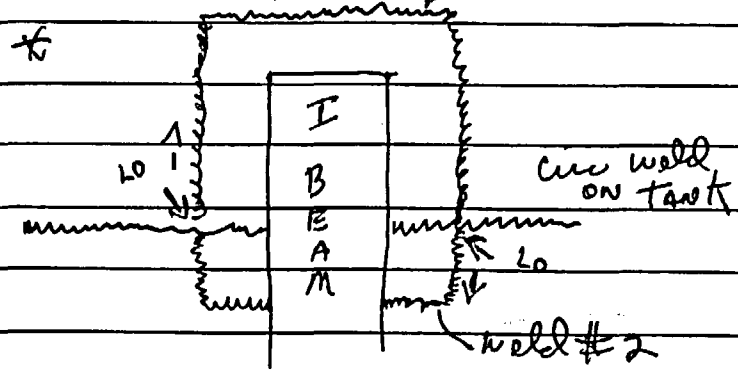
SwRI LIQUID PENETRANT EXAMINATION RECORD

PROJECT No: 17-5502	SITE: *Salem Generating Station, Unit 2*	DATE: (DAY - MONTH - YEAR) 03 APR 93	W_o LOCATION ℄ WELD	SHEET No 110080
EXAMINATION AREA (SYST/COMP) CVC TANK	(LINE/SUBASSEMBLY) 2-CVCT-2VS	(IDENTIFICATION) 1	L_o LOCATION 5 *	WELD TYPE: (FLOW) Fillet

EXAMINER L. VILLA	SNT LEVEL II	PROCEDURE No SATM9-PT-2 (3/1/93) VS2-SS-15-ZZ-0075 REV 3 CHG 1 ICN ☒ N/A	SURFACE TEMP °F 71°	PENETRANT TEMP °F 77°	THERMOMETER SERIAL NUMBER SWRI 193
EXAMINER M. COTTEN	SNT LEVEL II		SURFACE FINISH AS WELDED		WELD LENGTH 3 apr 93 ~~57"~~ 40½"

PRE CLEANER		PENETRANT		REMOVER		DEVELOPER	
BRAND	SPOTCHECK	BRAND	SPOTCHECK	BRAND	SPOTCHECK	BRAND	SPOTCHECK
TYPE	SKC-NF	TYPE	SKL-HF/S	TYPE	SKC-NF	TYPE	SKD-NF
BATCH No	92J01K	BATCH No	89K039	BATCH No	92J01K	BATCH No	92A01P
CLEANING COMPLETED	0910	TIME APPLIED	0915	REMOVAL COMPLETED	0935	TIME APPLIED	0945
		TIME REMOVED	0930			TIME READ	0953

INDICATION No	L	W	LOCATION UP OR DOWN STREAM	TYPE ROUND OR LINEAR	SIZE DIAMETER OR LENGTH	REMARKS	INITIAL
	NO RECORDABLE INDICATIONS					weld #1	JJ
						*	
						circ weld on tank	JJ
						weld #2	JJ



ANI REVIEW
INITIAL JSA
DATE 4/12/93

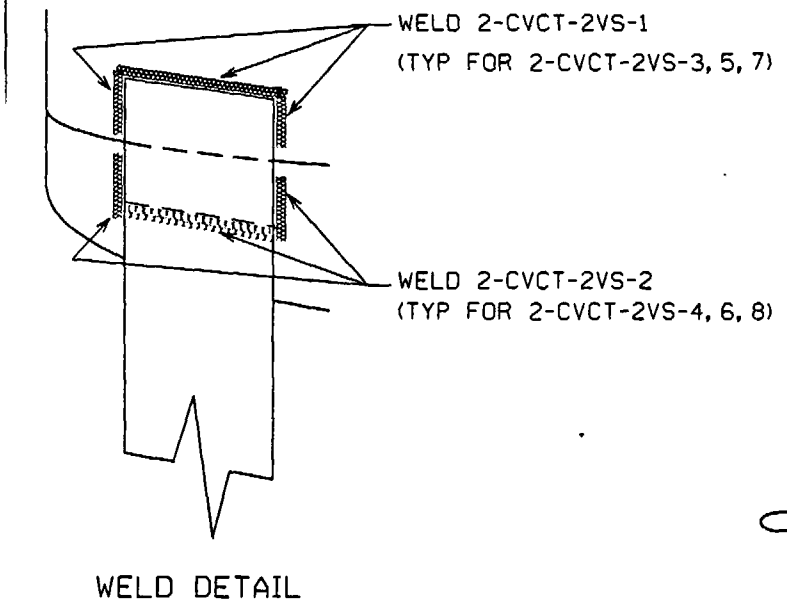
PSEG INSPECTION SERVICES
Reviewed and Approved
4/6/93
N.D.E. SUPERVISOR

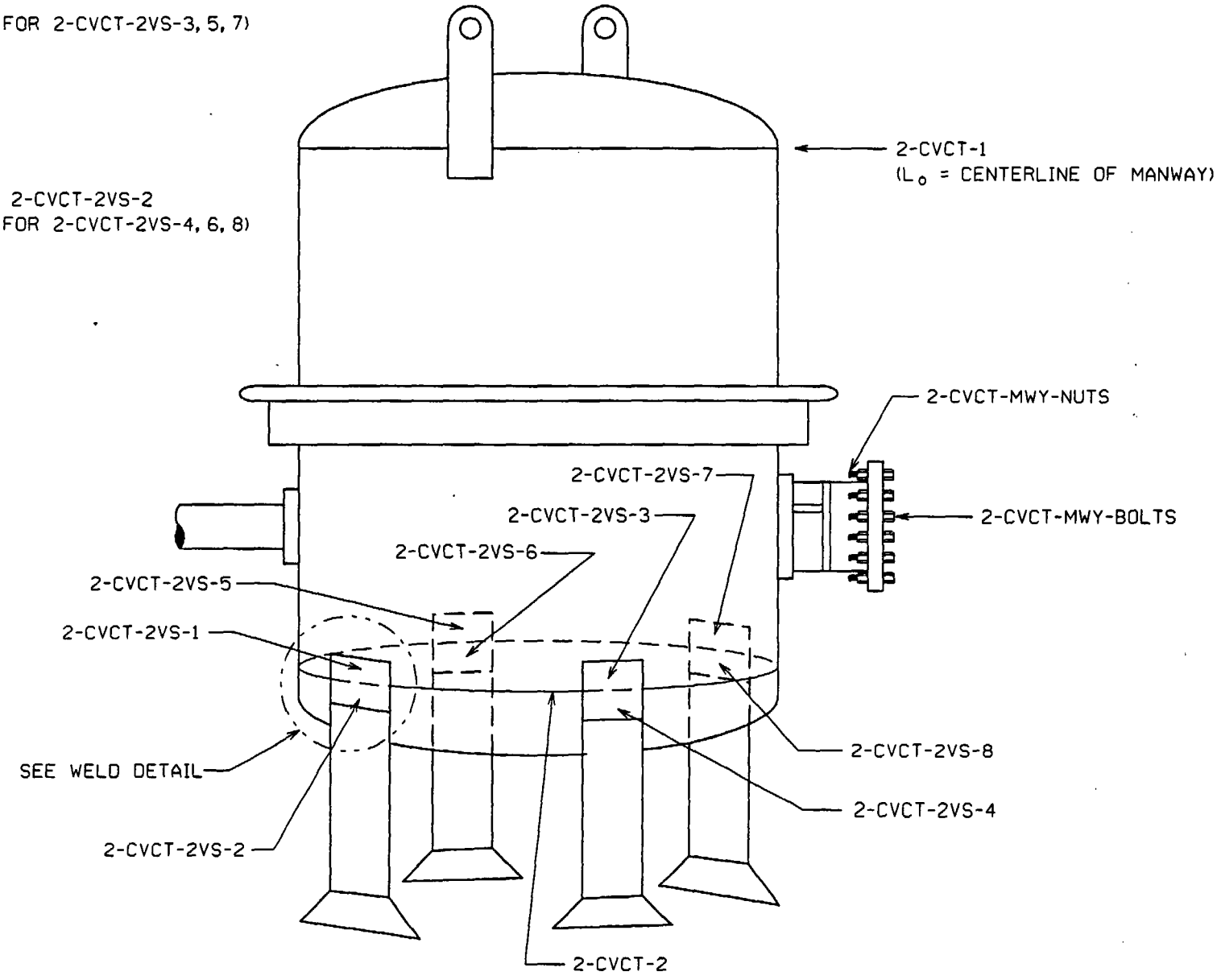
EXAMINATION AREA LIMITATION - IF NONE, SO STATE 2-CVC-1VS-22VS JJ
~~NO EXAM FROM 26" TO 32" DUE TO ANGLEIRON SUPPORT LEG~~ JJ 3 apr 93 None JJ

REVIEWED BY:	SNT LEVEL III	DATE 5 APR 93	CONTINUED ON SHEET N/A	PAGE 1 OF 1

SWRI FORM No. NDTR 17-11 (REV. 6/90)

275040





184

BUILDING: AUXILIARY	LOCATION: CVCT ROOM	ELEVATIONS: 122'

P&ID 205328

ATTENTION: ANY REVISION TO THIS DRAWING SHALL BE MADE ONLY BY CAED

REV.	DATE	DESCRIPTION
1		REVISED PER ORDER No. 80038023.

PSEG Nuclear, LLC
SALEM NUCLEAR GENERATING STATION
UNIT 2 - WELD / HANGER IDENTIFICATION FIGURE
INSERVICE INSPECTION DRAWING

FIGURE: B-5 | REVISION: 1
SYSTEM: CHEMICAL AND VOLUME CONTROL TANK
LINE: N/A
THIRD 10 YEAR INSPECTION INTERVAL

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LIMITATION REPORT

Project: 17-5502 Unit: SALEM UNIT 2

System: C.V.C. TANK Weld No.: 2-CVCT-2VS-1 AND 2

SURFACE EXAMINATIONS

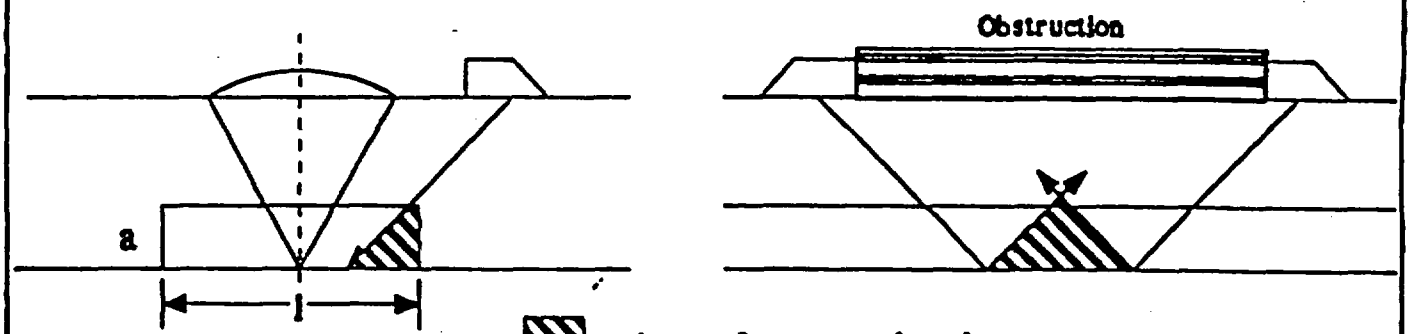
Area To Be Examined (Length x Width = A) A= 56.00

Area Of Limitation (Length x Width = A1) A1= 6.00

Percentage of Coverage (A - A1/A) = 89.30

VOLUMETRIC EXAMINATIONS

Parallel ← Example → Transverse



= Area of no examination

1. Compute Area a x l	= Asq	N/A
2. Multiply Asq by Weld Length	= Vt (Volume Total)	
3. Compute Area Not Covered	= a	
4. Multiply "a" by Weld Length	= Vl (Volume Limited)	
5. Percentage of Coverage	= (Vt - Vl/Vt)	

NOTE: Compute in a similar manner for indications perpendicular to the weld.

Preparedby: VICTOR MORTON Reviewedby: Vic [signature] 19

Date: 5APR93 Level: III Date: 5APR93 Level: III

Page 1 of 1

19

LIMITATION REPORT

Project: 17-5502 Unit: SALEM UNIT 2

System: C. V. C. TANK Weld No.: 2-CVCT-2 VS-3 AND 4

SURFACE EXAMINATIONS

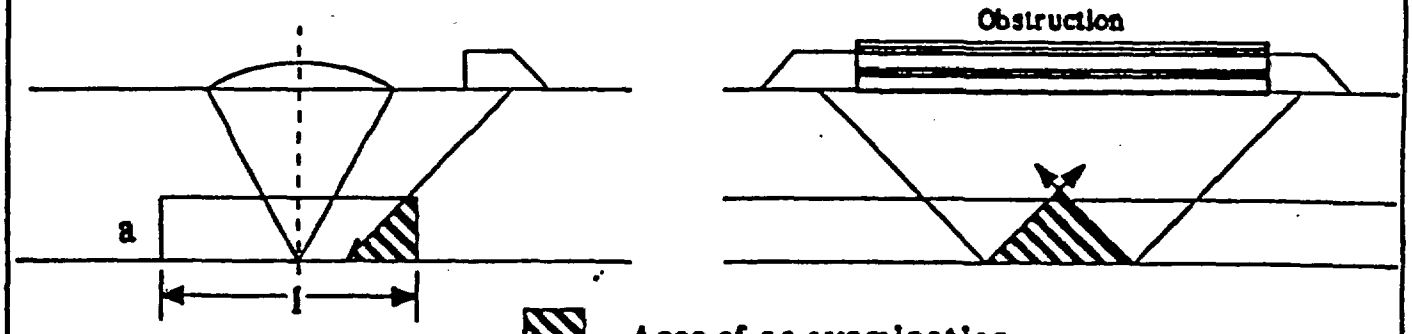
Area To Be Examined (Length x Width = A) A= 56.00

Area Of Limitation (Length x Width = Al) Al= 6.00

Percentage of Coverage (A - Al/A) = 89.30

VOLUMETRIC EXAMINATIONS

Parallel ← Example → Transverse



▨ - Area of no examination

1. Compute Area a x l	- Asq	N/A
2. Multiply Asq by Weld Length	- Vt (Volume Total)	
3. Compute Area Not Covered	- a	
4. Multiply "a" by Weld Length	- Vl (Volume Limited)	
5. Percentage of Coverage	- (Vt - Vl/Vt)	

NOTE: Compute in a similar manner for indications perpendicular to the weld.

Preparedby: VICTOR MORTON Reviewedby: Vic [signature] 20

Date: 5 APR 93 Level: III Date: 5 APR 93 Level: III

Page 1 of 1

LIMITATION REPORT

Project: 17-5502 Unit: SALEM UNIT 2

System: C.V.C. TANK Weld No.: 2-CVCT-2VS-SAND6

SURFACE EXAMINATIONS

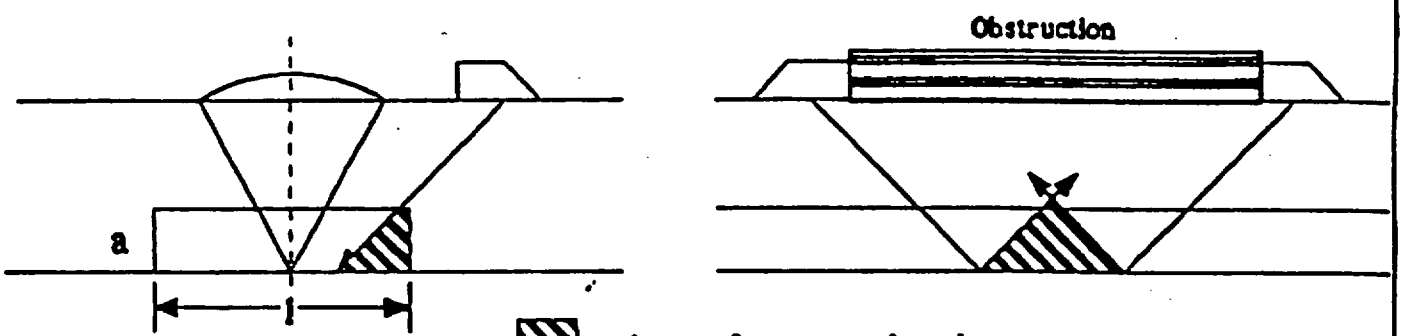
Area To Be Examined (Length x Width - A) A- 56.00

Area Of Limitation (Length x Width - Al) Al- 6.00

Percentage of Coverage (A - Al/A) - 89.30

VOLUMETRIC EXAMINATIONS

Parallel ← Example → Transverse



▨ - Area of no examination

			N	A
1. Compute Area a x l	- Asq			
2. Multiply Asq by Weld Length	- Vt (Volume Total)			
3. Compute Area Not Covered	- a			
4. Multiply "a" by Weld Length	- Vl (Volume Limited)			
5. Percentage of Coverage	- (Vt - Vl/Vt)			

NOTE: Compute in a similar manner for indications perpendicular to the weld.

Preparedby: VICTOR MORTON Reviewedby: Vic [signature] 21

Date: 5 APR 93 Level: III Date: 5 APR 93 Level: III

Page 1 of 1

21

LIMITATION REPORT

Project: 17-5502 Unit: SALEM UNIT 2

System: CVC TANK Weld No.: 2-CVCT-2VS-7 AND 8

SURFACE EXAMINATIONS

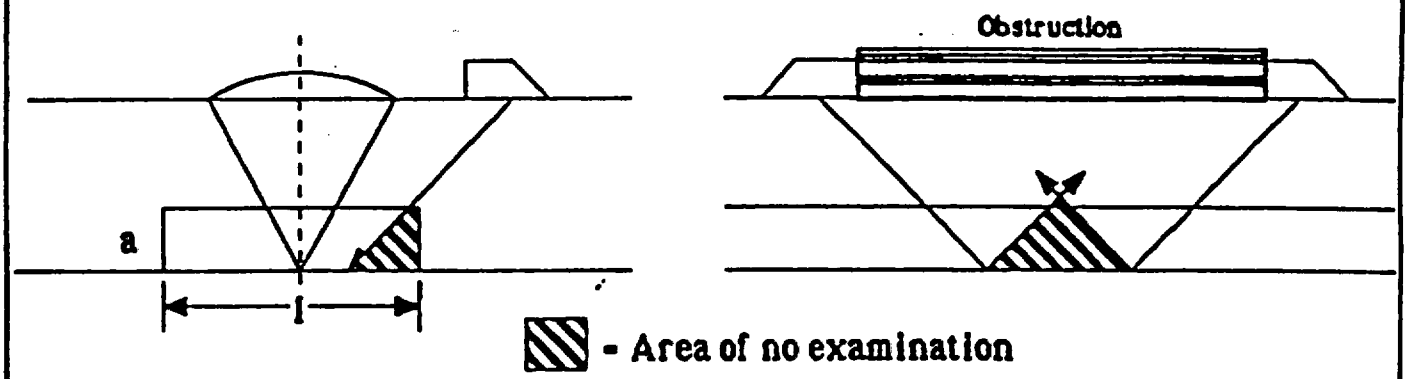
Area To Be Examined (Length x Width = A) A= 56.00

Area Of Limitation (Length x Width = A1) A1= 6.00

Percentage of Coverage (A - A1/A) = 89.30

VOLUMETRIC EXAMINATIONS

Parallel ← Example → Transverse



1. Compute Area a x l	= Asq	N/A
2. Multiply Asq by Weld Length	= Vt (Volume Total)	
3. Compute Area Not Covered	= a	
4. Multiply "a" by Weld Length	= Vl (Volume Limited)	
5. Percentage of Coverage	= (Vt - Vl/Vt)	

NOTE: Compute in a similar manner for indications perpendicular to the weld.

Preparedby: VICTOR MORTON Reviewedby: [signature] 22

Date: 5 APR 93 Level: III Date: 5 APR 93 Level: III

Page 1 of 1

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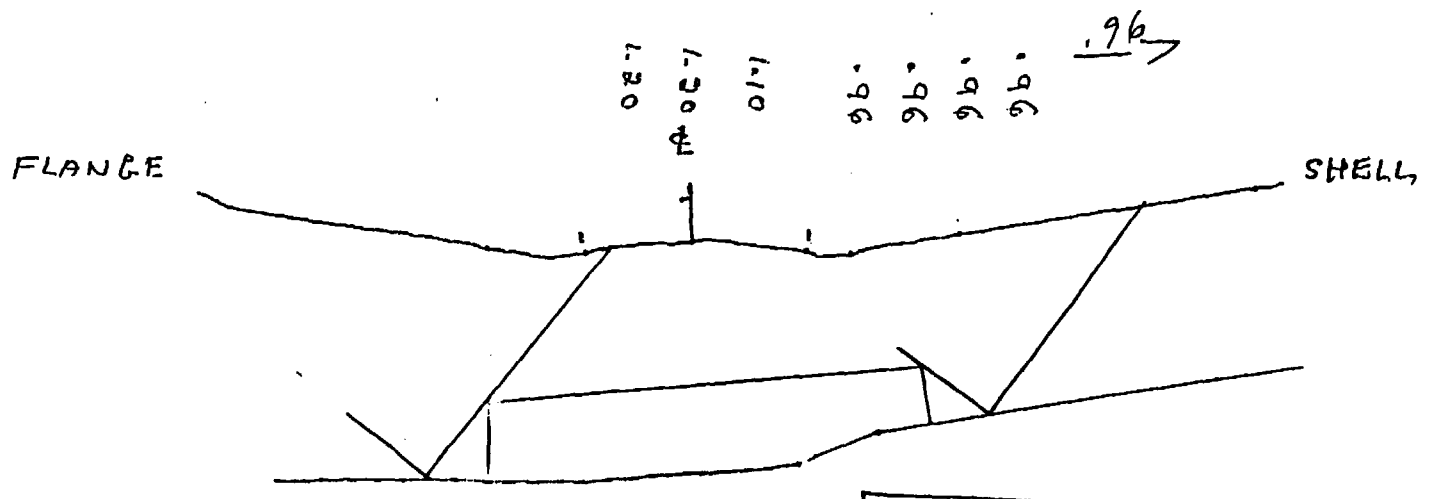
SwRI PROFILE AND THICKNESS INFORMATION RECORD

PROJECT NO:	SITE:	DATE: (DAY - MONTH - YEAR)	TIME (24 HR. CLOCK)	SHEET NO:
17-5502	Salem Generating Station, Unit 2	12 APR 93	INT. 0930 FINAL 0940	135042

EXAMINER	SNT LEVEL	THK. MEAS. REQ'D BY PROCEDURE*	INSTRUMENT:	SERIAL NO:	COMPONENT ID:
L. VILLA	II	No. SAN2-UT30 REV 0 CHG 0 ICN ☒ N/A	SONIC MARK I ☐ OTHER 139 ☒	855K	21-RHR-HEX-1
EXAMINER	**SNT LEVEL**		**COUPLANT:**		**REFERENCE BLK NO:**
M. COTTEN	II		GLYCERINE ☐ WATER ☐ OTHER (SPECIFY) ULTRAGEL II BATCH 9092		SS-113

SEARCH UNITS	
BRAND	MATL. ASSURANCE
SERIAL NO	E7541
SIZE	1/2" ROUND
FREQ. (MHz)	2.25
INSTRUMENT SETTINGS	
SCREEN SIZE	2"
DELAY	0.047
MATL. CAL.	0.222
RANGE	2"
REP. RATE	4KHZ
JACK USED	R&V
TRANS MODE	PE

PROFILE TAKEN AT 90°
WELD WIDTH = 1 3/8"
CROWN HEIGHT = 1/8.



ANI REVIEW
INITIAL
DATE 4/14/93

PSEG INSPECTION SERVICES
Reviewed and Approved
4/13/93
N.D.E. SUPERVISOR

APSE&G VS2.SS-IS.ZZ-0086

45 ° Search Unit chosen for coverage using 2/8, 6/8, 10/8 nodes.
____ ° Search Unit chosen for coverage using ____ nodes.

NAME: VICTOR MORTON
SNT LEVEL: III

REVIEWED BY: Vic Morton
SNT LEVEL: III
DATE: 12 APR 93

SWRI FORM No. NDTR 17-135 (REV. 6/90)

23

275365

LIMITATION REPORT

Project: 17-5502 Unit: SALEM UNIT 2

System: RESIDUAL HEAT REMOVAL Weld No.: 21-RHR-HEX-1

SURFACE EXAMINATIONS

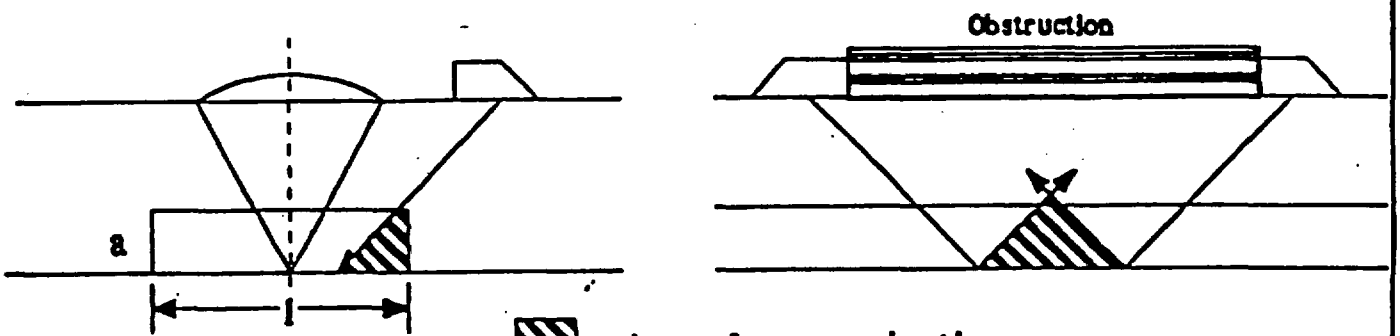
Area To Be Examined (Length x Width - A) A- N/A

Area Of Limitation (Length x Width - Al) Al-

Percentage of Coverage (A - Al/A) -

VOLUMETRIC EXAMINATIONS

Parallel ← Example → Transverse



▨ - Area of no examination

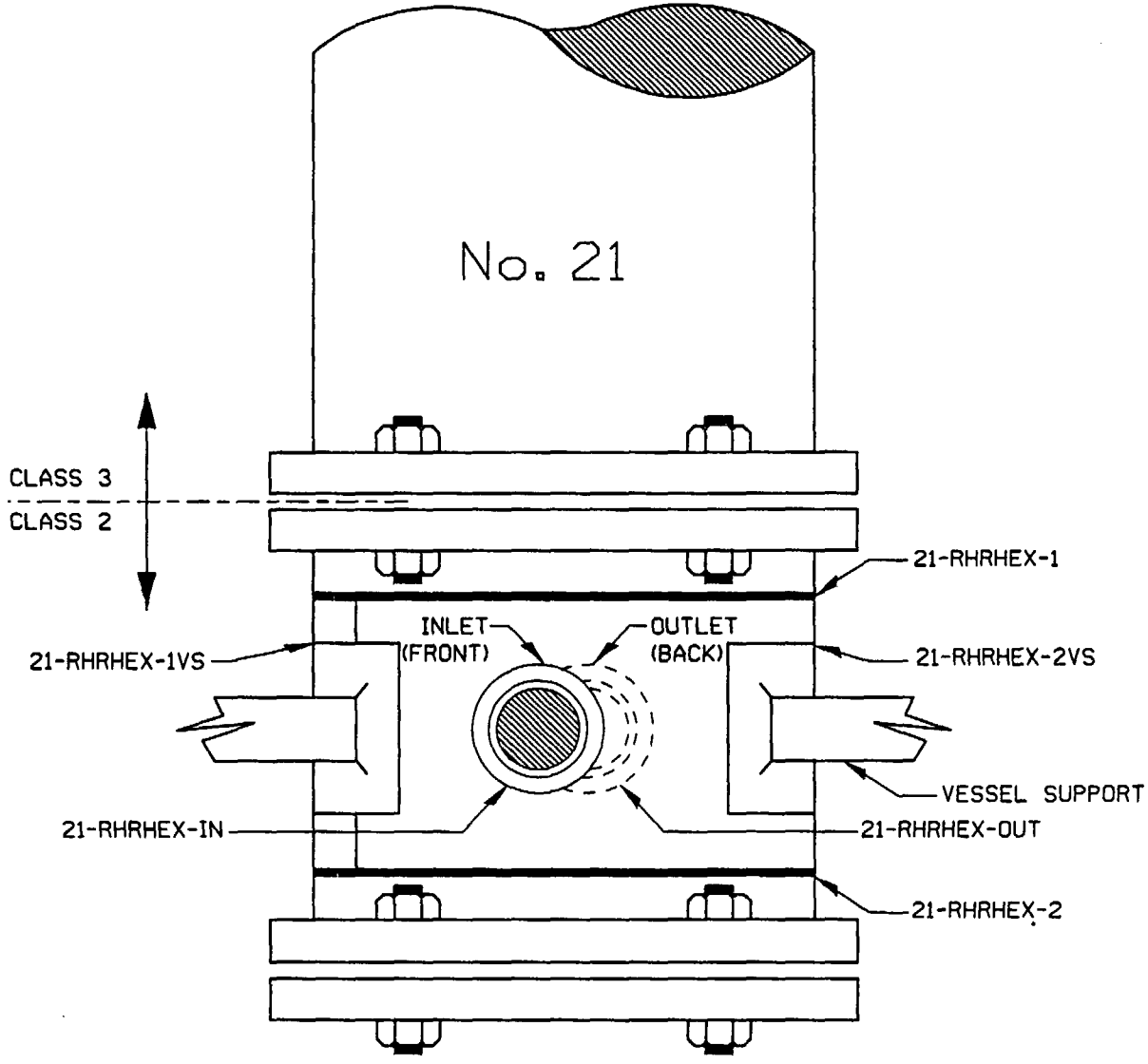
1. Compute Area a x l	- Asq	N/A
2. Multiply Asq by Weld Length	- Vt (Volume Total)	116.0
3. Compute Area Not Covered	- a	24.0
4. Multiply "a" by Weld Length	- Vl (Volume Limited)	N/A
5. Percentage of Coverage	- (Vt - Vl/Vt)	79.3

NOTE: Compute in a similar manner for indications perpendicular to the weld.

Preparedby: VICTOR MORTON Reviewedby: [signature] 24

Date: 13 APR 93 Level: III Date: 13 APR 93 Level: III

Page 1 of 1



RHR HEAT EXCHANGER

24A

24A

ILDING: XILIARY	LOCATION: *21 RHR HEAT EXCHANGER ROOM	ELEVATIONS: 63'-8"

P&ID 205332

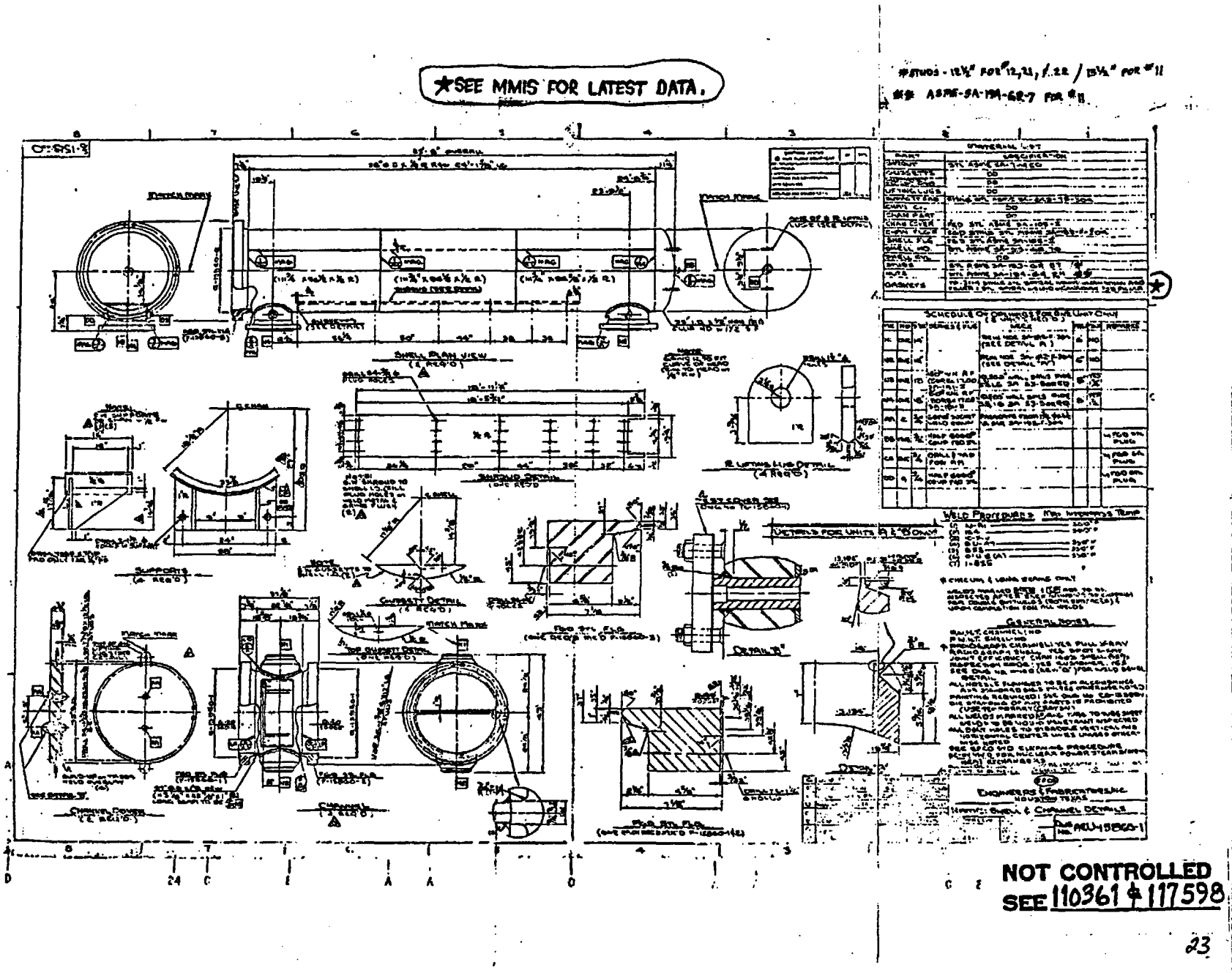
TTENTION: ANY REVISION TO THIS DRAWING SHALL BE MADE ONLY BY CAED

EV.	DATE	DESCRIPTION
1		REVISED PER ORDER No. 80038023.

PSEG Nuclear, LLC
SALEM NUCLEAR GENERATING STATION
UNIT 2 - WELD / HANGER IDENTIFICATION FIGURE
INSERVICE INSPECTION DRAWING

FIGURE: B-11 | REVISION: 1
SYSTEM: RHR HEAT EXCHANGER 21
LINE: N/A
THIRD 10 YEAR INSPECTION INTERVAL

USER RESPONSIBLE FOR VERIFYING REVISION, STATUS AND CHANGES
VTD 301110 000 10 PRINTED 20050111



USER RESPONSIBLE FOR VERIFYING REVISION, STATUS AND CHANGES
VTD 301110 000 10 PRINTED 20050111

242

NOT CONTROLLED
SEE 108342 & 117597

S.O. 15860

29'-6¾"
46¾"
23¼"
42"
25'-8" SHELL LGTH.
22'-3"
22½"
23'-4" DISTANCE TO REMOVE SHELL

CERTIFIED FOR CONSTRUCTION
DEC 16 1969
ENGINEERS & FABRICATORS INC. HOUSTON, TEXAS

CERTIFIED FOR CONSTRUCTION 1/15/70

2-1½"Ø HOLES IN EACH SUPPORT

SEE NOZ. LEVEL DETAIL

1" MAX.

NAME PL

TOP

16'-2"

TAP EVERY 4" HOLE

27,233# TOTAL SEISMIC FORCE ON SUPPORTS

NOT REQUIRED

FLOODED VOLUME OF SHELL = 835 GALS.
FLOODED VOLUME OF TUBESIDE = 476 GALS

WT. OF SHELL =	7,100 LBS.
WT. FULL H2O	25,620 LBS
WT EMPTY =	26,3[illegible] LBS

ESTIMATED WEIGHTS

MARK	SIZE	SERIES	SERVICE	PROJECTION
CC	¾	[illegible]	DRAIN	—
BB	¾	[illegible]	VENT	—
AA	¾	S.W. [illegible]	DRAIN	—
N4	18"	150# F.F.	OUTLET	26"
N3	18"	150# F.F.	INLET	26"
N2	14"	[illegible]	OUTLET	24½
N1	14"	[illegible]	INLET	24½

CONNECTION SCHEDULE

PNJACAHRS 1
PNJACAHRS 2

** CARBON STL PARTS ONLY
* TUBE SIDE ASME SECT. III C
SHELL SIDE ASME SECT. III

ALL NOZ. PROJECTIONS ARE FROM ℄ TO FACE OF FLG.
HYDROSTATIC TEST CHARTS
TEST WATER TO CONTAIN LESS

AEU-15860-2
AEU-B-15860-2
NP-15860-1
G-15860
W-100 (REV. G)
NP-15860-2
TC-15860-1
TC-15860-2

DESIGN CONDITIONS

	SHELL	TUBES
	150	600
	225	500
	200	400

ENGINEERS & FABRICATORS INC.

CO 15860

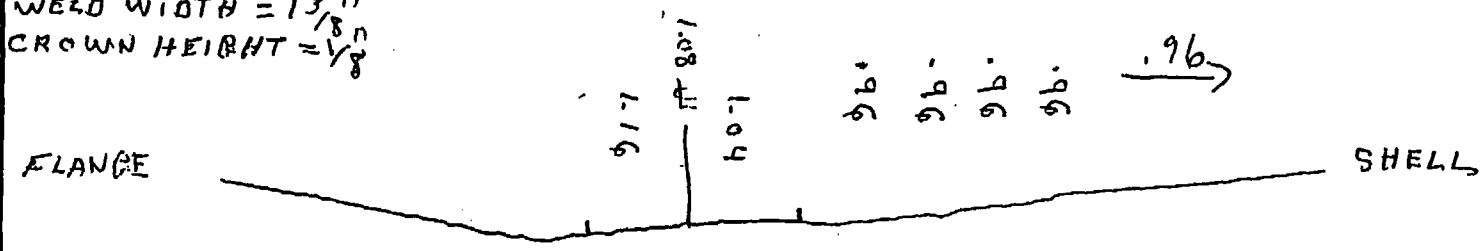
SwRI PROFILE AND THICKNESS INFORMATION RECORD

PROJECT NO:	SITE:	DATE: (DAY - MONTH - YEAR)	TIME (24 HR. CLOCK)		SHEET NO:
17-5502	Salem Generating Station, Unit 2	12 APR 93	INT. 0935	FINAL 0950	135043

EXAMINER	SNT LEVEL	THK. MEAS. REQ'D BY PROCEDURE* No. SA14.9-UT30 REV 0 CHG 0 ICN ☒ N/A	INSTRUMENT: SONIC MARK I ☐ OTHER 136 ☒	SERIAL NO:	COMPONENT ID:
L. VILLA	II			855K	21-RHR-HEX-2
EXAMINER	**SNT LEVEL**		**COUPLANT:** GLYCERINE ☐ WATER ☐ OTHER (SPECIFY) ULTRAGEL II BATCH 7092		**REFERENCE BLK NO:**
M. COTTEN	I T				55-113

SEARCH UNITS	
BRAND	MATL. ASSURANCE
SERIAL NO	E7541
SIZE	1/2" ROUND
FREQ. (MHz)	2.25
INSTRUMENT SETTINGS	
SCREEN SIZE	2"
DELAY	0.047
MATL. CAL.	0.222
RANGE	2"
REP. RATE	4KHZ
JACK USED	RCV
TRANS MODE	PE

PROFILE TAKEN AT 50"
WELD WIDTH = 1 3/8"
CROWN HEIGHT = 1/8"



ANI I REVIEW
INITIAL [illegible]
DATE 4/14/93

PSEG
INSPECTION SERVICES
Reviewed and Approved
4/13/93
N.D.E. SUPERVISOR

*PSE&G VS2.SS-IS-ZZ-0086

45° Search Unit chosen for coverage using 2/8, 4/8, 10/8 nodes.

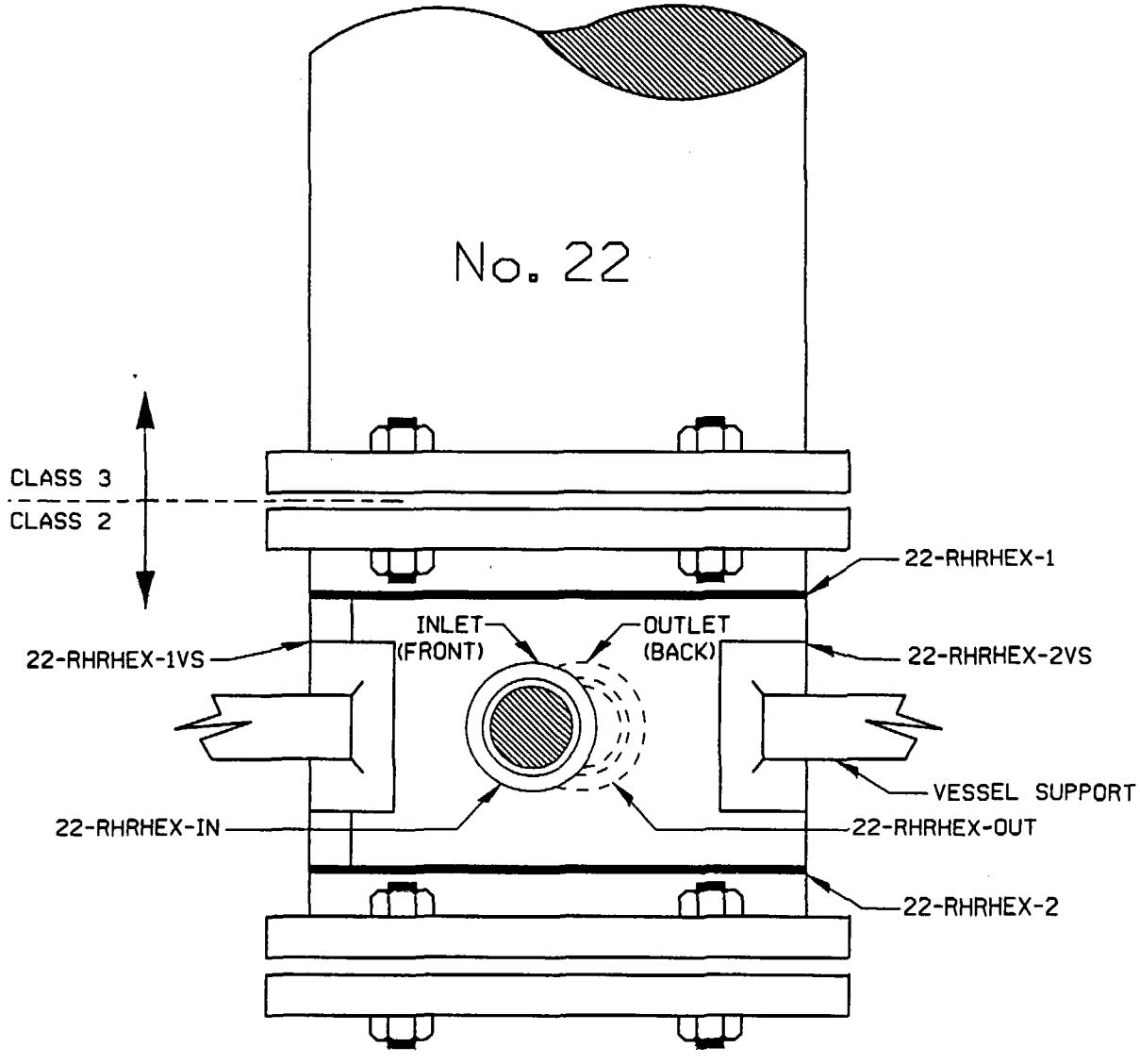
° Search Unit chosen for coverage using _____ nodes.

NAME:	SNT LEVEL:
VICTOR MORTON	III

REVIEWED BY:	SNT LEVEL:	DATE:
[signature]	III	13 APR 93

SWRI FORM No. NDTR 17-135 (REV. 6/90)

275390



RHR HEAT EXCHANGER

BUILDING: AUXILIARY	LOCATION: *21 RHR HEAT EXCHANGER ROOM	ELEVATIONS: 63'-8"

P&ID 205332

ATTENTION: ANY REVISION TO THIS DRAWING SHALL BE MADE ONLY BY CAED

REV.	DATE	DESCRIPTION
1		REVISED PER ORDER No. 80038023.

PSEG Nuclear, LLC
SALEM NUCLEAR GENERATING STATION
UNIT 2 - WELD / HANGER IDENTIFICATION FIGURE
INSERVICE INSPECTION DRAWING

FIGURE: B-12 | REVISION: 1
SYSTEM: RHR HEAT EXCHANGER 22
LINE: N/A
THIRD 10 YEAR INSPECTION INTERVAL

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LIMITATION REPORT

Project: 17-5502 Unit: SALEM UNIT 2

System: RHR HEAT EXCHANGER Weld No.: 21-RHR-HEX-2

SURFACE EXAMINATIONS

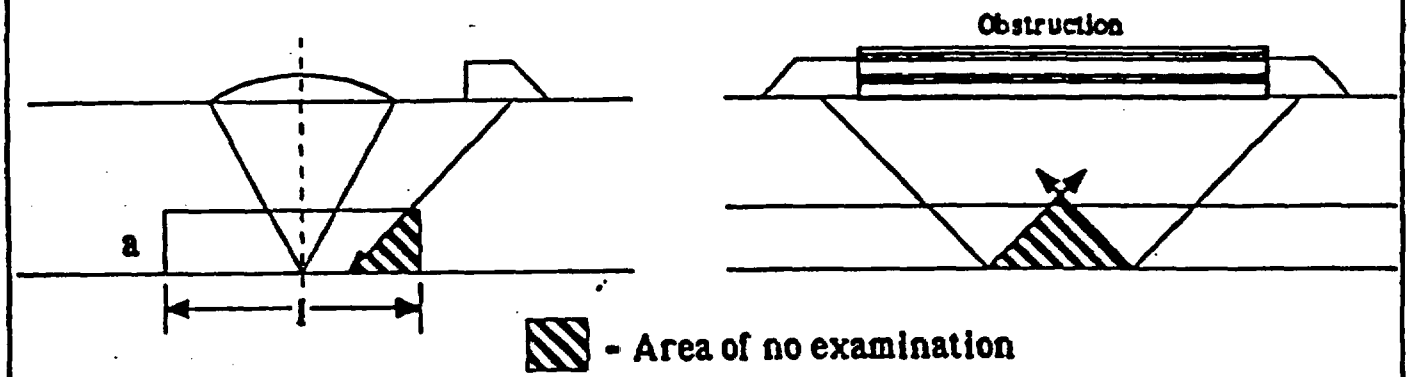
Area To Be Examined (Length x Width = A) A= N/A

Area Of Limitation (Length x Width = Al) Al= ↓

Percentage of Coverage (A - Al/A) = ↓

VOLUMETRIC EXAMINATIONS

Parallel ← Example → Transverse



1. Compute Area a x l	= Asq	N/A
2. Multiply Asq by Weld Length	= Vt (Volume Total)	117
3. Compute Area Not Covered	= a	93.5
4. Multiply "a" by Weld Length	= Vl (Volume Limited)	N/A
5. Percentage of Coverage	= (Vt - Vl/Vt)	20

NOTE: Compute in a similar manner for indications perpendicular to the weld.

Preparedby: VICTOR MORTON Reviewedby: Vic Morton 26

Date: 13 APR 93 Level: III Date: 13 APR 93 Level: III

Page 1 of 1

076370

LIMITATION REPORT

Project: 17-5502 Unit: SALEM UNIT 2

System: FEEDWATER Weld No.: 14-BF-2211-2

SURFACE EXAMINATIONS

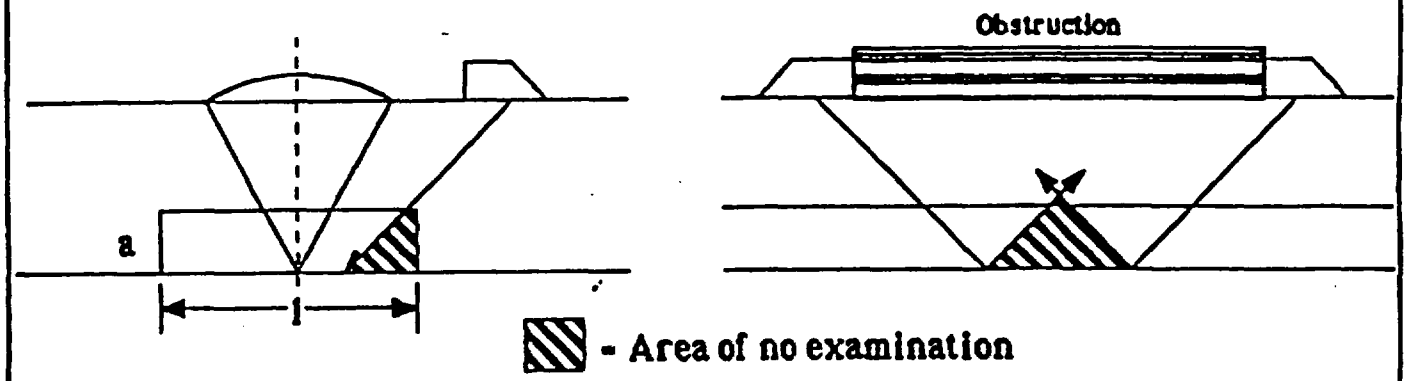
Area To Be Examined (Length x Width - A) A- 130.7

Area Of Limitation (Length x Width - Al) Al- 20.6

Percentage of Coverage (A - Al/A) - 84.3

VOLUMETRIC EXAMINATIONS

Parallel ← Example → Transverse



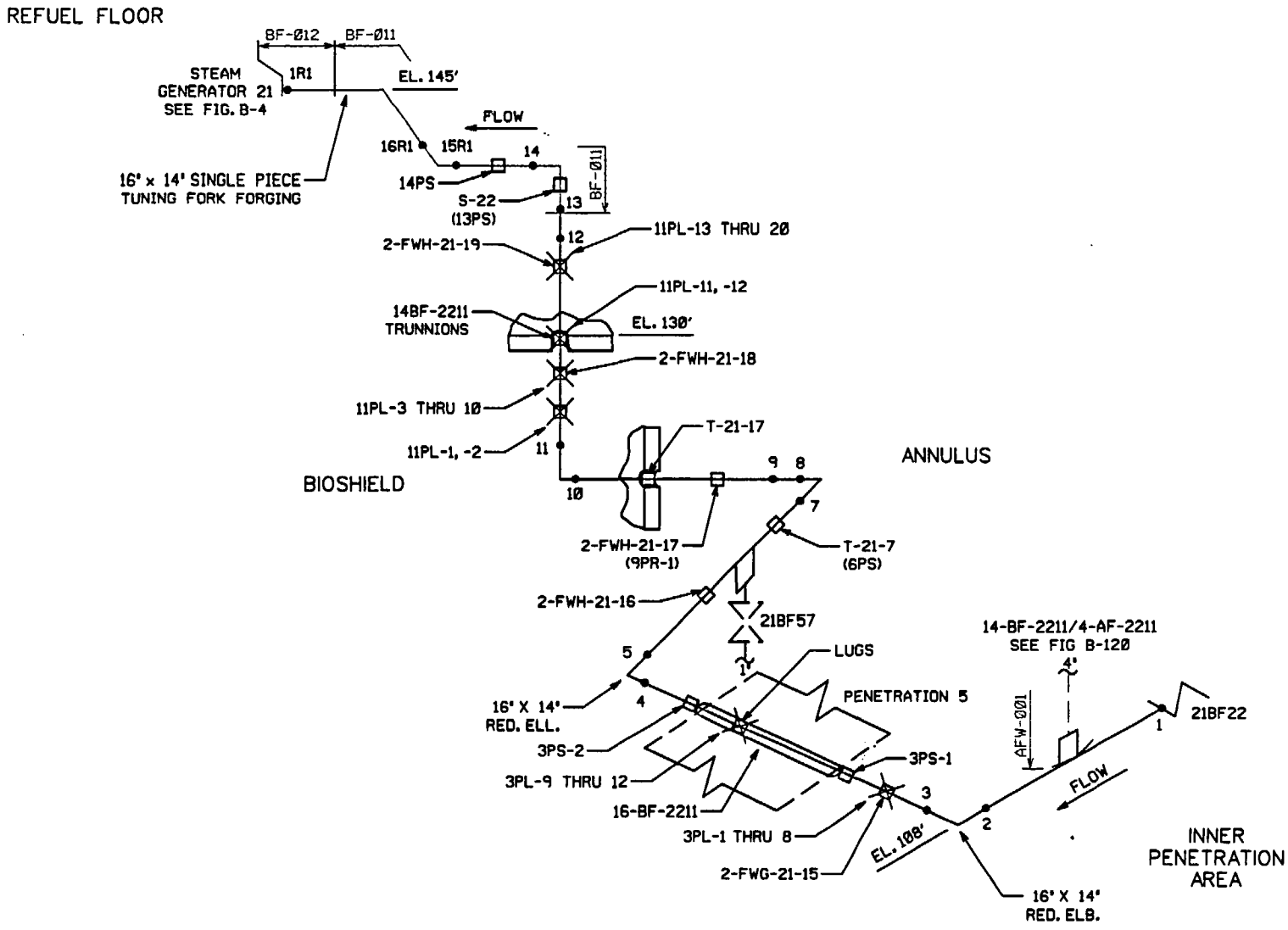
1. Compute Area a x l	- Asq	.92
2. Multiply Asq by Weld Length	- Vt (Volume Total)	40.94
3. Compute Area Not Covered	- a	.92
4. Multiply "a" by Weld Length	- Vl (Volume Limited)	6.44
5. Percentage of Coverage	- (Vt - Vl/Vt)	84.3

NOTE: Compute in a similar manner for indications perpendicular to the weld.

Preparedby: VICTOR MORTON Reviewedby: [signature] 27

Date: 2 APR 93 Level: III Date: 2 APR 93 Level: III

Page 1 of 1



274

BUILDING:	LOCATION:	ELEVATIONS:
CONTAINMENT INNER PEN	REFUEL FLOOR BIOSHIELD ANNULUS INNER PEN	108' to 145'

PSEG ISO SGF23-03
P & ID 205302-07

ATTENTION: ANY REVISION TO THIS DRAWING SHALL BE MADE ONLY BY CAED

REV.	DATE	DESCRIPTION
4		REVISED PER ORDER No. 80038023.

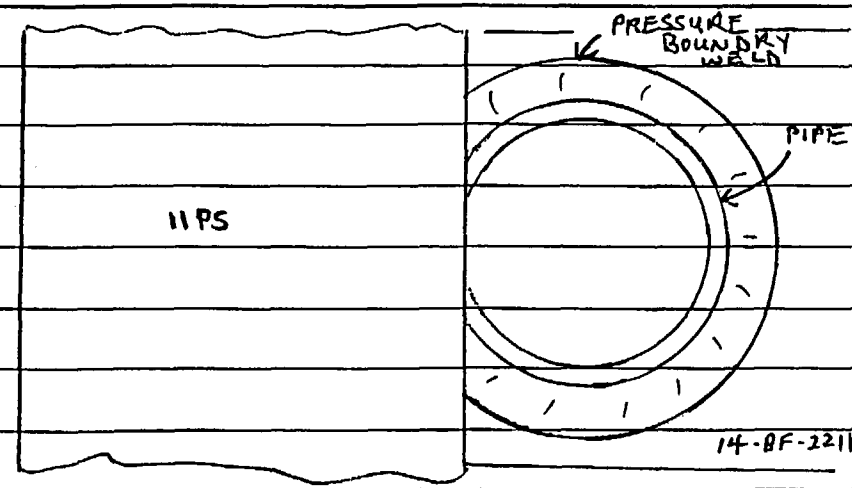
PSEG Nuclear, LLC
SALEM NUCLEAR GENERATING STATION
UNIT 2 - WELD / HANGER IDENTIFICATION FIGURE
INSERVICE INSPECTION DRAWING

FIGURE: B-17 | REVISION: 4
SYSTEM: BOILER FEED SYSTEM
STEAM GENERATOR FEED
LINE: 16-BF-2211, 14-BF-2211
THIRD 10 YEAR INSPECTION INTERVAL

SwRI MAGNETIC PARTICLE EXAMINATION RECORD

PROJECT No: 17-5502	SITE: Salem Generating Station, Unit 2	DATE: (DAY - MONTH - YEAR) 12 APR 93	TIME (24 HR. CLOCK) EXAM STARTED: 0907 EXAM ENDED: 0924	SHEET No.: 120016
EXAMINATION AREA: (SYST/COMP) FEEDWATER	LINE/SUBASSEMBLY: 14-BF-2211	IDENTIFICATION: TRUNNIONS	L_0 LOCATION: 6	W_0 LOCATION: FUSION LINE MAIN RUN
EXAMINER: W. HAWKINS	SNT LEVEL II	PROCEDURE V 52.55-15.22-0070 No SAM 2-MT1 REV 1 CHG 1 ICN [X] N/A	SURFACE FINISH: AS WELDED	WELD TYPE (——FLOW——) FILLET
EXAMINER: W. BYLER	SNT LEVEL II		MATERIAL BRAND: DETEK WET [ ] DRY [X] BATCH No.: 7801-200 FLOURESCENT [ ] TYPE: MPW-410 MIXED NO [X] YES [ ] COLOR: YELLOW MIXED WITH N/A	YOKE SPACING: 4 IN YOKE BRAND: PARKER SERIAL No.: 801
CALIBRATION BLOCK SERIAL No.: B 70198 10 WEIGHT: 11.3	CALIBRATION VERIFICATION TIME: 0847 1128 INITIALS: WH WH	DISTANCE FROM BLACK LIGHT TO SENSOR CELL N/A IN		SURFACE TEMP. N °F THERMOMETER SERIAL No.: A
BLACK LIGHT BRAND: N SERIAL No.: A	INTENSITY METER BRAND: N SERIAL No.: A	BLACK LIGHT OUTPUT N A $\mu w/cm^2$	BLACK LIGHT OUTPUT VERIFICATION TIME: N INITIALS: A	MATERIAL APPLICATION: DUSTING [X] FLOODING [ ] SPRAYING [ ]

IND No.	L	W	LOCATION	ROUND OR LINEAR	SIZE DIA. OR LENGTH	REMARKS:	INITIALS
NO RECORDABLE INDICATIONS							NH



PSEG INSPECTION SERVICES Reviewed and Approved WD 4/13/93 N.D.E. SUPERVISOR

NSA DATE 4/14/93

28

EXAMINATION AREA LIMITATION: (IF NONE, SO STATE) WELD 7 1/2" LONG, 1 1/2" OF WELD CANNOT BE INSPECTED DUE TO CONFIGURATION.

REVIEWED BY: [signature]	SNT LEVEL III	DATE 12 APR 93	PAGE 1 OF 1

SWRI FORM No. NDTR 17-12 (REV. 6/90)

33/095

LIMITATION REPORT

Project: 17-5502 Unit: SALEM UNIT 2

System: FEEDWATER Weld No.: 14-BF-2211 TRUNNIONS

SURFACE EXAMINATIONS

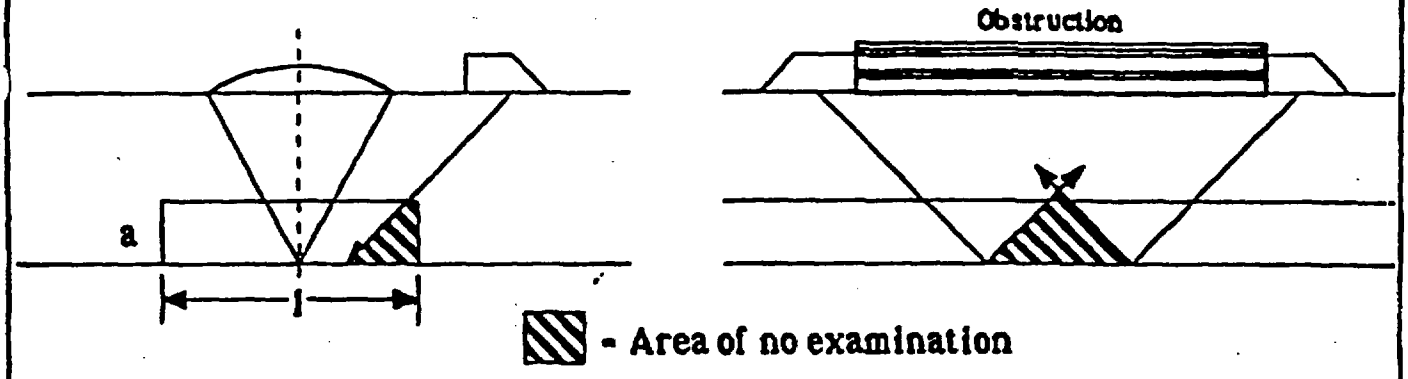
Area To Be Examined (Length x Width = A) A= 7.5

Area Of Limitation (Length x Width = Al) Al= 1.5

Percentage of Coverage (A - Al/A) = 80

VOLUMETRIC EXAMINATIONS

Parallel ← Example → Transverse



1. Compute Area a x l	= Asq	N/A
2. Multiply Asq by Weld Length	= Vt (Volume Total)	
3. Compute Area Not Covered	= a	
4. Multiply "a" by Weld Length	= Vl (Volume Limited)	
5. Percentage of Coverage	= (Vt - Vl/Vt)	

NOTE: Compute in a similar manner for indications perpendicular to the weld.

Preparedby: VICTOR MORTON Reviewedby: [signature] 29

Date: 12 APR 93 Level: III Date: 12 APR 93 Level: III

Page 1 of 1

22 INCS

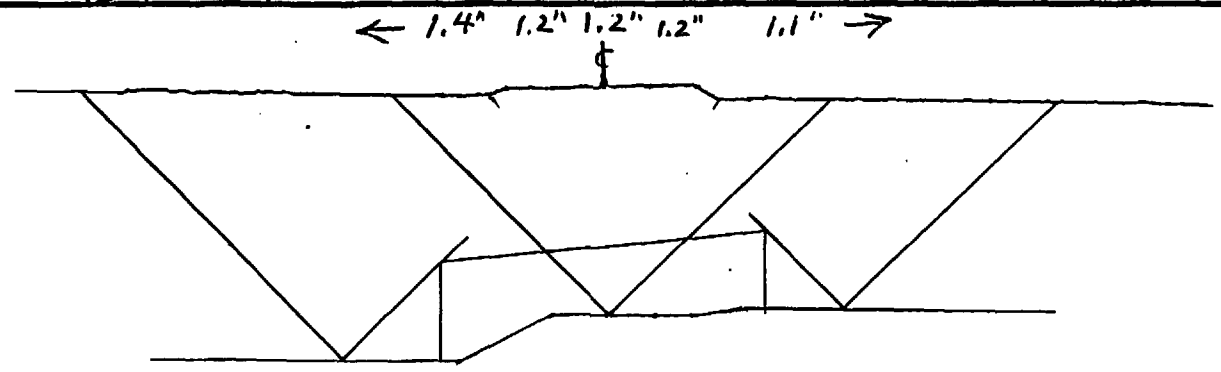
29

SwRI PROFILE AND THICKNESS INFORMATION RECORD

PROJECT NO:	SITE:	DATE: (DAY - MONTH - YEAR)	TIME (24 HR. CLOCK)		SHEET NO:
17-5502	Salem Generating Station, Unit 2	13 APR 93	INT. 1438	FINAL 1449	135118

EXAMINER	SNT LEVEL	THK. MEAS. REQ'D BY PROCEDURE	INSTRUMENT:	SERIAL NO:	COMPONENT ID:
W. HAWKINS	II	No. VS2.55-15.22-0082 SAM 2-UT 3 REV 2 CHG 0	SONIC MARK I ☐ OTHER 136 ☒	860K	30-MS-2211-9
EXAMINER	**SNT LEVEL**		**COUPLANT:**		**REFERENCE BLK NO:**
W. BYLER	II	ICN ☒ N/A	GLYCERINE ☐ WATER ☐ OTHER (SPECIFY) ULTRAGEL BATCH NO. 9092		CS-134

SEARCH UNITS	
BRAND	AEROTECH
SERIAL NO	E-11977
SIZE	1/4
FREQ. (MHz)	5
INSTRUMENT SETTINGS	
SCREEN SIZE	2"
DELAY VELOCITY	.272
MATL. CAL. VELOCITY	.209
RANGE	2
REP. RATE	4KHZ
JACK USED	RCV/XMT
TRANS MODE	DUAL



ANI REVIEW
INITIAL SA
DATE 4/15/93

PSEG
INSPECTION SERVICES
Reviewed and Approved
4/14/93
N.D.E. SUPERVISOR

← PIPE

ELBOW

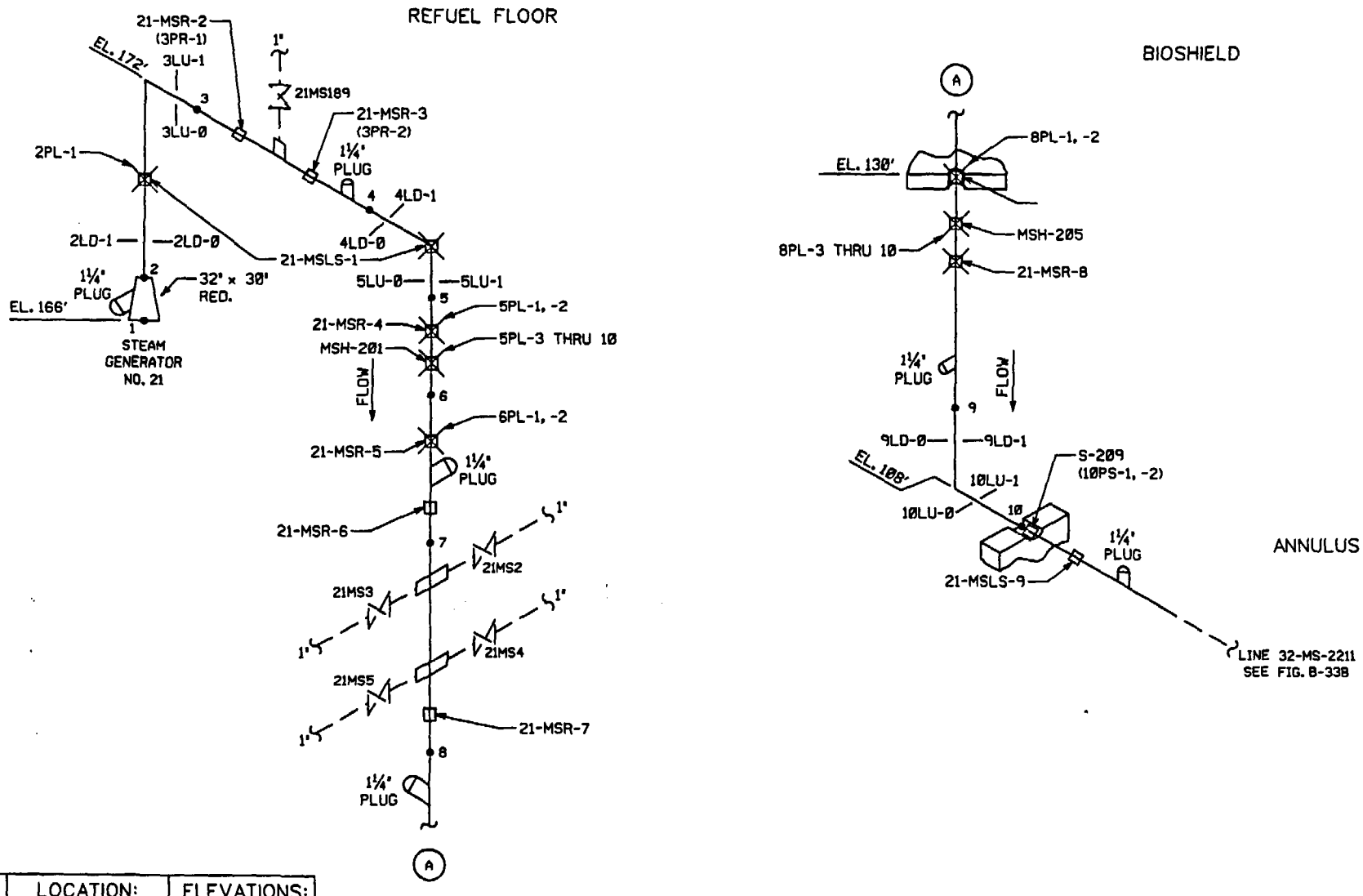
45 °	Search Unit chosen for coverage using 1/8, 3/8, 5/8, 7/8 nodes.	NAME: VICTOR MORTON	SNT LEVEL: III
___ °	Search Unit chosen for coverage using ___ nodes.		

REVIEWED BY:	SNT LEVEL:	DATE:
Vic Morton	III	13 APR 93

SWRI FORM No. NDTR 17-135 (REV. 6/90)

3C

382140



304

BUILDING: CONTAINMENT	LOCATION: REFUEL FLOOR BIOSHIELD ANNULUS	ELEVATIONS: 108' - 172'

PSEG ISO MS23-01
P & ID 205303

ATTENTION: ANY REVISION TO THIS DRAWING SHALL BE MADE ONLY BY CAED

REV.	DATE	DESCRIPTION
1		REVISED PER ORDER No. 80038023.

PSEG Nuclear, LLC
SALEM NUCLEAR GENERATING STATION
UNIT 2 - WELD / HANGER IDENTIFICATION FIGURE
INSERVICE INSPECTION DRAWING

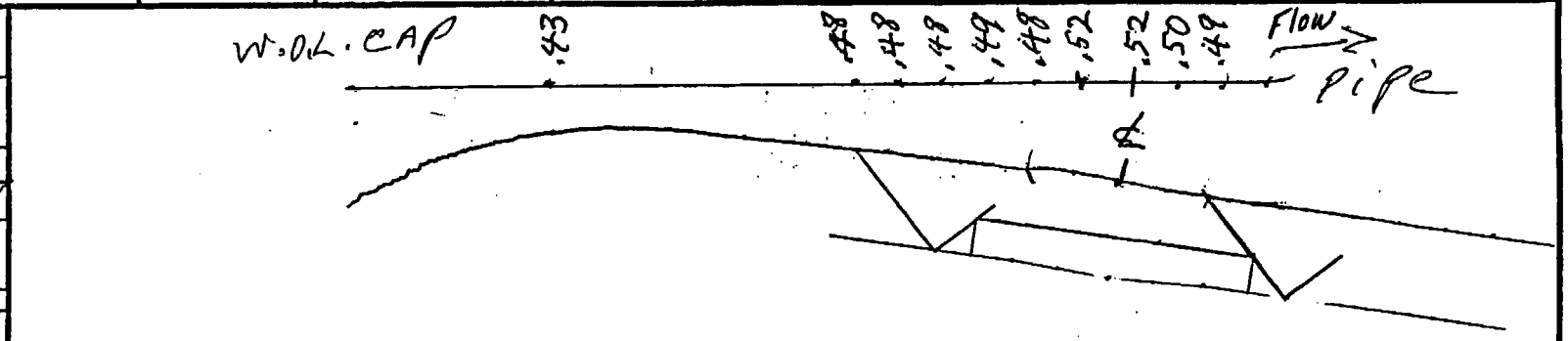
FIGURE: B-33A | REVISION: 1
SYSTEM: MAIN STEAM SYSTEM
LINE: 32-MS-2211, 30-MS-2211
THIRD 10 YEAR INSPECTION INTERVAL

SwRI PROFILE AND THICKNESS INFORMATION RECORD

PROJECT NO: 17-5502	SITE: Salem Generating Station, Unit 2	DATE: (DAY - MONTH - YEAR) 6 APRIL 93	TIME (24 HR. CLOCK) INT. 1355 FINAL 1655	SHEET NO: 135088

EXAMINER: K. KURTZ	SNT LEVEL: II	THK. MEAS. REQ'D BY PROCEDURE No. SAM2 UT3 REV 2 CHG 0 ICN ☑ N/A	INSTRUMENT: SONIC MARK I ☐ OTHER ULTRAGEL ☑	SERIAL NO: 857 K	COMPONENT ID: 12-PR-2201-1
EXAMINER: F. BRAUN	SNT LEVEL: IT		COUPLANT: ULTRAGEL GLYCERINE ☐ WATER ☐ OTHER (SPECIFY) BATCH NO. 8092		REFERENCE BLK NO: 66 SAM

SEARCH UNITS	
BRAND	KBA
SERIAL NO	C30257
SIZE	25
FREQ. (MHz)	2.25
INSTRUMENT SETTINGS	
SCREEN SIZE	1"
DELAY	.372
MATL. CAL.	.203
RANGE	1"
REP. RATE	4 KHZ
JACK USED	DUAL ~~XPAT~~ 4/6/93
TRANS MODE	N/A



ANI REVIEW
INITIAL NSA
DATE 4/12/93

PSEG
INSPECTION SERVICES
Reviewed and Approved
4/6/93
N.D.E. SUPERVISOR

WHERE AVAILABLE SCAN ACROSS WELD FOR ~~100%~~ MAXIMUM COVERAGE. 4/6/93

45 ° Search Unit chosen for coverage using 2/8, 6/8, 10/8 nodes.

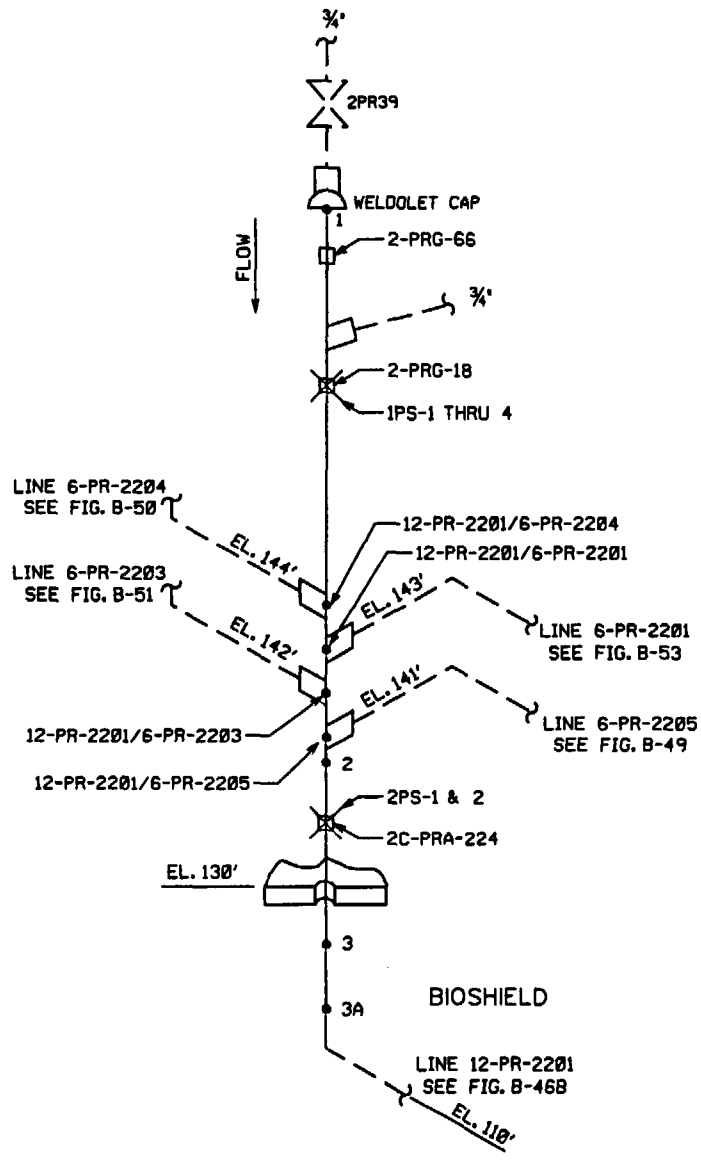
— ° Search Unit chosen for coverage using _____ nodes.

NAME: VICTOR MORTON SNT LEVEL: III

REVIEWED BY: Vic SNT LEVEL: III DATE: 7 APR 93

SWRI FORM No. NDTR 17-135 (REV. 6/90)

500010



314

BUILDING:	LOCATION:	ELEVATIONS:
CONTAINMENT	PRESSURIZER BLOCK HOUSE BIOSHIELD	110' - 130'

PSEG ISO RC23-03
P & ID 205301

ATTENTION: ANY REVISION TO THIS DRAWING SHALL BE MADE ONLY BY CAED

REV.	DATE	DESCRIPTION
1		REVISED PER ORDER No. 80038023.

PSEG Nuclear, LLC
SALEM NUCLEAR GENERATING STATION
UNIT 2 - WELD / HANGER IDENTIFICATION FIGURE
INSERVICE INSPECTION DRAWING

FIGURE: B-46A | REVISION: 1
SYSTEM: REACTOR COOLANT SYSTEM
CONTAINMENT PRESSURIZER RELIEF
LINE: 12-PR-2201
THIRD 10 YEAR INSPECTION INTERVAL

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LIMITATION REPORT

Project: 17-5502 Unit: SALEM UNIT 2

System: PRESSURIZER RELIEF Weld No.: 12-PR-2201-1

SURFACE EXAMINATIONS

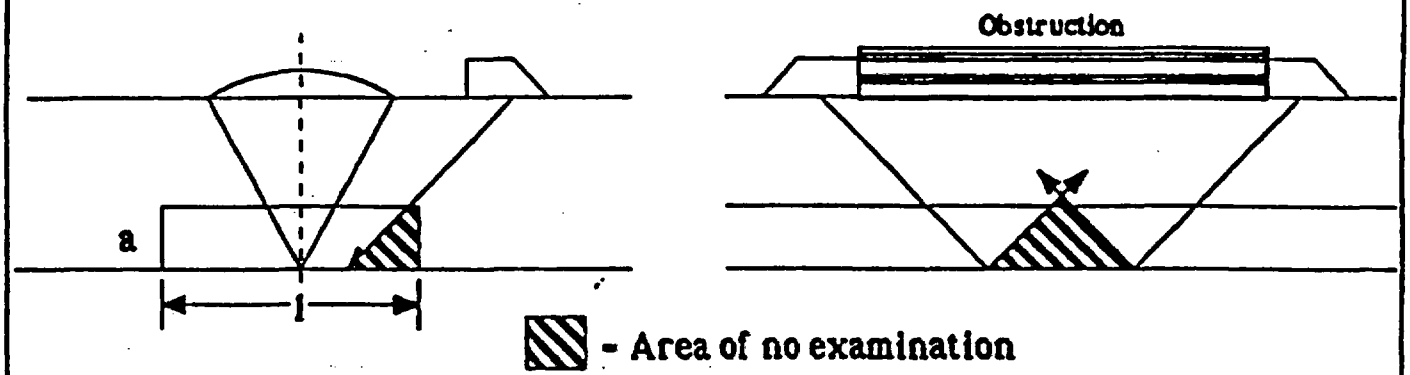
Area To Be Examined (Length x Width = A) A= 79.00

Area Of Limitation (Length x Width = A1) A1= 17.00

Percentage of Coverage (A - A1/A) = 78.48

VOLUMETRIC EXAMINATIONS

Parallel ← Example → Transverse



1. Compute Area a x l	= Asq	.40
2. Multiply Asq by Weld Length	= Vt (Volume Total)	15.80
3. Compute Area Not Covered	= a	.40
4. Multiply "a" by Weld Length	= Vl (Volume Limited)	3.40
5. Percentage of Coverage	= (Vt - Vl/Vt)	78.48

NOTE: Compute in a similar manner for indications perpendicular to the weld.

Prepared by: VICTOR MORTON Reviewed by: [signature] 32

Date: 7 APR 93 Level: III Date: 7 APR 93 Level: III

Page 1 of 1

LIMITATIONS

SYSTEM: RPV – Closure Head

IDENTIFICATION: 2–RPVCH–1446A

WELD TYPE: Meridional Weld @ 300 deg.

Limitation Code: 1 – CRD Penetration
2 – Shroud Support Ring
3 – Lifting Lug

NUMBER	CODE	L	W	LOCATION
1	1	0" to 3 1/2"	0" to 4"	CW Side
2	1	10" to 18"	0" to 4"	CW Side
3	1	1" to 8"	5" – to 12"	CCW Side
4	2	22" to 24 1/2"	0" to 19"	CW and CCW

002000

PSE&G LIMITATION REPORT

PROJECT: 17-6399 UNIT: SALEM Unit 2

SYSTEM: RPV Closure Head WELD NO.: 2-RPVCH-1446A / merid.@ 300

Prepared By: Hector Diaz Lv. III Date: 11 Nov. 1994

VOLUMETRIC EXAMINATIONS

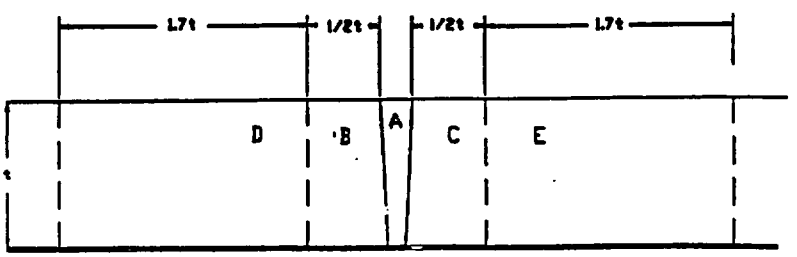
VOLUME	ANGLE	EXAM TYPE	DIRECTION	% COVERAGE
A	45 & 60	Parallel	2 Directions	16.0 %
	45 & 60	Transverse	2 Directions	34.0 %
B	45 & 60	Parallel	1 Direction	34.0 %
	45 & 60	Transverse	2 Directions	40.0 %
C	45 & 60	Parallel	1 Direction	32.0 %
	45 & 60	Transverse	2 Directions	27.0 %
ABCDE	0 deg.	Lamination	N / A	31.0 %
ABC	0 deg.	Planar (weld)	N / A	30.0 %
			AVERAGE COVERAGE	31.0 %

"A" volume is the weld volume.

"B" volume is the adjacent base material for a distance of 1/2 t from the weld fusion line on one side (cw, ccw, up, down) of the weld.

"C" volume is the adjacent base material for a distance of 1/2 t from the weld fusion line on the other side (cw, ccw, up, down) of the weld.

"D" and "E" are the adjacent base material volumes through which the angle beams pass to cover the base material for a distance of 1/2 t from the fusion line of the weld.



LIMITATIONS

SYSTEM: RPV – Closure Head

IDENTIFICATION: 2–RPVCH–1446B

WELD TYPE: Meridional @ 0 deg.

Limitation Code: 1 – CRD Penetration
2 – Shroud Support Ring
3 – Lifting Lug

NUMBER	CODE	L	W	LOCATION
1	1	0" to 3"	0" to 3 1/2"	CW and CCW Sides
2	1	3" to 8"	14 to 17 1/2"	CCW Side
3	1	9" to 15"	5 1/4" to 10 1/4"	CCW Side
4	2	22" to 24 1/2"	0" to 19"	CW and CCW Sides
5	3	21" to 46"	0" to 4 1/4"	CW and CCW Sides

002100

PSE&G LIMITATION REPORT

PROJECT:	17-6399	UNIT:	SALEM Unit 2
SYSTEM:	RPV Closure Head	WELD NO.:	2-RPVCH-1446B / merid.@ 0
Prepared By:	Hector Diaz Lv. III	Date:	11 Nov. 1994

VOLUMETRIC EXAMINATIONS

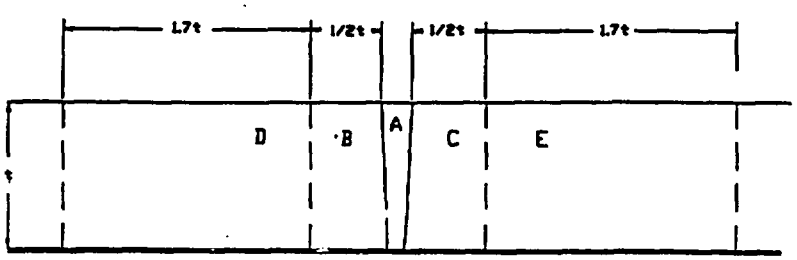
VOLUME	ANGLE	EXAM TYPE	DIRECTION	% COVERAGE
A	45 & 60	Parallel	2 Directions	13.5 %
	45 & 60	Transverse	2 Directions	10.0 %
B	45 & 60	Parallel	1 Direction	35.4 %
	45 & 60	Transverse	2 Directions	15.0 %
C	45 & 60	Parallel	1 Direction	34.3 %
	45 & 60	Transverse	2 Directions	15.0 %
ABCDE	0 deg.	Lamination	N / A	60.6 %
ABC	0 deg.	Planar (weld)	N / A	23.2 %
			AVERAGE COVERAGE	26.0 %

"A" volume is the weld volume.

"B" volume is the adjacent base material for a distance of 1/2 t from the weld fusion line on one side (cw, ccw, up, down) of the weld.

"C" volume is the adjacent base material for a distance of 1/2 t from the weld fusion line on the other side (cw, ccw, up, down) of the weld.

"D" and "E" are the adjacent base material volumes through which the angle beams pass to cover the base material for a distance of 1/2 t from the fusion line of the weld.



LIMITATIONS

SYSTEM: RPV – Closure Head

IDENTIFICATION: 2–RPVCH–1446C

WELD TYPE: Meridional Weld @ 60 deg.

Limitation Code:
1 – CRD Penetration
2 – Shroud Support Ring
3 – Lifting Lug

NUMBER	CODE	L	W	LOCATION
1	1	0" to 3 1/2"	0" to 3 1/2"	CW and CCW
2	1	1 1/2" to 9"	8" to 17"	CW Side
3	1	14" to 22"	5 1/2" to 12"	CW Side
4	2	22" to 24 1/2"	0" to 19"	CW and CCW
5	1	10" to 18"	0" to 6"	CCW Side

002200

PSE&G LIMITATION REPORT

PROJECT:	17-6399	UNIT:	SALEM Unit 2
SYSTEM:	RPV Closure Head	WELD NO.:	2-RPVCH-1446C / merid.@ 60
Prepared By:	Hector Diaz Lv. III	Date:	11 Nov. 1994

VOLUMETRIC EXAMINATIONS

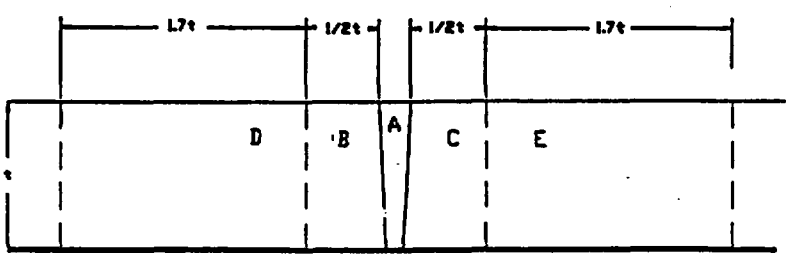
VOLUME	ANGLE	EXAM TYPE	DIRECTION	% COVERAGE
A	45 & 60	Parallel	2 Directions	18.9 %
	45 & 60	Transverse	2 Directions	10.4 %
B	45 & 60	Parallel	1 Direction	59.5 %
	45 & 60	Transverse	2 Directions	13.2 %
C	45 & 60	Parallel	1 Direction	64.5 %
	45 & 60	Transverse	2 Directions	13.2 %
ABCDE	0 deg.	Lamination	N / A	66.9 %
ABC	0 deg.	Planar (weld)	N / A	36.7 %
			AVERAGE COVERAGE	35.4 %

"A" volume is the weld volume.

"B" volume is the adjacent base material for a distance of 1/2 t from the weld fusion line on one side (cw, ccw, up, down) of the weld.

"C" volume is the adjacent base material for a distance of 1/2 t from the weld fusion line on the other side (cw, ccw, up, down) of the weld.

"D" and "E" are the adjacent base material volumes through which the angle beams pass to cover the base material for a distance of 1/2 t from the fusion line of the weld.



LIMITATIONS

SYSTEM: RPV – Closure Head

IDENTIFICATION: 2–RPVCH–1446D

WELD TYPE: Meridional Weld @ 120 deg.

Limitation Code: 1 – CRD Penetration
2 – Shroud Support Ring
3 – Lifting Lug

NUMBER	CODE	L	W	LOCATION
1	1	0" to 3"	0" to 3 1/2"	CW and CCW
2	1	1" to 8"	8" to 14 1/2"	CCW Side
3	1	11" to 17"	0" to 6"	CW Side
4	2	22" to 24 1/2"	0" to 19"	CW and CCW
5	3	21" to 46"	0" to 4 1/2"	CW and CCW

002300

PSE&G LIMITATION REPORT

PROJECT:	17-6399	UNIT:	SALEM Unit 2
SYSTEM:	RPV Closure Head	WELD NO.:	2-RPVCH-1446D / merid.@ 120
Prepared By:	Hector Diaz Lv. III	Date:	11 Nov. 1994

VOLUMETRIC EXAMINATIONS

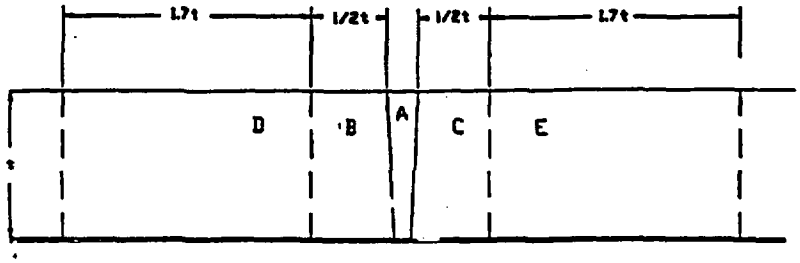
VOLUME	ANGLE	EXAM TYPE	DIRECTION	% COVERAGE
A	45 & 60	Parallel	2 Directions	32.0 %
	45 & 60	Transverse	2 Directions	11.0 %
B	45 & 60	Parallel	1 Direction	66.0 %
	45 & 60	Transverse	2 Directions	15.0 %
C	45 & 60	Parallel	1 Direction	62.0 %
	45 & 60	Transverse	2 Directions	5.3 %
ABCDE	0 deg.	Lamination	N / A	61.0 %
ABC	0 deg.	Planar (weld)	N / A	29.0 %
			AVERAGE COVERAGE	35.0 %

"A" volume is the weld volume.

"B" volume is the adjacent base material for a distance of 1/2 t from the weld fusion line on one side (cw, ccw, up, down) of the weld.

"C" volume is the adjacent base material for a distance of 1/2 t from the weld fusion line on the other side (cw, ccw, up, down) of the weld.

"D" and "E" are the adjacent base material volumes through which the angle beams pass to cover the base material for a distance of 1/2 t from the fusion line of the weld.



LIMITATIONS

SYSTEM: RPV – Closure Head

IDENTIFICATION: 2–RPVCH–1446E

WELD TYPE: Meridional Weld @ 180 deg.

Limitation Code:
1 – CRD Penetration
2 – Shroud Support Ring
3 – Lifting Lug

NUMBER	CODE	L	W	LOCATION
1	1	0" to 6"	0" to 3 1/2"	CW and CCW
2	1	0" to 7"	13" to 17"	CW Side
3	1	9" to 17"	5 1/2 to 12"	CCW Side
4	2	22" to 24 1/2"	0" to 19"	CW and CCW

00240C

PSE&G LIMITATION REPORT

PROJECT:	17-6399	UNIT:	SALEM Unit 2
SYSTEM:	RPV Closure Head	WELD NO.:	2-RPVCH-1446E / merid.@ 180
Prepared By:	Hector Diaz Lv. III	Date:	11 Nov. 1994

VOLUMETRIC EXAMINATIONS

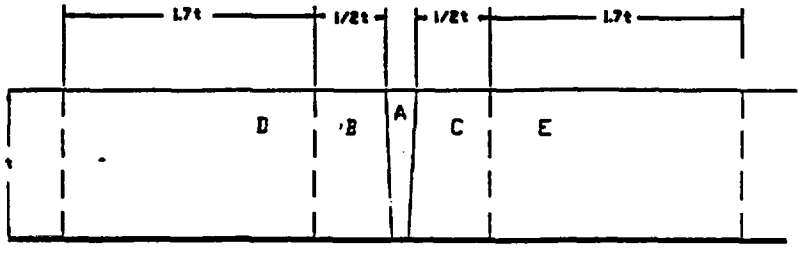
VOLUME	ANGLE	EXAM TYPE	DIRECTION	% COVERAGE
A	45 & 60	Parallel	2 Directions	19.0 %
	45 & 60	Transverse	2 Directions	44.0 %
B	45 & 60	Parallel	1 Direction	36.0 %
	45 & 60	Transverse	2 Directions	45.0 %
C	45 & 60	Parallel	1 Direction	36.0 %
	45 & 60	Transverse	2 Directions	45.0 %
ABCDE	0 deg.	Lamination	N / A	31.0 %
ABC	0 deg.	Planar (weld)	N / A	34.0 %
			AVERAGE COVERAGE	36.25 %

"A" volume is the weld volume.

"B" volume is the adjacent base material for a distance of 1/2 t from the weld fusion line on one side (cw, ccw, up, down) of the weld.

"C" volume is the adjacent base material for a distance of 1/2 t from the weld fusion line on the other side (cw, ccw, up, down) of the weld.

"D" and "E" are the adjacent base material volumes through which the angle beams pass to cover the base material for a distance of 1/2 t from the fusion line of the weld.



LIMITATIONS

SYSTEM: RPV – Closure Head

IDENTIFICATION: 2–RPVCH–1446F

WELD TYPE: Meridional Weld @ 240 deg.

Limitation Code: 1 – CRD Penetration
2 – Shroud Support Ring
3 – Lifting Lug

NUMBER	CODE	L	W	LOCATION
1	1	0" to 4"	0" to 3 1/2"	CW and CCW
2	1	10" to 19"	0" to 5 1/2"	CCW Side
3	1	1 1/2" to 8 1/2"	8 1/2" to 19"	CW Side
4	2	22" to 24 1/2"	0" to 19"	CW and CCW
5	1	13 1/2" to 22"	6" to 19"	CW Side
6	1	0" to 4"	9 1/2" to 17 1/2"	CCW Side
7	3	21" to 46"	0" to 4 1/4"	CW and CCW

002500

PSE&G LIMITATION REPORT

PROJECT:	17-6399	UNIT:	SALEM Unit 2
SYSTEM:	RPV Closure Head	WELD NO.:	2-RPVCH-1446F / merid.@ 240
Prepared By:	Hector Diaz Lv. III	Date:	11 Nov. 1994

VOLUMETRIC EXAMINATIONS

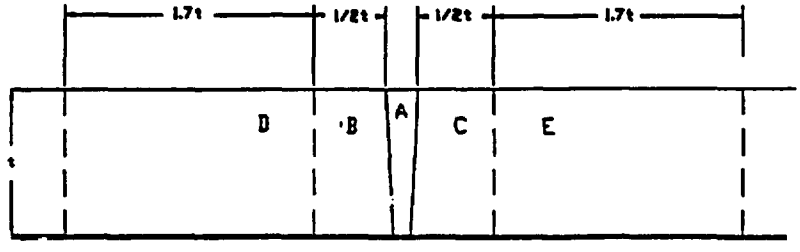
VOLUME	ANGLE	EXAM TYPE	DIRECTION	% COVERAGE
A	45 & 60	Parallel	2 Directions	37.0 %
	45 & 60	Transverse	2 Directions	79.0 %
B	45 & 60	Parallel	1 Direction	77.0 %
	45 & 60	Transverse	2 Directions	5.0 %
C	45 & 60	Parallel	1 Direction	81.0 %
	45 & 60	Transverse	2 Directions	13.0 %
ABCDE	0 deg.	Lamination	N / A	79.0 %
ABC	0 deg.	Planar (weld)	N / A	61.0 %
			AVERAGE COVERAGE	54.0 %

"A" volume is the weld volume.

"B" volume is the adjacent base material for a distance of 1/2 t from the weld fusion line on one side (cw, ccw, up, down) of the weld.

"C" volume is the adjacent base material for a distance of 1/2 t from the weld fusion line on the other side (cw, ccw, up, down) of the weld.

"D" and "E" are the adjacent base material volumes through which the angle beams pass to cover the base material for a distance of 1/2 t from the fusion line of the weld.



LIMITATIONS

SYSTEM: RPV – Closure Head

IDENTIFICATION: 2–RPVCH–6446B

WELD TYPE: Dollar Plate

Limitation Code:
1 – CRD Penetration
2 – Shroud Support Ring
3 – Lifting Lug

Note: "L" Measurements made starting at 0 deg position, going CCW.

NUMBER	CODE	L	W	LOCATION
1	1	0" to 320"	5" to 19"	Dome Side
2	1	5 1/2" to 10 1/2"	8" to 19"	Head Side
3	1	15 1/2" to 20 1/2"	0" to 7 1/2"	Head Side
4	1	23 1/2" to 28 1/2"	0" to 3"	Dome and Head Sides
5	1	33 1/2" to 38 1/2"	0" to 3"	Dome and Head Sides
6	1	46" to 51"	0" to 3"	Dome and Head Sides
7	1	46" to 51"	11" to 19"	Head Side
8	1	59" to 64"	0" to 7 1/2"	Head Side
9	1	76 1/2" to 81 1/2"	0" to 3"	Dome and Head Sides
10	1	84 1/2" to 89 1/2"	8" to 19"	Head Side
11	1	103 1/2" to 108 1/2"	0" to 3"	Dome and Head Sides
12	1	106" to 112"	10" to 19"	Head Side
13	1	115" to 121 1/2"	0" to 3 1/2"	Head Side
14	1	124 1/2" to 130 1/2"	11" to 19"	Head Side
15	1	127 1/2" to 134 1/2"	0" to 5 1/2"	Head Side
16	1	139" to 146"	0" to 8"	Head Side
17	1	154" to 161"	0" to 8"	Head Side
18	1	162" to 168 1/2"	8" to 19"	Head Side
19	1	171" to 177 1/2"	1 1/2" to 9 1/2"	Head Side
20	1	175" to 181"	14" to 19"	Head Side

002600

45

NUMBER	CODE	L	W	LOCATION
21	1	183" to 189"	0" to 3"	Head Side
22	1	184 1/2" to 190 1/2"	9" to 19"	Head Side
23	1	195" to 201"	0" to 3"	Dome Side
24	1	207" to 212 1/2"	10" to 19"	Head Side
25	1	218" to 225"	0" to 8"	Head Side
26	1	225 1/2" to 232 1/2"	4" to 19"	Dome Side
27	1	235" to 241 1/2"	0" to 6"	Head Side
28	1	243 1/2" to 249 1/2"	8" to 19"	Head Side
29	1	234 1/2" to 241"	4" to 19"	Dome Side
30	1	251" to 258 1/2"	0" to 8"	Head Side
31	1	255" to 261"	13" to 19"	Head Side
32	1	266" to 271 1/2"	10" to 19"	Head Side
33	1	276" to 282"	0" to 3"	Dome and Head Sides
34	1	287" to 293 1/2"	11" to 19"	Head Side
35	1	288" to 294 1/2"	0" to 3 1/2"	Head Side
36	1	300" to 306 1/2"	2' to 10"	Head Side
37	1	294" to 300 1/2"	15" to 19"	Head Side
38	1	306" to 312"	2" to 6"	Dome Side

002600

PSE&G LIMITATION REPORT

PROJECT:	17-6399	UNIT:	SALEM Unit 2
SYSTEM:	RPV Closure Head	WELD NO.:	2-RPVCH-6446B / Dollar plate weld
Prepared By:	Hector Diaz Lv.III	Date:	20 December 1994

VOLUMETRIC EXAMINATIONS

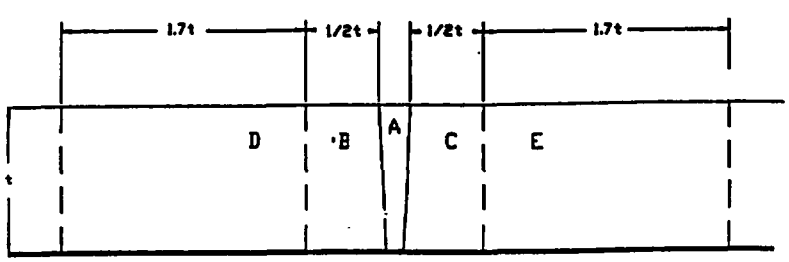
VOLUME	ANGLE	EXAM TYPE	DIRECTION	% COVERAGE
A	45 & 60	Parallel	2 Directions	22.0 %
	45 & 60	Transverse	2 Directions	79.0 %
B	45 & 60	Parallel	1 Direction	82.0 %
	45 & 60	Transverse	2 Directions	67.0 %
C	45 & 60	Parallel	1 Direction	66.0 %
	45 & 60	Transverse	2 Directions	88.0 %
ABCDE	0 deg.	Lamination	N / A	55.0 %
ABC	0 deg.	Planar (weld)	N / A	80.0 %
			AVERAGE COVERAGE	67.0 %

"A" volume is the weld volume.

"B" volume is the adjacent base material for a distance of 1/2 t from the weld fusion line on one side (cw, ccw, up, down) of the weld.

"C" volume is the adjacent base material for a distance of 1/2 t from the weld fusion line on the other side (cw, ccw, up, down) of the weld.

"D" and "E" are the adjacent base material volumes through which the angle beams pass to cover the base material for a distance of 1/2 t from the fusion line of the weld.



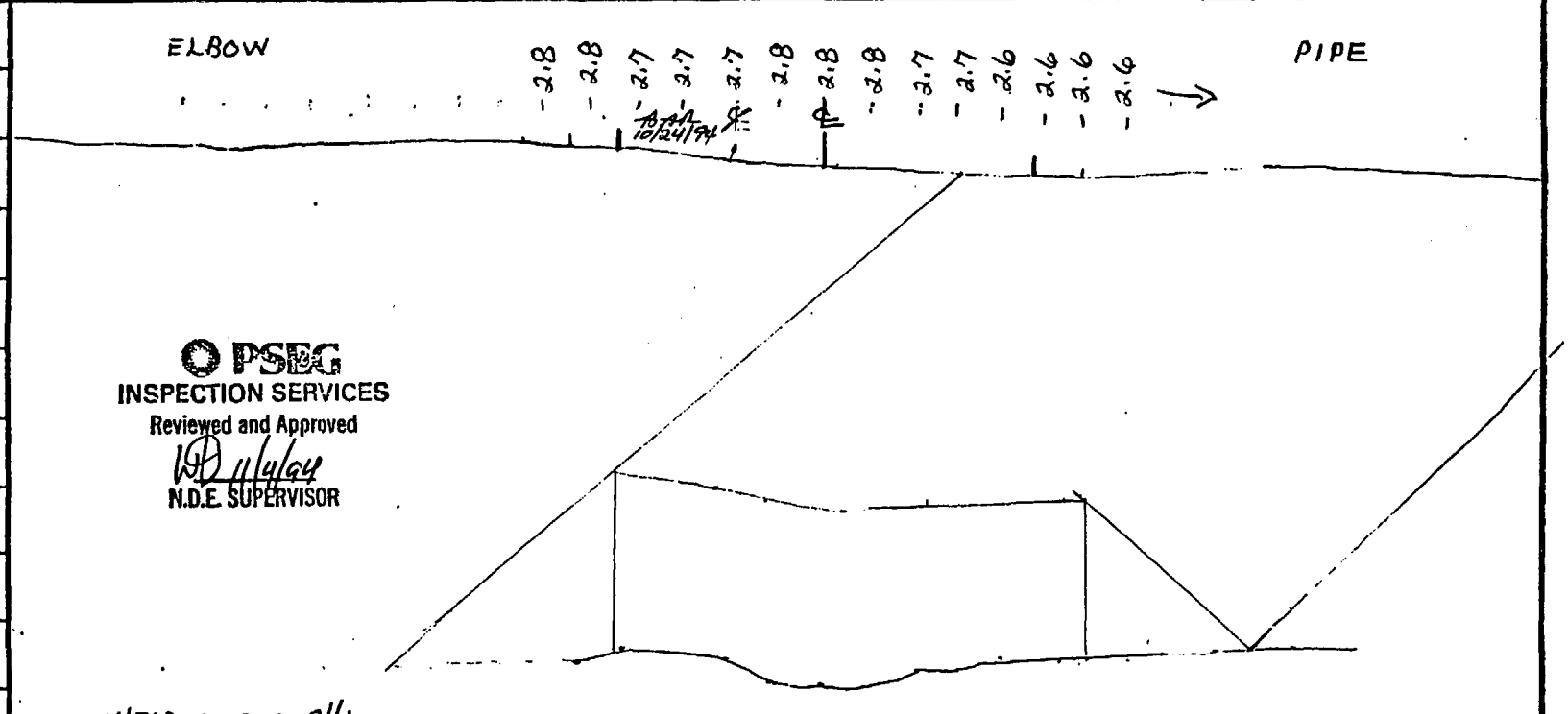
SwRI PROFILE AND THICKNESS INFORMATION RECORD

OT6000

PROJECT NO:	SITE:	DATE: (DAY - MONTH - YEAR)	TIME (24 HR. CLOCK)	SHEET NO:
17-6399	Salem Generating Station, Unit 2	24 OCT 94	INT. 09:30 FINAL 12:30	135013

EXAMINER	SNT LEVEL	THK. MEAS. REQ'D BY PROCEDURE *	INSTRUMENT:	SERIAL NO:	COMPONENT ID:
T. JACKSON	II	No. SAM2-UT49 REV 0 CHG 1	SONIC MARK I ☐ OTHER SONIC 136 ☒	656G	3-RC-1220-4
EXAMINER	**SNT LEVEL**		**COUPLANT:**		**REFERENCE BLK NO:**
B. ROBERDS	II	ICN ☒ N/A	GLYCERINE ☐ WATER ☐ OTHER (SPECIFY)		SS-DC-31

SEARCH UNITS	
BRAND	SWRI
SERIAL NO	3416
SIZE	1/2
FREQ. (MHz)	2.25
INSTRUMENT SETTINGS	
SCREEN SIZE	5.00
DELAY	.040
MATL. CAL.	.224
RANGE	5.00
REP. RATE	4 HHz
JACK USED	RCV
TRANS MODE	PULSE ECHO



PSEG INSPECTION SERVICES
Reviewed and Approved
11/4/94
N.D.E. SUPERVISOR

WELD WIDTH ~ 2 1/4

* VS2.RA-IS.ZZ-0088

45° Search Unit chosen for coverage using 2/B, 3/B, 4/B nodes.	NAME: B. Roberds	SNT LEVEL: II	
N/A° Search Unit chosen for coverage using N/A nodes.			

REVIEWED BY:	SNT LEVEL:	DATE:
	II	27 OCT 94

SWRI FORM No. NDTR 17-135 (REV. 6/90)

88

PSE&G LIMITATION REPORT

PROJECT: 17-6399 UNIT: SALEM 2

SYSTEM: REACTOR COOLANT WELD NO.: 31-RC-1220-4

Prepared By: VICTOR MORTON Date: 1 NOV 94

SURFACE EXAMINATIONS

Area To Be Examined (length x Width = A) A= 37.2

Area Of Limitation (Length x Width = Al) Al= 3.5

Percentage Of Coverage (A−Al /A)= 99.1%

VOLUMETRIC EXAMINATIONS

A. Axial Exams (Indications Parallel To Weld)

1. Compute Exam Volume	(height x width x length) = Vt1	281.9
2. Compute Vol. Not Covered Upstream	= A	43.11
3. Compute Upstream Limitation Percentage	(A / Vt1) x 100 = Z1	15.29
4. Compute Vol. Not Covered Downstream	= B	43.11
5. Compute Downstream Limitation Percentage	(B / Vt1) x 100 = Z2	15.29

B. Circumferential Exams (Indications Perpendicular To Weld)

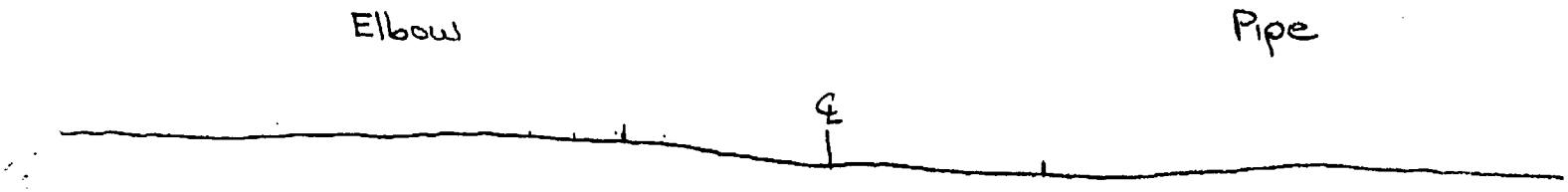
1. Compute Exam Volume	(height x width x length) = Vt2	328.86
2. Compute Vol. Not Covered CW	= C	52.2
3. Compute CW Limitation Percentage	(C / Vt2) x 100 = Z3	15.87
4. Compute Vol. Not Covered CCW	= D	52.2
5. Compute CCW Limitation Percentage	(D / Vt2) x 100 = Z4	15.87

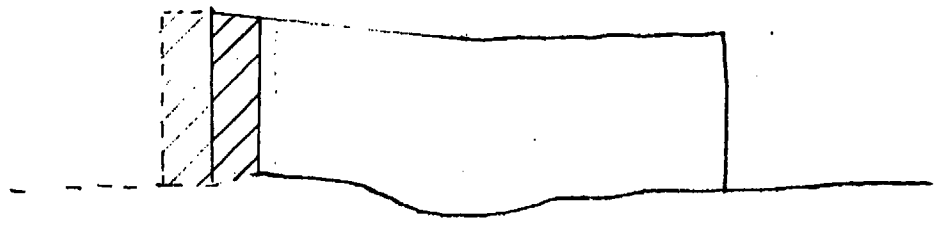
C. Total Coverage

1. Compute Total Limitation Percentage	(Z1+Z2+Z3+Z4) / 4 = L	15.58
2. Compute Total Coverage	100 − L	84.42

REMARKS:

SALEM UNIT 2 17-6399
REACTOR COOLANT 31-RC-1220-4
VICTOR MORTON III 1 NOV 94
FOR LIMITATIONS ONLY.





NO EXAM UP + DOWN FROM 55" TO 62"
DUE TO BRANCH CONNECTION. = 17.01 in²

- Circumferential Upstream Limitation due to Elbow Acoustic properties = 52.2 in³ (CW + CCW)

- AXIAL Limitation due to Elbow Acoustic properties = 26.1 in² (UP + DOWN)

076000

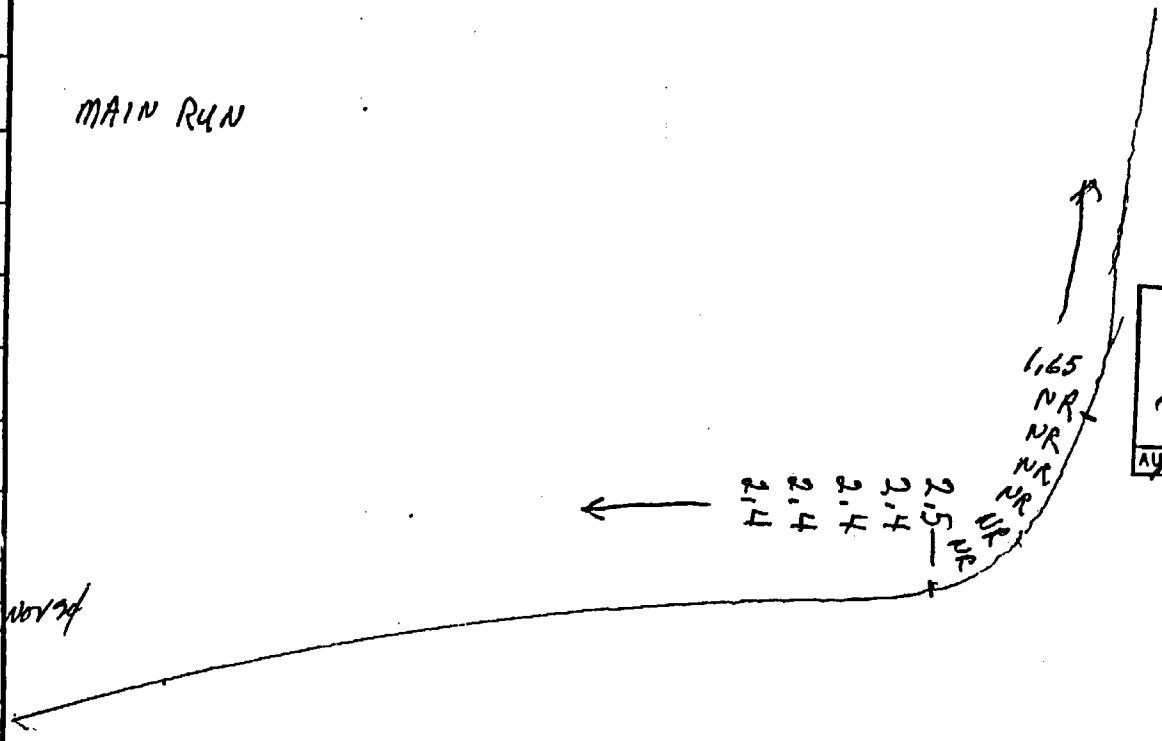
085000

SwRI PROFILE AND THICKNESS INFORMATION RECORD

PROJECT NO:	SITE:	DATE: (DAY - MONTH - YEAR)	TIME (24 HR. CLOCK)	SHEET NO:
17-6399	Salem Generating Station, Unit 2	05 NOV 94	INT. 1342 FINAL 1548	135040

EXAMINER	SNT LEVEL	THK. MEAS. REQ'D BY PROCEDURE No.	INSTRUMENT:	SERIAL NO:	COMPONENT ID:
D. KLEINJAN	II	* SAM2-UT49 REV 0 CHG 1	SONIC MARK I ☐ OTHER SONIC 136 ☒	855K	27.5-RC-1230-1BC-5
EXAMINER	SNT LEVEL	ICN ☒ N/A	COUPLANT: GLYCERINE ☐ WATER ☐ OTHER (SPECIFY) SONATRACE 40 #94014		REFERENCE BLK NO:
H. HENZE	IT				55-DC-31

SEARCH UNITS	
BRAND	SWRI
SERIAL NO	3416
SIZE	1/2
FREQ. (MHz)	2.25
INSTRUMENT SETTINGS	
SCREEN SIZE	5.0
DELAY	.039
MATL. CAL.	.224 ~~5.0~~ 05 NOV 94
RANGE	5.0
REP. RATE	250 Hz
JACK USED	RCV
TRANS MODE	PE



REVIEWED & ACCEPTED
FACTORY MUTUAL ENGINEERING ASSOCIATION
AUTH. NUCLEAR INSERVICE INSP. DATE 11/12/94

PSEG
INSPECTION SERVICES
Reviewed and Approved
11/12/94
N.D.E. SUPERVISOR

* VS2.RA-15.22-0088(Q) REV. 0

PROFILE TAKE AT 270°

45° Search Unit chosen for coverage using 1/8, 3/8, 5/8, 7/8 nodes.

N/A° Search Unit chosen for coverage using N/A nodes.

NAME: VICTOR MORTON

SNT LEVEL: III

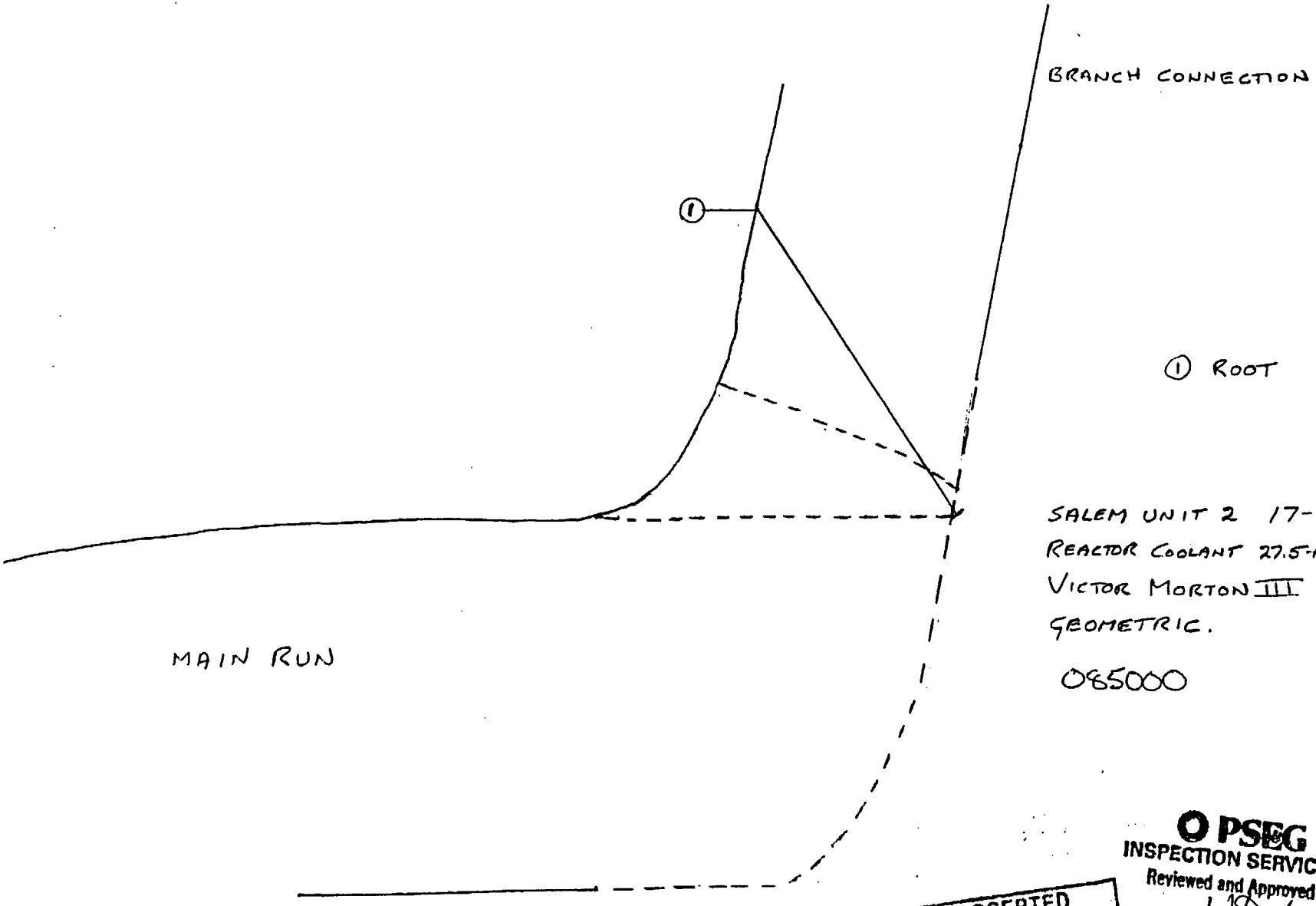
REVIEWED BY: William Sugell

SNT LEVEL: II

DATE: 7 NOV 94

SWRI FORM No. NDTR 17-135 (REV. 6/90)

5



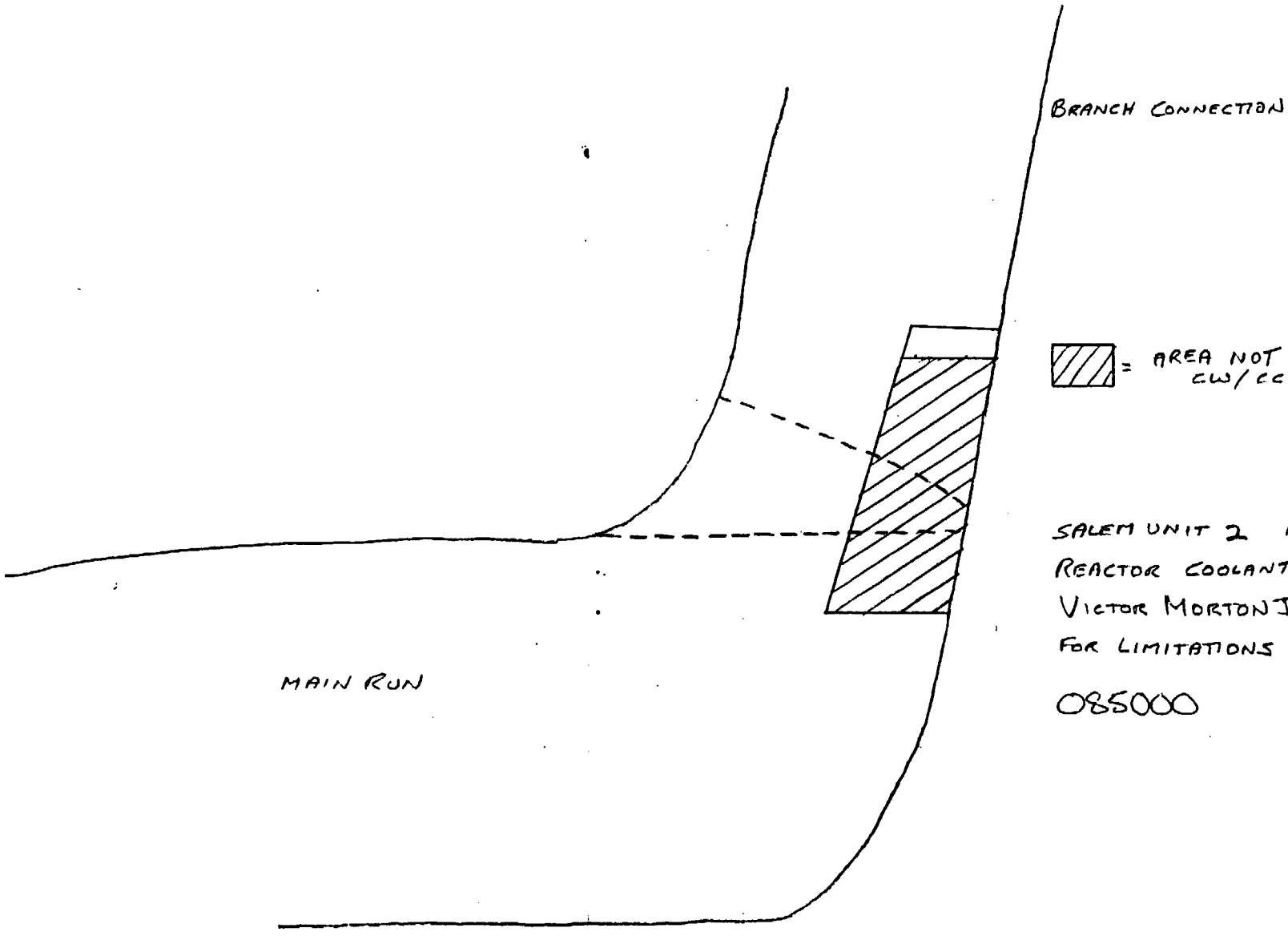
SALEM UNIT 2 17-6399
REACTOR COOLANT 27.5-RC-1230-1BC-5
VICTOR MORTON III 7 NOV 94
GEOMETRIC.

085000

PSEG
INSPECTION SERVICES
Reviewed and Approved
N.D.E. SUPERVISOR 11/12/94

REVIEWED & ACCEPTED
FACTORY MUTUAL
ENGINEERING ASSOCIATION
AUTH. NUCLEAR INSERVICE INSP. 11/10/94 DATE

52



= AREA NOT COVERED CW/CCW

SALEM UNIT 2 17-6399
REACTOR COOLANT 27.5-RC-1230-1BC5
VICTOR MORTON III 7 NOV 94
FOR LIMITATIONS ONLY.

085000

5

PSE&G LIMITATION REPORT

PROJECT: 17-6399 UNIT: SALEM UNIT 2

SYSTEM: REACTOR COOLANT WELD NO.: 27.5-RC-1230-1BC-5

Prepared By: _____ Date: 7 NOV 94

SURFACE EXAMINATIONS

Area To Be Examined (length x Width = A) A= N/A

Area Of Limitation (Length x Width = Al) Al= ↓

Percentage Of Coverage (A–Al /A)= ↓

VOLUMETRIC EXAMINATIONS

A. Axial Exams (Indications Parallel To Weld)

1. Compute Exam Volume (height x width x length) = Vt1 23.63
2. Compute Vol. Not Covered Branch Connection = A 0
3. Compute Branch Connection Limitation Percentage (A / Vt1) x 100 = Z1 0
4. Compute Vol. Not Covered Main Run = B 0
5. Compute Main Run Limitation Percentage (B / Vt1) x 100 = Z2 0

B. Circumferential Exams (Indications Perpendicular To Weld)

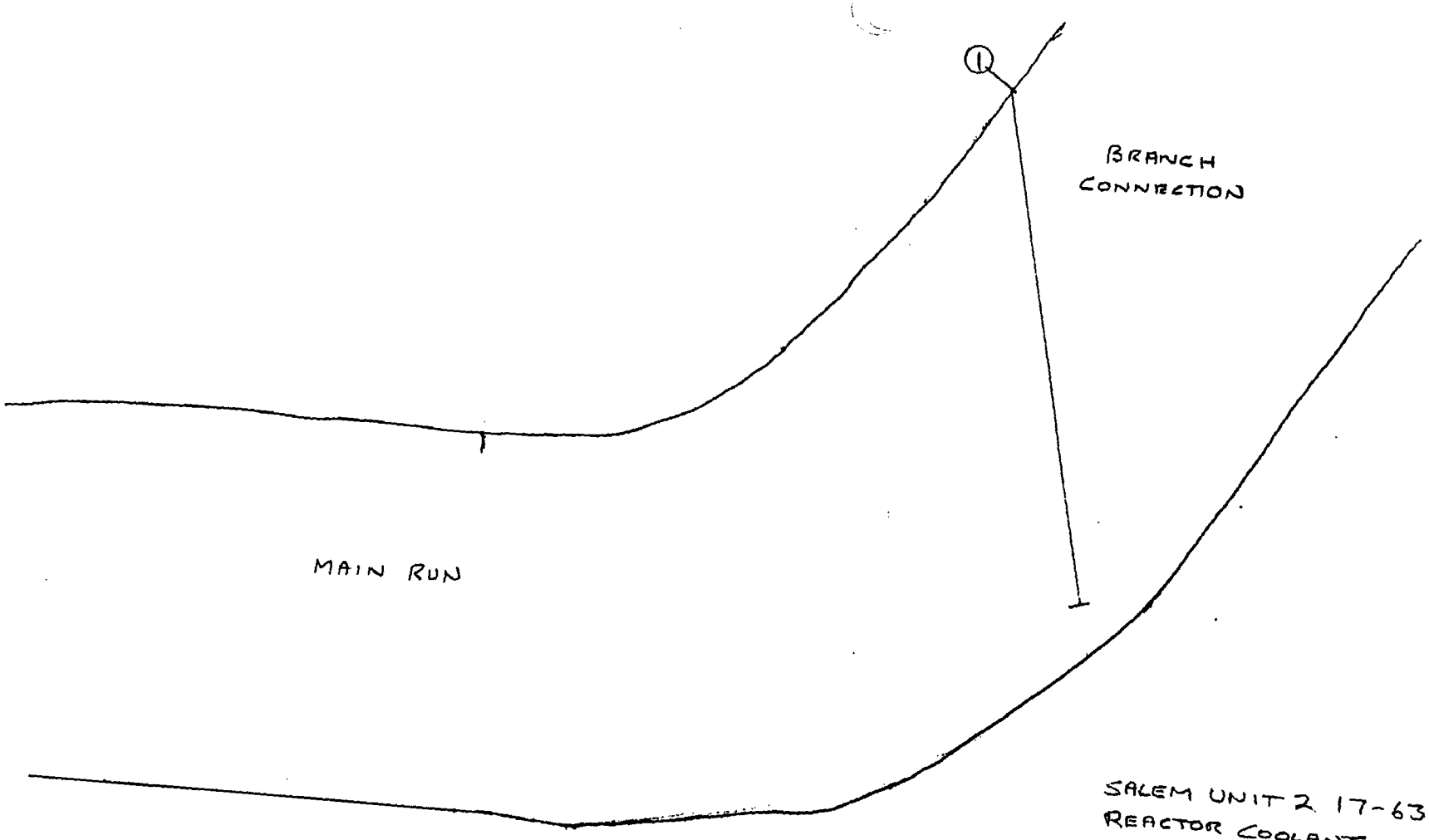
1. Compute Exam Volume (height x width x length) = Vt2 31.5
2. Compute Vol. Not Covered CW = C 28.35
3. Compute CW Limitation Percentage (C / Vt2) x 100 = Z3 90.00
4. Compute Vol. Not Covered CCW = D 28.35
5. Compute CCW Limitation Percentage (D / Vt2) x 100 = Z4 90.00

C. Total Coverage

1. Compute Total Limitation Percentage (Z1+Z2+Z3+Z4) / 4 = L 45%
2. Compute Total Coverage 100 – L 55%

REMARKS: _____

085000

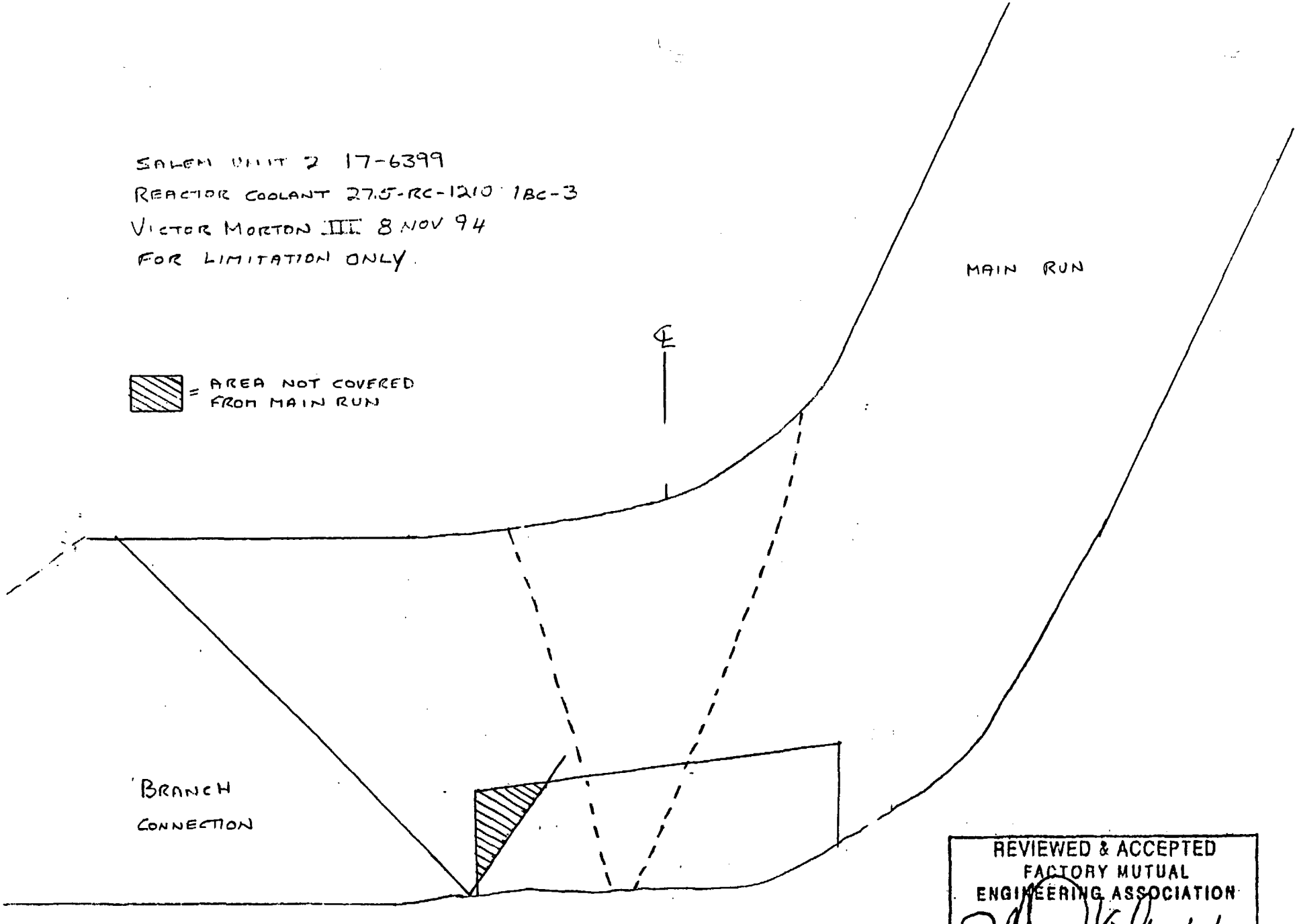


SALEM UNIT 2 17-6399
REACTOR COOLANT
27.5-RC-1210-1BC-3
VICTOR MORTON III 8 NOV 94
GEOMETRIC.
086800

REVIEWED & ACCEPTED
FACTORY MUTUAL
ENGINEERING ASSOCIATION
11/18/94
AUTH. NUCLEAR INSERVICE INSP. DATE

PSEG
INSPECTION SERVICES
Reviewed and Approved
11/11/94
N.D.E. SUPERVISOR

SALEM UNIT 2 17-6399
REACTOR COOLANT 27.5-RC-1210 1BC-3
VICTOR MORTON III 8 NOV 94
FOR LIMITATION ONLY.



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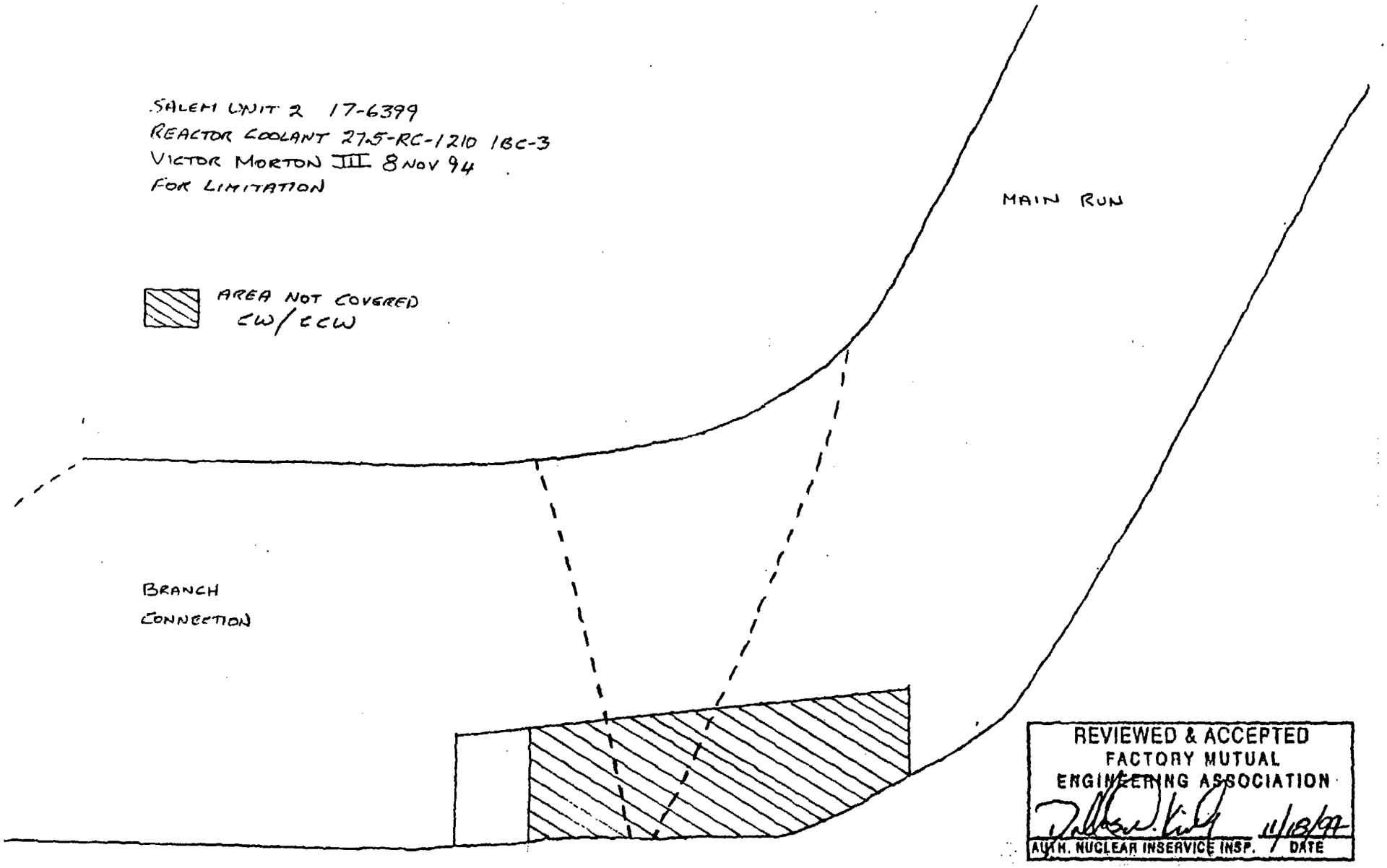
FACTORY MUTUAL
ENGINEERING ASSOCIATION
AUTH. NUCLEAR INSERVICE INSP. DATE 11/18/94

SALEM UNIT 2 17-6399
REACTOR COOLANT 27.5-RC-1210 IBC-3
VICTOR MORTON III 8 NOV 94
FOR LIMITATION



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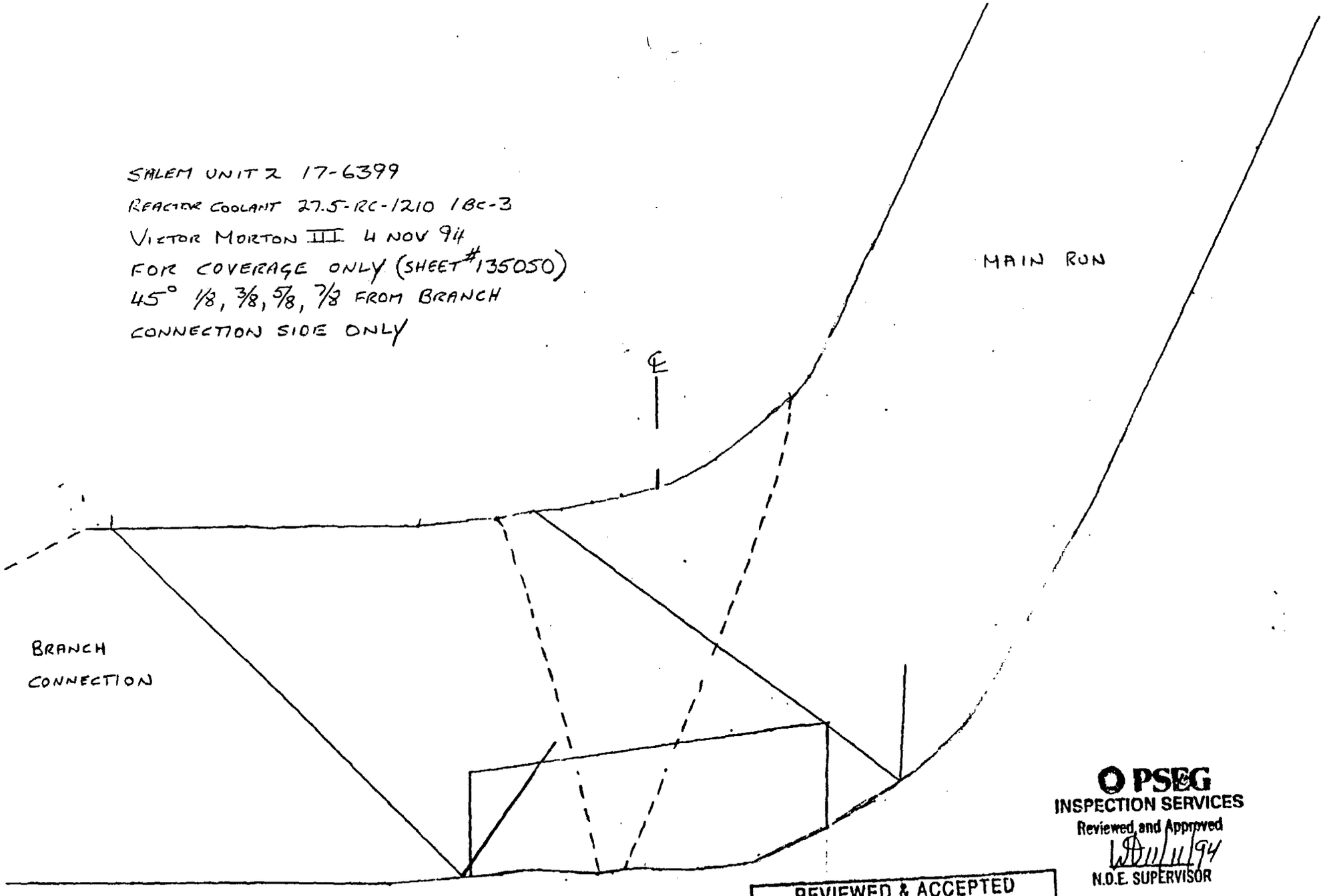
11/18/94
AUTH. NUCLEAR INSERVICE INSP. / DATE

57

SALEM UNIT 2 17-6399
REACTOR COOLANT 27.5-RC-1210 1BC-3
VICTOR MORTON III 4 NOV 94
FOR COVERAGE ONLY (SHEET #135050)
45° 1/8, 3/8, 5/8, 7/8 FROM BRANCH
CONNECTION SIDE ONLY



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INSPECTION SERVICES
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11/18/94
AUTH. NUCLEAR INSERVICE INSP. DATE

25

PSE&G LIMITATION REPORT

PROJECT: 17-6399 UNIT: SALEM UNIT 2

SYSTEM: REACTOR COOLANT WELD NO.: 275-RC-1210-1BC-3

Prepared By: VICTOR MORTON Date: 9 NOV 94

SURFACE EXAMINATIONS

Area To Be Examined (length x Width = A) A= N/A

Area Of Limitation (Length x Width = Al) Al=

Percentage Of Coverage (A−Al /A)=

VOLUMETRIC EXAMINATIONS

A. Axial Exams (Indications Parallel To Weld)

1. Compute Exam Volume	(height x width x length) = Vt1	121.26
2. Compute Vol. Not Covered Branch Connection	= A	0
3. Compute Branch Connection Limitation Percentage	(A / Vt1) x 100 = Z1	0
4. Compute Vol. Not Covered Main Run	= B	10.81
5. Compute Main Run Limitation Percentage	(B / Vt1) x 100 = Z2	8.91

B. Circumferential Exams (Indications Perpendicular To Weld)

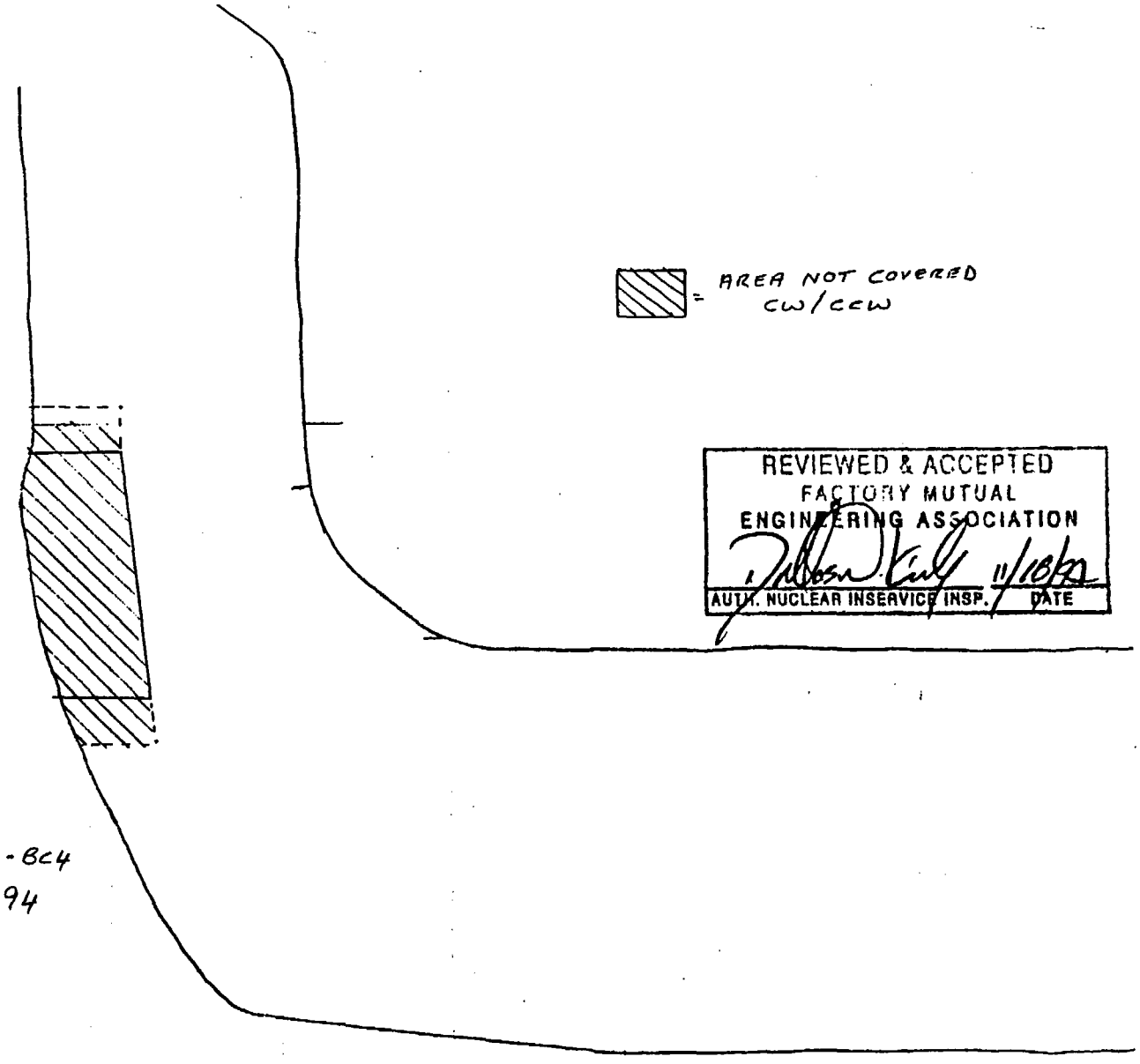
1. Compute Exam Volume	(height x width x length) = Vt2	139.59
2. Compute Vol. Not Covered CW	= C	117.03
3. Compute CW Limitation Percentage	(C / Vt2) x 100 = Z3	83.84
4. Compute Vol. Not Covered CCW	= D	117.03
5. Compute CCW Limitation Percentage	(D / Vt2) x 100 = Z4	83.84

C. Total Coverage

1. Compute Total Limitation Percentage	(Z1+Z2+Z3+Z4) / 4 = L	44.15
2. Compute Total Coverage	100 − L	55.85%

REMARKS:

0866800



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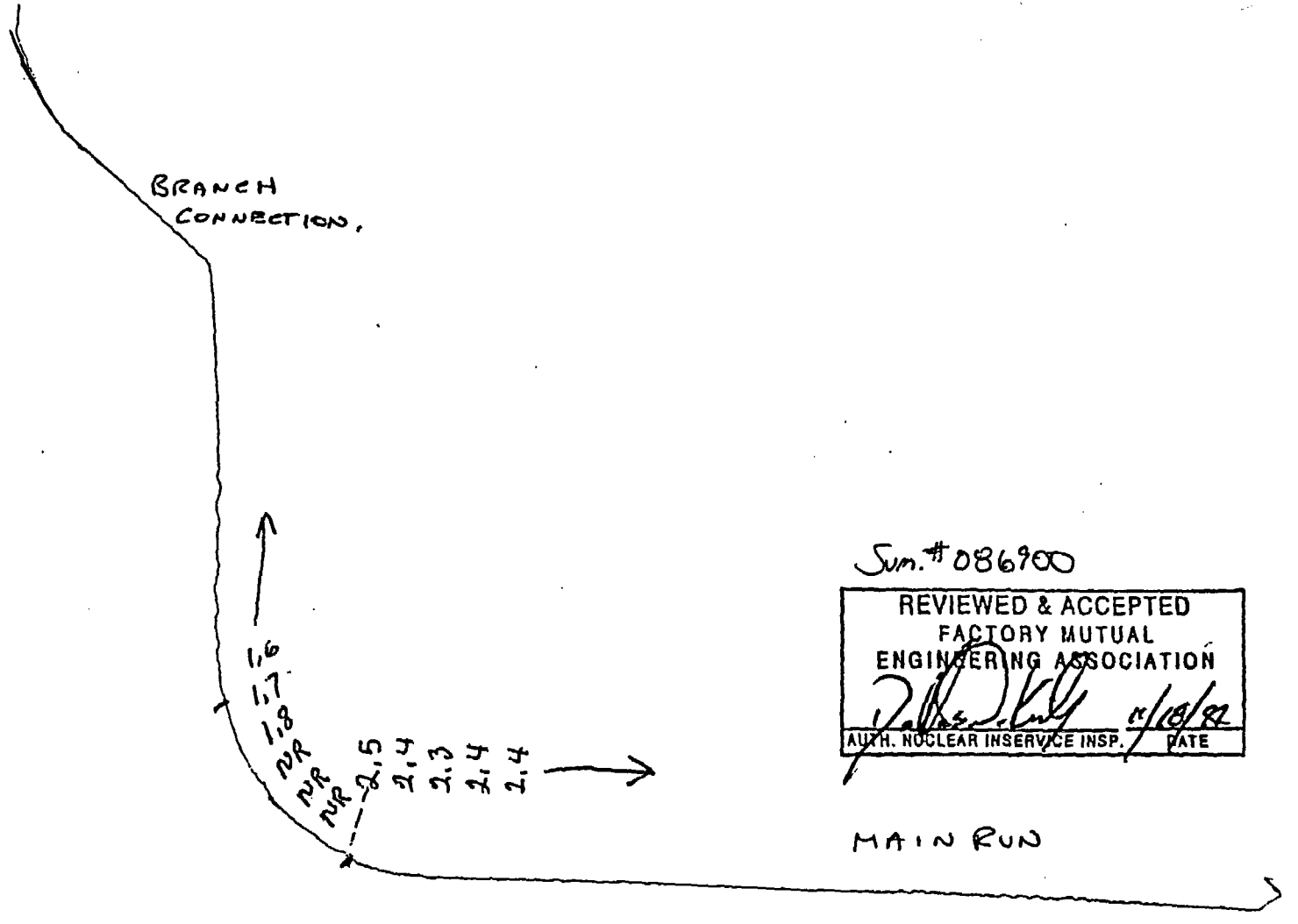
11/18/94

SALEM UNIT 2 17-6399
REACTOR COOLANT 275-RC-1210-BC4
VICTOR MORTON III 7 NOV 94
FOR LIMITATIONS ONLY.
086900

60



Sum. # 086900

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FACTORY MUTUAL
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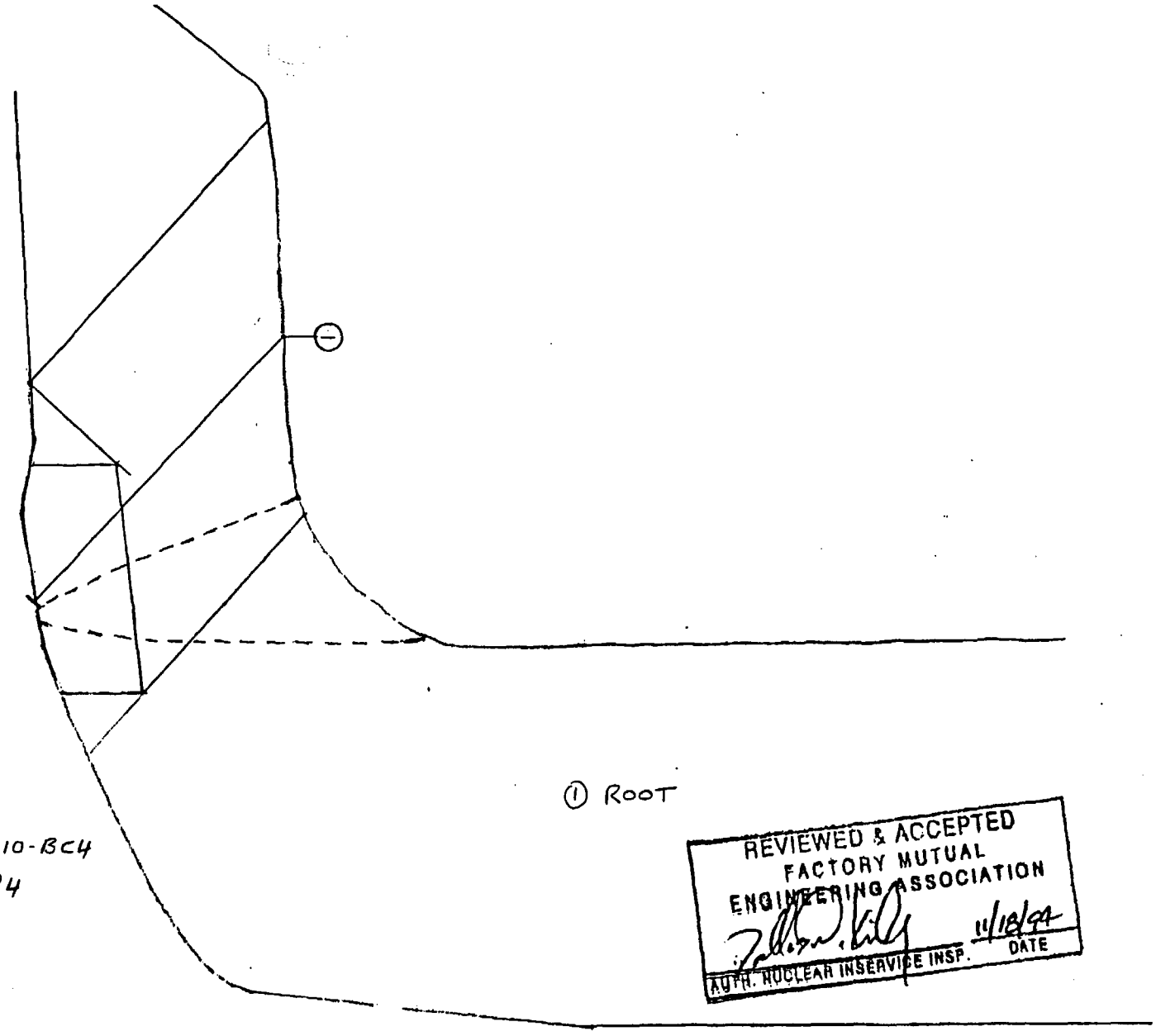
AUTH. NUCLEAR INSERVICE INSP. | DATE 11/18/82



SALEM UNIT 2 17-6399
REACTOR COOLANT 27.5-RC-1210-BC4
VICTOR MORTON III 7 NOV 94
GEOMETRIC
086400

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FACTORY MUTUAL
ENGINEERING ASSOCIATION
AUTH. NUCLEAR INSERVICE INSP. 11/18/94 DATE

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Reviewed and Approved
11/11/94
N.D.E. SUPERVISOR

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PSE&G LIMITATION REPORT

PROJECT: 17-6399 UNIT: SALEM UNIT 2

SYSTEM: REACTOR COOLANT WELD NO.: 27.5-RC-1210-1BC-4

Prepared By: VICTOR MORTON Date: 7 NOV 94

SURFACE EXAMINATIONS

Area To Be Examined (length x Width = A) A= N/A

Area Of Limitation (Length x Width = Al) Al=

Percentage Of Coverage (A–Al /A)=

VOLUMETRIC EXAMINATIONS

A. Axial Exams (Indications Parallel To Weld)

1. Compute Exam Volume (height x width x length) = Vt1 18.19
2. Compute Vol. Not Covered Branch Connection = A 0
3. Compute Branch Connection Limitation Percentage (A / Vt1) x 100 = Z1 0
4. Compute Vol. Not Covered Main Run = B 0
5. Compute Main Run Limitation Percentage (B / Vt1) x 100 = Z2 0

B. Circumferential Exams (Indications Perpendicular To Weld)

1. Compute Exam Volume (height x width x length) = Vt2 24.25
2. Compute Vol. Not Covered CW = C 23.03
3. Compute CW Limitation Percentage (C / Vt2) x 100 = Z3 94.97
4. Compute Vol. Not Covered CCW = D 23.03
5. Compute CCW Limitation Percentage (D / Vt2) x 100 = Z4 94.97

C. Total Coverage

1. Compute Total Limitation Percentage (Z1+Z2+Z3+Z4) / 4 = L 47.49
2. Compute Total Coverage 100 – L 52.51

REMARKS:

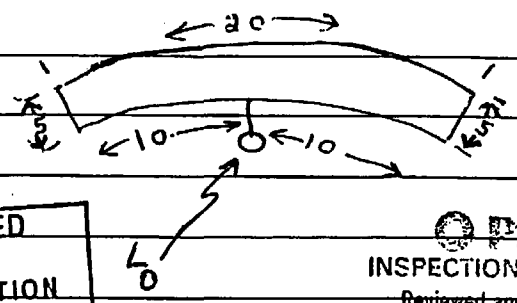
086900

330540

SwRI MAGNETIC PARTICLE EXAMINATION RECORD

PROJECT No: 17-6399	SITE: Salem Generating Station, Unit 2	DATE: (DAY - MONTH - YEAR) 28 OCT 94	TIME (24 HR. CLOCK) EXAM STARTED: 1316 EXAM ENDED: 1319
SHEET No.: 120016			
EXAMINATION AREA: (SYST/COMP) BOILER FEED SYSTEM	LINE/SUBASSEMBLY: 14-BF-2231	IDENTIFICATION: 17PS	L_0 LOCATION: 6
W_0 LOCATION: EDGE OF WELD			
EXAMINER: W. ANGELL	SNT LEVEL: II	PROCEDURE No SA MB-MT1 REV 1 ★ CHG 1 ICN ☒ N/A	SURFACE FINISH: AS WELDED
WELD TYPE (——FLOW——) PIPE SUPPORT	YOKE SPACING: 5 5/8 IN		
EXAMINER: M. COTTEN	SNT LEVEL: II		YOKE BRAND: WHITELINE
SERIAL No.: WL-1-18			
CALIBRATION BLOCK SERIAL No.: 870198 14 WEIGHT: 11.3 LBS.	CALIBRATION VERIFICATION TIME: 1230 1435 FINAL INITIALS: WA WA	DISTANCE FROM BLACK LIGHT TO SENSOR CELL N/A IN	MATERIAL BRAND: MAGNAFLUX BATCH No.: 85J048 TYPE: DRY POWDER COLOR: 1 GRAY
WET ☐ DRY ☒ FLOURESCENT ☐ MIXED NO ☐ YES ☐ MIXED WITH	SURFACE TEMP. °F THERMOMETER N/A SERIAL No.:		
BLACK LIGHT BRAND: N/A SERIAL No.:	INTENSITY METER BRAND: N/A SERIAL No.:	BLACK LIGHT OUTPUT N/A $\mu w/cm^2$	BLACK LIGHT OUTPUT VERIFICATION TIME: N INITIALS: A
MATERIAL APPLICATION: DUSTING ☒ FLOODING ☐ SPRAYING ☐			

IND No.	L	W	LOCATION	ROUND OR LINEAR	SIZE DIA. OR LENGTH	REMARKS:	INITIALS
NO RECORDABLE INDICATIONS							WA
							WA
							WA



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AUTH. NUCLEAR INSERVICE INSP. DATE 11/9/94

PSEG INSPECTION SERVICES Reviewed and Approved
N.D.E SUPERVISOR 11/3/94

★ VS2-SS-IS-ZZ-0070 REV.00

EXAMINATION AREA LIMITATION: (IF NONE, SO STATE)
LIMITED EXAM. DUE TO PROXIMITY OF PIPE RESTRAINT at 10" WA 28 OCT 94 to 15"Lo and 33Lo to 40Lo WA

REVIEWED BY:	SNT LEVEL	DATE	PAGE
	III	31 OCT 94	1 OF 1

SWRI FORM No. NDTR 17-12 (REV. 6/90)

PSE&G LIMITATION REPORT

PROJECT: 17-6399 UNIT: SALEM UNIT 2

SYSTEM: FEEDWATER WELD NO.: 14-BF-2231-17PS

Prepared By: VICTOR MORTON Date: 5 NOV 94

SURFACE EXAMINATIONS

Area To Be Examined (length x ~~Width~~ = A) WIDTH NOT NECESSARY A= 100% OF AREA

Area Of Limitation (Length x ~~Width~~ = Al) " " " Al= 50% OF AREA

Percentage Of Coverage (A−Al /A)= 50%

VOLUMETRIC EXAMINATIONS

A. Axial Exams (Indications Parallel To Weld)

1. Compute Exam Volume (height x width x length) = Vt1 N/A
2. Compute Vol. Not Covered Upstream = A
3. Compute Upstream Limitation Percentage (A / Vt1) x 100 = Z1
4. Compute Vol. Not Covered Downstream = B
5. Compute Downstream Limitation Percentage (B / Vt1) x 100 = Z2

B. Circumferential Exams (Indications Perpendicular To Weld)

1. Compute Exam Volume (height x width x length) = Vt2 N/A
2. Compute Vol. Not Covered CW = C
3. Compute CW Limitation Percentage (C / Vt2) x 100 = Z3
4. Compute Vol. Not Covered CCW = D
5. Compute CCW Limitation Percentage (D / Vt2) x 100 = Z4

C. Total Coverage

1. Compute Total Limitation Percentage (Z1+Z2+Z3+Z4) / 4 = L N/A
2. Compute Total Coverage 100 − L

REMARKS:

PSE&G LIMITATION REPORT

PROJECT: 17-6399 UNIT: SALEM UNIT 2

SYSTEM: FEEDWATER WELD NO.: 14-BF-2231-18 PS

Prepared By: VICTOR MORTON Date: 5 NOV 94

SURFACE EXAMINATIONS

Area To Be Examined (length x ~~Width~~ = A) WIDTH NOT NECESSARY A= 100% OF AREA

Area Of Limitation (Length x ~~Width~~ = Al) " " " Al= 50% OF AREA

Percentage Of Coverage (A−Al /A)= 50%

VOLUMETRIC EXAMINATIONS

A. Axial Exams (Indications Parallel To Weld)

1. Compute Exam Volume	(height x width x length) = Vt1	N/A
2. Compute Vol. Not Covered Upstream	= A	
3. Compute Upstream Limitation Percentage	(A / Vt1) x 100 = Z1	
4. Compute Vol. Not Covered Downstream	= B	
5. Compute Downstream Limitation Percentage	(B / Vt1) x 100 = Z2	

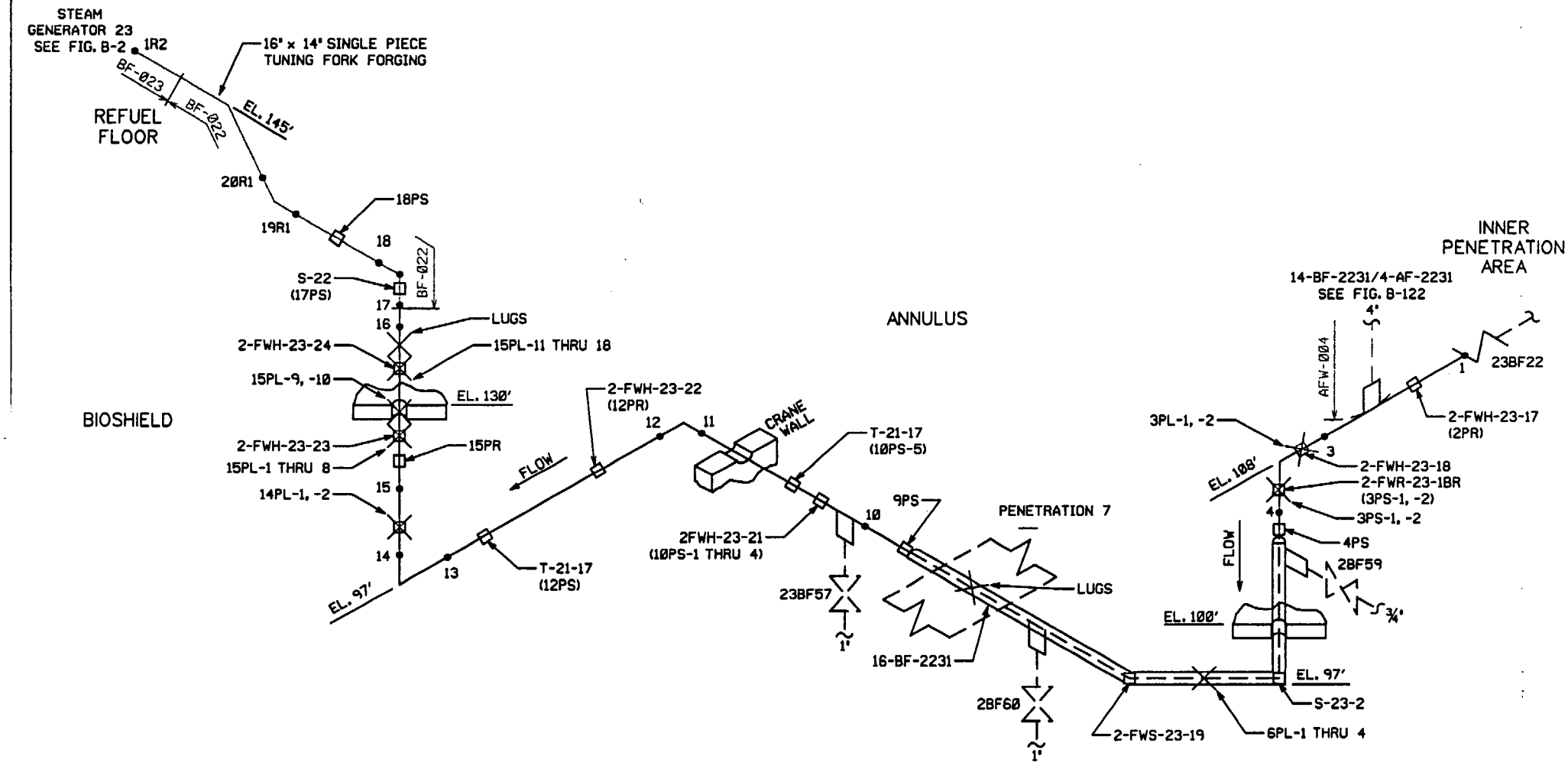
B. Circumferential Exams (Indications Perpendicular To Weld)

1. Compute Exam Volume	(height x width x length) = Vt2	N/A
2. Compute Vol. Not Covered CW	= C	
3. Compute CW Limitation Percentage	(C / Vt2) x 100 = Z3	
4. Compute Vol. Not Covered CCW	= D	
5. Compute CCW Limitation Percentage	(D / Vt2) x 100 = Z4	

C. Total Coverage

1. Compute Total Limitation Percentage	(Z1+Z2+Z3+Z4) / 4 = L	N/A
2. Compute Total Coverage	100 − L	

REMARKS:



BUILDING: CONTAINMENT INNER PEN	LOCATION: ANNULUS BIOSHIELD REFUEL FLOOR INNER PEN	ELEVATIONS: 97' to 145'

PSEG ISO SGF23-01
P & ID 205302-03

ATTENTION: ANY REVISION TO THIS DRAWING SHALL BE MADE ONLY BY CAED

REV.	DATE	DESCRIPTION
6		REVISED PER ORDER No. 80038023.

PSEG Nuclear, LLC
SALEM NUCLEAR GENERATING STATION
UNIT 2 - WELD / HANGER IDENTIFICATION FIGURE
INSERVICE INSPECTION DRAWING

FIGURE: B-14 | REVISION: 6
SYSTEM: BOILER FEED SYSTEM
STEAM GENERATOR FEED
LINE: 16-BF-2231, 14-BF-2231
THIRD 10 YEAR INSPECTION INTERVAL

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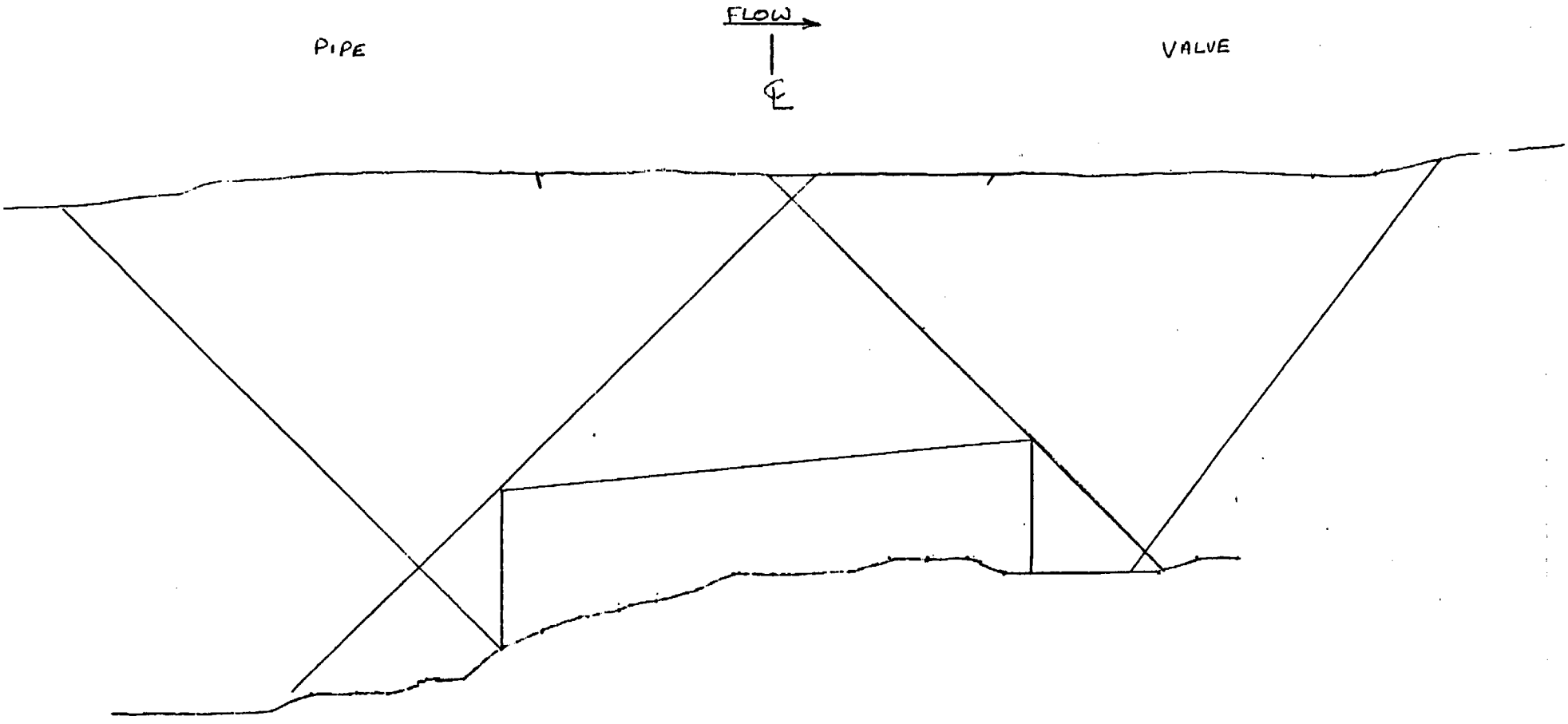
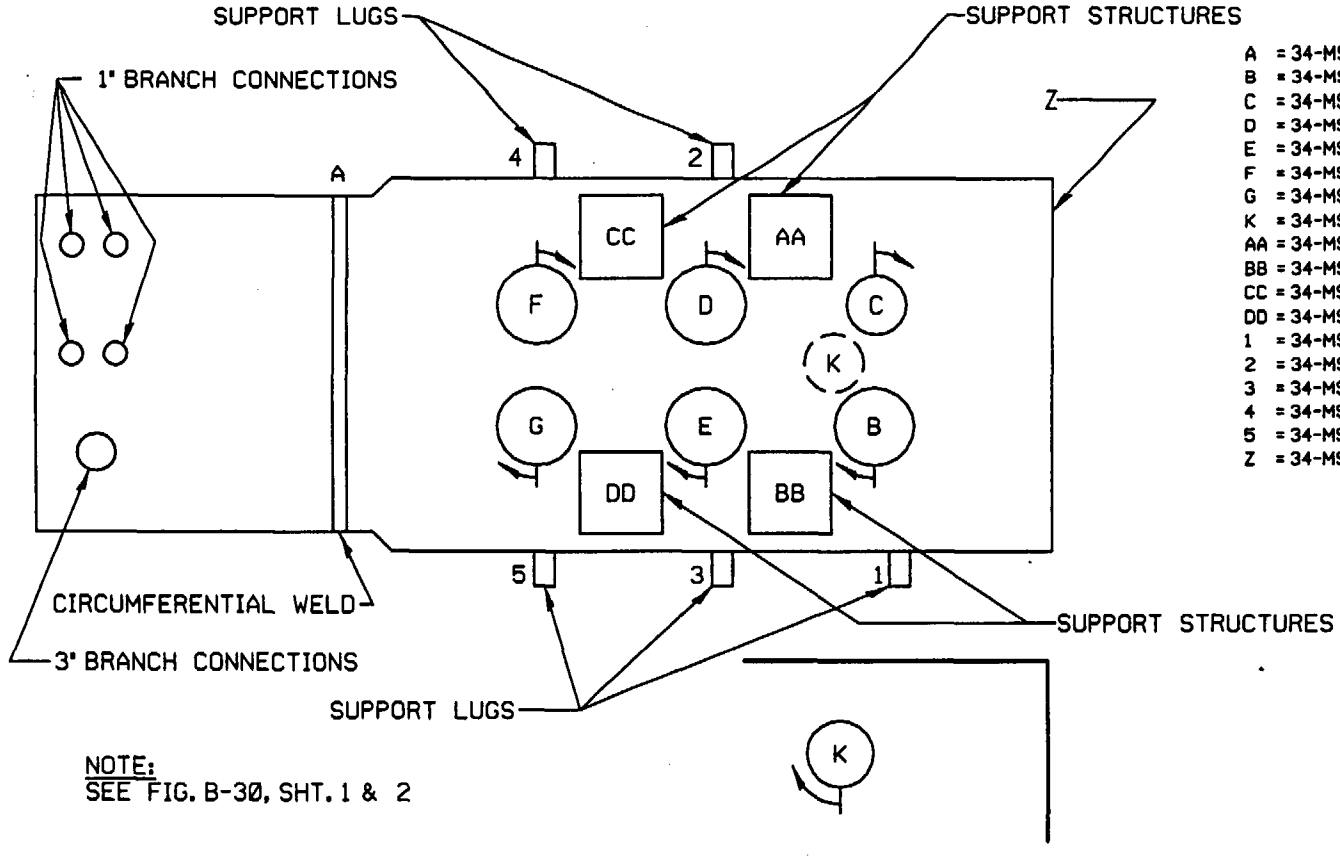


SALEM UNIT 2 17-6399
MAIN STEAM 34-MS-2241-3
VICTOR MORTON III 11 NOV 94
FOR COVERAGE ONLY.
380140

67

SALEM UNIT 2
MAIN STEAM HEADER



A = 34-MS-2241-1
B = 34-MS-2241-4/8-MS-2245 (SEE FIG. B-38)
C = 34-MS-2241-4/6-MS-2246 (SEE FIG. B-38)
D = 34-MS-2241-4/8-MS-2244 (SEE FIG. B-38)
E = 34-MS-2241-4/8-MS-2243 (SEE FIG. B-38)
F = 34-MS-2241-4/8-MS-2242 (SEE FIG. B-38)
G = 34-MS-2241-4/8-MS-2241 (SEE FIG. B-38)
K = 34-MS-2241-4/6-MS-2247 (SEE FIG. B-42)
AA = 34-MS-2241-1PL-17 THRU 1PL-20
BB = 34-MS-2241-1PL-13 THRU 1PL-16
CC = 34-MS-2241-1PL-7 THRU 1PL-10
DD = 34-MS-2241-1PL-3 THRU 1PL-6
1 = 34-MS-2241-1PL-21
2 = 34-MS-2241-1PL-12
3 = 34-MS-2241-1PL-11
4 = 34-MS-2241-1PL-2
5 = 34-MS-2241-1PL-1
Z = 34-MS-2241-TO VALVE 24MS167

NOTE:
SEE FIG. B-30, SHT. 1 & 2

BUILDING: CONTAINMENT	LOCATION: OUTER PEN	ELEVATIONS: 108'

PSEG ISO MS23-05
P & ID 205303

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REV.	DATE	DESCRIPTION
1		REVISED PER ORDER No. 80038023.

PSEG Nuclear, LLC
SALEM NUCLEAR GENERATING STATION
UNIT 2 - WELD / HANGER IDENTIFICATION FIGURE
INSERVICE INSPECTION DRAWING

FIGURE: B-26 | REVISION: 1
SYSTEM: MAIN STEAM SYSTEM
MAIN STEAM HEADER
LINE: 32-MS-2241, 34-MS-2241
THIRD 10 YEAR INSPECTION INTERVAL

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PSE&G LIMITATION REPORT

PROJECT: 17-6399 UNIT: SALEM UNIT 2

SYSTEM: MAIN STEAM WELD NO.: 34-MS-2241-3 (LONG SEAM)

Prepared By: VICTOR MORTON Date: 14 NOV 94

SURFACE EXAMINATIONS

Area To Be Examined (length x ~~Width~~ NOT REQUIRED = A) A= 8.75"

Area Of Limitation (Length x ~~Width~~ NOT REQUIRED = Al) Al= 7.50" (WORST CASE BASIS)

Percentage Of Coverage (A−Al /A)= 85.71%

VOLUMETRIC EXAMINATIONS

A. Axial Exams (Indications Parallel To Weld)

1. Compute Exam Volume (height x width x length) = Vt1 N/A
2. Compute Vol. Not Covered Upstream = A
3. Compute Upstream Limitation Percentage (A / Vt1) x 100 = Z1
4. Compute Vol. Not Covered Downstream = B
5. Compute Downstream Limitation Percentage (B / Vt1) x 100 = Z2

B. Circumferential Exams (Indications Perpendicular To Weld)

1. Compute Exam Volume (height x width x length) = Vt2 N/A
2. Compute Vol. Not Covered CW = C
3. Compute CW Limitation Percentage (C / Vt2) x 100 = Z3
4. Compute Vol. Not Covered CCW = D
5. Compute CCW Limitation Percentage (D / Vt2) x 100 = Z4

C. Total Coverage

1. Compute Total Limitation Percentage (Z1+Z2+Z3+Z4) / 4 = L N/A
2. Compute Total Coverage 100 − L *85.71%

REMARKS: *THIS IS 85.71% OF THE SURFACE AREA NECCESSARY TO ACHIEVE 100% OF THE REQUIRED VOLUME (CALCULATED ON A WORST CASE BASIS)

69

380140

PSE&G LIMITATION REPORT

PROJECT: 17-6399 UNIT: SALEM UNIT 2

SYSTEM: MAIN STEAM WELD NO.: 34-MS-2241-242 PL 2

Prepared By: VICTOR MORTON Date: 10 NOV 94

SURFACE EXAMINATIONS

Area To Be Examined (length x ~~Width~~ NOT REQUIRED = A) A= 100%

Area Of Limitation (Length x ~~Width~~ NOT REQUIRED = Al) Al= 28.8

Percentage Of Coverage (A−Al /A)= 71.2%

VOLUMETRIC EXAMINATIONS

A. Axial Exams (Indications Parallel To Weld)

1. Compute Exam Volume (height x width x length) = Vt1 N/A
2. Compute Vol. Not Covered Upstream = A
3. Compute Upstream Limitation Percentage (A / Vt1) x 100 = Z1
4. Compute Vol. Not Covered Downstream = B
5. Compute Downstream Limitation Percentage (B / Vt1) x 100 = Z2

B. Circumferential Exams (Indications Perpendicular To Weld)

1. Compute Exam Volume (height x width x length) = Vt2 N/A
2. Compute Vol. Not Covered CW = C
3. Compute CW Limitation Percentage (C / Vt2) x 100 = Z3
4. Compute Vol. Not Covered CCW = D
5. Compute CCW Limitation Percentage (D / Vt2) x 100 = Z4

C. Total Coverage

1. Compute Total Limitation Percentage (Z1+Z2+Z3+Z4) / 4 = L N/A
2. Compute Total Coverage 100 − L

REMARKS:

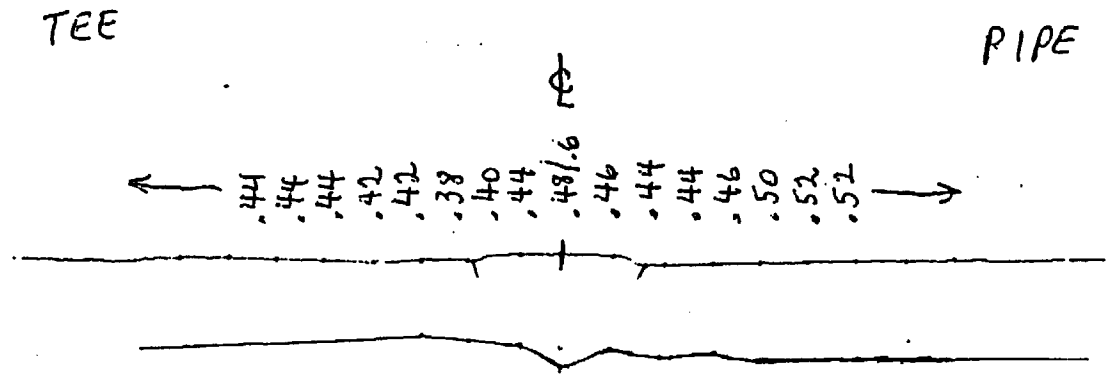
381070

385SIC SwRI PROFILE AND THICKNESS INFORMATION RECORD

PROJECT NO: 17-6399	SITE: Salem Generating Station, Unit 2	DATE: (DAY - MONTH - YEAR) 17 NOV 94	TIME (24 HR. CLOCK) INT. 0950	FINAL 1000	SHEET NO: 135078

EXAMINER: D. KLEINJAN	SNT LEVEL: II	THK. MEAS. REQ'D BY PROCEDURE No. SAM 2-4T49 REV 0 CHG 1 ICN ☒ N/A	INSTRUMENT: SONIC MARK I ☐ OTHER SONIG 136 ☐	SERIAL NO: 855 K	COMPONENT ID: 6-MS-2211-13
EXAMINER: H. HENZE	SNT LEVEL: I T		COUPLANT: GLYCERINE ☐ WATER ☐ OTHER (SPECIFY) SONATRACE 40 # 94014		REFERENCE BLK NO: CS-DC-38

SEARCH UNITS	
BRAND	KBA
SERIAL NO	C30236
SIZE	1/4
FREQ. (MHz)	2.2
INSTRUMENT SETTINGS	
SCREEN SIZE	1
DELAY	.434
MATL. CAL.	.236
RANGE	1.00
REP. RATE	1 KHz
JACK USED	RGU/XMT
TRANS MODE	DUAL



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AUTH. NUCLEAR INSERVICE INSP. 11/18/94 DATE

PSEG INSPECTION SERVICES
Reviewed and Approved
11/18/94
N.D.E. SUPERVISOR

WELD WIDTH 13/16

DUE TO TEE CONFIGURATION

V52, RA-15, 22-0088 REV. 00

PROFILE TAKEN AT 270°

45° Search Unit chosen for coverage using 2/8, 6/8, 10/8 nodes.

N/A° Search Unit chosen for coverage using N/A nodes.

NAME: VICTOR MORTON

SNT LEVEL: III

REVIEWED BY: [signature]

SNT LEVEL: III

DATE: 17 NOV 94

12

SWRI FORM No. NDTR 17-135 (REV. 6/90)

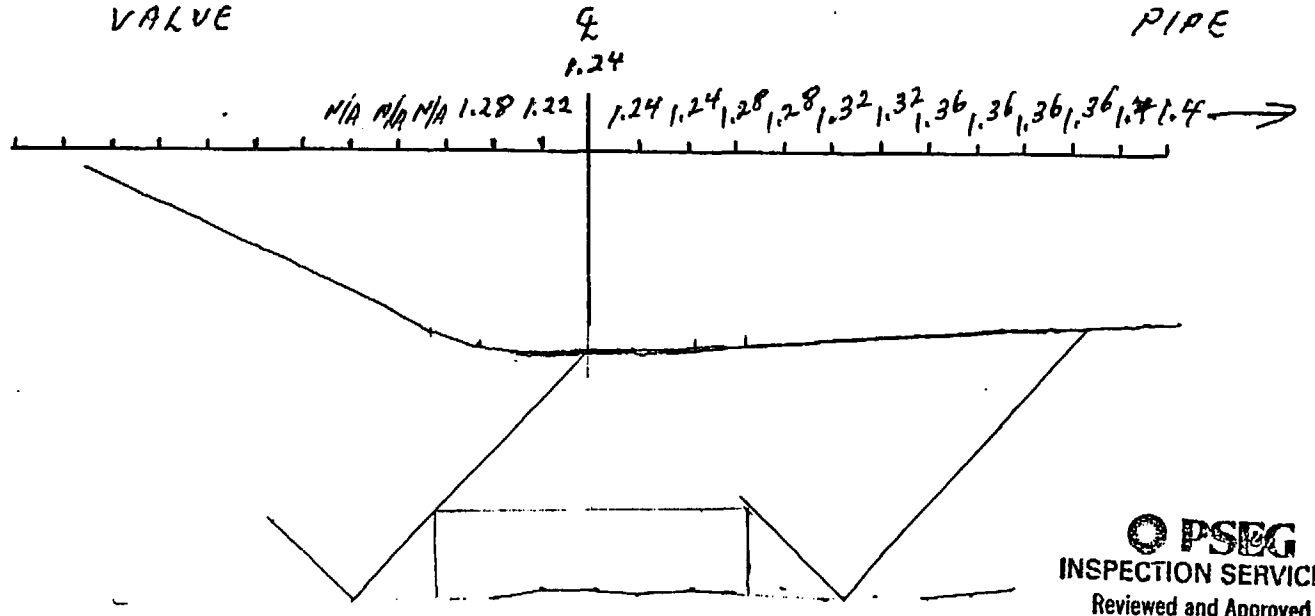
71

501800 **SwRI PROFILE AND THICKNESS INFORMATION RECORD**

PROJECT NO:	SITE:	DATE: (DAY - MONTH - YEAR)	TIME (24 HR. CLOCK)		SHEET NO:
17-6399	Salem Generating Station, Unit 2	9 NOV 94	INT. 0900	FINAL 1036	135052

EXAMINER	SNT LEVEL	THK. MEAS. REQ'D BY PROCEDURE	INSTRUMENT:	SERIAL NO:	COMPONENT ID:
B. ROBERDS	II	No. SAM 2-UT49 REV 0 CHG 1 *	SONIC MARK I ☐ OTHER 136 ☑	860K	14-RH-2212-1
EXAMINER	**SNT LEVEL**		**COUPLANT:**		**REFERENCE BLK NO:**
T. JACKSON	II	ICN ☑ N/A	GLYCERINE ☐ WATER ☐ OTHER (SPECIFY) SONOTRACE 40 #94014		SS-6

SEARCH UNITS	
BRAND	SWRI
SERIAL NO	3129
SIZE	3/8
FREQ. (MHz)	2.25
INSTRUMENT SETTINGS	
SCREEN SIZE	2.0
DELAY	.331
MATL. CAL.	.223
RANGE	2.00
REP. RATE	4KHZ.
JACK USED	RCV/XMT
TRANS MODE	DUAL



PSEG INSPECTION SERVICES Reviewed and Approved 11/14/94 N.D.E. SUPERVISOR

WELD WIDTH - 1 1/8 BAM

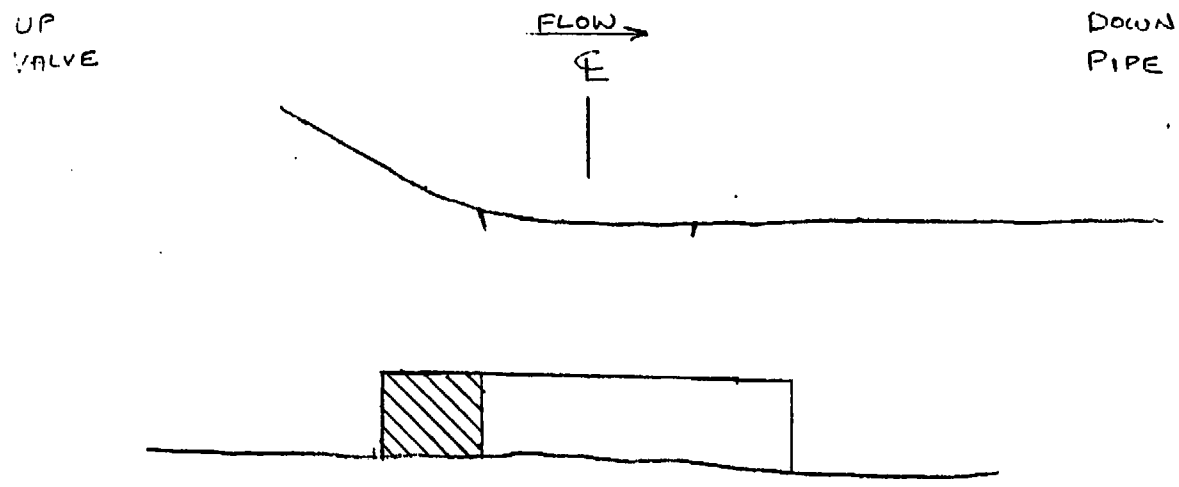
* VS2.RA-IS.22-0088 REV. 00 BAM

45°	Search Unit chosen for coverage using	1/8, 3/8, 5/8, 7/8	nodes.	NAME: B. Roberds / SNT LEVEL: II
N/A°	Search Unit chosen for coverage using	N/A	nodes.	

REVIEWED BY:	SNT LEVEL:	DATE:
Vic [illegible]	III	9 NOV 94

SWRI FORM No. NDTR 17-135 (REV. 6/90)

72



= AREA NOT COVERED CW/CCW

SALEM UNIT 2 17-6399
RESIDUAL HEAT REMOVAL
14-RH-2212-1
VICTOR MORTON III. 9 NOV 94
FOR LIMITATIONS ONLY.

501800

PSE&G LIMITATION REPORT

PROJECT: 17-6399 UNIT: SALEM UNIT 2

SYSTEM: RESIDUAL HEAT REMOVAL WELD NO.: 14-RH-2212-1

Prepared By: VICTOR MORTON Date: 9 NOV 94

SURFACE EXAMINATIONS

Area To Be Examined (length x Width = A) A= N/A

Area Of Limitation (Length x Width = Al) Al=

Percentage Of Coverage (A−Al /A)=

VOLUMETRIC EXAMINATIONS

A. Axial Exams (Indications Parallel To Weld)

1. Compute Exam Volume	(height x width x length) = Vt1	32.36
2. Compute Vol. Not Covered Upstream	= A	0
3. Compute Upstream Limitation Percentage	(A / Vt1) x 100 = Z1	0
4. Compute Vol. Not Covered Downstream	= B	0
5. Compute Downstream Limitation Percentage	(B / Vt1) x 100 = Z2	0

B. Circumferential Exams (Indications Perpendicular To Weld)

1. Compute Exam Volume	(height x width x length) = Vt2	42.69
2. Compute Vol. Not Covered CW	= C	10.34
3. Compute CW Limitation Percentage	(C / Vt2) x 100 = Z3	24.22
4. Compute Vol. Not Covered CCW	= D	10.34
5. Compute CCW Limitation Percentage	(D / Vt2) x 100 = Z4	24.22

C. Total Coverage

1. Compute Total Limitation Percentage	(Z1+Z2+Z3+Z4) / 4 = L	12.11
2. Compute Total Coverage	100 − L	87.89%

REMARKS:

501800

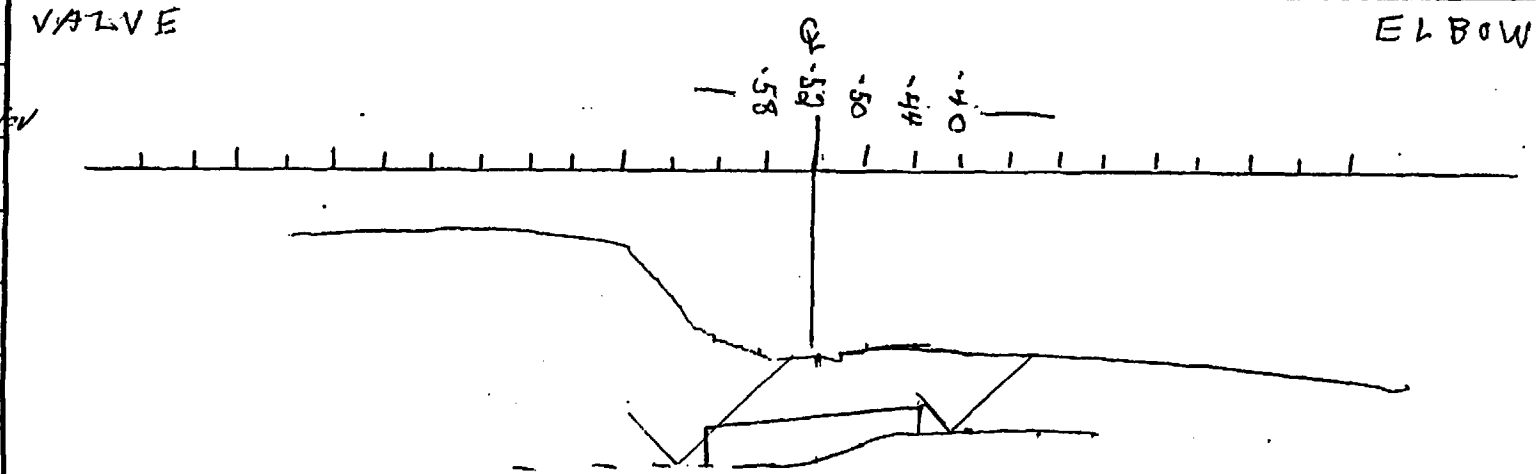
510010

SwRI PROFILE AND THICKNESS INFORMATION RECORD

PROJECT NO:	SITE:	DATE: (DAY - MONTH - YEAR)	TIME (24 HR. CLOCK)	SHEET NO:
17-6399	Salem Generating Station, Unit 2	12 NOV 94	INT. 1300 FINAL 1444	135067

EXAMINER	SNT LEVEL	THK. MEAS. REQ'D BY PROCEDURE	INSTRUMENT:	SERIAL NO:	COMPONENT ID:
W. ANGELL	II	No. SAM2-UT49 REV 0 ★ CHG 1 ICN ☒ N/A	SONIC MARK I ☐ OTHER SONIC 136 ☒	859K	14-~~RH~~ SJ-2224-1
EXAMINER	SNT LEVEL		COUPLANT: GLYCERINE ☐ WATER ☐ OTHER (SPECIFY) SONOTRACE 40 #94014		REFERENCE BLK NO: SS-6

SEARCH UNITS	
BRAND	SWRI ~~30~~-WA 12N-V
SERIAL NO	3008
SIZE	3/8
FREQ. (MHz)	2.25
INSTRUMENT SETTINGS	
SCREEN SIZE	1.0
DELAY	.444
MATL. CAL.	VEL .222
RANGE	1.00
REP. RATE	4KHZ.
JACK USED	RCV/XMT
TRANS MODE	DUAL



REVIEWED & ACCEPTED
FACTORY MUTUAL
ENGINEERING ASSOCIATION
AUTH. NUCLEAR INSERVICE INSP. 11/17/94 DATE

PSEG
INSPECTION SERVICES
Reviewed and Approved
11/15/94
N.D.E. SUPERVISOR

WELD WIDTH = 9/16 WA

★ VS3-RA-IS-ZZ-0088 REV. 00 WA

FLOW

45° Search Unit chosen for coverage using 3/8, 6/8 and 10/8 nodes.

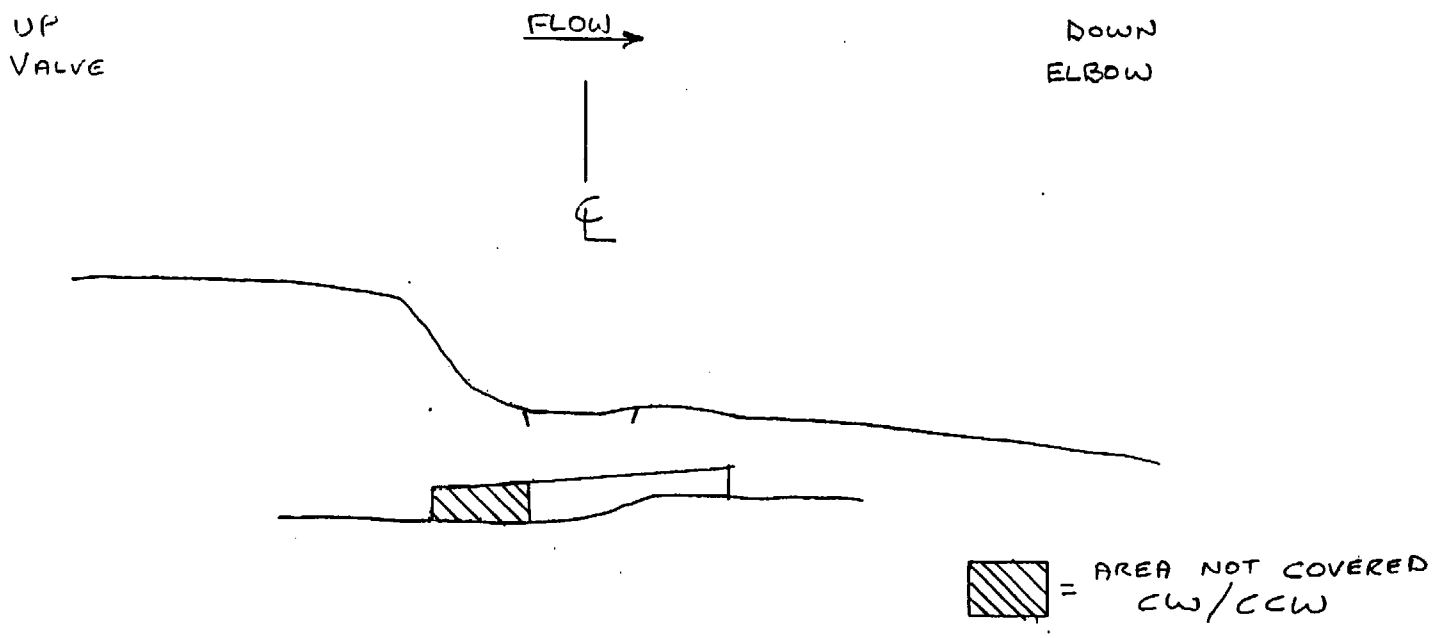
N/A° Search Unit chosen for coverage using N/A nodes.

NAME: W. Angell SNT LEVEL: II

REVIEWED BY: SNT LEVEL: III DATE: 14 NOV 94

SWRI FORM No. NDTR 17-135 (REV. 6/90)

75



SALEM UNIT 2 17-6399
RESIDUAL HEAT REMOVAL
14-SJ-2224-1
VICTOR MORTON III 14 NOV 94
FOR LIMITATIONS ONLY.

570010

PSE&G LIMITATION REPORT

PROJECT: 17-6399 UNIT: SALEM UNIT 2

SYSTEM: RESIDUAL HEAT REMOVAL WELD NO.: 14-~~78H~~ SJ 8H 11/10/94 -2224-1

Prepared By: VICTOR MORTON Date: 14-NOV 93

SURFACE EXAMINATIONS

Area To Be Examined (length x Width = A) A= N/A

Area Of Limitation (Length x Width = Al) Al=

Percentage Of Coverage (A−Al /A)=

VOLUMETRIC EXAMINATIONS

A. Axial Exams (Indications Parallel To Weld)

1. Compute Exam Volume	(height x width x length) = Vt1	9.97
2. Compute Vol. Not Covered Upstream	= A	0
3. Compute Upstream Limitation Percentage	(A / Vt1) x 100 = Z1	0
4. Compute Vol. Not Covered Downstream	= B	0
5. Compute Downstream Limitation Percentage	(B / Vt1) x 100 = Z2	0

B. Circumferential Exams (Indications Perpendicular To Weld)

1. Compute Exam Volume	(height x width x length) = Vt2	13.30
2. Compute Vol. Not Covered CW	= C	6.65
3. Compute CW Limitation Percentage	(C / Vt2) x 100 = Z3	50.00
4. Compute Vol. Not Covered CCW	= D	6.65
5. Compute CCW Limitation Percentage	(D / Vt2) x 100 = Z4	50.00

C. Total Coverage

1. Compute Total Limitation Percentage	(Z1+Z2+Z3+Z4) / 4 = L	25.00
2. Compute Total Coverage	100 − L	75%

REMARKS:

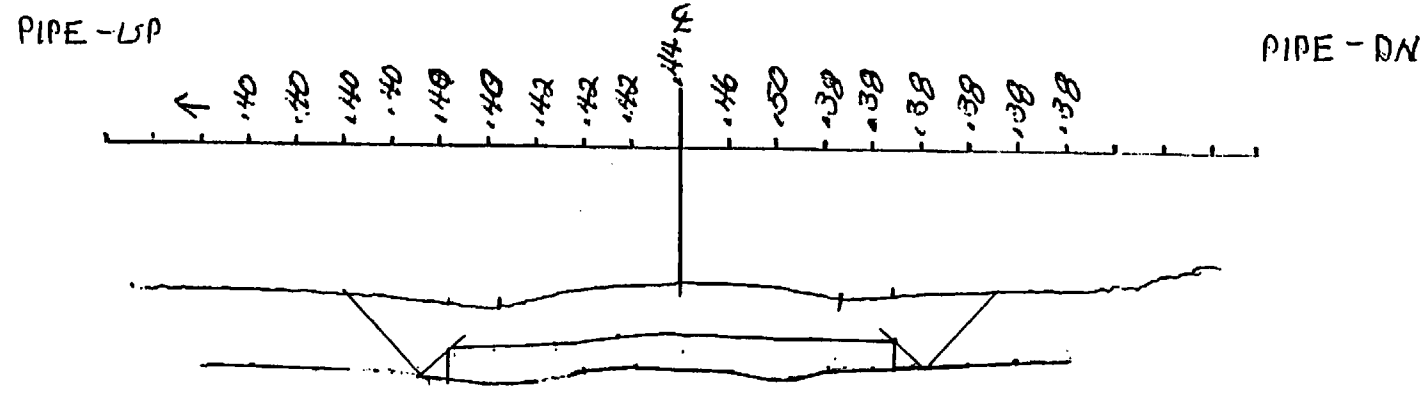
77

570010

573380 SwRI PROFILE AND THICKNESS INFORMATION RECORD

PROJECT NO: 17-6399	SITE: Salem Generating Station, Unit 2	DATE: (DAY - MONTH - YEAR) 14 NOV 94	TIME (24 HR. CLOCK) INT. 0852 FINAL 1707		SHEET NO: 135071
EXAMINER: R. ROBERDS	SNT LEVEL: II	THK. MEAS. REQ'D BY PROCEDURE * No. SAM 2-UT49 REV 0 CHG 1	INSTRUMENT: SONIC MARK I ☐ OTHER SONIC 136 ☑	SERIAL NO: 860K	COMPONENT ID: 12-RH-2252-38
EXAMINER: T. JACKSON	SNT LEVEL: II	ICN ☑ N/A	COUPLANT: BATCH 940114 GLYCERINE ☐ WATER ☐ OTHER (SPECIFY) SONOTRACE 40		REFERENCE BLK NO: SS-BC-31

SEARCH UNITS	
BRAND	SwRI
SERIAL NO	3129
SIZE	3/8
FREQ. (MHz)	2.25
INSTRUMENT SETTINGS	
SCREEN SIZE	1.0
DELAY	.341
MATL. CAL.	.219
RANGE	1.00
REP. RATE	4KHz
JACK USED	RCV/XMT
TRANS MODE	DUAL



REVIEWED & ACCEPTED FACTORY MUTUAL ENGINEERING ASSOCIATION 11/18/94 AUTH. NUCLEAR INSERVICE INSP. DATE

PSEG INSPECTION SERVICES Reviewed and Approved 11/16/94 N.D.E. SUPERVISOR

* CAL. CHECK: 1000, 1330 JJ

* VG 2.RA-IS.IZ-0088 REV. 0 JJ

45 ° Search Unit chosen for coverage using 4/8, 8/8, 12/8 nodes.

N/A ° Search Unit chosen for coverage using N/A nodes.

NAME: VICTOR MORTON SNT LEVEL: III

REVIEWED BY: Vic SNT LEVEL: III DATE: 15 NOV 94

SWRI FORM No. NDTR 17-135 (REV. 6/90)

78

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PSE&G LIMITATION REPORT

PROJECT: 17-6399 UNIT: SALEM UNIT 2

SYSTEM: RESIDUAL HEAT REMOVAL WELD NO.: 12-RH-2252-38

Prepared By: VICTOR MORTON Date: 15 NOV 94

SURFACE EXAMINATIONS

Area To Be Examined (length x Width = A) A= N/A

Area Of Limitation (Length x Width = Al) Al=

Percentage Of Coverage (A−Al /A)=

VOLUMETRIC EXAMINATIONS

A. Axial Exams (Indications Parallel To Weld)

1. Compute Exam Volume	(height x width x length) = Vt1	18.46
2. Compute Vol. Not Covered Upstream	= A	5.98
3. Compute Upstream Limitation Percentage	(A / Vt1) x 100 = Z1	32.39
4. Compute Vol. Not Covered Downstream	= B	5.98
5. Compute Downstream Limitation Percentage	(B / Vt1) x 100 = Z2	32.39

B. Circumferential Exams (Indications Perpendicular To Weld)

1. Compute Exam Volume	(height x width x length) = Vt2	22.47
2. Compute Vol. Not Covered CW	= C	7.28
3. Compute CW Limitation Percentage	(C / Vt2) x 100 = Z3	32.39
4. Compute Vol. Not Covered CCW	= D	7.28
5. Compute CCW Limitation Percentage	(D / Vt2) x 100 = Z4	32.39

C. Total Coverage

1. Compute Total Limitation Percentage	(Z1+Z2+Z3+Z4) / 4 = L	32.39
2. Compute Total Coverage	100 − L	67.61%

REMARKS:

79

573380

PSE&G LIMITATION REPORT

PROJECT: 17-6399 UNIT: SALEM UNIT 2

SYSTEM: RESIDUAL HEAT REMOVAL WELD NO.: 12-RH-2252-38PS-1

Prepared By: VICTOR MORTON Date: 15 NOV 94

SURFACE EXAMINATIONS

Area To Be Examined (length x Width = A) A= 28.00

Area Of Limitation (Length x Width = Al) Al= 8.00

Percentage Of Coverage (A−Al /A)= 71.43

VOLUMETRIC EXAMINATIONS

A. Axial Exams (Indications Parallel To Weld)

1. Compute Exam Volume (height x width x length) = Vt1 N/A
2. Compute Vol. Not Covered Upstream = A
3. Compute Upstream Limitation Percentage (A / Vt1) x 100 = Z1
4. Compute Vol. Not Covered Downstream = B
5. Compute Downstream Limitation Percentage (B / Vt1) x 100 = Z2

B. Circumferential Exams (Indications Perpendicular To Weld)

1. Compute Exam Volume (height x width x length) = Vt2 N/A
2. Compute Vol. Not Covered CW = C
3. Compute CW Limitation Percentage (C / Vt2) x 100 = Z3
4. Compute Vol. Not Covered CCW = D
5. Compute CCW Limitation Percentage (D / Vt2) x 100 = Z4

C. Total Coverage

1. Compute Total Limitation Percentage (Z1+Z2+Z3+Z4) / 4 = L N/A
2. Compute Total Coverage 100 − L

REMARKS:

573583

PSE&G LIMITATION REPORT

PROJECT: 17-6399 UNIT: SALEM UNIT 2

SYSTEM: RESIDUAL HEAT REMOVAL WELD NO.: 12-RH-2252-38 PS3

Prepared By: VICTOR MORTON Date: _____

SURFACE EXAMINATIONS

Area To Be Examined (length x ~~Width~~ NOT REQUIRED = A) A= 45.5

Area Of Limitation (Length x ~~Width~~ NOT REQUIRED = Al) Al= 13.0

Percentage Of Coverage (A−Al /A)= 71.43

VOLUMETRIC EXAMINATIONS

A. Axial Exams (Indications Parallel To Weld)

1. Compute Exam Volume (height x width x length) = Vt1 N/A
2. Compute Vol. Not Covered Upstream = A
3. Compute Upstream Limitation Percentage (A / Vt1) x 100 = Z1
4. Compute Vol. Not Covered Downstream = B
5. Compute Downstream Limitation Percentage (B / Vt1) x 100 = Z2

B. Circumferential Exams (Indications Perpendicular To Weld)

1. Compute Exam Volume (height x width x length) = Vt2 N/A
2. Compute Vol. Not Covered CW = C
3. Compute CW Limitation Percentage (C / Vt2) x 100 = Z3
4. Compute Vol. Not Covered CCW = D
5. Compute CCW Limitation Percentage (D / Vt2) x 100 = Z4

C. Total Coverage

1. Compute Total Limitation Percentage (Z1+Z2+Z3+Z4) / 4 = L N/A
2. Compute Total Coverage 100 − L

REMARKS: _____

573387

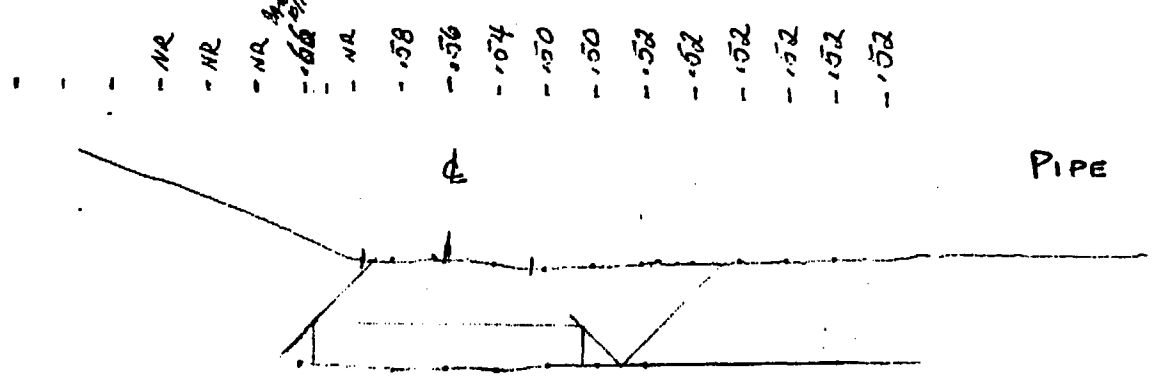
707130

SwRI PROFILE AND THICKNESS INFORMATION RECORD

PROJECT NO:	SITE:	DATE: (DAY - MONTH - YEAR)	TIME (24 HR. CLOCK)	SHEET NO:
17-6399	Salem Generating Station, Unit 2	19 OCT 94	INT. 1420 FINAL 1711	135001

EXAMINER	SNT LEVEL	THK. MEAS. REQ'D BY PROCEDURE *	INSTRUMENT:	SERIAL NO:	COMPONENT ID:
T. JACKSON	II	No. SAM2-UT49 REV 0 CHG 1	SONIC MARK I ☐ OTHER SONIC 136 ☐	656G	4-CV-2257-1
EXAMINER	**SNT LEVEL**		**COUPLANT:**		**REFERENCE BLK NO:**
B. ROBERDS	II	ICN ☒ N/A	GLYCERINE ☐ WATER ☐ OTHER (SPECIFY) SONOTRACE 40		SS-DC-31

SEARCH UNITS	
BRAND	SWRI
SERIAL NO	3129
SIZE	3/8
FREQ. (MHz)	2.25
INSTRUMENT SETTINGS	
SCREEN SIZE	1.00
DELAY	.369
MATL. CAL.	.222
RANGE	1.00
REP. RATE	4 kHz
JACK USED	RCV/XMT
TRANS MODE	DUAL



CROWN WIDTH 7/8

* VS2.BA-IS.ZZ-0088(Q) REV. 0

PSEG INSPECTION SERVICES
Reviewed and Approved
11/4/94
N.D.E. SUPERVISOR

45 ° Search Unit chosen for coverage using 2/8, 6/8, 10/8 nodes.

N/A ° Search Unit chosen for coverage using N/A nodes.

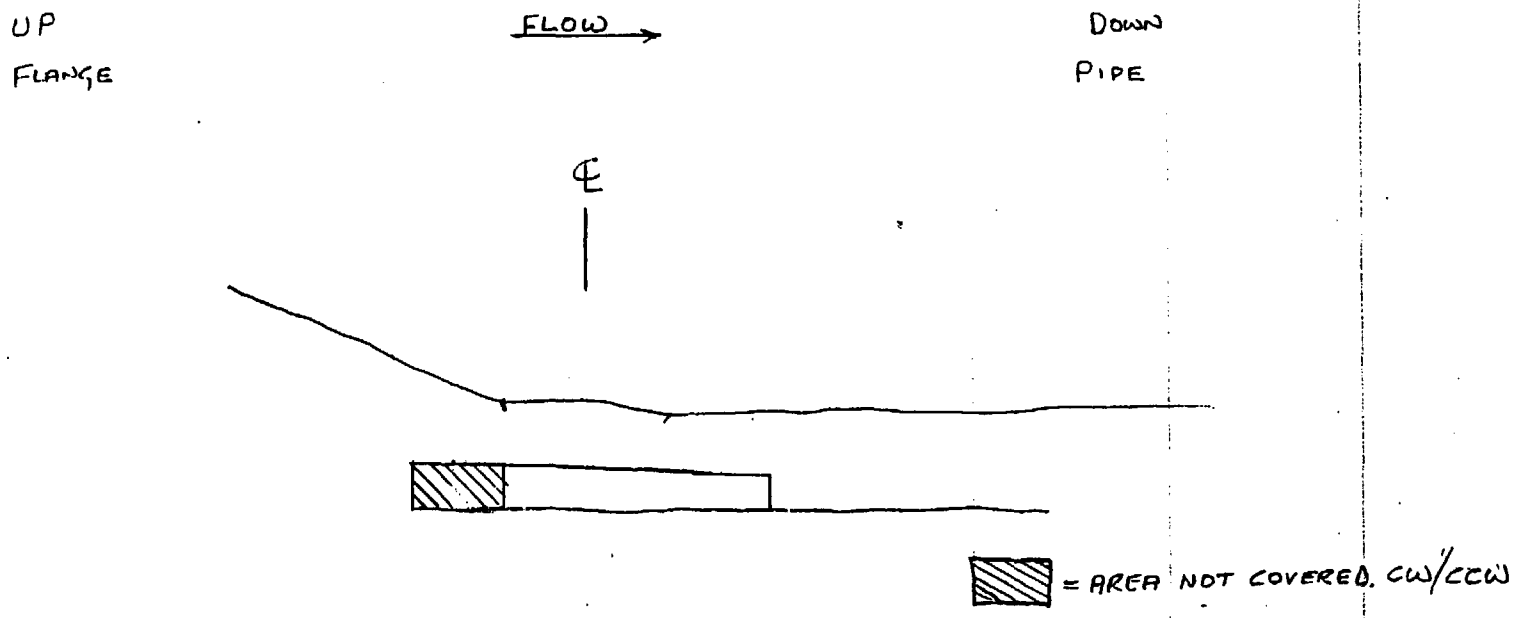
NAME:	SNT LEVEL:
VICTOR MORTON	III

REVIEWED BY:	SNT LEVEL:	DATE:
Vic [signature]	III	21 OCT 94

SWRI FORM No. NDTR 17-135 (REV. 6/90)

28

28



SALEM UNIT 2 17-6399
CHEMICAL VOLUME CONTROL
4-CV-2257-1
FOR LIMITATIONS ONLY.

707130

83

PSE&G LIMITATION REPORT

PROJECT: 17-6399 UNIT: SALEM UNIT 2

SYSTEM: CHEMICAL VOLUME CONTROL WELD NO.: 4-CV-2257-1

Prepared By: VICTOR MORTON Date: 1 NOV 1994

SURFACE EXAMINATIONS

Area To Be Examined (length x Width = A) A= N/A

Area Of Limitation (Length x Width = Al) Al=

Percentage Of Coverage (A−Al /A)=

VOLUMETRIC EXAMINATIONS

A. Axial Exams (Indications Parallel To Weld)

1. Compute Exam Volume	(height x width x length) = Vt1	5.00
2. Compute Vol. Not Covered Upstream	= A	0
3. Compute Upstream Limitation Percentage	(A / Vt1) x 100 = Z1	0
4. Compute Vol. Not Covered Downstream	= B	0
5. Compute Downstream Limitation Percentage	(B / Vt1) x 100 = Z2	0

B. Circumferential Exams (Indications Perpendicular To Weld)

1. Compute Exam Volume	(height x width x length) = Vt2	6.80
2. Compute Vol. Not Covered CW	= C	1.79
3. Compute CW Limitation Percentage	(C / Vt2) x 100 = Z3	26.32
4. Compute Vol. Not Covered CCW	= D	1.79
5. Compute CCW Limitation Percentage	(D / Vt2) x 100 = Z4	26.32

C. Total Coverage

1. Compute Total Limitation Percentage	(Z1+Z2+Z3+Z4) / 4 = L	13.16
2. Compute Total Coverage	100 − L	86.84%

REMARKS:

707130

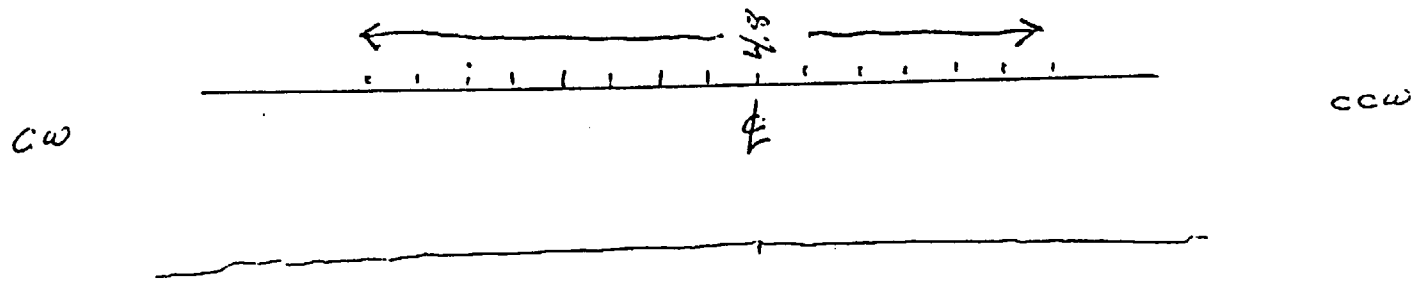
Sum.# 010400

SwRI PROFILE AND THICKNESS INFORMATION RECORD

PROJECT NO:	SITE:	DATE: (DAY - MONTH - YEAR)	TIME (24 HR. CLOCK)	SHEET NO:
17-7824	Salem Unit 2	5 SEPT 96	INT. 1535 FINAL 1550	135002

EXAMINER	SNT LEVEL	THK. MEAS. REQ'D BY PROCEDURE	INSTRUMENT:	SERIAL NO:	COMPONENT ID:
L. Duran	II	No. PSE UT 15 REV 1 CHG 1 ICN ☒ N/A	SONIC MARK I ☐ OTHER SONIC 136 ☒	860 K	2-PZR Long D
EXAMINER	SNT LEVEL		COUPLANT: GLYCERINE ☐ WATER ☐ OTHER (SPECIFY) Sonatrace		REFERENCE BLK NO:
M KLEINJAN	II				CS DC 25

SEARCH UNITS	
BRAND	AEROTECH
SERIAL NO	L08363
SIZE	3/4
FREQ. (MHz)	2.25
INSTRUMENT SETTINGS	
SCREEN SIZE	10
DELAY	.006
MATL. CAL.	.231
RANGE	10
REP. RATE	2K
JACK USED	RCV
TRANS MODE	PE



REVIEWED & ACCEPTED
FACTORY MUTUAL
ENGINEERING ASSOCIATION
AUTH. NUCLEAR INSERVICE INSP. — DATE 10/2/96

Permanent Insulation BRACKET ON CCW 5 1/4 from ℄ of weld

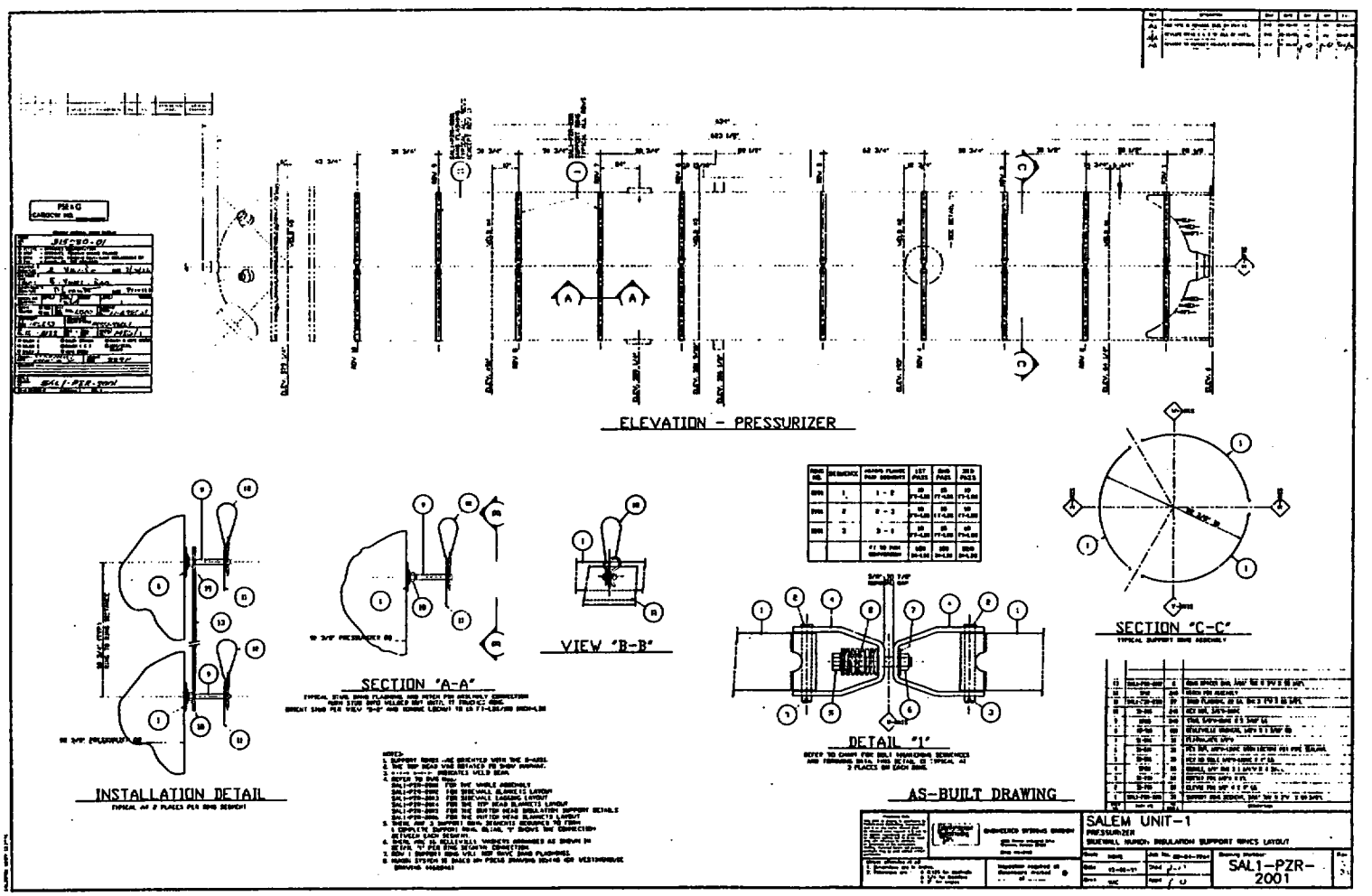
45 ° Search Unit chosen for coverage using 1/8, 1/8, 3/8, 5/8 nodes.
60 ° Search Unit chosen for coverage using 1/8, 2/8, 3/8, 5/8 nodes.

NAME: L. DURAN — SNT LEVEL: II

REVIEWED BY: [signature] — SNT LEVEL: III — DATE: 7 SEPT 96

SWRI FORM No. NDTR 17-135 (REV. 6/90)

USER RESPONSIBLE FOR VERIFYING REVISION, STATUS AND CHANGES
VTD 315230 000 1 PRINTED 20050112



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843

FORM 3
(Page 1 of 4)

VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

UNIT: Salem UNIT 2 LTP SUMMARY NO.: 010400

SYSTEM: Pressurizer LTP COMPONENT ID: 2-PZR-Long D

PREPARED BY: Hector Diaz Lv. III DATE: 16 SEP 96

REVIEWED BY: Steven A. Nadal Lv. II DATE: 16 Sept. 96

Scott W. [illegible] 10/2/96

1.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT BEAM PLANAR FLAWS

Exam height	X	Exam width	X	Exam length	=	Exam Volume
_____	X	_____	X	_____	=	*

2.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT LAMINAR PLANAR FLAWS

Exam height	X	Exam width	X	Exam length	=	Exam Volume
_____	X	_____	X	_____	=	*

3.0 CALCULATE REQUIRED PARALLEL EXAM VOLUME FOR 45° AND 65°

Exam height	X	Exam width	X	Exam length	=	Exam Volume
_____	X	_____	X	_____	=	*

4.0 CALCULATE REQUIRED TRANSVERSE EXAM VOLUME FOR 45° AND 65°

Exam height	X	Exam width	X	Exam length	=	Exam Volume
_____	X	_____	X	_____	=	*

5.0 CALCULATE STRAIGHT BEAM PLANAR EXAM COVERAGE

5.1 LIMITED ABOVE/CW EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Volume with NO exam coverage
_____	X	_____	X	_____	=	*

5.2 LIMITED BELOW/CW EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Volume with NO exam coverage
_____	X	_____	X	_____	=	*

Total straight beam planar exam volume not examined = *

FORM 3
(Page 2 of 4)

VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

5.3 PERCENT VOLUME EXAMINED Sum. # 010400

Percent Volume Examined	=	100	-	Total 0° vol w/No coverage	/	Total 0° Exam Vol	X	100
	=	100	-	{[_____	/	_____]	X	100}
	=					69		%

6.0 CALCULATE STRAIGHT BEAM LAMINAR EXAM COVERAGE

6.1 LIMITED ABOVE/CW EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Volume with NO exam coverage
_____	X	_____	X	_____	=	*

6.2 LIMITED BELOW/CW EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Volume with NO exam coverage
_____	X	_____	X	_____	=	*

Total straight beam laminar exam volume not examined = *

6.3 PERCENT VOLUME EXAMINED

Percent Volume Examined	=	100	-	Total 0° vol w/No coverage	/	Total 0° Exam Vol	X	100
	=	100	-	{[_____	/	_____]	X	100}
					—	100 ~~69~~		%

LAMINAR EXAM COVERAGE WAS Achieved IN All AREAS where Angle beam WAS done.

7.0 CALCULATE PARALLEL 45° EXAM COVERAGE

7.1 LIMITED ABOVE/CW EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Above/CW exam volume with NO exam coverage
_____	X	_____	X	_____	=	*

7.2 LIMITED BELOW/CCW EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Below/CCW exam volume with NO exam coverage
_____	X	_____	X	_____	=	*

Total 45° parallel exam volume not examined = *

FORM 3
(Page 3 of 4)

VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

7.3 PERCENT VOLUME EXAMINED Sum.# 010400

Percent Volume Examined	=	100	-	Total 45° parallel vol w/No coverage	/	Total 45° parallel Exam Vol X	100
	=	100	-	{[_____	/	_____] X	100}
	=					69	%

8.0 CALCULATE PARALLEL 60° EXAM COVERAGE

8.1 LIMITED ABOVE/CW EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Above/CW exam volume with NO exam coverage
_____	X	_____	X	_____	=	*

8.2 LIMITED BELOW/CCW EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Below/CCW exam volume with NO exam coverage
_____	X	_____	X	_____	=	*

Total 60° parallel exam volume not examined = *

8.3 PERCENT VOLUME EXAMINED

Percent Volume Examined	=	100	-	Total 60° parallel vol w/No coverage	/	Total 60° par. Exam Vol X	100
	=	100	-	{[_____	/	_____] X	100}
						69	%

9.0 CALCULATE TRANSVERSE 45° EXAM COVERAGE

9.1 LIMITED CLOCKWISE EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		CW exam volume with NO exam coverage
_____	X	_____	X	_____	=	*

9.2 LIMITED COUNTERCLOCKWISE EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		CCW exam volume with NO exam coverage
_____	X	_____	X	_____	=	*

Total 45° transverse exam volume not examined = *

FORM 3
(Page 4 of 4)

VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

9.3 PERCENT VOLUME EXAMINED Sum. # 010400

Percent Volume Examined	=	100	-	Total 45° parallel vol w/No coverage	/	Total 45° parallel Exam Vol	X	100
	=	100	-	{[_____	/	_____]	X	100}
	=					69		%

10.0 CALCULATE TRANSVERSE 60° EXAM COVERAGE

10.1 LIMITED CLOCKWISE EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		CW exam volume with NO exam coverage
_____	X	_____	X	_____	=	*

10.2 LIMITED COUNTERCLOCKWISE EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		CCW exam volume with NO exam coverage
_____	X	_____	X	_____	=	*

Total 60° transverse exam volume not examined = *

10.3 PERCENT VOLUME EXAMINED

Percent Volume Examined	=	100	-	Total 60° trans vol w/No coverage	/	Total 60° trans Exam Vol	X	100
	=	100	-	{[_____	/	_____]	X	100}
						69		%

11.0 CALCULATE PERCENT OF TOTAL VOLUME EXAMINED

Examination Coverage	=	Sum of Exam Volumes % (step 5 thru 10)	/No. of exams(6)
	=	74 %	

CW exam

REMARKS:

* Exam performed from 0" to 9" and was limited from 9" to 13" due to permanent Insulation brackets.

86

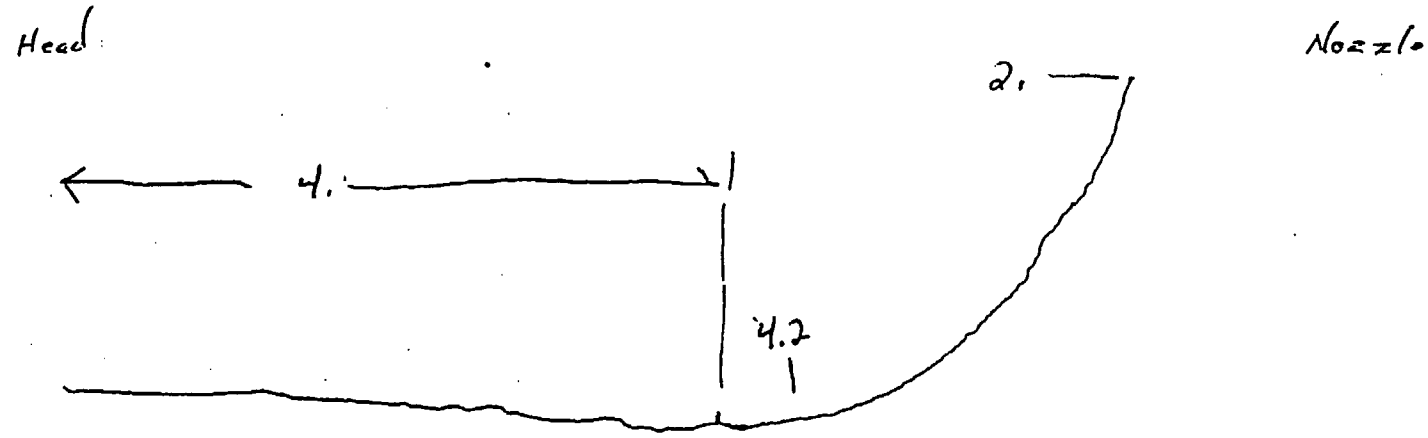
Sum.# 011100

SwRI PROFILE AND THICKNESS INFORMATION RECORD

PROJECT NO:	SITE:	DATE: (DAY - MONTH - YEAR)	TIME (24 HR. CLOCK)	SHEET NO:
17-7824	Salem UNIT 2	5 Sept 96	INT. 1632 FINAL 1635	135001

EXAMINER	SNT LEVEL	THK. MEAS. REQ'D BY PROCEDURE	INSTRUMENT:	SERIAL NO:	COMPONENT ID:
L. DURAN	II	No. N/A	SONIC MARK I ☒ OTHER ☐	860 K	PRESSURIZER 4-PSN-1231-IRS
EXAMINER	SNT LEVEL	REV N/A CHG ICN ☐ N/A	COUPLANT: GLYCERINE ☐ WATER ☐ OTHER (SPECIFY) Sonitrace		REFERENCE BLK NO: CS-DC-25
M KLEINJAN	II				

SEARCH UNITS	
BRAND	Aerotech
SERIAL NO	L08363
SIZE	3/4
FREQ. (MHz)	2.25
INSTRUMENT SETTINGS	
SCREEN SIZE	10
DELAY	1000
MATL. CAL.	1231
RANGE	10
REP. RATE	2K
JACK USED	RCV
TRANS MODE	PE



REVIEWED & ACCEPTED
FACTORY MUTUAL
ENGINEERING ASSOCIATION
AUTH. NUCLEAR INSERVICE INSP. 10/2/96 DATE

For INFORMATION ONLY

N/A° Search Unit chosen for coverage using _____ nodes.
N/A° Search Unit chosen for coverage using N/A nodes.

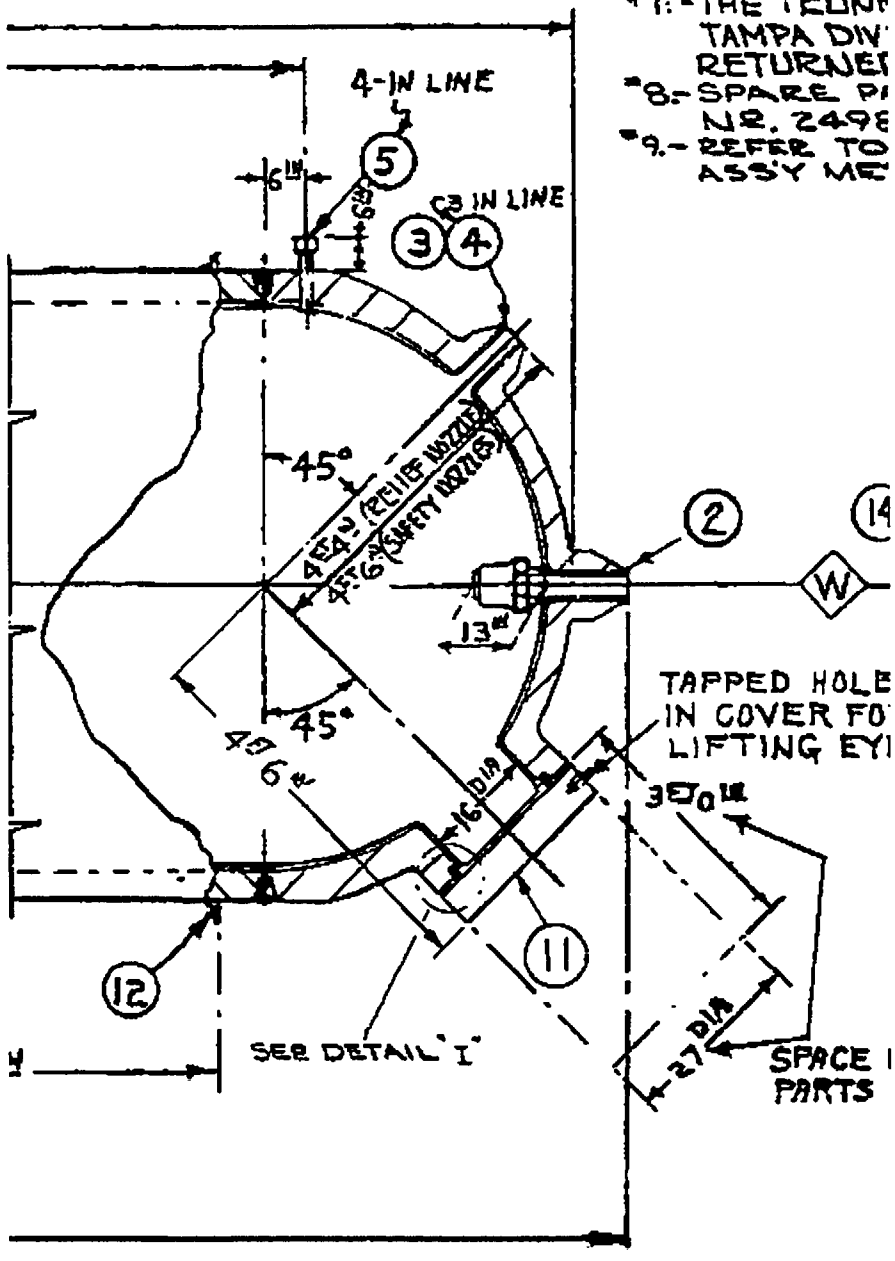
NAME:	SNT LEVEL:
N/A	N/A

REVIEWED BY:	SNT LEVEL:	DATE:
Neal Day	III	7 SEPT 96

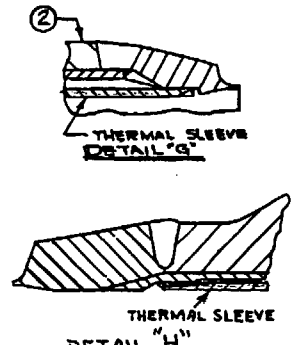
SWRI FORM No. NDTR 17-135 (REV. 6/80)

USER RESPONSIBLE FOR VERIFYING REVISION, STATUS AND CHANGES
VTD 301105 000 7 PRINTED 20050112

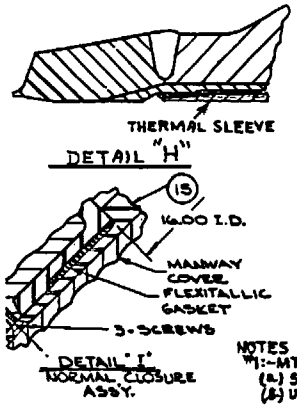
VESSEL CODE, SI
#5:- DESIGN PI
DESIGN TI
#6:-TOTAL HEA
#7:-THE TELUN
TAMPA DIV
RETURNEI
#8:-SPARE PI
NR. 2498
#9.- REFER TO
ASS'Y ME

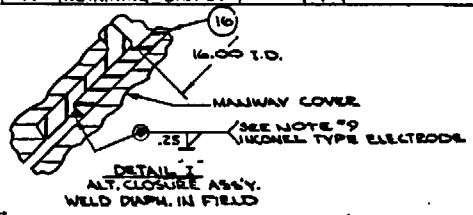


USER RESPONSIBLE FOR VERIFYING REVISION, STATUS AND CHANGES
VTD 301105 000 7 PRINTED 20050112



ITEM Nº	TITLE	NOTES	QTY.	SIZE	END PREP
1	SURGE NOZZLE	1&2a	1	14" SCH. 140	DET. "C" & "H"
2	SPRAY NOZZLE	1&2b	1	4" SCH. 160	DET. "C" & "G"
3	RELIEF NOZZLE	1&2b	1	4" SCH. 160	DET. "C"
4	SAFETY NOZZLE	1&2b	3	6"	DET. "C"
5	INSTRUMENT NOZZLE	3	8	3/4 SCH. 160	DET. "D"
6	SAMPLE NOZZLE	3	1	3/4 SCH. 160	DET. "D"
7					
8	IMMERSION HEATER		78		DET. "B"
9	RATING PL. & BRACKET		1		
10	NAME PL. & BRACKET		1		
11	MANWAY COVER		1	(APPROX. WT. 650 LBS)	
12	INSULATION ANGLE		5		
13	GUIDE BRACKET		4		
14	TRUNNION (NOTE 7)		2	(APPROX. WT. 400#)	DET. "E"
15	INSERT		1		DET. "I"
16	DIAPHRAGM	8			DET. "I"
17	RETAINING BASKET		1		





NOTES

#1:-MTL.
(a) SHELL:- Mn-Mo-STEEL PLATE SA-302 GR. B (FIRE BOX QUALITY.)
(b) UPPER & LOWER HEAD & NOZZLES (ITS. #1 THRU 4):- CARBON STEEL CASTING SA-216-GR WCC TO MEET ASME NUCLEAR VESSELS CODE SECT. III.
(c) SUPPORT SKIRT, CARBON STEEL PLATE TO SA-516 GR. 70

#2:- NOZZLE END; STAINLESS STEEL MTL.
(a) —— SA-312 TP. 316.
(b) —— SA-182 TP. 316.

#3:-NOZZLE, STAINLESS STEEL, SA-276 TP. 316.

#4:-VESSEL TO BE BUILT IN ACCORDANCE WITH ASME BOILER & PRESSURE VESSEL CODE, SECT. III, NUCLEAR VESSELS.

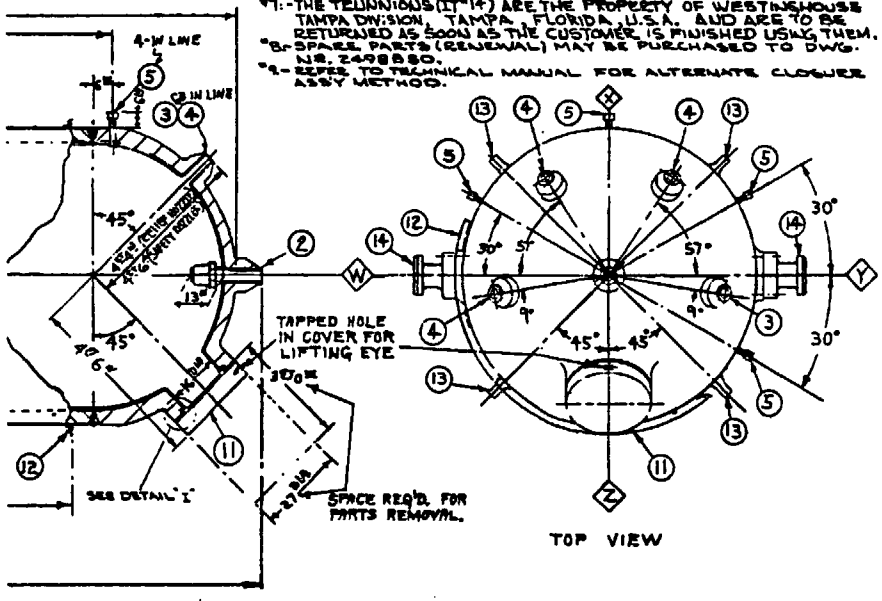
#5:- DESIGN PRESSURE —— 2485 P.S.I.G.
DESIGN TEMPERATURE —— 680° F

#6:-TOTAL HEATER CAPACITY 1800KW, EACH HEATER RATED 23.08KW, 480 VOLTS.

#7:-THE TRUNNIONS (IT #14) ARE THE PROPERTY OF WESTINGHOUSE TAMPA DIVISION, TAMPA, FLORIDA, U.S.A. AND ARE TO BE RETURNED AS SOON AS THE CUSTOMER IS FINISHED USING THEM.

#8:-SPARE PARTS (RENEWAL) MAY BE PURCHASED TO DWG. Nº. 2498880.

#9:- REFER TO TECHNICAL MANUAL FOR ALTERNATE CLOSURE ASSY METHOD.



301105

FIGURE 5-1. Outline

FORM 3
(Page 1 of 4)

VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

UNIT: Salem Unit 2 LTP SUMMARY NO.: 011100

SYSTEM: Pressurizer LTP COMPONENT ID: 4-PSN-1231-IRS

PREPARED BY: Hector Diaz DATE: 17 SEPT 96

REVIEWED BY: [signature] DATE: 17 Sept. 1996

[signature] 10/2/96

1.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT BEAM PLANAR FLAWS

Exam height	X	Exam width	X	Exam length	=	Exam Volume
_____	X	_____	X	_____	=	N/A

2.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT LAMINAR PLANAR FLAWS

Exam height	X	Exam width	X	Exam length	=	Exam Volume
_____	X	_____	X	_____	=	N/A

3.0 CALCULATE REQUIRED PARALLEL EXAM VOLUME FOR 45° AND 65°

Exam height	X	Exam width	X	Exam length	=	Exam Volume
_____	X	_____	X	_____	=	N/A

4.0 CALCULATE REQUIRED TRANSVERSE EXAM VOLUME FOR 45° AND 65°

Exam height	X	Exam width	X	Exam length	=	Exam Volume
_____	X	_____	X	_____	=	N/A

5.0 CALCULATE STRAIGHT BEAM PLANAR EXAM COVERAGE

5.1 LIMITED ABOVE/CW EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Volume with NO exam coverage
_____	X	_____	X	_____	=	N/A

5.2 LIMITED BELOW/CW EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Volume with NO exam coverage
_____	X	_____	X	_____	=	N/A

Total straight beam planar exam volume not examined = N/A

FORM 3
(Page 2 of 4)

Sum.# 011100

VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

5.3 PERCENT VOLUME EXAMINED

Percent Volume Examined	=	100	-	Total 0° vol w/No coverage	/	Total 0° Exam Vol	X	100
	=	100	-	{[_____	/	_____]	X	100}
	=					N/A		%

6.0 CALCULATE STRAIGHT BEAM LAMINAR EXAM COVERAGE

6.1 LIMITED ABOVE/CW EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Volume with NO exam coverage
_____	X	_____	X	_____	=	N/A

6.2 LIMITED BELOW/CW EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Volume with NO exam coverage
_____	X	_____	X	_____	=	N/A

Total straight beam laminar exam volume not examined = N/A

6.3 PERCENT VOLUME EXAMINED

Percent Volume Examined	=	100	-	Total 0° vol w/No coverage	/	Total 0° Exam Vol	X	100
	=	100	-	{[_____	/	N/A]	X	100}
						N/A		%

7.0 CALCULATE PARALLEL ~~45°~~ 53° EXAM COVERAGE

7.1 LIMITED ABOVE/CW EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Above/CW exam volume with NO exam coverage
_____	X	_____	X	_____	=	N/A

7.2 LIMITED BELOW/CCW EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Below/CCW exam volume with NO exam coverage
_____	X	_____	X	_____	=	N/A

Total 45° parallel exam volume not examined = N/A

FORM 3
(Page 3 of 4)

VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

Sum# 011100

7.3 PERCENT VOLUME EXAMINED

Percent Volume Examined	=	100	-	Total ~~45°~~ 53° (60) parallel vol w/No coverage	/	Total 45° parallel Exam Vol	X 100
	=	100	-	{[_____	/	N/A]	X 100}
	=					*50	%

8.0 CALCULATE PARALLEL 60° EXAM COVERAGE

8.1 LIMITED ABOVE/CW EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Above/CW exam volume with NO exam coverage
_____	X	_____	X	_____	=	N/A

8.2 LIMITED BELOW/CCW EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Below/CCW exam volume with NO exam coverage
_____	X	_____	X	_____	=	N/A

Total 60° parallel exam volume not examined = N/A

8.3 PERCENT VOLUME EXAMINED

Percent Volume Examined	=	100	-	Total 60° parallel vol w/No coverage	/	Total 60° par. Exam Vol	X 100
	=	100	-	{[_____	/	N/A]	X 100}
						N/A	%

9.0 CALCULATE TRANSVERSE 45° EXAM COVERAGE

9.1 LIMITED CLOCKWISE EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		CW exam volume with NO exam coverage
_____	X	_____	X	_____	=	N/A

9.2 LIMITED COUNTERCLOCKWISE EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		CCW exam volume with NO exam coverage
_____	X	_____	X	_____	=	N/A

Total 45° transverse exam volume not examined = N/A

FORM 3
(Page 4 of 4)

VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

Sum. # 011100

9.3 PERCENT VOLUME EXAMINED

Percent Volume Examined	=	100	-	Total 45° parallel vol w/No coverage	/	Total 45° parallel Exam Vol	X	100
	=	100	-	{[_____	/	N/A]	X	100}
	=					N/A		%

10.0 CALCULATE TRANSVERSE 60° EXAM COVERAGE

10.1 LIMITED CLOCKWISE EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		CW exam volume with NO exam coverage
_____	X	_____	X	_____	=	N/A

10.2 LIMITED COUNTERCLOCKWISE EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		CCW exam volume with NO exam coverage
_____	X	_____	X	_____	=	N/A

Total 60° transverse exam volume not examined = N/A

10.3 PERCENT VOLUME EXAMINED

Percent Volume Examined	=	100	-	Total 60° trans vol w/No coverage	/	Total 60° trans Exam Vol	X	100
	=	100	-	{[_____	/	N/A]	X	100}
						N/A		%

11.0 CALCULATE PERCENT OF TOTAL VOLUME EXAMINED

Examination Coverage	=	Sum of Exam Volumes % (step 5 thru 10)	/No. of exams(6)
	=	* 50 %	

CW exam

REMARKS:

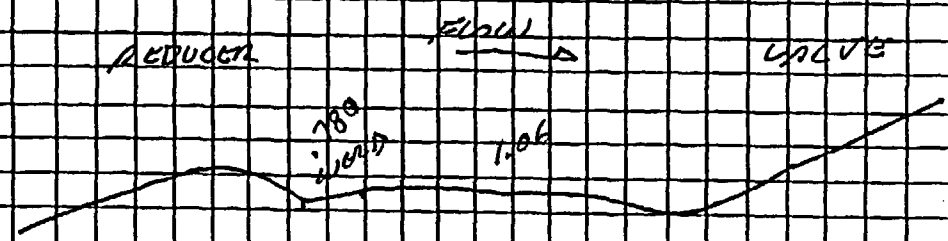
* No Exam from 0° to 180° due to raised ID Numbers, and manufactors stamp. Examination performed from 180° to 360° only.

ULTRASONIC WELD PROFILE AND THICKNESS EXAMINATION RECORD SH.RA-AP.ZZ-0101(Q) FORM 11

Summary No.: 176350

NDE Lab: VCR	SITE: SALEM 2	DATE: 5-17-96	TIME (24 HR. CLOCK) INT. 1302 FINAL 1531		SHEET NO: 090141
Examiner (Signature): LWG	SNT Level: III	Couplant, Specify Type: SONOTRACE 40 SONOTECH 94014	Instrument Model: EPOCH II S/N: 92086704	SERIAL NO: NA	COMPONENT ID: 6-SJ-R11-1R1
Examiner (Signature): NA	SNT Level: NA		Procedure No. & Rev: SH-RA.15.ZZ-0121(Q) REV 2		REFERENCE BLK NO: 85-4889

SEARCH UNITS	
BRAND	KBA
SERIAL NO	57462 06545
SIZE	.16 x .39
FREQ. (MHz)	4
INSTRUMENT SETTINGS	
SCREEN SIZE	1.0
DELAY	10.162
MATL. CAL.	.229
RANGE	.1
REP. RATE	FIXED
JACK USED	T/R
Trans Mode	LONG



REVIEWED & ACCEPTED FACTORY MUTUAL ENGINEERING ASSOCIATION
AUTH. NUCLEAR INSERVICE INSP. DATE

PSEG INSPECTION SERVICES Reviewed and Approved 5/21/96 N.D.E. SUPERVISOR

45T° Search Unit chosen for coverage using 1 nodes.

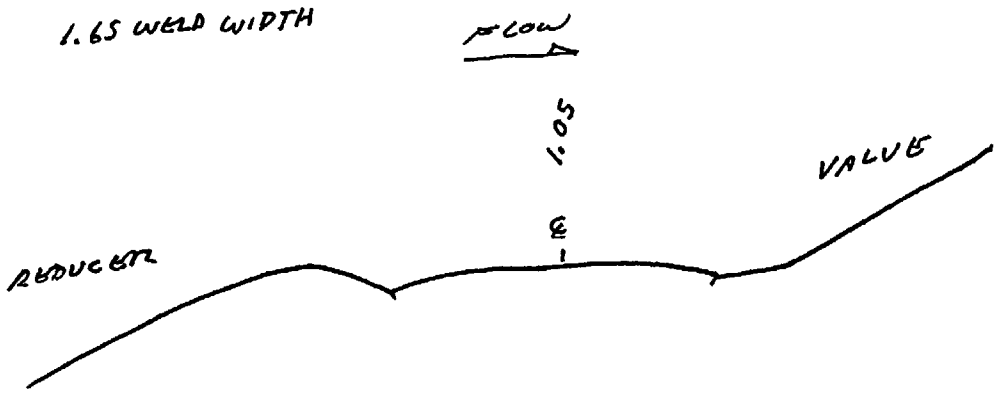
NA° Search Unit chosen for coverage using NA nodes.

PSI

Reviewed By: LWG	SNT Level: III	Date: 5-17-96

94

6-SJ-1211-IR1



5-17-96

PSEG
INSPECTION SERVICES
Reviewed and Approved
5/21/96
N.D.E. SUPERVISOR

95

FORM 2
(Page 1 of 1)

VOLUMETRIC (UT) PIPING EXAMINATION COVERAGE REPORT

UNIT:	SALEM 2	LTP SUMMARY NO.:	176350
SYSTEM:	SJ	LTP COMPONENT ID:	6-SJ-1211-1R1
PREPARED BY:	WAYNE DENLINGER	DATE:	6-12-96
REVIEWED BY:	[signature]	DATE:	6-12-96

VOLUMETRIC PIPING EXAMINATIONS

1.0 AXIAL EXAMS (INDICATIONS PARALLEL TO WELD)

1.1 Compute Exam Volume (height x width x length) = Vt1 (.3 x 2.15 x 20.8) — 13.416

1.2 Compute Vol. Not Covered Upstream = A — 13.416

1.3 Compute Upstream Limitation Percentage (A / Vt1) x 100 = Z1 — 100%

1.4 Compute Vol. Not Covered Downstream = B — 13.416

1.5 Compute Downstream Limitation Percentage (B / Vt1) x 100 = Z2 — 100%

2.0 CIRCUMFERENTIAL EXAMS (INDICATIONS PERPENDICULAR TO WELD)

2.1 Compute Exam Volume (height x width x length) = Vt2 (.3 x 2.65 x 20.8) — 16.536

2.2 Compute Vol. Not Covered CW .3 x 1.0 x 20.8 = C — 6.24

2.3 Compute CW Limitation Percentage (~~A~~ C / Vt2) x 100 = Z3 — 37.735

2.4 Compute Vol. Not Covered CCW = D — 6.24

2.5 Compute CCW Limitation Percentage (~~B~~ D / Vt2) x 100 = Z4 — 37.735

3.0 TOTAL COVERAGE

3.1 Compute Total Limitation Percentage (Z1 + Z2 + Z3 + Z4)/4 = L — 68.867

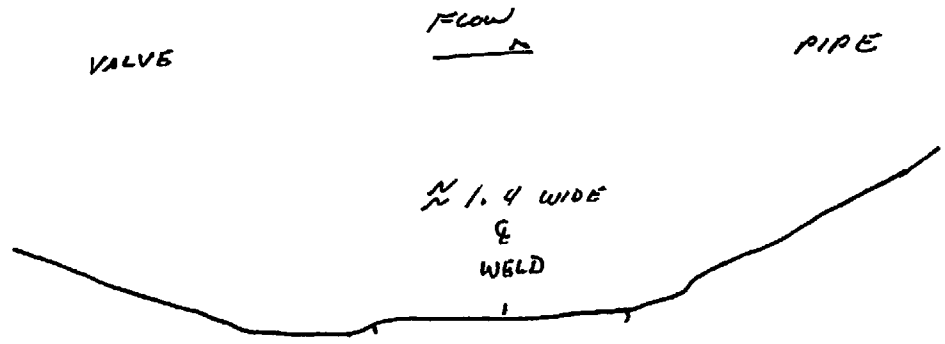
3.2 Compute Total Coverage 100 - L — 31.132

LIMITATION EXPLANATION / REMARKS:

THICKNESS BASED ON R.T. REPORT AND & THICKNESS MEASUREMENT.

SUM 176400

6-SJ-R11-ZR1



PSEG
INSPECTION SERVICES
Reviewed and Approved
WD 5/21/96
N.D.E. SUPERVISOR

ZWG III
5-17-96

97

FORM 2
(Page 1 of 1)

VOLUMETRIC PIPING EXAMINATION COVERAGE REPORT

UNIT: SALEM 2 LTP SUMMARY NO.: 176400

SYSTEM: SJ LTP COMPONENT ID: 6-SJ-1211-2R1

PREPARED BY: [illegible] DATE: 5-17-96

REVIEWED BY: _____ DATE: _____

VOLUMETRIC PIPING EXAMINATIONS

1.0 AXIAL EXAMS (INDICATIONS PARALLEL TO WELD)

1.1 Compute Exam Volume (height x width x length) = Vt1 (.3 x 1.9 x 20.8) — 11.856

1.2 Compute Vol. Not Covered Upstream = A — 11.856

1.3 Compute Upstream Limitation Percentage (A / Vt1) x 100 = Z1 — 100%

1.4 Compute Vol. Not Covered Downstream = B — 11.856

1.5 Compute Downstream Limitation Percentage (B / Vt1) x 100 = Z2 — 100%

2.0 CIRCUMFERENTIAL EXAMS (INDICATIONS PERPENDICULAR TO WELD)

2.1 Compute Exam Volume (height x width x length) = Vt2 (.3 x 2.4 x 20.8) — 14.976

2.2 Compute Vol. Not Covered CW .3x1.0x20.8 = C — 6.24

2.3 Compute CW Limitation Percentage (A / Vt2) x 100 = Z3 — 41.666

2.4 Compute Vol. Not Covered CW " = D — 6.24

2.5 Compute CCW Limitation Percentage (B / Vt2) x 100 = Z4 — 41.666.

3.0 TOTAL COVERAGE

3.1 Compute Total Limitation Percentage (Z1 + Z2 +Z3 + Z4)/4 = L — 70.833

3.2 Compute Total Coverage 100 - L — 29.167

LIMITATION EXPLANATION / REMARKS:

HEIGHT BASED ON R.T. EXAM REPORT. UNABLE TO GET UT BACKWALL

ULTRASONIC WELD PROFILE AND THICKNESS EXAMINATION RECORD

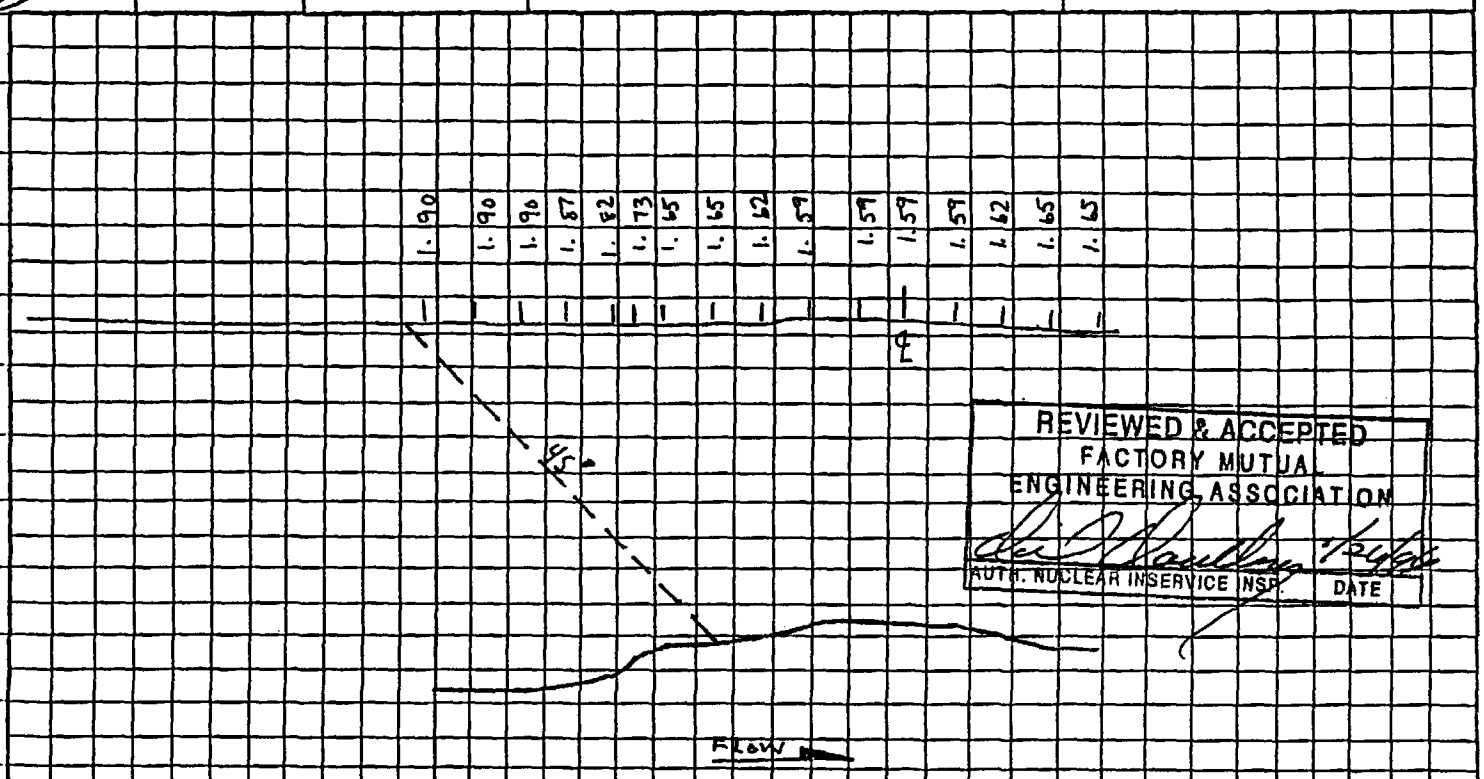
SH.RA-AP.ZZ-0101(Q) FORM 11

Summary No.: 381055

NDE Lab:	SITE:	DATE:	TIME (24 HR. CLOCK)	SHEET NO:
VCR	SALEM UNIT 2	1-11-96	INT. 1445 FINAL 1458	090022

Examiner (Signature)	SNT Level:	Couplant, Specify Type:	Instrument Model: EPOCH II S/N: 92086704	SERIAL NO:	COMPONENT ID:
Patrick U Cole	II	SONOTRACE 40 # 95243		92086704	32-MS-2241-3
Examiner (Signature)	**SNT Level:**		**Procedure No. & Rev:**		**REFERENCE BLK NO:**
Dennis P Stickler	II		SH.RA-IS.ZZ-0137Q (REV 0)		92-6683

SEARCH UNITS	
BRAND	KBA
SERIAL NO	04872
SIZE	.35x10
FREQ. (MHz)	4 mhz
INSTRUMENT SETTINGS	
SCREEN SIZE	5.0 inch
DELAY	9.700
MATL. CAL.	.2293
RANGE	.500
REP. RATE	FIXED
JACK USED	T/R
Trans Mode	LONG



45° Search Unit chosen for coverage using 1 1/2 nodes.

N/A° Search Unit chosen for coverage using N/A nodes.

PROFILE TAKEN AT 95" FROM L_0

Reviewed By:	SNT Level:	Date:
L W Cy	III	1-13-96

PSEG INSPECTION SERVICES Reviewed and Approved 1/20/96

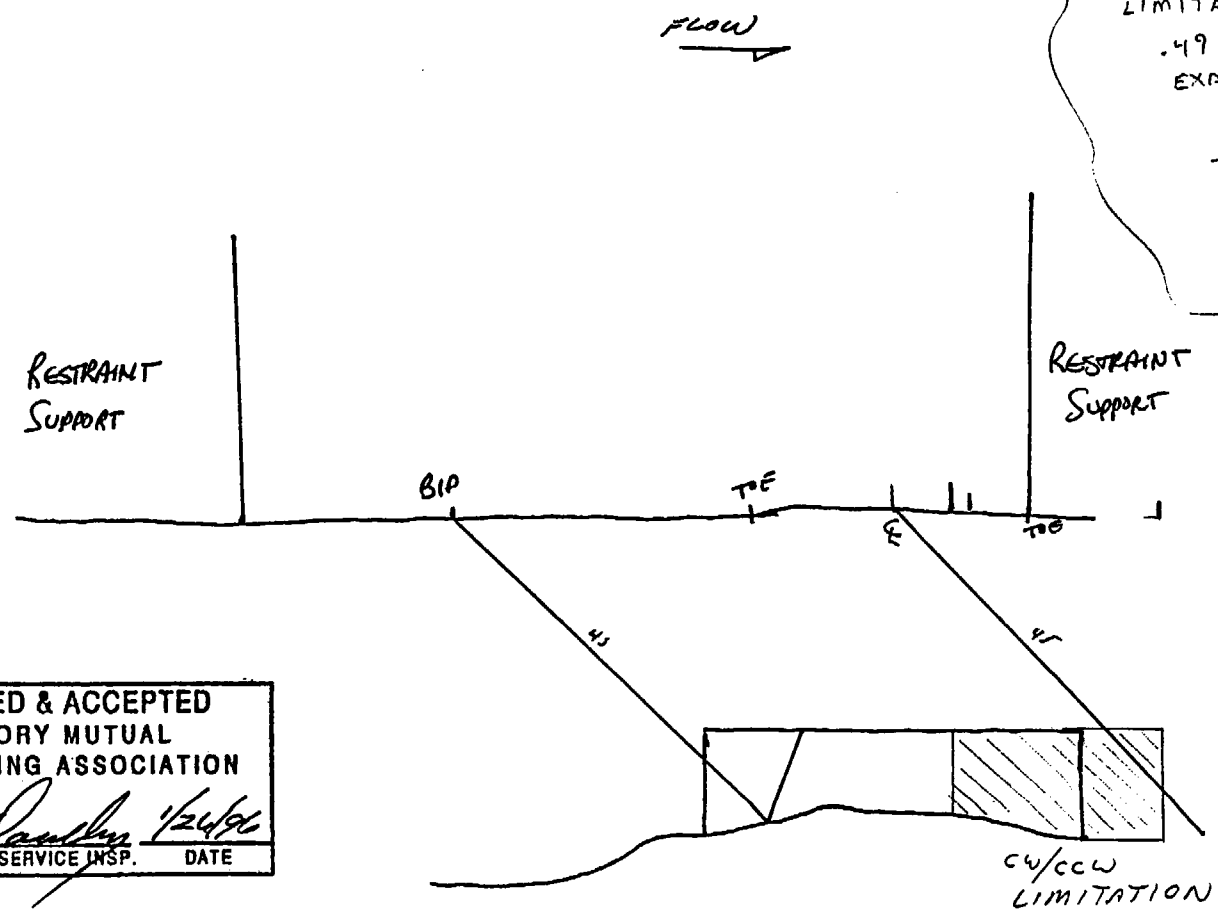
99

Rev. 4

>1055 SALEM UNIT 2 32-MS-2241-3 1 -96

CW/CCW LIMITATI
.49 x 1.1 x 8 = 4.31
EXAM. VOLUME 121.85
4.31/121.85 x 100 = 3.54
3.54% LIMITATION CW/CCW

LIMITATION UPSTREAM
.49 x 1.95 x 8 = 7.64
EXAM. VOLUME 96.98
7.64/96.98 x 100 = 7.87
7.87% LIMITATION DOWNSTREAM



REVIEWED & ACCEPTED
FACTORY MUTUAL
ENGINEERING ASSOCIATION
1/24/96
AUTH. NUCLEAR INSERVICE INSP. DATE

LIMITATION IS FROM 18" TO 26" FROM L_0

PSEG
INSPECTION SERVICES
Reviewed and Approved
1/20/96
N.D.E. SUPERVISOR

IWG III 1-13-96

20

FORM 2
(Page 1 of 1)

VOLUMETRIC PIPING EXAMINATION COVERAGE REPORT

UNIT: SALEM 2 LTP SUMMARY NO.: 381055

SYSTEM: MAIN STEAM LTP COMPONENT ID: 32-MS-2241.3

PREPARED BY: Jon W. Lay DATE: 1-25-96

REVIEWED BY: Jon W. Lewis DATE: 1/27/96

VOLUMETRIC PIPING EXAMINATIONS

1.0 AXIAL EXAMS (INDICATIONS PARALLEL TO WELD)

1.1 Compute Exam Volume (height x width x length) = Vt1 (.49 x 1.95 x 101.5) — 96.98

1.2 Compute Vol. Not Covered Upstream * * * = A — 7.64

1.3 Compute Upstream Limitation Percentage (A / Vt1) x 100 = Z1 — 7.87

1.4 Compute Vol. Not Covered Downstream ~~*~~ = B — 0

1.5 Compute Downstream Limitation Percentage (B / Vt1) x 100 = Z2 — 0

2.0 CIRCUMFERENTIAL EXAMS (INDICATIONS PERPENDICULAR TO WELD)

2.1 Compute Exam Volume (height x width x length) = Vt2 (.49 x 2.45 x 101.5) — 121.85

2.2 Compute Vol. Not Covered CW * * * = C — 4.31

2.3 Compute CW Limitation Percentage (~~A~~ C / Vt2) x 100 = Z3 — 3.54

2.4 Compute Vol. Not Covered CW * * * = D — 4.31

2.5 Compute CCW Limitation Percentage (~~B~~ D / Vt2) x 100 = Z4 — 3.54

3.0 TOTAL COVERAGE

3.1 Compute Total Limitation Percentage (Z1 + Z2 + Z3 + Z4)/4 = L — 14.95

3.2 Compute Total Coverage 100 - L — 85.05 %

LIMITATION EXPLANATION / REMARKS:

* CALCULATION ON PLOT/PROFILE

101

FORM 1
(Page 1 of 1)

SURFACE EXAMINATION COVERAGE REPORT

UNIT: SALEM 2 LTP SUMMARY NO.: 381120

SYSTEM: MAIN STEAM LTP COMPONENT ID: 32-MS-2231-1PS-2

PREPARED BY: [signature] DATE: 1-17-96

REVIEWED BY: [signature] DATE: 1/26/96

SURFACE EXAMINATIONS

1.0 CALCULATE REQUIRED EXAM AREA

Exam length	X	Exam Width	=	Exam Area
101.25		≈ 4		405 x 2 = 810 FOR TWO DIRECTION EXAM.

2.0 CALCULATE AREA NOT EXAMINED

2.1

	Length of obstructed area		Width of obstructed area		Area with NO exam coverage
A.	* 101.25	X	≈ 4	=	405
B.	NA	X	NA	=	NA
C.		X		=	
D.		X		=	

3.0 CALCULATE PERCENT AREA NOT EXAMINED

Percent Area NOT Examined	=	Total Area w/No Coverage	/	Exam Area	X	100
	=	[405	/	810]	X	100
	=	50 %				

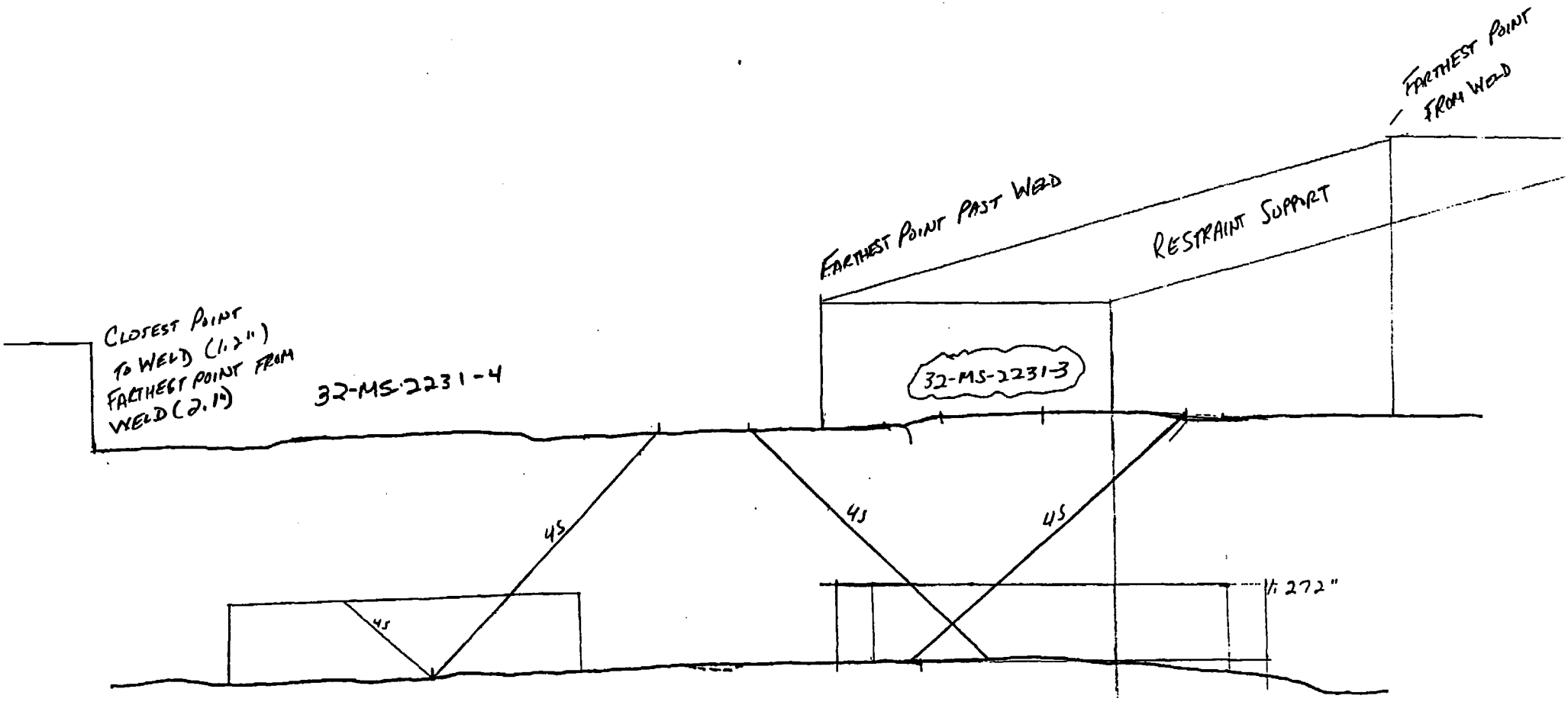
4.0 CALCULATE PERCENT OF TOTAL AREA EXAMINED

100%	-	Percent Area NOT Examined	=	Examination Coverage
100%	-	50	=	50 %

LIMITATION EXPLANATION / REMARKS:

* M.T. EXAM. PERFORMED IN ONLY ONE DIRECTION DUE TO CONFIGURATION.

102



← FLOW

SCALE 1:1

RESTRAINT HEIGHT NOT TO SCALE

381155

1-18-96

103

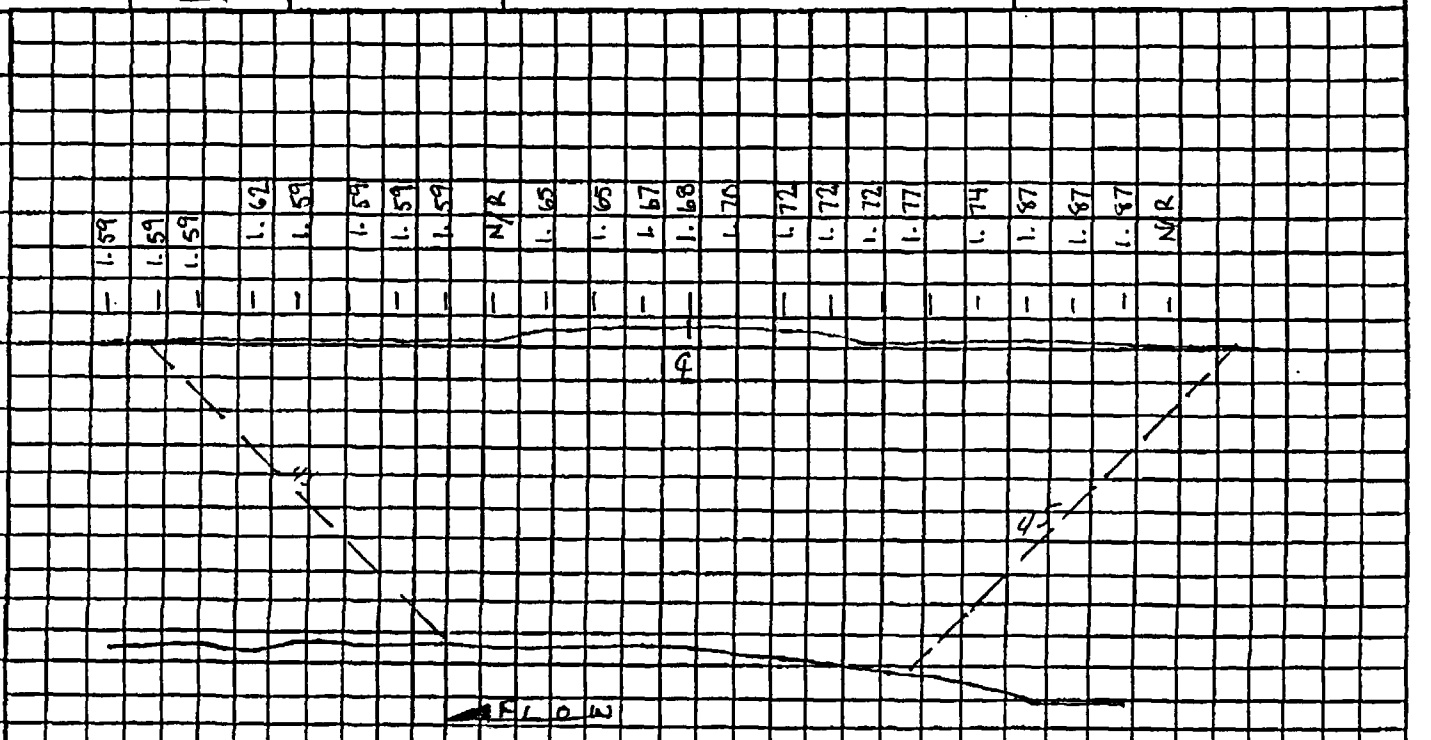
ULTRASONIC WELD PROFILE AND THICKNESS EXAMINATION RECORD

SH.RA-AP.ZZ-0101(Q) FORM 11

Summary No.: 381155

NDE Lab: VCR	SITE: SALEM UNIT 2	DATE: 1-16-96	TIME (24 HR. CLOCK) INT. 0850 FINAL 0903		SHEET NO: 090041
Examiner (Signature) [signature]	SNT Level: II	Couplant, Specify Type: SONOTRACE 40 #95243	Instrument Model: EPOCH II S/N: 92086704	SERIAL NO: 92086704	COMPONENT ID: 32-MS-2231-3
Examiner (Signature) [signature]	SNT Level: III		Procedure No. & Rev: SH.RA-IS.ZZ 0137(Q) Rev 0		REFERENCE BLK NO: 92-6683

SEARCH UNITS	
BRAND	KBA
SERIAL NO	04872
SIZE	.35x10
FREQ. (MHz)	4mhz
INSTRUMENT SETTINGS	
SCREEN SIZE	5.0
DELAY	9.700
MATL. CAL.	.2293
RANGE	.500
REP. RATE	FIXED
JACK USED	T/R
Trans Mode	LONG



45° Search Unit chosen for coverage using 1 1/2 nodes.

N/A° Search Unit chosen for coverage using N/A nodes.

PROFILE TAKEN AT 30" FROM LO

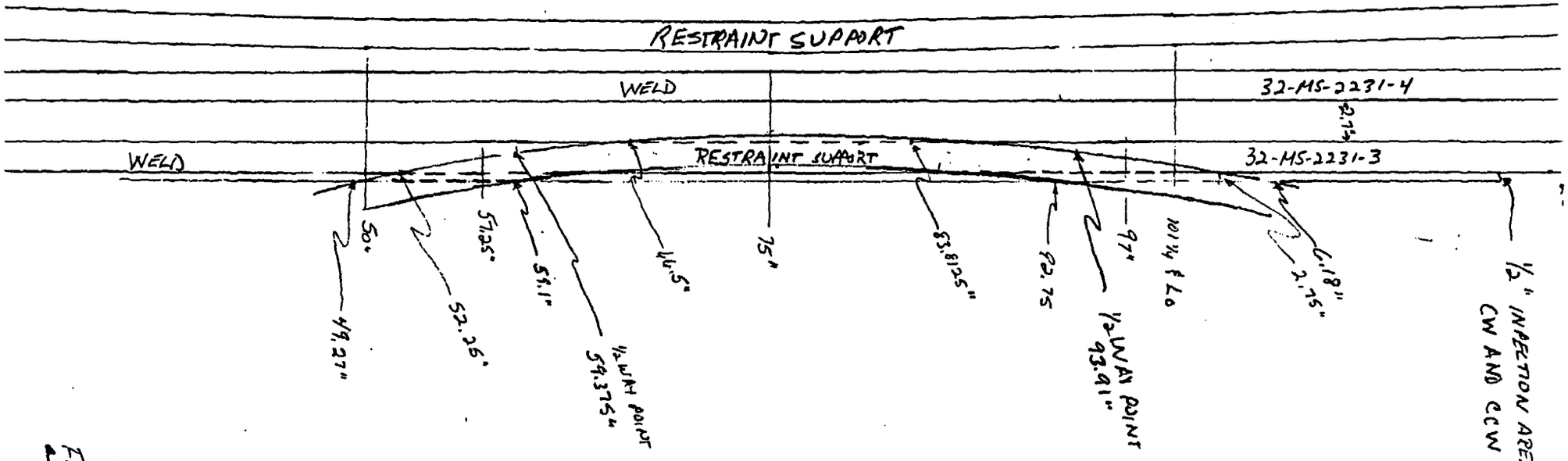
PSI

Reviewed By: [signature]	SNT Level: III	Date: 1-18-96

REVIEWED & ACCEPTED
FACTORY MUTUAL ENGINEERING ASSOCIATION
AUTH. NUCLEAR INSPECTOR [signature] 1/26/96

PSEG INSPECTION SERVICES
Reviewed and Approved
[signature] 1/24/96
N.D.E. SUPERVISOR

103A



38 1155

III

1-18-96

105

FORM 2
(Page 1 of 1)

VOLUMETRIC PIPING EXAMINATION COVERAGE REPORT

UNIT: SALEM, UNIT 2 LTP SUMMARY NO.: 381155

SYSTEM: MAIN STEAM LTP COMPONENT ID: 32-MS-2231-3

PREPARED BY: DENNIS P. STRICKLAND DATE: 1-16-96

REVIEWED BY: [signature] 1/27/96 DATE: 1-16-96

VOLUMETRIC PIPING EXAMINATIONS

1.0 AXIAL EXAMS (INDICATIONS PARALLEL TO WELD)

1.1	Compute Exam Volume	(height x width x length) = Vt1	132.64"
1.2	Compute Vol. Not Covered Upstream	= A	0.00"
1.3	Compute Upstream Limitation Percentage	(A / Vt1) x 100 = Z1	0%
1.4	Compute Vol. Not Covered Downstream	= B	0.00"
1.5	Compute Downstream Limitation Percentage	(B / Vt1) x 100 = Z2	0%

2.0 CIRCUMFERENTIAL EXAMS (INDICATIONS PERPENDICULAR TO WELD)

2.1	Compute Exam Volume	(height x width x length) = Vt2	189.34"
2.2	Compute Vol. Not Covered CW	= C	48.96"
2.3	Compute CW Limitation Percentage	(A / Vt2) x 100 = Z3	25.86%
2.4	Compute Vol. Not Covered CW	= D	48.96"
2.5	Compute CCW Limitation Percentage	(B / Vt2) x 100 = Z4	25.86%

3.0 TOTAL COVERAGE

3.1	Compute Total Limitation Percentage	(Z1 + Z2 + Z3 + Z4)/4 = L	12.93%
3.2	Compute Total Coverage	100 - L	87.07%

LIMITATION EXPLANATION / REMARKS:

LIMITATION DUE TO WHERE THE RESTRAINT SUPPORT CROSSES OVER THE WELD AND THE 1/2" AREA ON THE UP STREAM SIDE OF THE WELD.

106

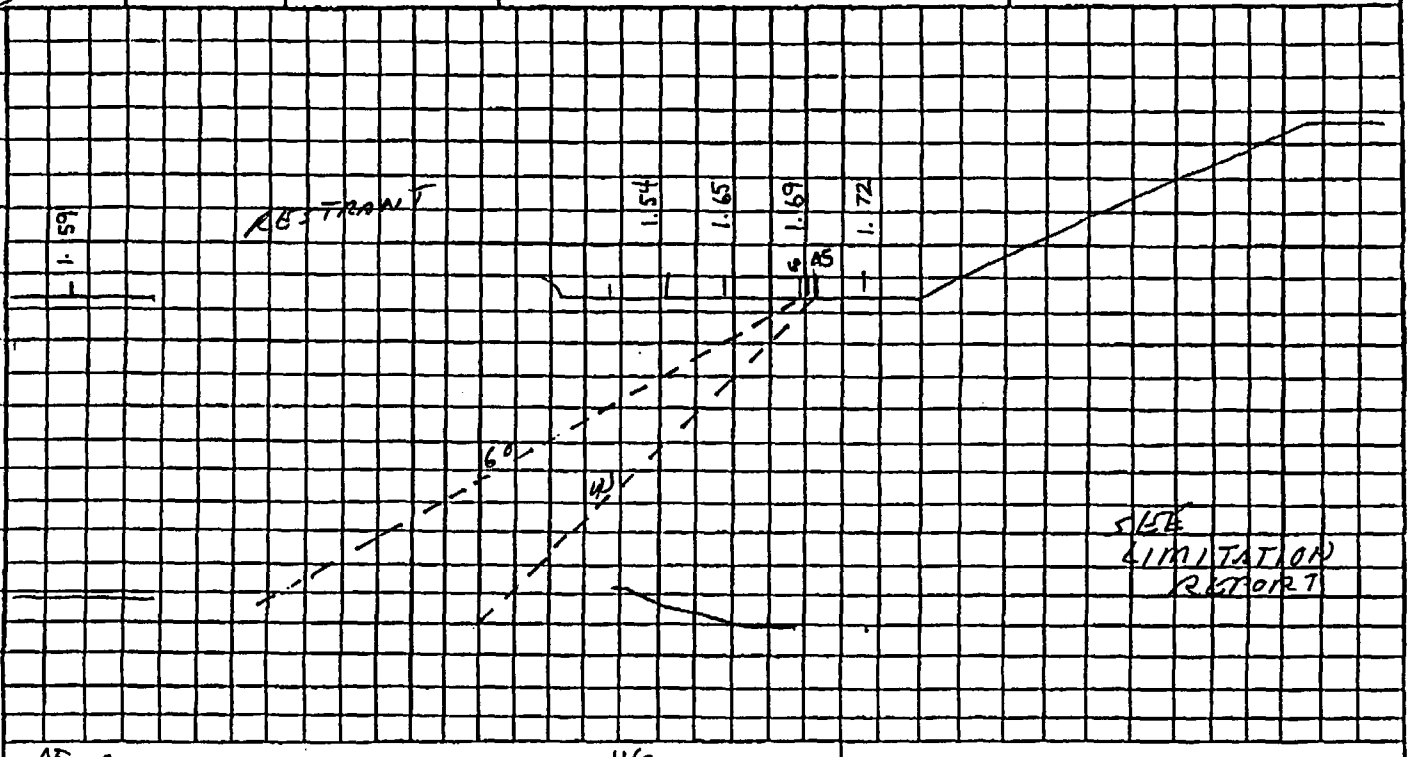
ULTRASONIC WELD PROFILE AND THICKNESS EXAMINATION RECORD

SH.RA-AP.ZZ-0101(Q) FORM 11

Summary No.: 381175

NDE Lab: VCR	SITE: SALEM UNIT 2	DATE: 1-20-96	TIME (24 HR. CLOCK) INT. 1005 FINAL 1015		SHEET NO: 090087
Examiner (Signature) [signature]	SNT Level: II	Couplant, Specify Type: SonoTRACE 40	Instrument Model: S/N: 92086704	SERIAL NO: 92086704	COMPONENT ID: 34-MS-2231-1
Examiner (Signature) [signature]	SNT Level: II	95243	Procedure No. & Rev: SH.RA-IS.ZZ 0137(Q) Rev 0		REFERENCE BLK NO: 92-6683

SEARCH UNITS	
BRAND	KBA
SERIAL NO	04872
SIZE	3.5x10MM
FREQ. (MHz)	4 mhz
INSTRUMENT SETTINGS	
SCREEN SIZE	5.0 inches
DELAY	9.700
MATL. CAL.	.2293
RANGE	.500
REP. RATE	FIXED
JACK USED	TIR
Trans Mode	SHEAR



45 ° Search Unit chosen for coverage using 1 1/2 nodes.

60 ° Search Unit chosen for coverage using 1 nodes.

PSI

Reviewed By: [signature] SNT Level: III Date: 1-26-96

REVIEWED & ACCEPTED
FACTORY MUTUAL
ENGINEERING ASSOCIATION
[signature] 1/27/96
AUTH. NUCLEAR INSERVICE INSP. DATE

PSEG
INSPECTION SERVICES
Reviewed and Approved
[signature] 1/26/96
N.D.E. SUPERVISOR

107

P STREAM LIMIT AREA (ORANGE)
THER THAN TH 1" LENGHT.

① .3 x .54 = .16 sq" x 80.125" = 12.82 ci
② (.54 x .85) ÷ 2 = .23 sq" x 80.125" = 18.43 ci

12.82
18.43
1.25 ci ÷ 103.75 = 30.12%

TOTAL VOL IN ORANGE AREA

20.85%
30.12%
0.97%

21.63"
+31.25
52.88" ÷ 103.75 = 50.97%

CW, CCW LIMITATION AREA (OLDE AREA)

.48" x 2.15" = 1.03
(.05" x 2.15") ÷ 2 = .05
1.08 sq"
LIMITED AREA CW AND CCW IN WELD OTHER THEN 21" 80.125"
86.54 ci
÷ 131.63 ci
65.74%

VE2

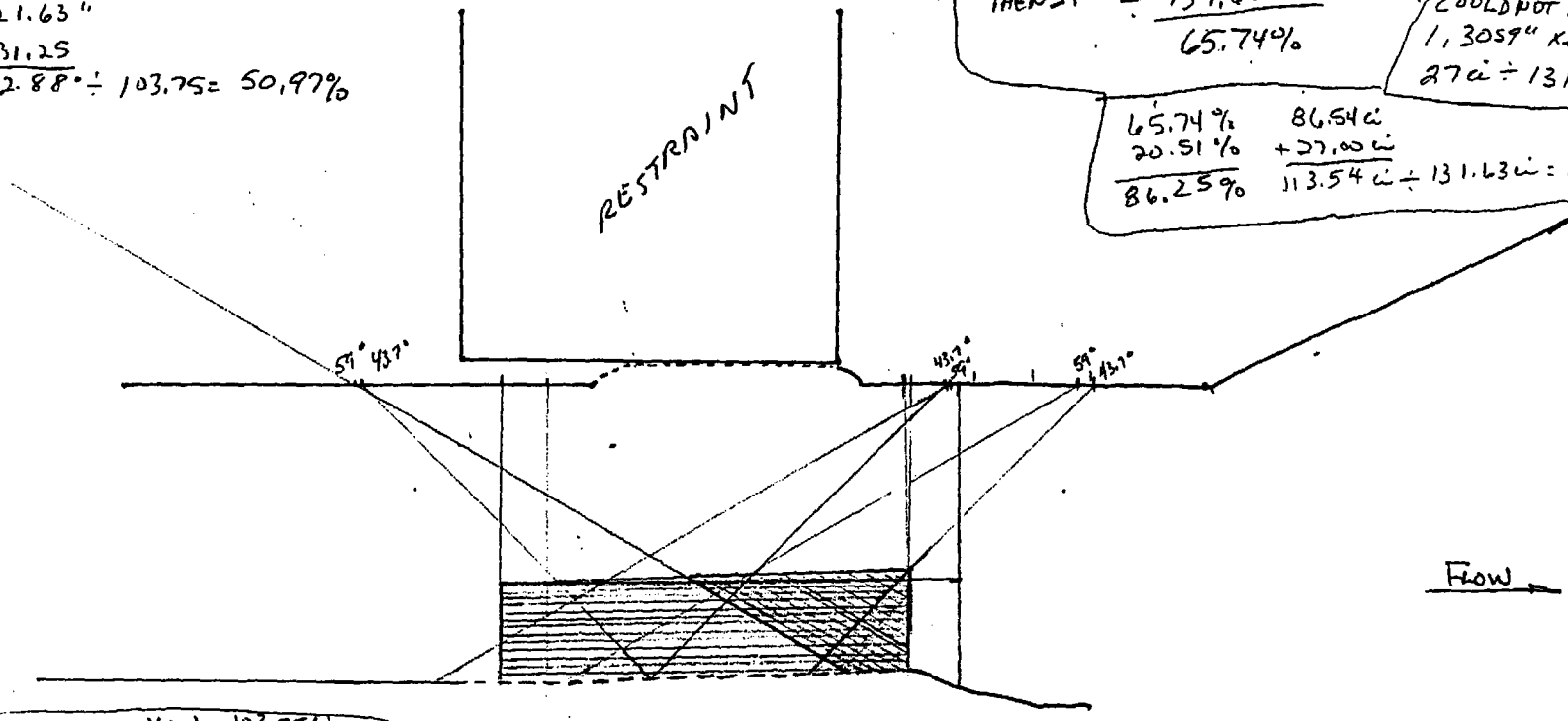
.48" x 2.43" = 1 sq"
(.05" x 2.15") ÷ 2 = .05 sq"
(.58" x .28") ÷ 2 = .08 sq"
1.30 sq"
x 101.125"
131.63 ci

COULD NOT SCAN 21" CW OR CCW
1.30 sq" x 21" = 27 ci
27 ci ÷ 131.63 ci = 20.51%

65.74%
20.51%
86.25%

86.54 ci
+27.00 ci
113.54 ci ÷ 131.63 ci = 86.26%

34-MS-2231-1



Vt 1 = 103.75 ci
(1.90 x .54) 1.03 x 101.125 = 103.75
1.90 x .54 = 1.03 x 21" = 21.63"
÷ 103.75
UPSTREAM LIMITATION PERCENT AREA FOR 21" LENGHT 20.85%

CAN NOT SCAN AREA 3" to 24" ON THE UP SIDE

21" total

101.125
- 21.000
80.125

80

DN STREAM LIMITATION AREA (GREEN)

(.77 x .36) ÷ 2 = .139 x 101.125 = 14.06
14.06 ÷ 101.125 = 13.90%

REVIEWED & ACCEPTED
FACTORY MUTUAL
ENGINEERING ASSOCIATION
AUTH. NUCLEAR INSERVICE INSP. DATE

JW by
1-24-96

FORM 2
(Page 1 of 1)

VOLUMETRIC PIPING EXAMINATION COVERAGE REPORT

UNIT: SALEM, UNIT 2 LTP SUMMARY NO.: 381175

SYSTEM: MAIN STEAM LTP COMPONENT ID: 34-MS-2231-1

PREPARED BY: DENNIS P. STRICKLAND DATE: 1-20-96

REVIEWED BY: [signature] 1/27/96 DATE: 1-24-96

VOLUMETRIC PIPING EXAMINATIONS

1.0 AXIAL EXAMS (INDICATIONS PARALLEL TO WELD)

1.1	Compute Exam Volume	(height x width x length) = Vt1	103.75 ci
1.2	Compute Vol. Not Covered Upstream	= A	52.88 ci
1.3	Compute Upstream Limitation Percentage	(A / Vt1) x 100 = Z1	50.97%
1.4	Compute Vol. Not Covered Downstream	= B	14.06 ci
1.5	Compute Downstream Limitation Percentage	(B / Vt1) x 100 = Z2	13.90%

2.0 CIRCUMFERENTIAL EXAMS (INDICATIONS PERPENDICULAR TO WELD)

2.1	Compute Exam Volume	(height x width x length) = Vt2	131.63 ci
2.2	Compute Vol. Not Covered CW	= C	113.54 ci
2.3	Compute CW Limitation Percentage	(A / Vt2) x 100 = Z3	86.26%
2.4	Compute Vol. Not Covered CW	= D	113.54 ci
2.5	Compute CCW Limitation Percentage	(B / Vt2) x 100 = Z4	86.26%

3.0 TOTAL COVERAGE

3.1	Compute Total Limitation Percentage	(Z1 + Z2 + Z3 + Z4)/4 = L	59.85%
3.2	Compute Total Coverage	100 - L	40.15%

LIMITATION EXPLANATION / REMARKS:

UPSTREAM SCANS LIMITED BETWEEN 3" AND 24" DUE TO ATTACHMENT MOUNTED TO PIPE RESTRAINT; RESTRAINT SUPPORT COVERS WELD 360° AROUND PIPE LIMITING SCANNING ACROSS THE WELD CROWN.

FORM 1
(Page 1 of 1)

SURFACE EXAMINATION COVERAGE REPORT

UNIT: SALEM 2 LTP SUMMARY NO.: 381220

SYSTEM: MAIN STEAM LTP COMPONENT ID: 32-MS-2221-1PS-2

PREPARED BY: [illegible] DATE: 1-19-96

REVIEWED BY: [illegible] DATE: 1/26/96

SURFACE EXAMINATIONS

1.0 CALCULATE REQUIRED EXAM AREA

Exam length	X	Exam Width	=	Exam Area
101.25"		3"		303.75 x 2 = 607.5 FOR

2.0 CALCULATE AREA NOT EXAMINED

2.1

	Length of obstructed area	X	Width of obstructed area	=	Area with NO exam coverage
A.	101.25	X	3.	=	303.75
B.	NA	X	NA	=	NA
C.		X		=	
D.		X		=	

3.0 CALCULATE PERCENT AREA NOT EXAMINED

Percent Area NOT Examined	=	Total Area w/No Coverage	/	Exam Area	X	100
	=	[303.75	/	607.5]	X	100
	=	50 %				

4.0 CALCULATE PERCENT OF TOTAL AREA EXAMINED

100%	-	Percent Area NOT Examined	=	Examination Coverage
100%	-	50	=	50 %

LIMITATION EXPLANATION / REMARKS:

*M.T. EXAM. PERFORMED IN ONLY ONE DIRECTION DUE TO CONFIGURATION.

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ULTRASONIC WELD PROFILE AND THICKNESS EXAMINATION RECORD

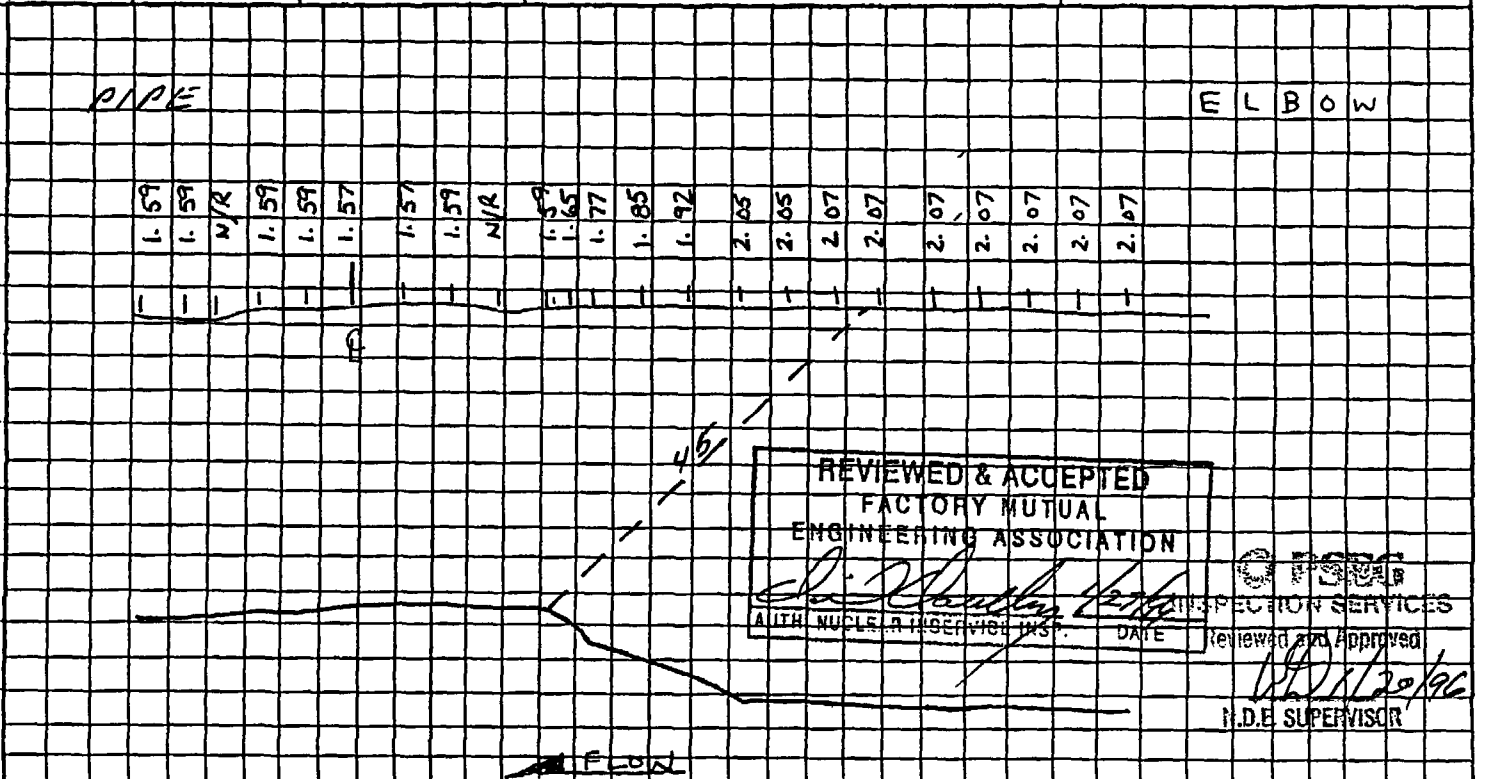
SH.RA-AP.ZZ-0101(Q) FORM 11

Summary No.: 381260

NDE Lab:	SITE:	DATE:	TIME (24 HR. CLOCK)		SHEET NO:
VCR	SALEM UNIT 2	1-13-96	INT. 1025	FINAL 1035	090028

Examiner (Signature)	SNT Level:	Couplant, Specify Type:	Instrument Model:	SERIAL NO:	COMPONENT ID:
Patrick [illegible]	II	SONOTRACE 40 #95243	EPOCH II S/N: 92086704	92086704	32-MS-2221-3
Examiner (Signature)	**SNT Level:**		**Procedure No. & Rev:**		**REFERENCE BLK NO:**
Dennis P. Stickel	II		SH.RA-IS.ZZ 0137(Q) Rev 0		92-6683

SEARCH UNITS	
BRAND	KBA
SERIAL NO	04872
SIZE	.35x10
FREQ. (MHz)	4 mhz
INSTRUMENT SETTINGS	
SCREEN SIZE	5.0
DELAY	9.700
MATL. CAL.	.2293
RANGE	.500
REP. RATE	FIXED
JACK USED	T/R
Trans Mode	LONG



REVIEWED & ACCEPTED
FACTORY MUTUAL
ENGINEERING ASSOCIATION
AUTH. NUCLEAR INSERVICE INSP. DATE

PSEG INSPECTION SERVICES
Reviewed and Approved
1/20/96
N.D.E. SUPERVISOR

45 ° Search Unit chosen for coverage using 1 1/2 nodes.

N/A ° Search Unit chosen for coverage using N/A nodes.

ISI

Reviewed By:	SNT Level:	Date:
[illegible]	III	1-15-96

Rev. 4

PAD PLUS ½ WEDGE WIDTH
.8 X .53. 1" = 8.9 ci
TOTAL PAD LENGHT
AVG. HIGHT OF BOX ① (BOX ① EQUALLS BOX ② & BOX ③)

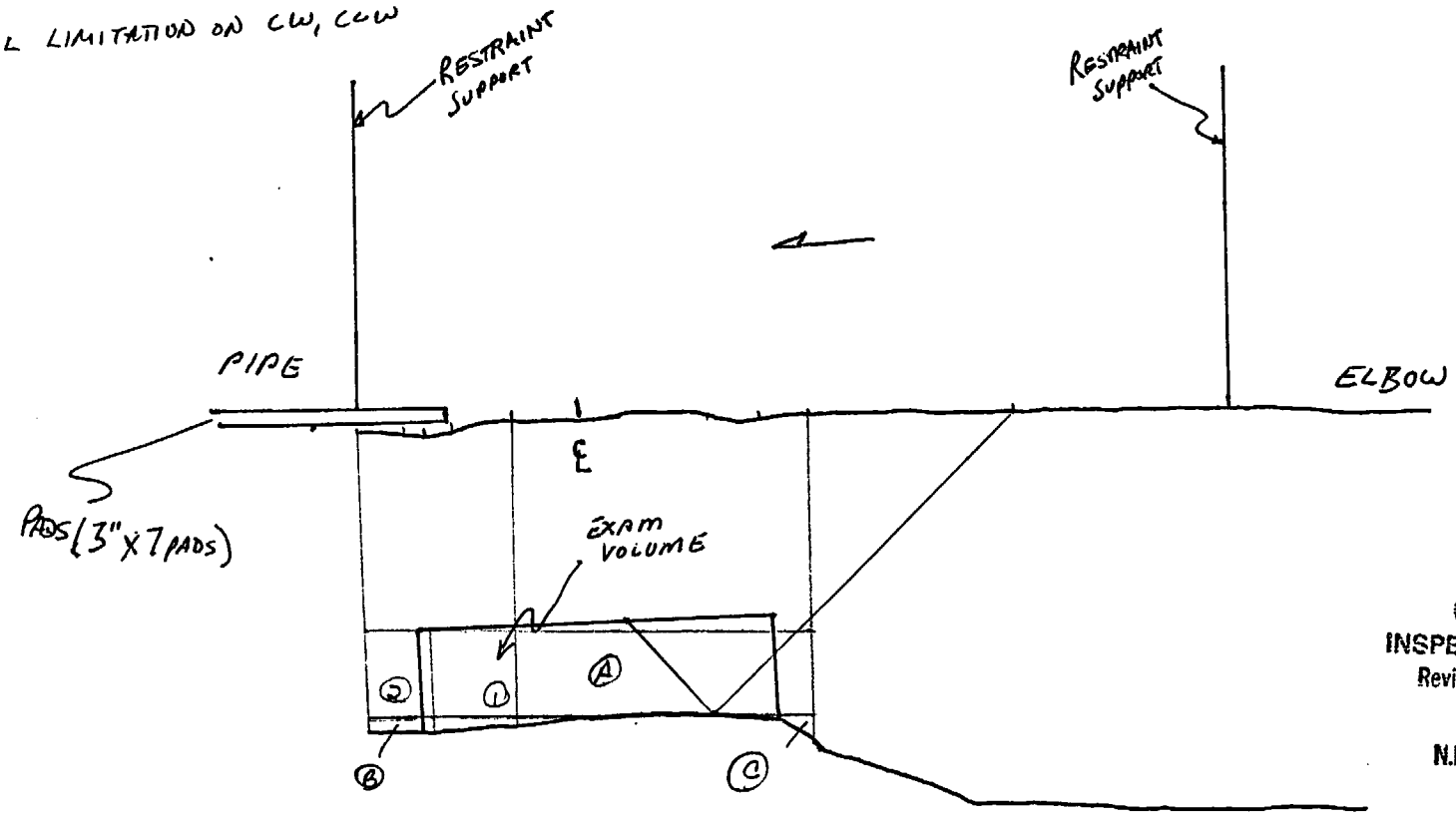
TOTAL LENGHT - PAD LENGHT
101.25 - 21 = 80.25" LENGHT OF WELD NOT EFFECTED BY PADS

½ OVER WEDGE
.35 X .54 X 80.25 = 15.17 ci
BOX HIGHT ② X LENGHT OF WELD MINUS PAD AREA

8.90 ci
+ 15.17 ci
24.07 ci TOTAL LIMITATION ON CW, CCW

CW & CCW
Ⓐ .46 X 2.4 = 1.104
Ⓑ (1.03 X .07) ÷ 2 = .02
Ⓒ (.25 X .11) ÷ 2 = .01

A+B+C = 1.13 X 101.25 = 114.41 ci
TOTAL LENGHT OF WELD



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INSPECTION SERVICES
Reviewed and Approved
1/20/96
N.D.E. SUPERVISOR

32-MS-2221-3 1-13-96 SUMMARY # 381260

ZWS III 1-15-96

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FORM 2
(Page 1 of 1)

VOLUMETRIC PIPING EXAMINATION COVERAGE REPORT

UNIT: 2, SALEM LTP SUMMARY NO.: 381260

SYSTEM: MAIN STEAM LTP COMPONENT ID: 32-MS-2221-3

PREPARED BY: DENNIS P. STRICKLAND DATE: 1-13-96

REVIEWED BY: [signature] 1/27/96 DATE: 1-23-96

VOLUMETRIC PIPING EXAMINATIONS

1.0 AXIAL EXAMS (INDICATIONS PARALLEL TO WELD)

1.1	Compute Exam Volume (height x width x length) = Vt1	99.81"
1.2	Compute Vol. Not Covered Upstream = A	8.30"
1.3	Compute Upstream Limitation Percentage (A / Vt1) x 100 = Z1	8.32%
1.4	Compute Vol. Not Covered Downstream = B	0.00
1.5	Compute Downstream Limitation Percentage (B / Vt1) x 100 = Z2	0%

2.0 CIRCUMFERENTIAL EXAMS (INDICATIONS PERPENDICULAR TO WELD)

2.1	Compute Exam Volume (height x width x length) = Vt2	114.41
2.2	Compute Vol. Not Covered CW = C	24.07
2.3	Compute CW Limitation Percentage (A / Vt2) x 100 = Z3	21.04 %
2.4	Compute Vol. Not Covered CW = D	24.07
2.5	Compute CCW Limitation Percentage (B / Vt2) x 100 = Z4	21.04%

3.0 TOTAL COVERAGE

3.1	Compute Total Limitation Percentage (Z1 + Z2 +Z3 + Z4)/4 = L	12.60%
3.2	Compute Total Coverage 100 - L	87.40 %

LIMITATION EXPLANATION / REMARKS:

0° LAMINATION SCAN COULD NOT BE PERFORMED ON THE DOWNSTREAM SIDE OF THE WELD OR ON THE UPSTREAM SIDE WHERE THE BARS OF THE RESTRAINT CROSS OVER THE EXAM AREA.

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FORM 1
(Page 1 of 1)

SURFACE EXAMINATION COVERAGE REPORT

UNIT: SALEM 2 LTP SUMMARY NO.: 381320

SYSTEM: MAIN STEAM LTP COMPONENT ID: 32-MS-2211-1PS-2

PREPARED BY: [signature] DATE: 1-17-96

REVIEWED BY: [signature] DATE: 1/26/96

SURFACE EXAMINATIONS

1.0 CALCULATE REQUIRED EXAM AREA

Exam length	X	Exam Width	=	Exam Area (FOR TWO DIRECTION EXAM)
101.25		≈ 4"		405 x 2 = 810

2.0 CALCULATE AREA NOT EXAMINED

2.1	Length of obstructed area		Width of obstructed area		Area with NO exam coverage
A.	* 101.25	X	≈ 4"	=	405 ~~x 2~~ TWO ~~810~~
B.	N A	X	N A	=	N A
C.		X		=	
D.		X		=	

3.0 CALCULATE PERCENT AREA NOT EXAMINED

Percent Area NOT Examined	=	Total Area w/No Coverage	/	Exam Area	X	100
	=	[405	/	810]	X	100
	=	50 %				

4.0 CALCULATE PERCENT OF TOTAL AREA EXAMINED

100%	-	Percent Area NOT Examined	=	Examination Coverage
100%	-	50	=	50 %

LIMITATION EXPLANATION / REMARKS:

* M.T. EXAM. PERFORMED IN ONLY ONE DIRECTION DUE TO CONFIGURATION.

PUBLIC SERVICE ELECTRIC AND GAS COMPANY

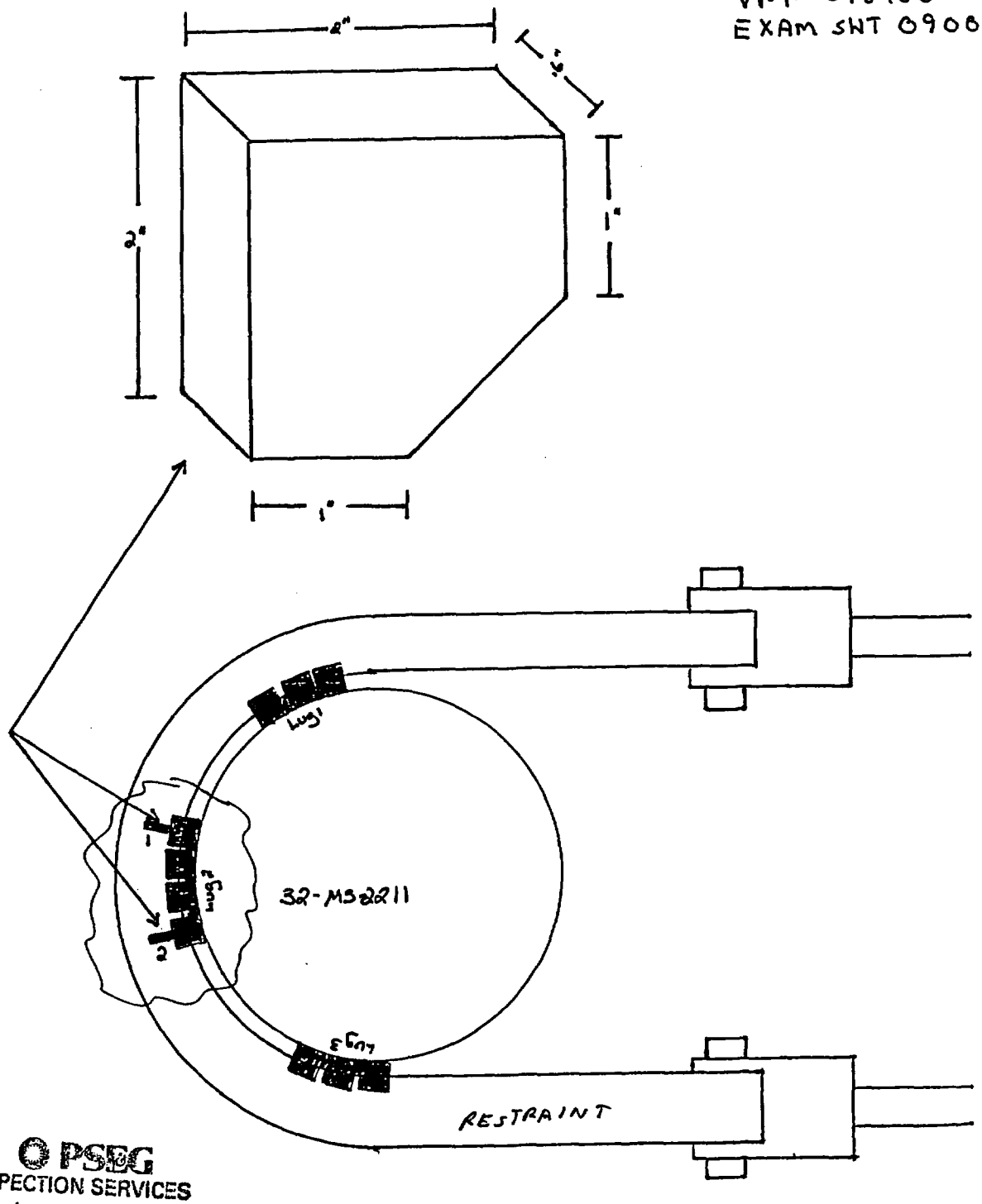
REFER TO
SUBJECT _____
FILE _____
ESTIMATE _____

COMPUTATION SHEET

PREPARED BY _____
DATE _____
CHECKED BY _____
DATE _____

Restraint Lug

SUMMARY Nº 381350
VNF 096406
EXAM SNT 090034



PSEG
INSPECTION SERVICES
Reviewed and Approved
1/20/96
N.D.E SUPERVISOR

1-16-96

85-2066 REV 2/92

115

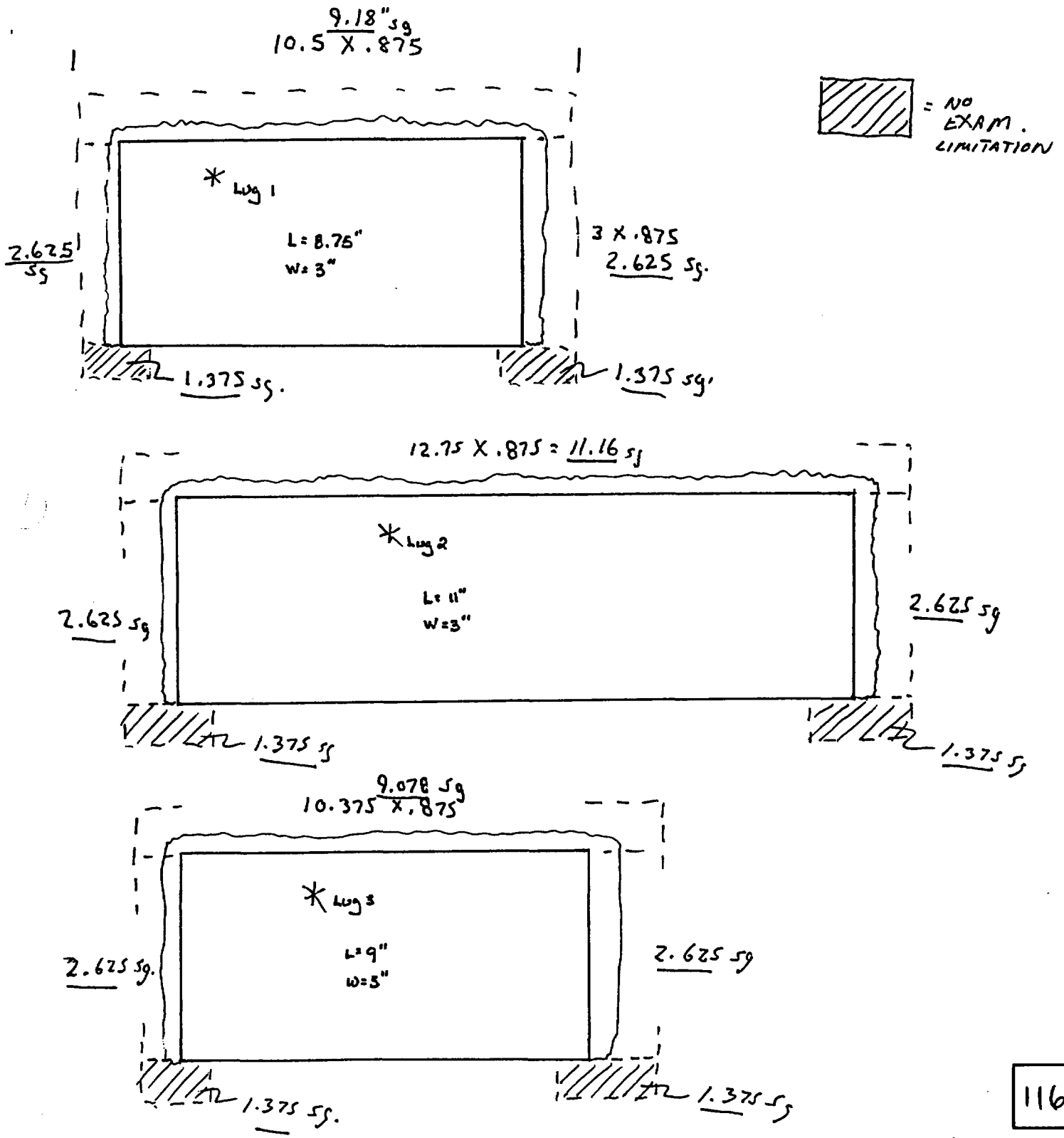
PUBLIC SERVICE ELECTRIC AND GAS COMPANY

REFER TO
SUBJECT 381350
FILE
ESTIMATE

COMPUTATION SHEET

PREPARED BY
DATE 1-15-96
CHECKED BY
DATE

32-MS-2211-2PL-1 Thru 3



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J W Ly III 1-16-96

116

85-2066 REV 3/92

FORM 1
(Page 1 of 1)

SURFACE EXAMINATION COVERAGE REPORT

UNIT: SALEM 2 LTP SUMMARY NO.: 381350

SYSTEM: MAIN STEAM LTP COMPONENT ID: 32-MS-2211-2 PL-1 THRU 3

PREPARED BY: [signature] DATE: 1-16-96

REVIEWED BY: [signature] DATE: 1-27-96

SURFACE EXAMINATIONS

1.0 CALCULATE REQUIRED EXAM AREA

Exam length	X	Exam Width	=	Exam Area
SEE PLOTS 3 LUGS				53.42 sq.

2.0 CALCULATE AREA NOT EXAMINED

2.1

	Length of obstructed area		Width of obstructed area		Area with NO exam coverage
A.	LUG 1 *	X	—	=	2.75
B.	LUG 2 *	X	—	=	2.75
C.	LUG 3 *	X	—	=	2.75
D.	—	X	—	=	—

3.0 CALCULATE PERCENT AREA NOT EXAMINED

Percent Area NOT Examined	=	Total Area w/No Coverage	/	Exam Area	X	100
	=	[8.75	/	53.42]	X	100
	=	16.37 %				

4.0 CALCULATE PERCENT OF TOTAL AREA EXAMINED

100%	-	Percent Area NOT Examined	=	Examination Coverage
100%	-	16.37	=	83.63 %

LIMITATION EXPLANATION / REMARKS:

SEE ATTACHED PLOT / PROFILE OF LUGS 1, 2, + 3
WELD SIZE VARIED CALCULATION BASED ON AVG.
.375. LIMITATION RECORDED IAW CODE INT XI-1-89-38

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FORM 2
(Page 1 of 1)

VOLUMETRIC PIPING EXAMINATION COVERAGE REPORT

UNIT: SALEM 2 LTP SUMMARY NO.: 381355

SYSTEM: MAIN STEAM LTP COMPONENT ID: 32-MS-2211-3

PREPARED BY: M. OLIVERI DATE: 3-13-97

REVIEWED BY: [signature] DATE: 3/13/97

VOLUMETRIC PIPING EXAMINATIONS

1.0 AXIAL EXAMS (INDICATIONS PARALLEL TO WELD)

1.1 Compute Exam Volume (height x width x length) = Vt1 259.84 sq"

1.2 Compute Vol. Not Covered Upstream = A 41.58 sq"

1.3 Compute Upstream Limitation Percentage (A / Vt1) x 100 = Z1 16%

1.4 Compute Vol. Not Covered Downstream = B 5.58 sq"

1.5 Compute Downstream Limitation Percentage (B / Vt1) x 100 = Z2 2%

2.0 CIRCUMFERENTIAL EXAMS (INDICATIONS PERPENDICULAR TO WELD)

2.1 Compute Exam Volume (height x width x length) = Vt2 N/A

2.2 Compute Vol. Not Covered CW = C N/A

2.3 Compute CW Limitation Percentage (A / Vt2) x 100 = Z3 N/A

2.4 Compute Vol. Not Covered CW = D N/A

2.5 Compute CCW Limitation Percentage (B / Vt2) x 100 = Z4 N/A

3.0 TOTAL COVERAGE

3.1 Compute Total Limitation Percentage (Z1 + Z2 +Z3 + Z4)/4 = L 18%

3.2 Compute Total Coverage 100 - L 82%

LIMITATION EXPLANATION / REMARKS:

PERMANENT BRACKET CAUSED LIMITATION "B"

PERMANENT BRANCH CONNECTIONS CAUSED LIMITATION "A"

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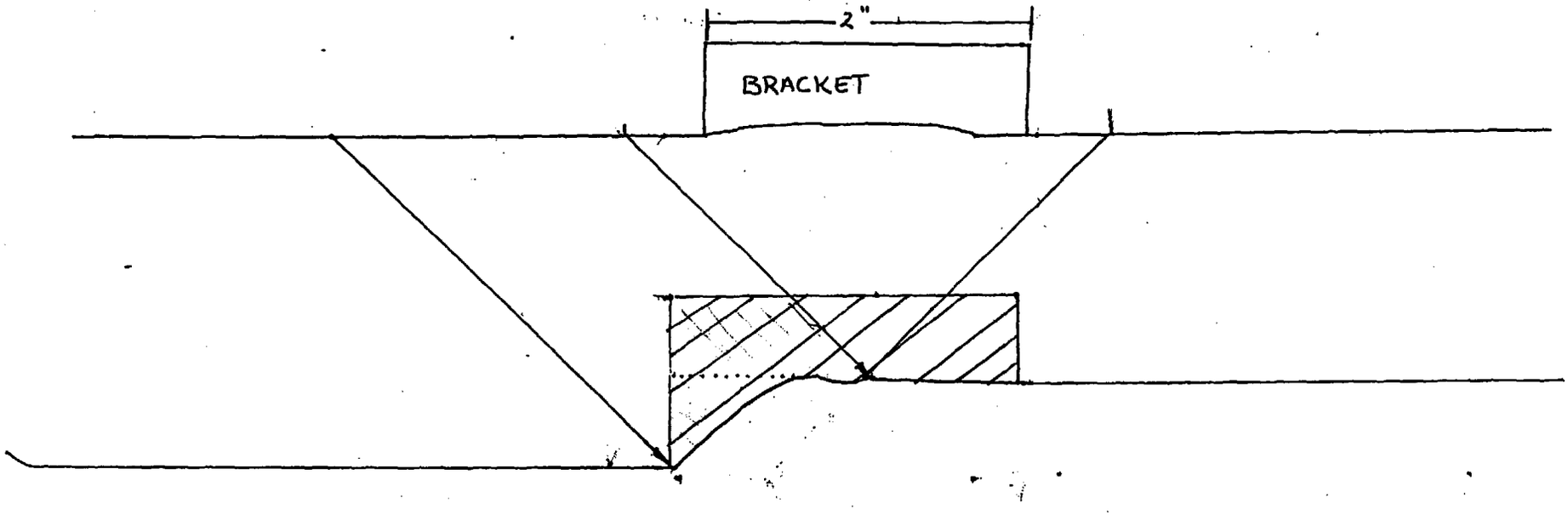
REF # 381.7-5
32-MS-2a... L3
Sheet No.



LIMITATIONS

NO SCAN IN THE DOWN STREAM DIRECTION
FROM 62.5" TO 80.5" (18") $\boxed{18 \times .312 = 5.58 \text{ sq}''}$

NO SCAN IN THE ~~DOWNSTREAM~~ UPSTREAM DIRECTION MAO 3-13-97
FROM 94.5" TO 7.5" = (14.5") $\boxed{14.5 \times \cancel{.968}\ 2.248'' = \cancel{14.03}\ 32.59 \text{ sq}''}$

NO SCAN IN THE UPSTREAM DIRECTION 8.992"
FROM 74.5" TO 78.5" (4") $\boxed{4 \times \cancel{.968}\ 2.248'' = \cancel{3.84}\ \text{sq}''}$

TOTAL LIMITATIONS = ~~23.45~~ MAO 3-13-97 sq" 47.16 18%

.312 sq" OF COVERAGE IS OBTAINED FROM THE DOWNSTREAM SCAN TOTAL = .312 x 101.5" = 31.68 sq"

2.248" MAO 3-13-97
~~.968~~ sq OF COVERAGE IS OBTAINED FROM THE UPSTREAM SCAN

THE UPSTREAM SCAN TOTAL =
~~.968~~ 2.248" x 101.5" = ~~98.25~~ 228.17 sq"
MAO 3-13-97

EXAM VOLUME

EXAM VOLUME = 1.28 sq"
WELD LENGTH = 101.5"
TOTAL WELD VOLUME = 129.92 sq"
NUMBER OF DIRECTIONS SCANNED = 2

129.92 sq"
x 2
259.84 sq"

119

UP STREAM "4" 100% LIMITATION

SEE Vt1 BLOCK & WHERE 1.03 COMES FROM

1.03 X 24" = 24.72 ÷ 103.77 = 23.82%

(B X H) X (L) ci Vt1

24" OF UP STREAM CANNOT BE SCANNED DUE TO PIPE INTRATIONS, THE REST OF THE UP STREAM WELD IS LIMITED AS SHOWN IN THE ORANGE AREA PLUS THE GREEN AREA

ORANGE/GREEN LENGHT

100.75 − 24" = 76.75" (LENGHT OF WELD AFFECTED)

ORANGE/GREEN AREA = 32.2ci

.5 X .51 = .26 sq"

(.35 X .03) ÷ 2 = .01 sq"

(.37 X .6) ÷ 2 = .15 sq"

+2+3 = .42 sq

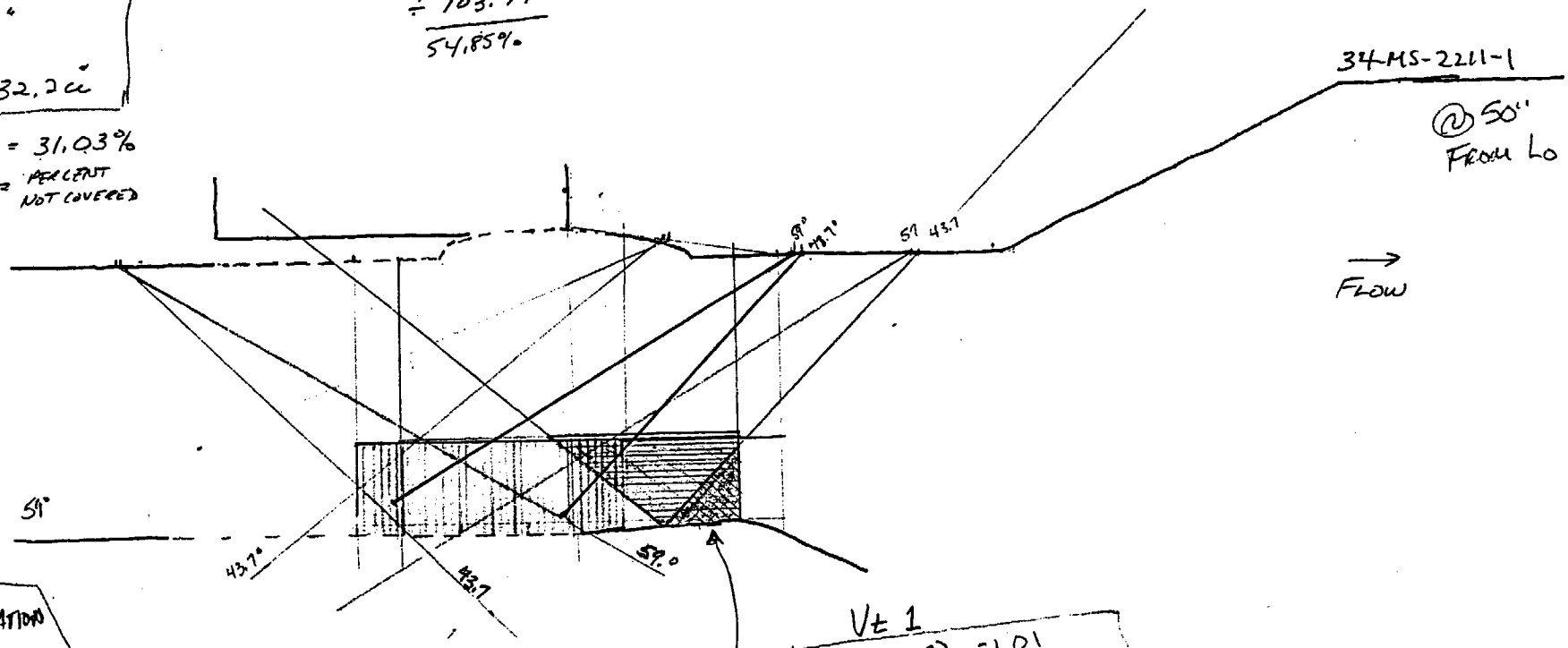
.42 sq" X 76.75" = 32.2 ci

32.2ci ÷ 103.77ci = 31.03%

ORANGE/GREEN VOL. Vt1 = PERCENT NOT COVERED

23.82%
+ 31.03%
54.85%

24.72"
+ 32.20"
56.92"
÷ 103.77
54.85%



120

BLUE AREA CW, CCW SCAN LIMITATION

(.48 X 2.48) = 1.19

(2.23 X .07) ÷ 2 = .08

(.25 X .09) ÷ 2 = .01

1.29

X 100.75

129.97 ci = Vt2

AREA COVERED

(.9 X .48) = .432 sq" X 100.75" = 43.52 ci

Vt2

129.97 ÷ 43.52 ci = 86.45 ci NOT COVERED

86.45 ÷ 129.97 = 66.52%

120

DOWNSTREAM LIMITATION 100% OF WELD

(.3 X .63) ÷ 2 = .0945 X 101.75 = 9.62"

9.62 ÷ 100.75" = 9.55%

Vt 1

(.51 X 1.98) = 1.01

(.02 X 1.98) ÷ 2 = .02

1.03

X 100.75

103.77

101.75"
− 24"
77.75
LIMIT AREA

FORM 2
(Page 1 of 1)

VOLUMETRIC PIPING EXAMINATION COVERAGE REPORT

UNIT: 2, SALEM LTP SUMMARY NO.: 381370

SYSTEM: MAIN STEAM LTP COMPONENT ID: 34-MS-2211-1

PREPARED BY: DENNIS P. STRICKLAND DATE: 1-20-96

REVIEWED BY: [illegible] 1/29/96 DATE: 1-24-96

VOLUMETRIC PIPING EXAMINATIONS

1.0 AXIAL EXAMS (INDICATIONS PARALLEL TO WELD)

1.1	Compute Exam Volume	(height x width x length) = Vt1	103.77
1.2	Compute Vol. Not Covered Upstream	= A	56.92"
1.3	Compute Upstream Limitation Percentage	(A / Vt1) x 100 = Z1	54.85%
1.4	Compute Vol. Not Covered Downstream	= B	9.62"
1.5	Compute Downstream Limitation Percentage	(B / Vt1) x 100 = Z2	9.55%

2.0 CIRCUMFERENTIAL EXAMS (INDICATIONS PERPENDICULAR TO WELD)

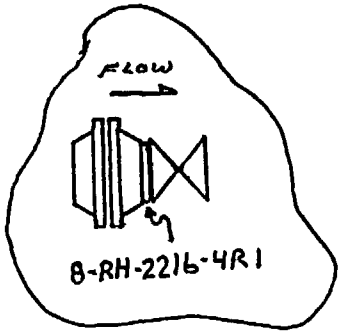
2.1	Compute Exam Volume	(height x width x length) = Vt2	129.97
2.2	Compute Vol. Not Covered CW	= C	86.45"
2.3	Compute CW Limitation Percentage	(A / Vt2) x 100 = Z3	66.52%
2.4	Compute Vol. Not Covered CW	= D	86.45"
2.5	Compute CCW Limitation Percentage	(B / Vt2) x 100 = Z4	66.52%

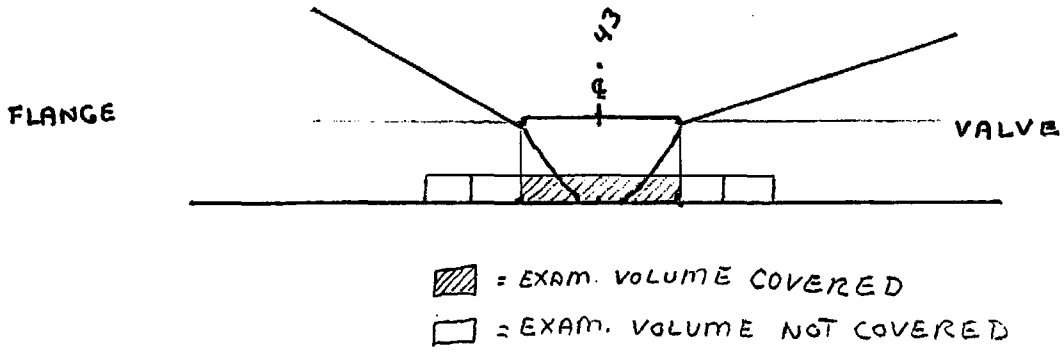
3.0 TOTAL COVERAGE

3.1	Compute Total Limitation Percentage	(Z1 + Z2 +Z3 + Z4)/4 = L	49.36%
3.2	Compute Total Coverage	100 - L	50.64%

LIMITATION EXPLANATION / REMARKS:

UPSTREAM SCAN LIMITED DUE TO THE FOLLOWING PIPE OBSTRUCTIONS; 22½" to 27½", 79" to 81", 88" to 90" AND 93¾" to 7" (14") FOR A TOTAL OF 24"; RESTRAINT SUPPORT PARTIALLY COVERS WELD 360°.





① LIMITATION TO 8-RH-2216-4R1 DUE TO FLANGE TO VALVE CONFIGURATION.
SUM 503340

② UNABLE TO TAKE PROFILE OF WELD DUE TO LIMITATIONS.

REVIEWED & ACCEPTED
FACTORY MUTUAL
ENGINEERING ASSOCIATION
5/16/96
AUTH. NUCLEAR INSERVICE INSP. DATE

5-16-96
5/16/96

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FORM 2
(Page 1 of 1)

VOLUMETRIC PIPING EXAMINATION COVERAGE REPORT

UNIT: SALEM 2 LTP SUMMARY NO.: 503340

SYSTEM: RH LTP COMPONENT ID: 8-RH-2216-4R1

PREPARED BY: TRAVIS W. LANG DATE: 5-16-96

REVIEWED BY: [signature] DATE: 5-16-96

VOLUMETRIC PIPING EXAMINATIONS

1.0 AXIAL EXAMS (INDICATIONS PARALLEL TO WELD)

1.1 Compute Exam Volume (height x width x length) = Vt1 (.129 x 1.300 x 27.500) — 4.611

1.2 Compute Vol. Not Covered Upstream .129x1.300x27.5 = A — 4.611

1.3 Compute Upstream Limitation Percentage (A / Vt1) x 100 = Z1 — 100

1.4 Compute Vol. Not Covered Downstream .129x1.300x27.5 = B — 4.611

1.5 Compute Downstream Limitation Percentage (B / Vt1) x 100 = Z2 — 100

2.0 CIRCUMFERENTIAL EXAMS (INDICATIONS PERPENDICULAR TO WELD)

2.1 Compute Exam Volume (height x width x length) = Vt2 (.129 x 1.8 x 27.5) — 6.385

2.2 Compute Vol. Not Covered CW .129x1.0x27.5 = C — 3.548

2.3 Compute CW Limitation Percentage (C / Vt2) x 100 = Z3 — 55.568

2.4 Compute Vol. Not Covered CCW .129x1.0x27.5 = D — 3.548

2.5 Compute CCW Limitation Percentage (D / Vt2) x 100 = Z4 — 55.568

3.0 TOTAL COVERAGE

3.1 Compute Total Limitation Percentage (Z1 + Z2 + Z3 + Z4)/4 = L — 77.784

3.2 Compute Total Coverage 100 - L — 22.216

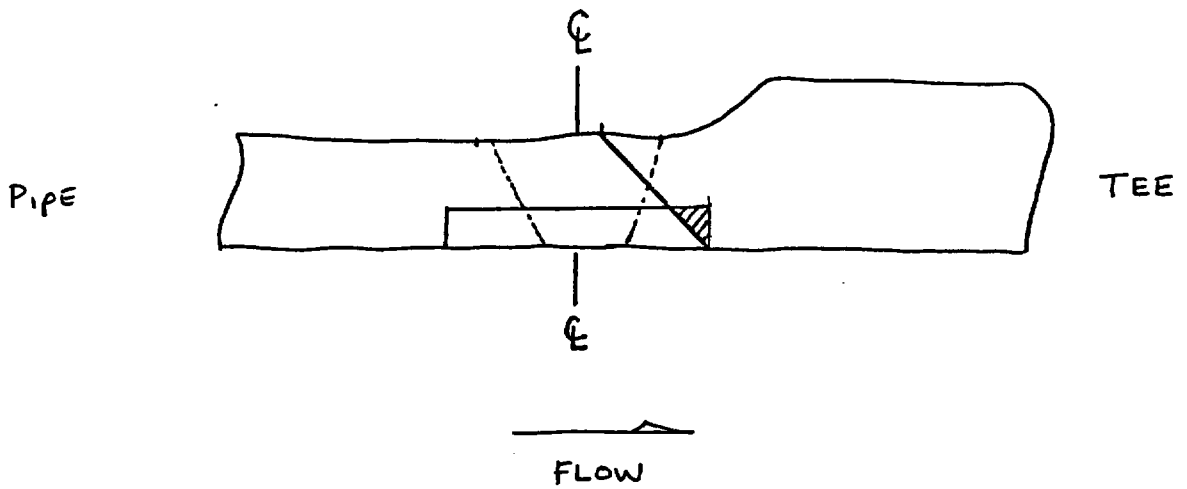
LIMITATION EXPLANATION / REMARKS:

UNABLE TO PROFILE COMPONENT DUE TO FLANGE TO VALVE CONFIGURATION

HEIGHT BASED ON THICKNESS AT WELD CENTERLINE

REVIEWED & ACCEPTED
FACTORY MUTUAL
ENGINEERING ASSOCIATION
AUTH. NUCLEAR INSERV. [signature] 5/21/96 DATE

UT COVERAGE PLOT



NOT EXAMINED

EXAMINED

WELD: 4PR-1200-7

FIGURE #: B9.11.003

Summary: 054400

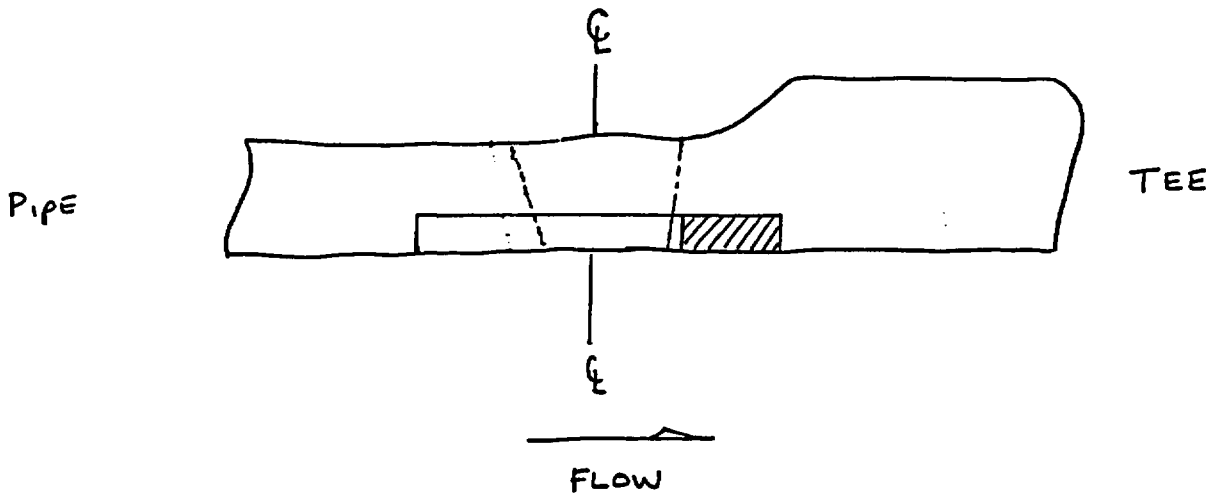
Nominal Pipe OD: 4.0"

Beam Direction: Axial

44° RL WAVE
&
43° SHEAR WAVE

124

UT COVERAGE PLOT



NOT EXAMINED

EXAMINED

WELD: 4PR-1200-7

FIGURE #: B9.11.003

Summary: 054400

Nominal Pipe OD: 4.0"

Beam Direction: Circ

43° SHEAR WAVE

125

FRAMATOME TECHNOLOGIES

VOLUMETRIC PIPING EXAMINATION COVERAGE REPORT

CUSTOMER: PSE&G SALEM UNIT-2, 10 RFO	SYSTEM: REACTOR COOLANT SYSTEM, PRESSURIZER RELIEF
SUMMARY NO.: 054400	COMPONENT ID: 4-PR-1200-7 PIPE TO TEE WELD

VOLUMETRIC PIPING EXAMINATIONS

1.0 AXIAL ULTRASONIC EXAMINATIONS (Indications Parallel to the Weld)

1.1	Compute Examination Volume (Height x Width x Length) = Vt_1	0.177" x 1.4" x 11.9" = 2.95 cu. in.
1.2	Compute Volume Not Examined on Upstream Side of Weld = A	2.95 in.^{3} (Beam Direction-US)
1.3	Compute Upstream Limitation Percentage (A ÷ Vt_1) x 100 = Z1	100 % (Beam Direction-US)
1.4	Compute Volume Not Examined on Downstream Side of Weld = B	0.177" x 0.16" x 11.9" = 0.34 in.^{3}
1.5	Compute Downstream Limitation Percentage (B ÷ Vt_1) x 100 = Z2	0.34 in.^{3} ÷ 2.95 in.^{3} x 100 = 11.5 % (Beam Direction-DS)

2.0 CIRCUMFERENTIAL ULTRASONIC EXAMINATIONS (Indications Perpendicular to the Weld)

2.1	Compute Examination Volume (Height x Width x Length) = Vt_2	0.177" x 1.9" x 11.9" = 4.00 cu in.
2.2	Compute Volume Not Examined in the Clock Wise Direction = C	0.177" x 0.50" x 11.9" = 1.05 in.^{3}
2.3	Compute Clock Wise Limitation Percentage (C ÷ Vt_2) x 100 = Z3	1.05 in.^{3} ÷ 4.00 in.^{3} x 100 = 26.3 %
2.4	Compute Volume Not Examined in the Counter CW Direction = D	0.177" x 0.50" x 11.9" = 1.05 in.^{3}
2.5	Compute Counter CW Limitation Percentage (D ÷ Vt_2) x 100 = Z4	1.05 in.^{3} ÷ 4.00 in.^{3} x 100 = 26.3 %

3.0 TOTAL EXAMINATION COVERAGE OBTAINED

3.1	Compute Total Limitation Percentage (Z1 + Z2 + Z3 + Z4) / 4 = L	**41.0 %**
3.2	Compute Total Coverage 100 – L	**59.0 %**

LIMITATION EXPLANATION/REMARKS

Limitation exists on the Tee side of the weld for the circumferential and axial examinations. See the attached UT Coverage Plot. The 45 degree refracted longitudinal wave transducer was scanned over the required volume from the pipe side of the weld only (one-sided examination), in order to achieve 88.5 percent coverage in the downstream axial direction. No volumetric (100% limitation) coverage was obtained from the upstream axial examination due to the Tee configuration. The exam volume was computed using actual OD pipe sizes and schedule wall thicknesses. The Length value is computed using the diameter at the inner one third of the pipe wall thickness.

PREPARED BY:	DATE:	REVIEWER:	DATE:
D. J. Langenfeld	05/17/99	[signature]	5/20/99

FACTORY MUTUAL ENGINEERING ASSOCIATION 6/4/99

FRAMATOME TECHNOLOGIES

LIQUID PENETRANT EXAMINATION

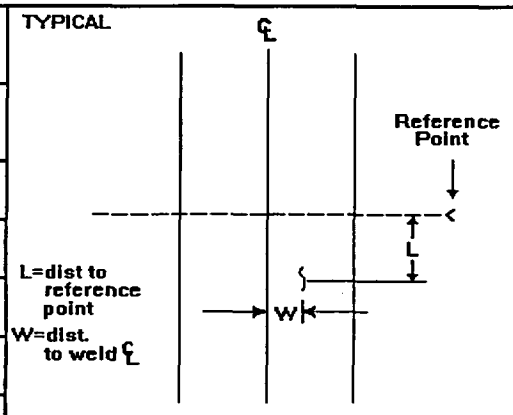
Customer: SALEM UNIT-2, 10 RFO	Exam Date: 04/29/99	Figure No.: B10.10.001
System/Component I.D.: 4-PS-1231-11PS-1 Thru 4 (Sum. #061700)		Nominal Thickness: N/A
Component Description: Pipe Support Weld		
Stage of Fabrication (End Prep, Repair, Root, In Process, Final): FINAL	ISO/Drawing No: RC-2-3, A-26	
Surface (ISI Prep, As Welded, Ground, Other): ISI PREP	Procedure No./Rev.: 54-ISI-240, Rev. 36	Temperature (F): 79
M&TE No. (Thermometer): DB# 15361	Calibration Due Date: 07/19/1999	Acceptance Std (ASME/ANSI, etc): ASME 1986, SECTION XI
M&TE No. (Black Light Meter): N/A	Calibration Due Date: N/A	Measure Intensity uW/CM^2: N/A

Penetrant Material Batch or Lot Numbers — Cleaner: 98A11K — Penetrant: 95L03K — Developer: 98L03K

INDICATION LOCATION

IND #	Ref Point Location	Size	Location L	Location W	Status A / U	Orientation to Weld
NRI						

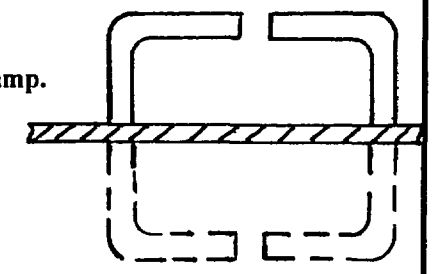
TYPICAL



Remarks/Sketch (If necessary)

No recordable indications found.

Bottom of welds inaccessible due to PERMANENT obstruction from a FIXED pipe clamp.



Contract No. 1220721

Examiner: P. L. Cave — Level: II — Date: 04/29/99 — Sign: Peter L. Cave	Examiner: N/A — Level: N/A — Date: — Sign:	FACTORY MUTUAL ~~Engineering Association~~
Reviewed: D.J. Langenfeld — Level: II — Date: 4-30-99 — Sign: D.J. Langenfeld	ANII Review: — Date: 5-12-99 — Sign:	
Customer: WAYNE DENLINGER — Date: 5-12-99 — Sign: Wayne Denlinger	NCR No.: N/A	

SH.RA-IS.ZZ-0145-1
(Page 1 of 1)

SURFACE EXAMINATION COVERAGE REPORT

UNIT: 2 LTP SUMMARY NO.: 061700

SYSTEM: Pressurizer Spray LTP COMPONENT ID: 4-PS-1231-11PS

PREPARED BY: Peter Cavle DATE: (1-4) 4-29-99

REVIEWED BY: Denny J. Langenfeld DATE: 4-30-99

SURFACE EXAMINATIONS

1.0 CALCULATE REQUIRED EXAM AREA

Exam length	X	Exam Width	=	Exam Area
=13"		1/4"		=3.25

2.0 CALCULATE AREA NOT EXAMINED

2.1

	Length of obstructed area	X	Width of obstructed area	=	Area with NO exam coverage
A.	=6.5"	X	1/4"	=	=1.63"
B.	N/A	X	N/A	=	N/A
C.	N/A	X	N/A	=	N/A
D.	N/A	X	N/A	=	N/A

3.0 CALCULATE PERCENT AREA NOT EXAMINED

Percent Area NOT Examined	=	Total Area w/No Coverage	/	Exam Area	X	100
	=	[=1.63"	/	=3.25]	X	100
	=	50 %				

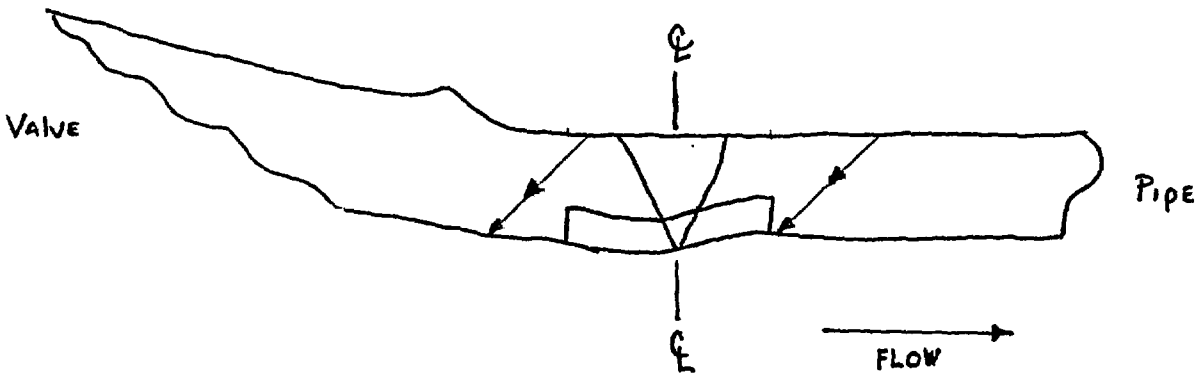
4.0 CALCULATE PERCENT OF TOTAL AREA EXAMINED

100%	-	50% Percent Area NOT Examined	=	Examination Coverage
100%	-	50% = 50%	=	=50%%

LIMITATION EXPLANATION / REMARKS:

Bottom of welds inaccessible due to permanent obstruction from fixed pipe clamp.

UT COVERAGE PLOT



NOT EXAMINED

WELD: 4-PS-1231-20

FIGURE No: B9.11.005

SUMMARY: 063000

NOMINAL OD: 4.0"

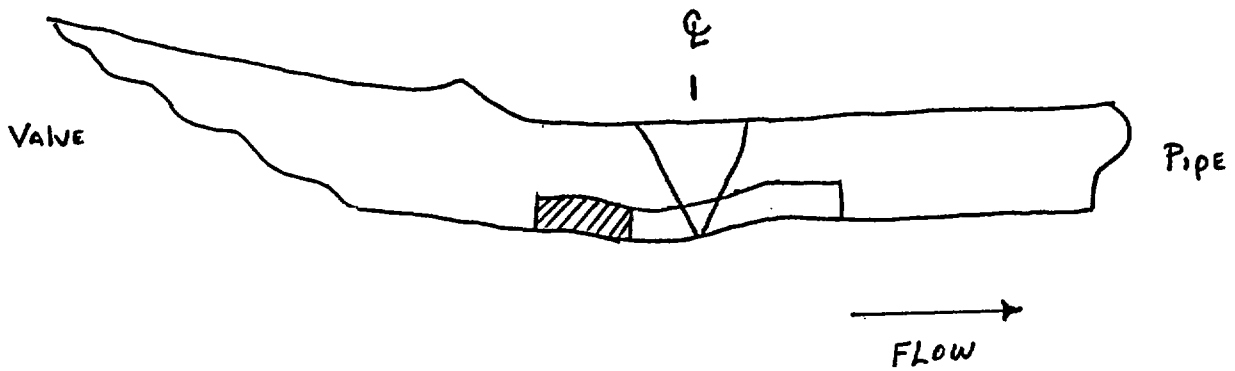
BEAM DIRECTION: AXIAL

45° RL WAVE (NOMINAL ANGLE)

&

45° SHEAR WAVE (NOMINAL ANGLE)

UT COVERAGE PLOT



NOT EXAMINED

WELD: 4-PS-1231-20

FIGURE No: B9.11.005

SUMMARY: 063000

NOMINAL OD: 4.0"

BEAM DIRECTION: CIRC

45° SHEAR WAVE (NOMINAL ANGLE)

FRAMATOME TECHNOLOGIES

VOLUMETRIC PIPING EXAMINATION COVERAGE REPORT

CUSTOMER: PSE&G SALEM UNIT-2, 10 RFO	SYSTEM: REACTOR COOLANT SYSTEM, PRESSURIZER SPRAY
SUMMARY NO.: 063000	COMPONENT ID: 4-PS-1231-20 VALVE 2PS28 TO PIPE WELD

VOLUMETRIC PIPING EXAMINATIONS

1.0 AXIAL ULTRASONIC EXAMINATIONS (Indications Parallel to the Weld)

1.1	Compute Examination Volume (Height x Width x Length) = Vt_1	0.177" x 1.1" x 11.9" = 2.32 cu. in.
1.2	Compute Volume Not Examined on Upstream Side of Weld = A	0.00 cu. in. (Beam Direction-US)
1.3	Compute Upstream Limitation Percentage $(A \div Vt_1) \times 100 = Z1$	0.00% (Beam Direction-US)
1.4	Compute Volume Not Examined on Downstream Side of Weld = B	2.32 in.^{3} (Beam Direction-DS)
1.5	Compute Downstream Limitation Percentage $(B \div Vt_1) \times 100 = Z2$	100 % (Beam Direction-DS)

2.0 CIRCUMFERENTIAL ULTRASONIC EXAMINATIONS (Indications Perpendicular to the Weld)

2.1	Compute Examination Volume (Height x Width x Length) = Vt_2	0.177" x 1.6" x 11.9" = 3.37cu. in.
2.2	Compute Volume Not Examined in the Clock Wise Direction = C	0.177" x 0.52" x 11.9" = 1.1 in.^{3}
2.3	Compute Clock Wise Limitation Percentage $(C \div Vt_2) \times 100 = Z3$	1.1 in.^{3} ÷ 3.37 in.^{3} x 100 = 32.6 %
2.4	Compute Volume Not Examined in the Counter CW Direction = D	0.177" x 0.52" x 11.9" = 1.1 in.^{3}
2.5	Compute Counter CW Limitation Percentage $(D \div Vt_2) \times 100 = Z4$	1.1 in.^{3} ÷ 3.37 in.^{3} x 100 = 32.6 %

3.0 TOTAL EXAMINATION COVERAGE OBTAINED

3.1	Compute Total Limitation Percentage (Z1 + Z2 + Z3 + Z4) / 4 = L	**41.3 %**
3.2	Compute Total Coverage 100 – L	**58.7 %**

LIMITATION EXPLANATION/REMARKS

Limitation exists on the Valve side of the weld for the circumferential and axial examinations. See the attached UT Coverage Plot. The 45 degree refracted longitudinal wave transducer was scanned over the required volume from the pipe side of the weld only (one-sided examination), in order to achieve 100 percent coverage in the upstream axial direction. No volumetric (100% limitation) coverage was obtained from the downstream axial examination due to the valve configuration. The exam volume was computed using actual OD pipe sizes and schedule wall thicknesses. The Length value is computed using the diameter at the inner one third of the pipe wall thickness.

PREPARED BY:	DATE:	REVIEWER:	DATE:
D. J. Langenfeld	05/17/99	[illegible]	5/20/99

FACTORY MUTUAL ENGINEERING ASSOCIATION

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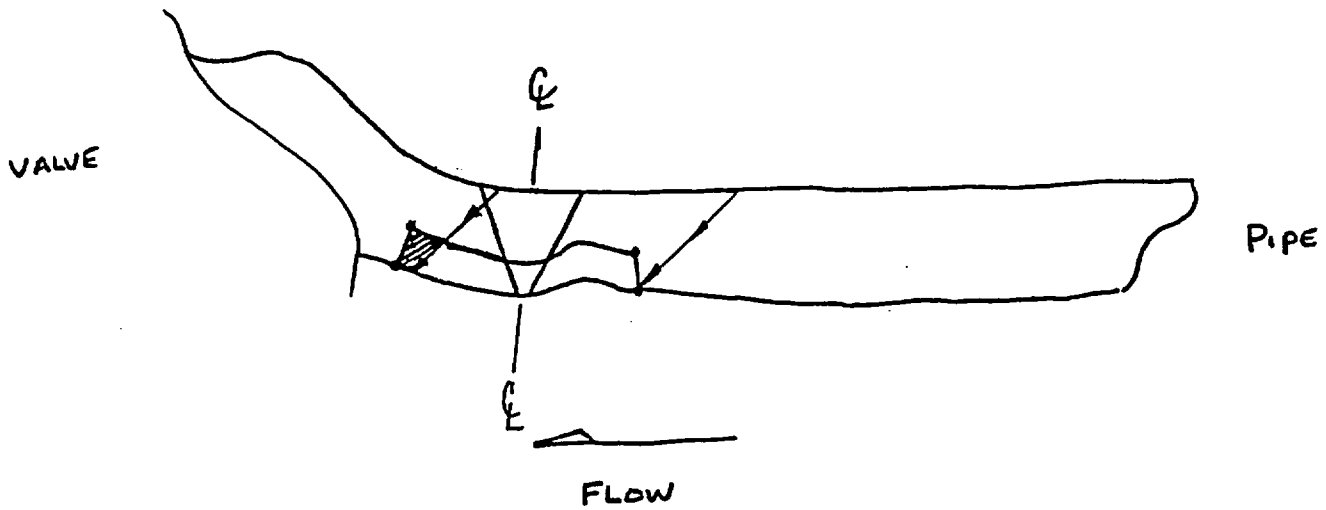
UT COVERAGE PLOT



NOT EXAMINED

WELD : 4-PS-1231-21

FIGURE NO: B9.11.006

SUMMARY: 063100

NOMINAL OD: 4.0"

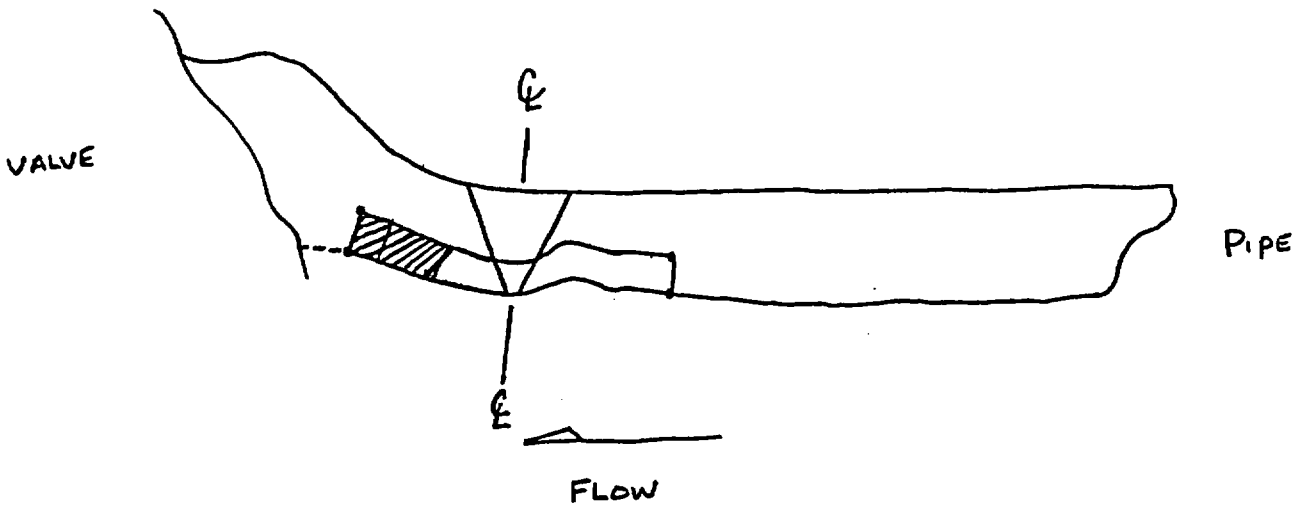
BEAM DIRECTION: AXIAL

44° RL WAVE

℄

43° SHEAR WAVE

UT COVERAGE PLOT



NOT EXAMINED

WELD : 4-PS-1231-21

FIGURE NO: B9.11.006

SUMMARY: 063100

NOMINAL OD: 4.0"

BEAM DIRECTION: CIRC

43° SHEAR WAVE

FRAMATOME TECHNOLOGIES

VOLUMETRIC PIPING EXAMINATION COVERAGE REPORT

CUSTOMER: PSE&G SALEM UNIT-2, 10 RFO	SYSTEM: REACTOR COOLANT SYSTEM, PRESSURIZER SPRAY
SUMMARY NO.: 063100	COMPONENT ID: 4-PS-1231-21 PIPE TO VALVE 2PS3

VOLUMETRIC PIPING EXAMINATIONS

1.0 AXIAL ULTRASONIC EXAMINATIONS (Indications Parallel to the Weld)

1.1	Compute Examination Volume (Height x Width x Length) = Vt_1	0.177" x 1.0" x 11.9" = 2.10 cu. in.
1.2	Compute Volume Not Examined on Upstream Side of Weld = A	2.10 in.^{3} (Beam Direction-US)
1.3	Compute Upstream Limitation Percentage (A ÷ Vt_1) x 100 = Z1	100 % (Beam Direction-US)
1.4	Compute Volume Not Examined on Downstream Side of Weld = B	0.177" x 0.176" x 11.9" = 0.37 in.^{3}
1.5	Compute Downstream Limitation Percentage (B ÷ Vt_1) x 100 = Z2	0.37 in.^{3} ÷ 2.10 in.^{3} x 100 = 17.6 % (Beam Direction-DS)

2.0 CIRCUMFERENTIAL ULTRASONIC EXAMINATIONS (Indications Perpendicular to the Weld)

2.1	Compute Examination Volume (Height x Width x Length) = Vt_2	0.177" x 1.5" x 11.9" = 3.15 cu. in.
2.2	Compute Volume Not Examined in the Clock Wise Direction = C	0.177" x 0.47" x 11.9" = 1.0 in.^{3}
2.3	Compute Clock Wise Limitation Percentage (C ÷ Vt_2) x 100 = Z3	1.0 in.^{3} ÷ 3.15 in.^{3} x 100 = 31.7 %
2.4	Compute Volume Not Examined in the Counter CW Direction = D	0.177" x 0.47" x 11.9" = 1.0 in.^{3}
2.5	Compute Counter CW Limitation Percentage (D ÷ Vt_2) x 100 = Z4	1.0 in.^{3} ÷ 3.15 in.^{3} x 100 = 31.7 %

3.0 TOTAL EXAMINATION COVERAGE OBTAINED

3.1	Compute Total Limitation Percentage (Z1 + Z2 + Z3 + Z4) / 4 = L	**45.3 %**
3.2	Compute Total Coverage 100 – L	**54.7 %**

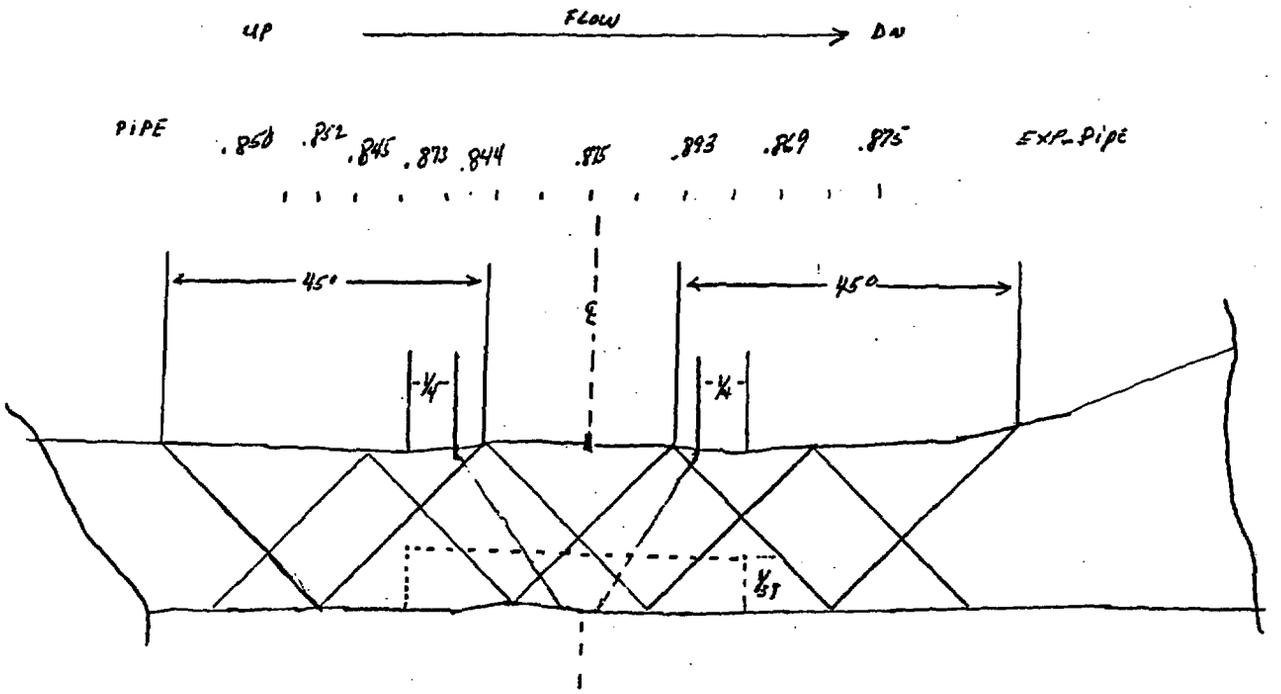
LIMITATION EXPLANATION/REMARKS

Limitation exists on the Valve side of the weld for the circumferential and axial examinations. See the attached UT Coverage Plot. The 45 degree refracted longitudinal wave transducer was scanned over the required volume from the pipe side of the weld only (one-sided examination), in order to achieve 54.7 percent coverage in the downstream axial direction. No volumetric (100% limitation) coverage was obtained from the upstream axial examination due to the valve configuration. The exam volume was computed using actual OD pipe sizes and schedule wall thicknesses. The Length value is computed using the diameter at the inner one third of the pipe wall thickness.

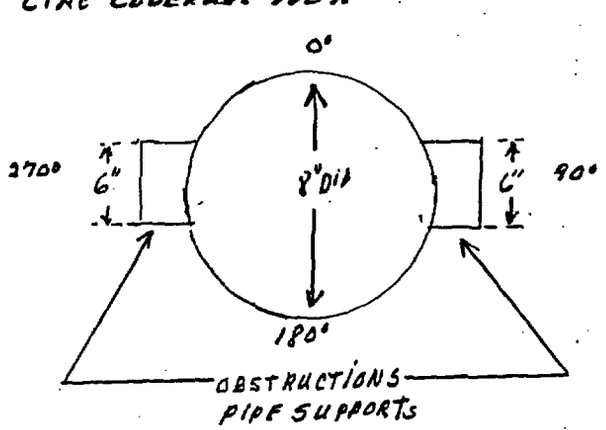
PREPARED BY:	DATE:	REVIEWER:	DATE:
D. J. Langenfeld	05/17/99	[illegible]	5/20/99

FACILITY SUPERVISOR
ENGINEERING ASSOCIATION
[illegible] 1.14.99

UT COVERAGE PLOT
8-SJ-1252-9



NOTE EXAM OBSTRUCTION DOWNSTREAM ONLY AT 90°, 6" AND 270° 6" TOTAL 12"
CIRC COVERAGE 100%



WELD: 8-SJ-1252-9
SUMMARY # 168200
SALEM UNIT 2, 10 REO
45° REFRACTED SHEAR
ID, OD, ID
45° REFRACTED LONGITUDINAL
HALF VEE.
BEAM DIRECTION: AXIAL
FIGURE No.: B9.11.020

FRAMATOME TECHNOLOGIES

VOLUMETRIC PIPING EXAMINATION COVERAGE REPORT

CUSTOMER: PSE&G SALEM UNIT-2, 10 RFO	SYSTEM: SAFETY INJECTION
SUMMARY NO.: 168200	COMPONENT ID: 8-SJ-1252-9 PIPE TO PIPE

VOLUMETRIC PIPING EXAMINATIONS

1.0 AXIAL ULTRASONIC EXAMINATIONS (Indications Parallel to the Weld)

1.1	Compute Examination Volume (Height x Width x Length) = Vt_1	0.325" x 1.8" x 21.36" = 12.50 cu. in.
1.2	Compute Volume Not Examined on Upstream Side of Weld = A	0.00 cu. in.
1.3	Compute Upstream Limitation Percentage ($A \div Vt_1$) x 100 = Z1	0.00 %
1.4	Compute Volume Not Examined on Downstream Side of Weld = B	0.325" x 1.8" x 12.0" = 7.02 cu. in.
1.5	Compute Downstream Limitation Percentage ($B \div Vt_1$) x 100 = Z2	7.02 in.^{3} ÷ 12.50 in.^{3} x 100 = 56.0%

2.0 CIRCUMFERENTIAL ULTRASONIC EXAMINATIONS (Indications Perpendicular to the Weld)

2.1	Compute Examination Volume (Height x Width x Length) = Vt_2	0.325" x 2.3" x 21.36" = 16.0 cu. in.
2.2	Compute Volume Not Examined in the Clock Wise Direction = C	0.00 cu. in.
2.3	Compute Clock Wise Limitation Percentage ($C \div Vt_2$) x 100 = Z3	0.00 %
2.4	Compute Volume Not Examined in the Counter CW Direction = D	0.00 cu. in.
2.5	Compute Counter CW Limitation Percentage ($D \div Vt_2$) x 100 = Z4	0.00 %

3.0 TOTAL EXAMINATION COVERAGE OBTAINED

3.1	Compute Total Limitation Percentage (Z1 + Z2 + Z3 + Z4) / 4 = L	**14.0 %**
3.2	Compute Total Coverage 100 – L	**86.0 %**

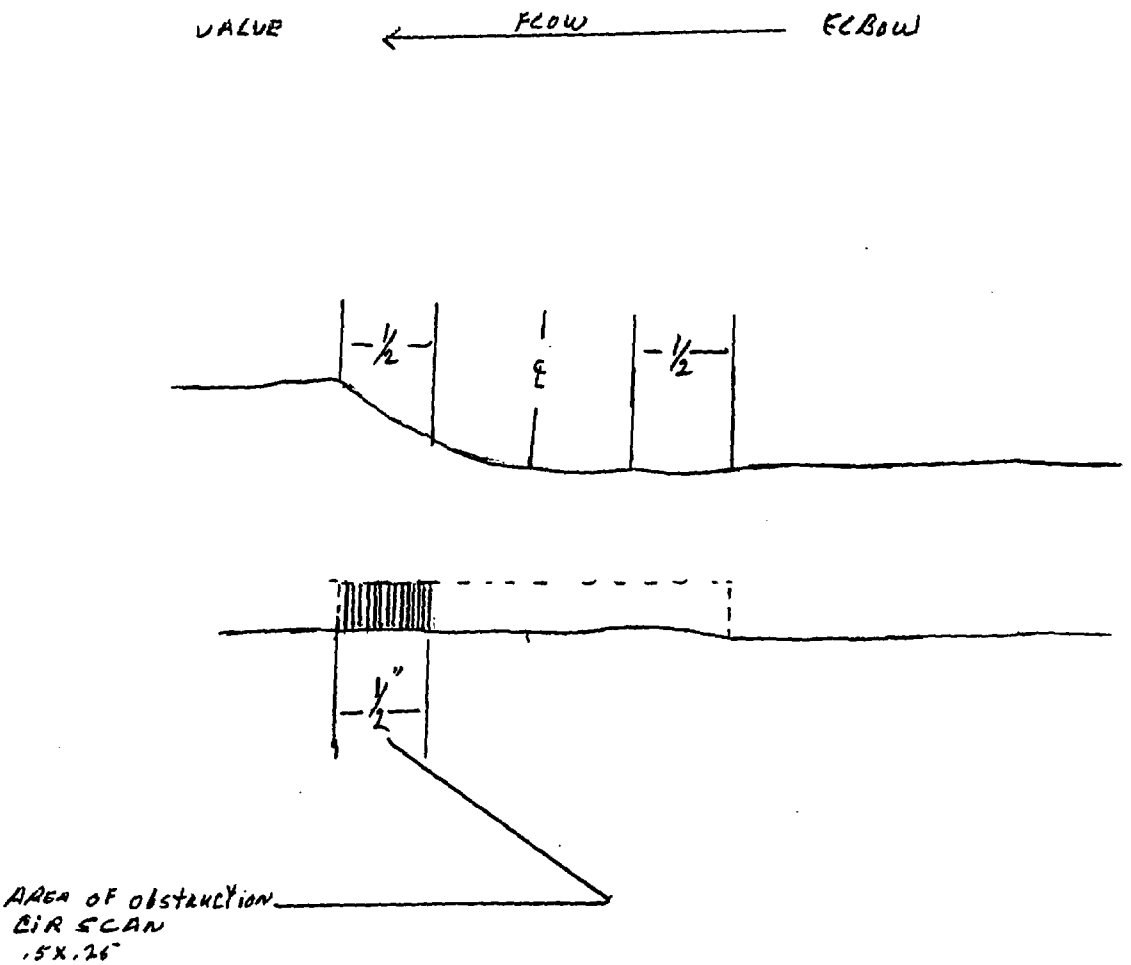
LIMITATION EXPLANATION/REMARKS

Limitation exists at ~90 and ~270 degrees around the pipe for a total of 12 inches. See the attached UT Coverage Plot. The 45 degree transducers were scanned over the required volume from both sides of the weld with the exception of the two obstructed areas from the permanently installed welded pipe supports on the downstream side of the weld. No limitation existed for the circumferential examinations due to the fact the permanently installed welded pipe support obstructions were located beyond the required volume. The exam volume was computed using actual OD pipe sizes and schedule wall thicknesses. The Length value is computed using the diameter at the inner one third of the pipe wall thickness.

PREPARED BY:	DATE:	REVIEWER:	DATE:
Danny J. Langenfeld	5-19-99	[illegible]	5-19-99

FACTORY MUTUAL ENGINEERING ASSOCIATION
[illegible] 6/4/99

UT COVERAGE PLOT
CIRC SCAN



AREA NOT EXAMINED

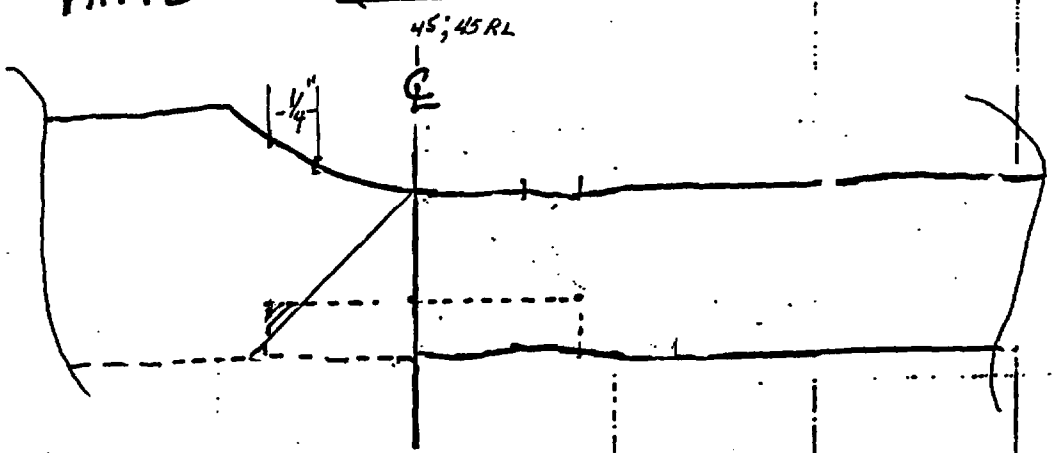
WELD: 6-SJ-1242-2
SUMMARY # 170250
6-SJ-1242-2
SALEM UNIT 2
FIGURE NO.: B9.11.023
DAVID G. GARCIA
4-27-99

REVIEWED & ACCEPTED
FACTORY MUTUAL
ENGINEERING ASSOCIATION
5-28-99
AUTH. NUCLEAR INSERVICE INSP. DATE

UT COVERAGE PLOT

6-SJ-1242-2

VALVE ← FLOW Elbow



▨ AREA NOT EXAMINED

SUMMARY # 170850
6-SJ-1242-2
NOMINAL PIPE OD 6"
FIGURE NO.: B9.11.023

DAVID GARLIA LEVEL II
4-27-99

REVIEWED & ACCEPTED
FACTORY MUTUAL
ENGINEERING ASSOCIATION
5-28-99
AUTH. NUCLEAR INSERVICE INSP. DATE

FRAMATOME TECHNOLOGIES

VOLUMETRIC PIPING EXAMINATION COVERAGE REPORT

CUSTOMER: PSE&G SALEM UNIT-2, 10 RFO	SYSTEM: SAFETY INJECTION
SUMMARY NO.: 170850	COMPONENT ID: 6-SJ-1242-2 ELBOW TO VALVE 24SJ43

VOLUMETRIC PIPING EXAMINATIONS

1.0 AXIAL ULTRASONIC EXAMINATIONS (Indications Parallel to the Weld)

1.1	Compute Examination Volume (Height x Width x Length) = Vt_1	0.255" x 1.66" x 17.6" = 7.45 cu. in.
1.2	Compute Volume Not Examined on Upstream Side of Weld = A	0.255" x 1.66" x 17.6" = 7.45 cu. in.
1.3	Compute Upstream Limitation Percentage $(A \div Vt_1) \times 100 = Z1$	100 % (Beam Direction-US)
1.4	Compute Volume Not Examined on Downstream Side of Weld = B	0.015 in.^{3} x 17.6" = 0.264 cu. in
1.5	Compute Downstream Limitation Percentage $(B \div Vt_1) \times 100 = Z2$	0.264 in.^{3} ÷ 7.45 in.^{3} x 100 = 3.54% (Beam Direction-DS)

2.0 CIRCUMFERENTIAL ULTRASONIC EXAMINATIONS (Indications Perpendicular to the Weld)

2.1	Compute Examination Volume (Height x Width x Length) = Vt_2	0.255" x 2.10" x 17.6" = 9.24 cu. in
2.2	Compute Volume Not Examined in the Clock Wise Direction = C	0.255" x 0.50" x 17.6" = 2.24 cu. in
2.3	Compute Clock Wise Limitation Percentage $(C \div Vt_2) \times 100 = Z3$	2.24 in.^{3} ÷ 9.24 in.^{3} x 100 = 24.3%
2.4	Compute Volume Not Examined in the Counter CW Direction = D	.255" x 0.50" x 17.6" = 2.24 cu. in
2.5	Compute Counter CW Limitation Percentage $(D \div Vt_2) \times 100 = Z4$	2.24 in.^{3} ÷ 9.24 in.^{3} x 100 = 24.3%

3.0 TOTAL EXAMINATION COVERAGE OBTAINED

3.1	Compute Total Limitation Percentage (Z1 + Z2 + Z3 + Z4) / 4 = L	**38.0 %**
3.2	Compute Total Coverage 100 – L	**62.0 %**

LIMITATION EXPLANATION/REMARKS

Limitation exists on the Valve side of the weld for the circumferential and axial examinations. See the attached UT Coverage Plot. The 45 degree shear & RL wave transducers were scanned over the required volume from the elbow side of the weld only (one-sided examination), and 48 percent coverage was obtained in the downstream axial direction. No volumetric (100% limitation) coverage was obtained from the upstream axial examination due to the Valve configuration.

The exam volume was computed using actual OD pipe sizes and schedule wall thicknesses.

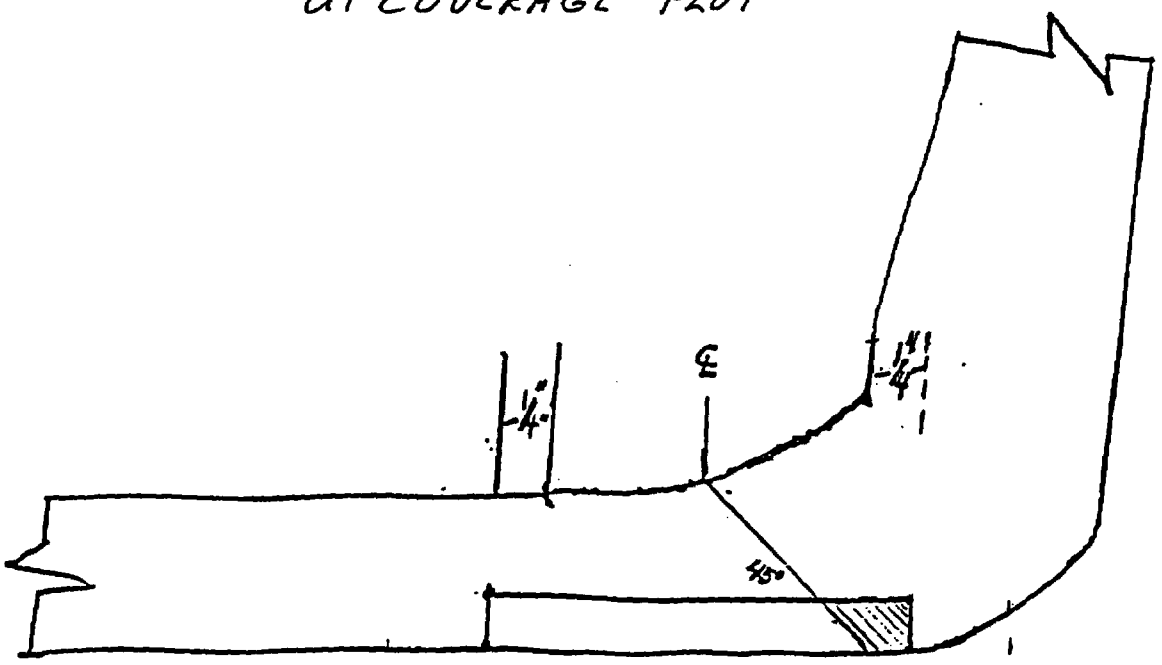
The Length value is computed using the diameter at the inner one third of the pipe wall thickness.

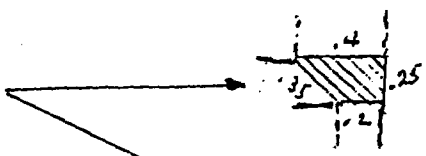
PREPARED BY:	DATE:	REVIEWER:	DATE:
David Bare	5-19-99	D.J. Langenfeld	05-19-99

5-28-99 FACTORY MUTUAL ENGINEERING ASSOCIATION

PIPE FLOW TEE

UT COVERAGE PLOT





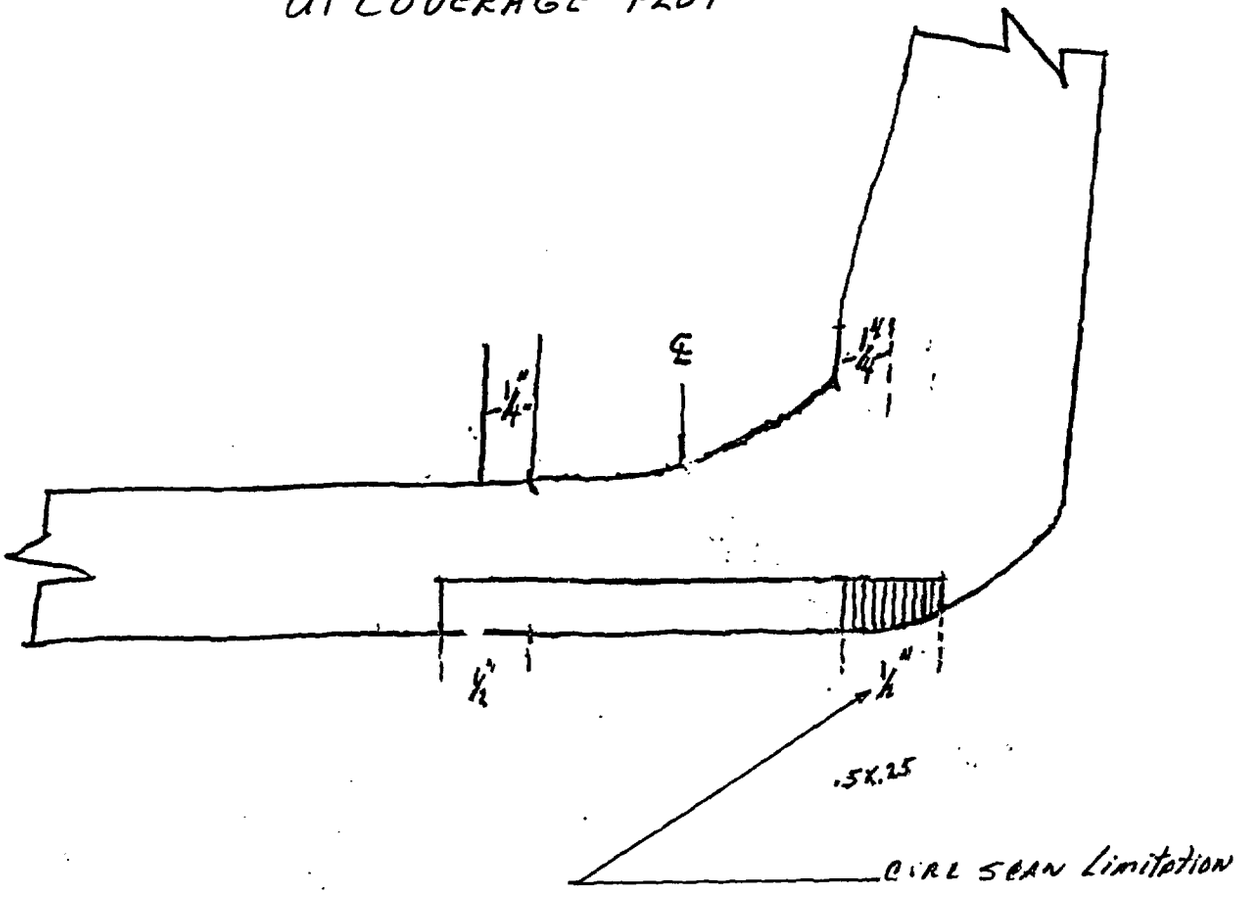
AREA OF SCANNING LIMITATION

WELD NO. 6-SJ-1232-12
SALEM UNIT 2
SUMMARY # 173300
FIGURE NO.: B9.011.026
NOMINAL PIPE OD: 6.0"
BEAM DIRECTION: AXIAL
45° RL & RS

PAGE 6 OF 8

PIPE FLOW TEE

UT COVERAGE PLOT



WELD NO. 6-SJ-1232-12
SALEM UNIT 2
SUMMARY # 173300
FIGURE NO.: 89.11.026
NOMINAL PIPE OD: 6.0"
BEAM DIRECTION: CIRC

FRAMATOME TECHNOLOGIES

VOLUMETRIC PIPING EXAMINATION COVERAGE REPORT

CUSTOMER: PSE&G SALEM UNIT-2, 10 RFO	SYSTEM: SAFETY INJECTION
SUMMARY NO.: 173300	COMPONENT ID: 6-SJ-1232-12 PIPE TO TEE

VOLUMETRIC PIPING EXAMINATIONS

1.0 AXIAL ULTRASONIC EXAMINATIONS (Indications Parallel to the Weld)

1.1	Compute Examination Volume (Height x Width x Length) = Vt_1	0.255" x 2.20 x 17.6" = 9.87 cu. in.
1.2	Compute Volume Not Examined on Upstream Side of Weld = A	0.255" x 2.20" x 17.6" = 9.87 cu. in.
1.3	Compute Upstream Limitation Percentage $(A \div Vt_1) \times 100 = Z1$	100 % (Beam Direction-US)
1.4	Compute Volume Not Examined on Downstream Side of Weld = B	0.068 in.^{2} x 17.6" = 1.20 cu. in
1.5	Compute Downstream Limitation Percentage $(B \div Vt_1) \times 100 = Z2$	1.20 in.^{3} ÷ 9.87 in.^{3} x 100 = 12.2% (Beam Direction-DS)

2.0 CIRCUMFERENTIAL ULTRASONIC EXAMINATIONS (Indications Perpendicular to the Weld)

2.1	Compute Examination Volume (Height x Width x Length) = Vt_2	0.255" x 2.70 x 17.6" = 12.11 cu. in
2.2	Compute Volume Not Examined in the Clock Wise Direction = C	0.255" x 0.50" x 17.6" = 2.24 cu. in
2.3	Compute Clock Wise Limitation Percentage $(C \div Vt_2) \times 100 = Z3$	2.24 in.^{3} ÷ 9.87 in.^{3} x 100 = 22.74%
2.4	Compute Volume Not Examined in the Counter CW Direction = D	0.255" x 0.50" x 17.6" = 2.24 cu. in
2.5	Compute Counter CW Limitation Percentage $(D \div Vt_2) \times 100 = Z4$	2.24 in.^{3} ÷ 9.87 in.^{3} x 100 = 22.74%

3.0 TOTAL EXAMINATION COVERAGE OBTAINED

3.1	Compute Total Limitation Percentage $(Z1 + Z2 + Z3 + Z4) / 4 = L$	**39.42 %**
3.2	Compute Total Coverage 100 – L	**60.6 %**

LIMITATION EXPLANATION/REMARKS

Limitation exists on the Tee side of the weld for the circumferential and axial examinations. See the attached UT Coverage Plot. The 45 degree shear & RL wave transducers were scanned over the required volume from the pipe side of the weld only (one-sided examination), and 44 percent coverage was obtained in the downstream axial direction. No volumetric (100% limitation) coverage was obtained from the upstream axial examination due to the Tee configuration

The exam volume was computed using actual OD pipe sizes and schedule wall thicknesses.

The Length value is computed using the diameter at the inner one third of the pipe wall thickness.

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PREPARED BY:	DATE:	REVIEWER:	DATE:
David Barra	5-21-99	D.J. Langenfeld	05-21-99

FACTORY MUTUAL ENGINEERING ASSOCIATION

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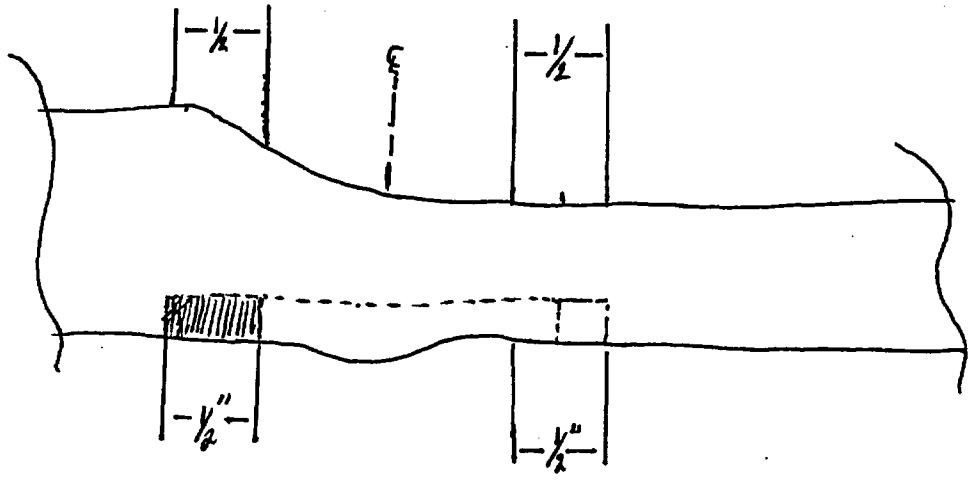
UT COVERAGE PLOT.

CIRC SCAN

VALVE → FLOW → PIPE



WELD NO. 6-SJ-1212-2
SUMMARY NO. 175600
SALEM UNIT 2
DAVID GARCIA
4-27-99
NOMINAL PIPE O.D.: 6.0"
FIGURE NO.: B9.11.029

FRAMATOME TECHNOLOGIES

VOLUMETRIC PIPING EXAMINATION COVERAGE REPORT

CUSTOMER: PSE&G SALEM UNIT-2, 10 RFO	SYSTEM: SAFETY INJECTION
SUMMARY NO.: 175600	COMPONENT ID: 6-SJ-1212-2 VALVE 21SJ43 TO PIPE

VOLUMETRIC PIPING EXAMINATIONS

1.0 AXIAL ULTRASONIC EXAMINATIONS (Indications Parallel to the Weld)

1.1	Compute Examination Volume (Height x Width x Length) = Vt_1	0.255" x 1.80 x 17.6" = 8.07 cu. in.
1.2	Compute Volume Not Examined on Upstream Side of Weld = A	0.05 in.^{3} x 17.6" = 0.88 cu. in
1.3	Compute Upstream Limitation Percentage (A ÷ Vt_1) x 100 = Z1	0.88 in.^{3} ÷ 8.07 in.^{3} x 100 = 10.9%
1.4	Compute Volume Not Examined on Downstream Side of Weld = B	0.255" x 1.80 x 17.6" = 8.07 cu. in.
1.5	Compute Downstream Limitation Percentage (B ÷ Vt_1) x 100 = Z2	100 % (Beam Direction-DS)

2.0 CIRCUMFERENTIAL ULTRASONIC EXAMINATIONS (Indications Perpendicular to the Weld)

2.1	Compute Examination Volume (Height x Width x Length) = Vt_2	0.255" x 2.30 x 17.6" = 10.32 cu. in
2.2	Compute Volume Not Examined in the Clock Wise Direction = C	0.255" x 0.50" x 17.6" = 2.24 cu. in
2.3	Compute Clock Wise Limitation Percentage (C ÷ Vt_2) x 100 = Z3	2.24 in.^{3} ÷ 10.32 in.^{3} x 100 = 21.7%
2.4	Compute Volume Not Examined in the Counter CW Direction = D	0.255" x 0.50" x 17.6" = 2.24 cu. in
2.5	Compute Counter CW Limitation Percentage (D ÷ Vt_2) x 100 = Z4	2.24 in.^{3} ÷ 10.32 in.^{3} x 100 = 21.7%

3.0 TOTAL EXAMINATION COVERAGE OBTAINED

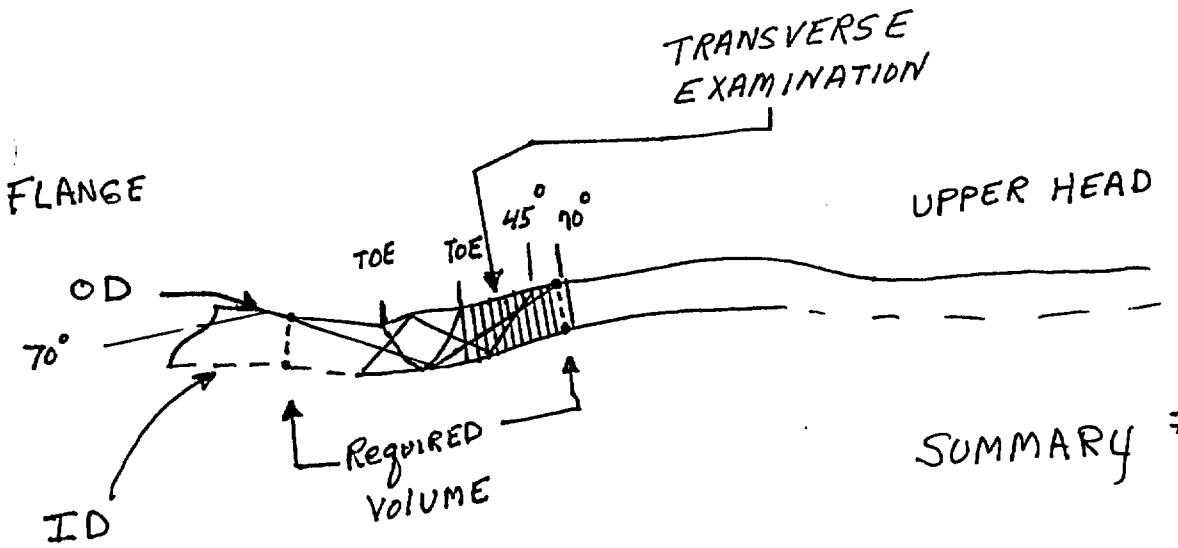
3.1	Compute Total Limitation Percentage (Z1 + Z2 + Z3 + Z4) / 4 = L	**38.58 %**
3.2	Compute Total Coverage 100 – L	**61.42 %**

LIMITATION EXPLANATION/REMARKS

Limitation exists on the Valve side of the weld for the circumferential and axial examinations. See the attached UT Coverage Plot. The 45 degree shear & RL wave transducers were scanned over the required volume from the pipe side of the weld only (one-sided examination), and 45 percent coverage was obtained in the upstream axial direction. No volumetric (100% limitation) coverage was obtained from the downstream axial examination due to the Valve configuration. The exam volume was computed using actual OD pipe sizes and schedule wall thicknesses. The Length value is computed using the diameter at the inner one third of the pipe wall thickness.

144

PREPARED BY:	DATE:	REVIEWER:	DATE:
David Garnia	5-19-99	D. J. Langenfeld	05/19/99



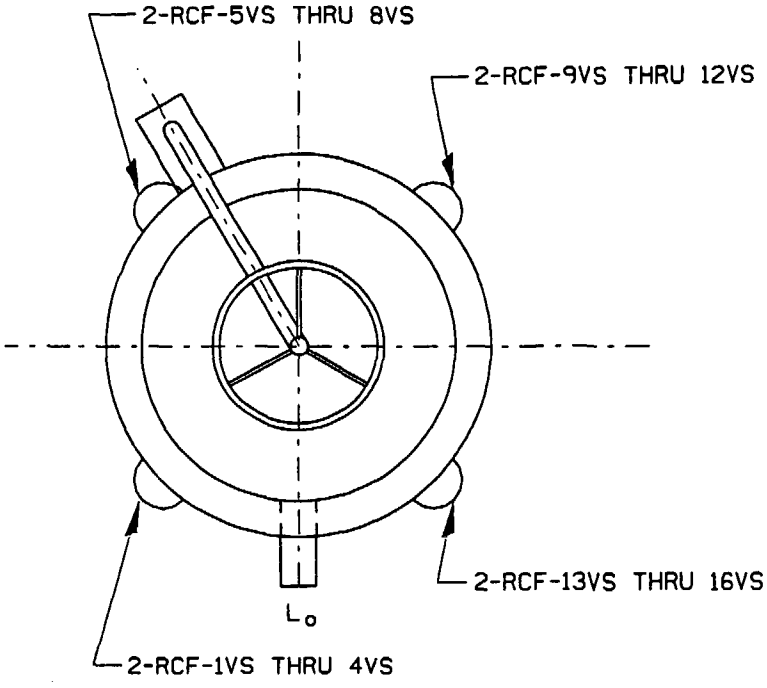
SUMMARY # 275230

NOTE-1. SKETCH TO SCALE

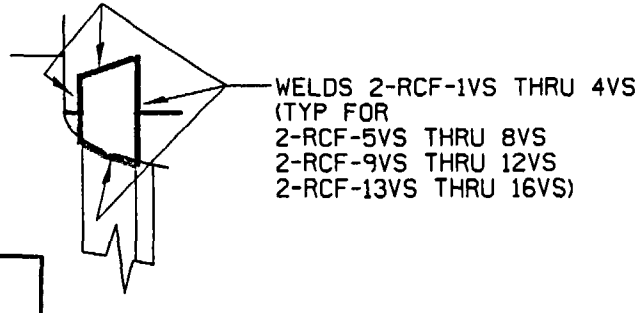
2. ONE SIDED EXAMINATION FOR Parallel EXAMINATION

UT THICKNESS PROFILE

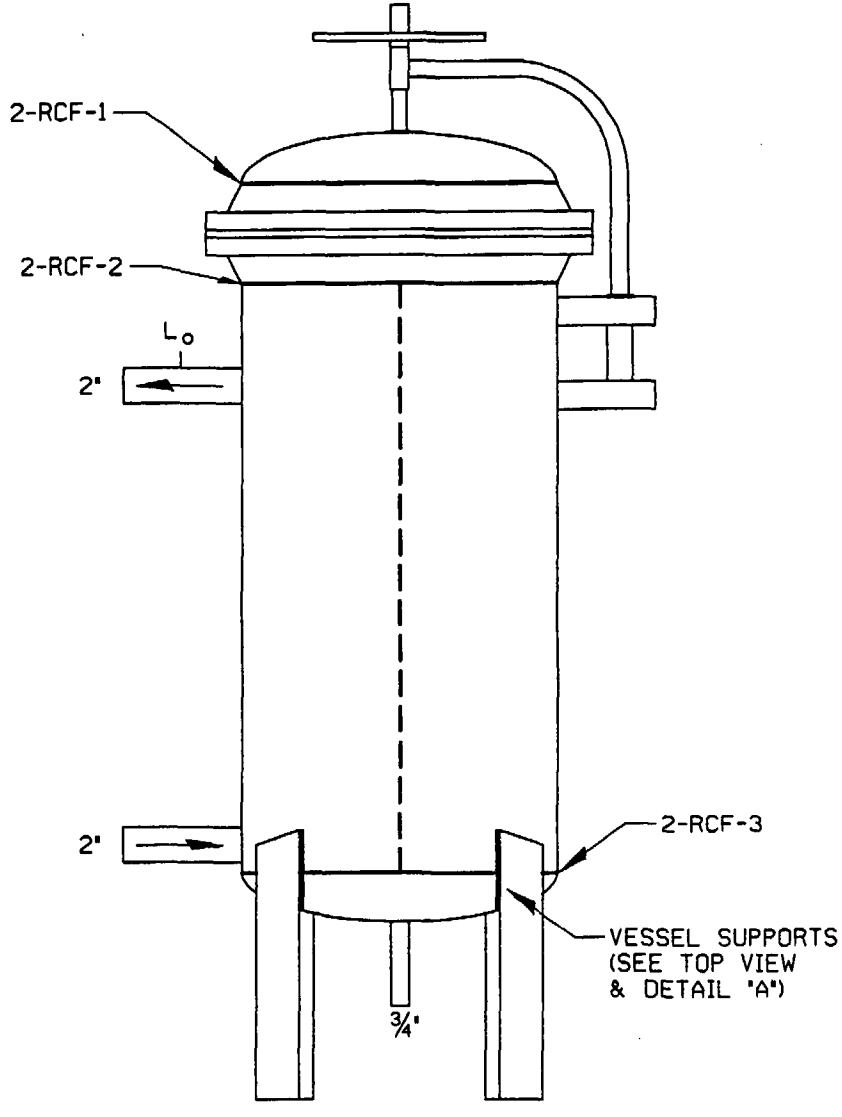
Dan Langenfeld
4-9-99



TOP VIEW



DETAIL 'A'



BUILDING: AUXILIARY	LOCATION: REACTOR COOLANT FILTER ROOM	ELEVATIONS: 100'

REACTOR COOLANT FILTER

P&ID 205328

ATTENTION: ANY REVISION TO THIS DRAWING SHALL BE MADE ONLY BY CAED

REV.	DATE	DESCRIPTION
1		REVISED PER ORDER No. 80038023.

PSEG Nuclear, LLC
SALEM NUCLEAR GENERATING STATION
UNIT 2 - WELD / HANGER IDENTIFICATION FIGURE
INSERVICE INSPECTION DRAWING

FIGURE: B-9 | REVISION: 1
SYSTEM: REACTOR COOLANT FILTER
LINE: N/A
THIRD 10 YEAR INSPECTION INTERVAL

SH.RA-IS.ZZ-0145-3
(Page 1 of 4)

VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

UNIT: 2, 10 RFO LTP SUMMARY NO.: 275230

SYSTEM: 2-RCF-1 LTP COMPONENT ID: 2-RCF-1

PREPARED BY: [illegible] DATE: 3-30-99

REVIEWED BY: Danny J. Langenfeld DATE: 4-9-99

1.0 ~~CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT BEAM PLANAR FLAWS~~ N/A

Exam height	X	Exam width	X	Exam length	=	Exam Volume
N/A	X	N/A	X	N/A	=	N/A

2.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT LAMINAR PLANAR FLAWS

Exam height	X	Exam width	X	Exam length	=	Exam Volume
N/A	X	N/A	X	N/A	=	N/A

3.0 CALCULATE REQUIRED PARALLEL EXAM VOLUME FOR ~~45°~~ AND ~~65°~~ 70° DJL 3-30-

Exam height	X	Exam width	X	Exam length	=	Exam Volume
0.25"	X	1.40"	X	43.9"	=	15.36 cu. INCHES

4.0 CALCULATE REQUIRED TRANSVERSE EXAM VOLUME FOR 45° ~~AND 65°~~ DJL 3-30-99

Exam height	X	Exam width	X	Exam length	=	Exam Volume
0.25"	X	1.40"	X	43.9"	=	15.36

5.0 ~~CALCULATE STRAIGHT BEAM PLANAR EXAM COVERAGE~~ N/A

~~5.1 LIMITED ABOVE/CW EXAM VOLUME~~ N/A

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Volume with NO exam coverage
	X		X		=	

~~5.2 LIMITED BELOW/CW EXAM VOLUME~~ N/A

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Volume with NO exam coverage
	X		X		=	

Total straight beam planar exam volume not examined = -

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D. [illegible] 146

SH.RA-IS.ZZ-0145-3
(Page 2 of 4)

VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

~~5.3 PERCENT VOLUME EXAMINED~~ N/A Sum.# 275230

Percent Volume Examined	=	100	-	Total 0° vol w/No coverage	/	Total 0° Exam Vol	X	100
	=	100	-	{[_____	/	_____]	X	100}
	=					N/A		%

~~6.0 CALCULATE STRAIGHT BEAM LAMINAR EXAM COVERAGE~~ N/A

~~6.1 LIMITED ABOVE/CW EXAM VOLUME~~

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Volume with NO exam coverage
_____	X	_____	X	_____	=	_____

~~6.2 LIMITED BELOW/CW EXAM VOLUME~~ N/A

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Volume with NO exam coverage
_____	X	_____	X	_____	=	_____

Total straight beam laminar exam volume not examined = _____

~~6.3 PERCENT VOLUME EXAMINED~~ N/A

Percent Volume Examined	=	100	-	Total 0° vol w/No coverage	/	Total 0° Exam Vol	X	100
	=	100	-	{[_____	/	_____]	X	100}
						N/A		%

7.0 CALCULATE PARALLEL 45° EXAM COVERAGE

70° EXAM COVERAGE ONLY

7.1 LIMITED ABOVE/CW EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Above/CW exam volume with NO exam coverage
N/A	X	N/A	X	N/A	=	N/A

7.2 LIMITED BELOW/CCW EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Below/CCW exam volume with NO exam coverage
N/A	X	N/A	X	N/A	=	N/A

Total 45° parallel exam volume not examined = N/A

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SH.RA-IS.ZZ-0145-3
(Page 3 of 4)

VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

7.3 PERCENT VOLUME EXAMINED Sum # 275230

Percent Volume Examined	=	100 -	Total 45° parallel vol w/No coverage	/	Total 45° parallel Exam Vol	X	100
	=	100 -	{[N/A	/	N/A]	X	100}
	=	70°			N/A	%	

8.0 CALCULATE PARALLEL ~~60°~~ EXAM COVERAGE DJZ 3-30-99

8.1 LIMITED ABOVE/CW EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Above/CW exam volume with NO exam coverage
N/A	X	N/A	X	N/A	=	N/A

8.2 LIMITED BELOW/CCW EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Below/CCW exam volume with NO exam coverage
N/A	X	N/A	X	N/A	=	N/A

Total 60° parallel exam volume not examined = N/A

8.3 PERCENT VOLUME EXAMINED

Percent Volume Examined	=	100 -	Total 60° parallel vol w/No coverage	/	Total 60° par. Exam Vol	X	100
	=	100 -	{[N/A	/	N/A]	X	100}
					100	%	

NOTE 1: 70° SCAN FROM VESSEL HEAD ACHIEVES 100% COVERAGE OF VOLUME

9.0 CALCULATE TRANSVERSE 45° EXAM COVERAGE

(1) 9.1 LIMITED CLOCKWISE EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		CW exam volume with NO exam coverage
0.250"	X	0.90"	X	43.9"	=	9.87 cu. inches

9.2 LIMITED COUNTERCLOCKWISE EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		CCW exam volume with NO exam coverage
0.25"	X	0.90"	X	43.9"	=	9.87 cu. inches

Total 45° transverse exam volume not examined = 9.87 cu. inches

(1) LIMITED FROM THE FLANGE SIDE ONLY. SCANNED FROM THE HEAD SIDE ONLY.

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SH.RA-IS.ZZ-0145-3
(Page 4 of 4)

VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

9.3 PERCENT VOLUME EXAMINED

Sum# 275230

Percent Volume Examined	=	100 -	Total 45° parallel vol w/No coverage	/	Total 45° parallel Exam Vol	X	100
	=	100 -	{[9.87 ^{3} IN.	/	15.36 ^{3} IN]	X	100}
	=	100 -	64.26		35.74		%

~~10.0 CALCULATE TRANSVERSE 60° EXAM COVERAGE~~ N/A

10.1 LIMITED CLOCKWISE EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		CW exam volume with NO exam coverage
_____	X	_____	X	_____	=	N/A

~~10.2 LIMITED COUNTERCLOCKWISE EXAM VOLUME~~ N/A

Height of obstructed volume		Width of obstructed area		Length of obstructed area		CCW exam volume with NO exam coverage
_____	X	_____	X	_____	=	N/A

Total 60° transverse exam volume not examined = N/A

~~10.3 PERCENT VOLUME EXAMINED~~ N/A

Percent Volume Examined	=	100 -	Total 60° trans vol w/No coverage	/	Total 60° trans Exam Vol	X	100
	=	100 -	{[_____	/	N/A]	X	100}
					N/A		%

11.0 CALCULATE PERCENT OF TOTAL VOLUME EXAMINED

Examination Coverage	=	Sum of Exam Volumes % (step 5 thru 10)	/No. of exams ~~(6)~~ * (2)
135.74/2	=	67.87 %	

OSI 3-30-99

~~CW exam~~ N/A

REMARKS:

PERFORMED 70° SHEAR WAVE SCANS FROM THE HEAD SIDE ONLY USING A 1-1/2 V-PATH TECHNIQUE TO ACHIEVE 100% COVERAGE FOR THE PARALLEL EXAMS. PERFORMED 45° SHEAR SCANS FROM THE HEAD SIDE ONLY FOR THE TRANSVERSE EXAMS.

* PARALLEL AND TRANSVERSE EXAMS PERFORMED AS STATED ABOVE.

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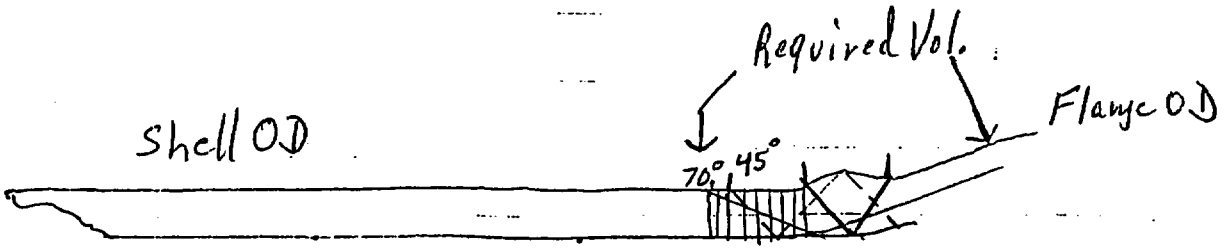

Note: 1. Sketch to Scale
2. One Sided Examination for parallel exam

UT Thickness Profile
Summary # 275240

4-9-99

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(Page 1 of 4)

VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

UNIT: 2, 10 RFO LTP SUMMARY NO.: 275240
SYSTEM: 2-RCF-2 LTP COMPONENT ID: 2-RCF-2
PREPARED BY: [signature] DATE: 3-30-99
REVIEWED BY: Danny J. Langefeld DATE: 4-9-99

1.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT BEAM PLANAR FLAWS

Exam height	X	Exam width	X	Exam length	=	Exam Volume
	X		X		=	

2.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT LAMINAR PLANAR FLAWS

Exam height	X	Exam width	X	Exam length	=	Exam Volume
	X		X		=	

3.0 CALCULATE REQUIRED PARALLEL EXAM VOLUME FOR ~~45°~~ AND ~~65°~~ 70° 19

Exam height	X	Exam width	X	Exam length	=	Exam Volume
0.25"	X	1.40"	X	43.9"	=	15.36 ^{3} inches

4.0 CALCULATE REQUIRED TRANSVERSE EXAM VOLUME FOR 45° ~~AND 65°~~ 72

Exam height	X	Exam width	X	Exam length	=	Exam Volume
0.25"	X	1.40"	X	43.9"	=	15.36 in^3

5.0 ~~CALCULATE STRAIGHT BEAM PLANAR EXAM COVERAGE~~ N/A

~~5.1 LIMITED ABOVE/CW EXAM VOLUME~~ NA

Height of obstructed volume	X	Width of obstructed area	X	Length of obstructed area	=	Volume with NO exam coverage
	X		X		=	

~~5.2 LIMITED BELOW/CW EXAM VOLUME~~ NA

Height of obstructed volume	X	Width of obstructed area	X	Length of obstructed area	=	Volume with NO exam coverage
	X		X		=	

Total straight beam planar exam volume not examined = _____

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(Page 2 of 4)

VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

~~5.3 PERCENT VOLUME EXAMINED~~ N/A

Percent Volume Examined	=	100	-	Total 0° vol w/No coverage	/	Total 0° Exam Vol	X	100
	=	100	-	{[_____	/	_____]	X	100}
	=					N/A		%

~~6.0 CALCULATE STRAIGHT BEAM LAMINAR EXAM COVERAGE~~ NA

~~6.1 LIMITED ABOVE/CW EXAM VOLUME~~

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Volume with NO exam coverage
_____	X	_____	X	_____	=	N/A

~~6.2 LIMITED BELOW/CW EXAM VOLUME~~ NA

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Volume with NO exam coverage
_____	X	_____	X	_____	=	N/A

Total straight beam laminar exam volume not examined = N/A

~~6.3 PERCENT VOLUME EXAMINED~~ NA

Percent Volume Examined	=	100	-	Total 0° vol w/No coverage	/	Total 0° Exam Vol	X	100
	=	100	-	{[_____	/	_____]	X	100}
						NA		%

7.0 CALCULATE PARALLEL 45° EXAM COVERAGE

70° Exam Coverage Only

7.1 LIMITED ABOVE/CW EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Above/CW exam volume with NO exam coverage
NA	X	NA	X	NA	=	NA

7.2 LIMITED BELOW/CCW EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Below/CCW exam volume with NO exam coverage
N/A	X	N/A	X	N/A	=	N/A

Total 45° parallel exam volume not examined = N/A

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(Page 1 of 4)

VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

UNIT: 2, 10 RFO LTP SUMMARY NO.: 275240

SYSTEM: 2-RCF-2 LTP COMPONENT ID: 2-RCF-2

PREPARED BY: [illegible] DATE: 3-30-99

REVIEWED BY: Danny J. Langefeld DATE: 4-9-99

1.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT BEAM PLANAR FLAWS

Exam height	X	Exam width	X	Exam length	=	Exam Volume
	X		X		=	

2.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT LAMINAR PLANAR FLAWS

Exam height	X	Exam width	X	Exam length	=	Exam Volume
	X		X		=	

3.0 CALCULATE REQUIRED PARALLEL EXAM VOLUME FOR ~~45°~~ AND ~~65°~~ 70° [illegible]

Exam height	X	Exam width	X	Exam length	=	Exam Volume
0.25"	X	1.40"	X	43.9"	=	15.36 ^{3} inches

4.0 CALCULATE REQUIRED TRANSVERSE EXAM VOLUME FOR 45° ~~AND 65°~~ [illegible]

Exam height	X	Exam width	X	Exam length	=	Exam Volume
0.25"	X	1.40"	X	43.9"	=	15.36 in^3

5.0 ~~CALCULATE STRAIGHT BEAM PLANAR EXAM COVERAGE~~ N/A

~~5.1 LIMITED ABOVE/CW EXAM VOLUME~~ NA

Height of obstructed volume	X	Width of obstructed area	X	Length of obstructed area	=	Volume with NO exam coverage
	X		X		=	

~~5.2 LIMITED BELOW/CW EXAM VOLUME~~ NA

Height of obstructed volume	X	Width of obstructed area	X	Length of obstructed area	=	Volume with NO exam coverage
	X		X		=	

Total straight beam planar exam volume not examined = _____

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VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

7.3 PERCENT VOLUME EXAMINED

Percent Volume Examined	=	100	-	Total 45° parallel vol w/No coverage	/	Total 45° parallel Exam Vol	X	100
	=	100	-	{[NA	/	NA]	X	100}
	=					NA		%

8.0 CALCULATE PARALLEL ~~60°~~ 70° EXAM COVERAGE

8.1 LIMITED ABOVE/CW EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Above/CW exam volume with NO exam coverage
.250"	X	1.40"	X	3.50"	=	1.23 cu."

8.2 LIMITED BELOW/CCW EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Below/CCW exam volume with NO exam coverage
.250"	X	1.40"	X	3.50"	=	1.23 cu."

Total ~~60°~~ 70° parallel exam volume not examined = 1.23 cu"

8.3 PERCENT VOLUME EXAMINED

Percent Volume Examined	=	100	-	Total ~~60°~~ 70° parallel vol w/No coverage	/	Total ~~60°~~ 70° par. Exam Vol	X	100
	=	100	-	{[1.23 cu."	/	15.36 cu"]	X	100}
	=	100	-	8	=	92		%

9.0 CALCULATE TRANSVERSE 45° EXAM COVERAGE

9.1 LIMITED CLOCKWISE EXAM VOLUME

	Height of obstructed volume		Width of obstructed area		Length of obstructed area		CW exam volume with NO exam coverage	Total
Up	.250		0.90		43.9		9.87 cu."	
Down	.250	X	0.90	X	3.5	=	0.79 cu"	10.66 cu"

9.2 LIMITED COUNTERCLOCKWISE EXAM VOLUME

	Height of obstructed volume		Width of obstructed area		Length of obstructed area		CCW exam volume with NO exam coverage	
Up	.25		.90		43.9		9.87 cu"	
Down	.25	X	.90	X	3.5	=	.79 cu"	10.66 cu"

Total 45° transverse exam volume not examined = 10.66 cu"

① Scanned from Shell Side Only.

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Rev. 2

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VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

9.3 PERCENT VOLUME EXAMINED

Percent Volume Examined	=	100	-	Total 45° parallel vol w/No coverage	/	Total 45° parallel Exam Vol	X	100
	=	100	-	{[18.66 in²	/	15.36 in²]	X	100}
	=	100	-	69.4	=	30.6	%	

~~10.0 CALCULATE TRANSVERSE 60° EXAM COVERAGE~~ N/A

10.1 LIMITED CLOCKWISE EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		CW exam volume with NO exam coverage
_____	X	_____	X	_____	=	NA

~~10.2 LIMITED COUNTERCLOCKWISE EXAM VOLUME~~ NA

Height of obstructed volume		Width of obstructed area		Length of obstructed area		CCW exam volume with NO exam coverage
_____	X	_____	X	_____	=	NA

Total 60° transverse exam volume not examined = NA

~~10.3 PERCENT VOLUME EXAMINED~~ NA

Percent Volume Examined	=	100	-	Total 60° trans vol w/No coverage	/	Total 60° trans Exam Vol	X	100
	=	100	-	{[	/	N/A]	X	100}
						N/A	%	

11.0 CALCULATE PERCENT OF TOTAL VOLUME EXAMINED

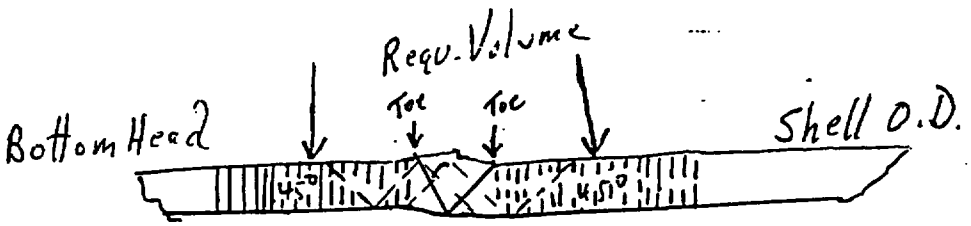
Examination Coverage	=	Sum of Exam Volumes % (step 5 thru 10)	/No. of exams ~~(6)~~ (2)
122.6/2	=	61.3 %	

~~CW exam~~ N/A

REMARKS:

Performed 70° shear wave scans from the shell side only using a 1½ V path technique. Performed 45° shear scans from the shell side only for the transverse exams. Parallel and transverse exams performed as stated above

Summary #275250



Note: 1. Sketch to Scale
2. UT Thickness Profile
3. ||||| – Base Metal Lamination Scan

H. U. Dennis
4-9-99

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VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

UNIT: 2, 10 RFO LTP SUMMARY NO.: 275250
SYSTEM: 2-RCF-3 LTP COMPONENT ID: 2-RCF-3
PREPARED BY: Hans During DATE: 3-30-99
REVIEWED BY: Danny J. Langenfeld DATE: 4-8-99

~~1.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT BEAM PLANAR FLAWS~~ NA

Exam height	X	Exam width	X	Exam length	=	Exam Volume
NA	X	NA	X	NA	=	NA

2.0 CALCULATE REQUIRED EXAM VOLUME FOR Base Metal STRAIGHT LAMINAR PLANAR FLAWS

Exam height	X	Exam width	X	Exam length	=	Exam Volume
.250"	X	~~.750"~~ 2.00"	X	43.9"	=	21.95" cu.

3.0 CALCULATE REQUIRED PARALLEL EXAM VOLUME FOR 45° ~~AND 65°~~ NA

Exam height	X	Exam width	X	Exam length	=	Exam Volume
.250"	X	1.40"	X	43.9"	=	15.36 cu."

4.0 CALCULATE REQUIRED TRANSVERSE EXAM VOLUME FOR 45° ~~AND 65°~~ NA

Exam height	X	Exam width	X	Exam length	=	Exam Volume
.250"	X	1.40"	X	43.9"	=	15.36 cu"

~~5.0 CALCULATE STRAIGHT BEAM PLANAR EXAM COVERAGE~~ NA

~~5.1 LIMITED ABOVE/CW EXAM VOLUME~~ N/A

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Volume with NO exam coverage
	X		X		=	N/A

~~5.2 LIMITED BELOW/CW EXAM VOLUME~~ N/A

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Volume with NO exam coverage
	X		X		=	N/A

Total straight beam planar exam volume not examined = N/A

SH.RA-IS.ZZ-0145-3
(Page 2 of 4)

VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

~~5.3 PERCENT VOLUME EXAMINED~~ N/A

Percent Volume Examined	=	100	-	Total 0° vol w/No coverage	/	Total 0° Exam Vol	X	100
	=	100	-	{[_____	/	_____]	X	100}
	=					N/A		%

6.0 CALCULATE STRAIGHT BEAM LAMINAR EXAM COVERAGE (BM)

6.1 LIMITED ABOVE/CW EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Volume with NO exam coverage
.250"	X	1.0"	X	20.5"	=	5.12 cu"

6.2 LIMITED BELOW/CW EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Volume with NO exam coverage
.250"	X	1.0"	X	20.5"	=	5.12 cu"

Total straight beam laminar exam volume not examined = 10.24 cu"

6.3 PERCENT VOLUME EXAMINED

Percent Volume Examined	=	100	-	Total 0° vol w/No coverage	/	Total 0° Exam Vol	X	100
	=	100	-	{[10.24 cu"	/	21.95 cu"	X	100}
	=	100	-	46.6		53.4		%

7.0 CALCULATE PARALLEL 45° EXAM COVERAGE

7.1 LIMITED ABOVE/CW EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Above/CW exam volume with NO exam coverage
.250"	X	1.40"	X	20.5"	=	7.2 cu"

7.2 LIMITED BELOW/CCW EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Below/CCW exam volume with NO exam coverage
.250"	X	1.40"	X	20.5"	=	7.2 cu."

Total 45° parallel exam volume not examined = 7.2 cu"

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VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

7.3 PERCENT VOLUME EXAMINED

Percent Volume Examined	=	100	-	Total 45° parallel vol w/No coverage	/	Total 45° parallel Exam Vol	X	100
	=	100	-	{[7.2 in³	/	15.36 in³	X	100}
	=	100	-	46.8		53.2		%

~~8.0 CALCULATE PARALLEL 60° EXAM COVERAGE~~ N/A

8.1 LIMITED ABOVE/CW EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Above/CW exam volume with NO exam coverage
NA	X	NA	X	NA	=	NA

8.2 LIMITED BELOW/CCW EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Below/CCW exam volume with NO exam coverage
NA	X	NA	X	NA	=	NA

Total 60° parallel exam volume not examined = NA

8.3 PERCENT VOLUME EXAMINED

Percent Volume Examined	=	100	-	Total 60° parallel vol w/No coverage	/	Total 60° par. Exam Vol	X	100
	=	100	-	{[N/A	/	N/A]	X	100}
						NA		%

9.0 CALCULATE TRANSVERSE 45° EXAM COVERAGE

9.1 LIMITED CLOCKWISE EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		CW exam volume with NO exam coverage
.250"	X	1.40"	X	20.5"	=	7.2 in³

9.2 LIMITED COUNTERCLOCKWISE EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		CCW exam volume with NO exam coverage
.250"	X	1.40"	X	20.5"	=	7.2 in³

Total 45° transverse exam volume not examined = 7.2 in³

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(Page 4 of 4)

VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

9.3 PERCENT VOLUME EXAMINED

Percent Volume Examined	=	100	-	Total 45° ~~parallel~~ transverse vol w/No coverage	/	Total 45° ~~parallel~~ transverse vol Exam Vol	X	100
	=	100	-	{[7.2 cu.in.	/	15.36 cu.in.	X	100}
	=	100	-	46.8		53.2 %		

~~10.0 CALCULATE TRANSVERSE 60° EXAM COVERAGE~~

10.1 LIMITED CLOCKWISE EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		CW exam volume with NO exam coverage
N/A	X	N/A	X	N/A	=	NA

~~10.2 LIMITED COUNTERCLOCKWISE EXAM VOLUME~~

Height of obstructed volume		Width of obstructed area		Length of obstructed area		CCW exam volume with NO exam coverage
N/A	X	N/A	X	N/A	=	NA

Total 60° transverse exam volume not examined = NA

~~10.3 PERCENT VOLUME EXAMINED~~

Percent Volume Examined	=	100	-	Total 60° trans vol w/No coverage	/	Total 60° trans Exam Vol	X	100
	=	100	-	{[N/A	/	N/A]	X	100}
						NA %		

11.0 CALCULATE PERCENT OF TOTAL VOLUME EXAMINED

Examination Coverage	=	Sum of Exam Volumes % (step 5 thru 10)	/No. of exams ~~(6)~~ 3
159.8/3	=	53.3 %	

~~CW exam~~ NA

REMARKS:
Performed 45° shear wave scans from the shell and head side using a 1½ V-Path technique. Also examined the Base Metal with a 0° longitudinal scan as stated above.

69° Shear Wave

//////// = Not Covered

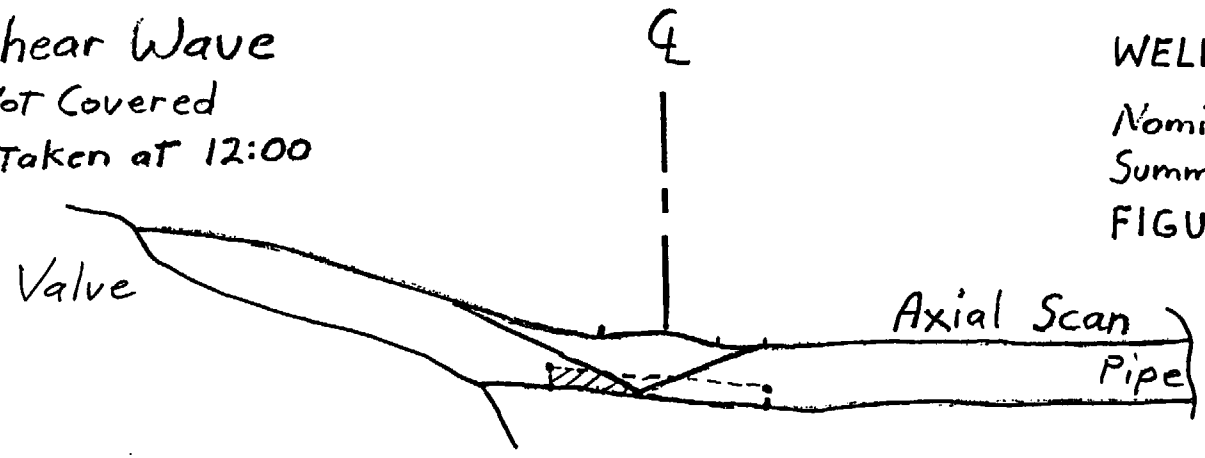
Profile Taken at 12:00

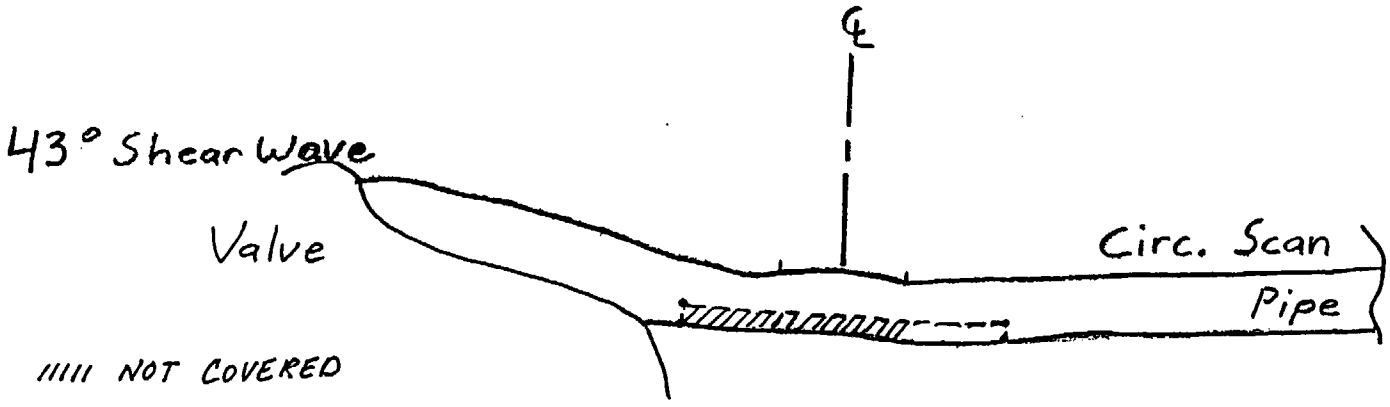
WELD: 3-CV-2255-9

Nominal OD = 3.0"

Summary # 710140

FIGURE No.: C5.21.001





Flow

UT COVERAGE PLOT

REVIEWED & ACCEPTED
FACTORY MUTUAL
ENGINEERING ASSOCIATION
5-27-99
AUTH. NUCLEAR INSERVICE INSP. DATE

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FRAMATOME TECHNOLOGIES

VOLUMETRIC PIPING EXAMINATION COVERAGE REPORT

CUSTOMER: PSE&G SALEM UNIT-2, 10 RFO	SYSTEM: CHEMICAL & VOLUME CONTROL
SUMMARY NO.: 710140	COMPONENT ID: 3-CV-2255-9 VALVE 2CV70 TO PIPE

VOLUMETRIC PIPING EXAMINATIONS

1.0 AXIAL ULTRASONIC EXAMINATIONS (Indications Parallel to the Weld)

1.1	Compute Examination Volume (Height x Width x Length) = Vt_1	0.12" x 1.125" x 8.73" = 1.18 cu. in.
1.2	Compute Volume Not Examined on Upstream Side of Weld = A	1.18 cu. in. (Beam Direction-US)
1.3	Compute Upstream Limitation Percentage $(A \div Vt_1) \times 100 = Z1$	100 % (Beam Direction-US)
1.4	Compute Volume Not Examined on Downstream Side of Weld = B	0.12" x 0.40" x 8.73" = 0.42 cu. in.
1.5	Compute Downstream Limitation Percentage $(B \div Vt_1) \times 100 = Z2$	0.42 in.^{3} ÷ 1.18 in.^{3} x 100 = 35.6 % (Beam Direction-DS)

2.0 CIRCUMFERENTIAL ULTRASONIC EXAMINATIONS (Indications Perpendicular to the Weld)

2.1	Compute Examination Volume (Height x Width x Length) = Vt_2	0.12" x 1.625" x 8.73" = 1.70 cu. in.
2.2	Compute Volume Not Examined in the Clock Wise Direction = C	0.12" x 1.125" x 8.73" = 1.18 cu. in.
2.3	Compute Clock Wise Limitation Percentage $(C \div Vt_2) \times 100 = Z3$	1.18 in.^{3} ÷ 1.70 in.^{3} x 100 = 69.4%
2.4	Compute Volume Not Examined in the Counter CW Direction = D	0.12" x 1.125" x 8.73" = 1.18 cu. in.
2.5	Compute Counter CW Limitation Percentage $(D \div Vt_2) \times 100 = Z4$	1.18 in.^{3} ÷ 1.70 in.^{3} x 100 = 69.4%

3.0 TOTAL EXAMINATION COVERAGE OBTAINED

3.1	Compute Total Limitation Percentage (Z1 + Z2 + Z3 + Z4) / 4 = L	**68.6 %**
3.2	Compute Total Coverage 100 – L	**31.4 %**

LIMITATION EXPLANATION/REMARKS

Limitation exists on the Valve side of the weld for the circumferential and axial examinations. See the attached UT Coverage Plot. The 69 degree shear wave transducer was scanned over the required volume from the pipe side of the weld only (one-sided examination), and 32.5 percent coverage was obtained in the downstream axial direction. No volumetric (100% limitation) coverage was obtained from the upstream axial examination due to the Valve configuration. The exam volume was computed using actual OD pipe sizes and schedule wall thicknesses. The Length value is computed using the diameter ~~at the inner~~ one third of the pipe wall thickness.

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PREPARED BY:	DATE:	REVIEWER:	DATE:
MW KEY	5/19/99	D. J. Zangarfeld	05/17/99

5/27/99 FACTORY MUTUAL ENGINEERING ASSOCIATION

SALEM Unit 2

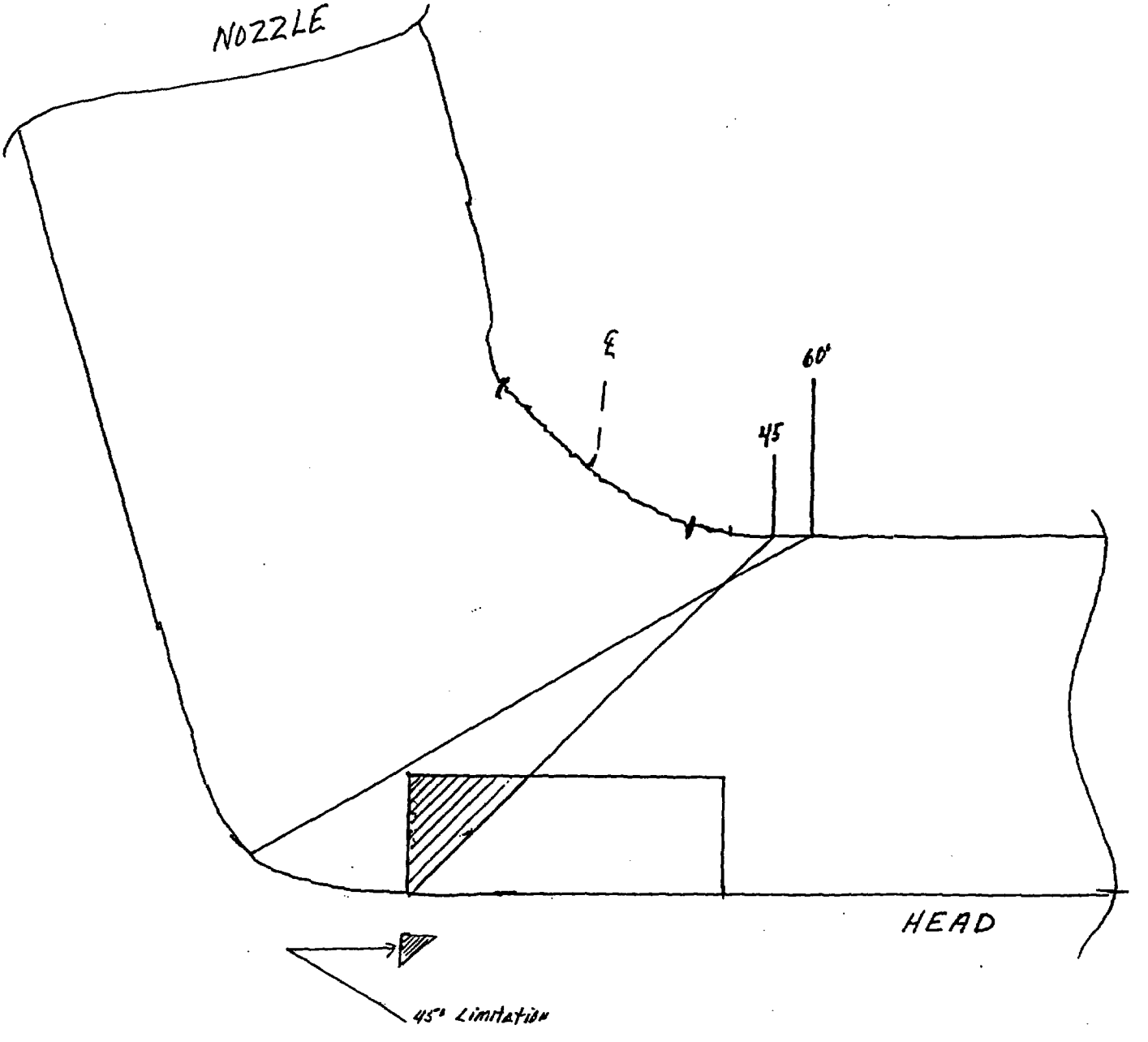
2-BIT-1 SUMMARY # 715140

UT COVERAGE PLOT

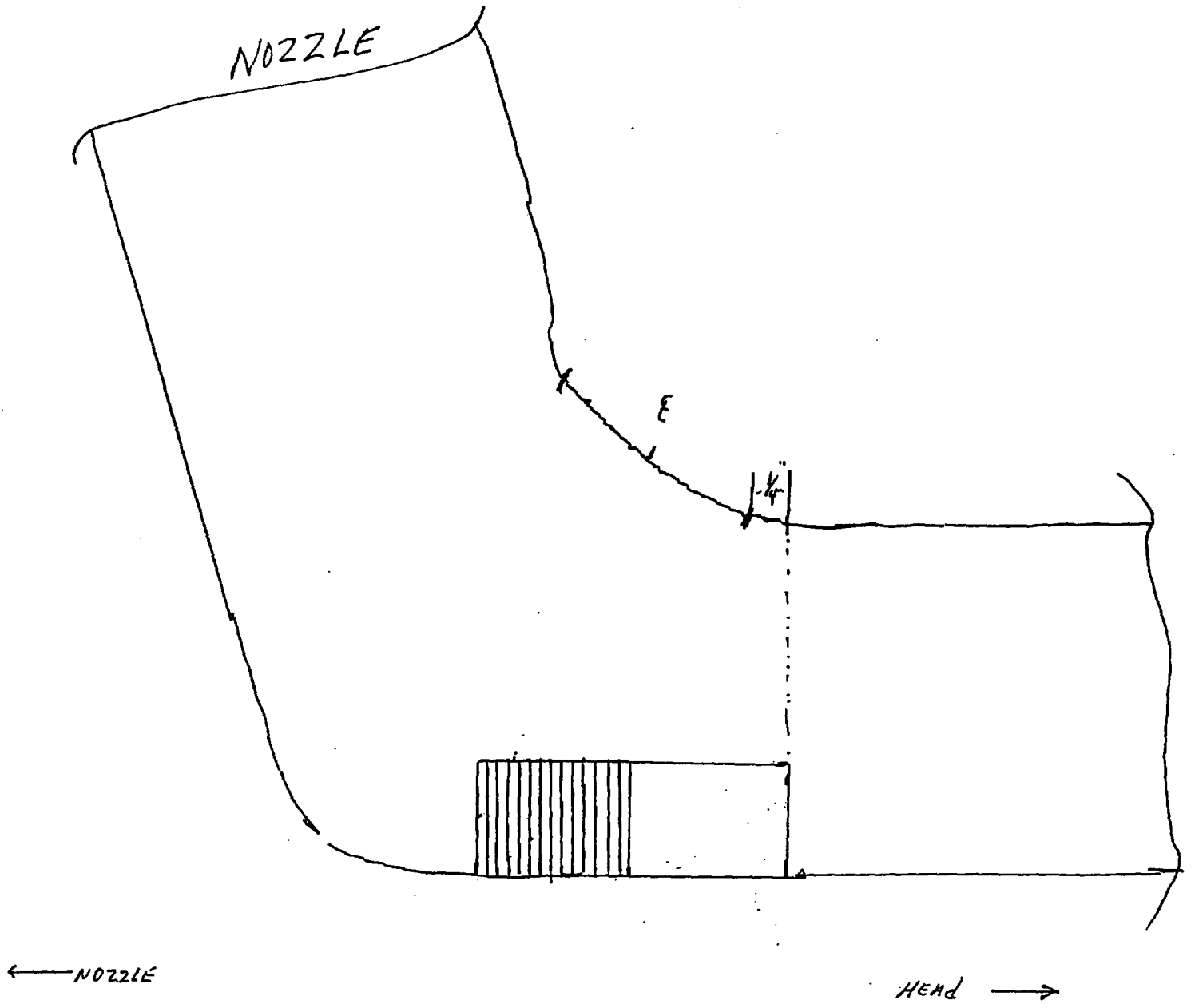
BORON INJECTION TANK NOZZLE

TO LOWER HEAD

AXIAL SCANS



SALEM UNIT 2
2-BIT-1
SUMMARY # 715140
UT COVERAGE PLOT
CIRC SCANS AND 0°
BORON INJECTION TANK NOZZLE
TO LOWER HEAD



SH.RA-IS.ZZ-0145-3
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VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

UNIT: SALEM UNIT 2 10RFO LTP SUMMARY NO.: 715140

SYSTEM: 2 BIT-1 LTP COMPONENT ID: NOZZLE TO LOWER HEAD WELD

PREPARED BY: DAVID GARCIA DATE: 5-14-99

REVIEWED BY: Danny J. Langfelt DATE: 5-15-99

1.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT BEAM PLANAR FLAWS

Exam height	X	Exam width	X	Exam length	=	Exam Volume
.73	X	2.0	X	24.1	=	35.19

2.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT LAMINAR PLANAR FLAWS PERFORMED LAMINATION SCAN BUT NO VOLUMETRIC COVERAGE CALCULATED.

Exam height	X	Exam width	X	Exam length	=	Exam Volume
N/A	X	N/A	X	N/A	=	N/A

3.0 CALCULATE REQUIRED PARALLEL EXAM VOLUME FOR 45° AND 65°

Exam height	X	Exam width	X	Exam length	=	Exam Volume
.73	X	2.0	X	24.1	=	35.19

4.0 CALCULATE REQUIRED TRANSVERSE EXAM VOLUME FOR 45° AND 65°

Exam height	X	Exam width	X	Exam length	=	Exam Volume
.73	X	2.0	X	24.1	=	35.19

5.0 CALCULATE STRAIGHT BEAM PLANAR EXAM COVERAGE

5.1 LIMITED ABOVE/CW EXAM VOLUME

Height of obstructed volume	X	Width of obstructed area	X	Length of obstructed area	=	Volume with NO exam coverage
0	X	0	X	0	=	0

5.2 LIMITED BELOW/CW EXAM VOLUME

Height of obstructed volume	X	Width of obstructed area	X	Length of obstructed area	=	Volume with NO exam coverage
.73	X	1.75	X	24.1	=	30.78

Total straight beam planar exam volume not examined = 30.78

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VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

5.3 PERCENT VOLUME EXAMINED

Percent Volume Examined	=	100	-	Total 0° vol w/No coverage	/	Total 0° Exam Vol	X	100
	=	100	-	{[30.78	/	35.19]	X	100}
	=	100	-	87.46		12.5		%

6.0 CALCULATE STRAIGHT BEAM LAMINAR EXAM COVERAGE

6.1 LIMITED ABOVE/CW EXAM VOLUME NO COVERAGE CALCULATED

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Volume with NO exam coverage
N/A	X	N/A	X	N/A	=	N/A

6.2 LIMITED BELOW/CW EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Volume with NO exam coverage
N/A	X	N/A	X	N/A	=	N/A

Total straight beam laminar exam volume not examined = N/A

6.3 PERCENT VOLUME EXAMINED

Percent Volume Examined	=	100	-	Total 0° vol w/No coverage	/	Total 0° Exam Vol	X	100
	=	100	-	{[N/A	/	N/A]	X	100}
						N/A		%

7.0 CALCULATE PARALLEL 45° EXAM COVERAGE

7.1 LIMITED ABOVE/CW EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Above/CW exam volume with NO exam coverage
.73	X	.4	X	24.1	=	7.03

7.2 LIMITED BELOW/CCW EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Below/CCW exam volume with NO exam coverage
.73	X	2.0	X	24.1	=	35.19

Total 45° parallel exam volume not examined = 42.22

ATTACHMENT 1

SH.RA-IS.ZZ-0145-3
(Page 3 of 4)

VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

7.3 PERCENT VOLUME EXAMINED

Percent Volume Examined = 100 - Total 45° parallel vol w/No coverage / Total 45° parallel Exam Vol X 100

= 100 - {[42.22 / 70.38] X 100}

= 100 - 60 = 40 %

8.0 CALCULATE PARALLEL 60° EXAM COVERAGE

8.1 LIMITED ABOVE/CW EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Above/CW exam volume with NO exam coverage
0	X	0	X	0	=	0 HEAD

8.2 LIMITED BELOW/CCW EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Below/CCW exam volume with NO exam coverage
.73	X	2.0	X	24.1	=	35.19 NOZZLE

Total 60° parallel exam volume not examined = 35.19

8.3 PERCENT VOLUME EXAMINED

Percent Volume Examined = 100 - Total 60° parallel vol w/No coverage / Total 60° par. Exam Vol X 100

= 100 - {[35.19 / 70.38] X 100}

= 50 %

9.0 CALCULATE TRANSVERSE 45° EXAM COVERAGE

9.1 LIMITED CLOCKWISE EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		CW exam volume with NO exam coverage
.73	X	2.0	X	24.1	=	35.19

9.2 LIMITED COUNTERCLOCKWISE EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		CCW exam volume with NO exam coverage
.73	X	1.0	X	24.1	=	17.59

Total 45° transverse exam volume not examined = 52.78

ATTACHMENT 1

SH.RA-IS.ZZ-0145-3
(Page 4 of 4)

VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

9.3 PERCENT VOLUME EXAMINED

Percent Volume Examined = 100 - Total 45° parallel vol w/No coverage / Total 45° parallel Exam Vol X 100

= 100 - {[52.78 / 70.38] X 100}

= 100 - 75 = 25 %

10.0 CALCULATE TRANSVERSE 60° EXAM COVERAGE

10.1 LIMITED CLOCKWISE EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		CW exam volume with NO exam coverage
.73	X	2.0	X	24.1	=	35.19

10.2 LIMITED COUNTERCLOCKWISE EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		CCW exam volume with NO exam coverage
.73	X	1.0	X	24.1	=	17.59

Total 60° transverse exam volume not examined = 52.78

10.3 PERCENT VOLUME EXAMINED

Percent Volume Examined = 100 - Total 60° trans vol w/No coverage / Total 60° trans Exam Vol X 100

= 100 - {[52.78 / 70.38] X 100}

100 - 75 = 25 %

11.0 CALCULATE PERCENT OF TOTAL VOLUME EXAMINED

Examination Coverage = Sum of Exam Volumes % (step 5 thru 10) 152.5 /No. of exams ~~(6)~~ (5)

= 30.5 %

AGL 5-15-99

~~CW exam~~

REMARKS:

NO ZERO DEGREE LAMINATION SCAN CALCULATED.

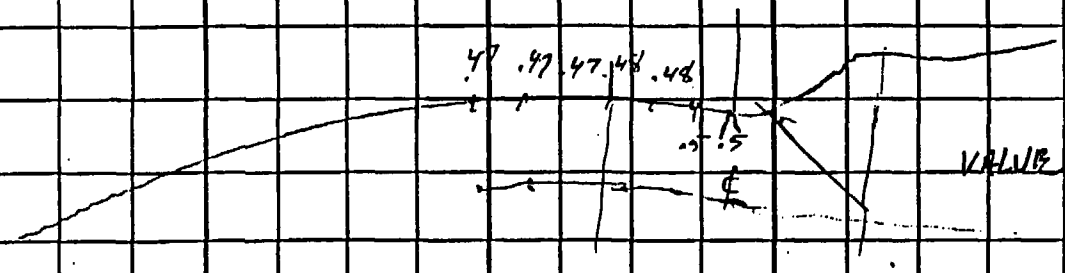
Sw. R.I. STRAIGHT BEAM LAMINATION EXAMINATION RECORD

PROJECT No.	SITE:	DATE: (DAY — MON. — YR.)	TIME: (24 - HR. CLOCK)	SHEET No.
17-2259	Salem, Unit 2	21 SEP 88	SHEET STARTED 1132 / SHEET ENDED 1139	180134

EXAMINATION AREA: (SYSTEM / COMPONENT)	(LINE / SUBASSEMBLY)	(IDENTIFICATION)	L_0 LOCATION	W_0 LOCATION
CHEMICAL & VOL. CONTROL	3-CV-1241	13	1	℄ WELD

EXAMINER:	SNT LEVEL	PROCEDURE	CALIBRATION SHEET (S)	MEASURED THICKNESS UP	℄	DOWN	CROWN HEIGHT	ATTENUATION UP	DOWN	WELD TYPE (—FLOW—)
C. MINOR	II	No. 600-3	250092	N/A	.5	.47	FLUSH	N/A	8dB	VALVE → ELBOW
EXAMINER: M. WARZYNIAK	SNT LEVEL I	REV 62 DAV 5					CROWN WIDTH 9 1/16			WELD LENGTH 11 1/16

IND No.	% LOSS OF BW	IND AMP % F.S.	POSITION 1 L1	W1	W2	MP	POSITION L	W1	W2	MP	POSITION L	W1	W2	MP	POSITION 2 L2	W1	W2	MP	SEARCH UNIT LOCATION	REMARKS	IN
			NO RECORDABLE INDICATIONS																ON		CA



REMARKS: 168

ANI/AI REVIEW INITIAL [illegible] DATE 9-28-88

PSEG INSPECTION SERVICES Reviewed and Approved [illegible] 9/28/88 N.D.E. SUPERVISOR

EXAMINATION AREA LIMITATIONS: (IF NONE, SO STATE):

NO EXAMINATION UPSTREAM TO VALVE CONFIGURATION CAM

REVIEWED BY:	SNT LEVEL:	DATE	PAGE 1 OF 1
[signature]	III	22 SEP 88	

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FRAMATOME TECHNOLOGIES

VOLUMETRIC PIPING EXAMINATION COVERAGE REPORT

CUSTOMER: SALEM 2, RFO 11	**SYSTEM:** CHEMICAL AND VOLUME CONTROL SYSTEM
SUMMARY NO: 034500	**COMPONENT ID:** 3-CV-1241-13

VOLUMETRIC PIPING EXAMINATIONS

1.0 AXIAL ULTRASONIC EXAMINATIONS - Upstream (US) and Downstream (DS)

1.1 Compute Required Exam Volume (#Angles X Height X Width X Length =Vt1)	1 x 0.15 x 1.15 x 8.73 =1.51	cu.
1.2 Volume Not Examined with Ultrasonic Beam Directed US = A	0 x 0.15 x 1.15 x 8.73 =0.00	cu.
1.3 Compute Upstream Limitation Percentage {(A / Vt1) X 100} = Z1	0.00%	
1.4 Volume Not Examined with Ultrasonic Beam Directed DS = B	1 x 0.15 x 1.15 x 8.73 =1.51	cu.
1.5 Compute Downstream Limitation Percentage {(B / Vt1) X 100} = Z2	100.000%	

2.0 CIRCUMFERENTIAL ULTRASONIC EXAMINATIONS (Clockwise and Counterclockwise)

2.1 Compute Required Exam Volume (#Angles X Height X Width X Length =Vt2)	1 x 0.15 x 1.15 x 8.73 =1.51	cu.
2.2 Compute Volume Not Examined in the Clockwise Direction = C	0 x 0.15 x 1.15 x 8.73 =0.00	cu.
2.3 Compute Clockwise Limitation Percentage (C / Vt2) X 100 = Z3	0.00%	
2.4 Compute Volume Not Examined in the Counter CW Direction = D	0 x 0.15 x 1.15 x 8.73 =0.00	cu.
2.5 Compute Counter CW Limitation Percentage (D / Vt2) X 100 = Z4	0.00%	

3.0 TOTAL EXAMINATION COVERAGE OBTAINED

3.1 Compute Total Limitation Percentage Z1+Z2+Z3+Z4/4 = L	25.00%
3.2 Compute Total Coverage (100 - L)	75.00%

LIMITATION EXPLANATION / REMARKS

ONE SIDED EXAMINATION FROM ELBOW SIDE ON AXIAL SCAN DUE TO CONFIGURATION OF VALVE.

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PREPARED BY:	DATE:	REVIEWER:	DATE:
	10/13/2000		10/14/00

Page 6 of 6

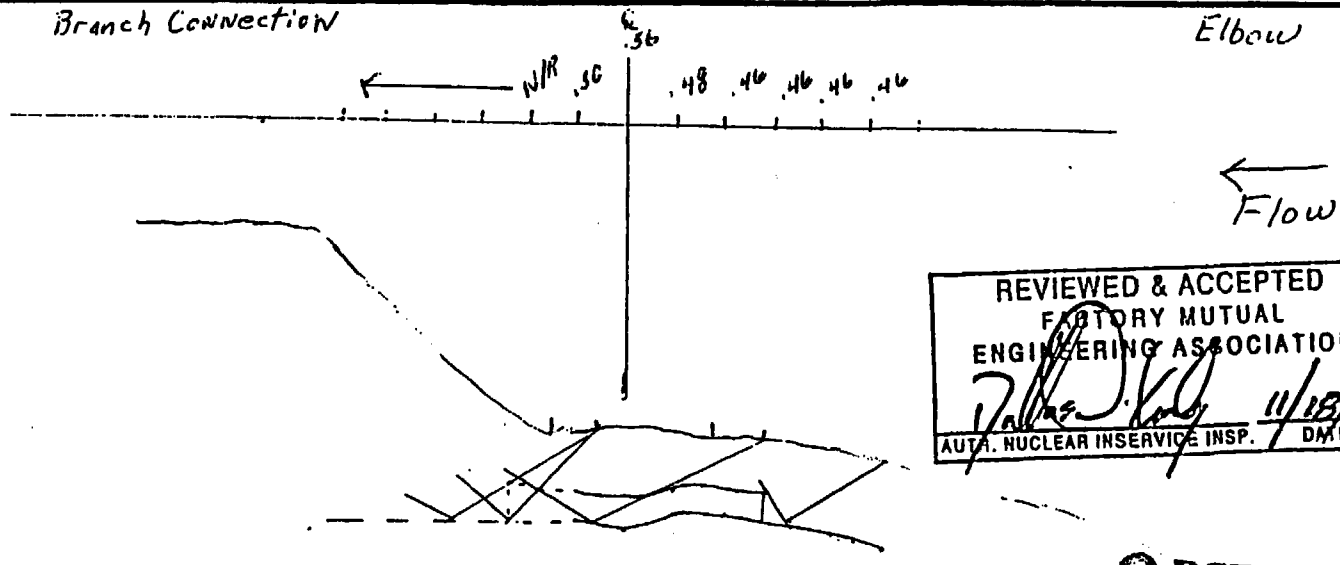
034600

SwRI PROFILE AND THICKNESS INFORMATION RECORD

PROJECT NO:	SITE:	DATE: (DAY - MONTH - YEAR)	TIME (24 HR. CLOCK)		SHEET NO:
17-6399	Salem Generating Station, Unit 2	4 Nov 94	INT. 1302	FINAL 1527	135038

EXAMINER	SNT LEVEL	THK. MEAS. REQ'D BY PROCEDURE	INSTRUMENT:	SERIAL NO:	COMPONENT ID:
W. Angell	II	No. SAM2-UT49 REV 0 *	SONIC MARK I ☐ OTHER Sonic 136 ☑	859K	3-CV-1241-14
EXAMINER	SNT LEVEL	CHG 1	COUPLANT:		REFERENCE BLK NO:
T. Jackson	II	ICN ☒ N/A	GLYCERINE ☐ WATER ☐ OTHER (SPECIFY) Sonotrace 40 Batch No 94014		SS-DC-31

SEARCH UNITS	
BRAND	SwRI
SERIAL NO	3008
SIZE	3/8
FREQ. (MHz)	2.25
INSTRUMENT SETTINGS	
SCREEN SIZE	1.00
DELAY	442
MATL. CAL. (Vel)	.222
RANGE	1.00
REP. RATE	4KHz
JACK USED	RCV/XMT
TRANS MODE	Dual



REVIEWED & ACCEPTED
FACTORY MUTUAL
ENGINEERING ASSOCIATION
AUTH. NUCLEAR INSERVICE INSP. DATE 11/18/94

PSEG
INSPECTION SERVICES
Reviewed and Approved
11/11/94
N.D.E. SUPERVISOR

* VS2-RA-IS-ZZ-0088 Rev. 00 WA

45 ° Search Unit chosen for coverage using 2/8, 6/8 & 10/8 nodes.
60 ° Search Unit chosen for coverage using 2/8, 6/8 & 10/8 nodes.

NAME:	SNT LEVEL:
W. Angell	II

REVIEWED BY:	SNT LEVEL:	DATE:
D.K. Arya	II	07 Nov 94

SWRI FORM No. NDTR 17-135 (REV. 6/90)

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FRAMATOME TECHNOLOGIES

VOLUMETRIC PIPING EXAMINATION COVERAGE REPORT

CUSTOMER: SALEM 2, RFO 11	**SYSTEM:** CHEMICAL AND VOLUME CONTROL SYSTEM
SUMMARY NO: 034600	**COMPONENT ID:** 3-CV-1241-14

VOLUMETRIC PIPING EXAMINATIONS

1.0 AXIAL ULTRASONIC EXAMINATIONS - Upstream (US) and Downstream (DS)

1.1 Compute Required Exam Volume (#Angles X Height X Width X Length =Vt1)	1 x 0.15 x 1.15 x 8.73 =1.51	cu.
1.2 Volume Not Examined with Ultrasonic Beam Directed US = A	0 x 0.00 x 0.00 x 0.00 =0.00	cu.
1.3 Compute Upstream Limitation Percentage {(A / Vt1) X 100} = Z1	0.00%	
1.4 Volume Not Examined with Ultrasonic Beam Directed DS = B	1 x 0.15 x 1.15 x 8.73 =1.51	cu.
1.5 Compute Downstream Limitation Percentage {(B / Vt1) X 100} = Z2	100.000%	

2.0 CIRCUMFERENTIAL ULTRASONIC EXAMINATIONS (Clockwise and Counterclockwise)

2.1 Compute Required Exam Volume (#Angles X Height X Width X Length =Vt2)	1 x 0.15 x 1.15 x 8.73 =1.51	cu.
2.2 Compute Volume Not Examined in the Clockwise Direction = C	0 x 0.15 x 1.15 x 8.73 =0.00	cu.
2.3 Compute Clockwise Limitation Percentage (C / Vt2) X 100 = Z3	0.00%	
2.4 Compute Volume Not Examined in the Counter CW Direction = D	0 x 0.15 x 1.15 x 8.73 =0.00	cu.
2.5 Compute Counter CW Limitation Percentage (D / Vt2) X 100 = Z4	0.00%	

3.0 TOTAL EXAMINATION COVERAGE OBTAINED

3.1 Compute Total Limitation Percentage Z1+Z2+Z3+Z4/4 = L	25.00%
3.2 Compute Total Coverage (100 - L)	75.00%

LIMITATION EXPLANATION / REMARKS

ONE SIDED EXAMINATION FROM ELBOW SIDE ON AXIAL SCAN DUE TO CONFIGURATION OF BRANCH CONNECTION.

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PREPARED BY: [signature] DATE: 10/13/2000

REVIEWER: Bob Kellenwell DATE: 10/14/00

FRAMATOME TECHNOLOGIES

VOLUMETRIC PIPING EXAMINATION COVERAGE REPORT

CUSTOMER: SALEM 2, RFO 11	SYSTEM: CHEMICAL AND VOLUME CONTROL SYSTEM
SUMMARY NO: 036000	COMPONENT ID: 3-CV-1231-14

VOLUMETRIC PIPING EXAMINATIONS

1.0 AXIAL ULTRASONIC EXAMINATIONS - Upstream (US) and Downstream (DS)

1.1 Compute Required Exam Volume (#Angles X Height X Width X Length =Vt1)	1 x 0.15 x 1.00 x 10.99 =1.65	cu.
1.2 Volume Not Examined with Ultrasonic Beam Directed US = A	1 x 0.15 x 1.00 x 10.99 =1.65	cu.
1.3 Compute Upstream Limitation Percentage {(A / Vt1) X 100} = Z1	100.00%	
1.4 Volume Not Examined with Ultrasonic Beam Directed DS = B	0 x 0.15 x 1.00 x 10.99 =0.00	cu.
1.5 Compute Downstream Limitation Percentage {(B / Vt1) X 100} = Z2	0.000%	

2.0 CIRCUMFERENTIAL ULTRASONIC EXAMINATIONS (Clockwise and Counterclockwise)

2.1 Compute Required Exam Volume (#Angles X Height X Width X Length =Vt2)	1 x 0.15 x 1.00 x 10.99 =1.65	cu.
2.2 Compute Volume Not Examined in the Clockwise Direction = C	0 x 0.15 x 1.00 x 10.99 =0.00	cu.
2.3 Compute Clockwise Limitation Percentage (C / Vt2) X 100 = Z3	0.00%	
2.4 Compute Volume Not Examined in the Counter CW Direction = D	0 x 0.15 x 1.00 x 10.99 =0.00	cu.
2.5 Compute Counter CW Limitation Percentage (D / Vt2) X 100 = Z4	0.00%	

3.0 TOTAL EXAMINATION COVERAGE OBTAINED

3.1 Compute Total Limitation Percentage Z1+Z2+Z3+Z4/4 = L	25.00%
3.2 Compute Total Coverage (100 - L)	75.00%

LIMITATION EXPLANATION / REMARKS

Limitation due to valve 2CV274.

FACTORY MUTUAL INSURANCE COMPANY
10-26-00

172

PREPARED BY:	DATE:	REVIEWER:	DATE:
	10/13/2000	Bob Kellerhall	10/13/00

FRAMATOME TECHNOLOGIES

PROFILE AND THICKNESS

Exam Date: 10/14/00	**Summary No.:** 084400
Site: Salem Unit 2, RFO 11	**Examination Method:** UT
System: REACTOR COOLANT SYSTEM	**Identification:** 27.5-RC-1230-1

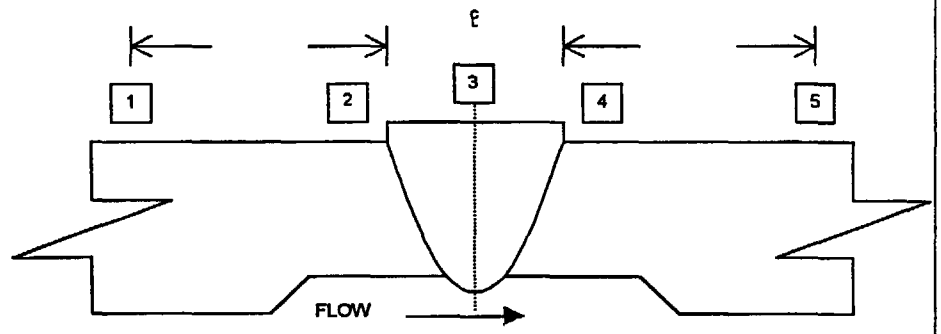
POSITION	0	90	180	270
1	•			
2	•			
3	•			
4				
5				

CROWN HEIGHT: _____

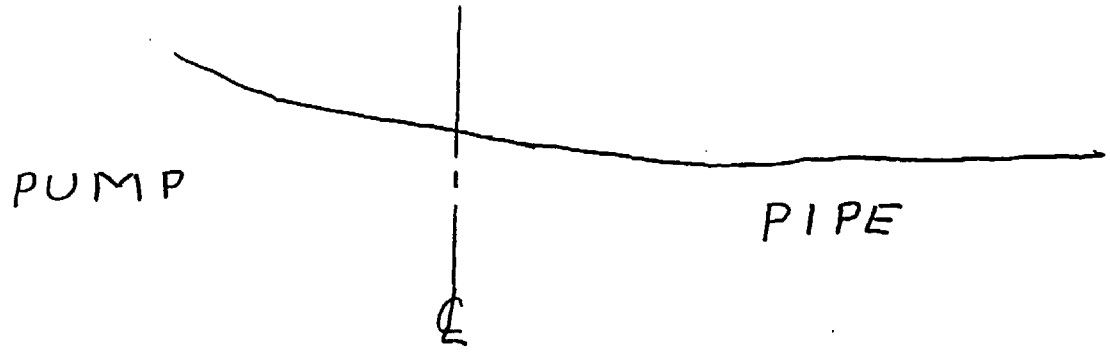
CROWN WIDTH: _____

NOM DIAMETER: _____

WELD LENGTH: _____



THICKNESS FROM 1978 EXAM



FACTORY MUTUAL INSURANCE COMPANY

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Pg. 6 of 6

Prepared By	Date	Reviewed By	Date	Utility Review By	Date
C R Trenwell	10-14-00	Bob Kellerman	10/19/00	W Denlinger	10-24-00

FRAMATOME TECHNOLOGIES

VOLUMETRIC PIPING EXAMINATION COVERAGE REPORT

CUSTOMER: SALEM 2, RFO 11	SYSTEM: REACTOR COOLANT SYSTEM
SUMMARY NO: 084400	COMPONENT ID: 27.5-RC-1230-1

VOLUMETRIC PIPING EXAMINATIONS

1.0 AXIAL ULTRASONIC EXAMINATIONS - Upstream (US) and Downstream (DS)

1.1 Compute Required Exam Volume (#Angles X Height X Width X Length =Vt1)	1 x 0.80 x 2.88 x 86.40 =199.07	cu.
1.2 Volume Not Examined with Ultrasonic Beam Directed US = A	x x x =104.14	cu.
1.3 Compute Upstream Limitation Percentage {(A / Vt1) X 100} = Z1	52.31%	
1.4 Volume Not Examined with Ultrasonic Beam Directed DS = B	1 x 0.80 x 1.44 x 86.40 =99.53	cu.
1.5 Compute Downstream Limitation Percentage {(B / Vt1) X 100} = Z2	50.000%	

2.0 CIRCUMFERENTIAL ULTRASONIC EXAMINATIONS (Clockwise and Counterclockwise)

2.1 Compute Required Exam Volume (#Angles X Height X Width X Length =Vt2)	1 x 0.80 x 2.88 x 86.40 =199.07	cu.
2.2 Compute Volume Not Examined in the Clockwise Direction = C	1 x 0.80 x 1.44 x 86.40 =99.53	cu.
2.3 Compute Clockwise Limitation Percentage (C / Vt2) X 100 = Z3	50.00%	
2.4 Compute Volume Not Examined in the Counter CW Direction = D	1 x 0.80 x 1.44 x 86.40 =99.53	cu.
2.5 Compute Counter CW Limitation Percentage (D / Vt2) X 100 = Z4	50.00%	

3.0 TOTAL EXAMINATION COVERAGE OBTAINED

3.1 Compute Total Limitation Percentage Z1+Z2+Z3+Z4/4 = L	50.58%
3.2 Compute Total Coverage (100 - L)	49.42%

LIMITATION EXPLANATION / REMARKS

1.2: VOLUME LIMITED DUE TO BRANCH CONNECTION

1 * 0.8 * 1.44 * 4 =4.61

VOLUME LIMITED ON FAR SIDE OF WELD

1 * 0.8 * 1.44 * 86.4 =99.53

PREPARED BY: [signature]	DATE: 10/14/2K	REVIEWER: Bob Kellenkoll	DATE: 10/19/00

FRAMATOME TECHNOLOGIES

PROFILE AND THICKNESS

Exam Date: 10/18/00	**Summary No.:** 174300
Site: Salem Unit 2, RFO 11	**Examination Method:** UT
System: RESIDUAL HEAT REMOVAL SYSTEM	**Identification:** 6-RH-1231-16

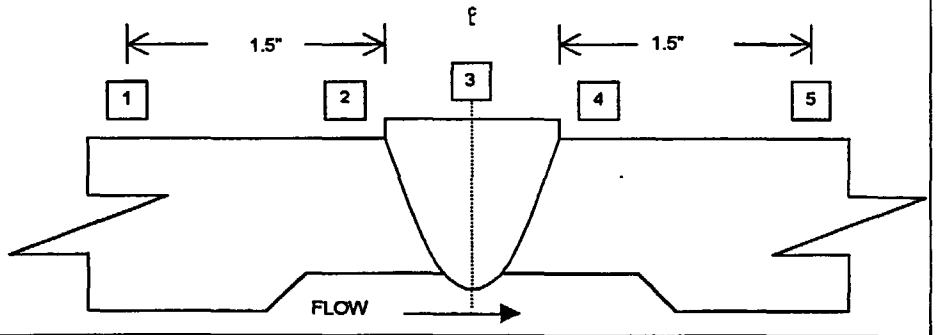
POSITION	0	90	180	270
1				
2				
3				
4				
5				

CROWN HEIGHT: _____

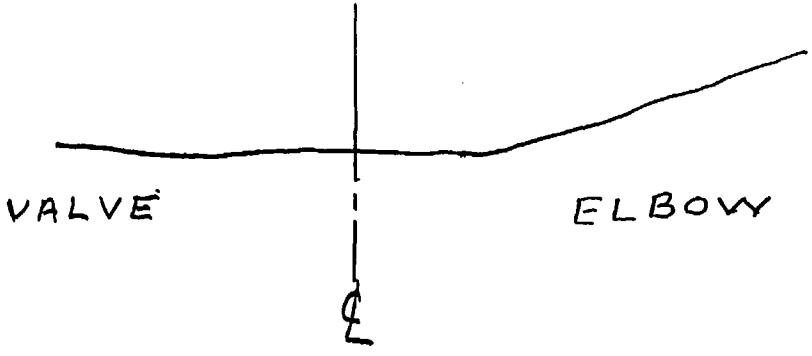
CROWN WIDTH: _____

NOM DIAMETER _____

WELD LENGTH: _____



THICKNESS FROM 7B DATA



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Pg. 6 of 6

C R Greenwell 10-18-00	Bob Kellenhall 10/19/00	W Dearinger 10-23-00
Prepared By Date	Reviewed By Date	Utility Review By Date

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FRAMATOME TECHNOLOGIES

VOLUMETRIC PIPING EXAMINATION COVERAGE REPORT

CUSTOMER: SALEM 2, RFO 11	**SYSTEM:** RESIDUAL HEAT REMOVAL SYSTEM
SUMMARY NO: 174300	**COMPONENT ID:** 6-RH-1231-16

VOLUMETRIC PIPING EXAMINATIONS

1.0 AXIAL ULTRASONIC EXAMINATIONS - Upstream (US) and Downstream (DS)

1.1 Compute Required Exam Volume (#Angles X Height X Width X Length =Vt1)	1 x 0.33 x 1.75 x 21.50 =12.42	cu.
1.2 Volume Not Examined with Ultrasonic Beam Directed US = A	1 x 0.33 x 0.88 x 21.50 =6.24	cu.
1.3 Compute Upstream Limitation Percentage {(A / Vt1) X 100} = Z1	50.29%	
1.4 Volume Not Examined with Ultrasonic Beam Directed DS = B	1 x 0.33 x 0.88 x 21.50 =6.24	cu.
1.5 Compute Downstream Limitation Percentage {(B / Vt1) X 100} = Z2	50.286%	

2.0 CIRCUMFERENTIAL ULTRASONIC EXAMINATIONS (Clockwise and Counterclockwise)

2.1 Compute Required Exam Volume (#Angles X Height X Width X Length =Vt2)	1 x 0.33 x 1.75 x 21.50 =12.42	cu.
2.2 Compute Volume Not Examined in the Clockwise Direction = C	1 x 0.33 x 0.88 x 21.50 =6.24	cu.
2.3 Compute Clockwise Limitation Percentage (C / Vt2) X 100 = Z3	50.29%	
2.4 Compute Volume Not Examined in the Counter CW Direction = D	1 x 0.33 x 0.88 x 21.50 =6.24	cu.
2.5 Compute Counter CW Limitation Percentage (D / Vt2) X 100 = Z4	50.29%	

3.0 TOTAL EXAMINATION COVERAGE OBTAINED

3.1 Compute Total Limitation Percentage Z1+Z2+Z3+Z4/4 = L	50.29%
3.2 Compute Total Coverage (100 - L)	49.71%

LIMITATION EXPLANATION / REMARKS

SINGLE SIDED EXAMINATION (ELBOW TO VALVE).

PREPARED BY: CE Mat	DATE: 10/18/2K	REVIEWER: Bob Kellerhall	DATE: 10/19/00

FRAMATOME TECHNOLOGIES

PROFILE AND THICKNESS

Exam Date: 10/14/00

Summary No.: 275210

Site: Salem Unit 2, RFO 11

Examination Method: UT

System: LETDOWN HEAT EXCHANGER

Identification: 2-LHEX-1

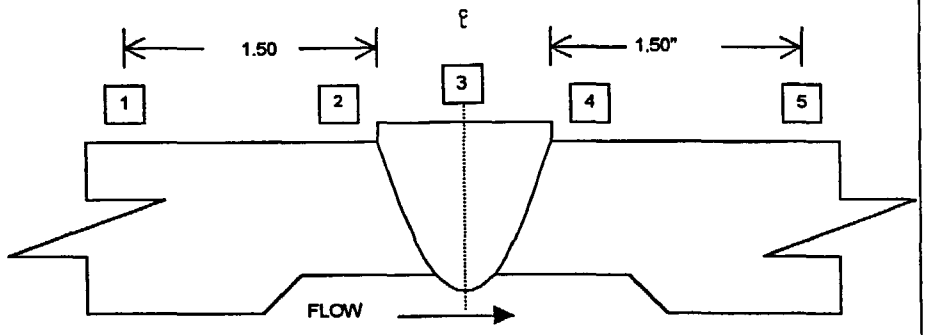
POSITION	0	90	180	270
1	0.54"			
2	0.54"			
3	N/A			
4	N/A			
5	N/A			

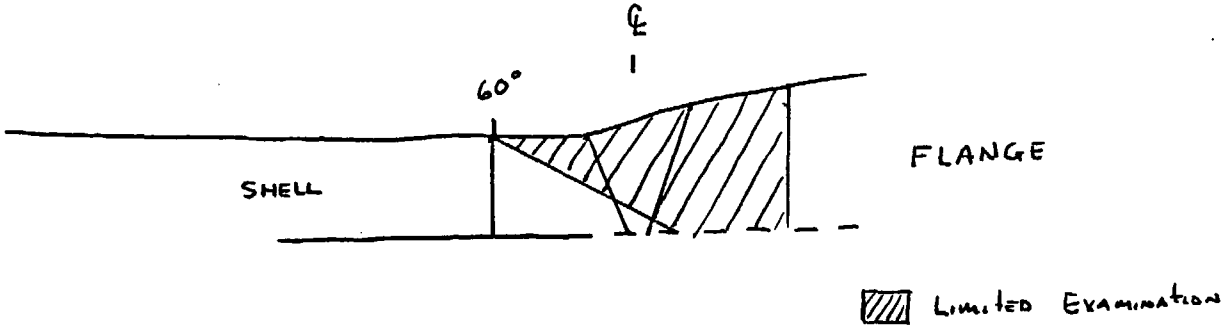
CROWN HEIGHT: TAPERED

CROWN WIDTH: 1.50"

NOM DIAMETER: 21.0"

WELD LENGTH: 68.1"





FACTORY MUTUAL INSURANCE COMPANY
NOV 3 2000

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Prepared By 10/14/2000 Date

Reviewed By Bob Kellerhall 10/26/00 Date

Utility Review By Wayne Dearinger 10-27-00 Date

FRAMATOME TECHNOLOGIES

VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

JSTOMER: SALEM 2, RFO-11	SYSTEM: LETDOWN HEAT EXCHANGERS
SUMMARY NO: 275210	COMPONENT ID: 2-LHEX-1

1.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT BEAM PLANAR FLAWS

1.1 Exam Height X Exam Width X Exam Length = Exam 0.54 X 1.70 X 68.10 = 62.52 cu.

2.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT BEAM LAMINAR

2.1 Exam Height X Exam Width X Exam Length = Exam 0.54 X 1.70 X 68.10 = 62.52 cu.

3.0 CALCULATE REQUIRED PARALLEL EXAM VOLUME FOR 45° AND

3.1 Exam Height X Exam Width X Exam Length = Exam 0.54 X 1.70 X 136.20 = 125.03 cu.

4.0 CALCULATE REQUIRED TRANSVERSE EXAM VOLUME FOR 45° AND 60°

4.1 Exam Height X Exam Width X Exam Length = Exam 0.54 X 1.70 X 136.20 = 125.03 cu.

5.0 CALCULATE STRAIGHT BEAM PLANAR EXAM COVERAGE

5.1 Limited above / CW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Volume with no Exam Coverage
0.54	X	0.85	X	68.10	=	31.26

5.2 Limited Below / CW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Volume with no Exam Coverage
0.54	X	0.35	X	68.10	=	12.87

Total straight beam planar exam volume not examined = 44.13

5.3 Percent Volume Examined

	Total 0 vol w/No Coverage		Total 0 Exam Volume			Percent Volume Examined
100 - {[	44.13	/	62.52]	x 100}	=	29.41 %

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FRAMATOME TECHNOLOGIES

VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

6.0 CALCULATE STRAIGHT BEAM LAMINAR EXAM COVERAGE

6.1 Limited above / CW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Volume with no Exam Coverage
0.54	X	1.70	X	68.10	=	62.52

6.2 Limited Below / CW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Volume with no Exam Coverage
0.00	X	0.00	X	0.00	=	0.00

Total straight beam planar exam volume not examined = 62.52

6.3 Percent Volume Examined

	Total 0° vol w/No Coverage		Total 0° Exam Volume			Percent Volume Examined
100 - {[	62.52	/	62.52]	x 100 }	=	0.00 %

7.0 CALCULATE PARALLEL 45° EXAM COVERAGE

7.1 Limited above / CW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Volume with no Exam Coverage
0.54	X	0.85	X	68.10	=	31.26

7.2 Limited Below / CCW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Volume with no Exam Coverage
0.54	X	0.35	X	68.10	=	12.87

Total 45° parallel exam volume not examined = 44.13

7.3 Percent Volume Examined

	Total 45° parallel vol w/No Coverage		Total 45° parallel Exam Volume			Percent Volume Examined
100 - {[	44.13	/	125.03]	x 100 }	=	64.71 %

8.0 CALCULATE PARALLEL 60° EXAM COVERAGE

8.1 Limited above / CW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Above / CW exam Volume with no Exam Coverage
0.54	X	0.85	X	68.10	=	31.26

8.2 Limited Below / CCW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Below / CCW exam Volume with no Exam Coverage
0.54	X	0.35	X	68.10	=	12.87

Total 60° parallel exam volume not examined = 44.13

8.3 Percent Volume Examined

	Total 60° parallel Vol w/No Coverage		Total 60° parallel Exam Volume			Percent Volume Examined
100 - { [	44.13	/	125.03]	x 100 }	=	64.71 %

9.0 CALCULATE TRANSVERSE 45° EXAM COVERAGE

9.1 Limited Clockwise exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		CW Exam Volume with no Exam Coverage
0.54	X	1.70	X	68.10	=	62.52

9.2 Limited Below Counter clockwise exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		CCW Exam Volume with no Exam Coverage
0.54	X	0.85	X	68.10	=	31.26

Total 45° transverse exam volume not examined = 93.77

9.3 Percent Volume Examined

	Total 45° parallel		Total 45° parallel Exam Volume			Percent Volume Examined
100 - { [	93.77	/	125.03]	x 100 }	=	25.00 %

FRAMATOME TECHNOLOGIES

VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

10.0 CALCULATE TRANSVERSE 60° EXAM COVERAGE

10.1 Limited Clockwise exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		CW exam Volume with no Exam Coverage
0.54	X	1.70	X	68.10	=	62.52

10.2 Limited Counterclockwise exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		CCW exam Volume with no Exam Coverage
0.54	X	0.85	X	68.10	=	31.26

Total straight beam planar exam volume not examined = 93.77

10.3 Percent Volume Examined

Total 60° Trans Vol w/NoCoverage		Total 60° Trans Exam Volume			Percent Volume Examined
100 - {[93.77	/	125.03]	x	100 } =	25.00 %

11.0 CALCULATE PERCENT OF TOTAL VOLUME EXAMINED

11.1 Sum of Exam Volumes %

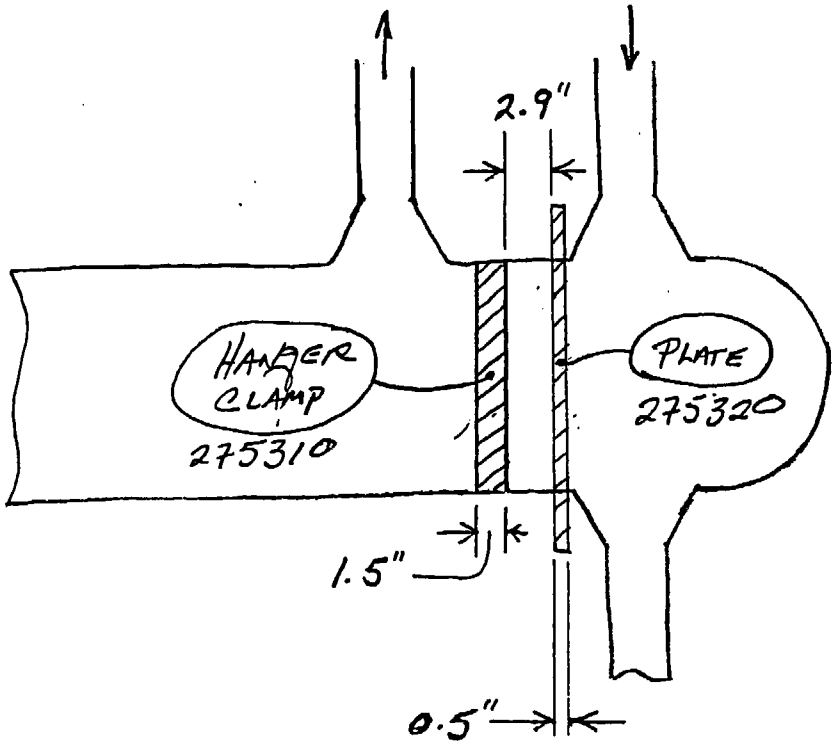
Steps 5 Thur 10		No. Of Exams (6)		Examination Coverage
[208.82	/	5.00]	=	41.76 %

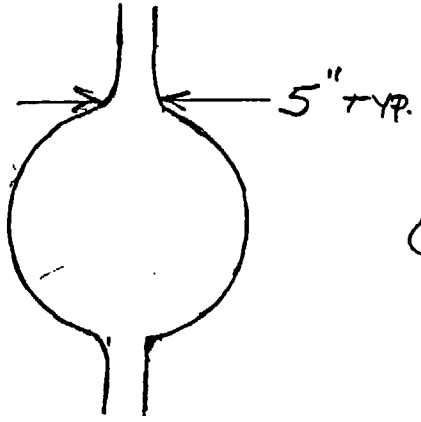
LIMITED BY FLANGE & NOZZLES [illegible]

181 10/10

Examiner:	Level:	Date:	Reviewer:	Level:	Date:
Sign: [signature]		10-24-00	Sign: Bob Kellerhall	II	10/26/00

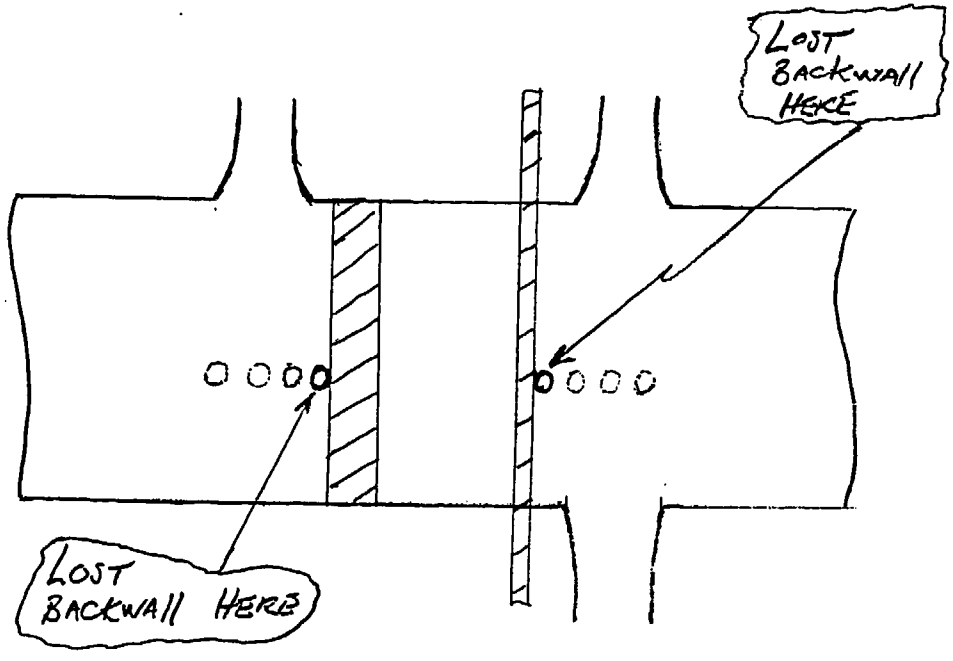
SUM # 275310 & 275320
REGENERATIVE HEAT EXCHANGE
COMPONENTS 2-RHE 2 & 3



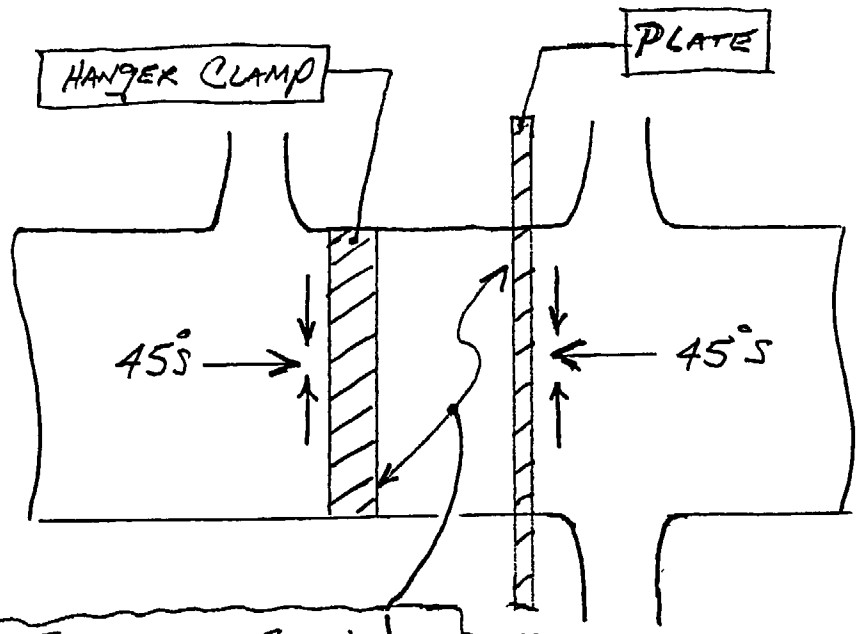


CIRCUMFERENCE = 29 1/2"

ASSUMED WELD IS LOCATED ADJACENT TO REGION WHERE BACKWALL IS LOST.



Sum # 275310 & 275320
Regenerative Heat Exchanger
Components 2-RHE-2 & 3



Scanned on the outside region of the hanger clamp and plate in the axial and circumferential directions indicated. Did not scan in the 5 inch region adjacent to the nozzles, axial or circumferential direction.

Tubesheet region.
Did not scan in this region since hanger clamp and plate prevent half-vee coverage and tubesheet prevents full-vee and 1½ vee coverage.

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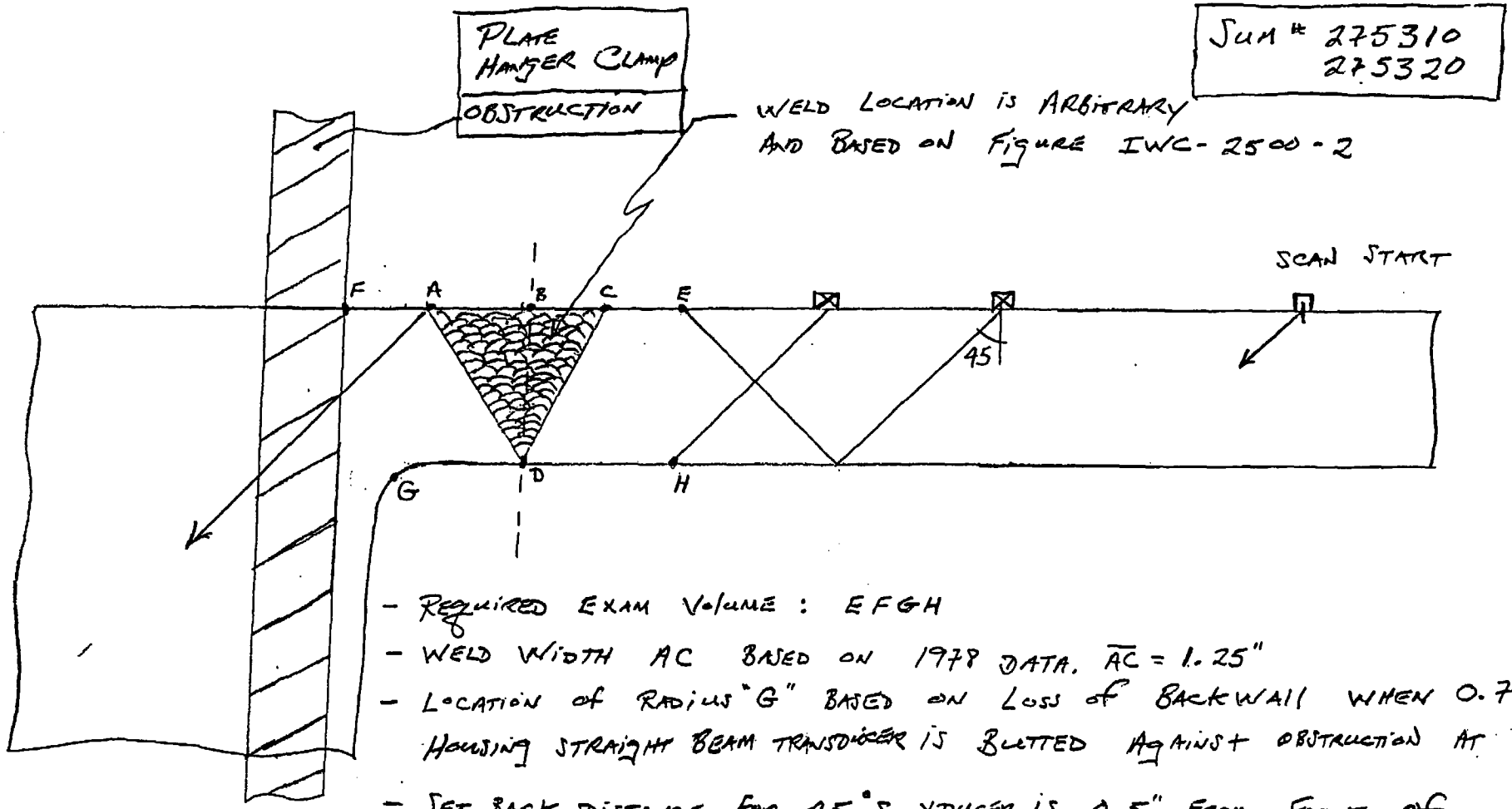
Page 5 of 8

Page # of 3



SUM # 275310
275320

- REQUIRED EXAM VOLUME : EFGH
- WELD WIDTH AC BASED ON 1978 DATA. $\overline{AC} = 1.25"$
- LOCATION OF RADIUS "G" BASED ON LOSS OF BACKWALL WHEN 0.75" DIA. HOUSING STRAIGHT BEAM TRANSDUCER IS BUTTED AGAINST OBSTRUCTION AT "F"
- SET BACK DISTANCE FOR 45°S XDUCER IS 0.5" FROM FRONT OF SHOE TO BEAM EXIT POINT. THUS WITH SHOE BUTTED AGAINST OBSTRUCTION, BEAM EXIT POINT IS AT POINT "A" AS SHOWN.
- SCANNING PERFORMED WITH BEAM DIRECTED TOWARD OBSTRUCTION, AS SHOWN, STARTING 6" BACK AND MOVING FORWARD UNTIL SHOE IS BUTTED AGAINST OBSTRUCTION.
- SCANNING WAS NOT PERFORMED WITH BEAM LOOKING AWAY FROM OBSTRUCTION
- WELD COVERAGE ONLY CONSIDERED FOR VOLUME BDHE SINCE WELD IS STAINLESS STEEL.

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FRAMATOME TECHNOLOGIES

VOLUMETRIC PIPING EXAMINATION COVERAGE REPORT

CUSTOMER: SALEM 2, RFO 11	SYSTEM: REGIN HEAT EXCHANGER
SUMMARY NO: 275310	COMPONENT ID: 2-RHE-2

VOLUMETRIC PIPING EXAMINATIONS

1.0 AXIAL ULTRASONIC EXAMINATIONS - Upstream (US) and Downstream (DS)

1.1 Compute Required Exam Volume (#Angles X Height X Width X Length =Vt1)	1 x 0.96 x 2.25 x 29.50 =63.72	cu.
1.2 Volume Not Examined with Ultrasonic Beam Directed US = A	x x x =37.26	cu.
1.3 Compute Upstream Limitation Percentage {(A / Vt1) X 100} = Z1	58.47%	
1.4 Volume Not Examined with Ultrasonic Beam Directed DS = B	1 x 0.96 x 1.13 x 29.50 =31.86	cu.
1.5 Compute Downstream Limitation Percentage {(B / Vt1) X 100} = Z2	50.000%	

2.0 CIRCUMFERENTIAL ULTRASONIC EXAMINATIONS (Clockwise and Counterclockwise)

2.1 Compute Required Exam Volume (#Angles X Height X Width X Length =Vt2)	1 x 0.96 x 2.25 x 29.50 =63.72	cu.
2.2 Compute Volume Not Examined in the Clockwise Direction = C	x x x =37.26	cu.
2.3 Compute Clockwise Limitation Percentage (C / Vt2) X 100 = Z3	58.47%	
2.4 Compute Volume Not Examined in the Counter CW Direction = D	x x x =37.26	cu.
2.5 Compute Counter CW Limitation Percentage (D / Vt2) X 100 = Z4	58.47%	

3.0 TOTAL EXAMINATION COVERAGE OBTAINED

3.1 Compute Total Limitation Percentage Z1+Z2+Z3+Z4/4 = L	56.36%
3.2 Compute Total Coverage (100 - L)	43.64%

LIMITATION EXPLANATION / REMARKS

1.2 : (1 x 0.96 x 1.125 x 29.5 = 31.86) + (1 x 0.96 x 1.125 x 5 = 5.4) = 37.26

2.2 & 2.4 : (1 x 0.96 x 1.125 x 29.5 = 31.86) + (1 x 0.96 x 1.125 x 5 = 5.4) = 37.26

IN THE ABOVE CALCULATIONS FOR STEPS 1.2, 2.2, AND 2.4 THE FIRST SET OF PARENTHESIS ADDRESSES THE HANGER CLAMP OBSTRUCTION, AND THE SECOND SET ADDRESSES THE NOZZLE OBSTRUCTION.

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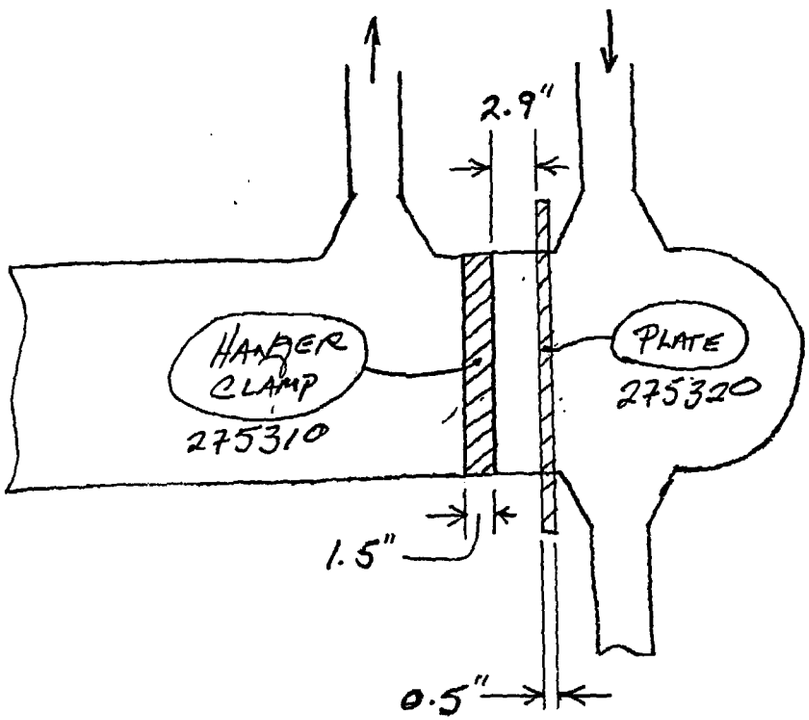
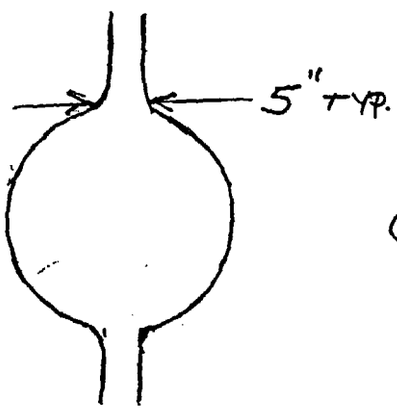
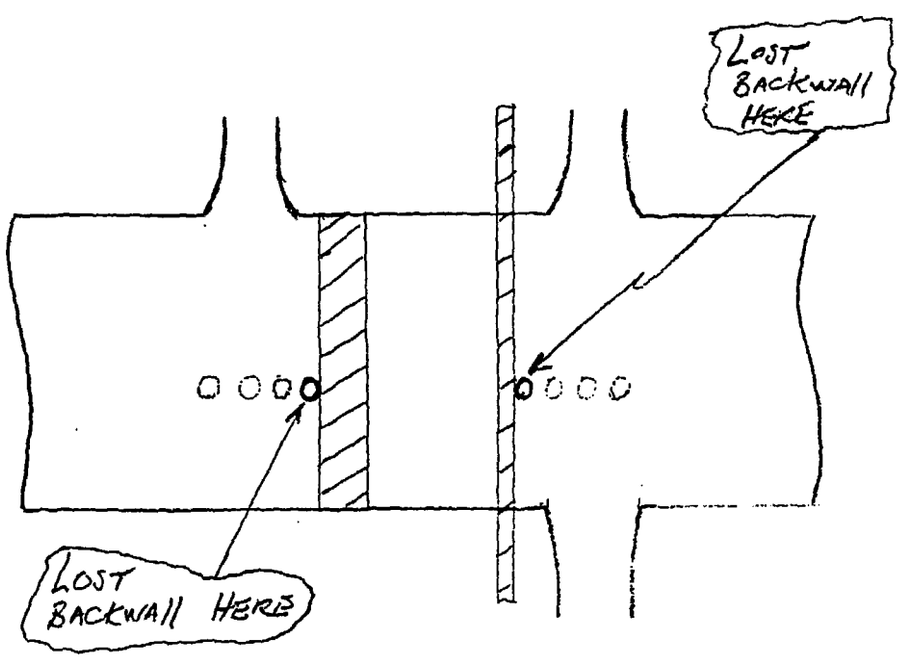
PREPARED BY:	DATE:	REVIEWER:	DATE:
C R Frenicent	10-10-00	Bob Kellerhall	10/12/00

SUM # 275310 & 275320
REGENERATIVE HEAT EXCHANGER
COMPONENTS 2-RHE 2 & 3





CIRCUMFERENCE = 29 1/2"



ASSUMED WELD IS LOCATED ADJACENT TO REGION WHERE BACKWALL IS LOST.

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Bulletin 191-96

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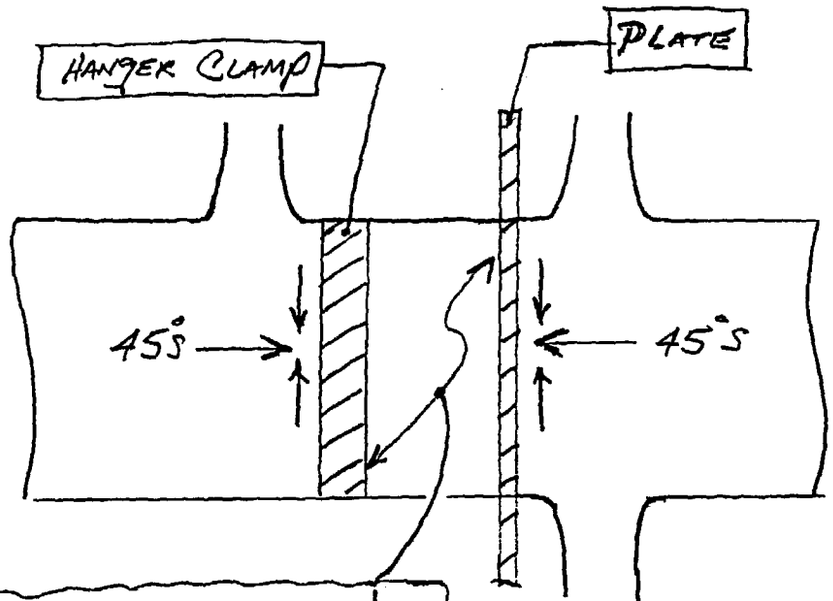

TUBESHEET REGION.
DID NOT SCAN IN THIS REGION SINCE HANGER CLAMP AND PLATE PREVENT HALF-VEE COVERAGE AND TUBESHEET PREVENTS FULL-VEE AND 1½ VEE COVERAGE.

SUM # 275310 & 275320
REGENERATIVE HEAT EXCHANGER COMPONENTS 2-RHE-2 & 3

SCANNED ON THE OUTSIDE REGION OF THE HANGER CLAMP AND PLATE IN THE AXIAL AND CIRCUMFERENTIAL DIRECTIONS INDICATED. DID NOT SCAN IN THE 5 INCH REGION ADJACENT TO THE NOZZLES, AXIAL OR CIRCUMFERENTIAL DIRECTIONS.

Pg. 5 of 6
Bluebell 10/30/01

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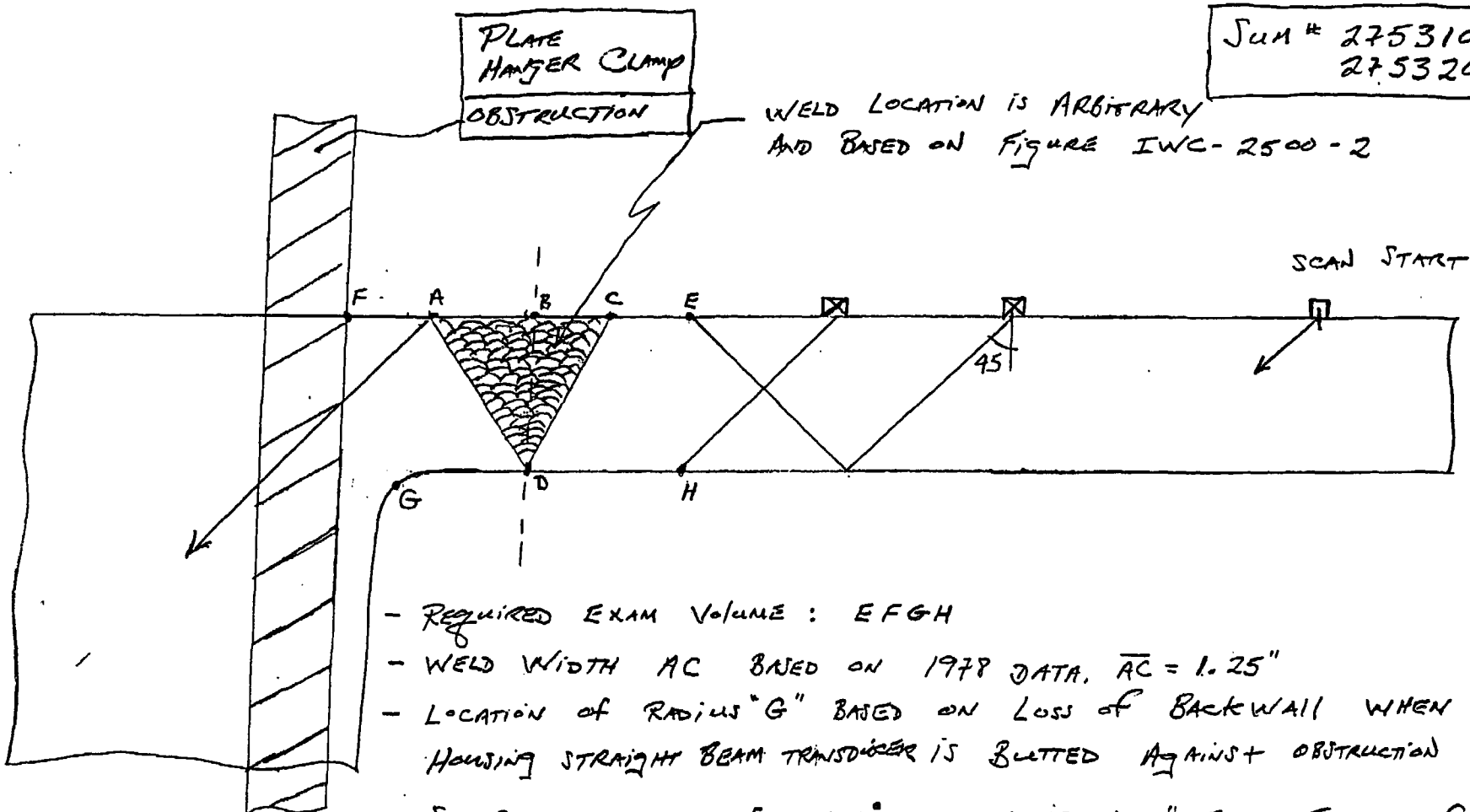
SUM # 275310
275320



- REQUIRED EXAM VOLUME : EFGH
- WELD WIDTH AC BASED ON 1978 DATA. $\overline{AC} = 1.25"$
- LOCATION OF RADIUS "G" BASED ON LOSS OF BACKWALL WHEN 0.75" DIA. HOUSING STRAIGHT BEAM TRANSDUCER IS BUTTED AGAINST OBSTRUCTION AT "F"
- SET BACK DISTANCE FOR 45°S XDUCER IS 0.5" FROM FRONT OF SHOE TO BEAM EXIT POINT. THUS WITH SHOE BUTTED AGAINST OBSTRUCTION, BEAM EXIT POINT IS AT POINT "A" AS SHOWN.
- SCANNING PERFORMED WITH BEAM DIRECTED TOWARD OBSTRUCTION, AS SHOWN, STARTING 6" BACK AND MOVING FORWARD UNTIL SHOE IS BUTTED AGAINST OBSTRUCTION.
- SCANNING WAS NOT PERFORMED WITH BEAM LOOKING AWAY FROM OBSTRUCTION
- WELD COVERAGE ONLY CONSIDERED FOR VOLUME BDHE SINCE WELD IS STAINLESS STEEL.

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FRAMATOME TECHNOLOGIES

VOLUMETRIC PIPING EXAMINATION COVERAGE REPORT

CUSTOMER: SALEM 2, RFO 11	SYSTEM: REGIN HEAT EXCHANGER
SUMMARY NO: 275320	COMPONENT ID: 2-RHE-3

VOLUMETRIC PIPING EXAMINATIONS

1.0 AXIAL ULTRASONIC EXAMINATIONS - Upstream (US) and Downstream (DS)

1.1 Compute Required Exam Volume (#Angles X Height X Width X Length =Vt1)	1 x 0.96 x 2.25 x 29.50 =63.72	cu.
1.2 Volume Not Examined with Ultrasonic Beam Directed US = A	x x x =42.66	cu.
1.3 Compute Upstream Limitation Percentage {(A / Vt1) X 100} = Z1	66.95%	
1.4 Volume Not Examined with Ultrasonic Beam Directed DS = B	x x x =42.66	cu.
1.5 Compute Downstream Limitation Percentage {(B / Vt1) X 100} = Z2	66.949%	

2.0 CIRCUMFERENTIAL ULTRASONIC EXAMINATIONS (Clockwise and Counterclockwise)

2.1 Compute Required Exam Volume (#Angles X Height X Width X Length =Vt2)	1 x 0.96 x 2.25 x 29.50 =63.72	cu.
2.2 Compute Volume Not Examined in the Clockwise Direction = C	x x x =42.66	cu.
2.3 Compute Clockwise Limitation Percentage (C / Vt2) X 100 = Z3	66.95%	
2.4 Compute Volume Not Examined in the Counter CW Direction = D	x x x =42.66	cu.
2.5 Compute Counter CW Limitation Percentage (D / Vt2) X 100 = Z4	66.95%	

3.0 TOTAL EXAMINATION COVERAGE OBTAINED

3.1 Compute Total Limitation Percentage Z1+Z2+Z3+Z4/4 = L	66.95%
3.2 Compute Total Coverage (100 - L)	33.05%

LIMITATION EXPLANATION / REMARKS

1.2 & 1.4 : (1 x 0.96 x 1.125 x 29.5) + (1 x 0.96 x 1.125 x (2 x 5)) = 42.66

2.2 & 2.4 : (1 x 0.96 x 1.125 x 29.5) + (1 x 0.96 x 1.125 x (2 x 5)) = 42.66

IN THE ABOVE CALCULATIONS FOR STEPS 1.2, 2.2, AND 2.4 THE FIRST SET OF PARENTHESIS ADDRESSES THE HANGER CLAMP OBSTRUCTION, AND THE SECOND SET ADDRESSES THE NOZZLE OBSTRUCTION.

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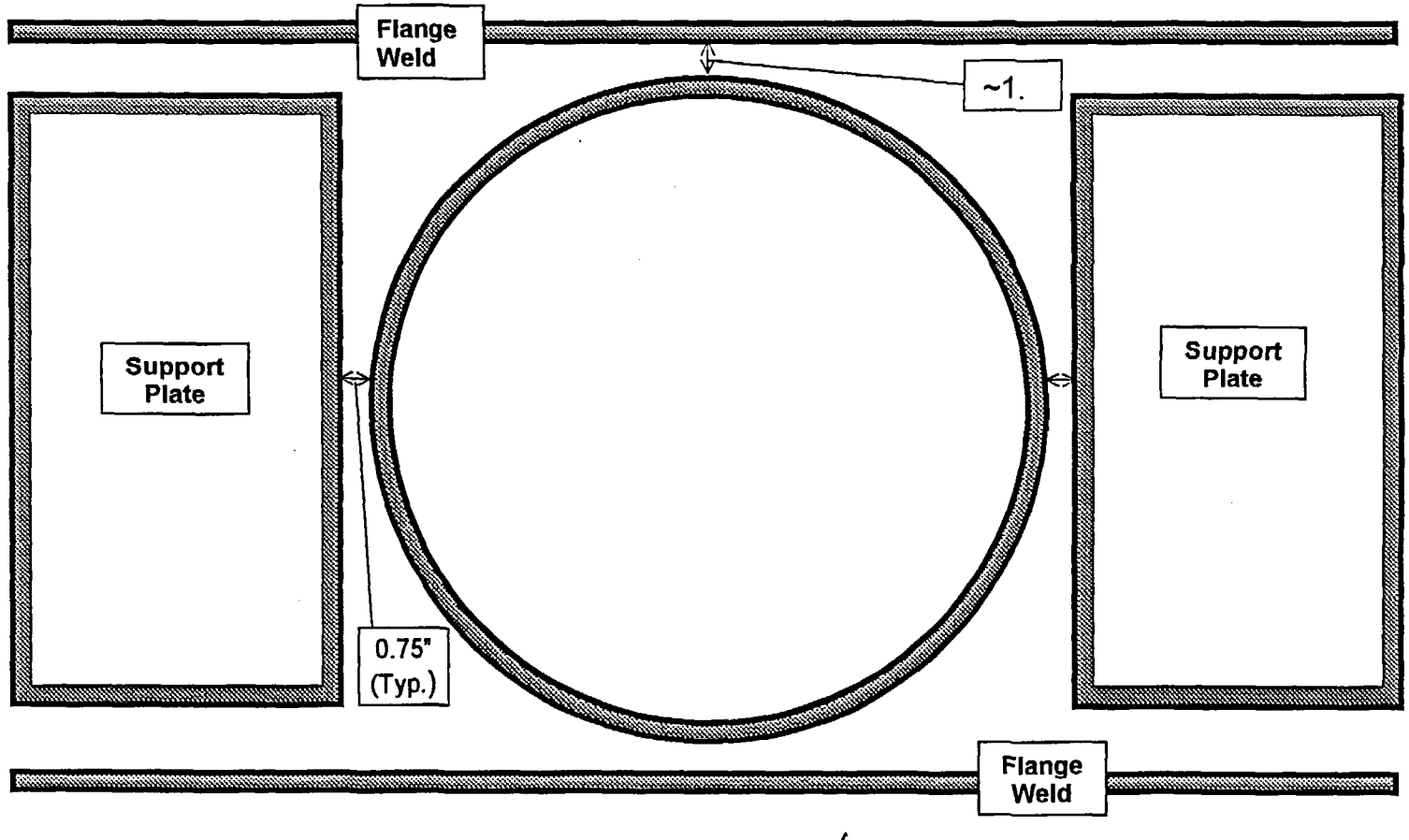
PREPARED BY: [signature]	DATE: 10/10/2K	REVIEWER: Bob Kellerhall	DATE: 10/19/00

FRAMATOME TECHNOLOGIES	PROFILE AND THICKNESS (cont.)	
	Exam Date: 10/18/00	**Summary No.:** 275400
Site: Salem Unit 2, RFO 11		**Examination Method:** UT
System: Residual Heat Removal Exchangers		**Identification:** 21-RHRHEX-OUT



Welds

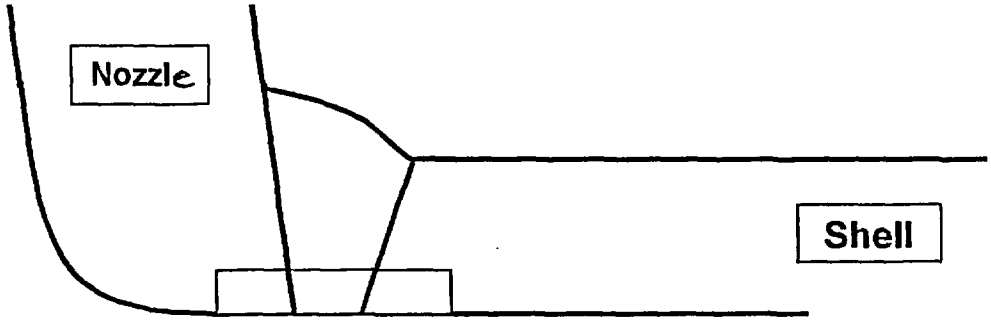
12/13

Prepared By 10/16/2000 Date

Reviewed By 10/23/00 Date

Utility Review By 10-26-00 Date

FRAMATOME TECHNOLOGIES	PROFILE AND THICKNESS (cont.)	
	Exam Date: 10/06/00	Summary No.: 275400
Site: Salem Unit 2, RFO 11	Examination Method: UT	
System: Residual Heat Removal Exc	Identification: 21-RHRHEX-OUT	



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13/13

Prepared By	Date	Reviewed By	Date	Utility Review By	Date
	10/16/2000	Bob Vellenhall	10/23/00	Wayne Dentinger	10-26-2000

FRAMATOME TECHNOLOGIES

VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

JSTOMER: SALEM 2, RFO-11	SYSTEM: RESIDUAL HEAT REMOVAL EXCHANGER
SUMMARY NO: 275400	COMPONENT ID: 21-RHRHEX-OUT

1.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT BEAM PLANAR FLAWS

1.1 Exam Height X Exam Width X Exam Length = Exam 0.33 X 1.50 X 183.00 = 90.58 cu.

2.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT BEAM LAMINAR

2.1 Exam Height X Exam Width X Exam Length = Exam 1.00 X 2.00 X 102.00 = 204.00 cu.

3.0 CALCULATE REQUIRED PARALLEL EXAM VOLUME FOR 45° AND 60°

3.1 Exam Height X Exam Width X Exam Length = Exam 0.33 X 1.50 X 366.00 = 181.17 cu.

4.0 CALCULATE REQUIRED TRANSVERSE EXAM VOLUME FOR 45° AND 60°

4.1 Exam Height X Exam Width X Exam Length = Exam 0.33 X 1.50 X 366.00 = 181.17 cu.

5.0 CALCULATE STRAIGHT BEAM PLANAR EXAM COVERAGE

5.1 Limited above / CW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Volume with no Exam Coverage
0.33	X	1.25	X	183.00	=	75.49

5.2 Limited Below / CW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Volume with no Exam Coverage
0.00	X	0.00	X	0.00	=	0.00

Total straight beam planar exam volume not examined = 75.49

5.3 Percent Volume Examined

Total 0 vol w/No Coverage		Total 0 Exam Volume		Percent Volume Examined
100 - {[75.49	/	90.58]	x 100} =	16.67 %

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BK 7/13

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FRAMATOME TECHNOLOGIES

VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

6.0 CALCULATE STRAIGHT BEAM LAMINAR EXAM COVERAGE

6.1 Limited above / CW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Volume with no Exam Coverage
1	X	2.00	X	74.00	=	148.00

6.2 Limited Below / CW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Volume with no Exam Coverage
0.00	X	0.00	X	0.00	=	0.00

Total straight beam planar exam volume not examined = 148.00

6.3 Percent Volume Examined

	Total 0° vol w/No Coverage		Total 0° Exam Volume			Percent Volume Examined
100 - {[	148.00	/	204.00]	x 100 }	=	27.45 %

7.0 CALCULATE PARALLEL 45° EXAM COVERAGE

7.1 Limited above / CW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Volume with no Exam Coverage
0.33	X	1.50	X	183.00	=	90.58

7.2 Limited Below / CCW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Volume with no Exam Coverage
0.33	X	1.50	X	183.00	=	90.58

Total 45° parallel exam volume not examined = 181.17

7.3 Percent Volume Examined

	Total 45° parallel vol w/No Coverage		Total 45° parallel Exam Volume			Percent Volume Examined
100 - {[	181.17	/	181.17]	x 100 }	=	0.00 %

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8/13

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FRAMATOME TECHNOLOGIES

VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

8.0 CALCULATE PARALLEL 60° EXAM COVERAGE

8.1 Limited above / CW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Above / CW exam Volume with no Exam Coverage
0.33	X	1.50	X	183.00	=	90.58

8.2 Limited Below / CCW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Below / CCW exam Volume with no Exam Coverage
0.33	X	1.50	X	183.00	=	90.58

Total 60° parallel exam volume not examined = 181.17

8.3 Percent Volume Examined

	Total 60° parallel Vol w/No Coverage		Total 60° parallel Exam Volume			Percent Volume Examined
100 - {[	181.17	/	181.17]	x 100 }	=	0.00 %

9.0 CALCULATE TRANSVERSE 45° EXAM COVERAGE

9.1 Limited Clockwise exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		CW Exam Volume with no Exam Coverage
0.33	X	1.50	X	183.00	=	90.58

9.2 Limited Below Counter clockwise exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		CCW Exam Volume with no Exam Coverage
0.33	X	1.50	X	155.00	=	76.72

Total 45° transverse exam volume not examined = 167.31

9.3 Percent Volume Examined

	Total 45° parallel		Total 45° parallel Exam Volume			Percent Volume Examined
100 - {[	167.31	/	181.17]	x 100 }	=	7.65 %

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BK 9/13

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FRAMATOME TECHNOLOGIES

VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

10.0 CALCULATE TRANSVERSE 60° EXAM COVERAGE

10.1 Limited Clockwise exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		CW exam Volume with no Exam Coverage
0.33	X	1.50	X	183.00	=	90.58

10.2 Limited Counterclockwise exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		CCW exam Volume with no Exam Coverage
0.33	X	1.50	X	155.00	=	76.72

Total straight beam planar exam volume not examined = 167.31

10.3 Percent Volume Examined

	Total 60° Trans Vol w/NoCoverage		Total 60° Trans Exam Volume			Percent Volume Examined
100 - {[	167.31	/	181.17]	x 100}	=	7.65 %

11.0 CALCULATE PERCENT OF TOTAL VOLUME EXAMINED

11.1 Sum of Exam Volumes %

Steps 5 Thur 10		No. Of Exams (6)		Examination Coverage
[59.42	/	6.00]	=	9.90 %

10/13

Examiner: Steve M. Herman	Level: II	Date: 10/16/00	Reviewer:	Level:	Date:
Sign:			Sign:		

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FRAMATOME TECHNOLOGIES

PROFILE AND THICKNESS

Exam Date: 10/14/00

Summary No.: 384320

Site: Salem Unit 2, RFO 11

Examination Method: UT

System: MAIN STEAM SYSTEM

Identification: 6-MS-2246-3

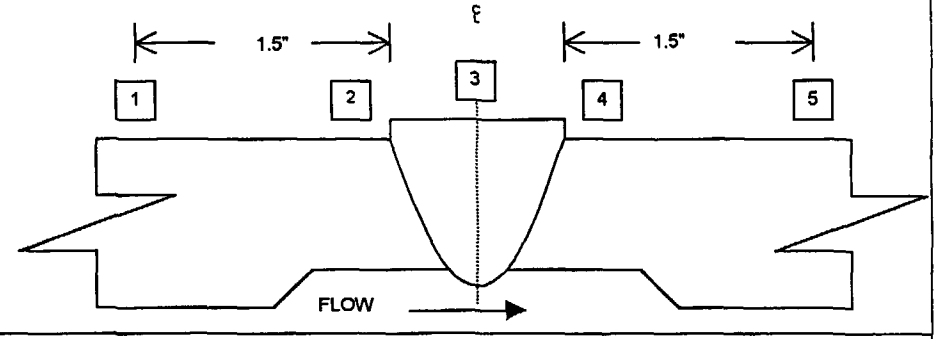
POSITION	0	90	180	270
1	0.44"			
2	0.44"			
3	0.52"			
4	N/A			
5	N/A			

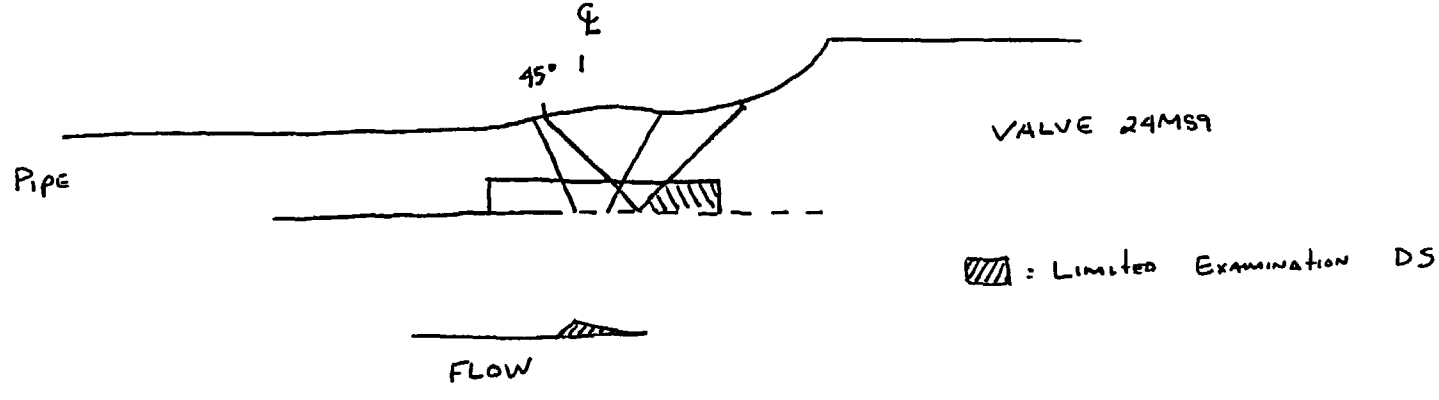
CROWN HEIGHT: 0.050"

CROWN WIDTH: 0.650"

NOM DIAMETER: 6.0"

WELD LENGTH: 20.81"





FACTORY MUTUAL INSURANCE COMPANY

6 of 87

Prepared By	Date	Reviewed By	Date	Utility Review By	Date
	10-14-2000	Bob Kellerhall	10/17/00	W Denlinger	10-24-00

126

FRAMATOME TECHNOLOGIES

PROFILE AND THICKNESS

Exam Date: 10/14/2000

Summary No.: 384320

Site: Salem Unit 2, RFO 11

Examination Method: UT

System:

Identification: 6-MS-2246-3

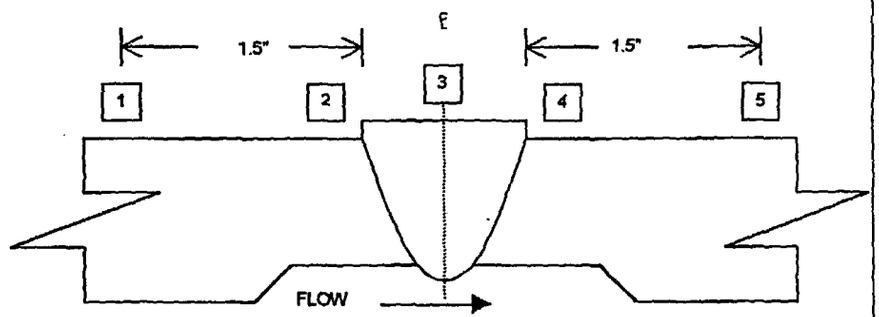
POSITION	0	90	180	270
1	.44"			
2	.44"			
3	.52"			
4	N/A			
5	N/A			

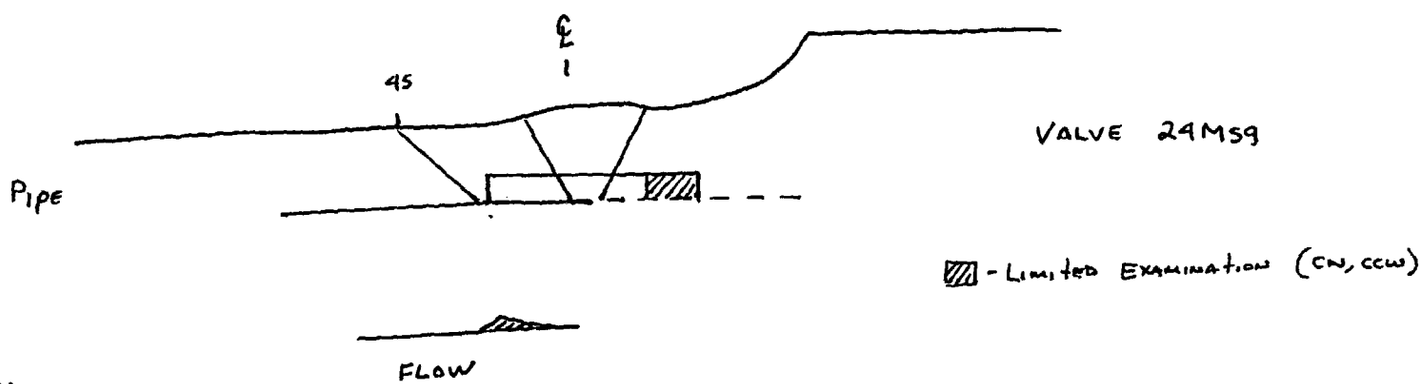
CROWN HEIGHT: 0.050"

CROWN WIDTH: 0.650"

NOM DIAMETER: 6.0"

WELD LENGTH: 20.81"





FACTORY MUTUAL INSURANCE COMPANY

7 of 7

Prepared By	Date	Reviewed By	Date	Utility Review By	Date
	10-14-2000	Bob Kolbe	10/17/00	Wayne Dearlinge	10-24-00

197

FRAMATOME TECHNOLOGIES

VOLUMETRIC PIPING EXAMINATION COVERAGE REPORT

CUSTOMER: SALEM 2, RFO 11	SYSTEM: MAIN STEAM SYSTEM
SUMMARY NO: 384320	COMPONENT ID: 6-MS-2246-3

VOLUMETRIC PIPING EXAMINATIONS

1.0 AXIAL ULTRASONIC EXAMINATIONS - Upstream (US) and Downstream (DS)

1.1 Compute Required Exam Volume (#Angles X Height X Width X Length =Vt1)	1 x 0.14 x 1.15 x 20.81 =3.35	cu.
1.2 Volume Not Examined with Ultrasonic Beam Directed US = A	0 x 0.14 x 1.15 x 20.81 =0.00	cu.
1.3 Compute Upstream Limitation Percentage {(A / Vt1) X 100} = Z1	0.00%	
1.4 Volume Not Examined with Ultrasonic Beam Directed DS = B	1 x 0.05 x 1.00 x 20.81 =1.04	cu.
1.5 Compute Downstream Limitation Percentage {(B / Vt1) X 100} = Z2	31.056%	

2.0 CIRCUMFERENTIAL ULTRASONIC EXAMINATIONS (Clockwise and Counterclockwise)

2.1 Compute Required Exam Volume (#Angles X Height X Width X Length =Vt2)	1 x 0.14 x 1.15 x 20.81 =3.35	cu.
2.2 Compute Volume Not Examined in the Clockwise Direction = C	1 x 0.14 x 0.30 x 20.81 =0.87	cu.
2.3 Compute Clockwise Limitation Percentage (C / Vt2) X 100 = Z3	26.09%	
2.4 Compute Volume Not Examined in the Counter CW Direction = D	1 x 0.14 x 0.30 x 20.81 =0.87	cu.
2.5 Compute Counter CW Limitation Percentage (D / Vt2) X 100 = Z4	26.09%	

3.0 TOTAL EXAMINATION COVERAGE OBTAINED

3.1 Compute Total Limitation Percentage Z1+Z2+Z3+Z4/4 = L	20.81%
3.2 Compute Total Coverage (100 - L)	79.19%

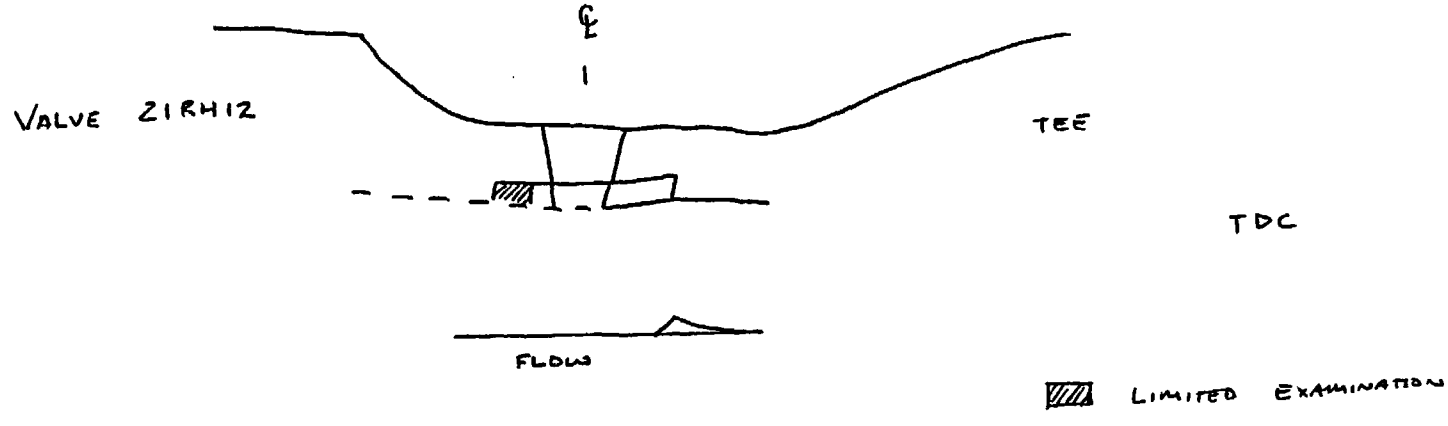
LIMITATION EXPLANATION / REMARKS

LIMITATION DUE TO VALVE 24MS9.

198

PREPARED BY:	DATE: 10-14-2000	REVIEWER: Bob Kellenhall	DATE: 10/17/00	Page 5 of 87

FRAMATOME TECHNOLOGIES	PROFILE AND THICKNESS	
	Exam Date: 10/06/00	**Summary No.: 502580**
Site: Salem Unit 2, RFO 11		**Examination Method: UT**
System: Residual Heat Removal System		**Identification:** 8-RH-2273-18



Pg. 6 of 7

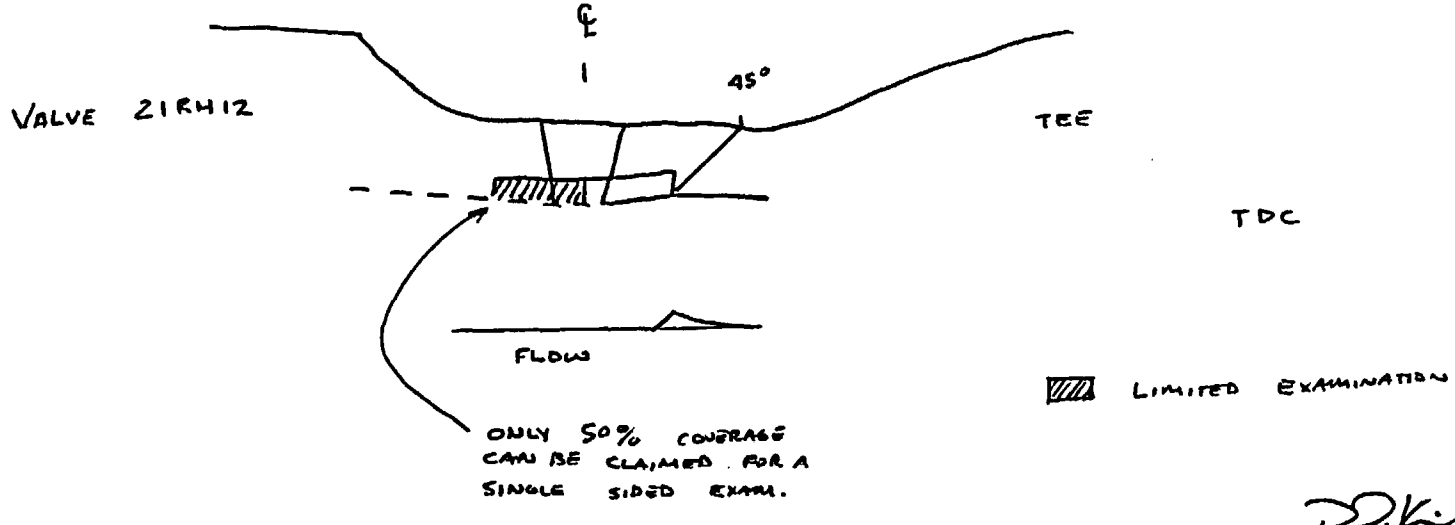
CIRC SCAN

FACTORY MUTUAL INSURANCE COMPANY
10-26-00

Prepared By	Date	Reviewed By	Date	Utility Review By	Date
MMKEY	10/3/2000	Bob Kellenbach	10/7/00	W Genlinger	10-10-00

195

FRAMATOME TECHNOLOGIES	PROFILE AND THICKNESS	
	Exam Date: 10/06/00	**Summary No.:** 502580
Site: Salem Unit 2, RFO 11		**Examination Method:** UT
System: Residual Heat Removal System		**Identification:** 8-RH-2273-18



Pg. 7 of 7

AXIAL SCAN

FACTORY MUTUAL INSURANCE COMPANY
10-26-00

Prepared By	Date	Reviewed By	Date	Utility Review By	Date
MINKEY	10/3/2000		10/7/00		10-10-00

FRAMATOME TECHNOLOGIES

VOLUMETRIC PIPING EXAMINATION COVERAGE REPORT

CUSTOMER: SALEM 2, RFO-11	SYSTEM: RESIDUAL HEAT REMOVAL SYSTEM
SUMMARY NO: 502580	COMPONENT ID: 8-RH-2273-18

VOLUMETRIC PIPING EXAMINATIONS

1.0 AXIAL ULTRASONIC EXAMINATIONS - Upstream (US) and Downstream (DS)

1.1 Compute Required Exam Volume (#Angles X Height X Width X Length =Vt1)	1 x 0.11 x 0.90 x 25.13 =2.49	cu.
1.2 Volume Not Examined with Ultrasonic Beam Directed US = A	1 x 0.11 x 0.45 x 25.13 =1.24	cu.
1.3 Compute Upstream Limitation Percentage {(A / Vt1) X 100} = Z1	50.00%	
1.4 Volume Not Examined with Ultrasonic Beam Directed DS = B	1 x 0.11 x 0.90 x 25.13 =2.49	cu.
1.5 Compute Downstream Limitation Percentage {(B / Vt1) X 100} = Z2	100.000%	

2.0 CIRCUMFERENTIAL ULTRASONIC EXAMINATIONS (Clockwise and Counterclockwise)

2.1 Compute Required Exam Volume (#Angles X Height X Width X Length =Vt2)	1 x 0.11 x 0.90 x 25.13 =2.49	cu.
2.2 Compute Volume Not Examined in the Clockwise Direction = C	1 x 0.11 x 0.20 x 25.13 =0.55	cu.
2.3 Compute Clockwise Limitation Percentage (C / Vt2) X 100 = Z3	22.22%	
2.4 Compute Volume Not Examined in the Counter CW Direction = D	1 x 0.11 x 0.20 x 25.13 =0.55	cu.
2.5 Compute Counter CW Limitation Percentage (D / Vt2) X 100 = Z4	22.22%	

3.0 TOTAL EXAMINATION COVERAGE OBTAINED

3.1 Compute Total Limitation Percentage Z1+Z2+Z3+Z4/4 = L	48.61%
3.2 Compute Total Coverage (100 - L)	51.39%

LIMITATION EXPLANATION / REMARKS

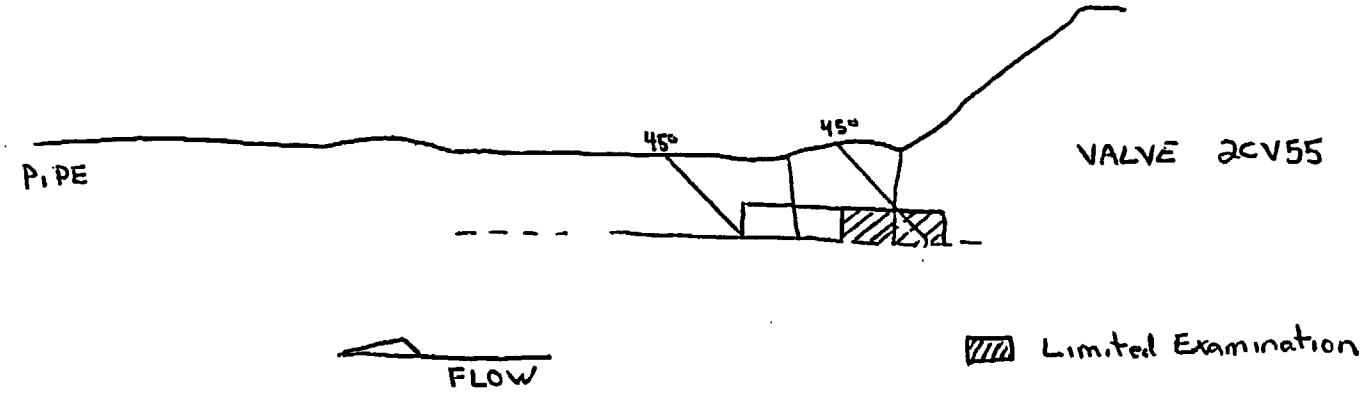
Limitation on valve side (upstream). Used 70 degree from tee side for coverage on valve side.

D.O.K.

FACTORY MUTUAL INSURANCE COMPANY
10-26-00

PREPARED BY:	DATE:	REVIEWER:	DATE:
	10/3/2000	Bob Kellerhall	10/07/00

FRAMATOME TECHNOLOGIES	PROFILE AND THICKNESS	
	Exam Date: 10/06/00	Summary No.: 707620
Site: Salem Unit 2, RFO 11		Examination Method: UT
System: Chemical and Volume Control System		Identification: 3-CV-2259-14R1



TDC

Axial Scan

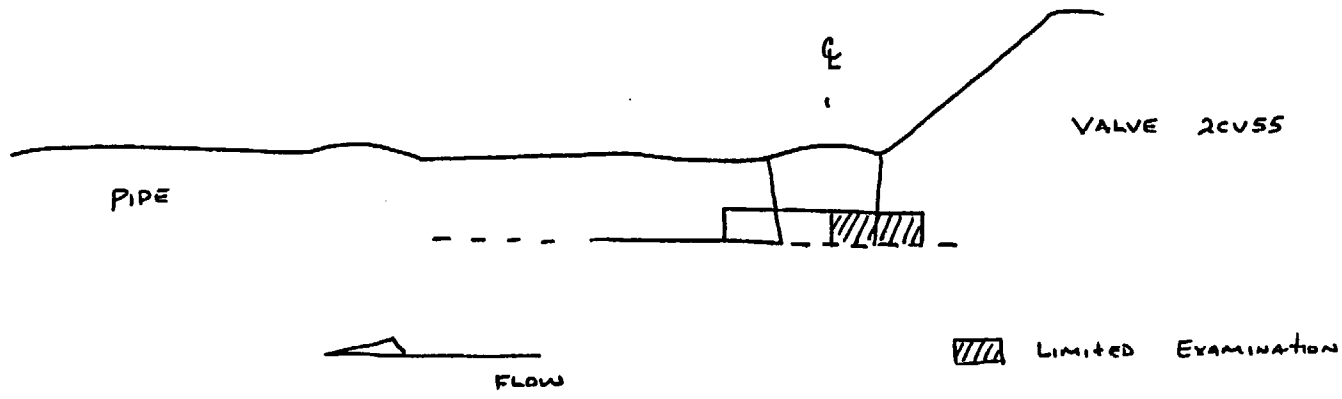
FACTORY MUTUAL INSURANCE COMPANY 10-31-00

Pg. 8 of 9

Prepared By	Date	Reviewed By	Date	Utility Review By	Date
D.A. Cleveland	10/7/00	Bob Kellenbach	10/7/00	Wayne Dunlap	10-12-00

202

FRAMATOME TECHNOLOGIES	PROFILE AND THICKNESS	
	Exam Date: 10/06/00	**Summary No.: 707620**
Site: Salem Unit 2, RFO 11		**Examination Method: UT**
System: Chemical and Volume Control System		**Identification:** 3-CV-2259-14R1



TDC

CIRC SCAN

FACTORY MUTUAL INSURANCE COMPANY
10-31-00

Pg. 9 of 9

Prepared By	Date	Reviewed By	Date	Utility Review By	Date
MW KEY	10/7/2000	Bob Kellenhall	10/7/00	Wayne Dowling	10-12-00

203

FRAMATOME TECHNOLOGIES

VOLUMETRIC PIPING EXAMINATION COVERAGE REPORT

CUSTOMER:	SYSTEM:
SALEM 2, RFO-11	CHEMICAL AND VOLUME CONTROL SYSTEM
SUMMARY NO:	**COMPONENT ID:**
707620	3-CV-2259-14R1

VOLUMETRIC PIPING EXAMINATIONS

1.0 AXIAL ULTRASONIC EXAMINATIONS - Upstream (US) and Downstream (DS)

1.1 Compute Required Exam Volume (#Angles X Height X Width X Length =Vt1)	1 x 0.15 x 1.05 x 10.90 =1.72	cu.
1.2 Volume Not Examined with Ultrasonic Beam Directed US = A	1 x 0.15 x 0.53 x 10.90 =0.87	cu.
1.3 Compute Upstream Limitation Percentage {(A / Vt1) X 100} = Z1	50.48%	
1.4 Volume Not Examined with Ultrasonic Beam Directed DS = B	1 x 0.15 x 1.05 x 10.90 =1.72	cu.
1.5 Compute Downstream Limitation Percentage {(B / Vt1) X 100} = Z2	100.000%	

2.0 CIRCUMFERENTIAL ULTRASONIC EXAMINATIONS (Clockwise and Counterclockwise)

2.1 Compute Required Exam Volume (#Angles X Height X Width X Length =Vt2)	1 x 0.15 x 1.05 x 10.90 =1.72	cu.
2.2 Compute Volume Not Examined in the Clockwise Direction = C	1 x 0.15 x 0.50 x 10.90 =0.82	cu.
2.3 Compute Clockwise Limitation Percentage (C / Vt2) X 100 = Z3	47.62%	
2.4 Compute Volume Not Examined in the Counter CW Direction = D	1 x 0.15 x 0.50 x 10.90 =0.82	cu.
2.5 Compute Counter CW Limitation Percentage (D / Vt2) X 100 = Z4	47.62%	

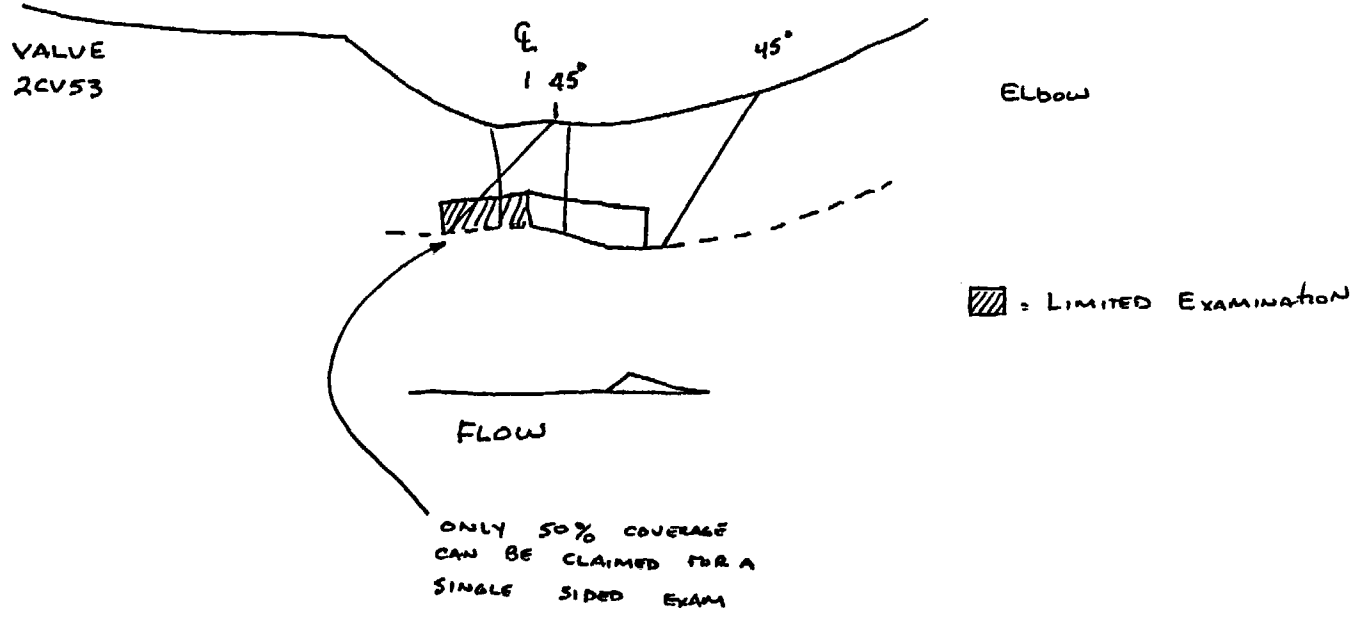
3.0 TOTAL EXAMINATION COVERAGE OBTAINED

3.1 Compute Total Limitation Percentage Z1+Z2+Z3+Z4/4 = L	61.43%
3.2 Compute Total Coverage (100 - L)	38.57%

LIMITATION EXPLANATION / REMARKS

PREPARED BY:	DATE:	REVIEWER:	DATE:
MW KEY	10/7/2000	Bob Kellerman	10/7/00

FRAMATOME TECHNOLOGIES	PROFILE AND THICKNESS	
	Exam Date: 10/06/00	**Summary No.: 707320**
Site: Salem Unit 2, RFO 11		**Examination Method: UT**
System: Chemical and Volume Control System		**Identification:** 4-CV-2257-16



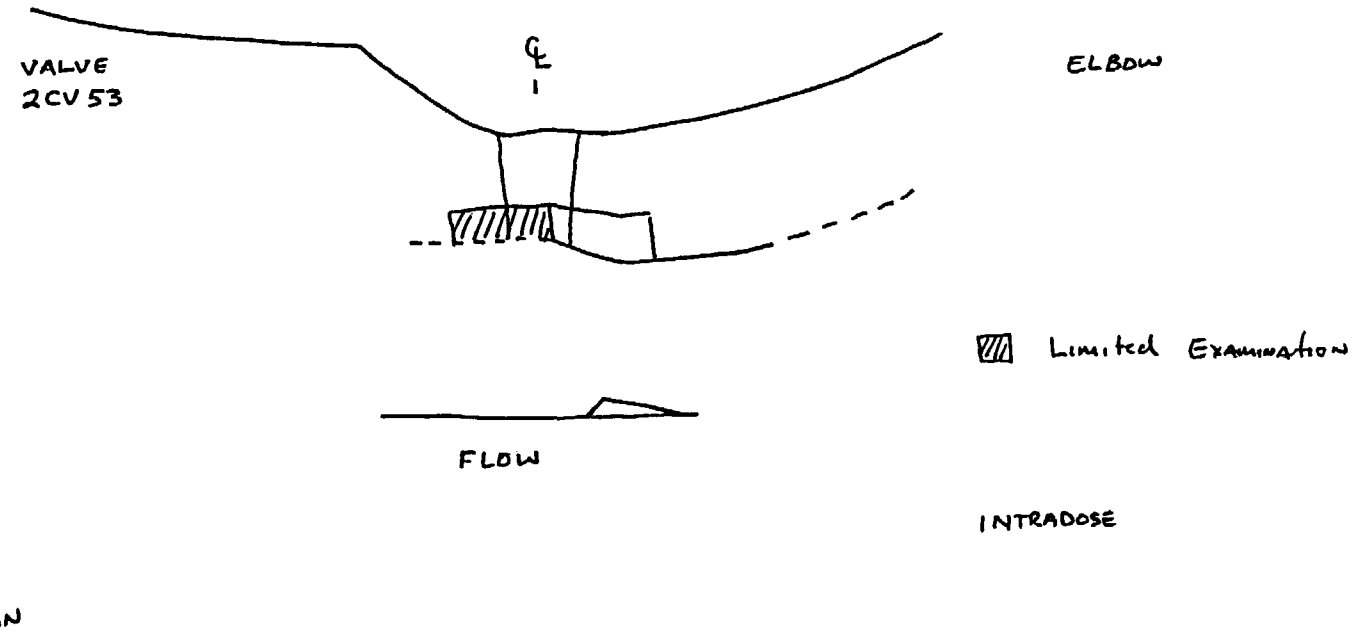
Pg. 7 of 9

Axial Scan

Prepared By	Date	Reviewed By	Date	Utility Review By	Date
MNICEY	10/5/00	Bob Keller	10/10/00	Wayne Denlinger	10-26-00

205

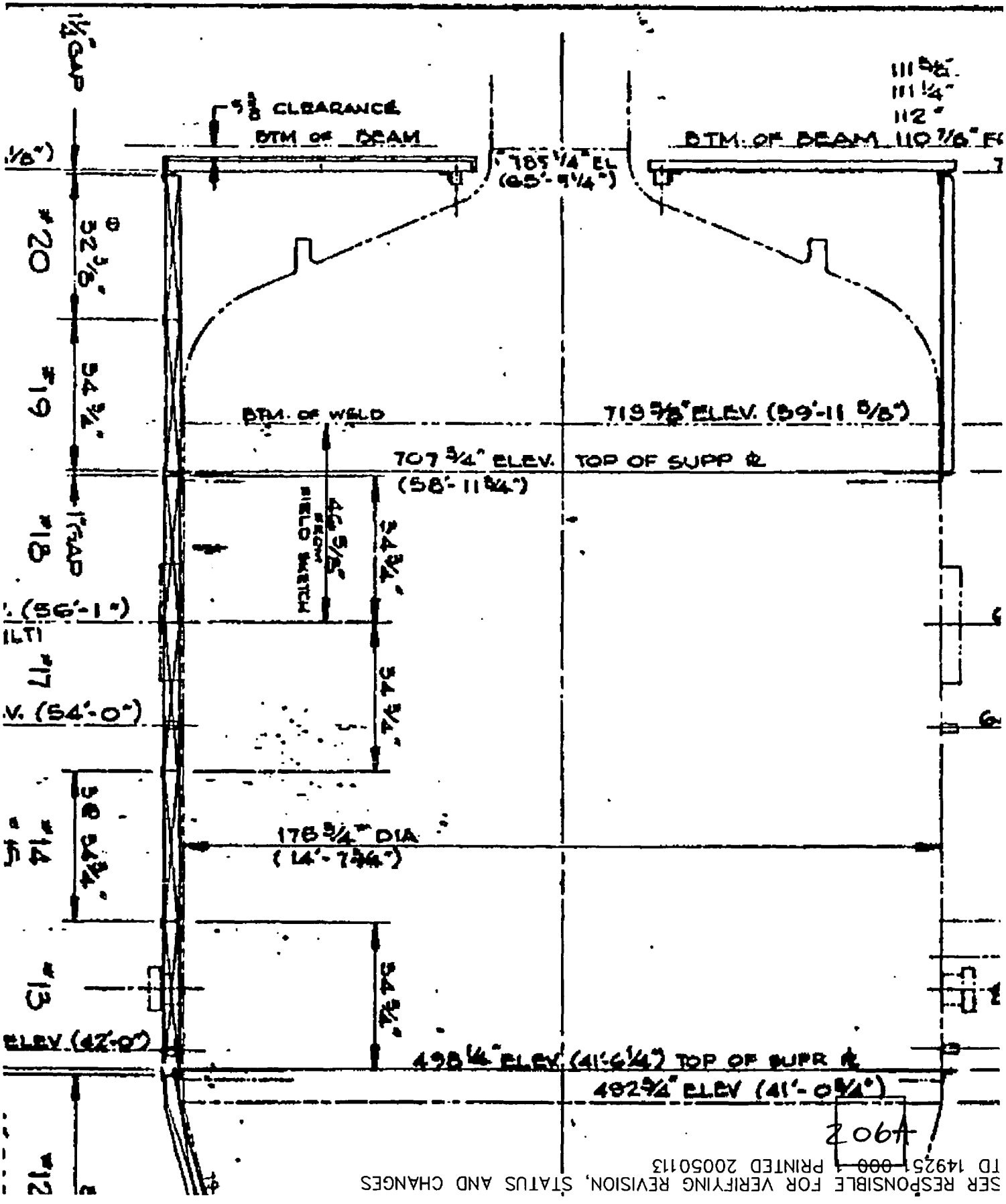
FRAMATOME TECHNOLOGIES	PROFILE AND THICKNESS	
	Exam Date: 10/06/00	**Summary No.: 707620**
Site: Salem Unit 2, RFO 11		**Examination Method: UT**
System: Chemical and Volume Control System		**Identification:** 3-CV-2259-14R1



6 of 8

Prepared By	Date	Reviewed By	Date	Utility Review By	Date
[illegible]	10/5/00	[illegible]	10/10/00	[illegible]	10-26-00

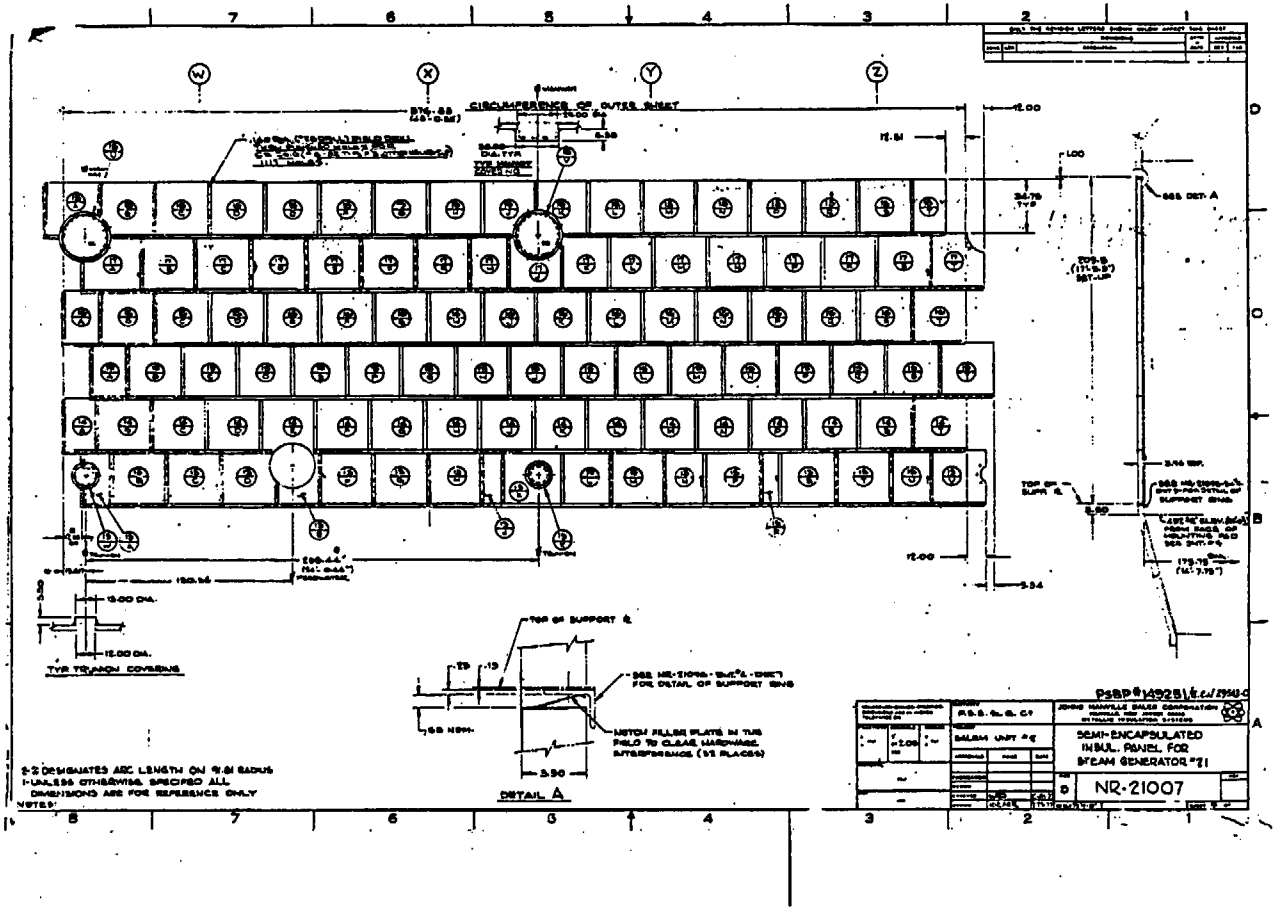
206

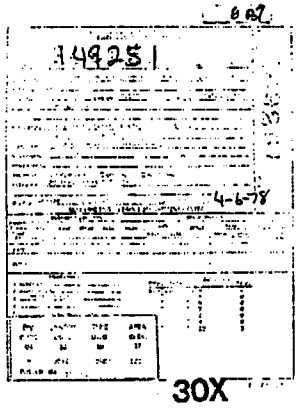


SER RESPONSIBLE FOR VERIFYING REVISION, STATUS AND CHANGES
TD 14925-000-1 PRINTED 20050113

206A

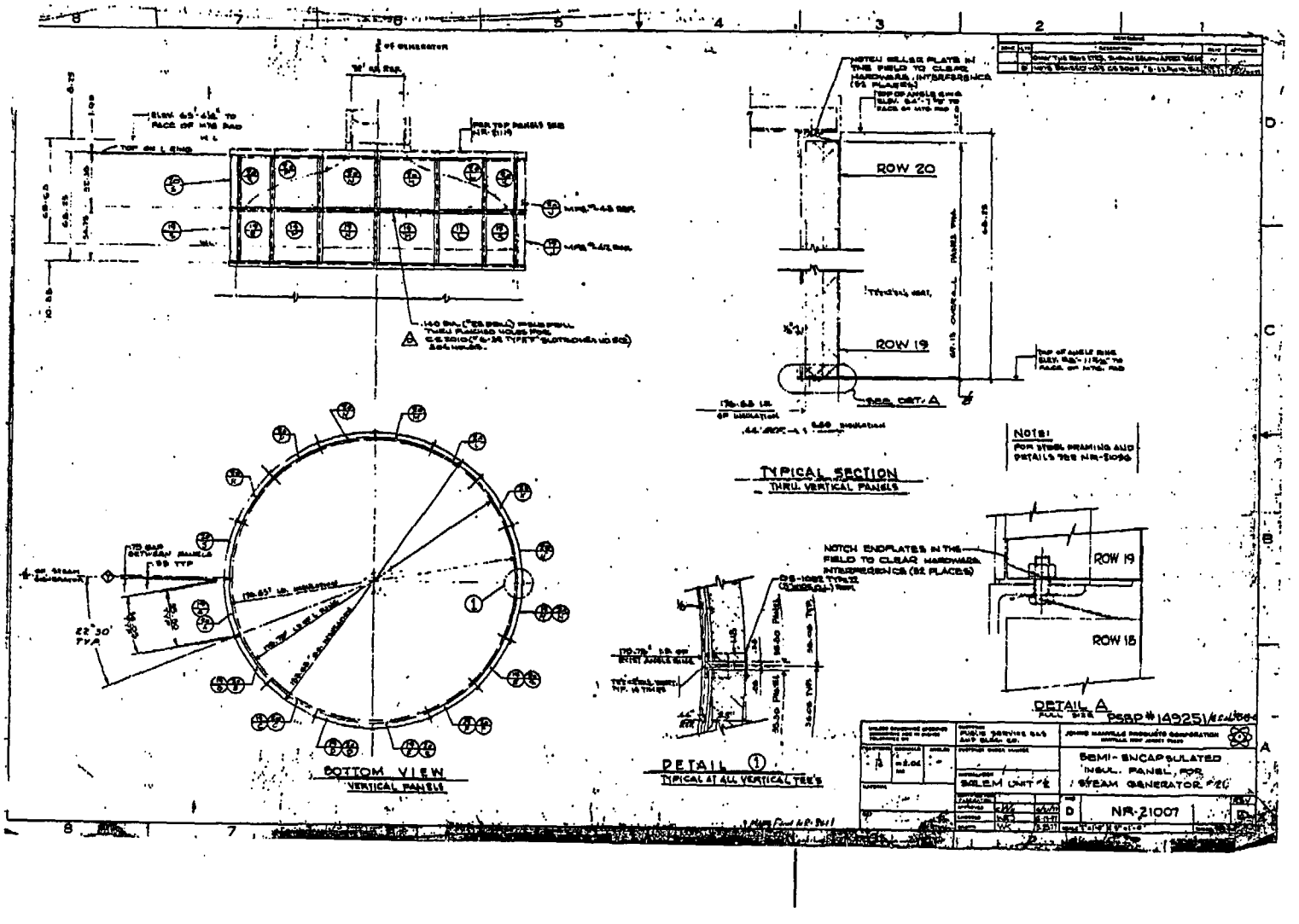
USER RESPONSIBLE FOR VERIFYING REVISION, STATUS AND CHANGES
VTD 149251 000 1 PRINTED 20050113

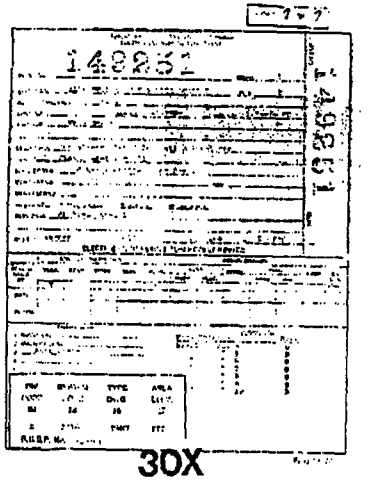




2069

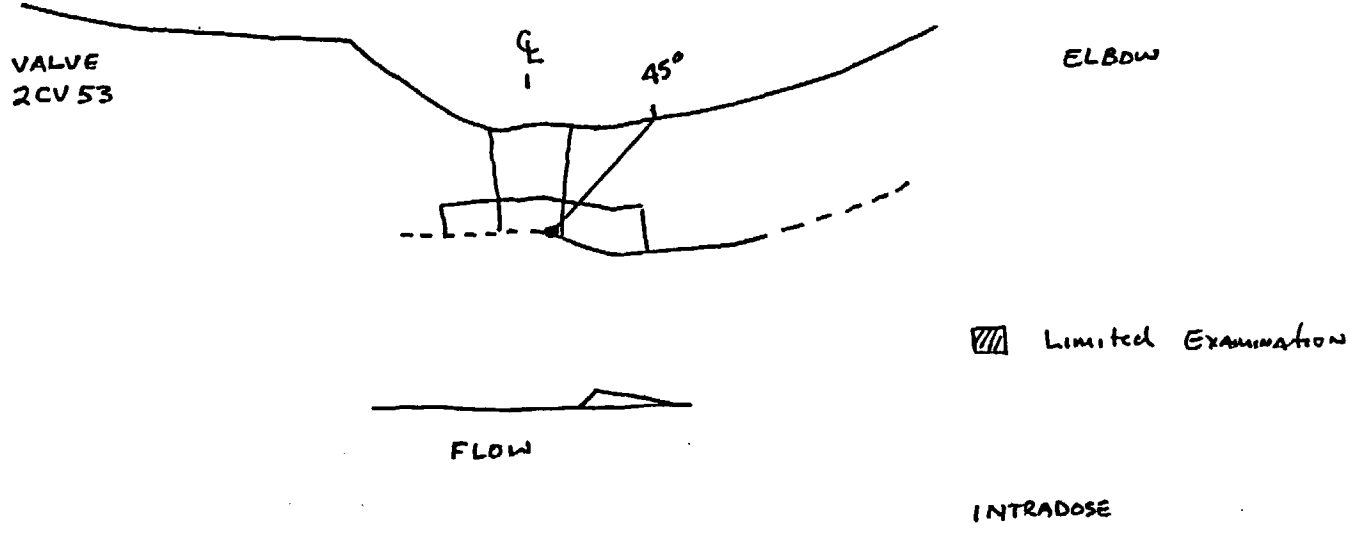
USER RESPONSIBLE FOR VERIFYING REVISION, STATUS AND CHANGES
VTD 149251 000 1 PRINTED 20050113





206 c

FRAMATOME TECHNOLOGIES	PROFILE AND THICKNESS	
	Exam Date: 10/06/00	**Summary No.:** 707620
Site: Salem Unit 2, RFO 11		**Examination Method:** UT
System: Chemical and Volume Control System		**Identification:** 3-CV-2259-14R1



Pg. 9 of 9

Prepared By	Date	Reviewed By	Date	Utility Review By	Date
	10/5/2000		10/10/00		10-26-00

207

FRAMATOME TECHNOLOGIES

VOLUMETRIC PIPING EXAMINATION COVERAGE REPORT

CUSTOMER: SALEM 2, RFO-11	SYSTEM: CHEMICAL AND VOLUME CONTROL SYSTEM
SUMMARY NO: 707320	COMPONENT ID: 4-CV-2257-16

VOLUMETRIC PIPING EXAMINATIONS

1.0 AXIAL ULTRASONIC EXAMINATIONS - Upstream (US) and Downstream (DS)

1.1 Compute Required Exam Volume (#Angles X Height X Width X Length =Vt1)	1 x 0.20 x 1.00 x 14.13 =2.83	cu.
1.2 Volume Not Examined with Ultrasonic Beam Directed US = A	1 x 0.20 x 0.50 x 14.13 =1.41	cu.
1.3 Compute Upstream Limitation Percentage {(A / Vt1) X 100} = Z1	50.00%	
1.4 Volume Not Examined with Ultrasonic Beam Directed DS = B	1 x 0.20 x 1.00 x 14.13 =2.83	cu.
1.5 Compute Downstream Limitation Percentage {(B / Vt1) X 100} = Z2	100.000%	

2.0 CIRCUMFERENTIAL ULTRASONIC EXAMINATIONS (Clockwise and Counterclockwise)

2.1 Compute Required Exam Volume (#Angles X Height X Width X Length =Vt2)	1 x 0.20 x 1.00 x 14.13 =2.83	cu.
2.2 Compute Volume Not Examined in the Clockwise Direction = C	1 x 0.20 x 0.50 x 14.13 =1.41	cu.
2.3 Compute Clockwise Limitation Percentage (C / Vt2) X 100 = Z3	50.00%	
2.4 Compute Volume Not Examined in the Counter CW Direction = D	1 x 0.20 x 0.50 x 14.13 =1.41	cu.
2.5 Compute Counter CW Limitation Percentage (D / Vt2) X 100 = Z4	50.00%	

3.0 TOTAL EXAMINATION COVERAGE OBTAINED

3.1 Compute Total Limitation Percentage Z1+Z2+Z3+Z4/4 = L	62.50%
3.2 Compute Total Coverage (100 - L)	37.50%

LIMITATION EXPLANATION / REMARKS

LIMITATION DUE TO VALVE.

USED 60 DEGREE L FROM ELBOW SIDE FOR COVERAGE ON VALVE SIDE.

PREPARED BY: [signature]	DATE: 10/7/2000	REVIEWER: Bob Kellerhall	DATE: 10/10/00

FRAMATOME TECHNOLOGIES

PROFILE AND THICKNESS

Exam Date: 10/16/00

Summary No.: 709960

Site: Salem Unit 2, RFO 11

Examination Method: UT

System: CHEMICAL AND VOLUME CONTROL SYSTEM

Identification: 3-CV-2256-6

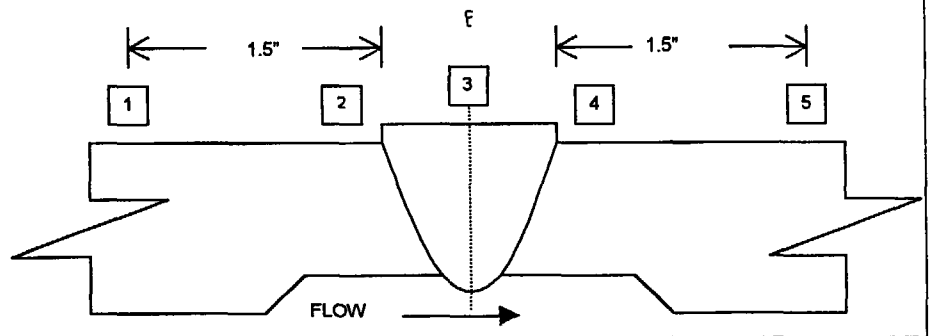
POSITION	0	90	180	270
1	0.40			
2	0.40			
3	0.44			
4	*			
5	*			

CROWN HEIGHT: **

CROWN WIDTH: 0.5"

NOM DIAMETER: 3.0"

WELD LENGTH: 11.0"



PIPE → VALVE

0 degree Top dead center
* Valve Body. Thickness not taken.
** Crown height approximately 1/10" . As welded condition.

Pg. 6 of 6

Prepared By	Date	Reviewed By	Date	Utility Review By	Date
[signature]	10/16/2K	[signature]	10/19/00	[signature]	10-24-00

204

FRAMATOME TECHNOLOGIES

VOLUMETRIC PIPING EXAMINATION COVERAGE REPORT

CUSTOMER: SALEM 2, RFO 11	SYSTEM: CHEMICAL AND VOLUME CONTROL SYSTEM
SUMMARY NO: 709960	COMPONENT ID: 3-CV-2256-6

VOLUMETRIC PIPING EXAMINATIONS

1.0 AXIAL ULTRASONIC EXAMINATIONS - Upstream (US) and Downstream (DS)

1.1 Compute Required Exam Volume (#Angles X Height X Width X Length =Vt1)	1 x 0.13 x 1.00 x 11.00 =1.46	cu.
1.2 Volume Not Examined with Ultrasonic Beam Directed US = A	1 x 0.13 x 0.50 x 11.00 =0.73	cu.
1.3 Compute Upstream Limitation Percentage {(A / Vt1) X 100} = Z1	50.00%	
1.4 Volume Not Examined with Ultrasonic Beam Directed DS = B	1 x 0.13 x 0.50 x 11.00 =0.73	cu.
1.5 Compute Downstream Limitation Percentage {(B / Vt1) X 100} = Z2	50.000%	

2.0 CIRCUMFERENTIAL ULTRASONIC EXAMINATIONS (Clockwise and Counterclockwise)

2.1 Compute Required Exam Volume (#Angles X Height X Width X Length =Vt2)	1 x 0.13 x 1.00 x 11.00 =1.46	cu.
2.2 Compute Volume Not Examined in the Clockwise Direction = C	1 x 0.13 x 0.50 x 11.00 =0.73	cu.
2.3 Compute Clockwise Limitation Percentage (C / Vt2) X 100 = Z3	50.00%	
2.4 Compute Volume Not Examined in the Counter CW Direction = D	1 x 0.13 x 0.50 x 11.00 =0.73	cu.
2.5 Compute Counter CW Limitation Percentage (D / Vt2) X 100 = Z4	50.00%	

3.0 TOTAL EXAMINATION COVERAGE OBTAINED

3.1 Compute Total Limitation Percentage Z1+Z2+Z3+Z4/4 = L	50.00%
3.2 Compute Total Coverage (100 - L)	50.00%

LIMITATION EXPLANATION / REMARKS

SINGLE SIDED EXAMINATION.

PREPARED BY:	DATE:	REVIEWER:	DATE:
[signature]	10/16/2K	Bob Kellenbach	10/19/00

FRAMATOME TECHNOLOGIES

VOLUMETRIC PIPING EXAMINATION COVERAGE REPORT

CUSTOMER: SALEM 2, RFO 11	SYSTEM: CHEMICAL AND VOLUME CONTROL SYSTEM
SUMMARY NO: 710910	COMPONENT ID: 3-CV-2255-12

VOLUMETRIC PIPING EXAMINATIONS

1.0 AXIAL ULTRASONIC EXAMINATIONS - Upstream (US) and Downstream (DS)

1.1 Compute Required Exam Volume (#Angles X Height X Width X Length =Vt1)	1 x 0.14 x 0.90 x 11.00 =1.39	cu.
1.2 Volume Not Examined with Ultrasonic Beam Directed US = A	1 x 0.14 x 0.45 x 11.00 =0.69	cu.
1.3 Compute Upstream Limitation Percentage {(A / Vt1) X 100} = Z1	50.00%	
1.4 Volume Not Examined with Ultrasonic Beam Directed DS = B	1 x 0.14 x 0.45 x 11.00 =0.69	cu.
1.5 Compute Downstream Limitation Percentage {(B / Vt1) X 100} = Z2	50.000%	

2.0 CIRCUMFERENTIAL ULTRASONIC EXAMINATIONS (Clockwise and Counterclockwise)

2.1 Compute Required Exam Volume (#Angles X Height X Width X Length =Vt2)	1 x 0.14 x 0.90 x 11.00 =1.39	cu.
2.2 Compute Volume Not Examined in the Clockwise Direction = C	1 x 0.14 x 0.45 x 11.00 =0.69	cu.
2.3 Compute Clockwise Limitation Percentage (C / Vt2) X 100 = Z3	50.00%	
2.4 Compute Volume Not Examined in the Counter CW Direction = D	1 x 0.14 x 0.45 x 11.00 =0.69	cu.
2.5 Compute Counter CW Limitation Percentage (D / Vt2) X 100 = Z4	50.00%	

3.0 TOTAL EXAMINATION COVERAGE OBTAINED

3.1 Compute Total Limitation Percentage Z1+Z2+Z3+Z4/4 = L	50.00%
3.2 Compute Total Coverage (100 - L)	50.00%

LIMITATION EXPLANATION / REMARKS

SINGLE SIDED EXAMINATION.

213

PREPARED BY: [signature] DATE: 10/16/2K

REVIEWER: Bob Kellerhall DATE: 10/19/00

~~[illegible]~~ 213

FRAMATOME TECHNOLOGIES

PROFILE AND THICKNESS

Exam Date: 10/16/00

Summary No.: 710190

Site: Salem Unit 2, RFO 11

Examination Method: UT

System: CHEMICAL AND VOLUME CONTROL SYSTEM

Identification: 3-CV-2255-12

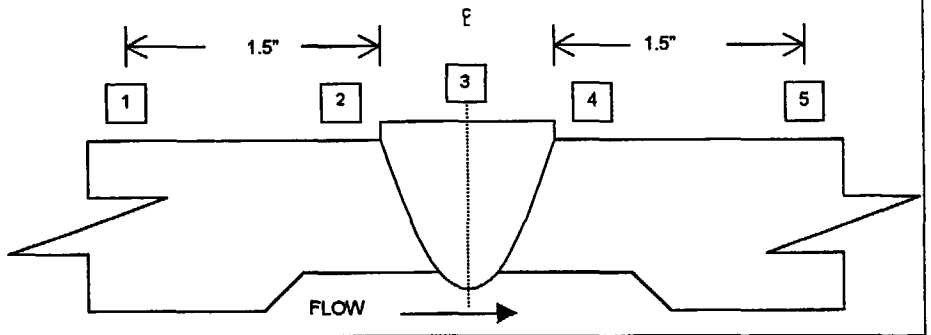
POSITION	0	90	180	270
1	0.42			
2	0.40			
3	0.46			
4	*			
5	*			

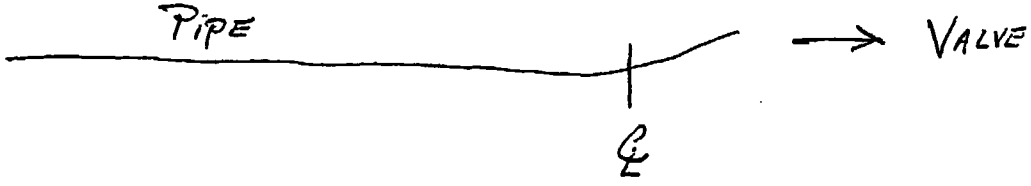
CROWN HEIGHT: **

CROWN WIDTH: 0.4"

NOM DIAMETER: 3.0"

WELD LENGTH: 11.0"





214

0 degree Top dead center
* Valve Body. Thickness not taken.
** Weld crown tapers from pipe to valve as shown by profile.

Pg. 6 of 6

214

Prepared By	Date	Reviewed By	Date	Utility Review By	Date
CE [illegible]	10/16/2K	Bob Kellerhall	10/19/00	Wayne Denlinger	10-24-00

WesDyne International
Reactor Vessel Inservice Examination
Scan Parameter Execution

CUSTOMER ..... PUBLIC SERVICE ELECTRIC & GAS
SITE ..... SALEM - UNIT 2
OUTAGE 2R12
VESSEL TYPE ..... PWR - WESTINGHOUSE FOUR LOOP

WELD IDENTIFICATION - 2-RPV-3442A

Weld and Scan Type = SHELL LONGITUDINAL WELD SCANNED IN THE
Scan Data File Name = W12-PRP-242-321

SCAN AREA PER THE ORIGINAL TECHNIQUES

UDRPS SCAN AREA DEFINITION		AZIMUTH (DEGREES)	ELEVATION (IN)
TOP LEFT	:	53.50	242.00
TOP RIGHT	:	66.50	242.00
BOTTOM LEFT	:	53.50	321.48
BOTTOM RIGHT	:	66.50	321.48

SCAN AREA/AREAS OBTAINED DURING THE SCAN

TOP LEFT	:	242.00	53.50
TOP RIGHT	:	320.50	53.50
BOTTOM LEFT	:	242.00	66.50
BOTTOM RIGHT	:	320.50	66.50

Increment Size (in)	=	0.50
Number of Indexes Specified	=	160
Number of Indexes Completed	=	158
Scan Area - Original Techniques (sq in)	=	1570.4
Scan Area - This Scan (sq in)	=	1570.4
Scan Area - Completed (sq in)	=	1550.8

	Time	Date
Scan Started	21:29:42	04/17/02
Scan Completed	22:03:20	04/17/02

Robot Operator Signature Paul Boone DATE 4/17/02

UT Operator Signature [illegible] DATE 4/17/02

Comments _____

215

USER REQUESTED FOR FULL LINE REVISION, STATUS AND CHANGES
VTD 301199 000 8 PRINTED 20050112

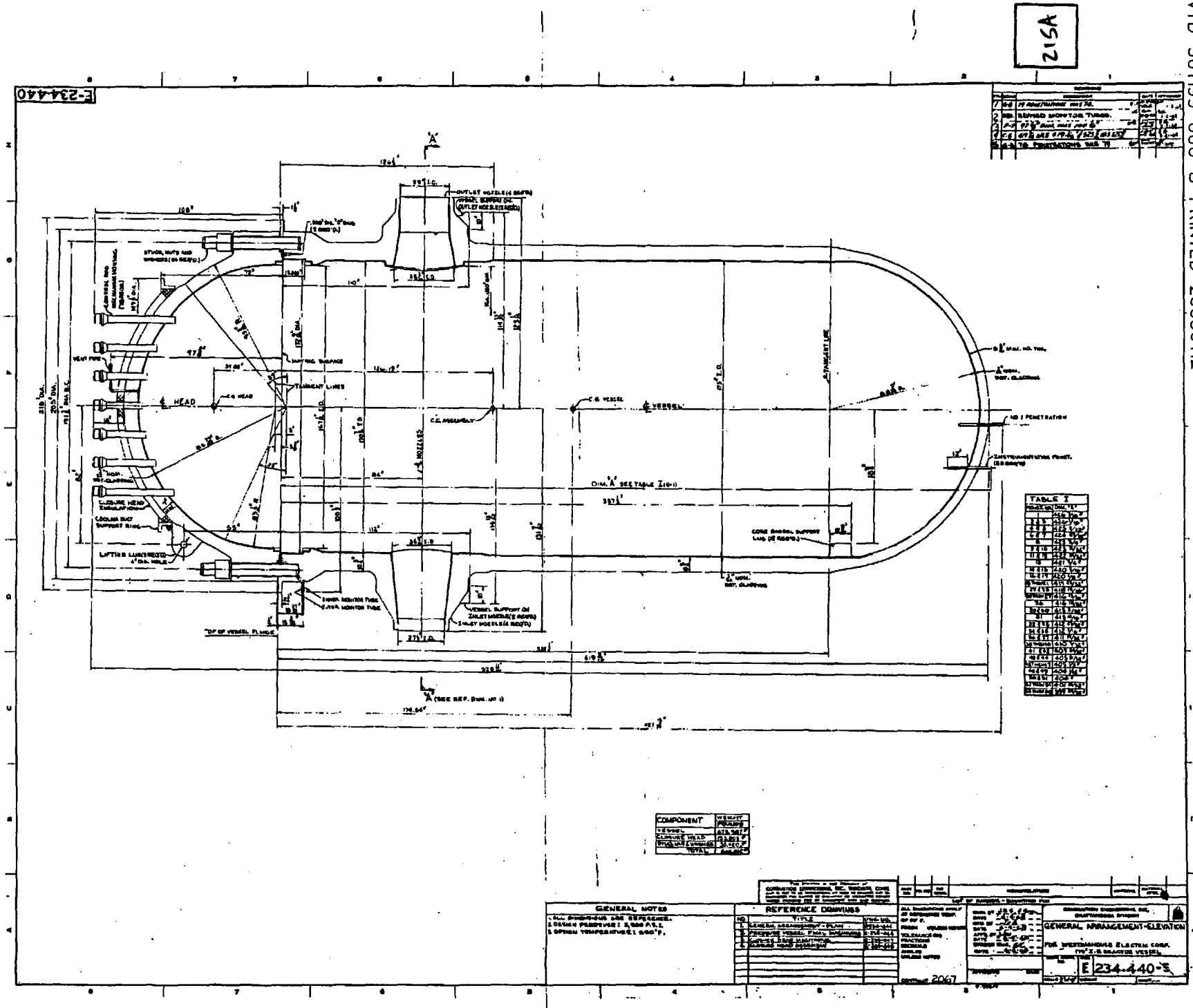
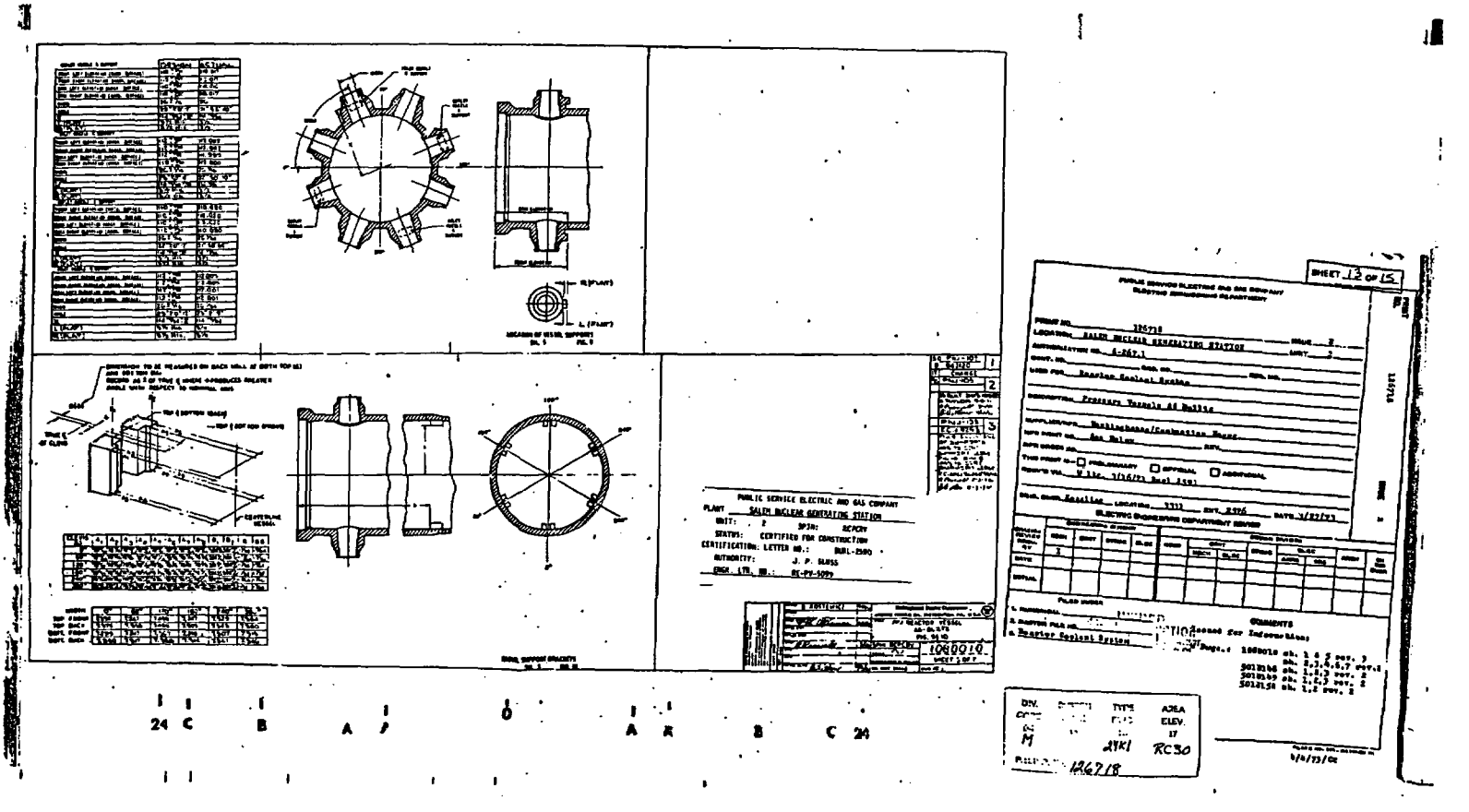


Fig. 1 General Arrangement—Elev. 8-1/8-2

USER RESPONSIBLE FOR VERIFYING REVISION, STATUS AND CHANGES
VTD 126718 000 2 PRINTED 20050112



2158

215B

WesDyne International
Reactor Vessel Inservice Examination
Scan Parameter Execution

CUSTOMER	PUBLIC SERVICE ELECTRIC & GAS
SITE	SALEM - UNIT 2
OUTAGE	2R12
VESSEL TYPE	PWR - WESTINGHOUSE FOUR LOOP

WELD IDENTIFICATION - 2-RPV-3442A

Weld and Scan Type = SHELL LONGITUDINAL - PARALLEL SCAN

Scan Data File Name = W12-PAR-260-320a

SCAN AREA PER THE ORIGINAL TECHNIQUES

UDRPS SCAN AREA DEFINITION		AZIMUTH (DEGREES)	ELEVATION (IN)
TOP LEFT	:	55.50	260.00
TOP RIGHT	:	64.50	260.00
BOTTOM LEFT	:	55.50	318.25
BOTTOM RIGHT	:	64.50	318.25

SCAN AREA/AREAS OBTAINED DURING THE SCAN

TOP LEFT	:	55.50	260.00
TOP RIGHT	:	64.50	318.25
BOTTOM LEFT	:	55.50	318.25
BOTTOM RIGHT	:	64.50	260.00

Increment Size (in)	=	0.50
Number of Indexes Specified	=	29
Number of Indexes Completed	=	29
Scan Area - Original Techniques (sq in)	=	844.6
Scan Area - This Scan (sq in)	=	844.6
Scan Area - Completed (sq in)	=	844.6

	Time	Date
Scan Started	21:15:56	04/17/02
Scan Completed	21:23:25	04/17/02

Robot Operator Signature Paul Boone DATE 4/17/02

UT Operator Signature [illegible] DATE 4/17/02

216

Comments

WesDyne International
Reactor Vessel Inservice Examination
Scan Parameter Execution

CUSTOMER	PUBLIC SERVICE ELECTRIC & GAS
SITE	SALEM - UNIT 2
OUTAGE	2R12
VESSEL TYPE	PWR - WESTINGHOUSE FOUR LOOP

WELD IDENTIFICATION - 2-RPV-3442A

Weld and Scan Type = SHELL LONGITUDINAL - PARALLEL SCAN

Scan Data File Name = W12-PAR-246-260

SCAN AREA PER THE ORIGINAL TECHNIQUES

UDRPS SCAN AREA DEFINITION		AZIMUTH (DEGREES)	ELEVATION (IN)
TOP LEFT	:	55.50	246.00
TOP RIGHT	:	64.50	246.00
BOTTOM LEFT	:	55.50	260.00
BOTTOM RIGHT	:	64.50	260.00

SCAN AREA/AREAS OBTAINED DURING THE SCAN

TOP LEFT	:	55.50	246.00
TOP RIGHT	:	64.50	260.00
BOTTOM LEFT	:	55.50	260.00
BOTTOM RIGHT	:	64.50	246.00

Increment Size (in)	=	0.50
Number of Indexes Specified	=	29
Number of Indexes Completed	=	29
Scan Area - Original Techniques (sq in)	=	203.0
Scan Area - This Scan (sq in)	=	203.0
Scan Area - Completed (sq in)	=	203.0

	Time	Date
Scan Started	21:09:05	04/17/02
Scan Completed	21:11:46	04/17/02

Robot Operator Signature Paul Boone DATE 4/17/02

UT Operator Signature [illegible] DATE 4/17/02

217

Comments

R.V. COVERAGE ESTIMATE BREAKDOWNS

PLANT NAME Salem #2

WesDyne International

COMPONENT LOWER LONGSEAM

WELD NO 2-RPV-3442-A

BEAM ANGLE BREAK DOWN

BEAM DIRECTION	45 Shear		45 L Single		45 L Dual			
	WELD	VOLUME	WELD	VOLUME	WELD	VOLUME	WELD	VOLUME
Perpindicular	79.33	79.33	79.33	79.33	81.69	81.69		
Parallel	80.74	80.81	81.13	81.20	80.66	80.73		
AVERAGE	80.05		80.25		81.20			

Comments:

COMBINED AVERAGE 80.50 Analyst [signature] Date 4/18/02

218

218

R.V. COVERAGE ESTIMATE BREAKDOWNS

PLANT NAME Salem #2

COMPONENT LOWER LONGSEAM

WELD NO 2-RPV-3442-B

WesDyne International

BEAM ANGLE BREAK DOWN

BEAM DIRECTION	45 Shear		45 L Single		45 L Dual			
	WELD	VOLUME	WELD	VOLUME	WELD	VOLUME	WELD	VOLUME
Perpindicular	79.33	79.33	79.33	79.33	81.69	81.69		
Parallel	80.74	80.81	81.13	81.20	80.66	80.73		
AVERAGE	80.05		80.25		81.20			

Comments:

COMBINED AVERAGE 80.50 Analyst [signature] Date 4/18/02

219

219

WesDyne International
Reactor Vessel Inservice Examination
Scan Parameter Execution

CUSTOMER	PUBLIC SERVICE ELECTRIC & GAS
SITE	SALEM - UNIT 2
OUTAGE	2R12
VESSEL TYPE	PWR - WESTINGHOUSE FOUR LOOP

WELD IDENTIFICATION - 2-RPV-3442B

Weld and Scan Type = SHELL LONGITUDINAL - PARALLEL SCAN

Scan Data File Name = W13-PAR-246-260

SCAN AREA PER THE ORIGINAL TECHNIQUES

UDRPS SCAN AREA DEFINITION		AZIMUTH (DEGREES)	ELEVATION (IN)
TOP LEFT	:	175.50	246.00
TOP RIGHT	:	184.50	246.00
BOTTOM LEFT	:	175.50	260.00
BOTTOM RIGHT	:	184.50	260.00

SCAN AREA/AREAS OBTAINED DURING THE SCAN

TOP LEFT	:	175.50	246.00
TOP RIGHT	:	184.50	260.00
BOTTOM LEFT	:	175.50	260.00
BOTTOM RIGHT	:	184.50	246.00

Increment Size (in)	=	0.50
Number of Indexes Specified	=	29
Number of Indexes Completed	=	29
Scan Area - Original Techniques (sq in)	=	203.0
Scan Area - This Scan (sq in)	=	203.0
Scan Area - Completed (sq in)	=	203.0

	Time	Date
Scan Started	20:36:57	04/17/02
Scan Completed	20:40:05	04/17/02

Robot Operator Signature Paul Roove DATE 4/17/02

UT Operator Signature [illegible] DATE 4/17/02

Comments

220

WesDyne International
Reactor Vessel Inservice Examination
Scan Parameter Execution

CUSTOMER	PUBLIC SERVICE ELECTRIC & GAS
SITE	SALEM - UNIT 2
OUTAGE	2R12
VESSEL TYPE	PWR - WESTINGHOUSE FOUR LOOP

WELD IDENTIFICATION - 2-RPV-3442B

Weld and Scan Type = SHELL LONGITUDINAL - PARALLEL SCAN

Scan Data File Name = W13-PAR-260-320a

SCAN AREA PER THE ORIGINAL TECHNIQUES

UDRPS SCAN AREA DEFINITION		AZIMUTH (DEGREES)	ELEVATION (IN)
TOP LEFT	:	175.50	260.00
TOP RIGHT	:	184.50	260.00
BOTTOM LEFT	:	175.50	318.25
BOTTOM RIGHT	:	184.50	318.25

SCAN AREA/AREAS OBTAINED DURING THE SCAN

TOP LEFT	:	175.50	260.00
TOP RIGHT	:	184.50	318.25
BOTTOM LEFT	:	175.50	318.25
BOTTOM RIGHT	:	184.50	260.00

Increment Size (in)	=	0.50
Number of Indexes Specified	=	29
Number of Indexes Completed	=	29
Scan Area - Original Techniques (sq in)	=	844.6
Scan Area - This Scan (sq in)	=	844.6
Scan Area - Completed (sq in)	=	844.6

	Time	Date
Scan Started	20:50:55	04/17/02
Scan Completed	20:59:20	04/17/02

Robot Operator Signature Paul Boom DATE 4/17/02

UT Operator Signature [illegible] DATE 4/17/02

221

Comments

WesDyne International
Reactor Vessel Inservice Examination
Scan Parameter Execution

CUSTOMER	PUBLIC SERVICE ELECTRIC & GAS
SITE	SALEM - UNIT 2
OUTAGE	2R12
VESSEL TYPE	PWR - WESTINGHOUSE FOUR LOOP

WELD IDENTIFICATION - 2-RPV-3442B

Weld and Scan Type = SHELL LONGITUDINAL WELD SCANNED IN THE
Scan Data File Name = W13-PRP-242-321

SCAN AREA PER THE ORIGINAL TECHNIQUES

UDRPS SCAN AREA DEFINITION		AZIMUTH (DEGREES)	ELEVATION (IN)
TOP LEFT	:	173.50	242.00
TOP RIGHT	:	186.50	242.00
BOTTOM LEFT	:	173.50	321.48
BOTTOM RIGHT	:	186.50	321.48

SCAN AREA/AREAS OBTAINED DURING THE SCAN

TOP LEFT	:	242.00	173.50
TOP RIGHT	:	321.48	173.50
BOTTOM LEFT	:	242.00	186.50
BOTTOM RIGHT	:	321.48	186.50

Increment Size (in)	=	0.50
Number of Indexes Specified	=	160
Number of Indexes Completed	=	158
Scan Area - Original Techniques (sq in)	=	1570.4
Scan Area - This Scan (sq in)	=	1570.4
Scan Area - Completed (sq in)	=	1550.8

	Time	Date
Scan Started	20:02:27	04/17/02
Scan Completed	20:26:24	04/17/02

Robot Operator Signature Paul Boone DATE 4/17/02

UT Operator Signature [illegible] DATE 4/17/02

Comments _____

222

WesDyne International
Reactor Vessel Inservice Examination
Scan Parameter Execution

CUSTOMER	PUBLIC SERVICE ELECTRIC & GAS
SITE	SALEM - UNIT 2
OUTAGE	2R12
VESSEL TYPE	PWR - WESTINGHOUSE FOUR LOOP

WELD IDENTIFICATION - 2-RPV-3442C

Weld and Scan Type = SHELL LONGITUDINAL - PARALLEL SCAN

Scan Data File Name = W14-PAR-260-320a

SCAN AREA PER THE ORIGINAL TECHNIQUES

UDRPS SCAN AREA DEFINITION		AZIMUTH (DEGREES)	ELEVATION (IN)
TOP LEFT	:	295.50	260.00
TOP RIGHT	:	304.50	260.00
BOTTOM LEFT	:	295.50	318.25
BOTTOM RIGHT	:	304.50	318.25

SCAN AREA/AREAS OBTAINED DURING THE SCAN

TOP LEFT	:	295.50	260.00
TOP RIGHT	:	304.50	318.25
BOTTOM LEFT	:	295.50	318.25
BOTTOM RIGHT	:	304.50	260.00

Increment Size (in)	=	0.50
Number of Indexes Specified	=	29
Number of Indexes Completed	=	29
Scan Area - Original Techniques (sq in)	=	844.6
Scan Area - This Scan (sq in)	=	844.6
Scan Area - Completed (sq in)	=	844.6

	Time	Date
Scan Started	23:00:56	04/17/02
Scan Completed	23:10:46	04/17/02

Robot Operator Signature Paul Boone DATE 4/17/02

UT Operator Signature [illegible] DATE 4/17/02

223

Comments

WesDyne International
Reactor Vessel Inservice Examination
Scan Parameter Execution

CUSTOMER	PUBLIC SERVICE ELECTRIC & GAS
SITE	SALEM - UNIT 2
OUTAGE	2R12
VESSEL TYPE	PWR - WESTINGHOUSE FOUR LOOP

WELD IDENTIFICATION - 2-RPV-3442C

Weld and Scan Type = SHELL LONGITUDINAL - PARALLEL SCAN

Scan Data File Name = W14-PAR-246-260

SCAN AREA PER THE ORIGINAL TECHNIQUES

UDRPS SCAN AREA DEFINITION		AZIMUTH (DEGREES)	ELEVATION (IN)
TOP LEFT	:	295.50	246.00
TOP RIGHT	:	304.50	246.00
BOTTOM LEFT	:	295.50	260.00
BOTTOM RIGHT	:	304.50	260.00

SCAN AREA/AREAS OBTAINED DURING THE SCAN

TOP LEFT	:	295.50	246.00
TOP RIGHT	:	304.50	260.00
BOTTOM LEFT	:	295.50	260.00
BOTTOM RIGHT	:	304.50	246.00

Increment Size (in)	=	0.50
Number of Indexes Specified	=	29
Number of Indexes Completed	=	29
Scan Area - Original Techniques (sq in)	=	203.0
Scan Area - This Scan (sq in)	=	203.0
Scan Area - Completed (sq in)	=	203.0

	Time	Date
Scan Started	22:50:51	04/17/02
Scan Completed	22:53:52	04/17/02

Robot Operator Signature Paul Boone DATE 4/17/02

UT Operator Signature [illegible] DATE 4/17/02

224

Comments

WesDyne International
Reactor Vessel Inservice Examination
Scan Parameter Execution

CUSTOMER	PUBLIC SERVICE ELECTRIC & GAS
SITE	SALEM - UNIT 2
OUTAGE	2R12
VESSEL TYPE	PWR - WESTINGHOUSE FOUR LOOP

WELD IDENTIFICATION - 2-RPV-3442C

Weld and Scan Type = SHELL LONGITUDINAL WELD SCANNED IN THE
Scan Data File Name = W14-PRP-242-321

SCAN AREA PER THE ORIGINAL TECHNIQUES

UDRPS SCAN AREA DEFINITION		AZIMUTH (DEGREES)	ELEVATION (IN)
TOP LEFT	:	293.50	242.00
TOP RIGHT	:	306.50	242.00
BOTTOM LEFT	:	293.50	321.48
BOTTOM RIGHT	:	306.50	321.48

SCAN AREA/AREAS OBTAINED DURING THE SCAN

TOP LEFT	:	246.00	293.50
TOP RIGHT	:	321.00	306.50
BOTTOM LEFT	:	246.00	306.50
BOTTOM RIGHT	:	321.00	293.50

Increment Size (in)	=	0.50
Number of Indexes Specified	=	160
Number of Indexes Completed	=	159
Scan Area - Original Techniques (sq in)	=	1570.4
Scan Area - This Scan (sq in)	=	1570.4
Scan Area - Completed (sq in)	=	1560.6

	Time	Date
Scan Started	22:13:12	04/17/02
Scan Completed	22:42:09	04/17/02

Robot Operator Signature Paul Boone DATE 4/17/02

UT Operator Signature [illegible] DATE 4/17/02

Comments

225

R.V. COVERAGE ESTIMATE BREAKDOWNS

PLANT NAME Salem #2

WesDyne International

COMPONENT LOWER LONGSEAM

WELD NO 2-RPV-3442-C

BEAM ANGLE BREAK DOWN

BEAM DIRECTION	45 Shear		45 L Single		45 L Dual			
	WELD	VOLUME	WELD	VOLUME	WELD	VOLUME	WELD	VOLUME
Perpindicular	79.33	79.33	79.33	79.33	81.69	81.69		
Parallel	80.74	80.81	81.13	81.20	80.66	80.73		
AVERAGE	80.05		80.25		81.20			

Comments:

COMBINED AVERAGE 80.50 Analyst [signature] Date 4/18/02

226

WesDyne International
Reactor Vessel Inservice Examination
Scan Parameter Execution

CUSTOMER	PUBLIC SERVICE ELECTRIC & GAS
SITE	SALEM - UNIT 2
OUTAGE	2R12
VESSEL TYPE	PWR - WESTINGHOUSE FOUR LOOP

WELD IDENTIFICATION - 2-RPV-1443A

Weld and Scan Type = HEAD MERIDINAL PERPENDICULAR SCAN

Scan Data File Name = W19-MER-PRP-270

SCAN AREA PER THE ORIGINAL TECHNIQUES

UDRPS SCAN AREA DEFINITION		MERIDINAL (DEGREES)	AZIMUTH (DEGREES)
TOP LEFT	:	48.20	266.42
TOP RIGHT	:	48.20	273.58
BOTTOM LEFT	:	76.00	266.42
BOTTOM RIGHT	:	76.00	273.58

SCAN AREA/AREAS OBTAINED DURING THE SCAN

TOP LEFT	:	76.00	266.29
TOP RIGHT	:	48.20	274.84
BOTTOM LEFT	:	76.00	273.72
BOTTOM RIGHT	:	48.20	265.17

Increment Size (in)	=	0.50
Number of Indexes Specified	=	87
Number of Indexes Completed	=	87
Scan Area - Original Techniques (sq in)	=	483.3
Scan Area - This Scan (sq in)	=	483.3
Scan Area - Completed (sq in)	=	483.3

	Time	Date
Scan Started	04:15:34	04/17/02
Scan Completed	04:22:53	04/17/02

Robot Operator Signature _____ DATE 04/17/02

UT Operator Signature _____ DATE 4/17/02

227

Comments _____

USER RESPONSIBLE FOR VERIFYING REVISION, STATUS AND CHANGES
VTD 325044 001 1 PRINTED 20050112

227A

E-234440

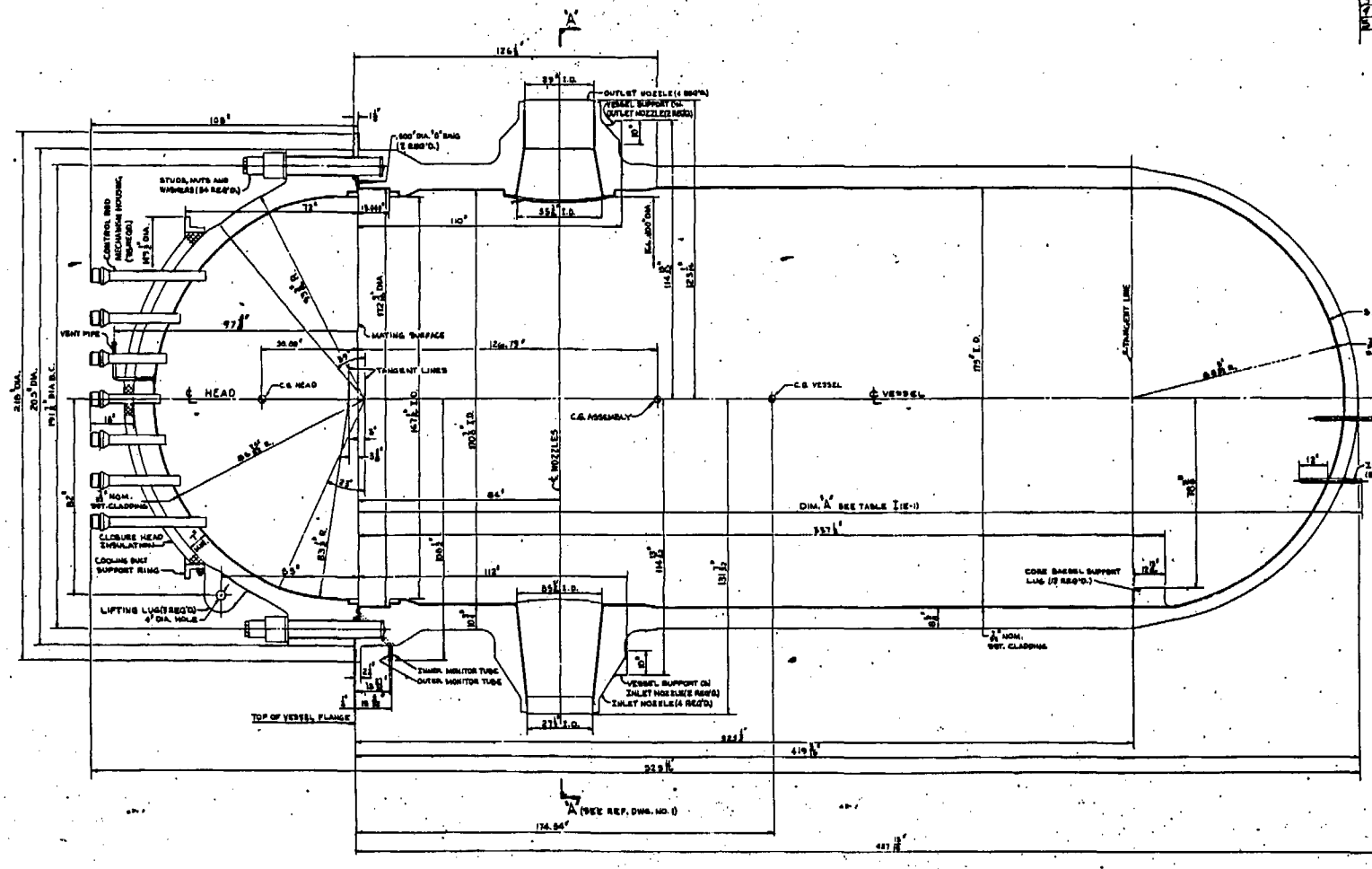


TABLE I	
PENET. NO.	DIM. "A"
1	466 1/16"
2 & 3	465 1/16"
4 & 5	463 3/16"
6 & 7	464 11/16"
8	462 3/4"
9 & 10	463 3/16"
11 & 12	463 3/16"
13	463 1/4"
14 & 15	463 1/16"
16 & 17	462 1/16"
18 THRU 21	461 11/16"
22 & 23	461 11/16"
24 THRU 27	461 7/16"
28	461 7/16"
29 & 30	461 3/16"
31	461 3/16"
32 & 33	461 1/16"
34 & 35	461 1/16"
36 & 37	461 1/16"
38 THRU 40	460 7/16"
41 & 42	460 3/16"
43 & 44	460 3/16"
45 THRU 47	460 1/16"
48 & 49	460 1/16"
50 & 51	460"
52 THRU 54	459 15/16"
55 THRU 58	459 13/16"

COMPONENT	WEIGHT POUNDS
VESSEL	678,587#
CLOSURE HEAD	132,401#
STUDS, NUTS & WASHERS	30,160#
TOTAL	841,148#

NO.	DRAWING	TITLE
1	E234-441	General Arrangement Elevation
2	E234-442	General Arrangement Plan
3	E234-443	Pressure Vessel Forging & Welding
4	E234-444	Bottom Head Forging & Welding
5	E234-445	Pressure Vessel Final Machining
6	E234-446	Closure Head
7	E234-447	Closure Head Forging & Welding
8	E234-448	Closure Head Machining
9	E234-449	Closure Head Machining
10	E234-450	Blind Flange Machining
11	E234-451	Flange Nut and Washer Details
12	E234-452	Assembly Flange Details
13	E234-453	Control Rod Guide
14	E234-454	Control Rod Transmission Details
15	E234-455	Control Rod Assembly
16	E234-456	Inlet & Outlet Nozzle Details
17	E234-457	Inlet & Outlet Nozzle Details
18	E234-458	Instrumentation Penetration Assy
19	E234-459	Instrumentation Penetration Assy
20	E234-460	Vent Pipe Details
21	E234-461	Cooling Belt Support Ring
22	E234-462	Control Rod Mechanism Housing Base Plate

LIST OF MATERIAL - QUANTITIES FOR

GENERAL NOTES

1. ALL DIMENSIONS ARE REFERENCE.
2. DESIGN PRESSURE: 2,500 P.S.I.
3. DESIGN TEMPERATURE: 650°F.

REFERENCE DRAWINGS

NO.	TITLE	DWG. NO.
1	GENERAL ARRANGEMENT - PLAN	E234-441
2	PRESSURE VESSEL FINAL MACHINING	E234-445
3	CLOSURE HEAD MACHINING	E234-447
4	CLOSURE HEAD ASSEMBLY	E234-448

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ALL DIMENSIONS APPLY AT REFERENCE TEMP OF 68° F.
FINISH UNLESS NOTED
TOLERANCE ON FRACTIONS DECIMALS ANGLES UNLESS NOTED

CONTRACT 2067

SALEM 2

MOD# 325044

SHT 1

COMBUSTION ENGINEERING, INC. CHATTANOOGA DIVISION

GENERAL ARRANGEMENT-ELEVATION

FOR WESTINGHOUSE ELECTRIC CORP. PTA 2 & REACTOR VESSEL

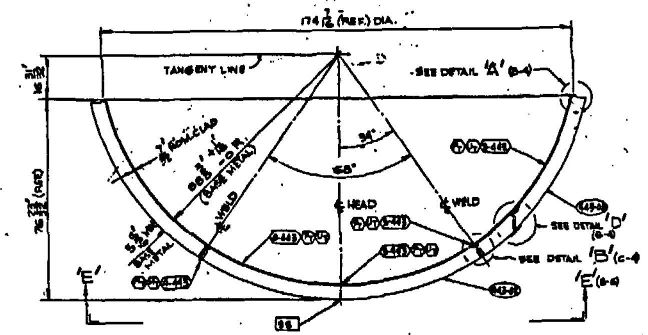
E 234-440-5

E-234-443

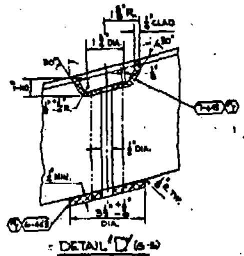
USER RESPONSIBLE FOR VERIFYING REVISION, STATUS AND CHANGES
VTD 325044 004 1 PRINTED 20050112

REVISIONS

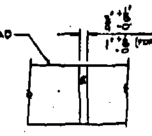
SYM	ZONE	DESCRIPTION	DATE	APPROVED
1	D-4	ADDED ½" & DELETED 05⁄16" R. REVISED DETAIL WELD PROC.	[illegible]	[illegible]
2	A-3	ADDED ALT. PROC. FOR WELD # 5-443	[illegible]	[illegible]
3	A-3 A-6 A-6 A-5	DELETED WELD TABLE. ADDED NOTE # 6. ADDED REF. DWG. # 5. DELETED REFERENCE TO CONT. # 2167.	[illegible]	[illegible]
4	E-3 GEN GEN B/I-2 E-6 G-2	DELETED SECTION "C-C". DELETED PC. # 443-04, 05, 06, & 07. ADDED PC. # 443-08 THRU 443-17. ADDED VIEW "E-E". ADDED SECTION "F-F". ADDED SECTION "G-G".	[illegible]	[illegible]
5	C-8 B-4	16 [illegible] WAS 17 [illegible] 76 [illegible] WAS 76 [illegible] REVISED DETAIL 'A'	[illegible]	[illegible]
6	C5 B-7	WELD # 2-443 WAS # 2-443 A. WELD # 8-443 WAS # 2-443 B.	[illegible]	[illegible]
7	GEN GEN G-3	DELETED VIEW 'E-E', SECT. G-G' 'F-F' DELETED PC# 443-08 THRU 443-17 ADDED DETAIL 'H'	[illegible]	[illegible]
8	F-7 B-6 G-4 G-2	BOTTOM HEAD ASSY. WAS SECT. 'A-A' VIEW 'E-E' WAS BOTTOM HEAD ASSY. DETAIL 'D' WAS SECT. 'D-D' SECTION 'H-H' WAS DETAIL 'H'	[illegible]	[illegible]



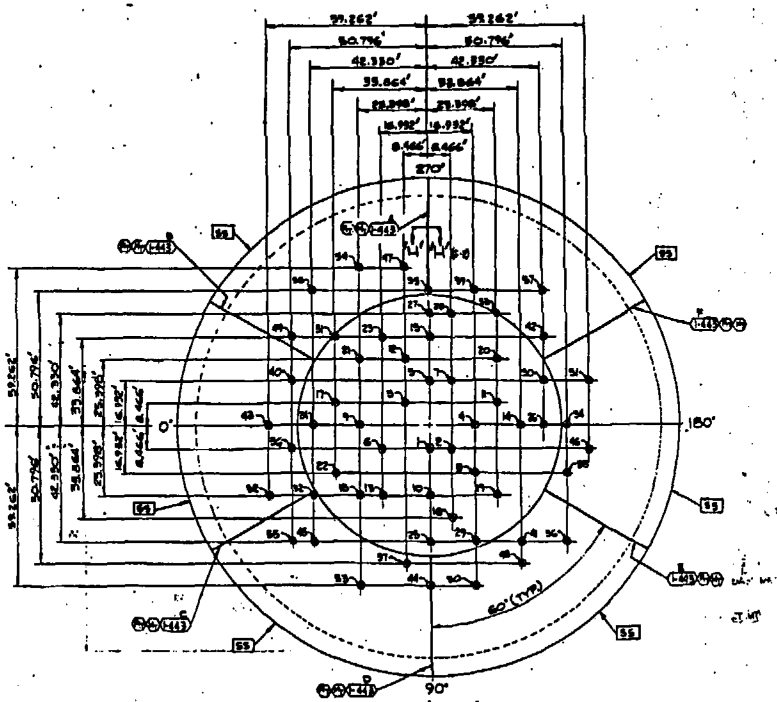
443-01 BOTTOM HEAD ASSEMBLY
SCALE: ¾" = 1'-0"



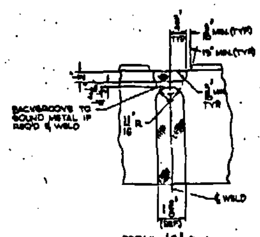
DETAIL 'D' (G-3)
TYPICAL FOR HOLES # 1 THRU 58
SCALE: 6"=1'-0"



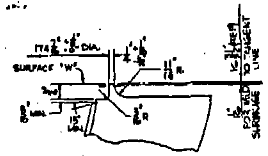
SECTION 'H-H' (G-4)
TYPICAL 6 PLACES
SCALE NONE



VIEW 'E-E' (G-6)
SCALE: ¾" = 1'-0"



DETAIL 'B' (B-3)
SCALE: 6"=1'-0"



DETAIL 'A' (H-6)
SCALE: 6"=1'-0"

MATERIAL NOTES:

'A': AS SUPPLEMENTED BY CE PURCHASE SPECIFICATION PSF 12(b)

3-2
SEE FIRST SHEET FOR APPROVAL STATUS SHT # 4
P5893
325044

ASSY NO.	PC. NO.	NO. REQD.	NOMENCLATURE	MATERIAL	MATERIAL SPEC.	MATL NOTE
	443-08	6	SIDE SEGMENT MAKE FROM 6 9⁄16" THK. PL.	ALLOY STL	A-533	'A'
	443-02	1	DOME SEGMENT MAKE FROM 6 9⁄16" THK. PL.	ALLOY STL	A-533	'A'
443-01		1	BOTTOM HEAD ASSEMBLY CONSISTING OF:			

LIST OF MATERIAL - QUANTITIES FOR ONE (1) UNIT, ONE (1) UNIT ON CONTRACT

6. FOR DETAIL WELD PROCEDURES SEE REF. DWG. # 5.

GENERAL NOTES:

1. SIZES IN [illegible] ARE FINISHED SIZES, NO ALLOWANCE MADE FOR FABRICATION OR WELD SHRINKAGE UNLESS NOTED.
2. REFERENCE (REF.) DIMENSIONS ARE FOR INFORMATION ONLY; DO NOT USE FOR FABRICATION.
3. ALL CLADDING TO BE AS DEPOSITED FINISH UNLESS NOTED AND A MIN. THICKNESS OF 5⁄32".
4. ALL FABRICATION SHALL BE IN ACCORDANCE WITH ASME BOILER CODE SECTION III.
5. FOR STANDARD NOTES SEE REF. DWG. # 3.

REFERENCE DRAWINGS

NO.	TITLE	DWG. NO.
1	PRESSURE VESSEL WELDING / MACHINING	E-234-442
2	PRESSURE VESSEL FINAL MACHINING	E-234-444
3	STANDARD NOTES	[illegible]
4	INSTRUMENTATION PENET. ASSY. DETAILS	[illegible]
5	DETAIL WELD PROCEDURES	[illegible]

THIS DRAWING IS THE PROPERTY OF COMBUSTION ENGINEERING, INC., WINDSOR, CONN. [illegible]

ALL DIMENSIONS APPLY AT REFERENCE TEMP. OF 68° F. SEE NOTE 1 FINISH UNLESS NOTED
TOLERANCE ON: FRACTIONS ± 1⁄16", DECIMALS ± .010", ANGLES ± 0°-30' UNLESS NOTED

DWN. BY [illegible] DATE [illegible]
CKD. BY [illegible] DATE [illegible]
APPD. BY [illegible] DATE [illegible]
STRESS ANAL. [illegible] DATE [illegible]

APPROVED — DATE

CONTRACT 2067

COMBUSTION ENGINEERING, INC.
CHATTANOOGA DIVISION

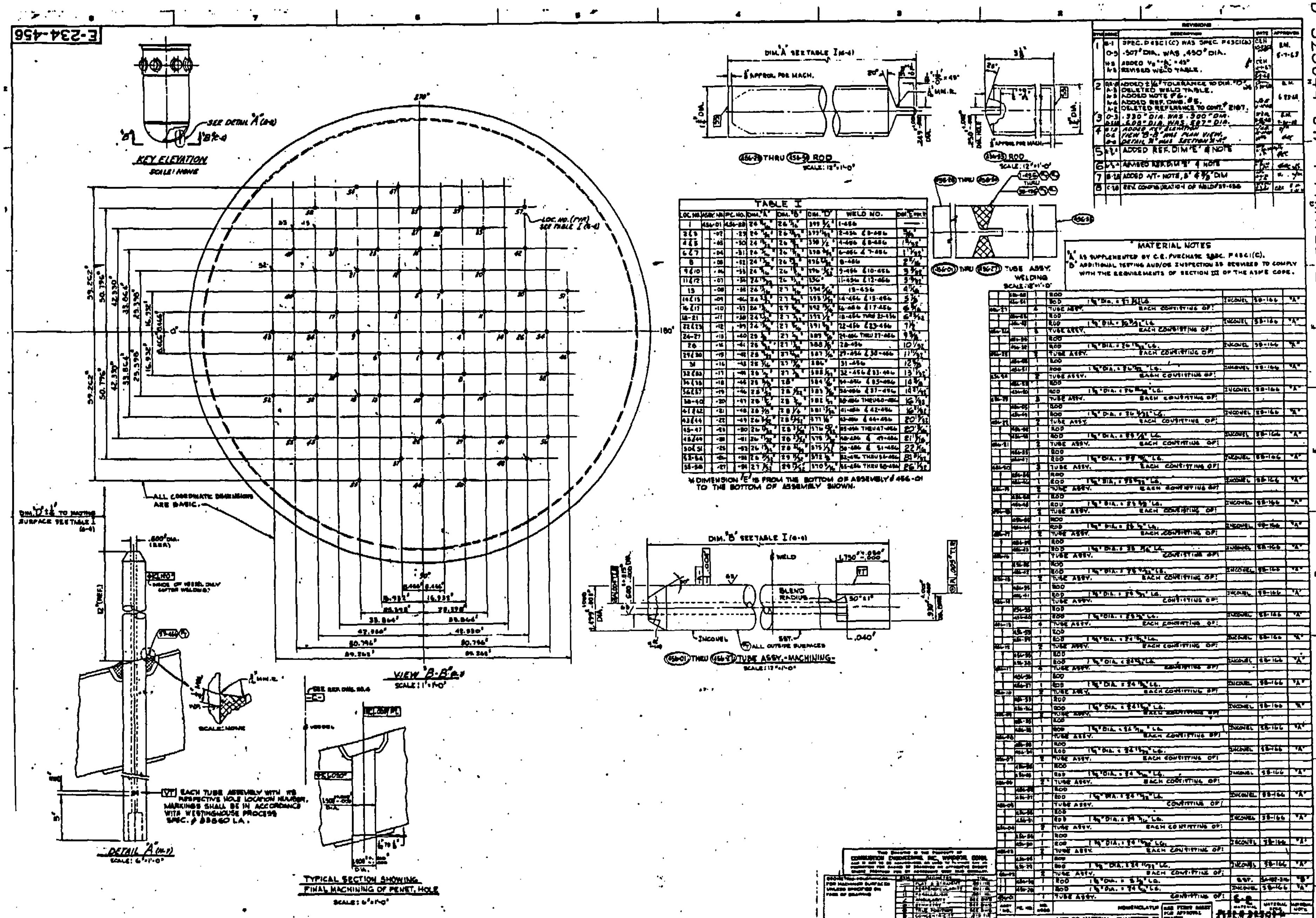
BOTTOM HEAD FORMING & WELDING
FOR WESTINGHOUSE ELECTRIC CORP.
173" I.D. REACTOR VESSEL

E 234-443-8

2278

USER RESPONSIBLE FOR VERIFYING REVISION, STATUS AND CHANGES
VTD 325044 017 1 PRINTED 20050112

E-234-456



GENERAL NOTES

1. FOR STANDARD NOTES, SEE REF. DWG. NO. 3.
2. SIZES IN L/M ARE FINISHED SIZES. NO ALLOWANCE MADE FOR FABRICATION OR WELD SHRINKAGE UNLESS NOTED.
3. REFERENCE (REF.) DIMENSIONS ARE FOR INFORMATION ONLY, DO NOT USE FOR FABRICATION.
4. ALL FABRICATION SHALL BE IN ACCORDANCE WITH ASME BOILER CODE SECTION III.
5. DOUBLE ARROW INDICATES DIMENSION TO GIVEN REFERENCE LINE.
6. FOR DETAIL WELD PROCEDURES SEE REF. DWG. # 5.

REFERENCE DRAWINGS

NO.	TITLE	DWG. NO.
1.	BOTTOM HEAD FORMING & WELDING	E-234-448
2.	PRESSURE VESSEL FINAL MACHINING	E-234-444
3.	STANDARD NOTES	A-230-546
4.	PRESSURE VESSEL FORMING & WELDING	E-234-442
5.	DETAIL WELD PROCEDURES	4-245-178

ALL DIMENSIONS APPLY AT REFERENCE TEMP. OF 68° F.
FINISH √ SEE NOTE 1 UNLESS NOTED
TOLERANCE ON: FRACTIONS ± 1/64, DECIMALS ±.010, ANGLES ± 0°-30' UNLESS NOTED

CONTRACT 2067

DWN. BY J.B. S... DATE 3-11-?
CHKD. BY ... DATE 3-11-?
APPD. BY ... DATE ...
SUPERVG. ENG. ... DATE ...

APPROVED DATE

SEE PRINT SHEET FOR APPROVAL STATUS SHT # 17

ENGINEERING, INC.
CHATTANOOGA DIVISION

INSTRUMENTATION PENETRATION ASSY. AND DETAILS - BOTTOM HEAD
FOR WESTINGHOUSE ELECTRIC CORP. 173" I.D. REACTOR VESSEL

SIZE E 234-456-3

227C

WesDyne International
Reactor Vessel Inservice Examination
Scan Parameter Execution

CUSTOMER	PUBLIC SERVICE ELECTRIC & GAS
SITE	SALEM - UNIT 2
OUTAGE	2R12
VESSEL TYPE	PWR - WESTINGHOUSE FOUR LOOP

WELD IDENTIFICATION - 2-RPV-1443A

Weld and Scan Type = HEAD MERIDINAL PERPENDICULAR SCAN

Scan Data File Name = W19-MER-PRP-270A

SCAN AREA PER THE ORIGINAL TECHNIQUES

UDRPS SCAN AREA DEFINITION		MERIDINAL (DEGREES)	AZIMUTH (DEGREES)
TOP LEFT	:	40.60	266.42
TOP RIGHT	:	40.60	270.39
BOTTOM LEFT	:	48.00	266.42
BOTTOM RIGHT	:	48.00	270.39

SCAN AREA/AREAS OBTAINED DURING THE SCAN

TOP LEFT	:	48.00	265.15
TOP RIGHT	:	40.60	264.46
BOTTOM LEFT	:	48.00	270.64
BOTTOM RIGHT	:	40.60	270.73

Increment Size (in)	=	0.50
Number of Indexes Specified	=	24
Number of Indexes Completed	=	24
Scan Area - Original Techniques (sq in)	=	75.4
Scan Area - This Scan (sq in)	=	75.4
Scan Area - Completed (sq in)	=	75.4

	Time	Date
Scan Started	04:23:00	04/17/02
Scan Completed	04:27:32	04/17/02

Robot Operator Signature _____ DATE 04/17/02 228

UT Operator Signature _____ DATE 4/17/02

Comments _____

228

WesDyne International
Reactor Vessel Inservice Examination
Scan Parameter Execution

CUSTOMER	PUBLIC SERVICE ELECTRIC & GAS
SITE	SALEM - UNIT 2
OUTAGE	2R12
VESSEL TYPE	PWR - WESTINGHOUSE FOUR LOOP

WELD IDENTIFICATION - 2-RPV-1443A

Weld and Scan Type = HEAD MERIDINAL PARALLEL SCAN

Scan Data File Name = W19-MER-PAR-270

SCAN AREA PER THE ORIGINAL TECHNIQUES

UDRPS SCAN AREA DEFINITION		AZIMUTH (DEGREES)	MERIDINAL (DEGREES)
TOP LEFT	:	266.38	75.23
TOP RIGHT	:	273.62	75.23
BOTTOM LEFT	:	265.36	49.20
BOTTOM RIGHT	:	274.64	49.20

SCAN AREA/AREAS OBTAINED DURING THE SCAN

TOP LEFT	:	266.38	75.23
TOP RIGHT	:	273.62	49.20
BOTTOM LEFT	:	266.38	49.20
BOTTOM RIGHT	:	273.62	75.23

Increment Size (in)	=	0.50
Number of Indexes Specified	=	23
Number of Indexes Completed	=	23
Scan Area - Original Techniques (sq in)	=	461.2
Scan Area - This Scan (sq in)	=	461.2
Scan Area - Completed (sq in)	=	461.2

	Time	Date
Scan Started	04:32:34	04/17/02
Scan Completed	04:40:08	04/17/02

Robot Operator Signature Gary P. Kistler DATE 04/17/02

UT Operator Signature DATE 4/17/02

Comments

229

WesDyne International
Reactor Vessel Inservice Examination
Scan Parameter Execution

CUSTOMER	PUBLIC SERVICE ELECTRIC & GAS
SITE	SALEM - UNIT 2
OUTAGE	2R12
VESSEL TYPE	PWR - WESTINGHOUSE FOUR LOOP

WELD IDENTIFICATION - 2-RPV-1443A

Weld and Scan Type = HEAD MERIDINAL PARALLEL SCAN

Scan Data File Name = W19-MER-PAR-270A

SCAN AREA PER THE ORIGINAL TECHNIQUES

UDRPS SCAN AREA DEFINITION		AZIMUTH (DEGREES)	MERIDINAL (DEGREES)
TOP LEFT	:	265.38	49.20
TOP RIGHT	:	273.53	49.20
BOTTOM LEFT	:	264.71	41.60
BOTTOM RIGHT	:	274.04	41.60

SCAN AREA/AREAS OBTAINED DURING THE SCAN

TOP LEFT	:	265.38	49.20
TOP RIGHT	:	273.08	41.60
BOTTOM LEFT	:	265.38	41.60
BOTTOM RIGHT	:	273.08	49.20
TOP LEFT	:	272.22	49.20
TOP RIGHT	:	273.08	41.60
BOTTOM LEFT	:	272.22	41.60
BOTTOM RIGHT	:	273.08	49.20

Increment Size (in)	=	0.50
Number of Indexes Specified	=	21
Number of Indexes Completed	=	19
Scan Area - Original Techniques (sq in)	=	122.8
Scan Area - This Scan (sq in)	=	122.8
Scan Area - Completed (sq in)	=	111.1

	Time	Date
Scan Started	04:49:20	04/17/02
Scan Completed	04:52:29	04/17/02

230

Robot Operator Signature DATE 04/17/02

UT Operator Signature DATE 4/17/02

230

R.V. COVERAGE ESTIMATE BREAKDOWNS

PLANT NAME SALEM UNIT 2

WesDyne International

COMPONENT MERIDONAL WELD

WELD NO 2-RPV-1443A

BEAM ANGLE BREAK DOWN

BEAM DIRECTION	45 Shear		45 L Single		45 L Dual			
	WELD	VOLUME	WELD	VOLUME	WELD	VOLUME	WELD	VOLUME
Perpindicular	89.10	89.10	89.10	89.10	89.10	85.44		
Parallel	87.02	87.02	87.02	87.02	87.02	87.02		
AVERAGE	88.06		88.06		87.15			

Comments:

COMBINED AVERAGE 87.76 Analyst [illegible] Date 4/18/02

231

231

R.V. COVERAGE ESTIMATE BREAKDOWNS

PLANT NAME SALEM UNIT 2

COMPONENT MERIDONAL WELD

WELD NO 2-RPV-1443C

WesDyne International

BEAM ANGLE BREAK DOWN

BEAM DIRECTION	45 Shear		45 L Single		45 L Dual			
	WELD	VOLUME	WELD	VOLUME	WELD	VOLUME	WELD	VOLUME
Perpindicular	91.00	85.50	91.00	89.06	91.00	85.25		
Parallel	88.20	86.30	88.20	87.20	88.20	87.20		
AVERAGE	87.75		88.87		87.91			

Comments:

COMBINED AVERAGE 88.18 Analyst [signature] Date 4/18/02

232

232

WesDyne International
Reactor Vessel Inservice Examination
Scan Parameter Execution

CUSTOMER	PUBLIC SERVICE ELECTRIC & GAS
SITE	SALEM - UNIT 2
OUTAGE	2R12
VESSEL TYPE	PWR - WESTINGHOUSE FOUR LOOP

WELD IDENTIFICATION - 2-RPV-1443C

Weld and Scan Type = HEAD MERIDINAL PARALLEL SCAN

Scan Data File Name = W15-MER-PAR-30A

SCAN AREA PER THE ORIGINAL TECHNIQUES

UDRPS SCAN AREA DEFINITION		AZIMUTH (DEGREES)	MERIDINAL (DEGREES)
TOP LEFT	:	27.63	55.00
TOP RIGHT	:	34.27	55.00
BOTTOM LEFT	:	27.00	40.50
BOTTOM RIGHT	:	35.41	40.50

SCAN AREA/AREAS OBTAINED DURING THE SCAN

TOP LEFT	:	27.63	55.00
TOP RIGHT	:	35.41	55.00
BOTTOM LEFT	:	27.63	40.50
BOTTOM RIGHT	:	35.41	40.50

Increment Size (in)	=	0.50
Number of Indexes Specified	=	18
Number of Indexes Completed	=	18
Scan Area - Original Techniques (sq in)	=	201.6
Scan Area - This Scan (sq in)	=	201.6
Scan Area - Completed (sq in)	=	201.6

	Time	Date
Scan Started	06:37:11	04/17/02
Scan Completed	06:41:19	04/17/02

Robot Operator Signature _____ DATE 04/17/02

UT Operator Signature _____ DATE 4/17/02

Comments _____

233

WesDyne International
Reactor Vessel Inservice Examination
Scan Parameter Execution

CUSTOMER	PUBLIC SERVICE ELECTRIC & GAS
SITE	SALEM - UNIT 2
OUTAGE	2R12
VESSEL TYPE	PWR - WESTINGHOUSE FOUR LOOP

WELD IDENTIFICATION - 2-RPV-1443C

Weld and Scan Type = HEAD MERIDINAL PARALLEL SCAN

Scan Data File Name = W15-MER-PAR-30

SCAN AREA PER THE ORIGINAL TECHNIQUES

UDRPS SCAN AREA DEFINITION		AZIMUTH (DEGREES)	MERIDINAL (DEGREES)
TOP LEFT	:	26.38	75.23
TOP RIGHT	:	33.62	75.23
BOTTOM LEFT	:	25.72	55.00
BOTTOM RIGHT	:	34.28	55.00

SCAN AREA/AREAS OBTAINED DURING THE SCAN

TOP LEFT	:	26.38	75.23
TOP RIGHT	:	33.62	55.00
BOTTOM LEFT	:	26.38	55.00
BOTTOM RIGHT	:	33.62	75.23

Increment Size (in)	=	0.50
Number of Indexes Specified	=	23
Number of Indexes Completed	=	23
Scan Area - Original Techniques (sq in)	=	358.8
Scan Area - This Scan (sq in)	=	358.8
Scan Area - Completed (sq in)	=	358.8

	Time	Date
Scan Started	06:27:43	04/17/02
Scan Completed	06:34:13	04/17/02

Robot Operator Signature _____ DATE 04/17/02

UT Operator Signature _____ DATE 4/17/02

Comments _____

234

WesDyne International
Reactor Vessel Inservice Examination
Scan Parameter Execution

CUSTOMER	PUBLIC SERVICE ELECTRIC & GAS
SITE	SALEM - UNIT 2
OUTAGE	2R12
VESSEL TYPE	PWR - WESTINGHOUSE FOUR LOOP

WELD IDENTIFICATION - 2-RPV-1443C

Weld and Scan Type = HEAD MERIDINAL PERPENDICULAR SCAN

Scan Data File Name = W15-MER-PRP-30A

SCAN AREA PER THE ORIGINAL TECHNIQUES

UDRPS SCAN AREA DEFINITION		MERIDINAL (DEGREES)	AZIMUTH (DEGREES)
TOP LEFT	:	39.50	29.08
TOP RIGHT	:	39.50	32.65
BOTTOM LEFT	:	54.00	29.08
BOTTOM RIGHT	:	54.00	32.65

SCAN AREA/AREAS OBTAINED DURING THE SCAN

TOP LEFT	:	54.00	28.77
TOP RIGHT	:	39.50	28.44
BOTTOM LEFT	:	54.00	33.33
BOTTOM RIGHT	:	39.50	34.23

Increment Size (in)	=	0.50
Number of Indexes Specified	=	46
Number of Indexes Completed	=	46
Scan Area - Original Techniques (sq in)	=	130.6
Scan Area - This Scan (sq in)	=	130.6
Scan Area - Completed (sq in)	=	130.6

	Time	Date
Scan Started	06:18:30	04/17/02
Scan Completed	06:22:16	04/17/02

Robot Operator Signature _____ DATE 04/17/02

UT Operator Signature _____ DATE 4/17/02

Comments _____

235

WesDyne International
Reactor Vessel Inservice Examination
Scan Parameter Execution

CUSTOMER	PUBLIC SERVICE ELECTRIC & GAS
SITE	SALEM - UNIT 2
OUTAGE	2R12
VESSEL TYPE	PWR - WESTINGHOUSE FOUR LOOP

WELD IDENTIFICATION - 2-RPV-1443C

Weld and Scan Type = HEAD MERIDINAL PERPENDICULAR SCAN

Scan Data File Name = W15-MER-PRP-30

SCAN AREA PER THE ORIGINAL TECHNIQUES

UDRPS SCAN AREA DEFINITION		MERIDINAL (DEGREES)	AZIMUTH (DEGREES)
TOP LEFT	:	54.00	26.42
TOP RIGHT	:	54.00	33.58
BOTTOM LEFT	:	76.00	26.42
BOTTOM RIGHT	:	76.00	33.58

SCAN AREA/AREAS OBTAINED DURING THE SCAN

TOP LEFT	:	76.00	26.29
TOP RIGHT	:	54.00	34.46
BOTTOM LEFT	:	76.00	33.72
BOTTOM RIGHT	:	54.00	25.55

Increment Size (in)	=	0.50
Number of Indexes Specified	=	69
Number of Indexes Completed	=	69
Scan Area - Original Techniques (sq in)	=	383.3
Scan Area - This Scan (sq in)	=	383.3
Scan Area - Completed (sq in)	=	383.3

	Time	Date
Scan Started	06:08:55	04/17/02
Scan Completed	06:16:58	04/17/02

Robot Operator Signature Gary L. Kistler DATE 04/17/02

UT Operator Signature _____ DATE _____

Comments _____

236

R.V. COVERAGE ESTIMATE BREAKDOWNS

PLANT NAME SALEM UNIT 2

WesDyne International

COMPONENT MERIDONAL WELD

WELD NO 2-RPV-1443D

BEAM ANGLE BREAK DOWN

BEAM DIRECTION	45 Shear		45 L Single		45 L Dual			
	WELD	VOLUME	WELD	VOLUME	WELD	VOLUME	WELD	VOLUME
Perpindicular	75.00	75.00	75.00	75.00	75.00	75.00		
Parallel	70.00	70.00	70.00	70.00	70.00	70.00		
AVERAGE	72.50		72.50		72.50			

Comments:

COMBINED AVERAGE 72.50 Analyst [signature] Date 4/18/02

237

237

WesDyne International
Reactor Vessel Inservice Examination
Scan Parameter Execution

CUSTOMER	PUBLIC SERVICE ELECTRIC & GAS
SITE	SALEM - UNIT 2
OUTAGE	2R12
VESSEL TYPE	PWR - WESTINGHOUSE FOUR LOOP

WELD IDENTIFICATION - 2-RPV-1443D

Weld and Scan Type = HEAD MERIDINAL PERPENDICULAR SCAN

Scan Data File Name = W16-MER-PRP-90

SCAN AREA PER THE ORIGINAL TECHNIQUES

UDRPS SCAN AREA DEFINITION		MERIDINAL (DEGREES)	AZIMUTH (DEGREES)
TOP LEFT	:	48.00	86.42
TOP RIGHT	:	48.00	93.58
BOTTOM LEFT	:	76.00	86.42
BOTTOM RIGHT	:	76.00	93.58

SCAN AREA/AREAS OBTAINED DURING THE SCAN

TOP LEFT	:	76.00	86.29
TOP RIGHT	:	48.75	94.80
BOTTOM LEFT	:	76.00	93.72
BOTTOM RIGHT	:	48.75	85.21

Increment Size (in)	=	0.50
Number of Indexes Specified	=	88
Number of Indexes Completed	=	85
Scan Area - Original Techniques (sq in)	=	488.8
Scan Area - This Scan (sq in)	=	488.8
Scan Area - Completed (sq in)	=	472.2

	Time	Date
Scan Started	06:55:36	04/17/02
Scan Completed	07:06:37	04/17/02

Robot Operator Signature _____ DATE 04/17/02

UT Operator Signature _____ DATE 4/17/02

Comments _____

238

238

WesDyne International
Reactor Vessel Inservice Examination
Scan Parameter Execution

CUSTOMER	PUBLIC SERVICE ELECTRIC & GAS
SITE	SALEM - UNIT 2
OUTAGE	2R12
VESSEL TYPE	PWR - WESTINGHOUSE FOUR LOOP

WELD IDENTIFICATION - 2-RPV-1443D

Weld and Scan Type = HEAD MERIDINAL PARALLEL SCAN

Scan Data File Name = W16-MER-PAR-90

SCAN AREA PER THE ORIGINAL TECHNIQUES

UDRPS SCAN AREA DEFINITION		AZIMUTH (DEGREES)	MERIDINAL (DEGREES)
TOP LEFT	:	86.38	75.23
TOP RIGHT	:	93.62	75.23
BOTTOM LEFT	:	85.46	50.60
BOTTOM RIGHT	:	94.54	50.60

SCAN AREA/AREAS OBTAINED DURING THE SCAN

TOP LEFT	:	86.38	75.23
TOP RIGHT	:	93.62	50.60
BOTTOM LEFT	:	86.38	50.60
BOTTOM RIGHT	:	93.62	75.23

Increment Size (in)	=	0.50
Number of Indexes Specified	=	23
Number of Indexes Completed	=	23
Scan Area - Original Techniques (sq in)	=	437.0
Scan Area - This Scan (sq in)	=	437.0
Scan Area - Completed (sq in)	=	437.0

	Time	Date
Scan Started	06:46:19	04/17/02
Scan Completed	06:52:37	04/17/02

Robot Operator Signature _____ DATE 04/17/02

UT Operator Signature _____ DATE 4/17/02

Comments _____

239

R.V. COVERAGE ESTIMATE BREAKDOWNS

PLANT NAME SALEM UNIT 2

WesDyne

COMPONENT SHELL TO FLANGE WELD

International

WELD NO 2-RPV-7442

BEAM ANGLE BREAK DOWN

BEAM DIRECTION	45 Shear		45 L Single		45 L Dual			
	WELD	VOLUME	WELD	VOLUME	WELD	VOLUME	WELD	VOLUME
Perpindicular	81.00	81.00	81.00	81.00	81.00	81.00		
Parallel	82.20	82.20	82.20	82.20	82.20	82.20		
AVERAGE	81.60		81.60		81.60			

Comments:

COMBINED AVERAGE 81.60 Analyst [signature] Date 4/19/02

240

240

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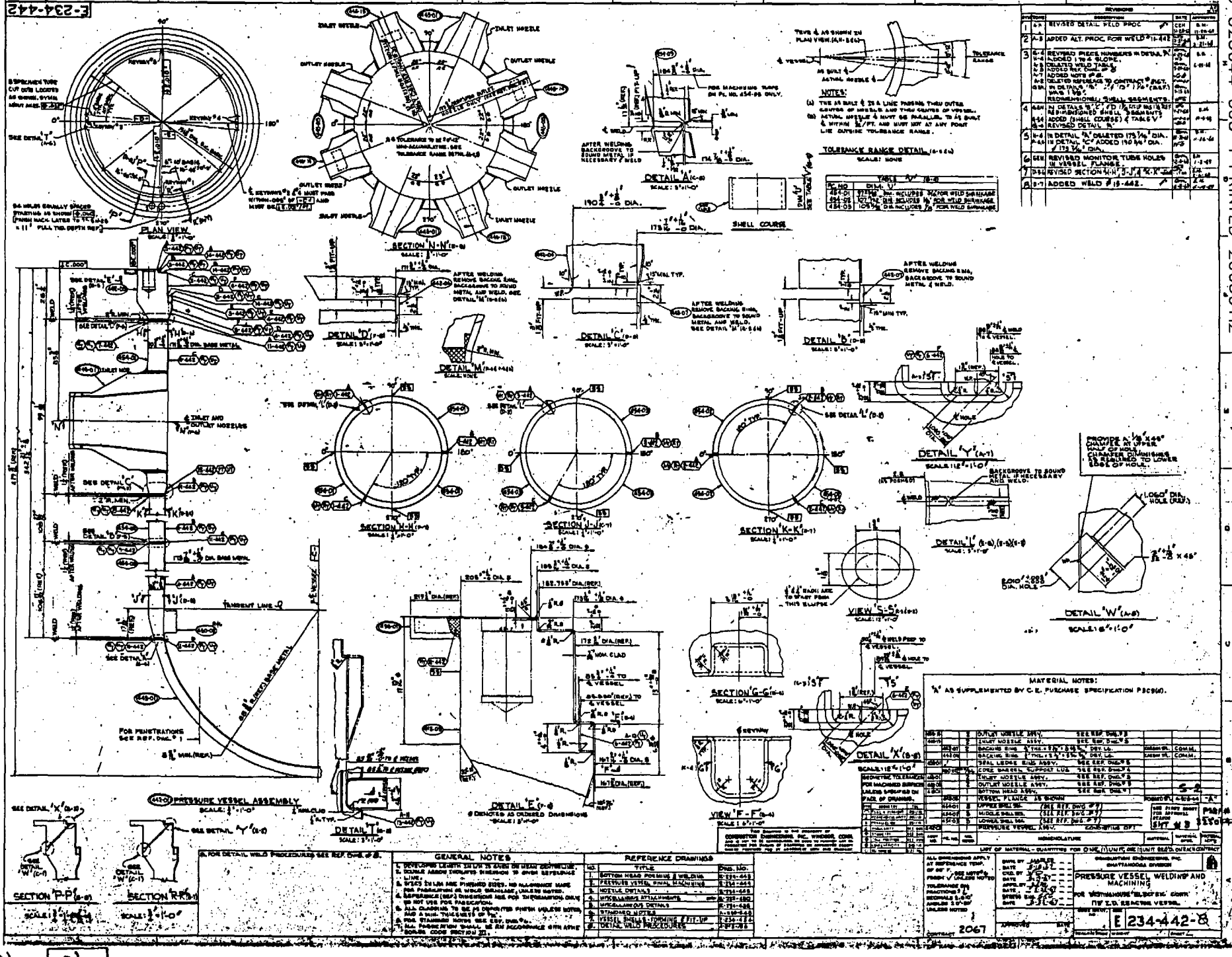
VTD 325044 003 1 PRINTED 20050112

E-234-442



240A

240 A

WesDyne International
Reactor Vessel Inservice Examination
Scan Parameter Execution

CUSTOMER	PUBLIC SERVICE ELECTRIC & GAS
SITE	SALEM - UNIT 2
OUTAGE	2R12
VESSEL TYPE	PWR-WESTINGHOUSE 4 LOOP

WELD IDENTIFICATION - 2-RPV-7442

Weld and Scan Type = FLANGE CIRCUMFERENTIAL PARALLEL SCAN

Scan Data File Name = W1-PAR-270-315

SCAN AREA PER THE ORIGINAL TECHNIQUES

UDRPS SCAN AREA DEFINITION		ELEVATION (IN)	AZIMUTH (DEGREES)
TOP LEFT	:	22.36	270.00
TOP RIGHT	:	22.36	315.25
BOTTOM LEFT	:	36.05	270.00
BOTTOM RIGHT	:	36.05	315.25

SCAN AREA/AREAS OBTAINED DURING THE SCAN

TOP LEFT	:	22.36	270.00
TOP RIGHT	:	36.05	315.25
BOTTOM LEFT	:	22.36	315.25
BOTTOM RIGHT	:	36.05	270.00

Increment Size (in)	=	0.50
Number of Indexes Specified	=	29
Number of Indexes Completed	=	29
Scan Area - Original Techniques (sq in)	=	973.6
Scan Area - This Scan (sq in)	=	973.6
Scan Area - Completed (sq in)	=	973.6

	Time	Date
Scan Started	19:05:13	04/18/02
Scan Completed	19:13:36	04/18/02

Robot Operator Signature Paul Boerne DATE 4/18/02

UT Operator Signature William G. Halley DATE 4/18/02

Comments

241

WesDyne International
Reactor Vessel Inservice Examination
Scan Parameter Execution

CUSTOMER	PUBLIC SERVICE ELECTRIC & GAS
SITE	SALEM - UNIT 2
OUTAGE	2R12
VESSEL TYPE	PWR-WESTINGHOUSE 4 LOOP

WELD IDENTIFICATION - 2-RPV-7442

Weld and Scan Type = FLANGE CIRCUMFERENTIAL PARALLEL SCAN

Scan Data File Name = W1-PAR-324-351

SCAN AREA PER THE ORIGINAL TECHNIQUES

UDRPS SCAN AREA DEFINITION		ELEVATION (IN)	AZIMUTH (DEGREES)
TOP LEFT	:	22.36	324.00
TOP RIGHT	:	22.36	351.00
BOTTOM LEFT	:	36.05	324.00
BOTTOM RIGHT	:	36.05	351.00

SCAN AREA/AREAS OBTAINED DURING THE SCAN

TOP LEFT	:	22.36	324.00
TOP RIGHT	:	36.05	351.00
BOTTOM LEFT	:	22.36	351.00
BOTTOM RIGHT	:	36.05	324.00

Increment Size (in)	=	0.50
Number of Indexes Specified	=	29
Number of Indexes Completed	=	29
Scan Area - Original Techniques (sq in)	=	580.9
Scan Area - This Scan (sq in)	=	580.9
Scan Area - Completed (sq in)	=	580.9

	Time	Date
Scan Started	19:35:21	04/18/02
Scan Completed	19:40:10	04/18/02

Robot Operator Signature Gary P. Kelley DATE 04/18/02

UT Operator Signature William G. Kelley DATE 4/18/02

Comments _____

242

WesDyne International
Reactor Vessel Inservice Examination
Scan Parameter Execution

CUSTOMER	PUBLIC SERVICE ELECTRIC & GAS
SITE	SALEM - UNIT 2
OUTAGE	2R12
VESSEL TYPE	PWR-WESTINGHOUSE 4 LOOP

WELD IDENTIFICATION - 2-RPV-7442

Weld and Scan Type = FLANGE CIRCUMFERENTIAL PARALLEL SCAN

Scan Data File Name = W1-PAR-6-34

SCAN AREA PER THE ORIGINAL TECHNIQUES

UDRPS SCAN AREA DEFINITION		ELEVATION (IN)	AZIMUTH (DEGREES)
TOP LEFT	:	22.36	6.00
TOP RIGHT	:	22.36	34.00
BOTTOM LEFT	:	36.05	6.00
BOTTOM RIGHT	:	36.05	34.00

SCAN AREA/AREAS OBTAINED DURING THE SCAN

TOP LEFT	:	22.36	6.00
TOP RIGHT	:	36.05	34.00
BOTTOM LEFT	:	22.36	34.00
BOTTOM RIGHT	:	36.05	6.00

Increment Size (in)	=	0.50
Number of Indexes Specified	=	29
Number of Indexes Completed	=	29
Scan Area - Original Techniques (sq in)	=	602.4
Scan Area - This Scan (sq in)	=	602.4
Scan Area - Completed (sq in)	=	602.4

	Time	Date
Scan Started	19:47:43	04/18/02
Scan Completed	19:52:41	04/18/02

Robot Operator Signature [signature] DATE 04/18/02

UT Operator Signature [signature] DATE 4/18/02

Comments _____

243

WesDyne International
Reactor Vessel Inservice Examination
Scan Parameter Execution

CUSTOMER	PUBLIC SERVICE ELECTRIC & GAS
SITE	SALEM - UNIT 2
OUTAGE	2R12
VESSEL TYPE	PWR-WESTINGHOUSE 4 LOOP

WELD IDENTIFICATION - 2-RPV-7442

Weld and Scan Type = FLANGE CIRCUMFERENTIAL PARALLEL SCAN

Scan Data File Name = W1-PAR-43-90

SCAN AREA PER THE ORIGINAL TECHNIQUES

UDRPS SCAN AREA DEFINITION		ELEVATION (IN)	AZIMUTH (DEGREES)
TOP LEFT	:	22.36	43.50
TOP RIGHT	:	22.36	90.00
BOTTOM LEFT	:	36.05	43.50
BOTTOM RIGHT	:	36.05	90.00

SCAN AREA/AREAS OBTAINED DURING THE SCAN

TOP LEFT	:	22.36	43.50
TOP RIGHT	:	36.05	90.00
BOTTOM LEFT	:	22.36	90.00
BOTTOM RIGHT	:	36.05	43.50

Increment Size (in)	=	0.50
Number of Indexes Specified	=	29
Number of Indexes Completed	=	29
Scan Area - Original Techniques (sq in)	=	1000.4
Scan Area - This Scan (sq in)	=	1000.4
Scan Area - Completed (sq in)	=	1000.4

	Time	Date
Scan Started	21:06:08	04/18/02
Scan Completed	21:14:13	04/18/02

Robot Operator Signature [signature] DATE 04/18/02

UT Operator Signature [signature] DATE 4/18/02

Comments

244

244

[245-254] DO NOT EXIST

WesDyne International
Reactor Vessel Inservice Examination
Scan Parameter Execution

CUSTOMER	PUBLIC SERVICE ELECTRIC & GAS
SITE	SALEM - UNIT 2
OUTAGE	2R12
VESSEL TYPE	PWR-WESTINGHOUSE 4 LOOP

WELD IDENTIFICATION - 2-RPV-7442

Weld and Scan Type = FLANGE CIRCUMFERENTIAL PARALLEL SCAN

Scan Data File Name = W1-PAR-90-135

SCAN AREA PER THE ORIGINAL TECHNIQUES

UDRPS SCAN AREA DEFINITION		ELEVATION (IN)	AZIMUTH (DEGREES)
TOP LEFT	:	22.36	90.00
TOP RIGHT	:	22.36	135.00
BOTTOM LEFT	:	36.05	90.00
BOTTOM RIGHT	:	36.05	135.00

SCAN AREA/AREAS OBTAINED DURING THE SCAN

TOP LEFT	:	22.36	90.00
TOP RIGHT	:	36.05	135.00
BOTTOM LEFT	:	22.36	135.00
BOTTOM RIGHT	:	36.05	90.00

Increment Size (in)	=	0.50
Number of Indexes Specified	=	29
Number of Indexes Completed	=	29
Scan Area - Original Techniques (sq in)	=	968.1
Scan Area - This Scan (sq in)	=	968.1
Scan Area - Completed (sq in)	=	968.1

	Time	Date
Scan Started	21:20:53	04/18/02
Scan Completed	21:28:46	04/18/02

Robot Operator Signature Gary P. Kitter DATE 04/18/02

UT Operator Signature William H. Holley DATE 4/18/02

Comments

255

255
[245-254] DO NOT EXIST

WesDyne International
Reactor Vessel Inservice Examination
Scan Parameter Execution

CUSTOMER ..... PUBLIC SERVICE ELECTRIC & GAS
SITE ..... SALEM - UNIT 2
OUTAGE 2R12
VESSEL TYPE ..... PWR-WESTINGHOUSE 4 LOOP

WELD IDENTIFICATION - 2-RPV-7442

Weld and Scan Type = FLANGE CIRCUMFERENTIAL PARALLEL SCAN

Scan Data File Name = W1-PAR-142-171

SCAN AREA PER THE ORIGINAL TECHNIQUES

UDRPS SCAN AREA DEFINITION		ELEVATION (IN)	AZIMUTH (DEGREES)
TOP LEFT	:	22.36	143.00
TOP RIGHT	:	22.36	171.00
BOTTOM LEFT	:	36.05	143.00
BOTTOM RIGHT	:	36.05	171.00

SCAN AREA/AREAS OBTAINED DURING THE SCAN

TOP LEFT	:	22.36	143.00
TOP RIGHT	:	36.05	171.00
BOTTOM LEFT	:	22.36	171.00
BOTTOM RIGHT	:	36.05	143.00

Increment Size (in)	=	0.50
Number of Indexes Specified	=	29
Number of Indexes Completed	=	29
Scan Area - Original Techniques (sq in)	=	602.4
Scan Area - This Scan (sq in)	=	602.4
Scan Area - Completed (sq in)	=	602.4

	Time	Date
Scan Started	21:34:30	04/18/02
Scan Completed	21:39:45	04/18/02

Robot Operator Signature [signature] DATE 04/18/02

UT Operator Signature William G. Halley DATE 4/18/02

Comments _____

256

252

WesDyne International
Reactor Vessel Inservice Examination
Scan Parameter Execution

CUSTOMER	PUBLIC SERVICE ELECTRIC & GAS
SITE	SALEM - UNIT 2
OUTAGE	2R12
VESSEL TYPE	PWR-WESTINGHOUSE 4 LOOP

WELD IDENTIFICATION - 2-RPV-7442

Weld and Scan Type = FLANGE CIRCUMFERENTIAL PARALLEL SCAN

Scan Data File Name = W1-PAR-186-215

SCAN AREA PER THE ORIGINAL TECHNIQUES

UDRPS SCAN AREA DEFINITION		ELEVATION (IN)	AZIMUTH (DEGREES)
TOP LEFT	:	22.36	186.50
TOP RIGHT	:	22.36	215.50
BOTTOM LEFT	:	36.05	186.50
BOTTOM RIGHT	:	36.05	215.50

SCAN AREA/AREAS OBTAINED DURING THE SCAN

TOP LEFT	:	22.36	186.50
TOP RIGHT	:	36.05	215.50
BOTTOM LEFT	:	22.36	215.50
BOTTOM RIGHT	:	36.05	186.50

Increment Size (in)	=	0.50
Number of Indexes Specified	=	29
Number of Indexes Completed	=	29
Scan Area - Original Techniques (sq in)	=	624.0
Scan Area - This Scan (sq in)	=	624.0
Scan Area - Completed (sq in)	=	624.0

	Time	Date
Scan Started	23:16:50	04/18/02
Scan Completed	23:22:14	04/18/02

Robot Operator Signature Gary P. Kistler DATE 04/18/02

UT Operator Signature DATE 4/18/02

Comments

257

257

WesDyne International
Reactor Vessel Inservice Examination
Scan Parameter Execution

CUSTOMER	PUBLIC SERVICE ELECTRIC & GAS
SITE	SALEM - UNIT 2
OUTAGE	2R12
VESSEL TYPE	PWR-WESTINGHOUSE 4 LOOP

WELD IDENTIFICATION - 2-RPV-7442

Weld and Scan Type = FLANGE CIRCUMFERENTIAL PARALLEL SCAN

Scan Data File Name = W1-PAR-223-270

SCAN AREA PER THE ORIGINAL TECHNIQUES

UDRPS SCAN AREA DEFINITION		ELEVATION (IN)	AZIMUTH (DEGREES)
TOP LEFT	:	22.36	223.00
TOP RIGHT	:	22.36	270.00
BOTTOM LEFT	:	36.05	223.00
BOTTOM RIGHT	:	36.05	270.00

SCAN AREA/AREAS OBTAINED DURING THE SCAN

TOP LEFT	:	22.36	223.00
TOP RIGHT	:	36.05	270.00
BOTTOM LEFT	:	22.36	270.00
BOTTOM RIGHT	:	36.05	223.00

Increment Size (in)	=	0.50
Number of Indexes Specified	=	29
Number of Indexes Completed	=	29
Scan Area - Original Techniques (sq in)	=	1011.2
Scan Area - This Scan (sq in)	=	1011.2
Scan Area - Completed (sq in)	=	1011.2

	Time	Date
Scan Started	23:30:10	04/18/02
Scan Completed	23:38:20	04/18/02

Robot Operator Signature Gary P. Kistler DATE 04/18/02

UT Operator Signature _____ DATE 4/18/02

Comments _____

258

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WesDyne International
Reactor Vessel Inservice Examination
Scan Parameter Execution

CUSTOMER ..... PUBLIC SERVICE ELECTRIC & GAS
SITE ..... SALEM - UNIT 2
OUTAGE 2R12
VESSEL TYPE ..... PWR-WESTINGHOUSE 4 LOOP

WELD IDENFICATION - 2-RPV-7442

Weld and Scan Type = FLANGE CIRCUMFERENTIAL PERPENDICULAR SCAN

Scan Data File Name = W1-PRP-6-34

SCAN AREA PER THE ORIGINAL TECHNIQUES

UDRPS SCAN AREA DEFINITION		AZIMUTH (DEGREES)	ELEVATION (IN)
TOP LEFT	:	5.75	22.36
TOP RIGHT	:	34.75	22.36
BOTTOM LEFT	:	5.75	42.08
BOTTOM RIGHT	:	34.75	42.08

SCAN AREA/AREAS OBTAINED DURING THE SCAN

TOP LEFT	:	5.75	22.36
TOP RIGHT	:	34.75	22.36
BOTTOM LEFT	:	5.75	42.08
BOTTOM RIGHT	:	34.75	42.08

Increment Size (in)	=	0.50
Number of Indexes Specified	=	88
Number of Indexes Completed	=	88
Scan Area - Original Techniques (sq in)	=	881.3
Scan Area - This Scan (sq in)	=	881.3
Scan Area - Completed (sq in)	=	881.3

	Time	Date
Scan Started	20:02:36	04/18/02
Scan Completed	20:13:42	04/18/02

Robot Operator Signature Gary P. Kistler DATE 04/18/02

UT Operator Signature William G. Kelly DATE 4/18/02

Comments _____

WesDyne International
Reactor Vessel Inservice Examination
Scan Parameter Execution

CUSTOMER ..... PUBLIC SERVICE ELECTRIC & GAS
SITE ..... SALEM - UNIT 2
OUTAGE 2R12
VESSEL TYPE ..... PWR-WESTINGHOUSE 4 LOOP

WELD IDENFICATION - 2-RPV-7442

Weld and Scan Type = FLANGE CIRCUMFERENTIAL PERPENDICULAR SCAN

Scan Data File Name = W1-PRP-43-90

SCAN AREA PER THE ORIGINAL TECHNIQUES

UDRPS SCAN AREA DEFINITION		AZIMUTH (DEGREES)	ELEVATION (IN)
TOP LEFT	:	43.00	22.36
TOP RIGHT	:	90.00	22.36
BOTTOM LEFT	:	43.00	42.08
BOTTOM RIGHT	:	90.00	42.08

SCAN AREA/AREAS OBTAINED DURING THE SCAN

TOP LEFT	:	43.00	22.36
TOP RIGHT	:	90.00	22.36
BOTTOM LEFT	:	43.00	42.08
BOTTOM RIGHT	:	90.00	42.08

Increment Size (in) = 0.50
Number of Indexes Specified = 142
Number of Indexes Completed = 142
Scan Area - Original Techniques (sq in) = 1422.1
Scan Area - This Scan (sq in) = 1422.1
Scan Area - Completed (sq in) = 1422.1

	Time	Date
Scan Started	20:19:56	04/18/02
Scan Completed	20:56:56	04/18/02

Robot Operator Signature Gary P. Kittner DATE 04/18/02

UT Operator Signature William H. Kelley DATE 4/18/02

Comments _____

WesDyne International
Reactor Vessel Inservice Examination
Scan Parameter Execution

CUSTOMER	PUBLIC SERVICE ELECTRIC & GAS
SITE	SALEM - UNIT 2
OUTAGE	2R12
VESSEL TYPE	PWR-WESTINGHOUSE 4 LOOP

WELD IDENFICATION - 2-RPV-7442

Weld and Scan Type = FLANGE CIRCUMFERENTIAL PERPENDICULAR SCAN

Scan Data File Name = W1-PRP-90-136

SCAN AREA PER THE ORIGINAL TECHNIQUES

UDRPS SCAN AREA DEFINITION		AZIMUTH (DEGREES)	ELEVATION (IN)
TOP LEFT	:	90.00	22.36
TOP RIGHT	:	136.50	22.36
BOTTOM LEFT	:	90.00	42.08
BOTTOM RIGHT	:	136.50	42.08

SCAN AREA/AREAS OBTAINED DURING THE SCAN

TOP LEFT	:	90.00	22.36
TOP RIGHT	:	136.50	22.36
BOTTOM LEFT	:	90.00	42.08
BOTTOM RIGHT	:	136.50	42.08

Increment Size (in)	=	0.50
Number of Indexes Specified	=	140
Number of Indexes Completed	=	140
Scan Area - Original Techniques (sq in)	=	1402.1
Scan Area - This Scan (sq in)	=	1402.1
Scan Area - Completed (sq in)	=	1402.1

	Time	Date
Scan Started	21:48:30	04/18/02
Scan Completed	22:04:43	04/18/02

Robot Operator Signature [signature] DATE 04/18/02

UT Operator Signature [signature] DATE 4/18/02

Comments _____

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WesDyne International
Reactor Vessel Inservice Examination
Scan Parameter Execution

CUSTOMER	PUBLIC SERVICE ELECTRIC & GAS
SITE	SALEM - UNIT 2
OUTAGE	2R12
VESSEL TYPE	PWR-WESTINGHOUSE 4 LOOP

WELD IDENFICATION - 2-RPV-7442

Weld and Scan Type = FLANGE CIRCUMFERENTIAL PERPENDICULAR SCAN

Scan Data File Name = W1-PRP-141-172

SCAN AREA PER THE ORIGINAL TECHNIQUES

UDRPS SCAN AREA DEFINITION		AZIMUTH (DEGREES)	ELEVATION (IN)
TOP LEFT	:	141.50	22.36
TOP RIGHT	:	172.50	22.36
BOTTOM LEFT	:	141.50	42.08
BOTTOM RIGHT	:	172.50	42.08

SCAN AREA/AREAS OBTAINED DURING THE SCAN

TOP LEFT	:	141.50	22.36
TOP RIGHT	:	172.50	22.36
BOTTOM LEFT	:	141.50	42.08
BOTTOM RIGHT	:	172.50	42.08

Increment Size (in)	=	0.50
Number of Indexes Specified	=	94
Number of Indexes Completed	=	94
Scan Area - Original Techniques (sq in)	=	941.4
Scan Area - This Scan (sq in)	=	941.4
Scan Area - Completed (sq in)	=	941.4

	Time	Date
Scan Started	22:11:05	04/18/02
Scan Completed	22:21:55	04/18/02

Robot Operator Signature Gary P. Kistler DATE 4/18/02

UT Operator Signature William G. Holley DATE 4/18/02

Comments _____

WesDyne International
Reactor Vessel Inservice Examination
Scan Parameter Execution

CUSTOMER	PUBLIC SERVICE ELECTRIC & GAS
SITE	SALEM - UNIT 2
OUTAGE	2R12
VESSEL TYPE	PWR-WESTINGHOUSE 4 LOOP

WELD IDENFICATION - 2-RPV-7442

Weld and Scan Type = FLANGE CIRCUMFERENTIAL PERPENDICULAR SCAN

Scan Data File Name = W1-PRP-185-214

SCAN AREA PER THE ORIGINAL TECHNIQUES

UDRPS SCAN AREA DEFINITION		AZIMUTH (DEGREES)	ELEVATION (IN)
TOP LEFT	:	185.50	22.36
TOP RIGHT	:	214.50	22.36
BOTTOM LEFT	:	185.50	42.08
BOTTOM RIGHT	:	214.50	42.08

SCAN AREA/AREAS OBTAINED DURING THE SCAN

TOP LEFT	:	185.50	22.36
TOP RIGHT	:	214.50	22.36
BOTTOM LEFT	:	185.50	42.08
BOTTOM RIGHT	:	214.50	42.08

Increment Size (in)	=	0.50
Number of Indexes Specified	=	88
Number of Indexes Completed	=	88
Scan Area - Original Techniques (sq in)	=	881.3
Scan Area - This Scan (sq in)	=	881.3
Scan Area - Completed (sq in)	=	881.3

	Time	Date
Scan Started	22:33:54	04/18/02
Scan Completed	22:44:03	04/18/02

Robot Operator Signature Gary P. Little DATE 04/18/02

UT Operator Signature William H. Holley DATE 4/18/02

Comments

262A

262A

WesDyne International
Reactor Vessel Inservice Examination
Scan Parameter Execution

CUSTOMER	PUBLIC SERVICE ELECTRIC & GAS
SITE	SALEM - UNIT 2
OUTAGE	2R12
VESSEL TYPE	PWR-WESTINGHOUSE 4 LOOP

WELD IDENFICATION - 2-RPV-7442

Weld and Scan Type = FLANGE CIRCUMFERENTIAL PERPENDICULAR SCAN

Scan Data File Name = W1-PRP-221-270

SCAN AREA PER THE ORIGINAL TECHNIQUES

UDRPS SCAN AREA DEFINITION		AZIMUTH (DEGREES)	ELEVATION (IN)
TOP LEFT	:	221.00	22.36
TOP RIGHT	:	270.00	22.36
BOTTOM LEFT	:	221.00	42.08
BOTTOM RIGHT	:	270.00	42.08

SCAN AREA/AREAS OBTAINED DURING THE SCAN

TOP LEFT	:	221.00	22.36
TOP RIGHT	:	270.00	22.36
BOTTOM LEFT	:	221.00	42.08
BOTTOM RIGHT	:	270.00	42.08

Increment Size (in)	=	0.50
Number of Indexes Specified	=	148
Number of Indexes Completed	=	148
Scan Area - Original Techniques (sq in)	=	1482.2
Scan Area - This Scan (sq in)	=	1482.2
Scan Area - Completed (sq in)	=	1482.2

	Time	Date
Scan Started	22:52:20	04/18/02
Scan Completed	23:09:28	04/18/02

Robot Operator Signature _____ DATE 04/18/02

UT Operator Signature _____ DATE 4/18/02

Comments _____

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WesDyne International
Reactor Vessel Inservice Examination
Scan Parameter Execution

CUSTOMER	PUBLIC SERVICE ELECTRIC & GAS
SITE	SALEM - UNIT 2
OUTAGE	2R12
VESSEL TYPE	PWR-WESTINGHOUSE 4 LOOP

WELD IDENFICATION - 2-RPV-7442

Weld and Scan Type = FLANGE CIRCUMFERENTIAL PERPENDICULAR SCAN

Scan Data File Name = W1-PRP-270-317

SCAN AREA PER THE ORIGINAL TECHNIQUES

UDRPS SCAN AREA DEFINITION		AZIMUTH (DEGREES)	ELEVATION (IN)
TOP LEFT	:	270.00	22.36
TOP RIGHT	:	317.50	22.36
BOTTOM LEFT	:	270.00	42.08
BOTTOM RIGHT	:	317.50	42.08

SCAN AREA/AREAS OBTAINED DURING THE SCAN

TOP LEFT	:	270.00	22.36
TOP RIGHT	:	317.50	42.08
BOTTOM LEFT	:	270.00	42.08
BOTTOM RIGHT	:	317.50	22.36

Increment Size (in)	=	0.50
Number of Indexes Specified	=	143
Number of Indexes Completed	=	143
Scan Area - Original Techniques (sq in)	=	1432.1
Scan Area - This Scan (sq in)	=	1432.1
Scan Area - Completed (sq in)	=	1432.1

	Time	Date
Scan Started	23:42:53	04/18/02
Scan Completed	23:59:27	04/18/02

Robot Operator Signature Gary P. Kistler DATE 04/18/02

UT Operator Signature DATE 4/18/02

Comments

WesDyne International
Reactor Vessel Inservice Examination
Scan Parameter Execution

CUSTOMER	PUBLIC SERVICE ELECTRIC & GAS
SITE	SALEM - UNIT 2
OUTAGE	2R12
VESSEL TYPE	PWR-WESTINGHOUSE 4 LOOP

WELD IDENFICATION - 2-RPV-7442

Weld and Scan Type = FLANGE CIRCUMFERENTIAL PERPENDICULAR SCAN

Scan Data File Name = W1-PRP-321-353

SCAN AREA PER THE ORIGINAL TECHNIQUES

UDRPS SCAN AREA DEFINITION		AZIMUTH (DEGREES)	ELEVATION (IN)
TOP LEFT	:	321.50	22.36
TOP RIGHT	:	353.00	22.36
BOTTOM LEFT	:	321.50	42.08
BOTTOM RIGHT	:	353.00	42.08

SCAN AREA/AREAS OBTAINED DURING THE SCAN

TOP LEFT	:	321.50	22.36
TOP RIGHT	:	353.00	42.08
BOTTOM LEFT	:	321.50	42.08
BOTTOM RIGHT	:	353.00	22.36

Increment Size (in)	=	0.50
Number of Indexes Specified	=	95
Number of Indexes Completed	=	95
Scan Area - Original Techniques (sq in)	=	951.4
Scan Area - This Scan (sq in)	=	951.4
Scan Area - Completed (sq in)	=	951.4

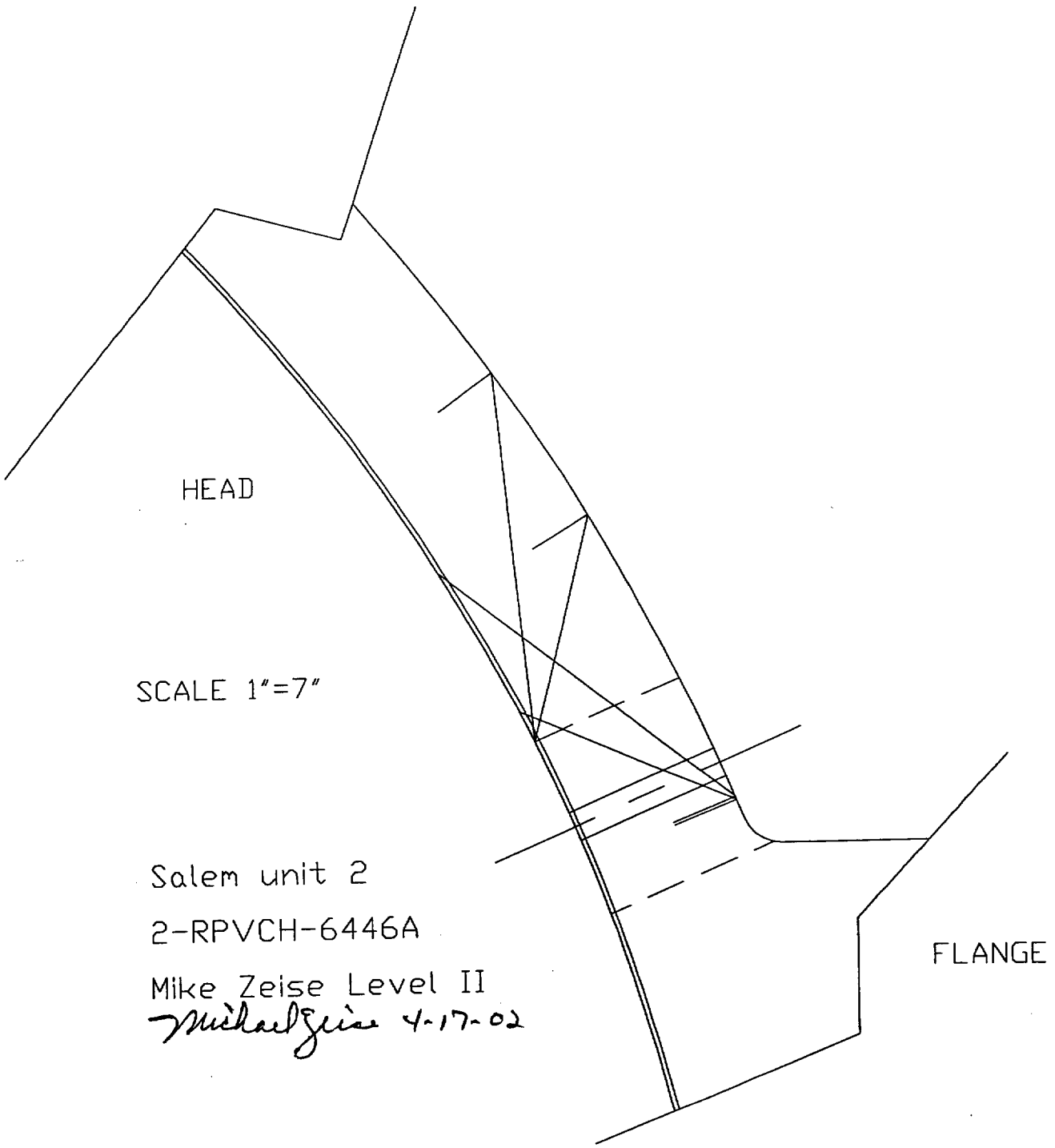
	Time	Date
Scan Started	00:05:40	04/19/02
Scan Completed	00:16:38	04/19/02

Robot Operator Signature _____ DATE 04/19/02

UT Operator Signature _____ DATE 4/9/02

Comments _____

SUMMARY # 002800
RPV HD/FLG. WELD



Salem unit 2

2-RPVCH-6446A

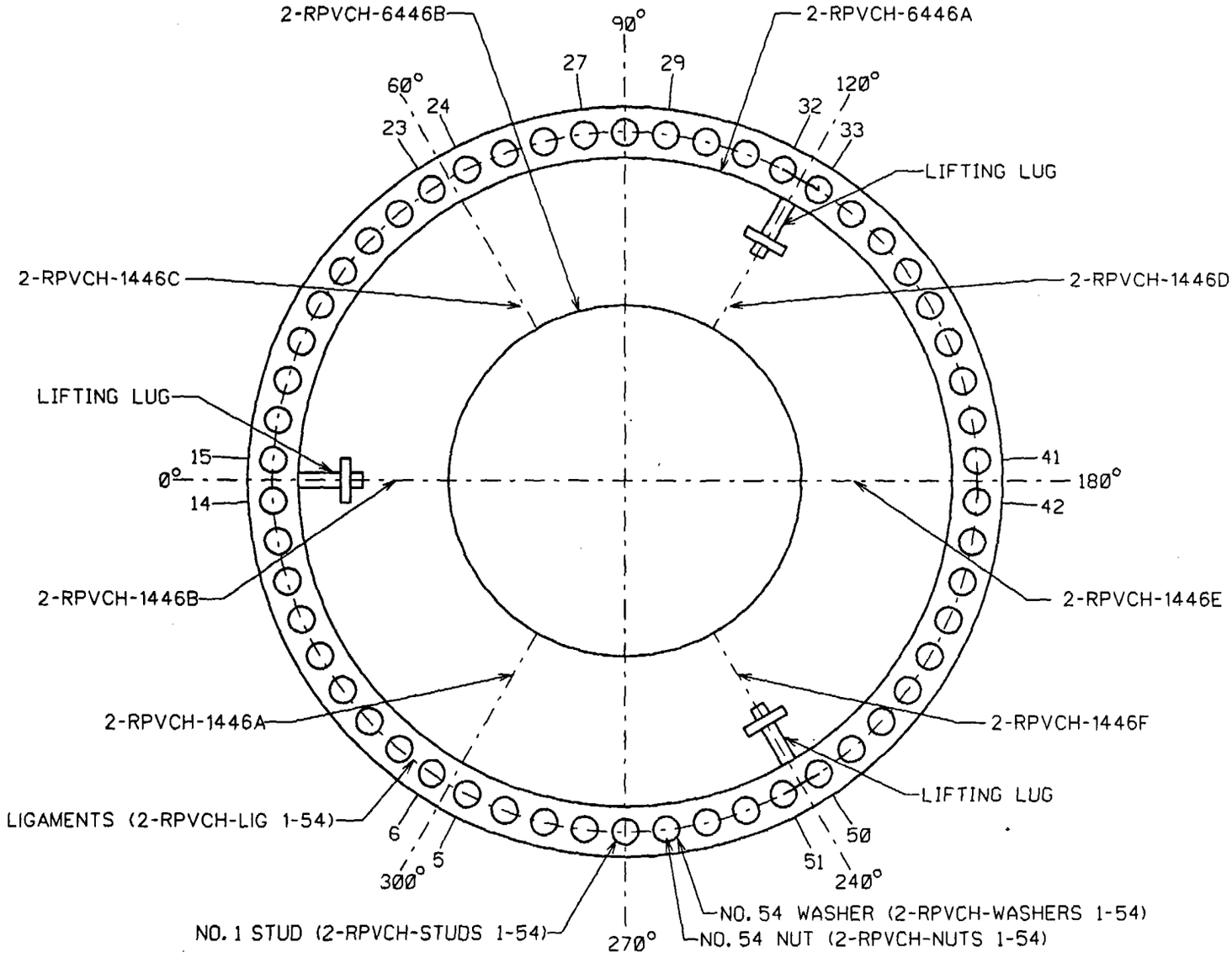
Mike Zeise Level II
Michael Zeise 4-17-02

FACTORY MUTUAL
INSURANCE COMPANY
DE Tilley 4-25-02

266

Bob Kellenhall
4/17/02

10/19 266



266A

REACTOR PRESSURE VESSEL CLOSURE HEAD LAYOUT

P&ID 205301

ATTENTION: ANY REVISION TO THIS DRAWING SHALL BE MADE ONLY BY CAED			PSEG Nuclear, LLC SALEM NUCLEAR GENERATING STATION UNIT 2 - WELD / HANGER IDENTIFICATION FIGURE INSERVICE INSPECTION DRAWING	FIGURE: A-3 REVISION: 1 SYSTEM: REACTOR PRESSURE VESSEL CLOSURE HEAD LAYOUT LINE: N/A THIRD 10 YEAR INSPECTION INTERVAL
1		REVISED PER ORDER No. 80038023.		
REV.	DATE	DESCRIPTION		

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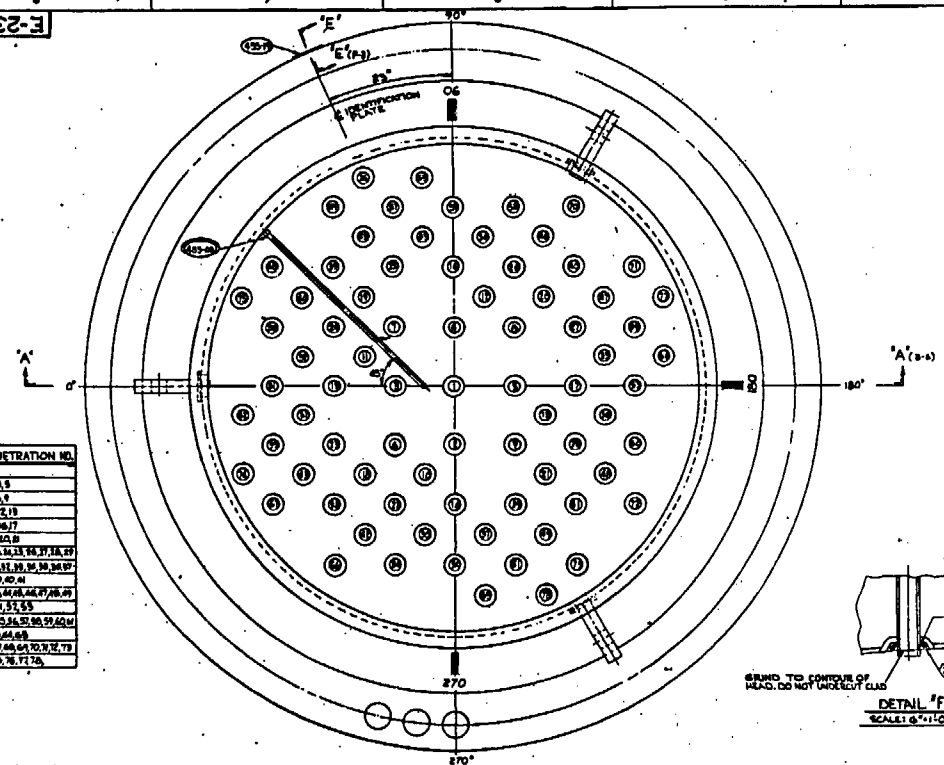
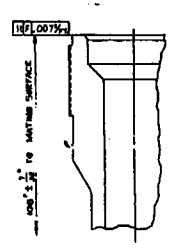
TD 325044 009 1 PRINTED 20050112

E-234-448

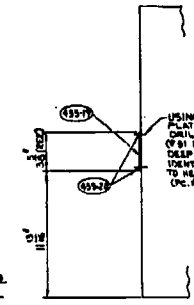


PLAN VIEW
SCALE 1:1'=1'-0"

455-19 NO.	PENETRATION NO.
451-01	1
451-03	2,3,4,5
451-04	6,7,8,9
451-05	10,11,12,13
451-06	14,15,16,17
451-07	18,19,20,21
451-08	22,23,24,25,26,27,28,29
451-09	30,31,32,33,34,35,36,37
451-10	38,39,40,41
451-11	42,43,44,45,46,47,48,49
451-12	50,51,52,53
451-13	54,55,56,57,58,59,60,61
451-14	62,63,64,65
451-15	66,67,68,69,70,71,72,73
451-16	74,75,76,77,78

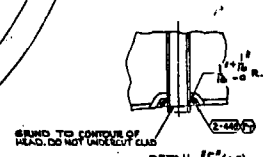


DETAIL 'D' (D-5)
TYPICAL FOR ALL HOUSINGS
SCALE 6"=1'-0"

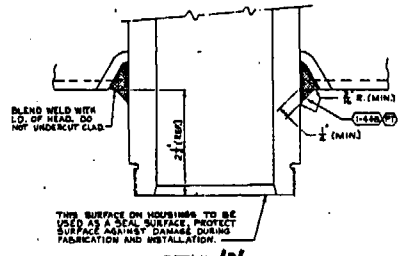


SECTION 'E-E' (H-1)
SCALE 13"=1'-0"

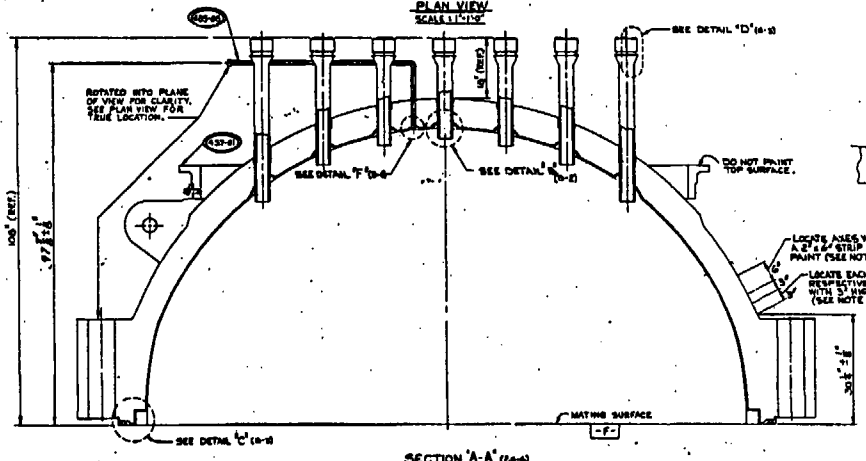
REVISIONS				
SHEET	ZONE	DESCRIPTION	DATE	APPROVED
1	F-6	REVISED PARALLELISM TOL.		B.H.
	C-E	ADDED 1/16" R. TO WELD.	8-21-67	
	B-B	REVISED NOTE.		
	A-3	REVISED WELD TABLE.		
	A-6	REVISED NOTE #6.		
	C-1	ADDED NOTE.		
2	A-6	DELETED WELD TABLE.		B.H.
	A-1	ADDED NOTE # 7.	9-27-68	
	A-6	ADDED REF. DWG. #9.	8-22-68	
	A-2	DELETED REFERENCE "D CON'T."		
3	A-6	REVISED NOTE #4 & 5		
4	[illegible]	[illegible]		
5	C-2	[illegible]		
6	A-3	REVISED NOTE FOR ATTACHING NAME PLATE.		B.H.
7	D-6	IN PLAN VIEW REVISED PENETRATION PATTERN.		
	B-B	TO PENETRATIONS WAS 79 REVISED TABLE.		



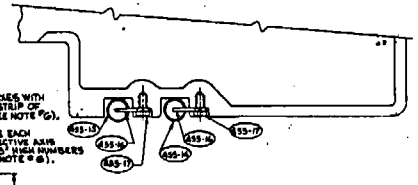
DETAIL 'F' (C-7)
SCALE 6"=1'-0"



DETAIL 'B' (C-6)
'TYPICAL HOUSING WELD DETAIL'
SCALE 12"=1'-0"



SECTION 'A-A' (D-4)
SCALE 1"=1'-0"



DETAIL 'C' (B-7)
SCALE 1 12"=1'-0"

THIS DRAWING IS THE PROPERTY OF COMBUSTION ENGINEERING, INC. WINDSOR, CONN. AND IS NOT TO BE REPRODUCED OR USED IN PLANNING OR PERFORMING FOR OTHERS OF DESIGNED OR OTHERWISE DISCLOSED WITHOUT WRITTEN PERMISSION.

SYM	DESIGNATION	FOR
	HEAT & STRAIGHT	[illegible]
	PERPENDICULARITY	[illegible]
	PARALLELISM	[illegible]
	CONCENTRICITY	[illegible]
	SYMMETRY	[illegible]
	TRUE POSITION	[illegible]
	CONTOURING	[illegible]
	ROUNDNESS	[illegible]

DIMENSIONS TOLERANCES FOR MACHINED SURFACES UNLESS SPECIFIED ON FACE OF DRAWING

ASSY NO.	PIECE NO.	NO. REQD.	NOMENCLATURE	MATERIAL	MATERIAL SPEC.
			LIST OF MATERIAL - QUANTITIES FOR		

S-2
PIECE 3
327044
SHT # 9

6. PAINT TO BE GILMAN LS-937 HEAT RESISTANT STENCIL RED PAINT.
7. FOR DETAIL WELD PROCEDURES SEE REF. DWG. # 9.

GENERAL NOTES

1. DOUBLE ARROW INDICATES DIMENSIONS TO A GIVEN REFERENCE LINE.
2. REFERENCE (REF) DIMENSIONS ARE FOR INFORMATION ONLY. DO NOT USE FOR FABRICATION.
3. FOR STANDARD NOTES SEE REF. DWG. # 1.
4. ALL FABRICATION SHALL BE IN ACCORDANCE WITH ASME BOILER CODE SECTION III.
5. PAINT ALL EXTERIOR SURFACES OF CLOSURE HEAD SKIRT, HOUSINGS, MATING SURFACE AND AREAS OTHERWISE NOTED WITH TWO (2) COATS OF MIL-P-16276 PAINT (GILMAN PAINT AND VARNISH COMPANY'S HEAT RESISTING ALUMINUM OR EQUAL).

REFERENCE DRAWINGS

NO.	TITLE	DRAWING NO.
1.	STANDARD NOTES	A-210-448
2.	GENERAL ARRANGEMENT - ELEVATION	E-234-440
3.	GENERAL ARRANGEMENT - PLAN	E-234-441
4.	CLOSURE HEAD FORMING AND WELDING	E-234-446
5.	CLOSURE HEAD MACHINING	E-234-447
6.	CONTROL ROD MECHANISM HOUSING DET.	E-234-451
7.	CONTROL ROD PENETRATION DETAILS	E-234-452
8.	MISCELLANEOUS DETAILS	E-234-453
9.	DETAIL WELD PROCEDURES	A-845-717

ALL DIMENSIONS APPLY AT REFERENCE TEMP OF 68° F. SEE NOTE #3 FOR UNLESS NOTED

TOLERANCE DIM FRACTIONS ± 1/16" DECIMALS ± .010" ANGLES ± 0°-30' UNLESS NOTED

CONTRACT 2067

DWN BY	BAB McCOLLUM	
DATE	3-21-67	
CHKD BY	[illegible]	
DATE	3-30-67	
APPD BY	[illegible]	
DATE	3-30-67	
STRESS DATA	[illegible]	
DATE	3-30-67	

APPROVED — DATE

COMBUSTION ENGINEERING, INC. CHATTANOOGA DIVISION

CLOSURE HEAD ASSEMBLY
FOR: WESTINGHOUSE ELECTRIC CORP.
173" I.D. REACTOR VESSEL

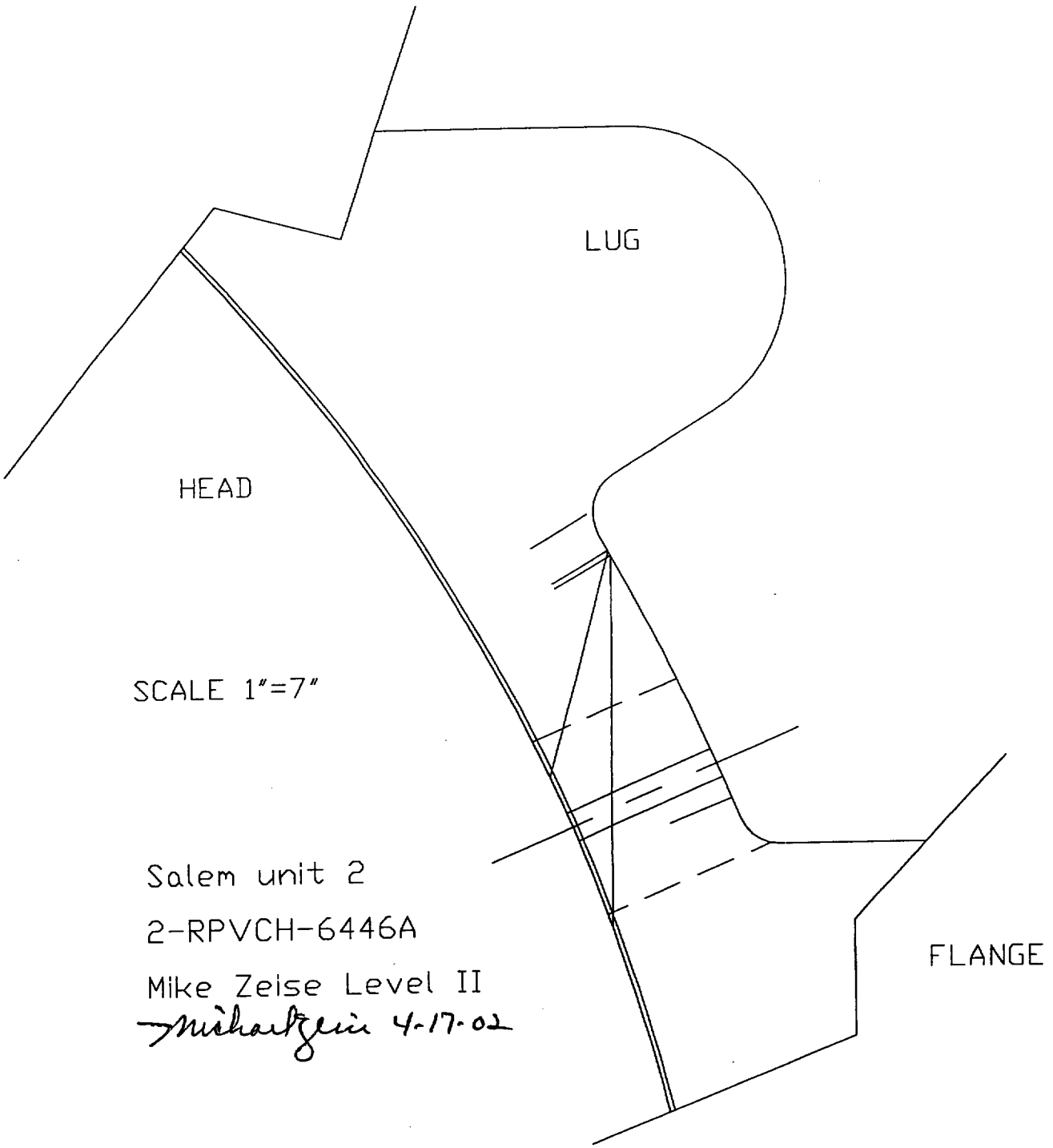
CODE IDENT NO. | SIZE: E | 234-448-7

SCALE AS NOTED | WEIGHT | SHEET

2663

2663

SUMMARY # 002800
RPV HD/FLG. WELD



Salem unit 2

2-RPVCH-6446A

Mike Zeise Level II

Mike Zeise 4-17-02

FACTORY MUTUAL
INSURANCE COMPANY

D E Tilley 4-25-02

Bob Kellenhall 4/17/02

11/19

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FRAMATOME ANP VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

6.0 CALCULATE STRAIGHT BEAM LAMINAR EXAM COVERAGE

6.1 Limited above / CW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Volume with no Exam Coverage
0.00	X	0.00	X	0.00	=	0.00

6.2 Limited Below / CW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Volume with no Exam Coverage
0.00	X	0.00	X	0.00	=	0.00

Total straight beam planar exam volume not examined = 0.00

6.3 Percent Volume Examined

	Total 0° vol w/No Coverage		Total 0° Exam Volume			Percent Volume Examined
100 - {[	0.00	/	0.00]	x 100 }	=	0.00 %

7.0 CALCULATE PARALLEL 45° EXAM COVERAGE

7.1 Limited above / CW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Volume with no Exam Coverage
1.10	X	1.10	X	10.00	=	12.10

7.2 Limited Below / CCW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Volume with no Exam Coverage
4.90	X	9.28	X	185.00	=	8,412.32

Total 45° parallel exam volume not examined = 8,424.42

7.3 Percent Volume Examined

	Total 45° parallel vol w/No Coverage		Total 45° parallel Exam Volume			Percent Volume Examined
100 - {[	8,424.42	/	27,824.00]	x 100 }	=	69.72 %

FACTORY MUTUAL INSURANCE COMPANY

OE Tilley 4-25-02

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7/19 RK 4/17/02

FRAMATOME ANP VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

8.0 CALCULATE PARALLEL 60° EXAM COVERAGE

8.1 Limited above / CW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Above / CW exam Volume with no Exam Coverage
1.70	X	9.40	X	10.00	=	159.80

8.2 Limited Below / CCW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Below / CCW exam Volume with no Exam Coverage
5.72	X	9.40	X	185.00	=	9,947.08

Total 60° parallel exam volume not examined = 10,106.88

8.3 Percent Volume Examined

	Total 60° parallel Vol w/No Coverage		Total 60° parallel Exam Volume			Percent Volume Examined
100 - {[	10,106.88	/	27,824.00]	x 100 }	=	63.68 %

9.0 CALCULATE TRANSVERSE 45° EXAM COVERAGE

9.1 Limited Clockwise exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		CW Exam Volume with no Exam Coverage
8.00	X	1.25	X	185.00	=	1,850.00

9.2 Limited Below Counter clockwise exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		CCW Exam Volume with no Exam Coverage
8.00	X	1.25	X	185.00	=	1,850.00

Total 45° transverse exam volume not examined = 3,700.00

9.3 Percent Volume Examined

	Total 45° parallel		Total 45° parallel Exam Volume			Percent Volume Examined
100 - {[	3,700.00	/	27,824.00]	x 100 }	=	86.70 %

FACTORY MUTUAL INSURANCE COMPANY

D E Tillery 4-25-02

269

8/19

FRAMATOME ANP

VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

10.0 CALCULATE TRANSVERSE 60° EXAM COVERAGE

10.1 Limited Clockwise exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		CW exam Volume with no Exam Coverage
8.00	X	1.25	X	185.00	=	1,850.00

10.2 Limited Counterclockwise exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		CCW exam Volume with no Exam Coverage
8.00	X	1.25	X	185.00	=	1,850.00

Total 60 transverse exam volume not examined = 3,700.00

10.3 Percent Volume Examined

	Total 60° Trans Vol w/NoCoverage		Total 60° Trans Exam Volume			Percent Volume Examined
100 - {[	3,700.00	/	27,824.00]	x 100 }	=	86.70 %

11.0 CALCULATE PERCENT OF TOTAL VOLUME EXAMINED

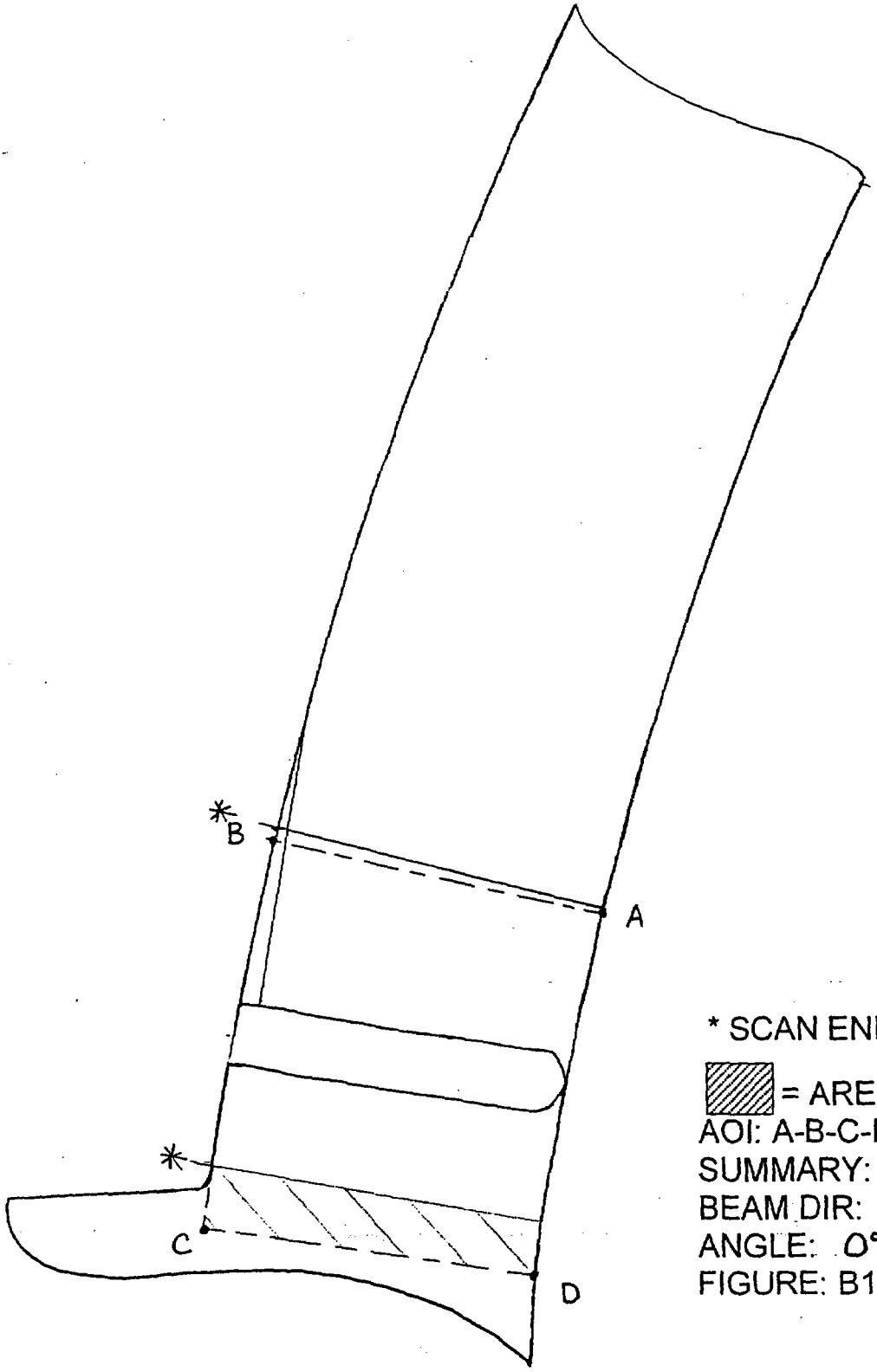
11.1 Sum of Exam Volumes %

Steps 5 Thur 10		No. Of Exams (6)		Examination Coverage
[393.50	/	5.00]	=	78.70 %

Examination limited on upper side of weld by lifting lug. Examination limited on lower side of weld by flange configuration. See attached coverage plots.

FACTORY MUTUAL
INSURANCE COMPANY
DE Tilley 4-25-02

Examiner: Mike Zeise	Level: II	Date: 04/17/02	Reviewer: Bob Kellenhall	Level: III	Date: 04/17/02
Sign: Michael Zeise			Sign:		



* SCAN END POINT

= AREA NOT EXAMINED

AOI: A-B-C-D

SUMMARY: 002800

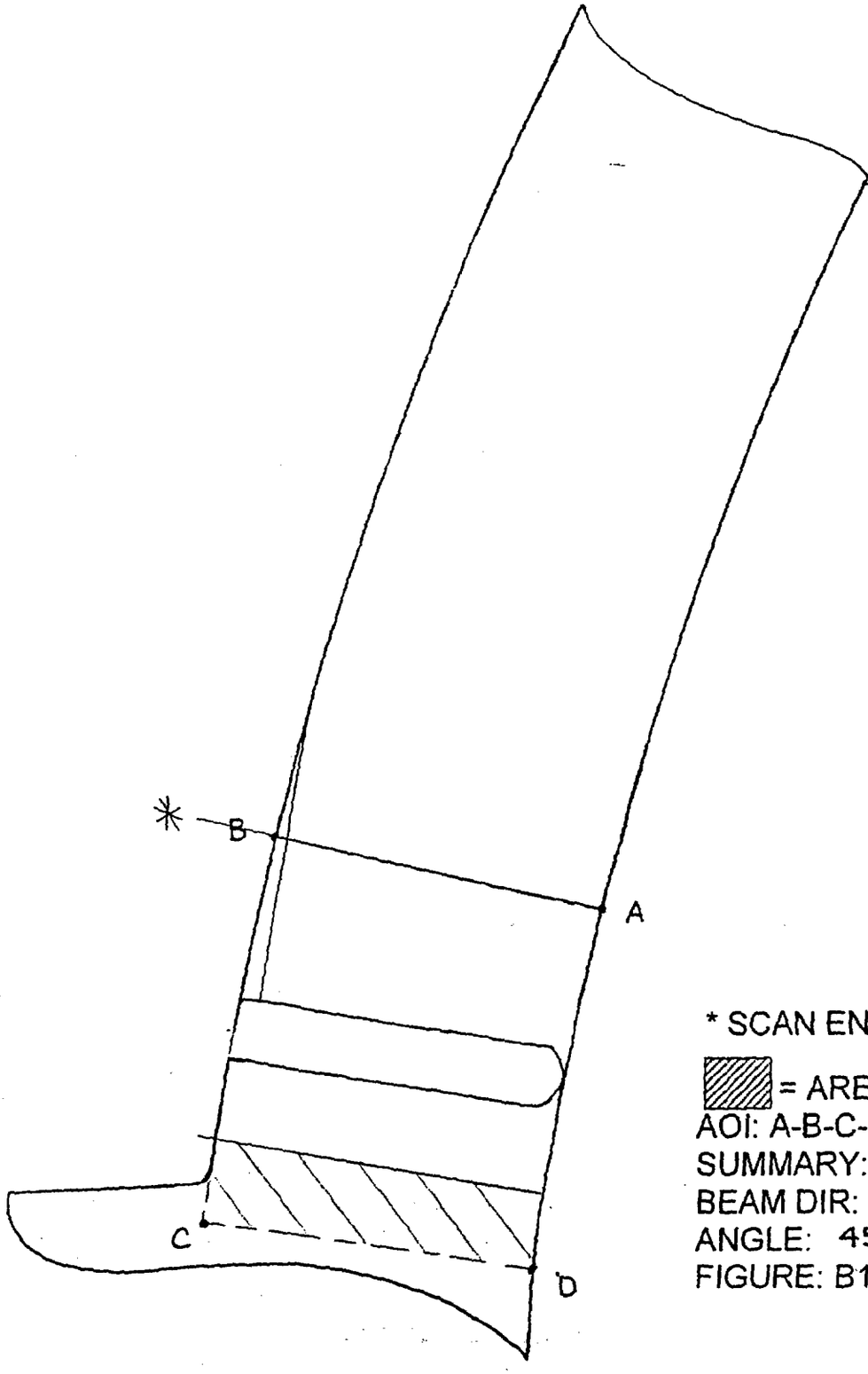
BEAM DIR: O to MAT'L

ANGLE: 0°

FIGURE: B1.40

HEAD TO FLANGE WELD

270A



* SCAN END POINT

= AREA NOT EXAMINED

AOI: A-B-C-D

SUMMARY: 002800

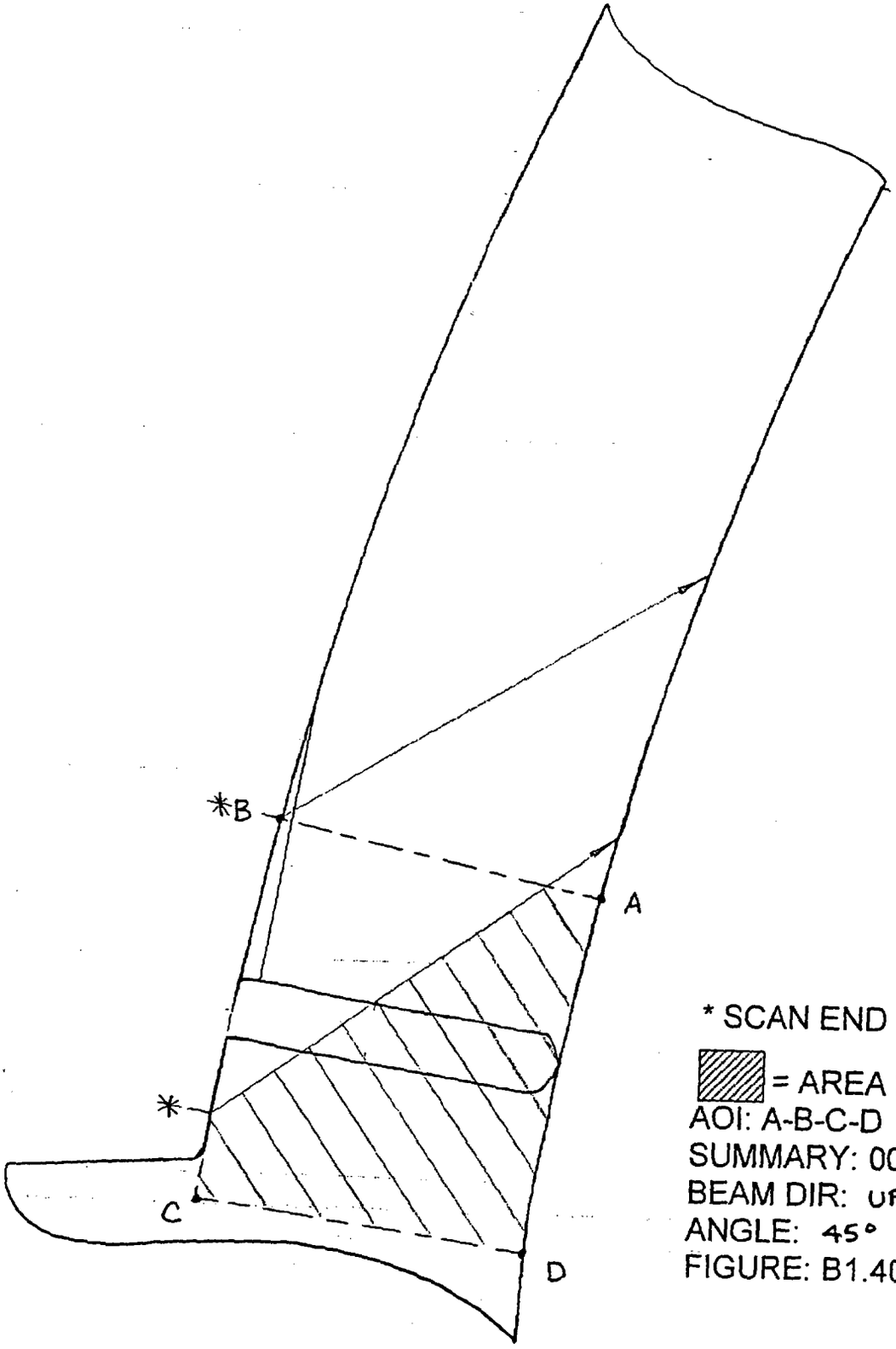
BEAM DIR: CW/CCW

ANGLE: 45°

FIGURE: B1.40

HEAD TO FLANGE WELD

270B



* SCAN END POINT

= AREA NOT EXAMINED

AOI: A-B-C-D

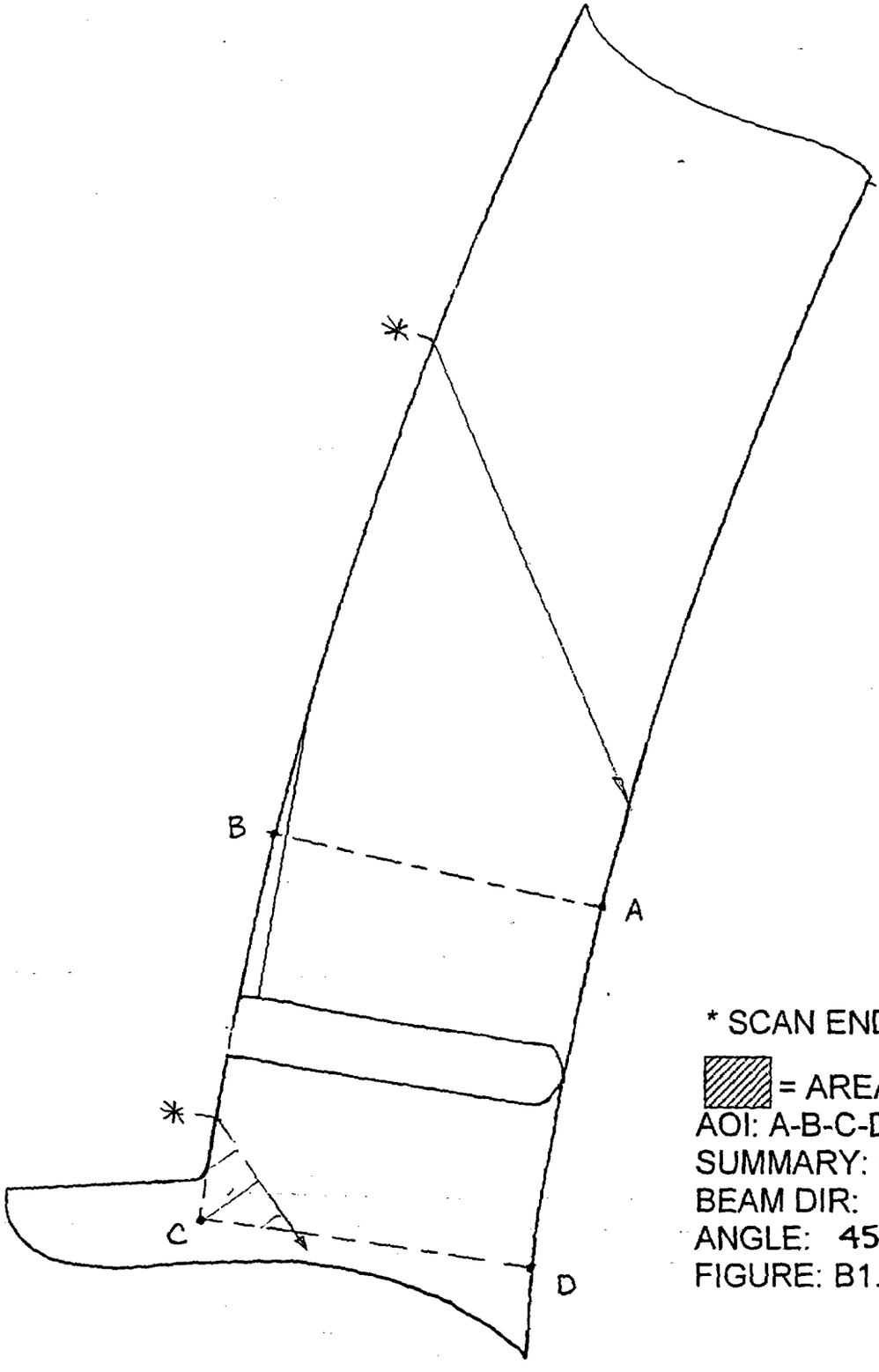
SUMMARY: 002800

BEAM DIR: UP

ANGLE: 45°

FIGURE: B1.40

HEAD TO FLANGE WELD



* SCAN END POINT

= AREA NOT EXAMINED

AOI: A-B-C-D

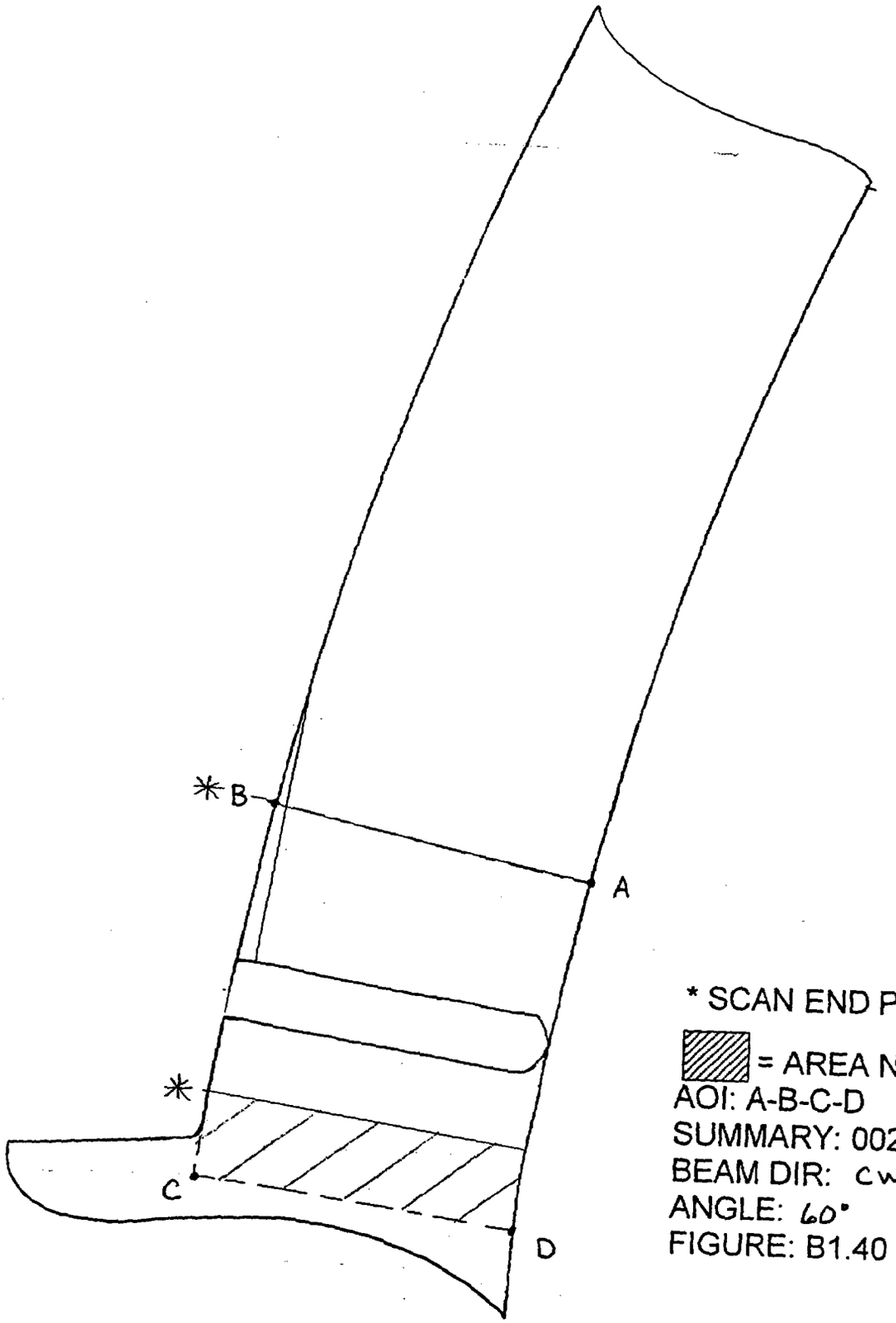
SUMMARY: 002800

BEAM DIR: DOWN

ANGLE: 45°

FIGURE: B1.40

HEAD TO FLANGE WELD



* SCAN END POINT

= AREA NOT EXAMINED

AOI: A-B-C-D

SUMMARY: 002800

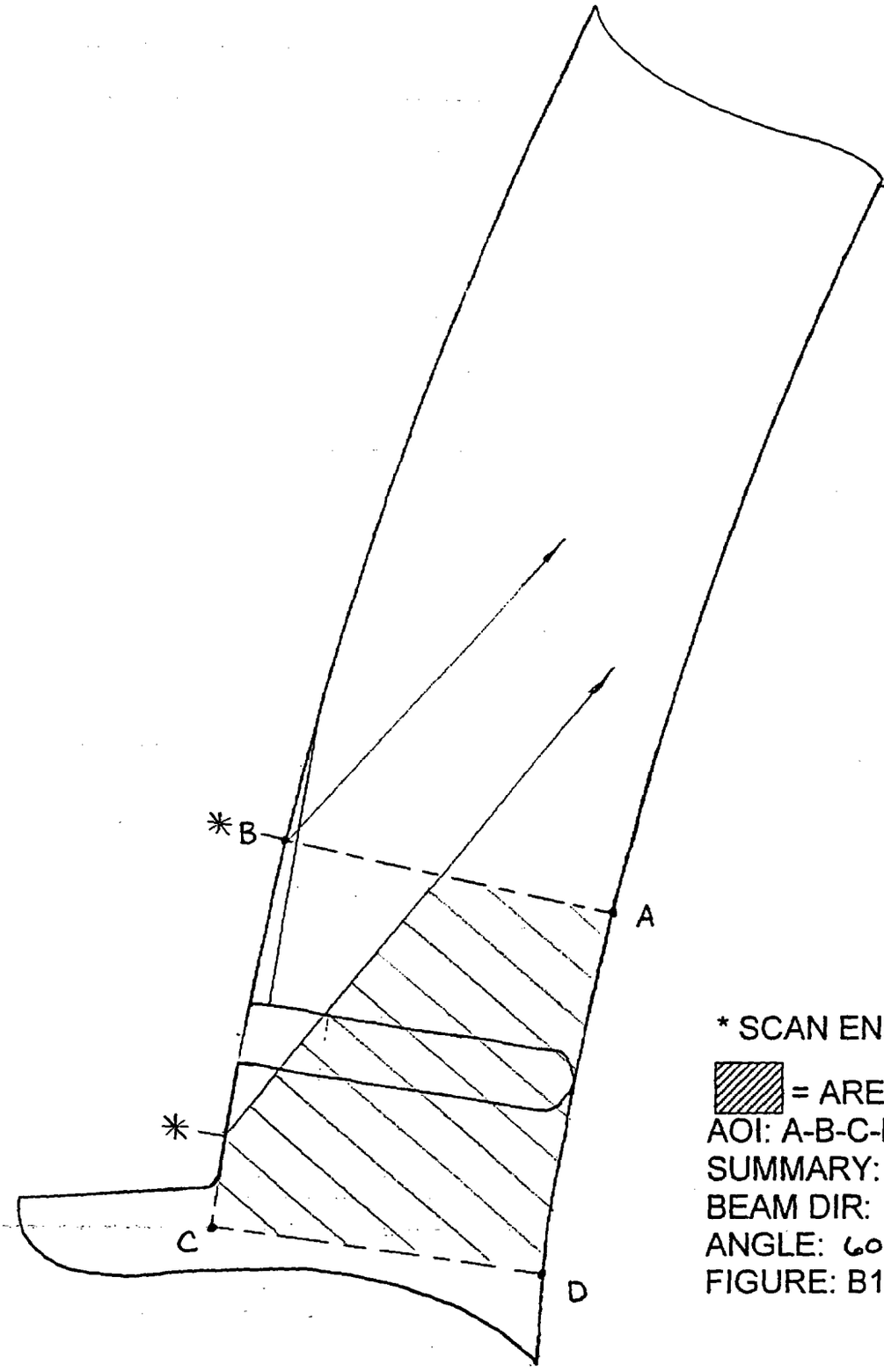
BEAM DIR: cw / ccw

ANGLE: 60°

FIGURE: B1.40

HEAD TO FLANGE WELD

270E



* SCAN END POINT

= AREA NOT EXAMINED

AOI: A-B-C-D

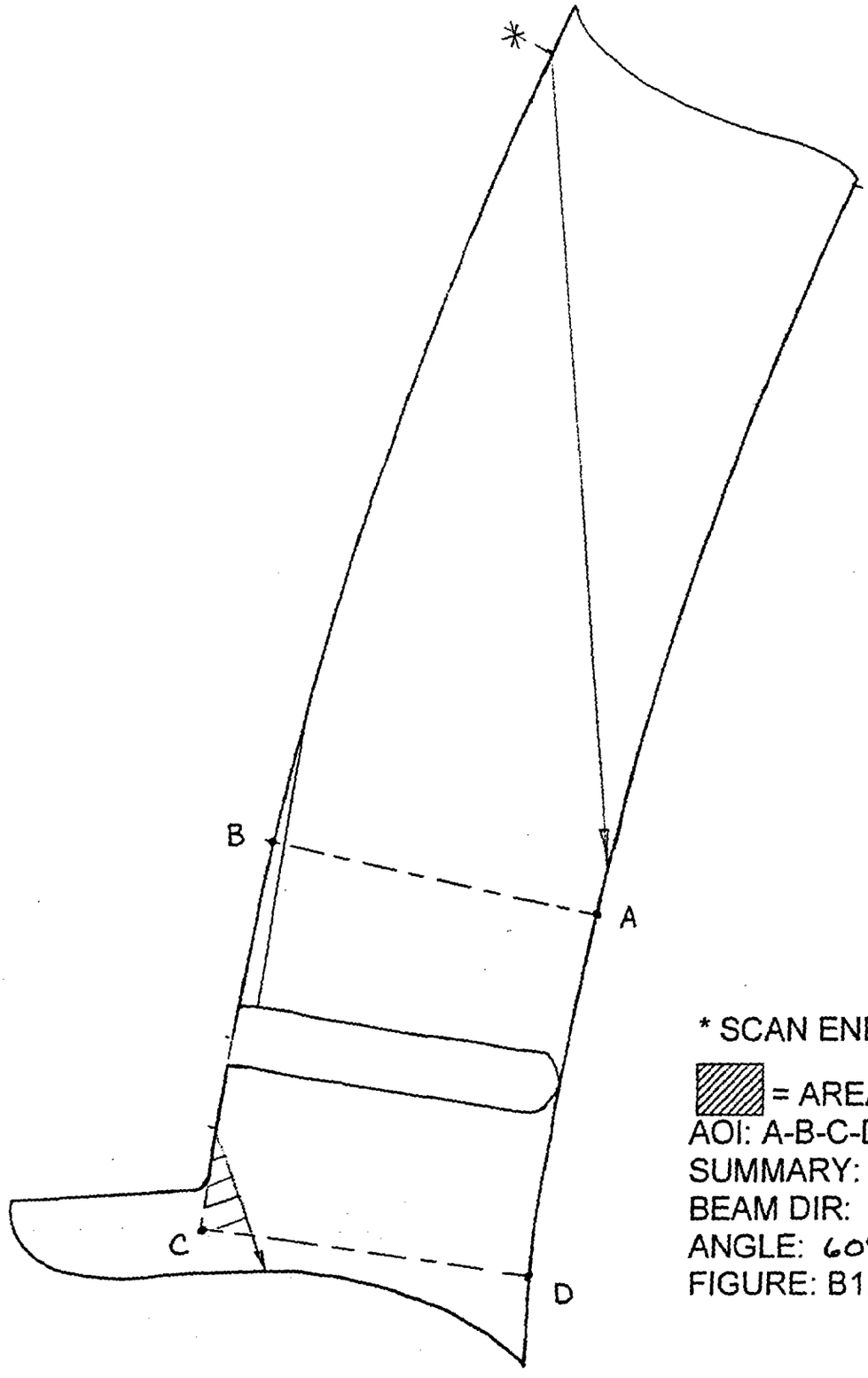
SUMMARY: 002800

BEAM DIR: UP

ANGLE: 60°

FIGURE: B1.40

HEAD TO FLANGE WELD



* SCAN END POINT

= AREA NOT EXAMINED

AOI: A-B-C-D

SUMMARY: 002800

BEAM DIR: DOWN

ANGLE: 60°

FIGURE: B1.40

HEAD TO FLANGE WELD

R.V. COVERAGE ESTIMATE BREAKDOWNS

PLANT NAME SALEM UNIT 2

COMPONENT NOZZLE TO SHELL WELD

WELD NO 29-RCN-1230

WesDyne International

BEAM ANGLE BREAK DOWN

BEAM DIRECTION	10 & 50 DEG.		45 Shear		45 L Single		45 L Dual	
	WELD	VOLUME	WELD	VOLUME	WELD	VOLUME	WELD	VOLUME
PARALLEL			55.50	71.00	55.50	71.00	55.5	71.00
BORE AXIAL	100.00	100.00						
(10 & 50 DEG.)								
AVERAGE	100.00		63.25		63.25		63.25	

Comments:

COMBINED AVERAGE 72.44 Analyst [signature] Date 12/19/02

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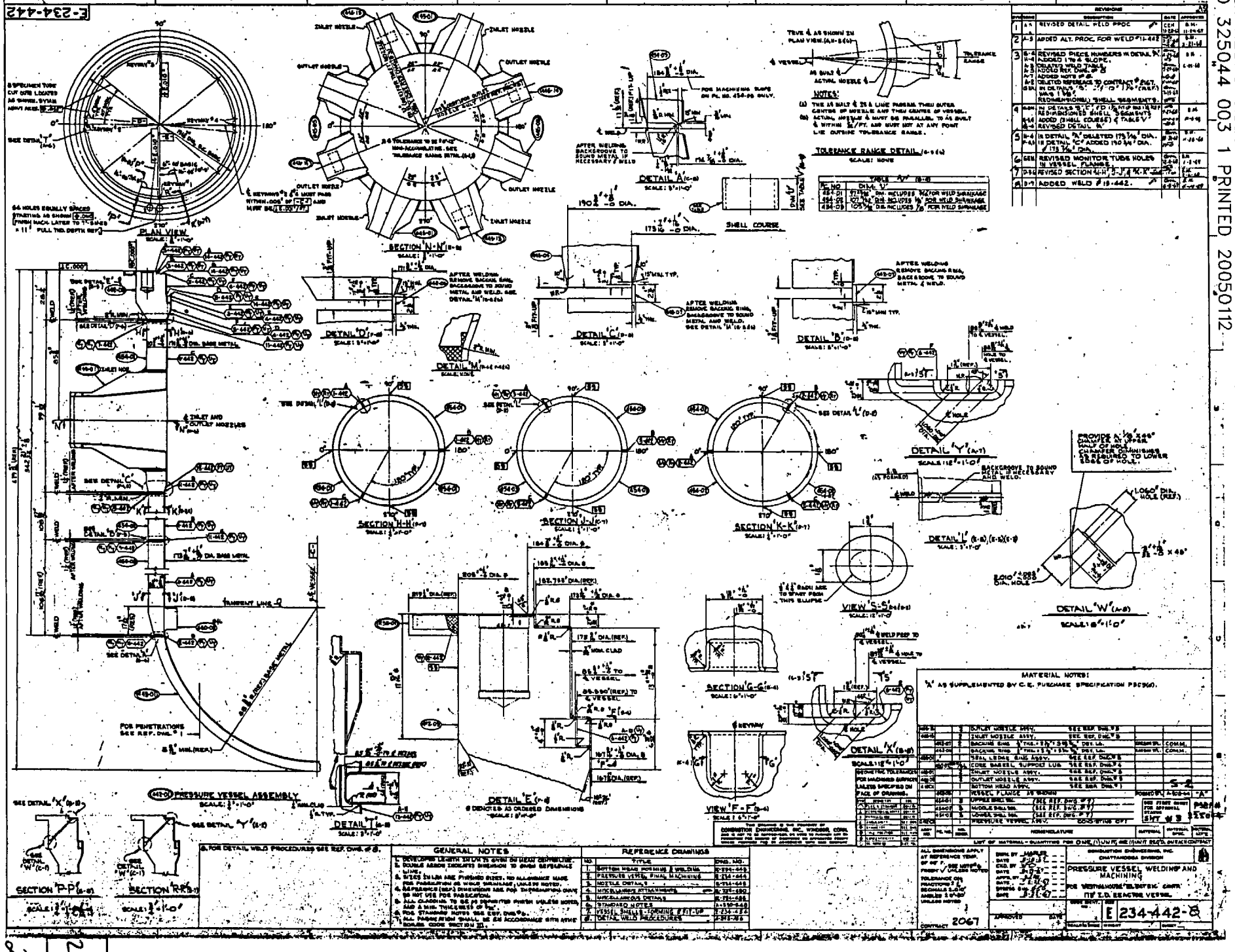
USER RESPONSIBLE FOR VERIFYING REVISION, STATUS AND CHANGES
VTD. 325044 003 1 PRINTED 20050112

E-234-442

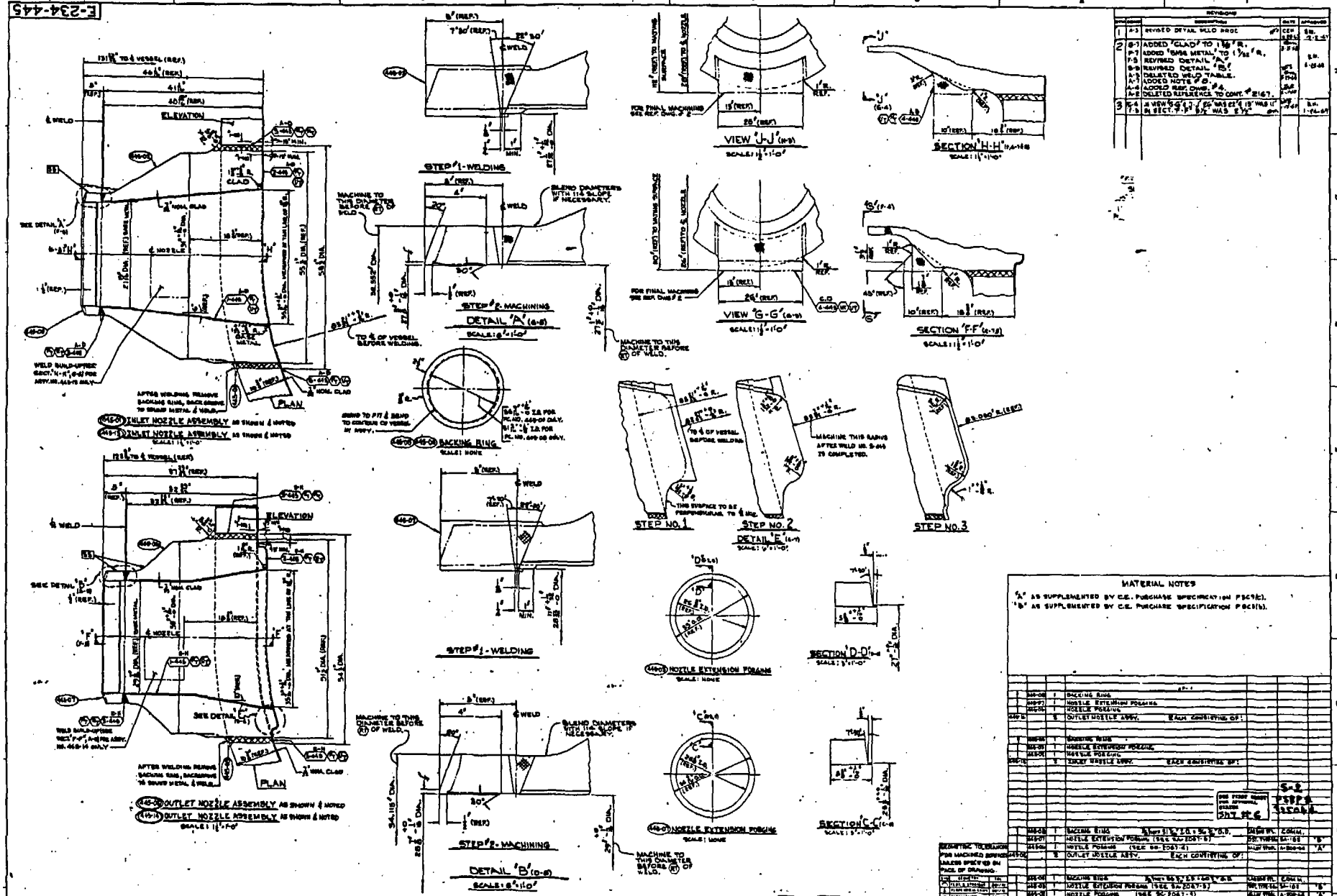


2714

271A

USER RESPONSIBLE FOR VERIFYING REVISION, STATUS AND CHANGES
TID 325044 006 1 PRINTED 20050112

E-234-445



2713

WesDyne International
Reactor Vessel Inservice Examination
Scan Parameter Execution

CUSTOMER ..... PUBLIC SERVICE ELECTRIC & GAS
SITE ..... SALEM - UNIT 2
OUTAGE 2R12
VESSEL TYPE ..... PWR-WESTINGHOUSE 4 LOOP

WELD IDENTIFICATION - 29-RCN-1230

Weld and Scan Type = NOZZLE TO SHELL (TAN) PARALLEL SCAN
Scan Data File Name = WN22-TAN-ONaaa

SCAN AREA PER THE ORIGINAL TECHNIQUES

UDRPS SCAN AREA DEFINITION		RADIUS (IN)	AZIMUTH (DEGREES)
START CW	:	85.44	179.90
END CCW	:	85.44	-179.90
START CW	:	85.44	179.90
END CCW	:	85.44	-179.90

SCAN AREA/AREAS OBTAINED DURING THE SCAN

TOP LEFT	:	26.75	179.90
TOP RIGHT	:	32.10	179.90
BOTTOM LEFT	:	26.75	-179.90
BOTTOM RIGHT	:	32.10	-179.90

Increment Size (in) = 0.50
Number of Indexes Specified = 12
Number of Indexes Completed = 12
Scan Area - Original Techniques (sq in) = 1118.7
Scan Area - This Scan (sq in) = 1118.7
Scan Area - Completed (sq in) = 1118.7

	Time	Date
Scan Started	16:14:04	04/18/02
Scan Completed	16:23:52	04/18/02

Robot Operator Signature Paul Boone DATE 4/18/02

UT Operator Signature [illegible] DATE 4/18/02

Comments _____

WesDyne International
Reactor Vessel Inservice Examination
Scan Parameter Execution

CUSTOMER	PUBLIC SERVICE ELECTRIC & GAS
SITE	SALEM - UNIT 2
OUTAGE	2R12
VESSEL TYPE	PWR-WESTINGHOUSE 4 LOOP

WELD IDENTIFICATION - 29-RCN-1230

Weld and Scan Type = NOZZLE TO SHELL (TAN) PARALLEL SCAN
Scan Data File Name = WN22-TAN-ONaaaa

SCAN AREA PER THE ORIGINAL TECHNIQUES

UDRPS SCAN AREA DEFINITION		RADIUS (IN)	AZIMUTH (DEGREES)
START CW	:	85.44	179.90
END CCW	:	85.44	-179.90
START CW	:	85.44	179.90
END CCW	:	85.44	-179.90

SCAN AREA/AREAS OBTAINED DURING THE SCAN

TOP LEFT	:	26.75	179.90
TOP RIGHT	:	29.25	179.90
BOTTOM LEFT	:	26.75	-179.90
BOTTOM RIGHT	:	29.25	-179.90

Increment Size (in)	=	0.50
Number of Indexes Specified	=	12
Number of Indexes Completed	=	6
Scan Area - Original Techniques (sq in)	=	1118.7
Scan Area - This Scan (sq in)	=	1118.7
Scan Area - Completed (sq in)	=	530.7

	Time	Date
Scan Started	16:28:14	04/18/02
Scan Completed	16:32:33	04/18/02

Robot Operator Signature Paul Boone DATE 4/18/02

UT Operator Signature [illegible] DATE 4/18/02

Comments _____

R.V. COVERAGE ESTIMATE BREAKDOWNS

PLANT NAME SALEM UNIT 2

WesDyne International

COMPONENT NOZZLE TO SHELL WELD

WELD NO 29-RCN-1240

BEAM ANGLE BREAK DOWN

BEAM DIRECTION	10 & 50 DEG.		45 Shear		45 L Single		45 L Dual	
	WELD	VOLUME	WELD	VOLUME	WELD	VOLUME	WELD	VOLUME
PARALLEL			55.50	71.00	55.50	71.00	55.5	71.00
BORE AXIAL	100.00	100.00						
(10 & 50 DEG.)								
AVERAGE	100.00		63.25		63.25		63.25	

Comments:

COMBINED AVERAGE 72.44 Analyst [signature] Date 4/14/02

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WesDyne International
Reactor Vessel Inservice Examination
Scan Parameter Execution

CUSTOMER	PUBLIC SERVICE ELECTRIC & GAS
SITE	SALEM - UNIT 2
OUTAGE	2R12
VESSEL TYPE	PWR-WESTINGHOUSE 4 LOOP

WELD IDENTIFICATION - 29-RCN-1240

Weld and Scan Type = NOZZLE TO SHELL (TAN) PARALLEL SCAN
Scan Data File Name = WN158-TAN-ONa

SCAN AREA PER THE ORIGINAL TECHNIQUES

UDRPS SCAN AREA DEFINITION		RADIUS (IN)	AZIMUTH (DEGREES)
START CW	:	85.44	179.90
END CCW	:	85.44	-179.90
START CW	:	85.44	179.90
END CCW	:	85.44	-179.90

SCAN AREA/AREAS OBTAINED DURING THE SCAN

TOP LEFT	:	26.75	179.90
TOP RIGHT	:	32.10	179.90
BOTTOM LEFT	:	26.75	-179.90
BOTTOM RIGHT	:	32.10	-179.90

Increment Size (in)	=	0.50
Number of Indexes Specified	=	12
Number of Indexes Completed	=	12
Scan Area - Original Techniques (sq in)	=	1118.7
Scan Area - This Scan (sq in)	=	1118.7
Scan Area - Completed (sq in)	=	1118.7

	Time	Date
Scan Started	17:36:11	04/18/02
Scan Completed	17:46:00	04/18/02

Robot Operator Signature Paul Boore DATE 4/18/02

UT Operator Signature [illegible] DATE 4/18/02

Comments

WesDyne International
Reactor Vessel Inservice Examination
Scan Parameter Execution

CUSTOMER	PUBLIC SERVICE ELECTRIC & GAS
SITE	SALEM - UNIT 2
OUTAGE	2R12
VESSEL TYPE	PWR-WESTINGHOUSE 4 LOOP

WELD IDENTIFICATION - 29-RCN-1240

Weld and Scan Type = NOZZLE TO SHELL (TAN) PARALLEL SCAN
Scan Data File Name = WN158-TAN-ONaa

SCAN AREA PER THE ORIGINAL TECHNIQUES

UDRPS SCAN AREA DEFINITION		RADIUS (IN)	AZIMUTH (DEGREES)
START CW	:	85.44	179.90
END CCW	:	85.44	-179.90
START CW	:	85.44	179.90
END CCW	:	85.44	-179.90

SCAN AREA/AREAS OBTAINED DURING THE SCAN

TOP LEFT	:	26.75	179.90
TOP RIGHT	:	29.75	-179.90
BOTTOM LEFT	:	26.75	-179.90
BOTTOM RIGHT	:	29.75	179.90

Increment Size (in)	=	0.50
Number of Indexes Specified	=	12
Number of Indexes Completed	=	7
Scan Area - Original Techniques (sq in)	=	1118.7
Scan Area - This Scan (sq in)	=	1118.7
Scan Area - Completed (sq in)	=	624.7

	Time	Date
Scan Started	17:49:34	04/18/02
Scan Completed	17:54:53	04/18/02

Robot Operator Signature Paul Boore DATE 4/18/02

UT Operator Signature Will Witt DATE 4/18/02

Comments

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R.V. COVERAGE ESTIMATE BREAKDOWNS

PLANT NAME SALEM UNIT 2

WesDyne International

COMPONENT NOZZLE TO SHELL WELD

WELD NO 29-RCN-1220

BEAM ANGLE BREAK DOWN

BEAM DIRECTION	10 & 50 DEG.		45 Shear		45 L Single		45 L Dual	
	WELD	VOLUME	WELD	VOLUME	WELD	VOLUME	WELD	VOLUME
PARALLEL			55.50	71.00	55.50	71.00	55.5	71.00
BORE AXIAL	100.00	100.00						
(10 & 50 DEG.)								
AVERAGE	100.00		63.25		63.25		63.25	

Comments:

COMBINED AVERAGE 72.44 Analyst [signature] Date 4/19/00

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WesDyne International
Reactor Vessel Inservice Examination
Scan Parameter Execution

CUSTOMER	PUBLIC SERVICE ELECTRIC & GAS
SITE	SALEM - UNIT 2
OUTAGE	2R12
VESSEL TYPE	PWR-WESTINGHOUSE 4 LOOP

WELD IDENTIFICATION - 29-RCN-1220

Weld and Scan Type = NOZZLE TO SHELL (TAN) PARALLEL SCAN
Scan Data File Name = WN202-TAN-ONa

SCAN AREA PER THE ORIGINAL TECHNIQUES

UDRPS SCAN AREA DEFINITION		RADIUS (IN)	AZIMUTH (DEGREES)
START CW	:	85.44	179.90
END CCW	:	85.44	-179.90
START CW	:	85.44	179.90
END CCW	:	85.44	-179.90

SCAN AREA/AREAS OBTAINED DURING THE SCAN

TOP LEFT	:	26.75	179.90
TOP RIGHT	:	32.10	179.90
BOTTOM LEFT	:	26.75	-179.90
BOTTOM RIGHT	:	32.10	-179.90

Increment Size (in)	=	0.50
Number of Indexes Specified	=	12
Number of Indexes Completed	=	12
Scan Area - Original Techniques (sq in)	=	1118.7
Scan Area - This Scan (sq in)	=	1118.7
Scan Area - Completed (sq in)	=	1118.7

	Time	Date
Scan Started	15:07:10	04/18/02
Scan Completed	15:21:42	04/18/02

Robot Operator Signature Paul Boone DATE 4/18/02

UT Operator Signature [illegible] DATE 4/18/02

Comments

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WesDyne International
Reactor Vessel Inservice Examination
Scan Parameter Execution

CUSTOMER	PUBLIC SERVICE ELECTRIC & GAS
SITE	SALEM - UNIT 2
OUTAGE	2R12
VESSEL TYPE	PWR-WESTINGHOUSE 4 LOOP

WELD IDENTIFICATION - 29-RCN-1220

Weld and Scan Type = NOZZLE TO SHELL (TAN) PARALLEL SCAN
Scan Data File Name = WN202-TAN-ON-180

SCAN AREA PER THE ORIGINAL TECHNIQUES

UDRPS SCAN AREA DEFINITION		RADIUS (IN)	AZIMUTH (DEGREES)
START CW	:	85.44	179.90
END CCW	:	85.44	-179.90
START CW	:	85.44	179.90
END CCW	:	85.44	-179.90

SCAN AREA/AREAS OBTAINED DURING THE SCAN

TOP LEFT	:	26.75	179.90
TOP RIGHT	:	29.75	-179.90
BOTTOM LEFT	:	26.75	-179.90
BOTTOM RIGHT	:	29.75	179.90

Increment Size (in)	=	0.50
Number of Indexes Specified	=	12
Number of Indexes Completed	=	7
Scan Area - Original Techniques (sq in)	=	1118.7
Scan Area - This Scan (sq in)	=	1118.7
Scan Area - Completed (sq in)	=	624.7

	Time	Date
Scan Started	15:29:47	04/18/02
Scan Completed	15:34:59	04/18/02

Robot Operator Signature Paul Boom DATE 4/18/02

UT Operator Signature [illegible] DATE 4/18/02

Comments

R.V. COVERAGE ESTIMATE BREAKDOWNS

PLANT NAME SALEM UNIT 2

WesDyne

COMPONENT NOZZLE TO SHELL WELD

International

WELD NO 29-RCN-1210

BEAM ANGLE BREAK DOWN

BEAM DIRECTION	10 & 50 DEG.		45 Shear		45 L Single		45 L Dual	
	WELD	VOLUME	WELD	VOLUME	WELD	VOLUME	WELD	VOLUME
PARALLEL			55.50	71.00	55.50	71.00	55.5	71.00
BORE AXIAL	100.00	100.00						
(10 & 50 DEG.)								
AVERAGE	100.00		63.25		63.25		63.25	

Comments:

COMBINED AVERAGE 72.44 Analyst [signature] Date 4/19/02

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WesDyne International
Reactor Vessel Inservice Examination
Scan Parameter Execution

CUSTOMER	PUBLIC SERVICE ELECTRIC & GAS
SITE	SALEM - UNIT 2
OUTAGE	2R12
VESSEL TYPE	PWR-WESTINGHOUSE 4 LOOP

WELD IDENTIFICATION - 29-RCN-1210

Weld and Scan Type = NOZZLE TO SHELL (TAN) PARALLEL SCAN
Scan Data File Name = WN338-TAN-ON

SCAN AREA PER THE ORIGINAL TECHNIQUES

UDRPS SCAN AREA DEFINITION		RADIUS (IN)	AZIMUTH (DEGREES)
START CW	:	85.44	179.90
END CCW	:	85.44	-179.90
START CW	:	85.44	179.90
END CCW	:	85.44	-179.90

SCAN AREA/AREAS OBTAINED DURING THE SCAN

TOP LEFT	:	26.75	179.90
TOP RIGHT	:	32.10	179.90
BOTTOM LEFT	:	26.75	-179.90
BOTTOM RIGHT	:	32.10	-179.90

Increment Size (in)	=	0.50
Number of Indexes Specified	=	12
Number of Indexes Completed	=	12
Scan Area - Original Techniques (sq in)	=	1118.7
Scan Area - This Scan (sq in)	=	1118.7
Scan Area - Completed (sq in)	=	1118.7

	Time	Date
Scan Started	15:49:49	04/18/02
Scan Completed	15:59:39	04/18/02

Robot Operator Signature Paul Boore DATE 4/18/02

UT Operator Signature [illegible] DATE 4/18/02

Comments

FRAMATOME ANP

VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

CUSTOMER: SALEM 2R12	SYSTEM: PRESSURIZER
SUMMARY NO: 010900	COMPONENT ID: 2-PZR-CIRC-DUH

1.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT BEAM PLANAR FLAWS

1.1 Exam Height X Exam Width X Exam Length = Exam 4.50 X 6.80 X 290.00 = 8,874.00 cu.in

2.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT BEAM LAMINAR FLAWS

2.1 Exam Height X Exam Width X Exam Length = Exam 0.00 X 0.00 X 0.00 = 0.00 cu.in

3.0 CALCULATE REQUIRED PARALLEL EXAM VOLUME FOR 45° AND 60°

3.1 Exam Height X Exam Width X Exam Length = Exam 4.50 X 6.80 X 580.00 =17,748.00 cu.in

4.0 CALCULATE REQUIRED TRANSVERSE EXAM VOLUME FOR 45° AND 60°

4.1 Exam Height X Exam Width X Exam Length = Exam 4.50 X 6.80 X 580.00 =17,748.00 cu.in

5.0 CALCULATE STRAIGHT BEAM PLANAR EXAM COVERAGE

5.1 Limited above / CW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Volume with no Exam Coverage
4.50	X	3.95	X	290	=	5,154.75

5.2 Limited Below / CW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Volume with no Exam Coverage
0.00	X	0.00	X	0.00	=	0.00

Total straight beam planar exam volume not examined = 5,154.75

5.3 Percent Volume Examined

Total 0 vol w/No Coverage		Total 0 Exam Volume			Percent Volume Examined
100 - {[5,154.75	/	8,874.00]	x	100 } =	41.91 %

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FRAMATOME ANP

VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

6.0 CALCULATE STRAIGHT BEAM LAMINAR EXAM COVERAGE

6.1 Limited above / CW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Volume with no Exam Coverage
0.00	X	0.00	X	0.00	=	0.00

6.2 Limited Below / CW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Volume with no Exam Coverage
0.00	X	0.00	X	0.00	=	0.00

Total straight beam planar exam volume not examined = 0.00

6.3 Percent Volume Examined

	Total 0° vol w/No Coverage		Total 0° Exam Volume			Percent Volume Examined
100 - {[	0.00	/	0.00]	x 100 }	=	0.00 %

7.0 CALCULATE PARALLEL 45° EXAM COVERAGE

7.1 Limited above / CW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Volume with no Exam Coverage
4.50	X	3.65	X	290.00	=	4,763.25

7.2 Limited Below / CCW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Volume with no Exam Coverage
4.50	X	4.50	X	366.50	=	7,421.63

Total 45° parallel exam volume not examined = 12,184.88

7.3 Percent Volume Examined

	Total 45° parallel vol w/No Coverage		Total 45° parallel Exam Volume			Percent Volume Examined
100 - {[	12,184.88	/	17,748.00]	x 100 }	=	31.35 %

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Delton E. Tillery 4-19-01

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FRAMATOME ANP VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

8.0 CALCULATE PARALLEL 60° EXAM COVERAGE

8.1 Limited above / CW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Above / CW exam Volume with no Exam Coverage
4.50	X	3.59	X	290.00	=	4,684.95

8.2 Limited Below / CCW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Below / CCW exam Volume with no Exam Coverage
4.50	X	4.50	X	392.00	=	7,938.00

Total 60° parallel exam volume not examined = 12,622.95

8.3 Percent Volume Examined

	Total 60° parallel Vol w/No Coverage		Total 60° parallel Exam Volume			Percent Volume Examined
100 - {[	12,622.95	/	17,748.00]	x 100 }	=	28.88 %

9.0 CALCULATE TRANSVERSE 45° EXAM COVERAGE

9.1 Limited Clockwise exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		CW Exam Volume with no Exam Coverage
4.50	X	4.50	X	254.50	=	5,153.63

9.2 Limited Below Counter clockwise exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		CCW Exam Volume with no Exam Coverage
4.50	X	4.50	X	254.50	=	5,153.63

Total 45° transverse exam volume not examined = 10,307.25

9.3 Percent Volume Examined

	Total 45° parallel		Total 45° parallel Exam Volume			Percent Volume Examined
100 - {[	10,307.25	/	17,748.00]	x 100 }	=	41.92 %

FRAMATOME ANP VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

10.0 CALCULATE TRANSVERSE 60° EXAM COVERAGE

10.1 Limited Clockwise exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		CW exam Volume with no Exam Coverage
4.50	X	4.50	X	254.50	=	5,153.63

10.2 Limited Counterclockwise exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		CCW exam Volume with no Exam Coverage
4.50	X	4.50	X	254.50	=	5,153.63

Total 60 transverse exam volume not examined = 10,307.25

10.3 Percent Volume Examined

Total 60° Trans Vol w/NoCoverage		Total 60° Trans Exam Volume			Percent Volume Examined
100 - {[10,307.25	/	17,748.00]	x	100} =	41.92 %

11.0 CALCULATE PERCENT OF TOTAL VOLUME EXAMINED

11.1 Sum of Exam Volumes %

Steps 5 Thur 10		No. Of Exams (6)		Examination Coverage
[185.98	/	5.00]	=	37.20 %

The total circumferential area available for scanning was 140" out of the total circumference of 290". Within this 140", the scan was limited on the head side of the weld 360 degrees by a support ring. The distance from the indicated weld centerline to the bottom of the support ring is 2.50". The dimensions shown in this form are not reflective of actual dimensions, however the totals used calculate the coverages for each of the steps are accurate.

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Examiner: Mike Zeise Level: II Date: 04/11/02
Sign: Michael Zeise FACTORY MUTUAL

Reviewer: Bob Kellerhall Level: III Date: ~~04/11/02~~ 4/15/02 4/13/02
Sign:

FACTORY MUTUAL
INSURANCE COMPANY

DE Tilley 4/26/02

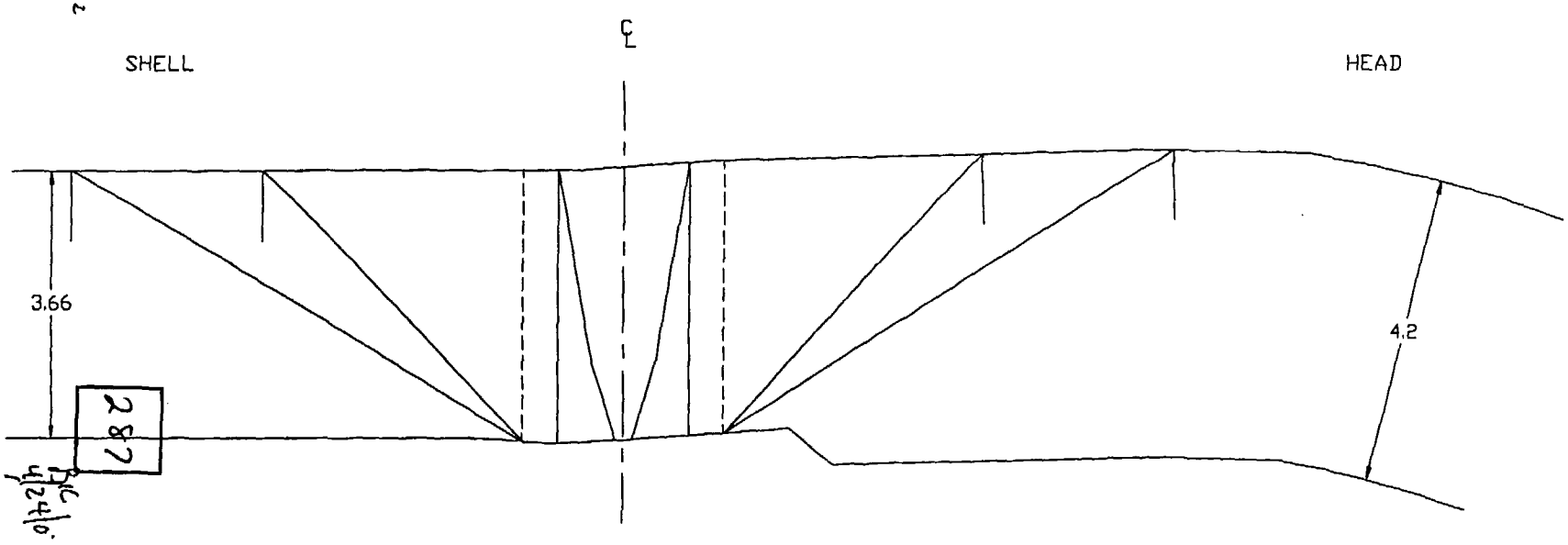
Plot illustrates the required exam volume
as scaned from the head and shell sides

Salem unit 2

21-STG-SDUH

David Kleinjan Level II

Scale 1"=2.5'



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DJC
4/24/02

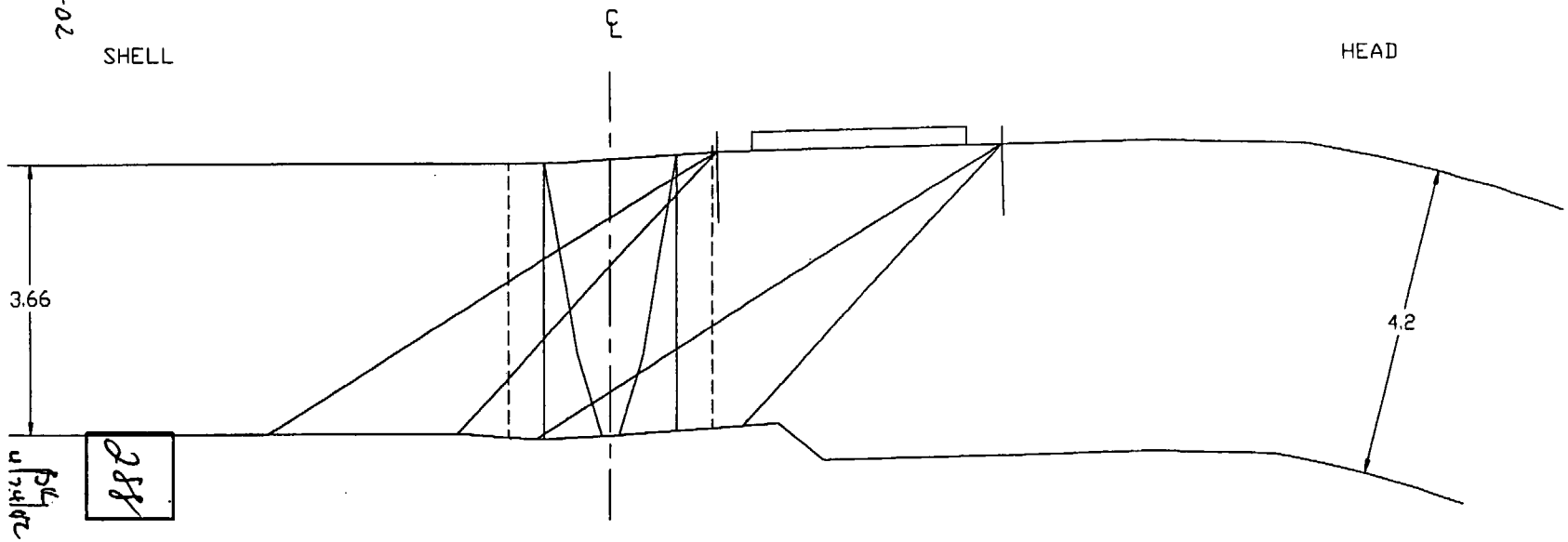
Plot illustrates the limitations of the weld pads as scanning from the head side

Salem unit 2

21-STG-SDUH

David Kleinjan Level II

Scale 1"=2.5"



FACTORY MUTUAL INSURANCE COMPANY

DE Tilley 4-26-02

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FRAMATOME ANP

VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

CUSTOMER: SALEM 2R12	SYSTEM: STEAM GENERATOR #21
SUMMARY NO: 272900	COMPONENT ID: 21-STG-SDUH

1.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT BEAM PLANAR FLAWS

1.1 Exam Height X Exam Width X Exam Length = Exam 3.72 X 3.00 X 553.00 = 6,171.48 cu.in

2.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT BEAM LAMINAR FLAWS

2.1 Exam Height X Exam Width X Exam Length = Exam 0.00 X 0.00 X 0.00 = 0.00 cu.in

3.0 CALCULATE REQUIRED PARALLEL EXAM VOLUME FOR 45° AND 60°

3.1 Exam Height X Exam Width X Exam Length = Exam 3.72 X 3.00 X 1,106.0 =12,342.96 cu.in

4.0 CALCULATE REQUIRED TRANSVERSE EXAM VOLUME FOR 45° AND 60°

4.1 Exam Height X Exam Width X Exam Length = Exam 3.72 X 3.00 X 1,106.0 =12,342.96 cu.in

5.0 CALCULATE STRAIGHT BEAM PLANAR EXAM COVERAGE

5.1 Limited above / CW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Volume with no Exam Coverage
3.72	X	1.45	X	49.50	=	267.00

5.2 Limited Below / CW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Volume with no Exam Coverage
3.72	X	1.45	X	49.50	=	267.00

Total straight beam planar exam volume not examined = 534.01

5.3 Percent Volume Examined

Total 0 vol w/No Coverage		Total 0 Exam Volume				Percent Volume Examined
100 - {[534.01	/	6,171.48]	x	100 }	=	91.35 %

FACTORY MUTUAL INSURANCE COMPANY

D.F. Tillman 4-26-01

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AIL 42402 10/15

FRAMATOME ANP

VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

6.0 CALCULATE STRAIGHT BEAM LAMINAR EXAM COVERAGE

6.1 Limited above / CW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Volume with no Exam Coverage
0.00	X	0.00	X	0.00	=	0.00

6.2 Limited Below / CW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Volume with no Exam Coverage
0.00	X	0.00	X	0.00	=	0.00

Total straight beam planar exam volume not examined = 0.00

6.3 Percent Volume Examined

	Total 0° vol w/No Coverage		Total 0° Exam Volume			Percent Volume Examined
100 - {[	0.00	/	0.00]	x 100 }	=	0.00 %

7.0 CALCULATE PARALLEL 45° EXAM COVERAGE

7.1 Limited above / CW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Volume with no Exam Coverage
3.72	X	3.00	X	96.30	=	1,074.71

7.2 Limited Below / CCW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Volume with no Exam Coverage
3.72	X	3.00	X	76.75	=	856.53

Total 45° parallel exam volume not examined = 1,931.24

7.3 Percent Volume Examined

	Total 45° parallel vol w/No Coverage		Total 45° parallel Exam Volume			Percent Volume Examined
100 - {[	1,931.24	/	12,342.96]	x 100 }	=	84.35 %

FRAMATOME ANP **VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT**

8.0 CALCULATE PARALLEL 60° EXAM COVERAGE

8.1 Limited above / CW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Above / CW exam Volume with no Exam Coverage
3.72	X	3.00	X	96.80	=	1,080.29

8.2 Limited Below / CCW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Below / CCW exam Volume with no Exam Coverage
3.72	X	3.00	X	76.75	=	856.53

Total 60° parallel exam volume not examined = 1,936.82

8.3 Percent Volume Examined

	Total 60° parallel Vol w/No Coverage		Total 60° parallel Exam Volume			Percent Volume Examined
100 - {[	1,936.82	/	12,342.96]	x 100 }	=	84.31 %

9.0 CALCULATE TRANSVERSE 45° EXAM COVERAGE

9.1 Limited Clockwise exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		CW Exam Volume with no Exam Coverage
3.72	X	3.00	X	68.00	=	758.88

9.2 Limited Below Counter clockwise exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		CCW Exam Volume with no Exam Coverage
3.72	X	3.00	X	68.00	=	758.88

Total 45° transverse exam volume not examined = 1,517.76

9.3 Percent Volume Examined

	Total 45° parallel		Total 45° parallel Exam Volume			Percent Volume Examined
100 - {[	1,517.76	/	12,342.96]	x 100 }	=	87.70 %

FRAMATOME ANP

VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

10.0 CALCULATE TRANSVERSE 60° EXAM COVERAGE

10.1 Limited Clockwise exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		CW exam Volume with no Exam Coverage
3.72	X	3.00	X	68.00	=	758.88

10.2 Limited Counterclockwise exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		CCW exam Volume with no Exam Coverage
3.72	X	3.00	X	68.00	=	758.88

Total 60 transverse exam volume not examined = 1,517.76

10.3 Percent Volume Examined

Total 60° Trans Vol w/NoCoverage		Total 60° Trans Exam Volume			Percent Volume Examined
100 - {[1,517.76	/	12,342.96]	x	100 } =	87.70 %

11.0 CALCULATE PERCENT OF TOTAL VOLUME EXAMINED

11.1 Sum of Exam Volumes %

Steps 5 Thur 10		No. Of Exams (6)		Examination Coverage
[435.42	/	5.00]	=	87.08 %

Examination limited by insulation support plates and welded plates both sides of the weld. The Height, Width, and Length of the obstructed areas indicated are not accurate, however the total for each individual scan is an accumulation of the total obstructed volume for that scan.

FACTORY MUTUAL INSURANCE COMPANY
O E Tilley 4-26-02

Examiner: David Kleinjan	Level: II	Date: 04/19/02	Reviewer:	Level:	Date:
Sign:			Sign: Bob Kellerhall	III	4/24/02

FRAMATOME ANP

SURFACE EXAMINATION COVERAGE REPORT

CUSTOMER: SALEM 2 RFO-12	SYSTEM: Boiler Feedwater
SUMMARY NO: 330645	COMPONENT ID: 14-BF-2221-3PL-1 THRU-8

SURFACE EXAMINATIONS

1.0 CALCULATE REQUIRED EXAMINATION AREA

Calculate Examination Area (Length X Width = A1) : * X * = 224.800 sq.in.

2.0 CALCULATE AREA NOT EXAMINED

2.1

	Length of Limitation		Width of Limitation		Area Not Examined	
A.	*	X	*	=	*	sq.in.
B.	*	X	*	=	*	
C.	*	X	*	=	*	
D.	*	X	*	=	*	

2.2 Calculate Total Area Not Examined

(The sum of Area: A + B + C + D = A2) 48.300

3.0 CALCULATE PERCENT AREA NOT EXAMINED

3.1 Calculate Percent of Area Not Examined (A2/A1 X 100 = LP): 21.500

4.0 TOTAL EXAMINATION COVERAGE OBTAINED

4.1 Calculate Percent of Total Area Examined (100 - LP): 78.514%

LIMITATION EXPLANATION / REMARKS

* Percent weld examined is a total calculated from all lugs @ 0, 90, 180, and 270 degree locations. Areas not examined were due to inability to access yoke in correct orientation.

PREPARED BY: Phillip Wright	Date: 04/05/2002	REVIEWER: Bob Vellerhell	Date: 4/9/02 Page 3 of 3

FACTORY MUTUAL INSURANCE COMPANY
Delton E. Tillery 4-15-02

FRAMATOME ANP

VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

CUSTOMER: SALEM 2, RFO 12	SYSTEM: BORON INJECTION TANK
SUMMARY NO: 715180	COMPONENT ID: 2-BIT-A

1.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT BEAM PLANAR FLAWS

1.1 Exam Height X Exam Width X Exam Length = Exam 2.75 X 4.00 X 110.00 = 1,210.00 cu.in

2.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT BEAM LAMINAR FLAWS

2.1 Exam Height X Exam Width X Exam Length = Exam 0.00 X 0.00 X 0.00 = 0.00 cu.in

3.0 CALCULATE REQUIRED PARALLEL EXAM VOLUME FOR 45° AND 60°

3.1 Exam Height X Exam Width X Exam Length = Exam 2.75 X 4.00 X 220.00 = 2,420.00 cu.in

4.0 CALCULATE REQUIRED TRANSVERSE EXAM VOLUME FOR 45° AND 60°

4.1 Exam Height X Exam Width X Exam Length = Exam 2.75 X 4.00 X 220.00 = 2,420.00 cu.in

5.0 CALCULATE STRAIGHT BEAM PLANAR EXAM COVERAGE

5.1 Limited above / CW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Volume with no Exam Coverage
0.00	X	0.00	X	0.00	=	0.00

5.2 Limited Below / CW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Volume with no Exam Coverage
0.00	X	0.00	X	0.00	=	0.00

Total straight beam planar exam volume not examined = 0.00

5.3 Percent Volume Examined

Total 0 vol w/No Coverage		Total 0 Exam Volume		Percent Volume Examined
100 - {[0.00	/	1,210.00]	x 100 } =	100.00 %

294

FRAMATOME ANP

VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

6.0 CALCULATE STRAIGHT BEAM LAMINAR EXAM COVERAGE

6.1 Limited above / CW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Volume with no Exam Coverage
0	X		X		=	0.00

6.2 Limited Below / CW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Volume with no Exam Coverage
	X		X		=	

Total straight beam planar exam volume not examined = 0.00

6.3 Percent Volume Examined

	Total 0° vol w/No Coverage		Total 0° Exam Volume			Percent Volume Examined
100 - {[	0.00	/	0.00]	x 100 }	=	0.00 %

7.0 CALCULATE PARALLEL 45° EXAM COVERAGE

7.1 Limited above / CW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Volume with no Exam Coverage
2.75	X	4.00	X	32.00	=	352.13

7.2 Limited Below / CCW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Volume with no Exam Coverage
1.10	X	2.00	X	32.00	=	70.40

Total 45° parallel exam volume not examined = 422.53

7.3 Percent Volume Examined

	Total 45° parallel vol w/No Coverage		Total 45° parallel Exam Volume			Percent Volume Examined
100 - {[	422.53	/	2,420.00]	x 100 }	=	82.54 %

FACTORY MUTUAL INSURANCE COMPANY

NET. Ma... 4-25-02

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RK 4/22/02

FRAMATOME ANP

VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

8.0 CALCULATE PARALLEL 60° EXAM COVERAGE

8.1 Limited above / CW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Above / CW exam Volume with no Exam Coverage
2.75	X	4.00	X	32.00	=	352.00

8.2 Limited Below / CCW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Below / CCW exam Volume with no Exam Coverage
2.55	X	4.00	X	32.00	=	326.40

Total 60° parallel exam volume not examined = 678.40

8.3 Percent Volume Examined

	Total 60° parallel Vol w/No Coverage		Total 60° parallel Exam Volume			Percent Volume Examined
100 - {[	678.40	/	2,420.00]	x 100 }	=	71.97 %

9.0 CALCULATE TRANSVERSE 45° EXAM COVERAGE

9.1 Limited Clockwise exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		CW Exam Volume with no Exam Coverage
2.00	X	2.75	X	32.00	=	176.00

9.2 Limited Below Counter clockwise exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		CCW Exam Volume with no Exam Coverage
2.00	X	2.75	X	32.00	=	176.00

Total 45° transverse exam volume not examined = 352.00

9.3 Percent Volume Examined

	Total 45° parallel		Total 45° parallel Exam Volume			Percent Volume Examined
100 - {[	352.00	/	2,420.00]	x 100 }	=	85.45 %

FACTORY MUTUAL INSURANCE COMPANY

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BK 4/22/02

4-25-02

FRAMATOME ANP **VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT**

10.0 CALCULATE TRANSVERSE 60° EXAM COVERAGE

10.1 Limited Clockwise exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		CW exam Volume with no Exam Coverage
2.00	X	2.75	X	32.00	=	176.00

10.2 Limited Counterclockwise exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		CCW exam Volume with no Exam Coverage
2.00	X	2.75	X	32.00	=	176.00

Total 60 transverse exam volume not examined = 352.00

10.3 Percent Volume Examined

Total 60° Trans Vol w/NoCoverage	Total 60° Trans Exam Volume	Percent Volume Examined

100 - {[352.00 **/** 2,420.00 **] x 100 } =** 85.45 **%**

11.0 CALCULATE PERCENT OF TOTAL VOLUME EXAMINED

11.1 Sum of Exam Volumes %

Steps 5 Thur 10		No. Of Exams (6)		Examination Coverage
[425.42	/	5.00]	=	85.08 %

SCANS LIMITED IN 4 AREAS BY TANK SUPPORT LEGS.

FACTORY MUTUAL INSURANCE COMPANY
OE Tilley 4-25-02

297

Examiner: Mike Zeise Level: II Date: 04/19/02
Sign: Michael Zeise

Reviewer: Bob Kellenbell Level: III Date: 4/22/02
Sign:

12/13

FRAMATOME TECHNOLOGIES

PROFILE AND THICKNESS

Exam Date: 10/12/00	**Summary No.: 011800**
Site: Salem Unit 2, RFO 11	**Examination Method: UT**
System: PRESSURIZER	**Identification: 6-PR-1205-1**

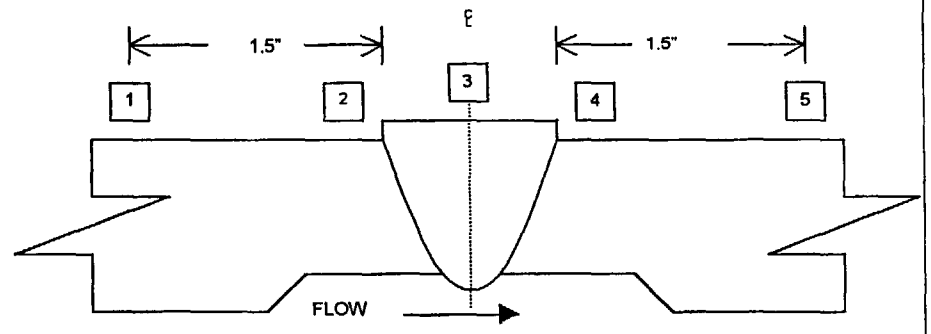
POSITION	0	90	180	270
1	1.4"			
2	1.4"			
3	1.2"			
4	1.2"			
5	1.2"			

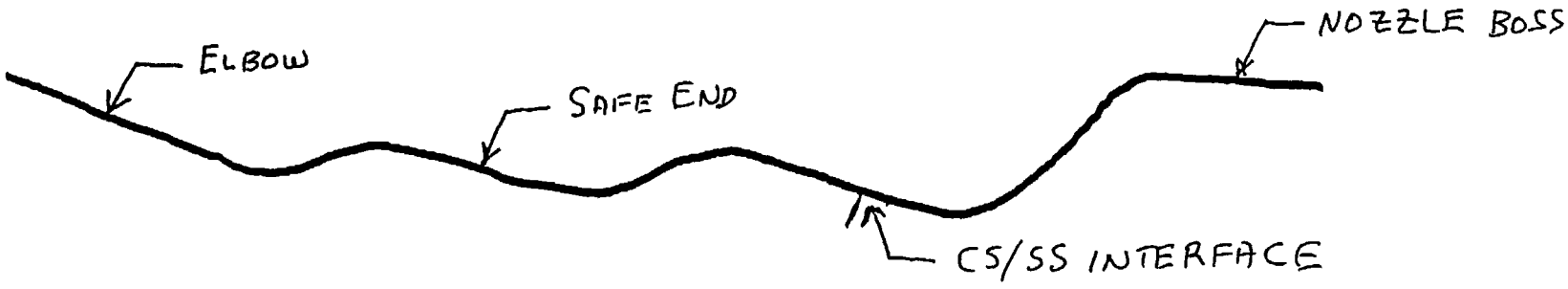
CROWN HEIGHT: SEE NOTES

CROWN WIDTH: SEE NOTES

NOM DIAMETER: 6.0"

WELD LENGTH: 18.85"

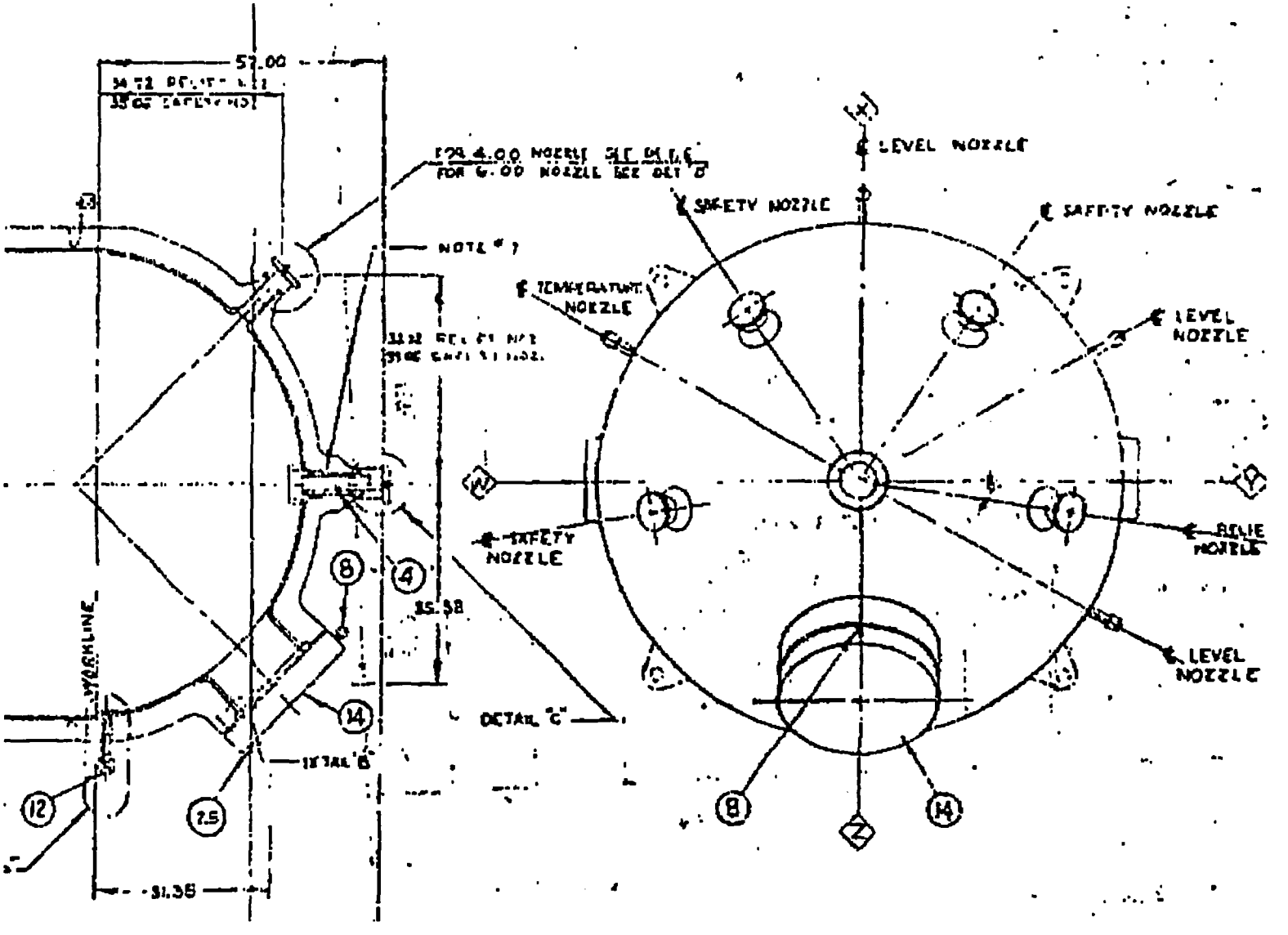




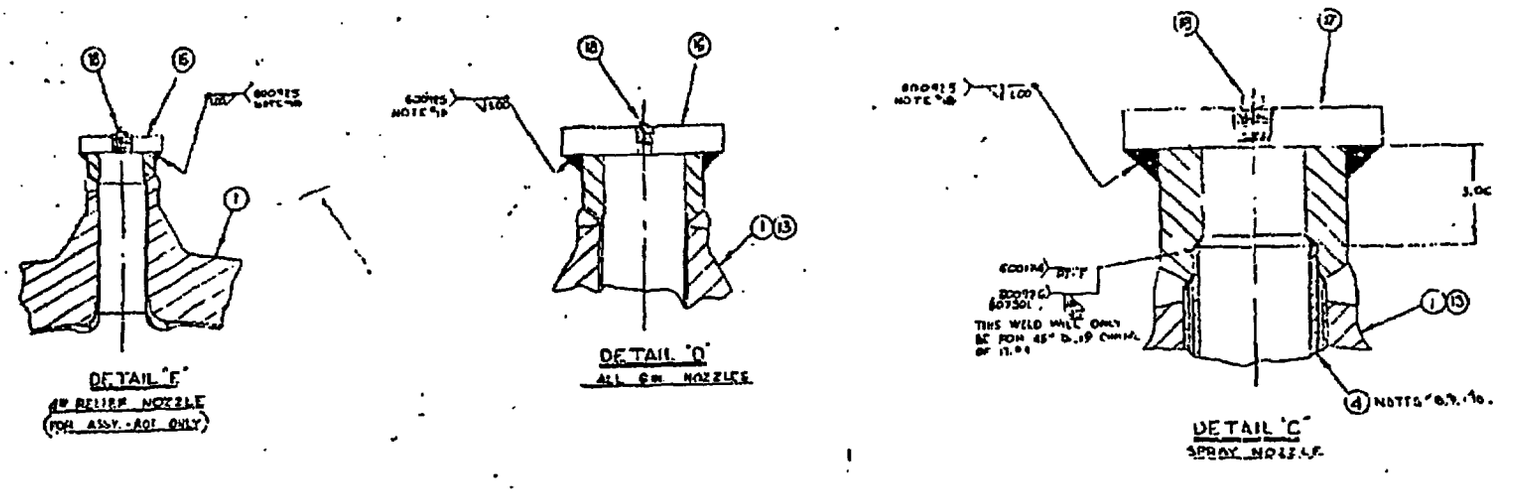
NOTES: 1- WELD WIDTH IS INDETERMINATE, CANNOT DISCRIMINATE WELD TO SAFE END INTERFACE.
2- THERE IS NOT ENOUGH ROOM TO SCAN ON THE AVAILABLE SURFACES TO PROVIDE A MEANINGFUL EXAMINATION.
3- THE SURFACE OF THE WELD AREA EXCEEDS THE REQUIREMENTS OF ISI-362-14.

Pg. 4 of 4

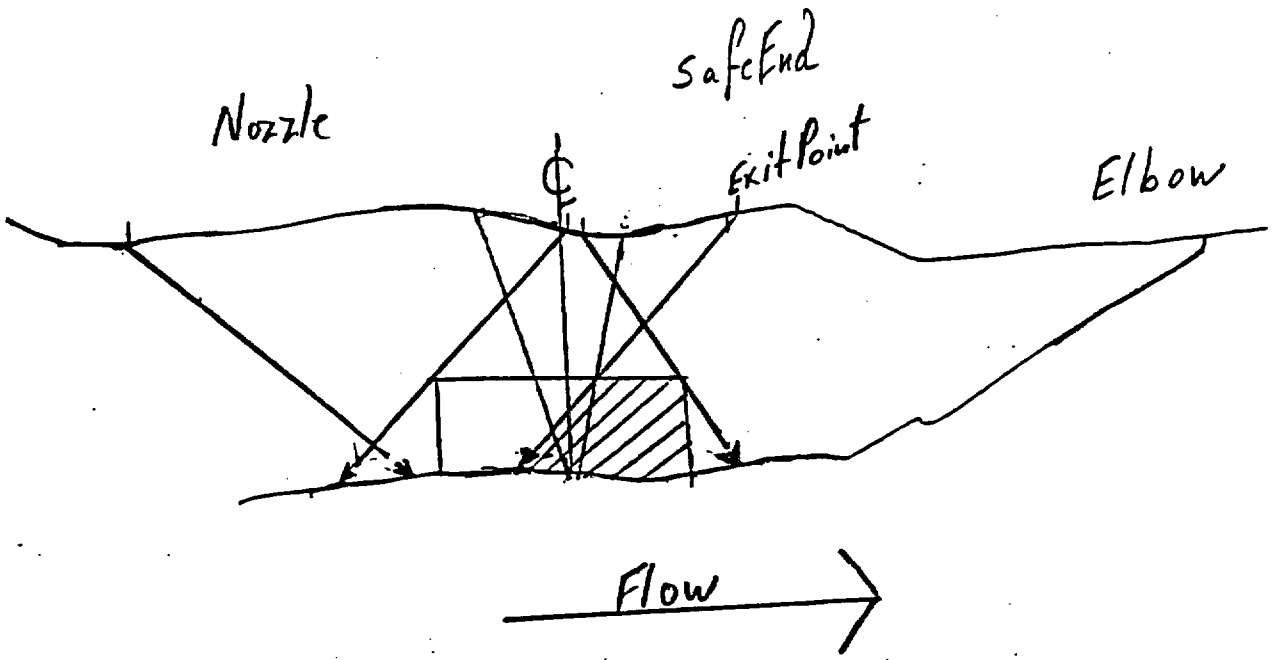
Prepared By	Date	Reviewed By	Date	Utility Review By	Date
	10-12-2000		10/23/00		10-26-00


57.00
LEVEL NOZZLE
SAFETY NOZZLE
SAFETY NOZZLE
NOTE # 7
TEMPERATURE NOZZLE
LEVEL NOZZLE
SAFETY NOZZLE
RELIE NOZZLE
LEVEL NOZZLE
35.58
DETAIL "C"
DETAIL "B"
WORKLINE
31.35
8
4
14
12
7.5
8
14

USER RESPONSIBLE FOR VERIFYING REVISION, STATUS AND CHANGES
VTD 139846 000 1 PRINTED 20050111



Summary #011820
6-PR-1203-1



UT Coverage Plot
Sketch to Scale

Fig. No. B5.40.002
Nom. Component OD - 6.0"

Area Not Covered

301

FRAMATOME TECHNOLOGIES

VOLUMETRIC PIPING EXAMINATION COVERAGE REPORT

CUSTOMER: PSE&G SALEM UNIT-2, 10 RFO	SYSTEM: REACTOR COOLANT SYSTEM, PRESSURIZER RELIEF
SUMMARY NO.: 011820	COMPONENT ID: 6-PR-1203-1 RCS PR NOZZLE TO SAFE-END

VOLUMETRIC PIPING EXAMINATIONS

1.0 AXIAL ULTRASONIC EXAMINATIONS (Indications Parallel to the Weld)

1.1	Compute Examination Volume (Height x Width x Length) = Vt_1	0.50" x 1.25" x 14.5" = 9.10^3 inches
1.2	Compute Volume Not Examined on Upstream Side of Weld = A	0.00^3 inches
1.3	Compute Upstream Limitation Percentage $(A \div Vt_1) \times 100 = Z1$	0.00 %
1.4	Compute Volume Not Examined on Downstream Side of Weld = B	5.1^3 inches
1.5	Compute Downstream Limitation Percentage $(B \div Vt_1) \times 100 = Z2$	56.0 %

2.0 CIRCUMFERENTIAL ULTRASONIC EXAMINATIONS (Indications Perpendicular to the Weld)

2.1	Compute Examination Volume (Height x Width x Length) = Vt_2	0.50" x 1.75" x 14.5" = 12.7^3 inches
2.2	Compute Volume Not Examined in the Clock Wise Direction = C	0.00^3 inches
2.3	Compute Clock Wise Limitation Percentage $(C \div Vt_2) \times 100 = Z3$	0.00 %
2.4	Compute Volume Not Examined in the Counter CW Direction = D	0.00^3 inches
2.5	Compute Counter CW Limitation Percentage $(D \div Vt_2) \times 100 = Z4$	0.00 %

3.0 TOTAL EXAMINATION COVERAGE OBTAINED

3.1	Compute Total Limitation Percentage $(Z1 + Z2 + Z3 + Z4) / 4 = L$	14.0 %
3.2	Compute Total Coverage 100 – L	86.0 %

LIMITATION EXPLANATION/REMARKS

Limitation exists on the Safe-End side of the weld for the axial examinations. See the attached UT Coverage Plot. The 45 degree shear wave transducer was scanned over the required volume on both sides of the weld in order to achieve 44.0 percent coverage in the axial direction. The examination volume was computed using actual OD pipe sizes and schedule wall thicknesses. The height value is computed using the diameter at the inner one third of the pipe wall thickness. NOTE: ^{3} INCHES DENOTES CUBIC INCHES.

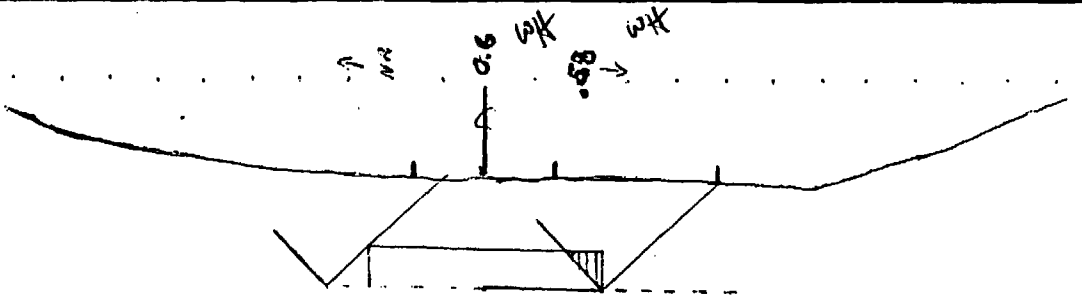
PREPARED BY:	DATE:	REVIEWER:	DATE:
K.L. Dunins	5/13/99	Danny J. Langenfeld	5-14-99

302

SwRI PROFILE AND THICKNESS INFORMATION RECORD

PROJECT NO: 17-5502	SITE: Salem Generating Station, Unit 2	DATE: (DAY - MONTH - YEAR) 08 APR 93	TIME (24 HR. CLOCK) INT. 0907 * FINAL 1058		SHEET NO: 135115
EXAMINER: W. HAWKINS	SNT LEVEL: II	THK. MEAS. REQ'D BY PROCEDURE No. VS2,55-13,22-0032 SAM2-UT3 REV 2 CHG 0 ICN ☒ N/A	INSTRUMENT: SONIC MARK I ☐ OTHER 136 ☒	SERIAL NO: 860K	COMPONENT ID: 4-PR-1200-1
EXAMINER: W. BYLER	SNT LEVEL: II		COUPLANT: GLYCERINE ☐ WATER ☐ OTHER (SPECIFY) ULTRAGEL BATCH NO. 9082		REFERENCE BLK NO: 55-113

SEARCH UNITS	
BRAND	AEROTECH
SERIAL NO	E-11977
SIZE	1/4
FREQ. (MHz)	5
INSTRUMENT SETTINGS	
SCREEN SIZE	5
DELAY	.164
MATL. CAL. VELOCITY	.205
RANGE	5
REP. RATE	4KHZ
JACK USED	RCV/XMT
TRANS MODE	DUAL



~~EXAM COVERAGE: 100% 45° UT ON WELD ONLY.~~ (W) 9/APR/93

ANI REVIEW
INITIAL
DATE 4/13/93

PSEG
INSPECTION SERVICES
Reviewed and Approved
WD 4/10/93
N.D.E. SUPERVISOR

→ NOZZLE

* CHECKED AT 1257

SAFE END

45° Search Unit chosen for coverage using _____ nodes.

0° Search Unit chosen for coverage using _____ nodes.

NAME: VICTOR MORTON

SNT LEVEL: III

REVIEWED BY: Vic Morton

SNT LEVEL: III

DATE: 9 APR 93

SWRI FORM No. NDTR 17-135 (REV. 6/90)

303

011830

LIMITATION REPORT

Project: 17-5502 Unit: SALEM UNIT 2

System: PRESSURIZER RELIEF Weld No.: 4-PR-1200-1

SURFACE EXAMINATIONS

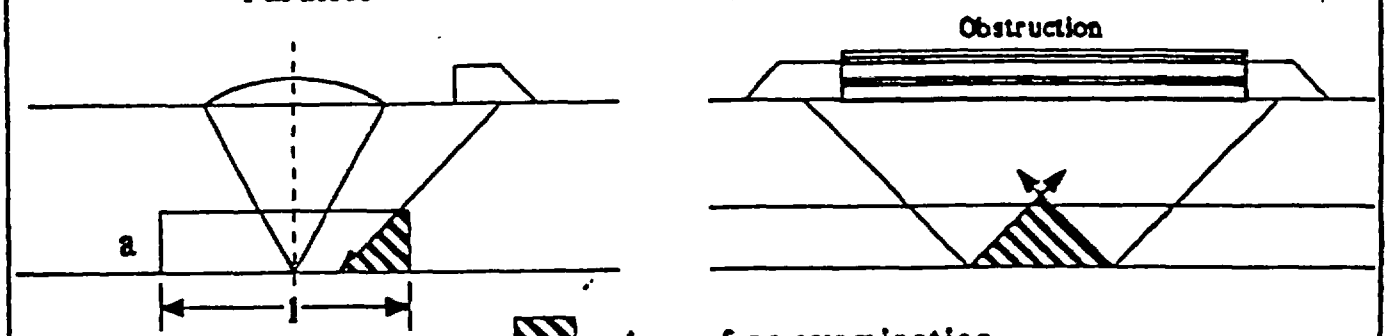
Area To Be Examined (Length x Width - A) A- N/A

Area Of Limitation (Length x Width - Al) Al-

Percentage of Coverage (A - Al/A) -

VOLUMETRIC EXAMINATIONS

Parallel ← Example → Transverse



- Area of no examination

1. Compute Area a x l	- Asq	.25
2. Multiply Asq by Weld Length	- Vt (Volume Total)	5.87
3. Compute Area Not Covered	- a	.04
4. Multiply "a" by Weld Length	- Vl (Volume Limited)	.94
5. Percentage of Coverage	- (Vt - Vl/Vt)	84.00

NOTE: Compute in a similar manner for indications perpendicular to the weld.

Preparedby: VICTOR MORTON Reviewedby: Vic Morton

Date: 9 APR 93 Level: III Date: 9 APR 93 Level: III

Page 1 of 1

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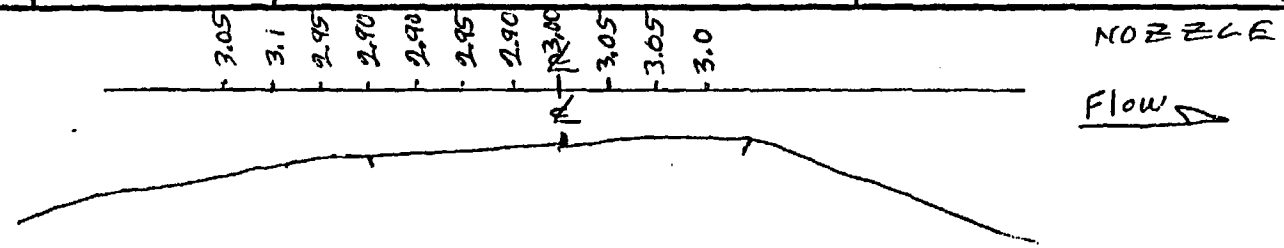
SwRI PROFILE AND THICKNESS INFORMATION RECORD

PROJECT NO:	SITE:	DATE: (DAY - MONTH - YEAR)	TIME (24 HR. CLOCK)	SHEET NO:
17-5502	Salem Generating Station, Unit 2	6 APRIL 93	INT. 0909 FINAL 1045	135086

EXAMINER	SNT LEVEL	THK. MEAS. REQ'D BY PROCEDURE * No.	INSTRUMENT:	SERIAL NO:	COMPONENT ID:
K. KURTZ	II	SAM 2-UT3 REV 2 CHG 6 ICN ☒ N/A	SONIC MARK I ☐ OTHER 136 ☑	857K	29-RC-1210-5
EXAMINER	SNT LEVEL		COUPLANT: ULTRAGEL GLYCERINE ☐ WATER ☐ OTHER (SPECIFY) BATCH NO. 9092	REFERENCE BLK NO:	
F. BRAUN	I T			37 SAM	

SEARCH UNITS	
BRAND	MATERIAL ASSURANCE
SERIAL NO	E-105
SIZE	1/2"
FREQ. (MHz)	2.25
INSTRUMENT SETTINGS	
SCREEN SIZE	5"
DELAY	.017
MATL. CAL.	.219
RANGE	5"
REP. RATE	4K HZ
JACK USED	XMH
TRANS MODE	N/A



ANI REVIEW
INITIAL nor
DATE 4/12/93

PSEG INSPECTION SERVICES
Reviewed and Approved
4/7/93
N.D.E. SUPERVISOR

305

* US2.55-15.ZZ-0082 NO EXAM UP/DOWN 45T ON WELD ONLY (JM)

45 ° Search Unit chosen for coverage using 2/8, 3/8, 5/8, 4/x nodes.

____ ° Search Unit chosen for coverage using _____ nodes.

NAME:	SNT LEVEL:
VICTOR MORTON	III

REVIEWED BY:	SNT LEVEL:	DATE:
Vic Morton	III	6 APR 93

SWRI FORM No. NDTR 17-135 (REV. 6/90)

083300

LIMITATION REPORT

Project: 17-5502 Unit: SALEM UNIT 2

System: REACTOR COOLANT Weld No.: 29-RC-1210-5

SURFACE EXAMINATIONS

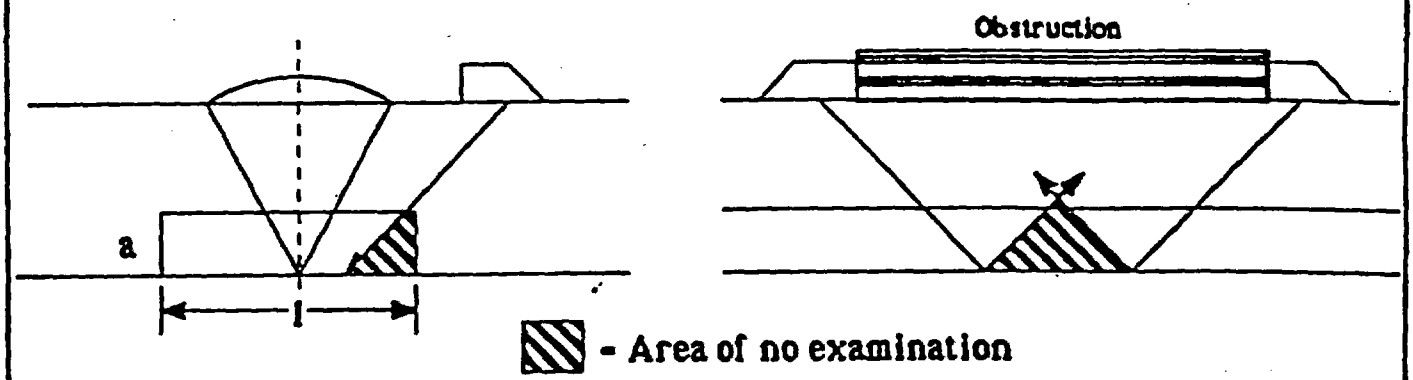
Area To Be Examined (Length x Width = A) A= N/A

Area Of Limitation (Length x Width = A1) A1=

Percentage of Coverage (A - A1/A) =

VOLUMETRIC EXAMINATIONS

Parallel ← Example → Transverse



1. Compute Area a x l	= Asq	3.0
2. Multiply Asq by Weld Length	= Vt (Volume Total)	351.0
3. Compute Area Not Covered	= a	~~117.0~~ 1.0
4. Multiply "a" by Weld Length	= Vl (Volume Limited)	117.0
5. Percentage of Coverage	= (Vt - Vl/Vt) TRANSVERSE EXAM ONLY.	66.6

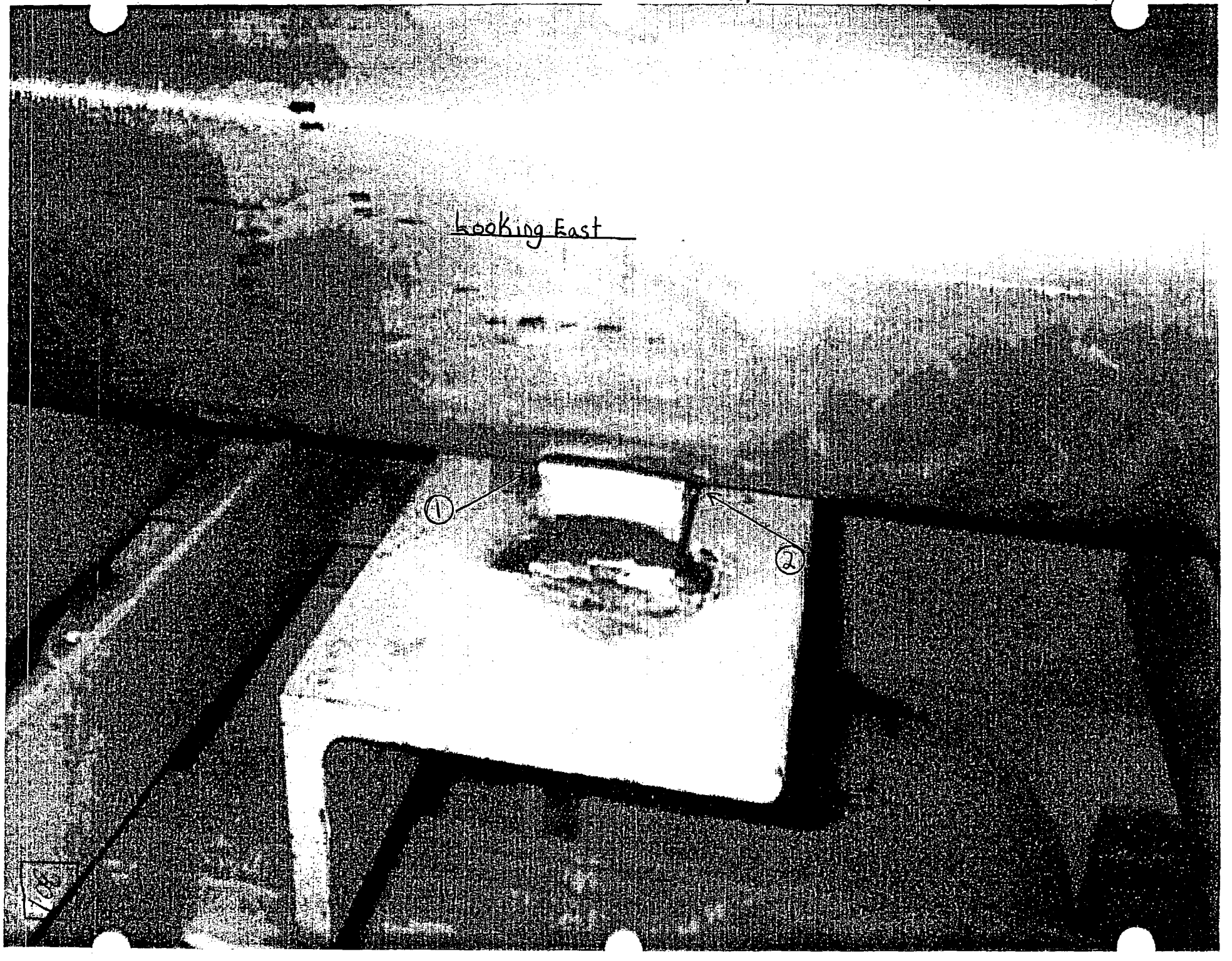
NOTE: ~~Compute in a similar manner for indications perpendicular to the weld.~~

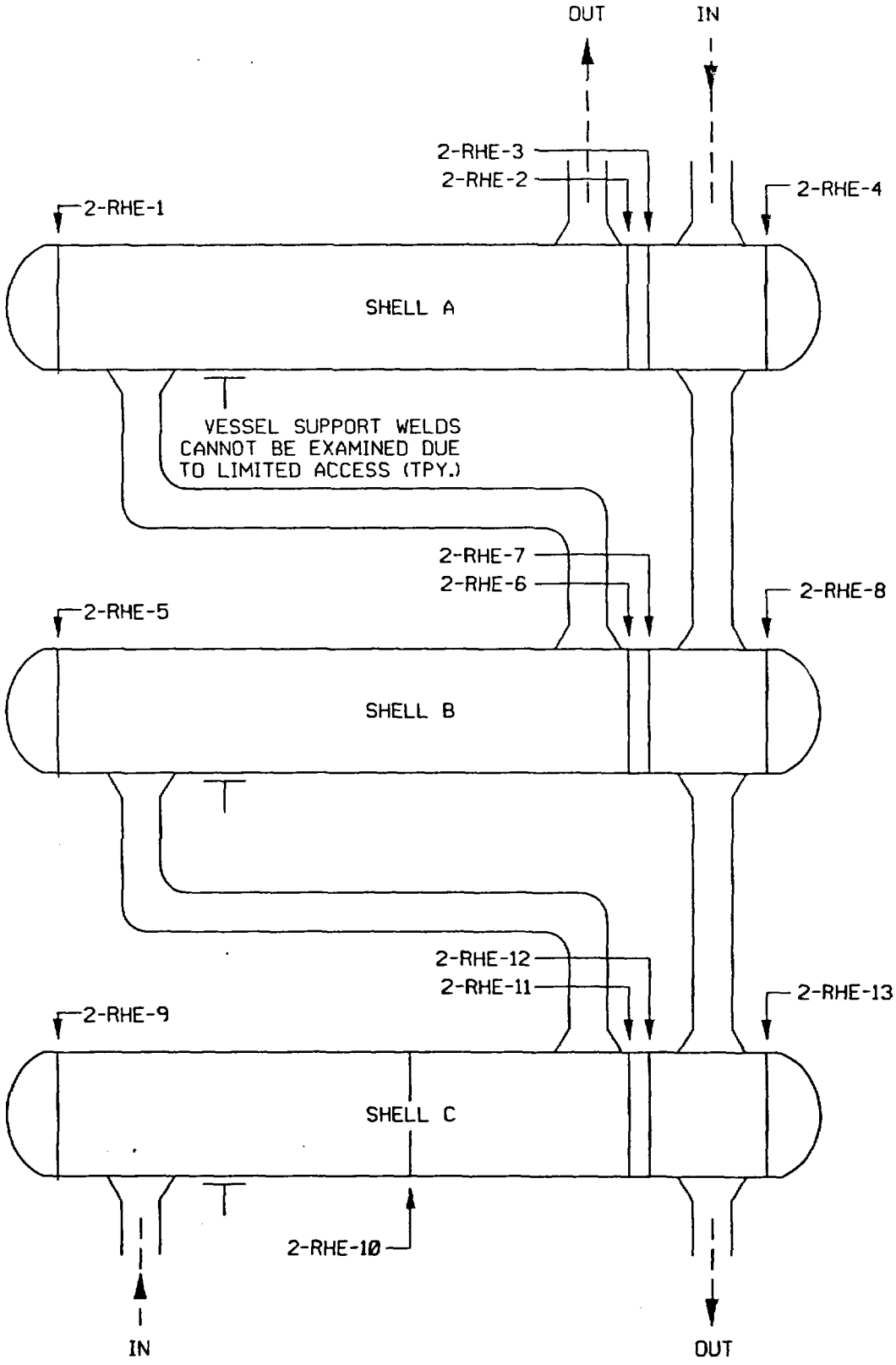
Preparedby: VICTOR MORTON Reviewedby: [signature]

Date: Level: Date: Level: III

306

Page 1 of 1


Looking East
1
2



REGENERATIVE HEAT EXCHANGER

NOTE: VESSEL IS IN ROOM
NEXT TO
ACCUMULATOR NO. 24

308

BUILDING: AUXILIARY

LOCATION: HEAT EXCHANGER ROOM

ELEVATIONS: 78'

ATTENTION: ANY REVISION TO THIS DRAWING SHALL BE MADE ONLY BY CAED

1		REVISED PER ORDER No. 80038023.

PSEG Nuclear, LLC
SALEM NUCLEAR GENERATING STATION
UNIT 2 - WELD / HANGER IDENTIFICATION FIGURE
INSERVICE INSPECTION DRAWING

FIGURE: B-10 | REVISION: 1

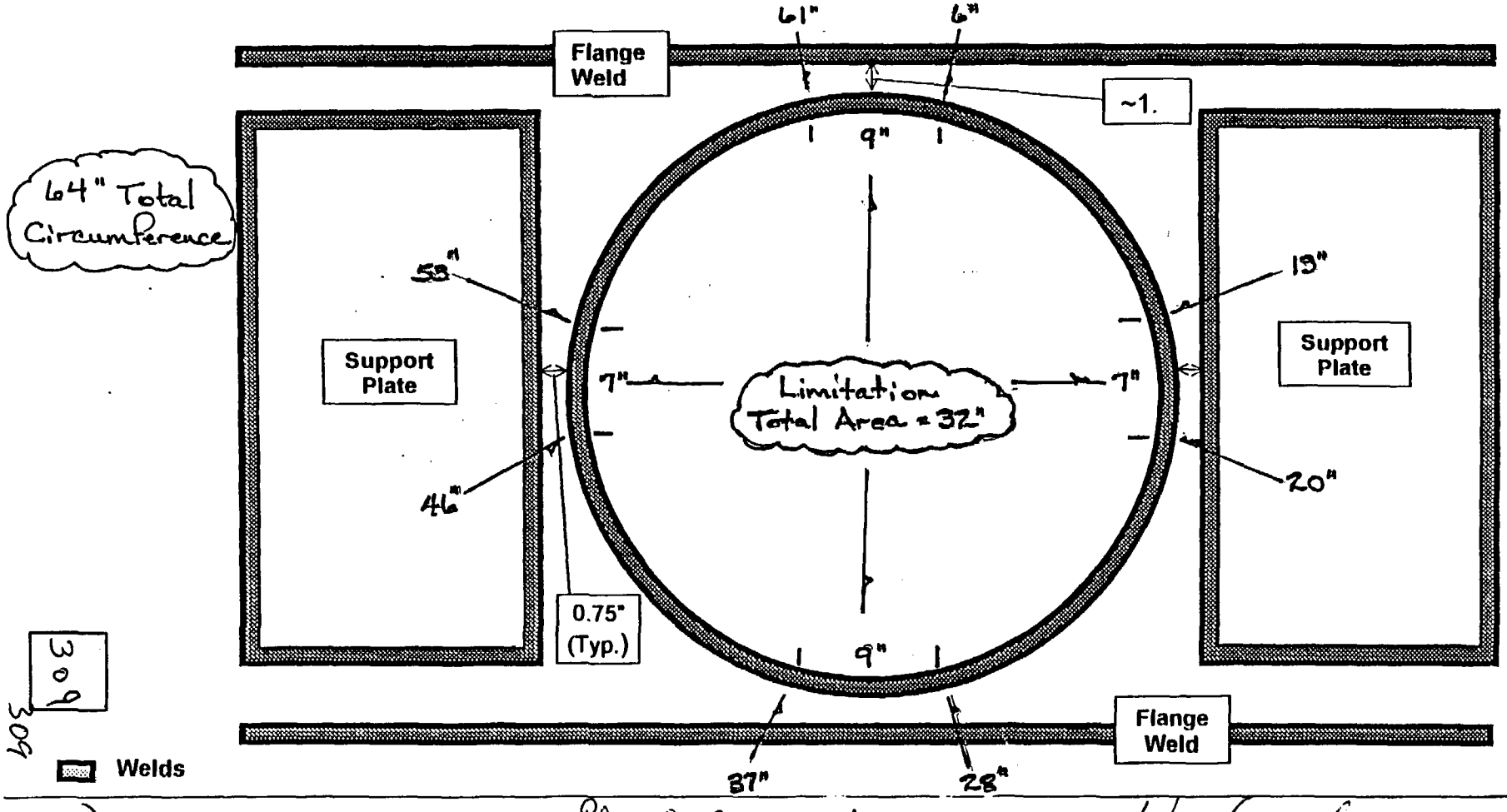
SYSTEM: REGENERATIVE HEAT EXCHANGER

LINE: N/A

THIRD 10 YEAR INSPECTION INTERVAL

P&ID 205328

FRAMATOME TECHNOLOGIES	PROFILE AND THICKNESS (cont.)	
	Exam Date: 10/3/03	Summary No.: 275410
Site: Salem Unit 2		Examination Method: UT
System: Residual Heat Removal Exchangers		Identification: 21-RHRHEX-IN



309

Wes Money	Edward P. Mazyck	Wayne Swearingen 10-28-03
Prepared By Date	Reviewed By Date	Utility Review By Date

PSEG

Weld Profile & Thickness Record

Report No.: _____

Page: ____ of ____

Summary No.: 275410

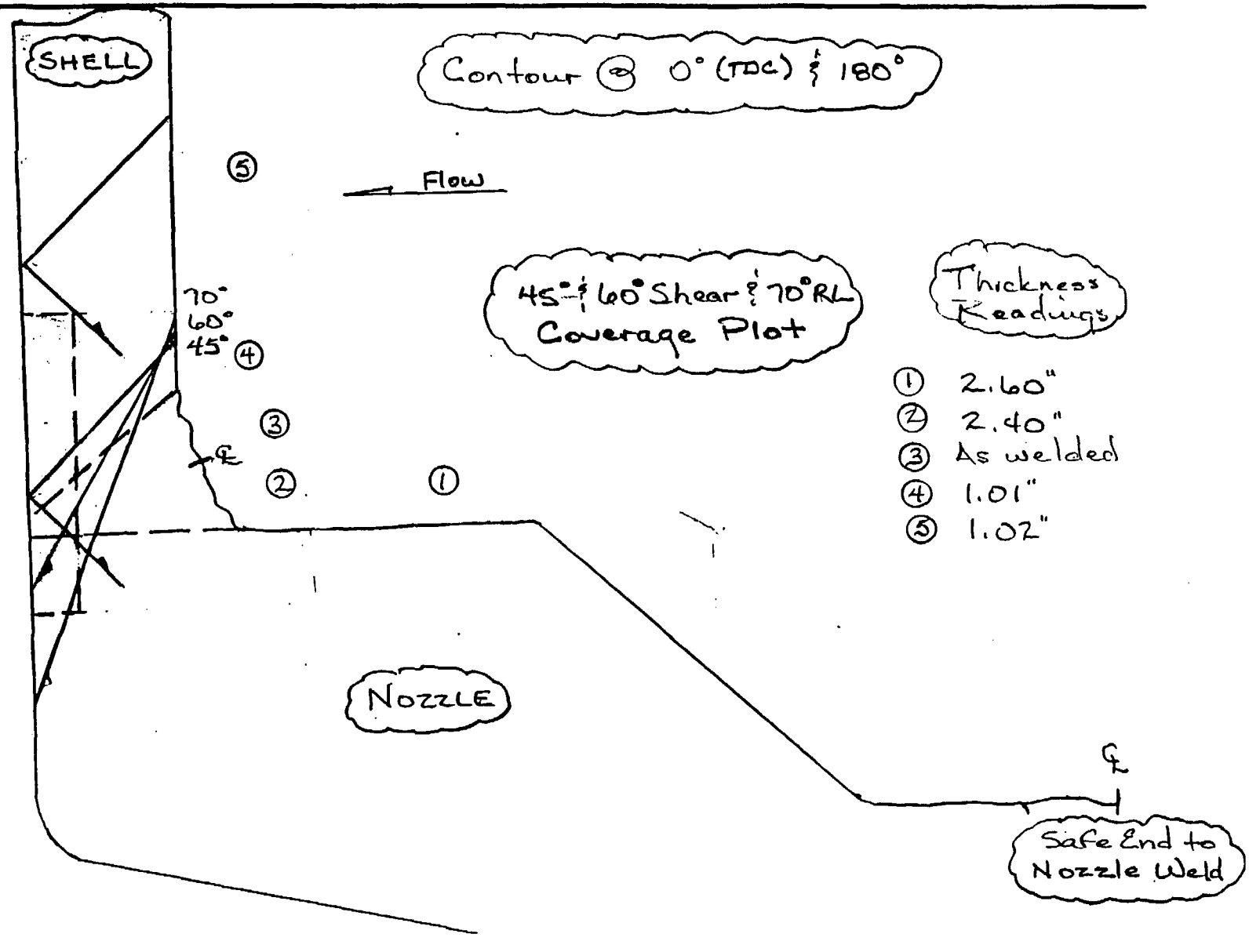
Examiner: Wes Money Level: III Reviewer: Edward P. Moyzyk Date: 10/25/03

Examiner: _____ Level: _____ Site Review: Wayne Denlinger Date: 10/25/03

Other: _____ Level: _____ ANII Review: [illegible] Date: 11/5/03

Comments:

Sketch or Photo:



Summary #275410

Component # 21-RHRHEX-IN

64" Total Circumference

310

Weld Crown width varies from 1.4" to 1.0"

310

PSEG

Weld Profile & Thickness Record

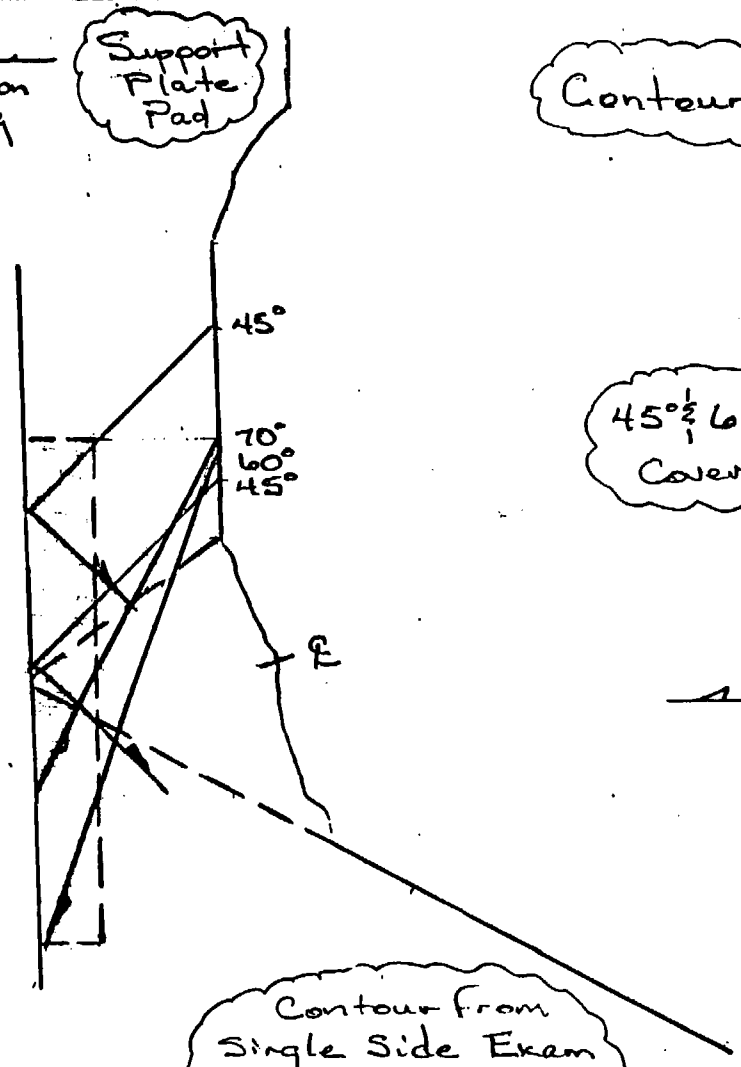
Report No.: _____

Page: ____ of ____

Summary No.:	275410						
Examiner:	Wes Money	Level:	III	Reviewer:	Edward P. Mayott	Date:	10/25/03
Examiner:	Tim Brelje	Level:	I	Site Review:	Wayne Denlinger	Date:	10-28-03
Other:		Level:		ANII Review:	[illegible]	Date:	11/5/03

Comments: See Limitation Drawing

Sketch or Photo:



Contour @ 90° & 270°

Summary # 275410

Component # 21-RHRHEX-IN

45° & 60° Shear & 70° RL Coverage Plot

Flow

Thickness Readings on other Coverage Plot

3 of 4

3/04

FRAMATOME

VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

STOMER: PSEG	SYSTEM: RHR
SUMMARY NO: 275410	COMPONENT ID: 21-RHR HEX-IN

1.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT BEAM PLANAR FLAWS

1.1 Exam Height X Exam Width X Exam Length = Exam Volume ___ X ___ X ___ = N/A cu.i

2.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT BEAM LAMINAR FLAWS

2.1 Exam Height X Exam Width X Exam Length = Exam Volume ___ X ___ X ___ = N/A cu.i

3.0 CALCULATE REQUIRED PARALLEL EXAM VOLUME FOR 45° AND 60° (84.48 84.48)

3.1 Exam Height X Exam Width X Exam Length = Exam Volume .33" X 2" X 256 = 168.96 cu.i

CALCULATE REQUIRED TRANSVERSE EXAM VOLUME FOR 45° AND 60° (84.48 84.48)

4.1 Exam Height X Exam Width X Exam Length = Exam Volume .33" X 2" X 256 = 168.96 cu.i

5.0 CALCULATE STRAIGHT BEAM PLANAR EXAM COVERAGE

5.1 Limited above / CW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Volume with no Exam Coverage
N/A	X	N/A	X	N/A	=	N/A

5.2 Limited Below / CW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Volume with no Exam Coverage
N/A	X	N/A	X	N/A	=	N/A

Total straight beam planar exam volume not examined = N/A

5.3 Percent Volume Examined

	Total 0 vol w/No Coverage		Total 0 Exam Volume			Percent Volume Examined
100 - {[	N/A	/	N/A]	x 100}	=	N/A %

310B

310b

FRAMATOME

VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

6.0 CALCULATE STRAIGHT BEAM LAMINAR EXAM COVERAGE

6.1 Limited above / CW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Volume with no Exam Coverage
N/A	x	N/A	x	N/A	=	N/A

6.2 Limited Below / CW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Volume with no Exam Coverage
N/A	x	N/A	x	N/A	=	N/A

Total straight beam planar exam volume not examined = N/A

6.3 Percent Volume Examined

Total 0° vol w/No Coverage		Total 0° Exam Volume			Percent Volume Examined
100 - {[N/A	/	N/A]	x 100 }	=	N/A %

7.0 CALCULATE PARALLEL 45° EXAM COVERAGE

7.1 Limited ~~above / CW~~ Upstream CCW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Volume with no Exam Coverage
.33"	x	1.00"	x	64"	=	21.12 cu in

7.2 ~~Limited Below / CCW~~ Downstream CW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Volume with no Exam Coverage
.33"	x	1.00"	x	128"	=	42.24 cu in

Total 45° parallel exam volume not examined = 63.36 cu in

7.3 Percent Volume Examined

Total 45° parallel vol w/No Coverage		Total 45° parallel Exam Volume			Percent Volume Examined
100 - {[63.36	/	84.48]	x 100 }	=	25 %

310C

310C

FRAMATOME

VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

8.0 CALCULATE PARALLEL 60° EXAM COVERAGE

8.1 Limited ~~above / CW~~ Upstream CCW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Above / CW exam Volume with no Exam Coverage
.33"	X	1.00"	X	64"	=	21.12 cu in.

8.2 Limited ~~Below / CCW~~ Downstream CCW exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		Below / CCW exam Volume with no Exam Coverage
.33"	X	1.00"	X	128"	=	42.24 cu in.

Total 60° parallel exam volume not examined = 63.36 cu in

8.3 Percent Volume Examined

Total 60° parallel Vol w/No Coverage		Total 60° parallel Exam Volume			Percent Volume Examined
100 - {[63.36	/	84.48]	x	100 } =	25 %

9.0 CALCULATE TRANSVERSE 45° EXAM COVERAGE

9.1 Limited ~~Clockwise~~ Looking Downstream exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		CW Exam Volume with no Exam Coverage
.33"	X	1.00"	X	64"	=	21.12 cu in.

9.2 Limited Below ~~Counter clockwise~~ Looking Upstream exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		CCW Exam Volume with no Exam Coverage
.33"	X	1.00"	X	128"	=	42.24 cu in.

Total 45° transverse exam volume not examined = 63.36 cu in.

9.3 Percent Volume Examined

Total 45° parallel Vol w/No Coverage		Total 45° parallel Exam Volume			Percent Volume Examined
100 - {[63.36 ci	/	84.48 ci]	x	100 } =	25 %

310D

FRAMATOME ANP VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

.0 CALCULATE TRANSVERSE 60° EXAM COVERAGE

10.1 Limited ~~Clockwise~~ Looking Downstream exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		CW exam Volume with no Exam Coverage
.33"	X	1.00"	X	64"	=	21.12 cu.in.

10.2 Limited ~~Counterclockwise~~ Looking Upstream exam volume

Height of Obstructed Volume		Width of Obstructed Area		Length of Obstructed Area		CCW exam Volume with no Exam Coverage
.33"	X	1.00	X	128"	=	42.24 cu.in.

Total 60 transverse exam volume not examined = 63.36 cu.in.

10.3 Percent Volume Examined

Total 60° Trans Vol w/NoCoverage		Total 60° Trans Exam Volume			Percent Volume Examined
100 - {[21.12	/	84.48]	x	100}	= 25 %

11.0 CALCULATE PERCENT OF TOTAL VOLUME EXAMINED

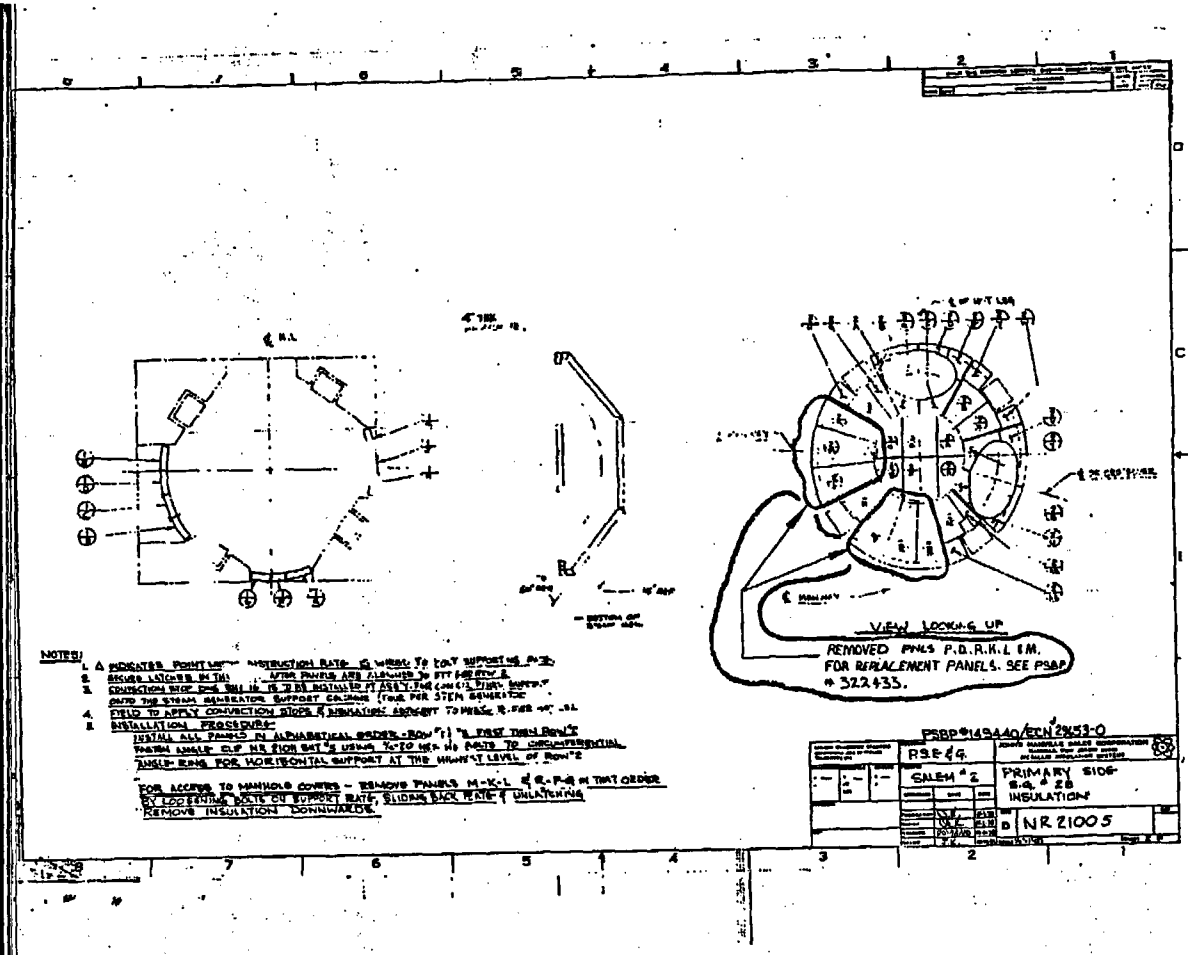
11.1 Sum of Exam Volumes %

Steps ~~5~~ 7 Thur 10 (TW) 10/22/03		No. Of Exams ~~(6)~~ 4 (TW) 10/22/03		Examination Coverage
[100%	/	4]	=	25 %

No scan from nozzle side or on weld due to configuration.

Examiner:	Level:	Date:	Reviewer:	Level: 310E	Date: 3/0E
Sign:			Sign:		

USER RESPONSIBLE FOR VERIFYING REVISION, STATUS AND CHANGES
VTD 149440 000 2 PRINTED 20050112



PE REV	DOC REV	DATE	DRAFTSMAN	SUPERVISOR	DISCIPLINE INTERFACE	REVISION DESCRIPTION
						ADDED NOTE TO A VENDOR DWG. FOR INSULATION PANELS. THIS REV. SUPERSEDES & INCORPS. DCR.

NC.NA-AP.ZZ-0043(Q)

FORM-1

VENDOR INFORMATION

PSE&G VTD NUMBER: 149440

- [x] ACTIVE Approved Documentation
- [ ] APCP Approved, Pending Change Package (May only be used for Rev. 1)
- [ ] CAN Canceled, Not Required
- [ ] VOID No longer applicable, superseded by: _____

Discipline Selection

- [ ] Electrical
- [ ] I&C
- [x] Mechanical
- [ ] Other Specify: _____

Safety Related: [ ] yes [x] no

Unit Applicability

- [ ] Salem 1
- [ ] Salem Common
- [ ] Hope Creek & Salem
- [x] Salem 2
- [ ] Hope Creek
- [ ] Nuclear Business Unit
- [ ] Salem 3

System: STEAM GEN. DRAINS & BLOWDOWN MMIS Sys Code: GBD

Vendor Name: JOHNS MANVILLE

Vendor Code: M568 Vendor No.: NR 21005

Vendor Category: 10 (Category Codes are listed in DCS.)

Purchase Order No.: —

Folio Number: —

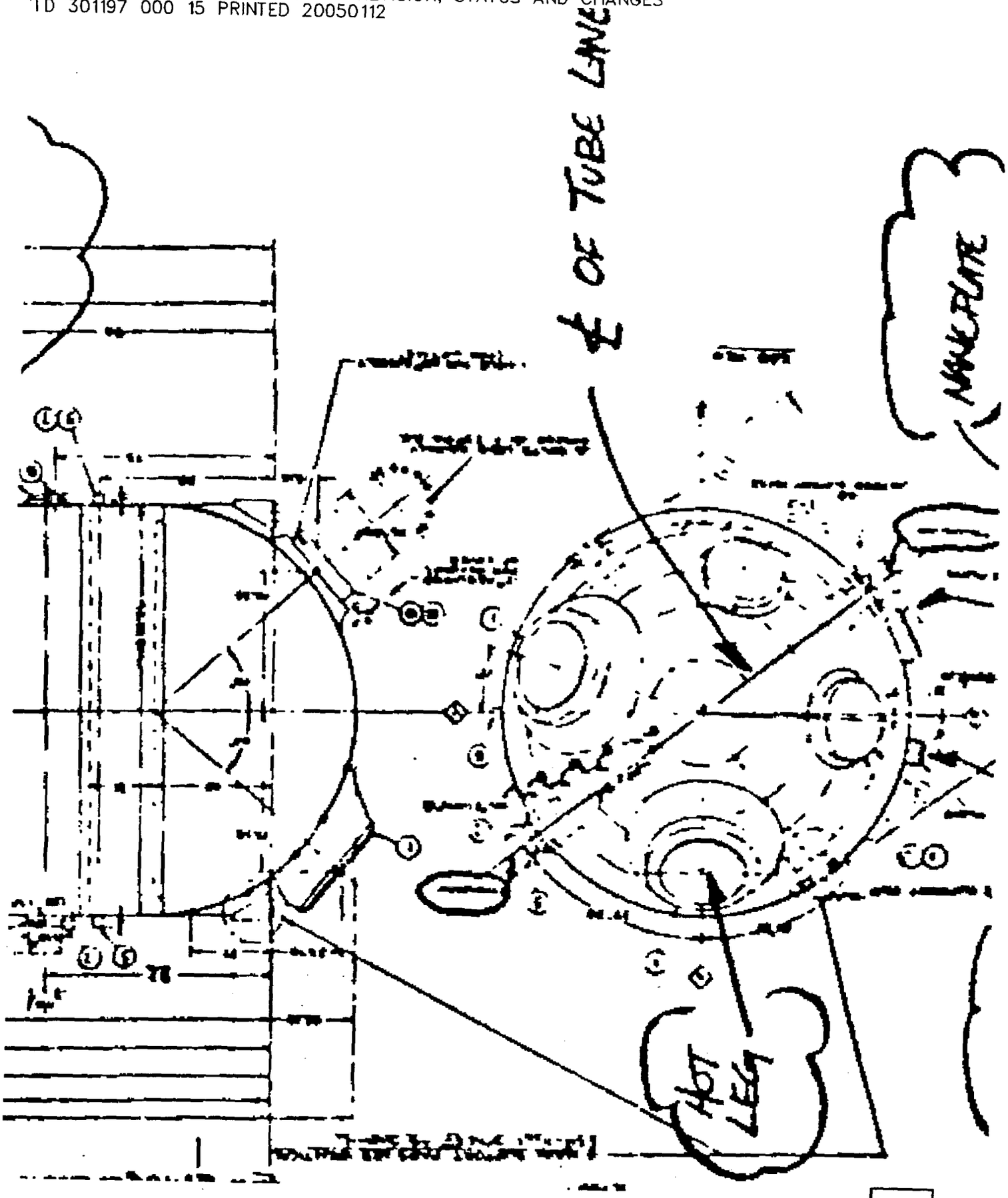
Originator: WAGBER Dept: ENG. Group: —

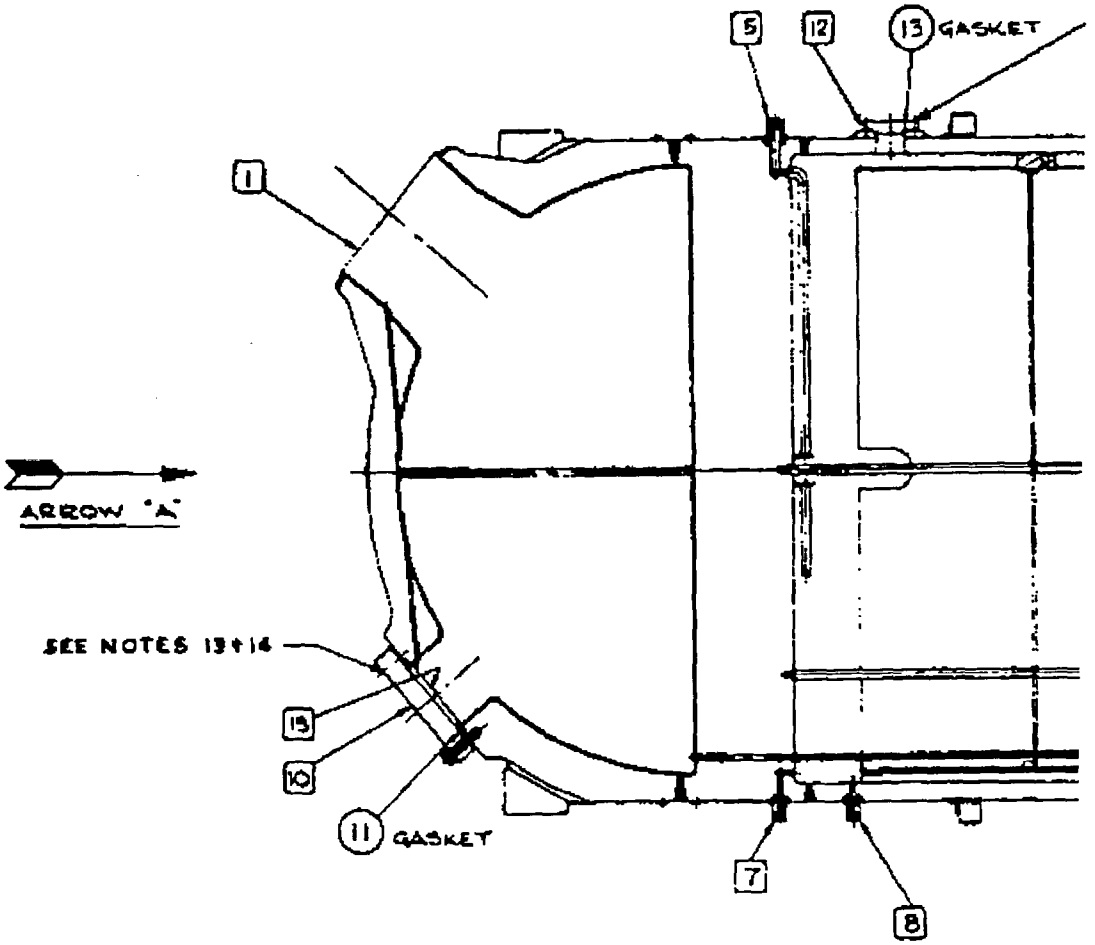
Date: 12-14-96 Ext: —

If changes are made to this form, initial and date the change and document in the revision

311

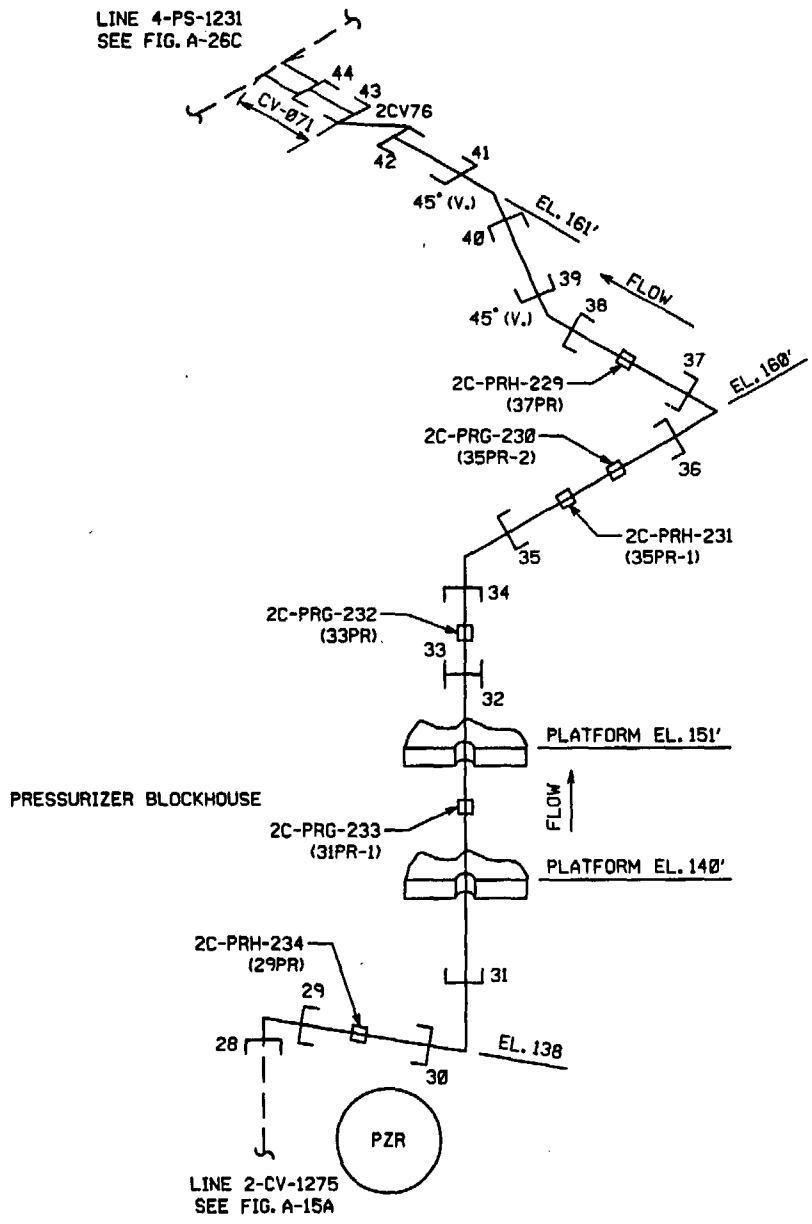
311


℄ OF TUBE LANE
MANLIFTE
HOT LEG



ITEM	DESCRIPTION, MATL. DIMS., ETC.	DEF. CODE	DWG. OR STYLE NO.	MATERIAL SPEC.	MATERIAL FR. IT.	QTY
001	UPPER SHELL ASSY		717364A02			0001
002	TUBE BUNDLE ASSY.		717366A02			0001
003	TRANS. WRAPPER SWIRL VANE ASSY.		87.0038A01			0001
004	INSTALLATION OF FORMED VANE		4454356A01			0001
009	PLUG (PIPE) 1.25		270A365007			0001
010	PLUG (PIPE) 2.00		270A365009			0001
011	GASKET (PRIMARY MANWAY)		390A029H01			0002
012	GASKET (SECONDARY MANWAY)		390A029H03			0002
013	GASKET (SECONDARY HANDHOLE)		390A029H02			0002
014	SPARE PARTS (ERECTION)		717036.001			0001
023	PLUG		2499806001			0001

SER RESPONSIBLE FOR VERIFYING REVISION, STATUS AND CHANGES
TD 301197 000 15 PRINTED 20050112



314

BUILDING:	LOCATION:	ELEVATIONS:
ONTAINMENT	PRZ BLOCKHOUSE	138' to 161'

PSEG ISO RC23-13
P & ID 205301, 205328

ATTENTION: ANY REVISION TO THIS DRAWING SHALL BE MADE ONLY BY CAED

REV.	DATE	DESCRIPTION
1		REVISED PER ORDER No. 80038023.

PSEG Nuclear, LLC
SALEM NUCLEAR GENERATING STATION
UNIT 2 - WELD / HANGER IDENTIFICATION FIGURE
INSERVICE INSPECTION DRAWING

FIGURE: A-15B | REVISION: 1
SYSTEM: CHEMICAL AND VOLUME CONTROL
AUXILIARY SPRAY
LINE: 2-CV-1275
THIRD 10 YEAR INSPECTION INTERVAL

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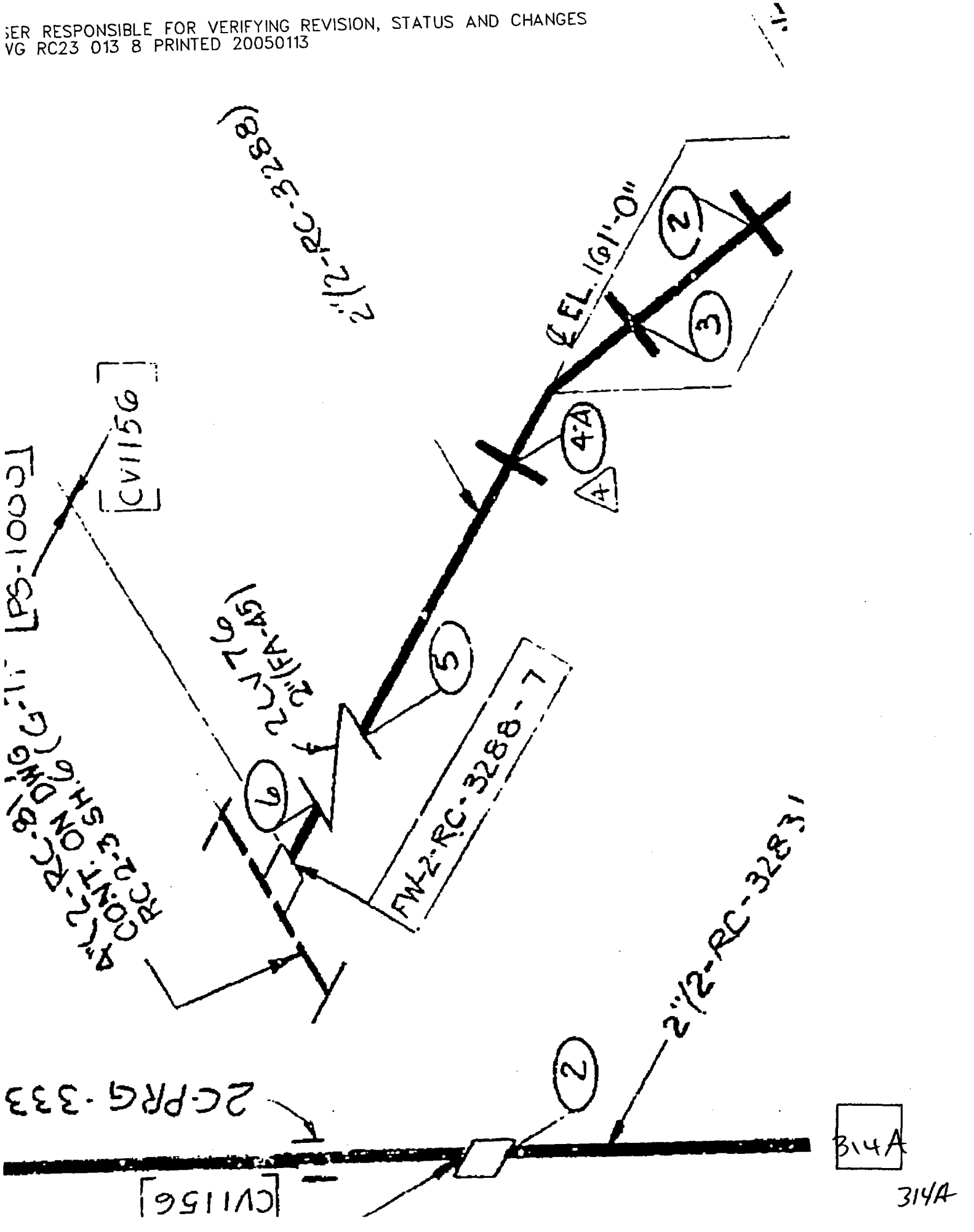
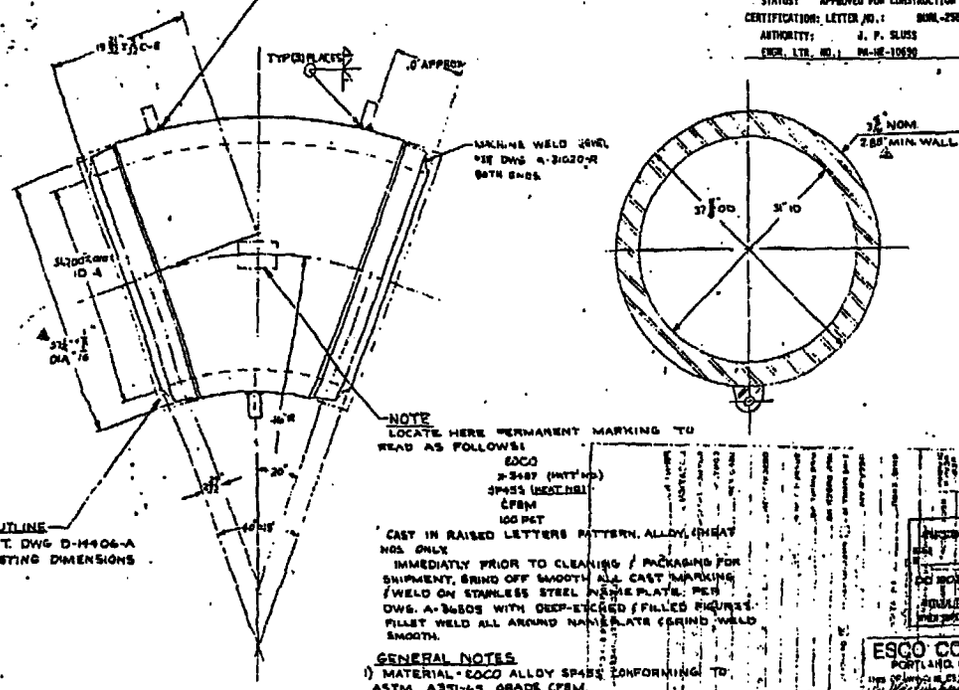

2"(2-RC-3288)
℄ EL. 161'-0"
2
3
4-A
4
5
2"LV76
2"(FA-45)
6
FW-2-RC-3288-7
CV1156
PS-1000
4"(2-RC-3283)
CONT. ON DWG (G-11-RC-2-3 SH. 6)
2"(2-RC-3283)
2
2C-PRG-333
CV1156
314A

JSER RESPONSIBLE FOR VERIFYING REVISION, STATUS AND CHANGES
VTD 138383 000 1 PRINTED 20050113 ISSUE 1

315

PUBLIC SERVICE ELECTRIC AND GAS COMPANY
PLANT: SALEM NUCLEAR GENERATING STATION
UNIT: 2 SPIN: ACPCCP
STATUS: APPROVED FOR CONSTRUCTION
CERTIFICATION: LETTER NO.: BGNL-2582
AUTHORITY: J. P. SLUSS
ENGR. LTR. NO.: PA-HE-10690



NOTE
LOCATE HERE PERMANENT MARKING TO READ AS FOLLOWS:
ESCO
D-3487 (PATT NO)
SP455 (ASTM NO)
CFSM
100 PCT

CAST IN RAISED LETTERS PATTERN, ALLOY, HEAT NOS ONLY
IMMEDIATLY PRIOR TO CLEANING / PACKAGING FOR SHIPMENT, GRIND OFF SMOOTH ALL CAST MARKING / WELD ON STAINLESS STEEL NAME PLATE, PER DWG. A-36505 WITH DEEP-ETCHED / FILLED FIGURES. FILLET WELD ALL AROUND NAMEPLATE (GRIND WELD SMOOTH.

GENERAL NOTES
1) MATERIAL - ESCO ALLOY SP455 CONFORMING TO ASTM A351-65 GRADE CFSM.
2) DESIGN - PER ASME B31.1-1967 CODE FOR PRESSURE PIPING.
3) DESIGN CONDITIONS - 2485 PSIG AT 650°F

PATT. NO. 11-3487
EST. FIN. WTS 3155

CONTROLLED COPY
DO NOT FILE OR DESTROY

ESCO CORPORATION
PORTLAND, OREGON, U.S.A.

ESCO CORPORATION — PORTLAND, OREGON
TITLE: 31" ID LR 40" WELD ELL
ESCO D-14406 REV. B

REV.	REMARKS	DWN	DR	D.S. NO.	DATE	D.S. NO.	DATE
B	[illegible]	[illegible]					
B	[illegible]	"	"				
B	[illegible]	"	"				
A	[illegible]	[illegible]	[illegible]				
0	[illegible]	[illegible]	[illegible]				

C. 24

PUBLIC SERVICE ELECTRIC AND GAS COMPANY
ELECTRIC ENGINEERING DEPARTMENT

PRINT NO. 138383 ISSUE 1
LOCATION SALEM NUCLEAR GENERATING STATION UNIT 2
AUTHORIZATION NO. A 287 Camden
CONT. NO. 312288 ORIG. NO. REQ. NO.
USED FOR Reactor Coolant System
DESCRIPTION 31" I.D. L.R. 40° Weld Ell.
SUPPLIER/MFR. Esco
MFR / PART NO. D-14406 REV. B
MFR ORDER NO.
THIS PRINT IS — ☐ PRELIMINARY ☒ OFFICIAL ☐ ADDITIONAL
ISSUED VIA Westinghouse Letter Barl 2582, 8/20/75
ORIG. ENGR. Kenworthy LOCATION 3287 EXT. 4138 DATE 8/28/75

ELECTRIC ENGINEERING DEPARTMENT REVIEW

	Engineering Division				Design Division							
	MECH	CIVIL	STRUC	ELEC	MECH	CIVIL STRUC		ELEC		ARCH		FIR PROT
Drawing Review Approved BY	X		X		X			X				
DATE												
INITIAL												

FILED UNDER
1. HORIZONTAL
2. MASTER FILE NO.
3. Reactor
4. Reactor Coolant System
5.

COMMENTS
Applies to Pieces with Heat Nos. 57429-2 and 59125-3.

DIV. CODE	SYSTEM CODE	TYPE DWG.	AREA ELEV.
04	13	18	17
111	R200	24	RCZ

P.S.E.P. No. 138383

8/2/75/DT

315A

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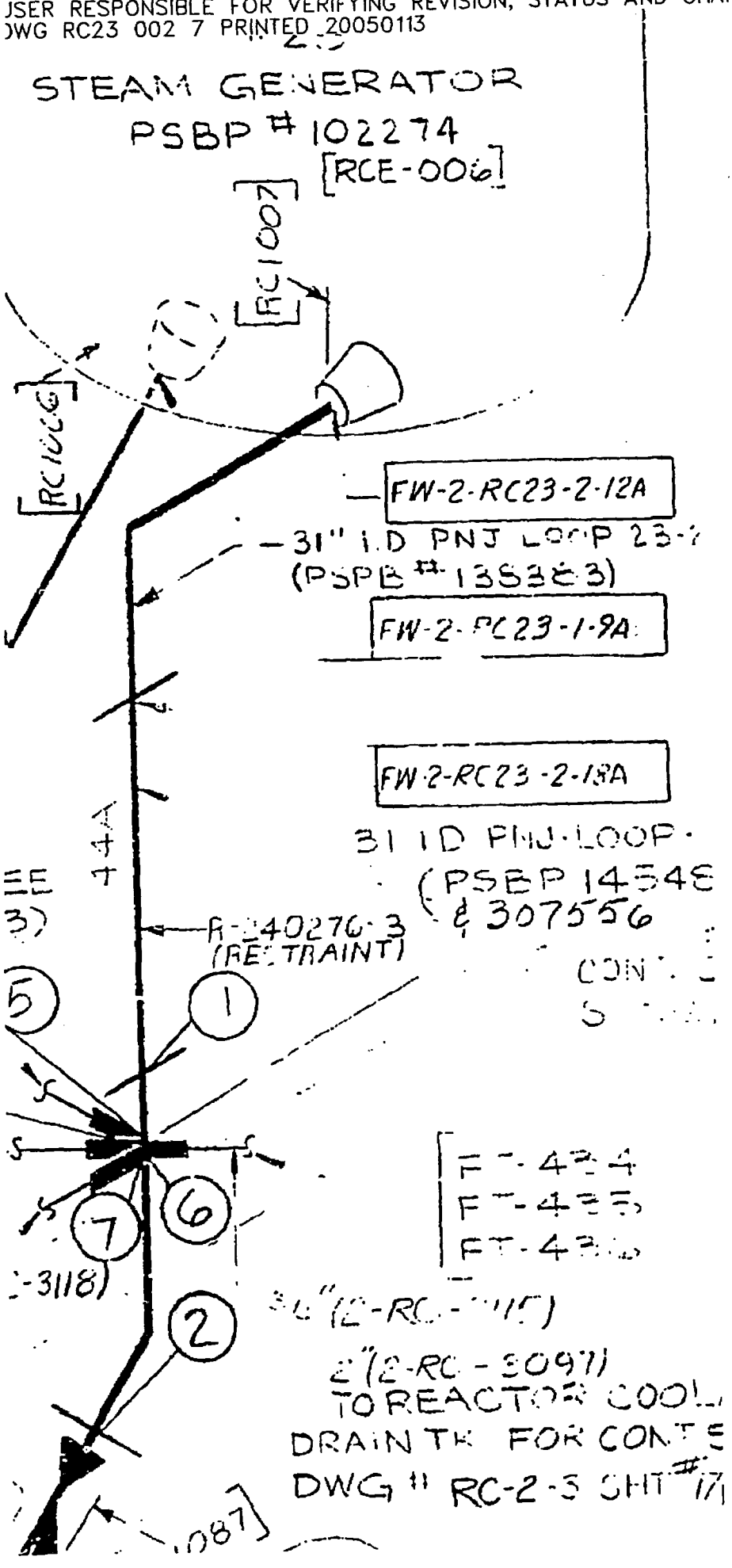
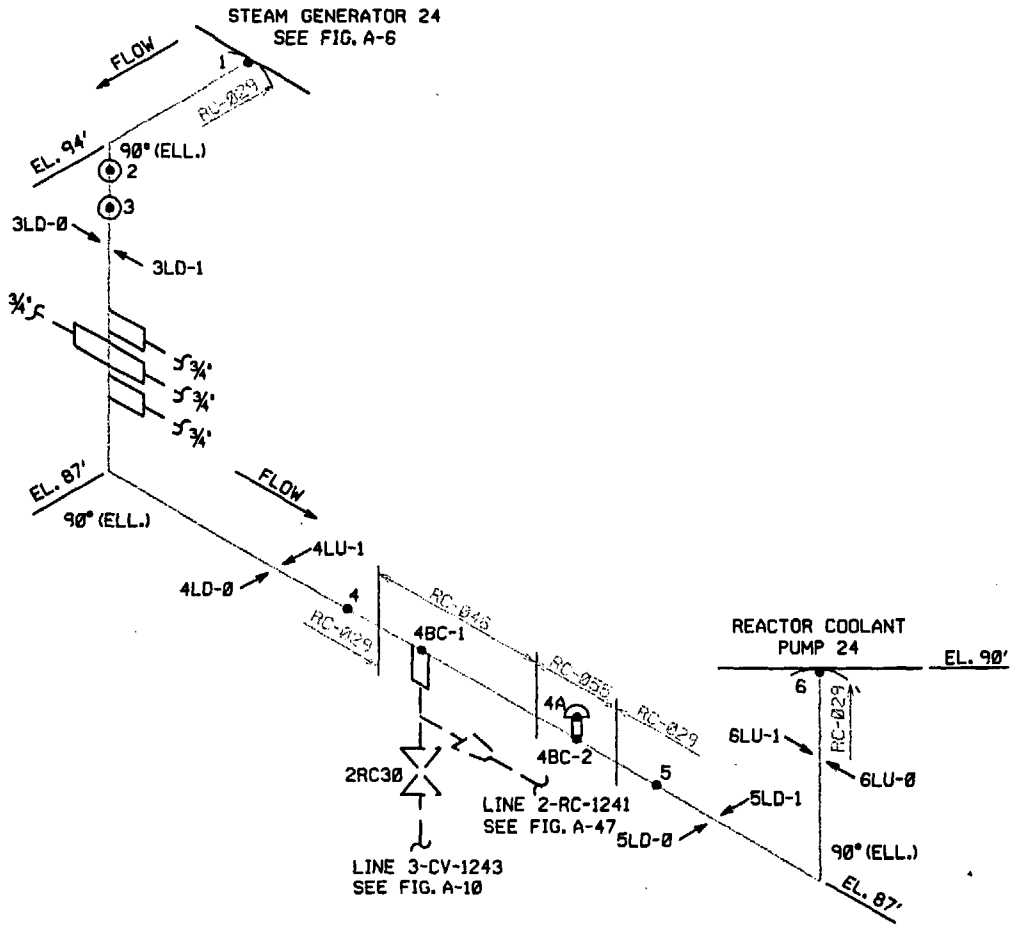
DWG RC23 002 7 PRINTED 20050113



315A

3158



3158

BUILDING: CONTAINMENT	LOCATION: BIOSHIELD	ELEVATIONS: 87' to 94'

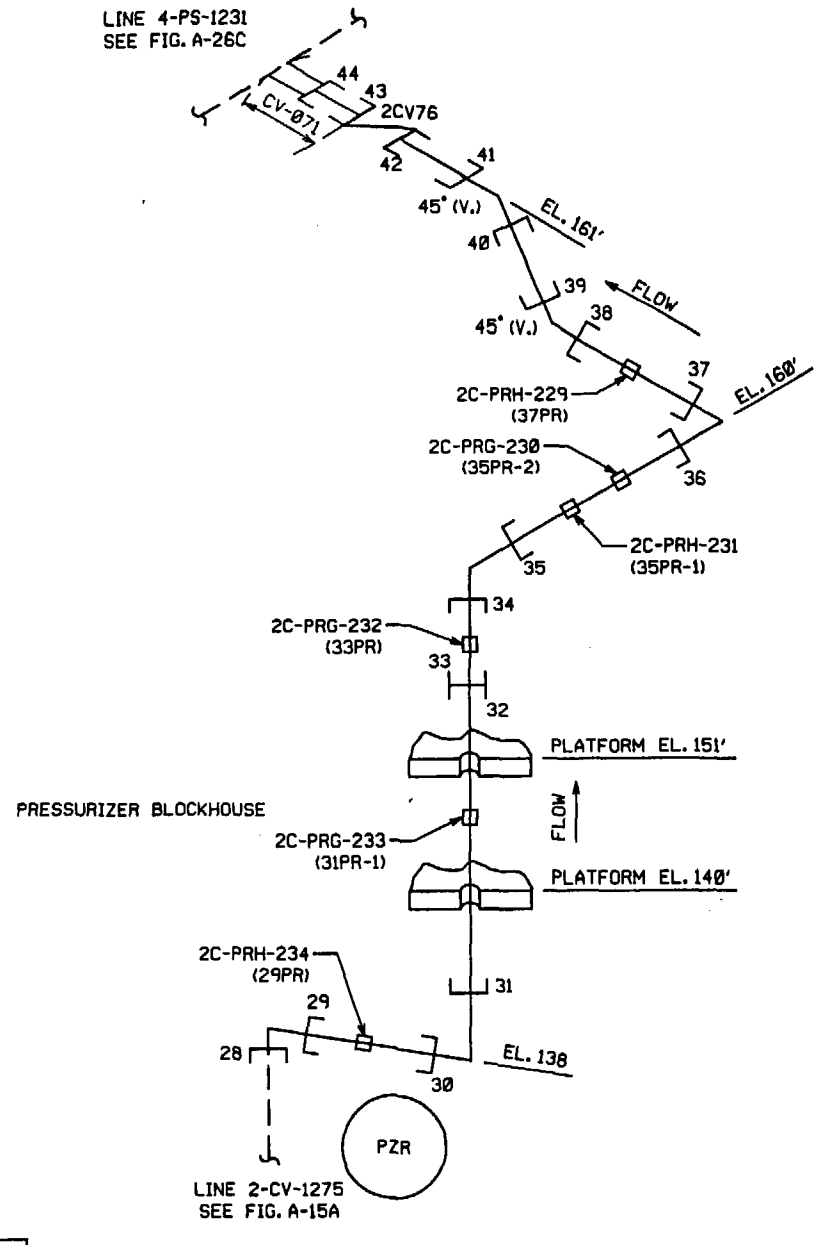
PSEG ISO RC23-02
P & ID 205301

ATTENTION: ANY REVISION TO THIS DRAWING SHALL BE MADE ONLY BY CAED

REV.	DATE	DESCRIPTION
1		REVISED PER ORDER No. 80038023.

PSEG Nuclear, LLC
SALEM NUCLEAR GENERATING STATION
UNIT 2 - WELD / HANGER IDENTIFICATION FIGURE
INSERVICE INSPECTION DRAWING

FIGURE: A-29 | REVISION: 1
SYSTEM: REACTOR COOLANT SYSTEM
#24 CROSSOVER LEG
LINE: 31-RC-1240
THIRD 10 YEAR INSPECTION INTERVAL



316

316

BUILDING: CONTAINMENT	LOCATION: PRZ BLOCKHOUSE	ELEVATIONS: 138' to 161'

PSEG ISO RC23-13
P & ID 205301, 205328

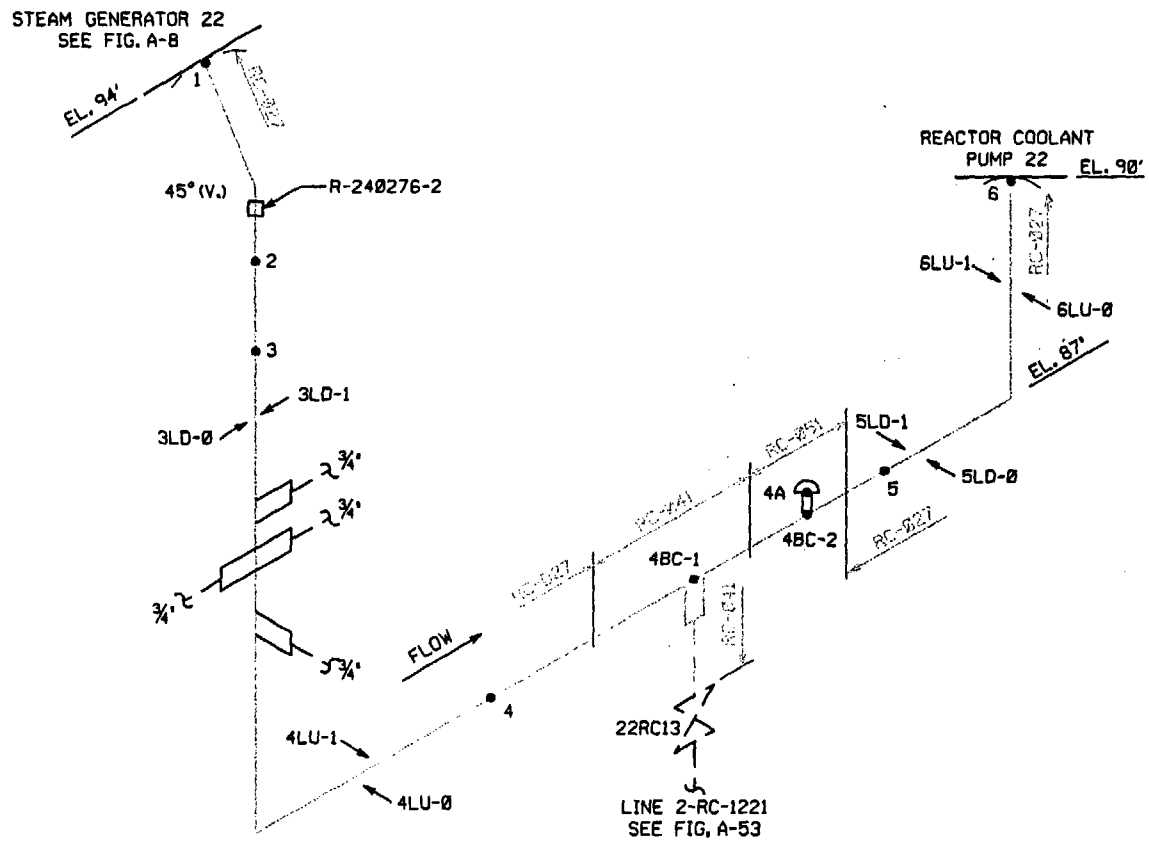
ATTENTION: ANY REVISION TO THIS DRAWING SHALL BE MADE ONLY BY CAED

REV.	DATE	DESCRIPTION
1		REVISED PER ORDER No. 80038023.

PSEG Nuclear, LLC
SALEM NUCLEAR GENERATING STATION
UNIT 2 - WELD / HANGER IDENTIFICATION FIGURE
INSERVICE INSPECTION DRAWING

FIGURE: A-15B | REVISION: 1
SYSTEM: CHEMICAL AND VOLUME CONTROL
AUXILIARY SPRAY
LINE: 2-CV-1275
THIRD 10 YEAR INSPECTION INTERVAL

316A



316A

BUILDING:	LOCATION:	ELEVATIONS:
CONTAINMENT	BIOSHIELD	87' to 94'

PSEG ISO RC23-01
P & ID 205301

ATTENTION: ANY REVISION TO THIS DRAWING SHALL BE MADE ONLY BY CAED

REV.	DATE	DESCRIPTION
1		REVISED PER ORDER No. 80038023.

PSEG Nuclear, LLC
SALEM NUCLEAR GENERATING STATION
UNIT 2 - WELD / HANGER IDENTIFICATION FIGURE
INSERVICE INSPECTION DRAWING

FIGURE: A-31 | REVISION: 1
SYSTEM: REACTOR COOLANT SYSTEM
CROSSOVER LEG
LINE: 31-RC-1220
THIRD 10 YEAR INSPECTION INTERVAL

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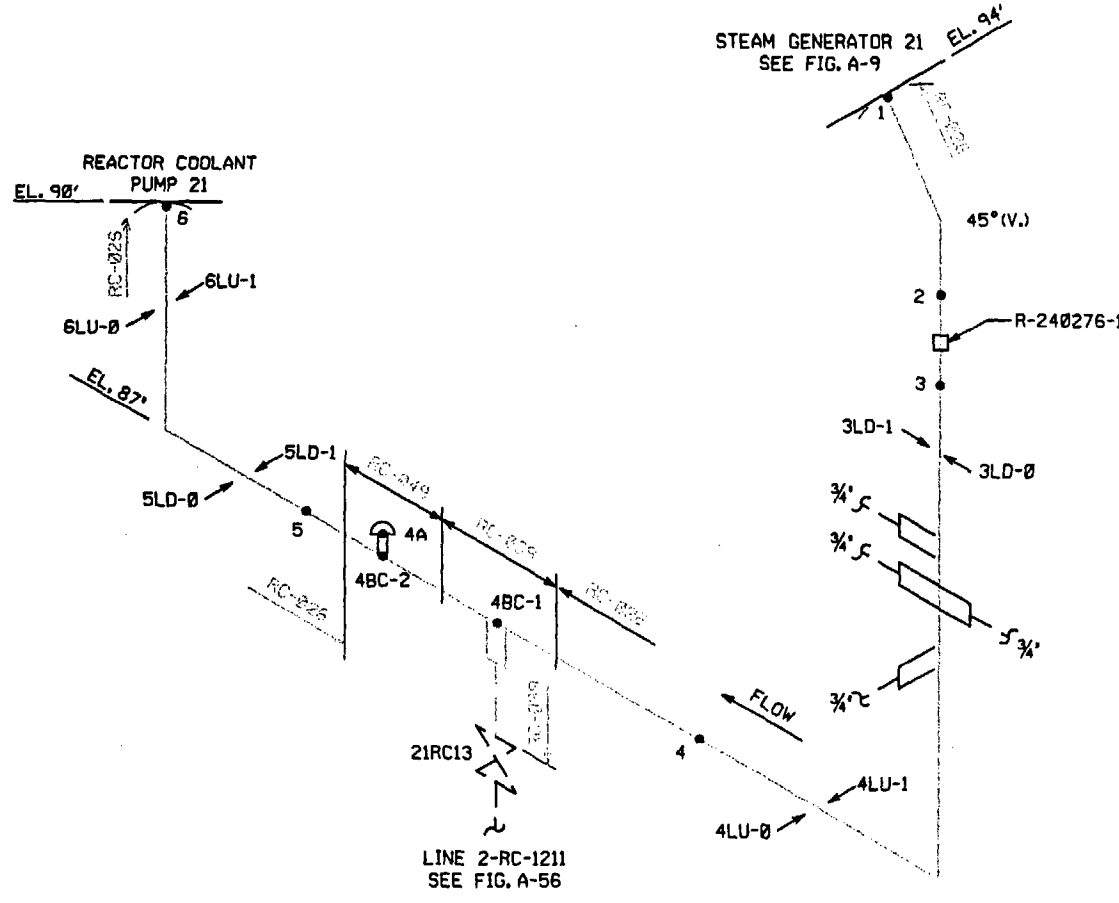

317

317

BUILDING:	LOCATION:	ELEVATIONS:
CONTAINMENT	BIOSHIELD	87' to 94'

PSEG ISO RC23-01
P & ID 205301

ATTENTION: ANY REVISION TO THIS DRAWING SHALL BE MADE ONLY BY CAED

REV.	DATE	DESCRIPTION
1		REVISED PER ORDER No. 80038023.

PSEG Nuclear, LLC
SALEM NUCLEAR GENERATING STATION
UNIT 2 - WELD / HANGER IDENTIFICATION FIGURE
INSERVICE INSPECTION DRAWING

FIGURE: A-32 REVISION: 1
SYSTEM: REACTOR COOLANT SYSTEM
CROSSOVER LEG
LINE: 31-RC-1210
THIRD 10 YEAR INSPECTION INTERVAL

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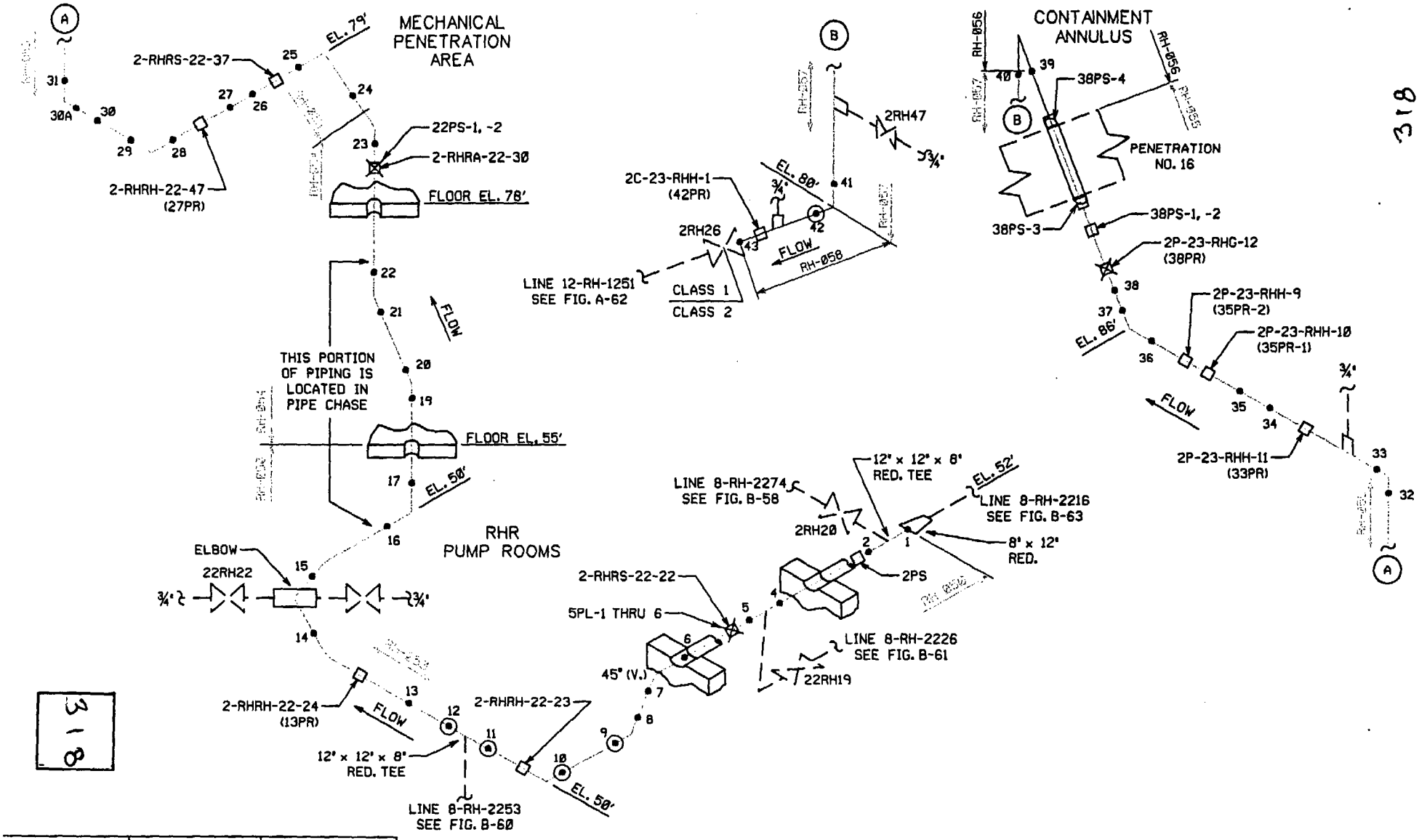

BUILDING:	LOCATION:	ELEVATIONS:
AUXILIARY	22 RHR PUMP ROOM MECHANICAL PENETRATION AREA	50' - 86'
CONTAINMENT	ANNULUS	80' - 82'

PSEG ISO RH22-01, RH23-01
P & ID 205332

ATTENTION: ANY REVISION TO THIS DRAWING SHALL BE MADE ONLY BY CAED

REV.	DATE	DESCRIPTION
1		REVISED PER ORDER No. 80038023.

PSEG Nuclear, LLC
SALEM NUCLEAR GENERATING STATION
UNIT 2 - WELD / HANGER IDENTIFICATION FIGURE
INSERVICE INSPECTION DRAWING

FIGURE: B-68 | REVISION: 1
SYSTEM: RESIDUAL HEAT REMOVAL
LINE: 12-RH-2252
THIRD 10 YEAR INSPECTION INTERVAL

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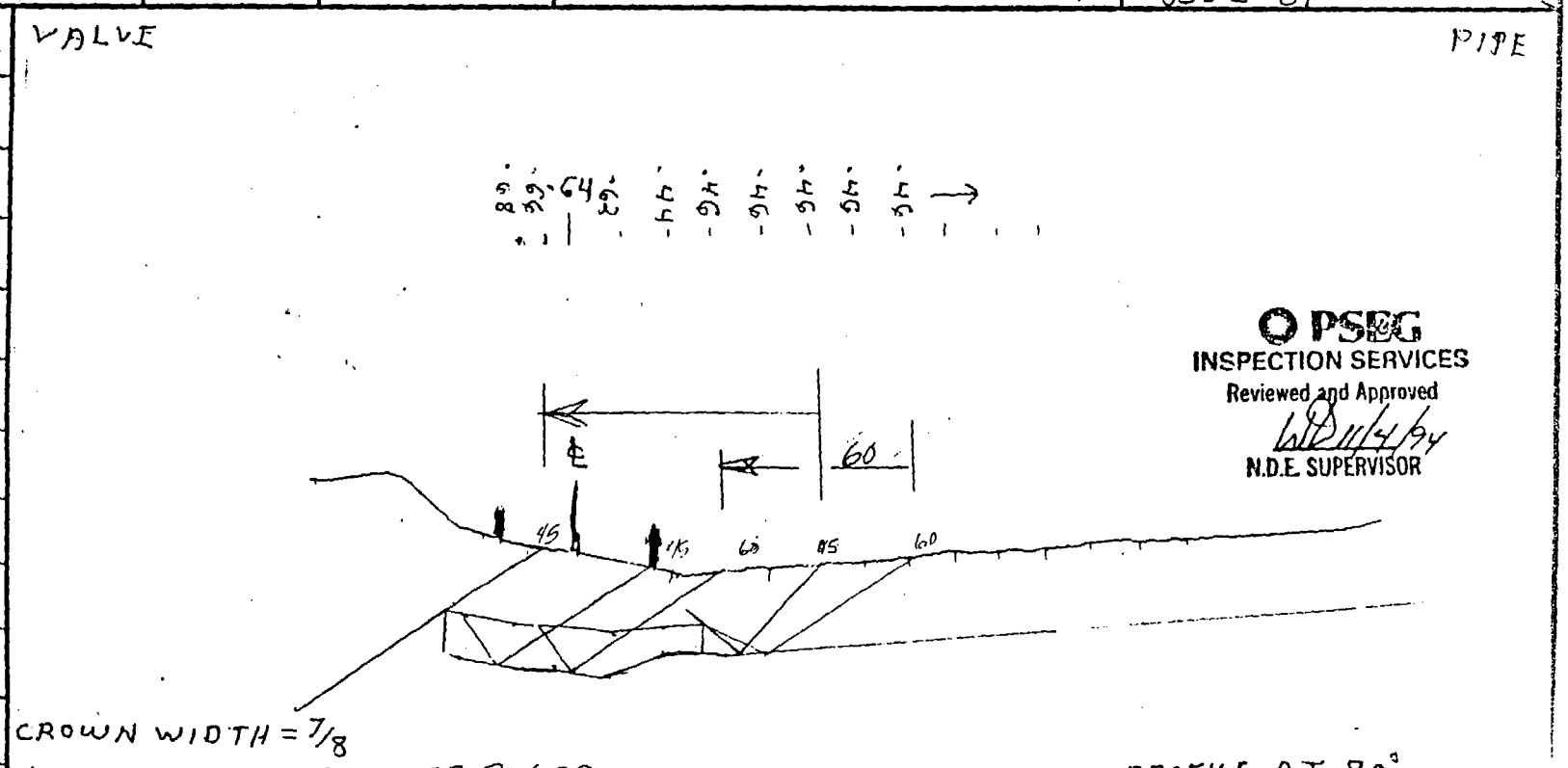
707730

SwRI PROFILE AND THICKNESS INFORMATION RECORD

PROJECT NO:	SITE:	DATE: (DAY - MONTH - YEAR)	TIME (24 HR. CLOCK)		SHEET NO:
17-6399	Salem Generating Station, Unit 2	25 OCT 94	INT. 1538	FINAL 1612	135020

EXAMINER	SNT LEVEL	THK. MEAS. REQ'D BY PROCEDURE	INSTRUMENT:	SERIAL NO:	COMPONENT ID:
B. ROBERDS	II	No SAM 2-UT49 REV 0 *	SONIC MARK I ☐ OTHER SONIC 136 ☐	860K	3-CV-2257-7
EXAMINER	SNT LEVEL	CHG!	COUPLANT:		REFERENCE BLK NO:
M. COTTEN	II	ICN ☒ N/A	GLYCERINE ☐ WATER ☐ OTHER (SPECIFY) SONATRACE 40 #94014		SSDC-31

SEARCH UNITS	
BRAND	SWRI
SERIAL NO	3129
SIZE	3/8
FREQ. (MHz)	2.25
INSTRUMENT SETTINGS	
SCREEN SIZE	1.0
DELAY	.341
MATL. CAL.	.219
RANGE	1.0
REP. RATE	4KHZ
JACK USED	RCV/XMT
TRANS MODE	DUAL



PSEG INSPECTION SERVICES
Reviewed and Approved
11/4/94
N.D.E. SUPERVISOR

* VS2-RA-IS-ZZ-0088 REV 00

45 ° Search Unit chosen for coverage using 2/8, 6/8, 10/8 nodes.

60 ° Search Unit chosen for coverage using 2/8, 6/8, 10/8 nodes.

NAME: D. Kleinjan SNT LEVEL: II

REVIEWED BY: D. Kleinjan SNT LEVEL: II DATE: 29 OCT 94

321

321

SWRI FORM NO. NDTR 17-135 (REV. 6/90)

PSE&G LIMITATION REPORT

PROJECT: 17-6399 UNIT: SALEM 2

SYSTEM: CHEMICAL VOLUME CONTROL WELD NO.: 3-CV-2257-7

Prepared By: VICTOR MORTON Date: 31 OCT 94

SURFACE EXAMINATIONS

Area To Be Examined (length x Width = A) A= N/A

Area Of Limitation (Length x Width = Al) Al=

Percentage Of Coverage (A−Al /A)=

VOLUMETRIC EXAMINATIONS

A. Axial Exams (Indications Parallel To Weld)

1. Compute Exam Volume	(height x width x length) = Vt1	3.40
2. Compute Vol. Not Covered Upstream	= A	.99
3. Compute Upstream Limitation Percentage	(A / Vt1) x 100 = Z1	29.12
4. Compute Vol. Not Covered Downstream	= B	.49
5. Compute Downstream Limitation Percentage	(B / Vt1) x 100 = Z2	14.41

B. Circumferential Exams (Indications Perpendicular To Weld)

1. Compute Exam Volume	(height x width x length) = Vt2	4.64
2. Compute Vol. Not Covered CW	= C	.77
3. Compute CW Limitation Percentage	(C / Vt2) x 100 = Z3	16.59
4. Compute Vol. Not Covered CCW	= D	.77
5. Compute CCW Limitation Percentage	(D / Vt2) x 100 = Z4	16.59

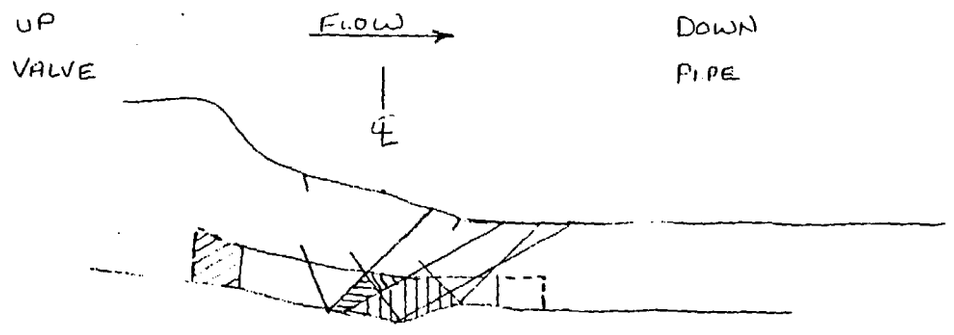
C. Total Coverage

1. Compute Total Limitation Percentage	(Z1+Z2+Z3+Z4) / 4 = L	19.18
2. Compute Total Coverage	100 − L	80.82

REMARKS:

322 707730

322



= AREA NOT COVERED CW/CCW

= AREA NOT COVERED UP/DOWN

= AREA NOT COVERED UPSTREAM SIDE.

= AREA NOT COVERED DOWNSTREAM SIDE

- - - - = CIRCUMFERENTIAL AREA

SALEM UNIT 2 17-6399
CHEMICAL VOLUME CONTROL
3-CV-2257-7
VICTOR MORTON III 31 OCT 94
FOR LIMITATION COVERAGE ONLY.

323

707750