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10CFR50.55a(g)(5)(iii)

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United States Nuclear Regulatory Commission  
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Washington, DC 20555

SALEM GENERATING STATION – UNIT 2  
FACILITY OPERATING LICENSE NO. DPR-75  
NRC DOCKET NO. 50-311

Subject: **RE-SUBMITTAL OF INSERVICE INSPECTION PROGRAM RELIEF  
REQUESTS S2-I2-RR-B01 AND S2-I2-RR-C01**

References: (1) Letter from PSEG to NRC: "Inservice Inspection Program Relief Requests S2-I2-RR-B01 and S2-I2-RR-C01, Salem Nuclear Generating Station - Unit 2, Facility Operating License DPR-75, Docket No. 50-311," dated March 21, 2006

(2) Letter from NRC to PSEG: "Salem Nuclear Generating Station, Unit 2, Request for Additional Information, Re: Inservice Inspection Program Relief Requests," dated December 20, 2006

(3) Letter from PSEG to NRC: "Withdrawal of Inservice Inspection Program Relief Requests S2-I2-RR-B01 and S2-I2-RR-C01, Salem Nuclear Generating Station - Unit 2, Facility Operating License DPR-75, Docket No. 50-311," dated March 24, 2007

In Reference 1, PSEG Nuclear LLC (PSEG) submitted inspection relief requests S2-I2-RR-B01 and S2-I2-RR-C01 associated with the Second Ten Year Inservice Inspection (ISI) Interval for Salem Unit 2.

In Reference 2, the NRC requested additional information (RAI) related to the Reference 1 requests.

In Reference 3 PSEG withdrew relief requests S2-I2-RR-B01 and S2-I2-RR-C01 following discussion with the NRC Staff. PSEG noted in Reference 3 that the relief requests, including with responses to the Reference 2 RAIs, may be re-submitted in the future.

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This letter re-submits relief requests S2-I2-RR-B01 and S2-I2-RR-C01, and incorporates the responses to the Reference 2 RAIs, as described below.

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). Attachment 3 provides individual responses to the Reference 2 RAIs, and, where applicable, describes how the RAI responses are addressed in Attachments 1 and 2, and Enclosure 1. Enclosure 1 provides supporting documentation and additional descriptive details.

If you have any questions or require additional information, please do not hesitate to contact Mr. Jamie Mallon at (610) 765-5507.

Sincerely,



Robert Braun  
Site Vice President  
Salem Generating Station

**Attachments:**

1. ISI Relief Request S2-I2-RR-B01
2. ISI Relief Request S2-I2-RR-C01
3. Response to NRC RAIs

**Enclosures:**

1. Supporting Documentation

CC Mr. S. Collins, Administrator - Region I  
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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 cumulatively less 2 months and 1 day 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-J, and B-K-1
Item Numbers:	See Table 1-1
Description:	Volumetric and surface examination coverage
Component Number:	See Table 1-1

**Applicable Code Edition and Addenda**

The code of record for the Salem Unit 2 Second ten-year ISI Program interval is Section XI of the ASME Code, 1986 Edition.

**Applicable Code Requirement**

Salem Unit 2 Second Ten-Year Interval Inservice Inspection (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. 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 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 performed after this



date. With this initiative came revised coverage calculation methodologies that further reduced the credited examination coverage of those applicable components.

ASME, Section XI, 1986 Edition, required volumetric and/or surface and visual examinations be performed upon components and welds identified within Table IWB-2500-1. The applicable exam categories for this relief request are B-A, B-B, B-D, B-F, B-J, and B-K-1. The applicable code requirements for the relevant item numbers are as follows. Please note that "essentially 100%," as clarified by ASME Code Case N-460, is greater than 90% coverage of the examination volume, or surface area, as applicable.

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

Code Requirement: Item B1.12 requires essentially 100% volumetric examination, as defined by Figure IWB-2500-2, of one longitudinal reactor pressure vessel (RPV) beltline (core region) shell weld during successive operating intervals 2 through 4. Items B1.21 and B1.22 require essentially 100% volumetric examination of the "accessible length" of head welds, as defined by Figure IWB-2500-3. Items B1.30 and B1.40 require essentially 100% of the shell-to-flange and closure head-to-flange welds, as defined by Figures IWB-2500-4 and -5, respectively.

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

Code Requirement: Items B2.11 and B2.12 require essentially 100% volumetric examination, as defined by Figures IWB-2500-1 and -2, of the circumferential shell-to-head weld and one foot of the intersecting longitudinal weld on the pressurizer.

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

Code Requirement: Item B3.90 requires essentially 100% volumetric examination, as defined by Figures IWB-2500-7 a through d, of the reactor vessel nozzle-to-vessel welds. Items B3.120 and B3.140 require essentially 100% volumetric examination, as defined by Figures IWB-2500-7 a through d, of the nozzle inside radius sections of the pressurizer and primary side of the steam generators.

D. Exam Category B-F Pressure Retaining Dissimilar Metal Piping Welds

Code Requirement: Items B5.40 and B5.70, require essentially 100% volumetric and surface examinations, as defined by Figure IWB-2500-8 of the pressurizer relief and spray nozzle-to-safe-end welds, and steam generator short radius nozzle-to-safe-end welds.

**E. Exam Category B-J Pressure Retaining Piping Welds**

Code Requirement: Items B9.11 and B9.31, require essentially 100% volumetric and surface examinations, as defined by Figures IWB-2500-8, -9, -10, or -11, as applicable, for piping circumferential and branch connection welds > 4-inch NPS. Items B9.21 and B9.40 require essentially 100% surface examinations, as defined in IWB-2500-8, of piping circumferential welds < 4-inch NPS and socket welds. Once incorporated into NRC Regulatory Guide 1.147 Revision 12, item B9.12 piping longitudinal seam welds > 4-inch NPS were examined 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.

**F. Exam Category B-K-1 Welded Integral Attachments**

Code Requirement: Items B10.10 and B10.20 require essentially 100% surface or volumetric examinations, as defined by Figures IWB-2500-13, -14, or -15, as applicable, for integrally welded support attachments on Class 1 piping and pumps, respectively. 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.

Table 1-1 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 piping and vessel welds due to exam limitations. Table 1-1 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. Enclosure 1 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,

which provides additional assurance that the structural integrity of the subject components is maintained.

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 1-1, 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 examined 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 1-1, 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 1-1, 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 nozzles 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 & E. Exam Category B-F and B-J Pressure Retaining Piping Welds

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

Required Code coverage is impractical for the subject welds since the components 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 or past 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 pre-service 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.

To demonstrate that the best available technology was applied for austenitic welds, 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. Based upon the qualification efforts of the PDI program, PSEG considers austenitic piping welds examined from a single side to be fully examined to the extent practical. This is considered true for examinations performed prior to and after the PDI in that it has been confirmed by the PDI that the configuration and material acoustic properties of austenitic piping prevents full two-sided access for examination.

F. Exam Category B-K-1 Welded Integral Attachments

See Table 1-1, 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 Nuclear. The piping and pumps have a permanently welded support structure that interfered with the exam upon the lower portion of the integrally welded attachments. Removal of the piping or pump support structure to access the obstructed area would result in the need to redesign the system's configuration. 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 welds have been examined to the extent required by the Code and also found to be acceptable with no observed signs of degradation. 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 to the extent practical upon the components identified in the exam categories below using the state of the art techniques of the time and as applicable, demonstrated through the EPRI PDI Program.

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 performed using the best available

technology at the time and as applicable, 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 applicable.
- System pressure test examinations were performed per ASME Section 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 performed using the best available technology at the time and as applicable, 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 applicable.
- System pressure test examinations were performed per ASME Section 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 at the time and as applicable, 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 applicable.
- System pressure test examinations were performed per ASME Section 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 at the time and as applicable, 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, as applicable.
- 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, as applicable.
- The code required surface and system pressure test examinations were performed per ASME Section XI requirements.

F. Exam Category B-K-1 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 Section XI requirements.

Once approved by NRC Regulatory Guide 1.147, 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**

As part of the submission of the Salem 2 second 10-year interval ISI program plan and associated relief requests, limitations relief requests RR-B1 and RR-C1 were submitted. In the Safety Evaluation of this submission, relief was granted for relief requests RR-B1, parts 2 through 11, and RR-C1, parts 1 through 4, for the Salem 2 second 10-year interval (Reference 1). Those components that relief was granted for are noted as such in Table 1-1 ("Relief Previously Granted" column).

Additionally similar relief requests were submitted for the first 10-year interval at Salem Unit 2 (Reference 2). Most of those welds listed in that submittal are the same as those for the second interval, with some additions. Those components for which relief was granted in the first interval are also noted in Table 1-1 ("Relief Previously Granted" column). The examinations performed in the second interval achieved equivalent or better coverage or coverage in more examination directions compared to the first 10-year interval (second interval relief request submittal utilized first interval coverage).

The NRC also approved a similar request for the Salem Unit 1 second 10-year interval in Reference 3.

### **References**

1. "Evaluation of the Second Ten-Year Interval Inspection Program Plan and Associated Requests for Relief for Salem Generating Station, Unit 2 (TAC No. M83316)," dated October 23, 1995.
2. "Inservice Inspection – Long Term Plan, Final Relief Requests – First Interval, Salem Generating Station, Unit No. 2, Docket No. 50-311," dated September 28, 1992.
3. "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 1-1  
2nd Ten-Year Inservice Inspection Interval Class 1 Component NDE Exam Limitations

Sum#	Component ID	Description	2 <sup>nd</sup> Interval ASME Cat	2 <sup>nd</sup> Interval ASME Item #	ASME Class	System	Limited NDE Exam	Code Coverage Achieved	Exam Date	Photo/ Sketch No.*	Required Examination Volume	Relief Previously Granted? **	UT Exam Type and Limitation Description
000400	2-RPV-3442A	LOWER SHELL AT 60 DEG.	B-A	B1.12	1	RC	UT	81%	4/18/02	215, 215A, 215B, 216, 217, 218	IWB-2500-1		UT exam was conducted using 45-degree shear and refracted 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	B1.12	1	RC	UT	81%	4/18/02	215A, 215B, 219, 220, 221, 222	IWB-2500-1		UT exam was conducted using 45-degree shear and refracted 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	B1.12	1	RC	UT	81%	4/18/02	215A, 215B, 223, 224, 225, 226	IWB-2500-1		UT exam was conducted using 45-degree shear and refracted 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	B1.21	1	RC	UT	67%	10/28/94	45, 46, 47, 266A, 266B	IWB-2500-3	YES	UT exam was conducted using 0-, 45- and, 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.
002000	2-RPVCH-1446A	MERIDIONAL WELD AT 300 DEG	B-A	B1.22	1	RC	UT	31%	10/28/94	33, 34, 266A, 266B	IWB-2500-3	YES	UT exam was conducted using 0-, 45- and, 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	B1.22	1	RC	UT	26%	10/28/94	35, 36, 266A, 266B	IWB-2500-3	YES	UT exam was conducted using 0-, 45- and, 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	B1.22	1	RC	UT	35%	10/28/94	37, 38, 266A, 266B	IWB-2500-3	YES	UT exam was conducted using 0-, 45- and, 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.

\* These numbers refer to Enclosure 1, Pages 1 through 343. Page numbers are in boxes in the corners of the pages.

\*\* Relief was granted by the NRC in Reference 1 or was submitted in the Salem 2 first 10-year interval in Reference 2.

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

Sum#	Component ID	Description	2 <sup>nd</sup> Interval ASME Cat	2 <sup>nd</sup> Interval ASME Item #	ASME Class	System	Limited NDE Exam	Code Coverage Achieved	Exam Date	Photo/Sketch No.*	Required Examination Volume	Relief Previously Granted? **	UT Exam Type and Limitation Description
002300	2-RPVCH-1446D	MERIDIONAL WELD AT 120 DEG	B-A	B1.22	1	RC	UT	35%	10/28/94	39, 40, 266A, 266B	IWB-2500-3	YES	UT exam was conducted using 0-, 45- and, 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.
002400	2-RPVCH-1446E	MERIDIONAL WELD AT 180 DEG	B-A	B1.22	1	RC	UT	36%	10/28/94	41, 42, 266A, 266B	IWB-2500-3	YES	UT exam was conducted using 0-, 45- and, 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	B1.22	1	RC	UT	54%	10/28/94	43, 44, 266A, 266B	IWB-2500-3	YES	UT exam was conducted using 0-, 45- and, 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	B1.22	1	RC	UT	88%	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	B1.22	1	RC	UT	88%	4/18/02	232, 233, 234, 235, 236	IWB-2500-3	YES	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.
001600	2-RPV-1443D	MERIDIONAL WELD AT 90 DEG.	B-A	B1.22	1	RC	UT	72%	4/18/02	227A, 227B, 227C, 237, 238, 239	IWB-2500-3	YES	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	B1.30	1	RC	UT	82%	4/18/02	240, 240A, 241, 242, 243, 244, 255, 256, 257, 258, 259, 260, 261, 262, 262A, 263, 264, 265	IWB-2500-4	YES	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.

\* These numbers refer to Enclosure 1, Pages 1 through 343. Page numbers are in boxes in the corners of the pages.

\*\* Relief was granted by the NRC in Reference 1 or was submitted in the Salem 2 first 10-year interval in Reference 2.

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

Sum#	Component ID	Description	2 <sup>nd</sup> Interval ASME Cat	2 <sup>nd</sup> Interval ASME Item #	ASME Class	System	Limited NDE Exam	Code Coverage Achieved	Exam Date	Photo/Sketch No.*	Required Examination Volume	Relief Previously Granted? **	UT Exam Type and Limitation Description
002800	2-RPVCH-6446A	HEAD TO FLANGE	B-A	B1.40	1	RC	UT	79%	4/17/02	266, 266A, 266B, 267, 268, 269, 270, 270A, 270B, 270C, 270D, 270E, 270F, 270G	IWB-2500-5	YES	UT exam was conducted using 45- and 60-degree shear 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).
010900	2-PZR-CIRC DUH	SHELL D TO UPPER HEAD	B-B	B2.11	1	RC	UT	37%	4/11/02	283, 284, 285, 286, 286A, 286B, 286C	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	B2.12	1	RC	UT	74%	9/7/96	84A, 84B, 85, 86, 87, 88	IWB-2500-2		UT exam was conducted using 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.
011100	4-PSN-1231-IRS	SAFETY NOZZLE	B-D	B3.120	1	RC	UT	50%	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	B3.140	1	RC	UT	80%	10/24/94	311, 312, 313, 313P, 313Q, 313R	IWB-2500-7(d)	YES	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.

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

Sum#	Component ID	Description	2 <sup>nd</sup> Interval ASME Cat	2 <sup>nd</sup> Interval ASME Item #	ASME Class	System	Limited NDE Exam	Code Coverage Achieved	Exam Date	Photo/Sketch No.*	Required Examination Volume	Relief Previously Granted? **	UT Exam Type and Limitation Description
021200	29-STG-1220-IRS	INLET NOZZLE IRS	B-D	B3.140	1	RC	UT	73%	10/24/94	311, 312, 313, 313D, 313E, 313F	IWB-2500-7(d)	YES	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 on 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.
020700	31-STG-1230-IRS	OUTLET NOZZLE IRS	B-D	B3.140	1	RC	UT	81%	5/12/99	311, 312, 313, 313S, 313T, 313U	IWB-2500-7(d)	YES	UT exam was conducted using 28- and 38-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	B3.140	1	RC	UT	75%	5/12/99	311, 312, 313, 313G, 313H, 313-I	IWB-2500-7(d)	YES	UT exam was conducted using 28- and 38-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	B3.140	1	RC	UT	85%	4/23/02	311, 312, 313, 313V, 313W, 313X	IWB-2500-7(d)	YES	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-1210-IRS	OUTLET NOZZLE IRS	B-D	B3.140	1	RC	UT	79%	4/23/02	311, 312, 313, 313M, 313N, 313-O	IWB-2500-7(d)	YES	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.
021000	29-STG-1240-IRS	INLET NOZZLE IRS	B-D	B3.140	1	RC	UT	86%	4/23/02	311, 312, 313, 313J, 313K, 313L	IWB-2500-7(d)	YES	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.

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2nd Ten-Year Inservice Inspection Interval Class 1 Component NDE Exam Limitations

Sum#	Component ID	Description	2 <sup>nd</sup> Interval ASME Cat	2 <sup>nd</sup> Interval ASME Item #	ASME Class	System	Limited NDE Exam	Code Coverage Achieved	Exam Date	Photo/Sketch No.*	Required Examination Volume	Relief Previously Granted? **	UT Exam Type and Limitation Description
021300	29-STG-1210-IRS	INLET NOZZLE IRS	B-D	B3.140	1	RC	UT	82%	4/23/02	311, 312, 313, 313A, 313B, 313C	IWB-2500-7(a)	YES	UT exam was conducted using 28- and 38-degree longitudinal wave transducers. The exams completed was limited to 82% code required coverage 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-1210	OUTLET NOZZLE AT 338 DEG.	B-D	B3.90	1	RC	M-UT	72%	12/19/02	271, 271A, 271B, 280, 281	IWB-2500-7(b)	YES	UT exam was conducted using 45-degree shear and 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. A system pressure test was also completed with no unacceptable indications observed.
002900	29-RCN-1230	OUTLET NOZZLE AT 22 DEG.	B-D	B3.90	1	RC	UT	72%	12/19/02	271, 271A, 271B, 272, 273	IWB-2500-7(b)	YES	UT exam was conducted using 45-degree shear 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. A system pressure test was also completed with no unacceptable indications observed.
003300	29-RCN-1220	OUTLET NOZZLE AT 203 DEG.	B-D	B3.90	1	RC	UT	72%	12/19/02	271A, 271B, 277, 278, 279	IWB-2700-7(a)	YES	UT exam was conducted using 45-degree shear and longitudinal wave transducers. The exam completed was limited to 72% code required coverage 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	B3.90	1	RC	UT	72%	12/19/02	271A, 271B, 274, 275, 276	IWB-2700-7(a)	YES	UT exam was conducted using 45-degree shear and longitudinal wave transducers. The exam completed was limited to 72% code required coverage 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	B-F	B5.40	1	RC	UT	38%	10/14/00	298, 298A, 298B, 298C, 298D, 299, 300	IWB-2500-7(b)	YES	UT exam was conducted using 30-degree refracted longitudinal wave transducer. The ultrasonic examination completed was partially limited to 38% of the code required coverage 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 were also completed with no recordable indications observed.

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2nd Ten-Year Inservice Inspection Interval Class 1 Component NDE Exam Limitations

Sum#	Component ID	Description	2 <sup>nd</sup> Interval ASME Cat	2 <sup>nd</sup> Interval ASME Item #	ASME Class	System	Limited NDE Exam	Code Coverage Achieved	Exam Date	Photo/Sketch No.*	Required Examination Volume	Relief Previously Granted? **	UT Exam Type and Limitation Description
011820	6-PR-1203-1	NOZZLE TO SAFE-END	B-F	B5.40	1	RC	UT	86%	4/21/99	300, 301, 302, 302A, 302B, 302C	IWB-2500-8	YES	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 were also completed with no unacceptable indications observed.
011830	4-PR-1200-1	NOZZLE TO SAFE-END	B-F	B5.40	1	RC	UT	84%	4/21/99	300, 303, 304, 304A, 304B, 304C, 304D	IWB-2500-8	YES	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 were also completed with no unacceptable indications observed.
083300	29-RC-1210-5	ELBOW TO NOZZLE	B-F	B5.70	1	RC	UT	67%	10/28/94	305, 306, 306A, 306B, 312, 313, 315	IWB-2500-8	YES	UT exam was conducted using 45-degree 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 exam and system pressure test were also completed with no unacceptable indications observed.
070000	31-RC-1240-1	NOZZLE TO ELBOW	B-F	B5.70	1	RC	UT	50%	10/28/94	312, 313, 315, 315B, 316H, 316-I, 316J	IWB-2500-8	YES	UT exam was conducted using 45-degree 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 exam and system pressure test were also completed with no unacceptable indications observed.

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2nd Ten-Year Inservice Inspection Interval Class 1 Component NDE Exam Limitations

Sum#	Component ID	Description	2 <sup>nd</sup> Interval ASME Cat	2 <sup>nd</sup> Interval ASME Item #	ASME Class	System	Limited NDE Exam	Code Coverage Achieved	Exam Date	Photo/Sketch No.*	Required Examination Volume	Relief Previously Granted? **	UT Exam Type and Limitation Description
072300	31-RC-1230-1	NOZZLE TO ELBOW	B-F	B5.70	1	RC	UT	50%	4/24/99	312, 313, 315, 315A, 316E, 316F, 316G, 317	IWB-2500-8	YES	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 exam and system pressure test were also completed with no unacceptable indications observed.
074600	31-RC-1220-1	NOZZLE TO ELBOW	B-F	B5.70	1	RC	UT	50%	4/24/99	312, 313, 315, 316A, 316B, 316C, 316D	IWB-2500-8	YES	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 exam and system pressure test were also completed with no unacceptable indications observed.
076800	31-RC-1210-1	NOZZLE TO ELBOW	B-F	B5.70	1	RC	UT	50%	4/24/99	315, 315B, 317, 317A, 317B	IWB-2500-8	YES	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 exam and system pressure test were also completed with no unacceptable indications observed.

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Sum#	Component ID	Description	2 <sup>nd</sup> Interval ASME Cat	2 <sup>nd</sup> Interval ASME Item #	ASME Class	System	Limited NDE Exam	Code Coverage Achieved	Exam Date	Photo/Sketch No.*	Required Examination Volume	Relief Previously Granted? **	UT Exam Type and Limitation Description
080300	29-RC-1230-3	PIPE TO PIPE	B-J	B9.11	1	RC	UT	90%	4/6/93	1, 2	IWB-2500-8		UT exam was conducted 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	B-J	B9.11	1	SJ	UT	83%	4/12/93	3, 3A, 3B, 3C	IWB-2500-8		UT exam was conducted 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	B-J	B9.11	1	SJ	UT	82%	3/27/93	4, 4A, 4B, 4C, 4D	IWB-2500-8		UT exam was conducted 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 a permanently 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 with no recordable indications observed.
169450	8-SJ-1245-1	TEE TO VALVE 24RH27	B-J	B9.11	1	SJ	UT	36%	4/14/93	5, 6, 6A, 6B, 6C	IWB-2500-8	YES	UT exam was conducted 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.

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Sum#	Component ID	Description	2 <sup>nd</sup> Interval ASME Cat	2 <sup>nd</sup> Interval ASME Item #	ASME Class	System	Limited NDE Exam	Code Coverage Achieved	Exam Date	Photo/Sketch No.*	Required Examination Volume	Relief Previously Granted?*	UT Exam Type and Limitation Description
172500	6-SJ-1241-18	ELBOW TO PIPE	B-J	B9.11	1	SJ	UT	90%	4/3/93	7, 7A, 7B, 7C	IWB-2500-8		UT exam was conducted 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 were also completed with no recordable indications observed.
076000	31-RC-1220-4	ELBOW TO PIPE	B-J	B9.11	1	RC	UT	84%	10/27/94	48, 49, 50, 50A, 50B, 50C	IWB-2500-8	YES	UT exam was performed using 45-degree shear wave transducer 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 liquid penetrant examination and system pressure test were also completed with no unacceptable indications observed.
054400	4-PR-1200-7	PIPE TO TEE	B-J	B9.11	1	RC	UT	59%	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	B-J	B9.11	1	RC	UT	59%	5/17/99	129, 130, 131, 131A, 131B, 131C	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	B-J	B9.11	1	RC	UT	55%	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.

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Sum#	Component ID	Description	2 <sup>nd</sup> Interval ASME Cat	2 <sup>nd</sup> Interval ASME Item #	ASME Class	System	Limited NDE Exam	Code Coverage Achieved	Exam Date	Photo/Sketch No.*	Required Examination Volume	Relief Previously Granted? **	UT Exam Type and Limitation Description
168200	8-SJ-1252-9	PIPE TO PIPE	B-J	B9.11	1	SJ	UT	86%	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	B-J	B9.11	1	SJ	UT	62%	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	B-J	B9.11	1	SJ	UT	61%	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.
175600	6-SJ-1212-2	VALVE 21SJ43 TO PIPE	B-J	B9.11	1	SJ	UT	61%	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 61% 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	B-J	B9.11	1	RC	UT	49%	10/16/00	173, 174, 174A, 174B, 174C, 174D	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.

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174300	6-RH-1231-16	ELBOW TO VALVE 23SJ156	B-J	B9.11	1	RHR	UT	50%	10/18/00	175, 176, 176A	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 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-I	LONGITUDINAL	B-J	B9.12	1	RC	UT	0%	10/28/94	315, 315C, 315D	IWB-2500-8	YES	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.
075900	31-RC-1220-4LU-O	LONGITUDINAL	B-J	B9.12	1	RC	UT	0%	10/28/94	315, 315E, 315F	IWB-2500-8	YES	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	B-J	B9.21	1	CVC	UT	75%	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	B-J	B9.21	1	CVC	UT	75%	10/11/00	172, 172A, 172B, 172C	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.
034600	3-CV-1241-14	ELBOW TO BRANCH CONNECTION	B-J	B9.21	1	CVC	UT	75%	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.

\* These numbers refer to Enclosure 1, Pages 1 through 343. Page numbers are in boxes in the corners of the pages.

\*\* Relief was granted by the NRC in Reference 1 or was submitted in the Salem 2 first 10-year interval in Reference 2.

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

Sum#	Component ID	Description	2 <sup>nd</sup> Interval ASME Cat	2 <sup>nd</sup> Interval ASME Item #	ASME Class	System	Limited NDE Exam	Code Coverage Achieved	Exam Date	Photo/Sketch No.*	Required Examination Volume	Relief Previously Granted? **	UT Exam Type and Limitation Description
085000	27.5-RC-1230-1BC-5	4 IN. BRANCH CONNECTION	B-J	B9.31	1	RC	UT	55%	11/7/94	51, 52, 53, 54	IWB-2500-8	YES	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-1210-1BC-3	10 IN. BRANCH CONNECTION	B-J	B9.31	1	RC	UT	56%	11/7/94	55, 56, 57, 58, 59	IWB-2500-8	YES	UT exam was conducted using 45- and 39-degree 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-1210-1BC-4	4 IN. BRANCH CONNECTION	B-J	B9.31	1	RC	UT	53%	11/7/94	60, 61, 62, 63	IWB-2500-8	YES	UT exam was conducted using 45- and 32-degree 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 indications were noted. A liquid penetrant and system pressure test was also completed with no unacceptable indications observed.
040900	2-CV-1275-43	VALVE TO CV76 TO PIPE	B-J	B9-40	1	CVC	UT	50%	10/14/00	314, 314A, 314B, 314C	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	B-J	B9-40	1	CVC	UT	50%	10/14/00	314A, 314D, 314E, 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 numbers refer to Enclosure 1, Pages 1 through 343. Page numbers are in boxes in the corners of the pages.

\*\* Relief was granted by the NRC in Reference 1 or was submitted in the Salem 2 first 10-year interval in Reference 2.

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

Sum#	Component ID	Description	2 <sup>nd</sup> Interval ASME Cat	2 <sup>nd</sup> Interval ASME Item #	ASME Class	System	Limited NDE Exam	Code Coverage Achieved	Exam Date	Photo/ Sketch No.*	Required Examination Volume	Relief Previously Granted? **	UT Exam Type and Limitation Description
061700	4-PS-1231-11PS-1 THRU 4	PIPE SUPPORT	B-K-1	B10.10	1	RC	PT	50%	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.
251200	22-PMP-LUGS 1,2,3	PUMP LUGS	B-K-1	B10.20	1	RC	PT	67%	4/6/93	8, 9, 10, 11	IWB-2500-15	YES	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 a 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-1	B10.20	1	RC	PT	67%	4/6/93	12, 13, 14, 15	IWB-2500-15	YES	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 a 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.

\* These numbers refer to Enclosure 1, Pages 1 through 343. Page numbers are in boxes in the corners of the pages.

\*\* Relief was granted by the NRC in Reference 1 or was submitted in the Salem 2 first 10-year interval in Reference 2.

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 cumulatively less 2 months and 1 day 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-C, C-F-1, and C-F-2
Item Numbers:	See Table 2-1
Description:	Volumetric and surface examination coverage
Component Number:	See Table 2-1

**Applicable Code Edition and Addenda**

The code of record for the Salem Unit 2 second 10-year ISI Program interval is Section XI of the ASME Code, 1986 Edition

**Code Requirement:**

Salem Unit 2 second Ten-Year Interval Inservice Inspection (ISI) 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 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 Class 1 and 2 bolting, piping system welds, and reactor pressure vessel nondestructive examinations performed after this date. With this initiative came revised coverage calculation methodologies that further reduced the credited examination coverage of some components.

ASME, Section XI, 1986 Edition required volumetric and/or surface and visual examinations be performed upon components and welds identified within Table IWC-2500-1. The applicable exam categories for this relief request are C-A, C-B, C-C, C-F-1 and C-F-2. The applicable code requirements for the relevant item numbers are as follows. Please note that “essentially 100%,” as clarified by ASME Code Case N-460, is greater than 90% coverage of the examination volume, or surface area, as applicable.

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

Code Requirement: Items C1.10, C1.20, and C1.30 require essentially 100% volumetric weld examinations to be performed upon various pressure vessel shell-circumferential, head-circumferential and tubesheet-to-shell welds, respectively. 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

Code Requirement: Item C2.21 requires essentially 100% volumetric and surface examinations, as defined by Figures IWC-2500-4 (a) and (b), of the nozzle-to-shell welds in Class 2 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

Code Requirement: Items C3.10 and C3.20 require essentially 100% surface examinations, as defined by Figure IWC-2500-5, of integral attachments for pressure vessels and piping respectively. PSEG Nuclear (PSEG) conducted welded integral attachment weld exams in accordance with the requirements of 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

Code Requirement: 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 (Items C5.10/C5.11) and greater than or equal to 2 inches in diameter but less than or equal to 4 inches (Items C5.20/C5.21). Additionally, as part of the second 10-year interval inservice inspection plan, as detailed in Reference 1, PSEG committed to perform augmented volumetric examinations of a 7½% sample of Class 2 welds in the containment spray system that are otherwise not selected based on wall thickness (i.e. less than 0.375 inches wall thickness). A limitation

in examination coverage of one of these augmented welds is listed in Table 2-1 (Category "A-E").

Table 2-1 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 piping and vessel welds due to exam limitations. Table 2-1 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. Enclosure 1 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 inspection period. This provides additional assurance that the structural integrity of the subject components is maintained.

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 2-1, 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 vessels 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 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.



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

See Table 2-1, 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 vessels 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-C Welded Integral Attachments**

See Table 2-1, 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 attachments 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 welded attachments 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 found these welds to be acceptable with no leakage observed.

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

See Table 2-1, 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 to achieve additional coverage 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 or past 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 pre-service 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.

To demonstrate that the best available technology was applied to austenitic welds, 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. Based upon the qualification efforts of the PDI program, PSEG considers austenitic piping welds examined from a single side to be fully examined to the extent practical. This is considered true for examinations performed prior to and after the PDI in that it has been confirmed by the PDI that the configuration and material acoustic properties of austenitic piping prevents full two-sided access for examination.

**Alternative Examination:**

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

**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 at the time and as applicable, 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 applicable.
- The code required system pressure test examinations were performed per ASME Section 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 at the time and as applicable, 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 applicable.
- The code required system pressure test examinations were performed per ASME Section XI requirements.

**C. 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 Section XI requirements.

Once approved by NRC Regulatory Guide 1.147, 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.

D. 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 at the time and as applicable, demonstrated through the EPRI PDI program:

- For similar metal welds, 100% of the required volume was examined by ultrasonic examination 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, as applicable.
- For dissimilar metal welds, 100% of the required volume was examined by ultrasonic examination 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, as applicable.
- The code required surface and system pressure test examinations were performed per ASME Section XI requirements.

### **Applicability**

This Relief Request is applicable to the following:

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

### **Precedents**

As part of the submission of the Salem 2 second 10-year interval ISI program plan and associated relief requests, limitations relief requests RR-B1 and RR-C1 were submitted. In the Safety Evaluation of this submission, relief was granted for relief requests RR-B1, parts 2 through 11, and RR-C1, parts 1 through 4, for the Salem 2 second 10-year interval (Reference 1). Those components that relief was granted for are noted as such in Table 2-1 (“Relief Previously Granted” column).

Additionally similar relief requests were submitted for the first 10-year interval at Salem Unit 2 (Reference 2). Most of those welds listed in that submittal are the same as those for the second interval, with some additions. Those components for which relief was granted in the first interval are also noted in Table 2-1 (“Relief Previously Granted”

column). The examinations performed in the second interval achieved equivalent or better coverage or coverage in more examination directions compared to the first 10-year interval (second interval relief request submittal utilized first interval coverage).

The NRC also approved a similar request for the Salem Unit 1 second 10-year interval in Reference 3.

### **References**

1. "Evaluation of the Second Ten-Year Interval Inspection Program Plan and Associated Requests for Relief for Salem Generating Station, Unit 2 (TAC No. M83316)," dated October 23, 1995.
2. "Inservice Inspection – Long Term Plan, Final Relief Requests – First Interval, Salem Generating Station, Unit No. 2, Docket No. 50-311," dated September 28, 1992.
3. "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 2-1  
2nd Ten-Year Inservice Inspection Interval Class 2 Component NDE Exam Limitations

Sum#	Component ID	Description	2 <sup>ND</sup> Interval ASME Cat	2 <sup>nd</sup> Interval ASME Item #	ASME Class	System	Limited NDE Exam	Code Coverage Achieved	Exam Date	Photo/Sketch No.*	Required Examination Volume	Relief Previously Granted? **	UT Exam Type and Limitation Description
700000	8-CS-2227-5	VALVE 21CS2 TO PIPE	A-E	A-E<3/8	2	CS	UT	31%	5/8/99	338, 339, 340, 341, 342, 343	IWC-2500-7(b)		UT exam was conducted using a 45- and 70-degree shear wave transducer. The ultrasonic 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	C1.10	2	RHR	UT	79%	4/12/93	23, 24, 24A, 24B, 24C	IWC-2500-1	YES	UT exam was conducted using 0- and 45-degree shear wave transducers. 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.
275370	21-RHRHEX-2	SHELL TO FLANGE	C-A	C1.10	2	RHR	UT	20%	4/13/93	24B, 24C, 25, 25A, 26	IWC-2500-1	YES	UT exam was conducted using 0- and 45-degree shear wave transducers. 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	C1.10	2	RC	UT	61%	4/12/99	145A, 150, 151, 152, 153, 154	IWC-2500-1		UT exam was conducted using 45- and 70-degree shear wave transducers. 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	C1.10	2	CVC	UT	42%	10/14/00	177, 178, 179, 180, 181	IWC-2500-1	YES	UT exam was conducted using 45- and 60-degree shear and longitudinal wave transducers. 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 completed with no unacceptable indications observed. UT exam limited due to the configuration of the flange and nozzle.

\* These numbers refer to Enclosure 1, Pages 1 through 343. Page numbers are in boxes in the corners of the pages.

\*\* Relief was granted by the NRC in Reference 1 or was submitted in the Salem 2 first 10-year interval in Reference 2.

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

Sum#	Component ID	Description	2 <sup>ND</sup> Interval ASME Cat	2 <sup>nd</sup> Interval ASME Item #	ASME Class	System	Limited NDE Exam	Code Coverage Achieved	Exam Date	Photo/Sketch No.*	Required Examination Volume	Relief Previously Granted?*	UT Exam Type and Limitation Description
734111	2CVE-18-SWIJ-1	#21 SEAL WATER INJECTION FILTER FLANGE TO SHELL	C-A	C1.10	2	CVC	UT	61%	10/29/03	324, 325, 326, 327, 328, 329, 330	IWC-2500-1		UT exam was conducted using 70-degree refracted longitudinal wave, 0-degree longitudinal, and 45- and 60-degree shear wave transducers. The exam completed was limited to 61% code required coverage due to presence of permanently installed welded attachment and identification plate that interfere with scanning. Additionally the flange configuration on the upstream side of the weld prevented axial scanning on that side. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.
734112	2CVE-18-SWIJ-2	#21 SEAL WATER INJECTION FILTER SHELL TO LOWER HEAD	C-A	C1.20	2	CVC	UT	69%	10/29/03	331, 332, 333, 334, 335, 336, 337	IWC-2500-1		UT exam was conducted using 0-degree longitudinal and 45- and 60-degree shear wave transducers. The exam completed was limited to 69% code required coverage due to presence of permanently installed welded attachments and an inlet nozzle that interfere with scanning. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.
275030	2-CVCT-2	SHELL TO LOWER HEAD	C-A	C1.20	2	CVC	UT	71%	4/5/93	16, 17, 18, 18A	IWC-2500-1	YES	UT exam was conducted using 45-degree shear wave transducer. 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	C1.20	2	RC	UT	68%	4/14/99	145, 145A, 146, 147, 148, 149	IWC-2500-1	YES	UT exam was conducted using 45- and 70-degree 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.
275250	2-RCF-3	SHELL TO LOWER HEAD	C-A	C1.20	2	RC	UT	53%	4/12/99	145A, 155, 156, 157, 158, 159	IWC-2500-1		UT exam was conducted using 45- and 70-degree 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.

\* These numbers refer to Enclosure 1, Pages 1 through 343. Page numbers are in boxes in the corners of the pages.

\*\* Relief was granted by the NRC in Reference 1 or was submitted in the Salem 2 first 10-year interval in Reference 2.

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

Sum#	Component ID	Description	2 <sup>ND</sup> Interval ASME Cat	2 <sup>nd</sup> Interval ASME Item #	ASME Class	System	Limited NDE Exam	Code Coverage Achieved	Exam Date	Photo/Sketch No.*	Required Examination Volume	Relief Previously Granted?*	UT Exam Type and Limitation Description
715180	2-BIT-A	LOWER HEAD	C-A	C1.20	2	SJ	UT	85%	4/19/02	294, 295, 296, 297, 167A	IWC-2500-1		UT exam was conducted using 45- and 60-degree shear wave 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	C1.20	2	RC	UT	87%	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.
275310	2-RHE-2	SHELL TO TUBE SHEET	C-A	C1.30	2	RHR	UT	44%	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	C1.30	2	RHR	UT	33%	10/19/00	186, 187, 188, 189	IWC-2500-1		UT exam was conducted using 45-degree 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	C2.21	2	SJ	UT	31%	5/15/99	162, 163, 164, 165, 166, 167, 167A	IWC-2500-4(a)		UT exam was conducted using 0-, 45- and 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.

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

Sum#	Component ID	Description	2 <sup>ND</sup> Interval ASME Cat	2 <sup>nd</sup> Interval ASME Item #	ASME Class	System	Limited NDE Exam	Code Coverage Achieved	Exam Date	Photo/Sketch No.*	Required Examination Volume	Relief Previously Granted?*	UT Exam Type and Limitation Description
715160	2-BIT-2	NOZZLE TO UPPER HEAD	C-B	C2.21	2	SJ	UT	63%	4/24/02	167A, 167B, 167C, 167D, 167E, 167F, 167G	IWC-2500-4(b)		UT exam was conducted using 0-degree longitudinal and 45- and 60-degree shear wave transducers. The exam completed was limited to 63% code required coverage due to the nozzle to upper head weld configuration that interfered with scanning. No unacceptable indications were noted. An acceptable magnetic particle surface exam was also completed with no coverage limitations. A system pressure test was also completed with no unacceptable indications observed.
275400	21-RHRHEX-OUT	NOZZLE-TO-SHELL WELD	C-B	C2.21	2	RHR	UT	10%	10/16/00	190, 191, 192, 193, 194, 195	IWC-2500-4(b)	YES	UT exam was conducted using 60-degree refracted longitudinal wave and 45- and 60-degree 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	C2.21	2	RHR	UT	25%	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 transducers. 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	C3.10	2	CVC	PT	89%	4/5/93	18, 18A, 19	IWC-2500-5	YES	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.
275050	2-CVCT-2VS-3&4	VESSEL SUPPORT	C-C	C3.10	2	CVC	PT	89%	4/5/93	18, 18A, 20	IWC-2500-5	YES	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.

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

Sum#	Component ID	Description	2 <sup>ND</sup> Interval ASME Cat	2 <sup>nd</sup> Interval ASME Item #	ASME Class	System	Limited NDE Exam	Code Coverage Achieved	Exam Date	Photo/Sketch No.*	Required Examination Volume	Relief Previously Granted?*	UT Exam Type and Limitation Description
275060	2-CVCT-2VS-5&6	VESSEL SUPPORT	C-C	C3.10	2	CVC	PT	89%	4/5/93	18, 18A, 21	IWC-2500-5	YES	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	C3.10	2	CVC	PT	89%	4/5/93	18, 18A, 22	IWC-2500-5	YES	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.
275358	2-RHE-1VS-1&2	VESSEL SUPPORT	C-C	C3.10	2	RHR	PT	50%	10/22/03	307, 308	IWC-2500-5(a)	YES	PT exam was conducted of this component. The PT exam was limited to 50% because of weld #1 being partially inaccessible due to the permanently installed support's configuration. 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	C3.20	2	BF	MT	80%	4/12/93	28, 29, 29A, 29B, 29C	IWC-2500-5(a)	YES	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 permanent 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	C3.20	2	BF	MT	50%	10/31/94	64, 65, 65A, 65B, 65C, 65D	IWC-2500-5(a)	YES	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	C3.20	2	BF	MT	50%	10/31/94	66, 66A, 66B, 66C, 66D, 66E	IWC-2500-5(a)	YES	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.

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

Sum#	Component ID	Description	2 <sup>ND</sup> Interval ASME Cat	2 <sup>nd</sup> Interval ASME Item #	ASME Class	System	Limited NDE Exam	Code Coverage Achieved	Exam Date	Photo/Sketch No.*	Required Examination Volume	Relief Previously Granted?*	UT Exam Type and Limitation Description
381070	34-MS-2241-242PL	PIPE LUG 242	C-C	C3.20	2	MS	MT	71%	11/11/94	70, 70A, 70B, 70C, 70D	IWC-2500-5(a)	YES	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	C3.20	2	RHR	PT	71%	11/15/94	80, 80A, 80B, 80C, 80D, 80E	IWC-2500-5(a)	YES	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	C3.20	2	RHR	PT	71%	11/15/94	81, 81A, 81B, 81C, 81D	IWC-2500-5(a)	YES	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.
381120	32-MS-2231-1PS-2	WELDED INTEGRAL PIPE SUPPORT ATTACHMENT	C-C	C3.20	2	MS	MT	50%	1/17/96	102, 102A, 102B, 102C, 102D	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	C3.20	2	MS	MT	50%	1/19/96	110, 110A, 110B, 110C, 110D, 110E	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	C3.20	2	MS	MT	50%	1/19/96	114, 114A, 114B, 114C, 114D	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.

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

Sum#	Component ID	Description	2 <sup>ND</sup> Interval ASME Cat	2 <sup>nd</sup> Interval ASME Item #	ASME Class	System	Limited NDE Exam	Code Coverage Achieved	Exam Date	Photo/Sketch No.*	Required Examination Volume	Relief Previously Granted?*	UT Exam Type and Limitation Description
381350	32-MS-2211-2PL-1 THRU 3	PIPE LUG	C-C	C3.20	2	MS	MT	84%	1/16/96	115, 116, 117, 117A, 117B	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	C3.20	2	RHR	PT	33%	5/7/99	318, 319, 320, 321, 321A	IWC-2500-5(a)	YES	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	C3.20	2	BF	MT	79%	4/6/02	293, 293A, 293B, 293C, 293D, 293E, 293F, 293G	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.
500010	12-PR-2201-1	CAP TO PIPE	C-F-1	C5.11	2	RC	UT	78%	4/7/93	31, 31A, 32, 32A, 32B	IWC-2500-7(a)	YES	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	C-F-1	C5.11	2	RHR	UT	87%	11/9/94	72, 73, 74, 74A, 74B, 74C	IWC-2500-7(b)	YES	UT exam was conducted using a 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	C-F-1	C5.11	2	RHR	UT	75%	11/14/94	75, 76, 77, 77A, 77B	IWC-2500-7(b)	YES	UT exam was conducted using a 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 also completed with no unacceptable indications observed.

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

Sum#	Component ID	Description	2 <sup>ND</sup> Interval ASME Cat	2 <sup>nd</sup> Interval ASME Item #	ASME Class	System	Limited NDE Exam	Code Coverage Achieved	Exam Date	Photo/Sketch No.*	Required Examination Volume	Relief Previously Granted?*	UT Exam Type and Limitation Description
573380	12-RH-2252-38	PIPE TO PIPE	C-F-1	C5.11	2	RHR	UT	67%	11/15/94	78, 79, 79A, 79B, 79C	IWC-2500-7(b)	YES	UT exam was conducted using a 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 1 1/16" 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	C-F-1	C5.11	2	RHR	UT	22%	5/15/96	122, 123	IWC-2500-7(b)	YES	UT exam was conducted using a 45-degree shear wave transducer. The exam completed was limited to 22% code required coverage. No UT exam could be 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.
502580	8-RH-2273-18	VALVE 21RH12 TO TEE	C-F-1	C5.11	2	RHR	UT	51%	10/5/00	199, 200, 201	IWC-2500-7(b)		UT exam was conducted using 45- and 70-degree shear wave transducers. 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	C-F-1	C5.21	2	CVC	UT	86%	10/21/94	82, 83, 84	IWC-2500-7(b)	YES	UT exam was conducted using a 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	C-F-1	C5.21	2	CVC	UT	80%	10/21/94	322, 322A, 323	IWC-2500-7(b)	YES	UT exam was conducted using a 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 observed.

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

Sum#	Component ID	Description	2 <sup>ND</sup> Interval ASME Cat	2 <sup>nd</sup> Interval ASME Item #	ASME Class	System	Limited NDE Exam	Code Coverage Achieved	Exam Date	Photo/Sketch No.*	Required Examination Volume	Relief Previously Granted? **	UT Exam Type and Limitation Description
710140	3-CV-2255-9	VALVE 2CV70 TO PIPE	C-F-1	C5.21	2	CVC	UT	31%	5/23/99	160, 161, 161A, 161B	IWC-2500-7(b)		UT exam was conducted using 45-, 60- and 70-degree shear wave transducers. 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	C-F-1	C5.21	2	CVC	UT	38%	10/20/00	205, 208	IWC-2500-7(b)		UT exam was conducted using a 45-degree shear and a 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	C-F-1	C5.21	2	CVC	UT	39%	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.
709960	3-CV-2256-6	PIPE TO VALVE 2CV73	C-F-1	C5.21	2	CVC	UT	50%	10/18/00	161B, 209, 210, 211, 212	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	C-F-1	C5.21	2	CVC	UT	50%	10/18/00	161B, 213, 214, 214A, 214B	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.

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

Sum#	Component ID	Description	2 <sup>ND</sup> Interval ASME Cat	2 <sup>nd</sup> Interval ASME Item #	ASME Class	System	Limited NDE Exam	Code Coverage Achieved	Exam Date	Photo/Sketch No.*	Required Examination Volume	Relief Previously Granted?*	UT Exam Type and Limitation Description
330930	14-BF-2211-2	PIPE TO ELBOW	C-F-2	C5.51	2	BF	UT	84%	4/2/93	27, 27A, 27B, 27C, 27D, 27E, 27F	IWC-2500-7	YES	UT exam was conducted 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.
382140	30-MS-2211-9	PIPE TO ELBOW	C-F-2	C5.51	2	MS	UT	90%	4/13/93	30, 30A, 30B, 30C	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-2241-2	PIPE TO VALVE 24MS167	C-F-2	C5.51	2	MS	UT	85%	11/11/94	67, 67A, 68, 68A, 68B, 68C, 68D, 69	IWC-2500-7(b)	YES	UT exam was conducted using 45- and 32-degree 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	C-F-2	C5.51	2	MS	UT	73%	11/17/94	71, 71A, 71B, 71C	IWC-2500-7(b)		UT exam was conducted using a 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.
381055	32-MS-2241-3	ELBOW TO PIPE	C-F-2	C5.51	2	MS	UT	85%	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.

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

Sum#	Component ID	Description	2 <sup>ND</sup> Interval ASME Cat	2 <sup>nd</sup> Interval ASME Item #	ASME Class	System	Limited NDE Exam	Code Coverage Achieved	Exam Date	Photo/Sketch No.*	Required Examination Volume	Relief Previously Granted?*	UT Exam Type and Limitation Description
381155	32-MS-2231-3	ELBOW TO PIPE	C-F-2	C5.51	2	MS	UT	87%	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	C-F-2	C5.51	2	MS	UT	40%	1/24/96	107, 108, 109	IWC-2500-7(b)		UT exam was conducted using a 45- and 60-degree shear wave transducer. 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.
381260	32-MS-2221-3	ELBOW TO PIPE	C-F-2	C5.51	2	MS	UT	87%	1/20/96	111, 112, 113	IWC-2500-7(b)		UT exam was conducted using 0-degree 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	C-F-2	C5.51	2	MS	UT	82%	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 could 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	C-F-2	C5.51	2	MS	UT	51%	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 were noted. A magnetic particle test and system pressure test was also completed with no unacceptable indications observed.

\* These numbers refer to Enclosure 1, Pages 1 through 343. Page numbers are in boxes in the corners of the pages.

\*\* Relief was granted by the NRC in Reference 1 or was submitted in the Salem 2 first 10-year interval in Reference 2.



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

Sum#	Component ID	Description	2 <sup>ND</sup> Interval ASME Cat	2 <sup>nd</sup> Interval ASME Item #	ASME Class	System	Limited NDE Exam	Code Coverage Achieved	Exam Date	Photo/Sketch No.*	Required Examination Volume	Relief Previously Granted? **	UT Exam Type and Limitation Description
384320	6-MS-2246-3	PIPE TO VALVE 24MS9	C-F-2	C5.51	2	MS	UT	79%	10/17/00	196, 197, 198	IWC-2500-7(b)		UT exam was conducted using a 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 numbers refer to Enclosure 1, Pages 1 through 343. Page numbers are in boxes in the corners of the pages.  
 \*\* Relief was granted by the NRC in Reference 1 or was submitted in the Salem 2 first 10-year interval in Reference 2.

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION  
REQUESTS FOR RELIEF REGARDING EXAMINATION COVERAGE  
SECOND TEN-YEAR INSERVICE INSPECTION INTERVAL  
SALEM NUCLEAR GENERATING STATION, UNIT NO. 2  
DOCKET NO. 50-311

On March 21, 2006, PSEG Nuclear LLC (PSEG), the licensee for the Salem Nuclear Generating Station (Salem), Unit No. 2, requested relief from certain requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code), Section XI, for the inservice inspection (ISI) of Class 1 and Class 2 components. PSEG stated that it had conducted examinations as part of the Second Ten-Year Interval ISI Program to the extent practical; however, coverage for certain weld examinations was less than required by the Code. The Nuclear Regulatory Commission (NRC) staff has determined that responses to the following questions are necessary in order for the staff to complete its review:

Questions on Relief Request S2-I2-RR-B01:

1.1 Request for Relief S2-I2-RR-B01, Part B, Examination Category B-B, Pressure Retaining Welds in Vessels Other than Reactor Vessels

1.1(a) For weld 2-PZR-CIRC DUH, the information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support the determination that the inspection of this weld is limited and impractical.

**RESPONSE**

Enclosure 1 provides additional information for weld 2-PZR-CIRC DUH, including the following attributes:

1. Weld cross-section
2. Material (SS or CS – to determine inspection requirement differences)
3. Thickness / weld crown
4. Obstruction(s) identified on a diagram
5. Exam area shown (highlighted) on a diagram
6. Transducer ray exit point

The Enclosure 1 page numbers for this additional information have been added to the 2-PZR-CIRC DUH component entry in Table 1-1 of Attachment 1.

1.2 Request for Relief S2-I2-RR-B01, Part C, Examination Category B-D, Full Penetration Welds of Nozzles in Vessels

1.2(a) For certain nozzle welds, information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers shown below.

31-STG-1220-IRS 29-STG-1230-IRS 29-STG-1240-IRS  
 29-STG-1220-IRS 31-STG-1240-IRS 29-STG-12R10-IRS  
 31-STG-1230-IRS 31-STG-12R10-IRS

## **RESPONSE**

Enclosure 1 provides additional information for the above welds, including the following attributes:

1. Weld cross-section
2. Material (SS or CS – to determine inspection requirement differences)
3. Thickness / weld crown
4. Obstruction(s) identified on a diagram
5. Exam area shown (highlighted) on a diagram
6. Transducer ray exit point

Note that the 'R' in weld numbers 29-STG-12R10-IRS and 31-STG-12R10-IRS is a typographical error and the weld numbers in Attachment 1 and Enclosure 1 are correct (29-STG-1210-IRS and 31-STG-1210-IRS). The Enclosure 1 page numbers for this additional information have been added to the applicable component entries in Table 1-1 of Attachment 1.

- 1.2(b) From the licensee's submittal, it appears that all welds considered in Category B-D underwent a pressure test, with the exception of 29-RCN-12R10 and 29-RCN-1230. Please clarify whether a pressure test was performed on these welds, and the results of the pressure test.

## **RESPONSE**

Like welds 29-RCN-1220 and 29-RCN-1240, welds 29-RCN-1210 and 29-RCN-1230 did receive a pressure test and the results were satisfactory. Component ID 29-RCN- was corrected in Attachment 1 Table 1-1 to be 29-RCN-1210.

- 1.3 Request for Relief S2-I2-RR-B01, Part D, Examination Category B-J and B-F, Pressure Retaining Welds in Piping and Pressure Retaining Dissimilar Metal Welds in Vessel Nozzles

- 1.3(a) In the licensee's submittal, Table 1 of Relief Request S2-I2-RR-B01 contains a listing of multiple limited examinations for Class 1 piping and nozzle welds that have occurred during the second 10-year interval. The table lists ASME Code examination categories for each piping and nozzle weld prior to (B-F and B-J), and after (R-A), implementation of a risk-informed inservice inspection (RI-ISI) program. It is unclear whether the piping and nozzle weld examinations were performed under a conventional ASME Code program, or under the new RI-ISI program.

It is important to understand which program was used to examine each piping weld because: a) under a conventional ASME Code Section XI program, which requires a substantial population of applicable Category B-F and B-J welds to be

examined, requests for relief for limited examinations based on impracticality may be submitted per Title 10 of the *Code of Federal Regulations* (10 CFR), Paragraph 50.55a(g)(5)(iii), whereas, b) under a RI-ISI program, which is an existing alternative to ASME Code requirements approved by the NRC for Salem Unit No. 2, there is no method for evaluating a request for relief under 10 CFR 50.55a(g)(5)(iii).

## **RESPONSE**

All examinations noting limitations in the relief request submittal were performed to ASME Section XI, B-F and B-J requirements. Some risk-informed examinations were performed in the last outage of the second 10-year interval, however there were no limitations in those examinations. As the current risk-informed classification of these components does not apply to the examinations for which relief is requested, these columns were removed from Table 1-1.

1.3(b) According to Table 1, Examination Category B-F and B-J, the post ISI ASME item numbers are listed as R1.19-2, R1.20-4, or R1.20-6. According to Code Case N-577 or N-578, as applicable, for implementation of RI-ISI programs at Salem Unit No. 2, these item numbers do not appear in Table 1, Examination Category R-A. Please provide the correct designations.

## **RESPONSE**

As part of Salem's Service Experience and Susceptibility Review for the initial application of the EPRI risk-informed methodology, Salem assigned the degradation mechanism of External Chloride Stress Corrosion Cracking (ECSCC) to some components at both units. Code Case N-578 does not have an item number for ECSCC but N-578-1, Table 1, has the additional item numbers of R1.19 for ECSCC and R1.20 for items with no degradation mechanism applicable to them. These are the item numbers referred to in item 1.3(b). The examinations were established using the EPRI report TR-112657 Rev B-A methodology.

As the current risk-informed classification of these components does not apply to the examinations for which relief is requested, these columns were removed from Table 1-1 and 2-1.

1.3(c) For certain piping welds, information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers listed below.

### ***Examination Category B-F***

6-PR-1205-1	29-RC-1210-5	31-RC-1220-1
6-PR-1203-1	31-RC-1240-1	31-RC-1210-1
4-PR-1200-1	31-RC-1230-1	

**Examination Category B-J**

10-SJ-1221-21	31-RC-1220-4	31-RC-1220-4LU-I	2-CV-1275-44
8-SJ-1262-10	4-PS-1231-20	31-RC-1220-4LU-O	
8-SJ-1245-1	27.5-RC-1230-1	3-CV-1231-14	
8-SJ-1241-18	6-RH-1231-16	2-CV-1275-43	

**RESPONSE**

Enclosure 1 provides additional information for the above welds, including the following attributes:

1. Weld cross-section
2. Material (SS or CS – to determine inspection requirement differences)
3. Thickness / weld crown
4. Obstruction(s) identified on a diagram
5. Exam area shown (highlighted) on a diagram
6. Transducer ray exit point

The Enclosure 1 page numbers for this additional information have been added to the applicable component entries in Table 1-1 of Attachment 1.

1.4 Request for Relief Part E, Examination Category B-G-1, Pressure Retaining Bolting, Greater than 2 Inches in Diameter.

- 1.4(a) Relief is being requested for certain examination requirements for Examination Category B-G-1, "Pressure Retaining Bolting Greater than 2 Inches in Diameter." However, there are no B-G-1 items listed in Table 1. Please add the appropriate Category B-G-1 items to Table 1, and include sufficient information to demonstrate impracticality, or revise the request appropriately.

**RESPONSE**

There were no limitations for B-G-1 component examinations for the second interval for Salem Unit 2. The relief request was revised to remove reference to this category.

**Questions on Relief Request S2-I2-RR-C01:**

2.1 Request of Relief S2-I2-RR-C01, Part C, Examination Category C-F-1 and C-F-2, Pressure Retaining Piping Welds

- 2.1(a) In the licensee's submittal, Table 1 of Relief Request S2-I2-RR-C01 contains a listing of multiple limited examinations for Class 2 piping welds that have occurred during the second 10-year interval. The table lists ASME Code examination categories for each piping weld prior to (C-F-1 and C-F-2), and after (R-A), implementation of an RI-ISI program. It is unclear whether the piping weld examinations were performed under a conventional ASME Code program, or under the new RI-ISI program.

It is important to understand which type of program each piping weld examination was performed under, because: a) under a conventional ASME Code Section XI program, which requires a substantial population of applicable Category C-F-1 and C-F-2 welds to be examined, requests for relief for limited examinations based on impracticality may be submitted per 10 CFR 50.55a(g)(5)(iii), whereas, b) under a RI-ISI program, which is an existing alternative to ASME Code requirements approved by the NRC for Salem Unit No. 2, there is no method for evaluating a request for relief under 10 CFR 50.55a(g)(5)(iii).

## **RESPONSE**

All examinations noting limitations in the relief request submittal were performed to ASME Section XI, C-F-1 and C-F-2 requirements. As the current risk-informed classification of these components does not apply to the examinations for which relief is requested, these columns were removed from Table 2-1.

2.1(b) For the component identified as 8-CS-2227-5, a valve-to-pipe weld, the licensee has listed this as ASME Examination Category C-F-1, Item A-E<3/8. This item number does not correspond with Table IWC-2500-1 in the 1986 Edition of the ASME Code. Please confirm that this weld is required to be examined by requirements of ASME Code, Table IWC-2500-1, Examination Category C-F-1. If so, please list the correct item designation for this weld.

## **RESPONSE**

This weld is not required to be examined by the requirements of ASME Code, Table IWC-2500-1, Examination Category C-F-1 as the wall thickness of the piping is less than 3/8-inch (Item C5.11 is for welds greater than or equal to 3/8-inch). Therefore there is no applicable item number for this weld. As part of the second 10-year interval inservice inspection plan, as detailed in Reference 1, PSEG committed to the NRC to perform augmented volumetric examinations of a 7 1/2% sample of Class 2 welds in the containment spray system that are otherwise not selected based on wall thickness (i.e. less than 0.375 inches wall thickness). This weld is part of the augmented examination population and therefore included in the submittal.

2.1(c) For certain piping welds, information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by the licensee identification numbers below.

8-CS-2227-5	12-PR-2201-1	14-RH-2212-1	14-RH-2224-1
12-RH-2252-38	3-CV-2255-9	3-CV-2256-6	3-CV-2255-12
14-BF-2211-2	30-MS-2211-9	34-MS-2241-3	6-MS-2211-13

## **RESPONSE**

Enclosure 1 provides additional information for the above welds, including the following attributes:

1. Weld cross-section
2. Material (SS or CS – to determine inspection requirement differences)
3. Thickness / weld crown
4. Obstruction(s) identified on a diagram
5. Exam area shown (highlighted) on a diagram
6. Transducer ray exit point

The Enclosure 1 page numbers for this additional information have been added to the applicable component entries in Table 2-1 of Attachment 2.

**2.2 Request for Relief Part D, Examination Category C-C, Integral Attachments for Vessels, Piping, Pumps and Valves**

2.2(a) For certain component attachment and support welds, information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by the licensee identification numbers below.

14-BF-2211-Trunnions 11PL-11 & 11-PI-12	14-BF-2231-17PS
14-BF-2231-18PS	34-MS-2241-242PL
12-RH-2252-38PS-1&2	12-RH-2252-38PS-3
32-MS-2231-1PS-2	32-MS-2221-1PS-2
32-MS-2211-1PS-2	32-MS-2211-2PL-1 thru 3
12-RH-2252-5PL-1 thru 6	14-BF-2221-3PL-1 thru 8

**RESPONSE**

Enclosure 1 provides additional information for the above welds, including the following attributes:

1. Weld cross-section
2. Material (SS or CS – to determine inspection requirement differences)
3. Thickness / weld crown
4. Obstruction(s) identified on a diagram
5. Exam area shown (highlighted) on a diagram
6. Transducer ray exit point

The Enclosure 1 page numbers for this additional information have been added to the applicable component entries in Table 1 of Attachment 2.

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	24C	48	70A	85	115	149
2	25	49	70B	86	116	150
3	25A	50	70C	87	117	151
3A	26	50A	70D	88	117A	152
3B	27	50B	71	89	117B	153
3C	27A	50C	71A	89A	118	153A
4	27B	51	71B	89B	119	154
4A	27C	52	71C	90	120	155
4B	27D	53	72	91	121	156
4C	27E	54	73	92	122	157
4D	27F	55	74	93	123	158
5	28	56	74A	99	124	159
6	29	57	74B	100	125	160
6A	29A	58	74C	101	126	161
6B	29B	59	75	102	127	161A
6C	29C	60	76	102A	128	161B
7	30	61	77	102B	129	162
7A	30A	62	77A	102C	130	163
7B	30B	63	77B	102D	131	164
7C	30C	64	78	103	131A	165
8	31	65	79	103A	131B	166
9	31A	65A	79A	105	131C	167
10	32	65B	79B	106	132	167A
11	32A	65C	79C	107	133	167B
12	32B	65D	80	108	134	167C
13	33	66	80A	109	135	167D
14	34	66A	80B	110	136	167E
15	35	66B	80C	110A	137	167F
16	36	66C	80D	110B	138	167G
17	37	66D	80E	110C	139	168
18	38	66E	81	110D	140	169
18A	39	67	81A	110E	141	170
19	40	67A	81B	111	142	171
20	41	68	81C	112	143	172
21	42	68A	81D	113	144	172A
22	43	68B	82	114	145	172B
23	44	68C	83	114A	145A	172C
24	45	68D	84	114B	146	173
24A	46	69	84A	114C	147	174
24B	47	70	84B	114D	148	174A



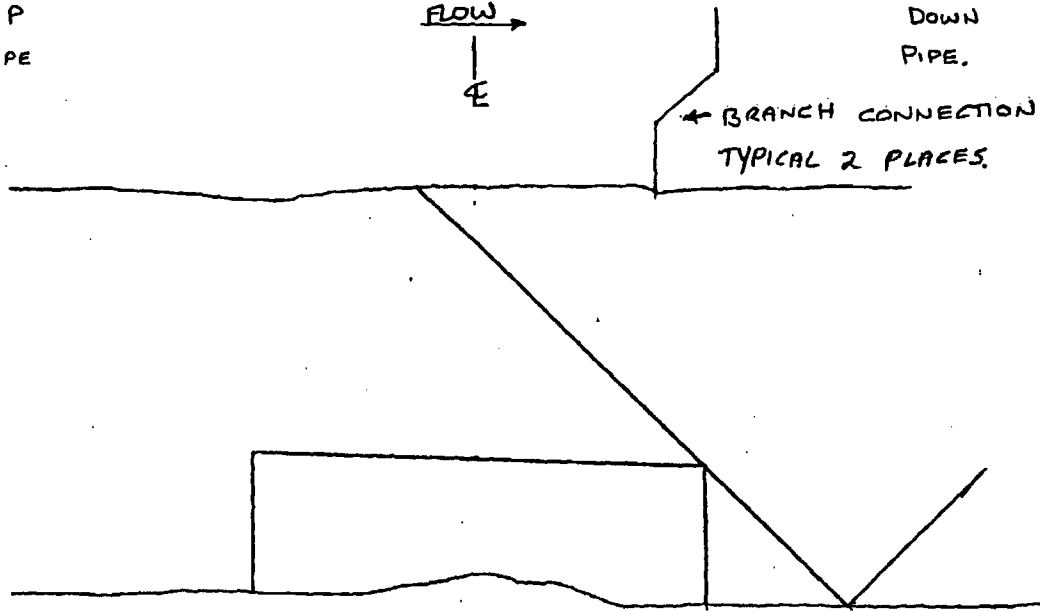
174B	214	262	293A	313B	316J
174C	214A	262A	293B	313C	317
174D	214B	263	293C	313D	317A
175	215	264	293D	313E	317B
176	215A	265	293E	313F	318
176A	215B	266	293F	313G	319
177	216	266A	293G	313H	320
178	217	266B	294	313-I	321
179	218	267	295	313J	321A
180	219	268	296	313K	322
181	220	269	297	313L	322A
182	221	270	298	313M	323
183	222	270A	298A	313N	324
184	223	270B	298B	313-O	325
185	224	270C	298C	313P	326
186	225	270D	298D	313Q	327
187	226	270E	299	313R	328
188	227	270F	300	313S	329
189	227A	270G	301	313T	330
190	227B	271	302	313U	331
191	227C	271A	302A	313V	332
192	228	271B	302B	313W	333
193	229	272	302C	313X	334
194	230	273	303	314	335
195	231	274	304	314A	336
196	232	275	304A	314B	337
197	233	276	304B	314C	338
198	234	277	304C	314D	339
199	235	278	304D	314E	340
200	236	279	305	315	341
201	237	280	306	315A	342
202	238	281	306A	315B	343
203	239	283	306B	315C	
204	240	284	307	315D	
205	240A	285	308	315E	
206	241	286	309	315F	
206A	242	286A	310	316	
206B	243	286B	310A	316A	
206C	244	286C	310B	316B	
207	255	287	310C	316C	
208	256	288	310D	316D	
209	257	289	310E	316E	
210	258	290	311	316F	
211	259	291	312	316G	
212	260	292	313	316H	
213	261	293	313A	316-I	

UP  
PIPE

FLOW  
→  
↓  
E

DOWN  
PIPE.

← BRANCH CONNECTION  
TYPICAL 2 PLACES.



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	SA
DATE	4/12/93

**OPSEG**  
INSPECTION SERVICES  
Reviewed and Approved  
4/17/93  
N.O.E. SUPERVISOR



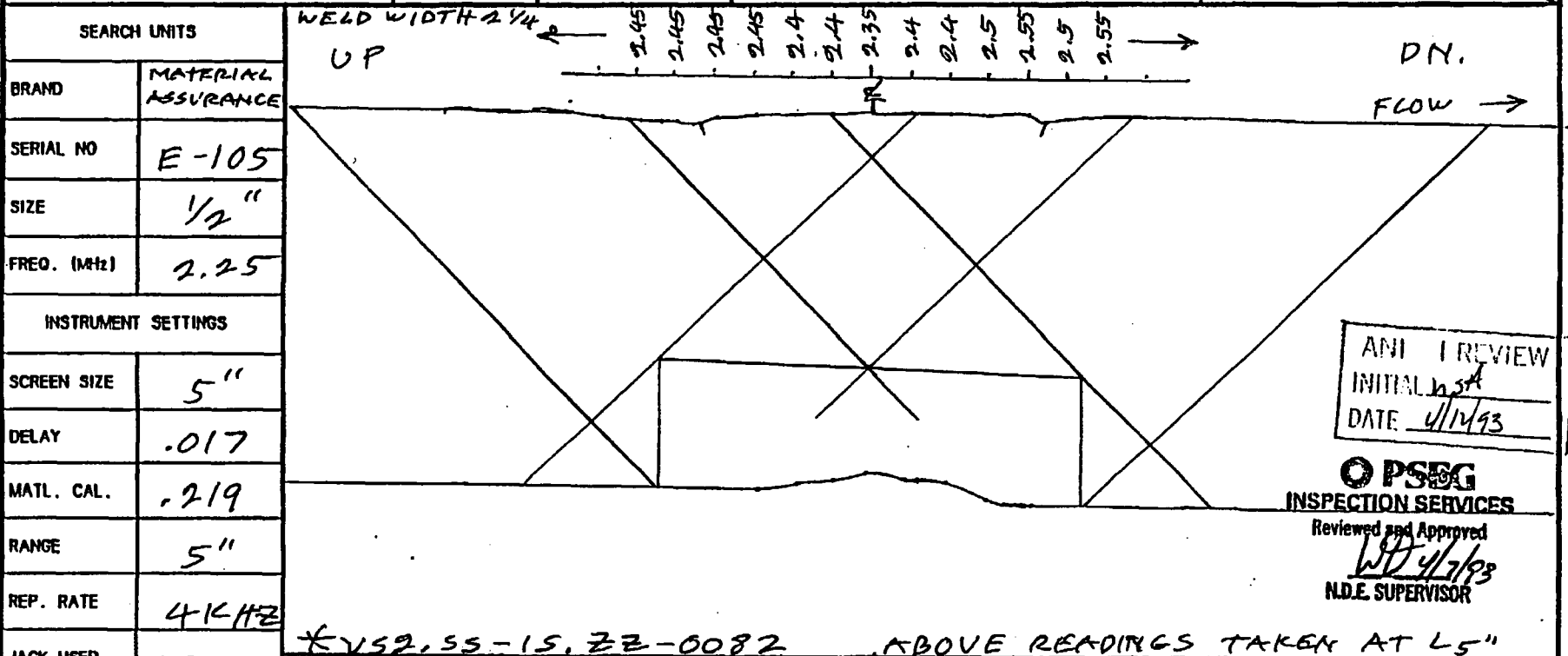


# SWRI PROFILE AND THICKNESS INFORMATION RECORD

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

EXAMINER: K. KURTZ      SNT LEVEL: II      THK. MEAS. REQ'D BY PROCEDURE: No. SAM 2 UT-3      INSTRUMENT: SONIC MARK I  OTHER: 136       SERIAL NO: 857K      COMPONENT ID: 29-RC-1230-3

EXAMINER: F. BRAUN      SNT LEVEL: IT      REV: 2      CHO: 0      ICN:  H7A      COUPLANT: ULTRAGEL      Glycerine  WATER       OTHER (SPECIFY): BATCH NO. 9092      REFERENCE BLK NO: 37 SAM



ANI I REVIEW  
INITIAL: hst  
DATE: 4/14/93

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

JACK USED: XMT      TRANS MODE: N/A      \*VS2.55-15.22-0082      ABOVE READINGS TAKEN AT L5"      45° Search Unit chosen for coverage using 2/8, 3/8, 5/8, 7/8 nodes.      NAME: VICTOR MORTON      SNT LEVEL: III

REVIEWED BY: Vic [Signature]      SNT LEVEL: III      DATE: 6 APR 93

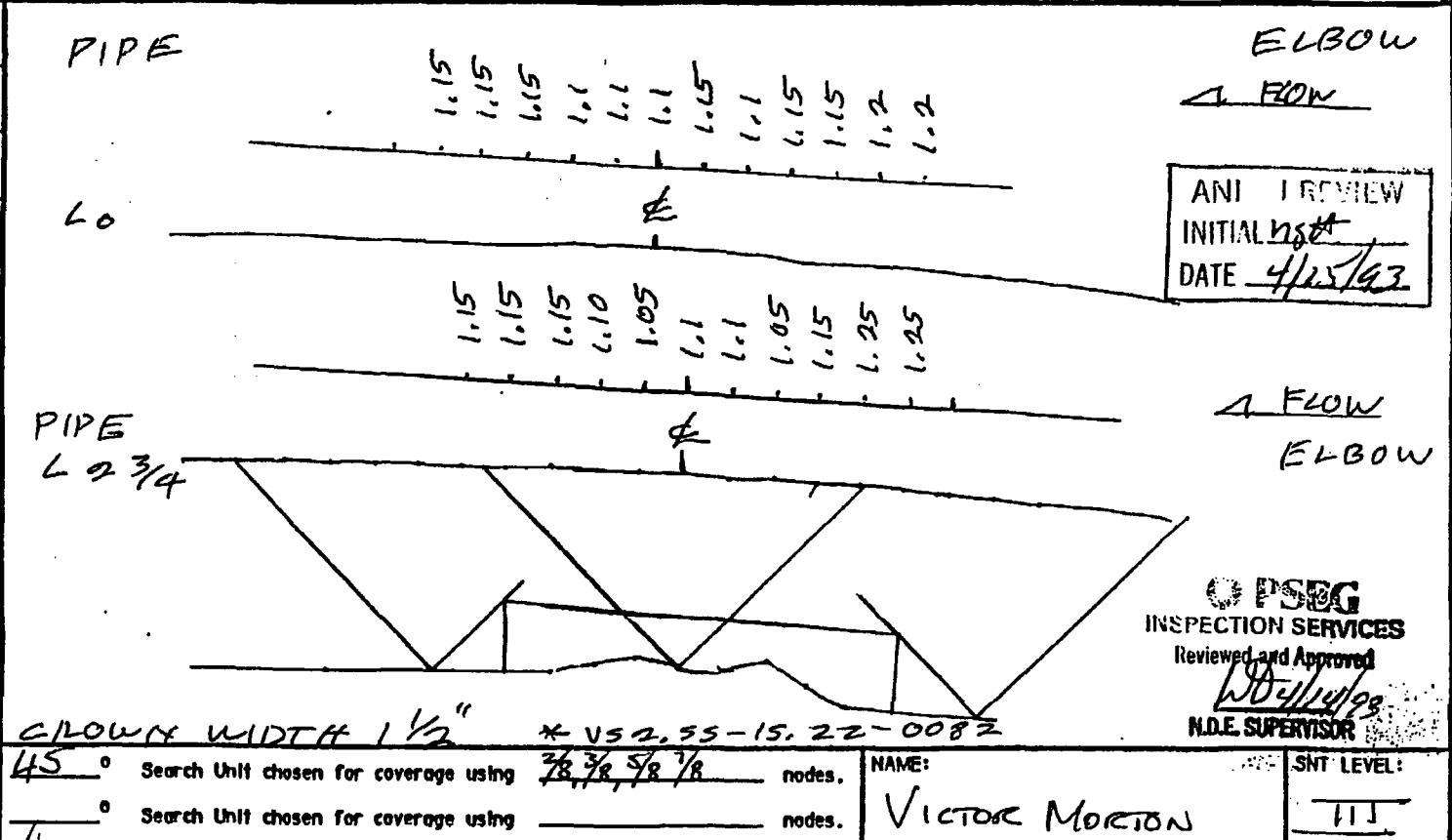
# SWRI PROFILE AND THICKNESS INFORMATION RECORD

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

EXAMINER: K. KURTZ      SNT LEVEL: II      THK. MEAS. REQ'D BY PROCEDURE:  No. SAC72 UT3      INSTRUMENT: SONIC MARK I  OTHER 136       SERIAL NO: 857K      COMPONENT ID: 10 SJ 1221-21

EXAMINER: F. BRAUN      SNT LEVEL: IT      REV: 2      CHG: 0      ICN:  N/A      COUPLANT: GLYCERINE  WATER  OTHER (SPECIFY) ULTRAGEL - BATCH 9092      REFERENCE BLK NO: 59113

SEARCH UNITS	
BRAND	SWRI
SERIAL NO	4024
SIZE	1/4
FREQ. (MHz)	2.25
INSTRUMENT SETTINGS	
SCREEN SIZE	2.5
DELAY	.058
MATL. CAL.	.27C
RANGE	2.5
REP. RATE	4K
JACK USED	XMT
TRANS MODE	1/A



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

**REQUEST FOR ADDITIONAL INFORMATION**  
**REQUEST FOR RELIEF REGARDING EXAMINATION COVERAGE**  
**SECOND TEN-YEAR IN-SERVICE INSPECTION INTERVAL**  
**SALEM NUCLEAR GENERATING STATION, UNIT NO. 2**  
**DOCKET NO. 50-311**

**QUESTION**      1.3 (c)    For certain piping welds, Information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers listed below.

Summary #      164000

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Component I.D.    10-SJ-1221-21

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Description      Elbow to Pipe

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		Comments
1	Weld X-Section	See Attached
2	Material	Stainless Steel
3	Thickness / weld Crown	Thickness 1.1" / Weld Crown 1.5"
4	Obstruction	Intrados of Elbow
5	Exam Area Highlighted on Drawing	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> X
6	Transducer ray exit point	See Attached

**Comments**

UT exam was performed of this component using 45 degree shear wave transducer. The ultrasonic examination completed was partially limited to 83% of the code required coverage being limited from 13" to 21" on the 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.

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Supplemental Drawing

Summary # 164000

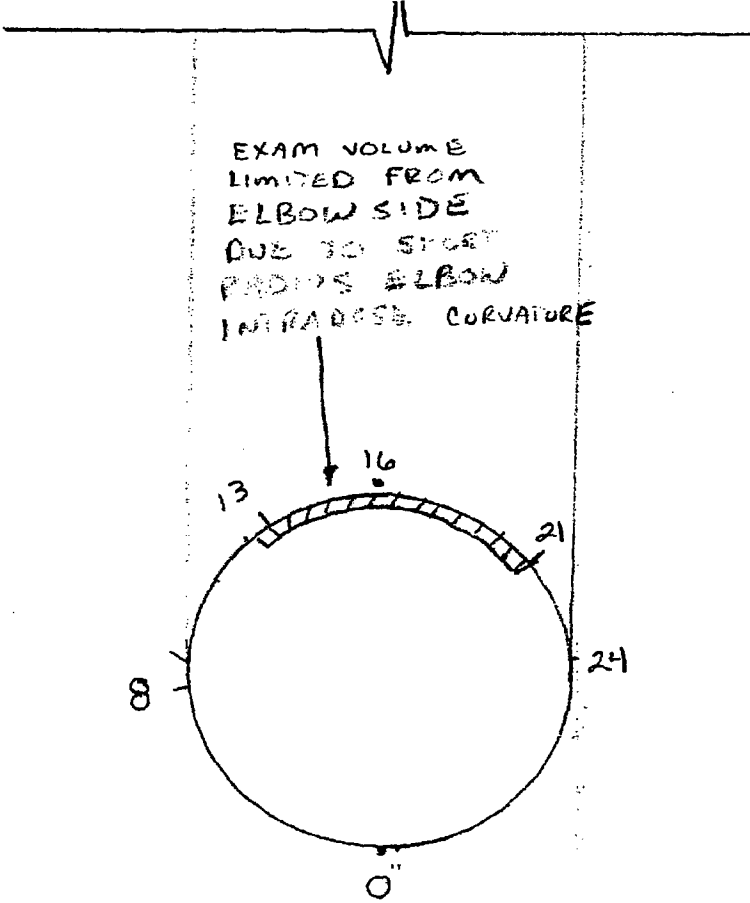
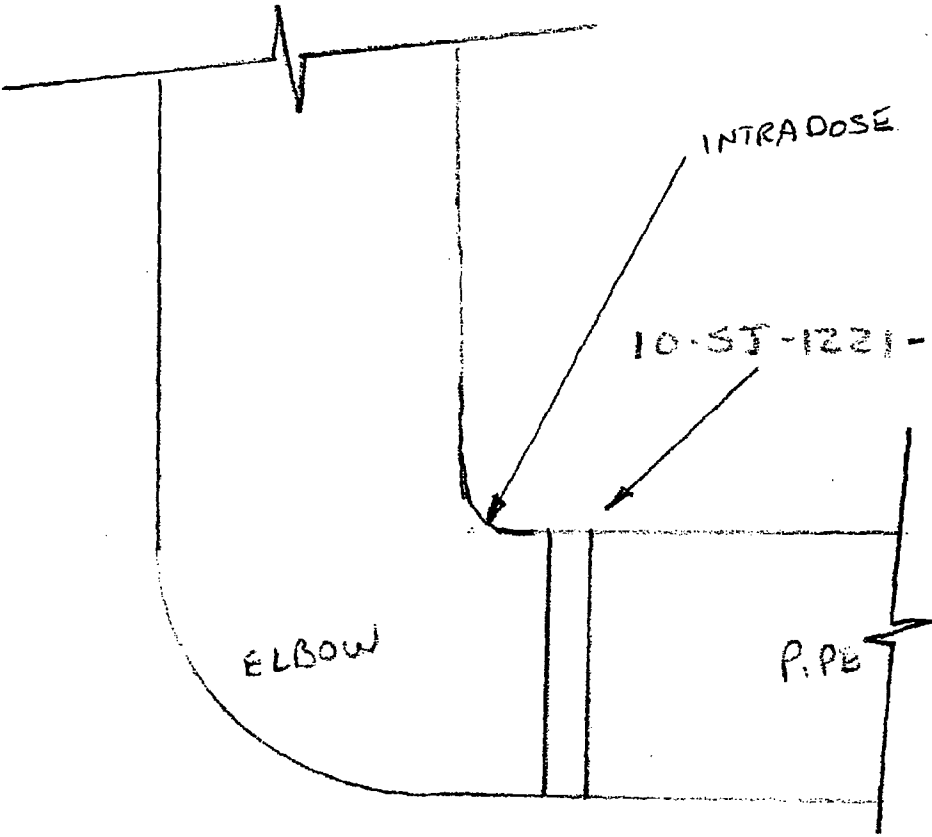
Component I.D. 10-SJ-1221-21

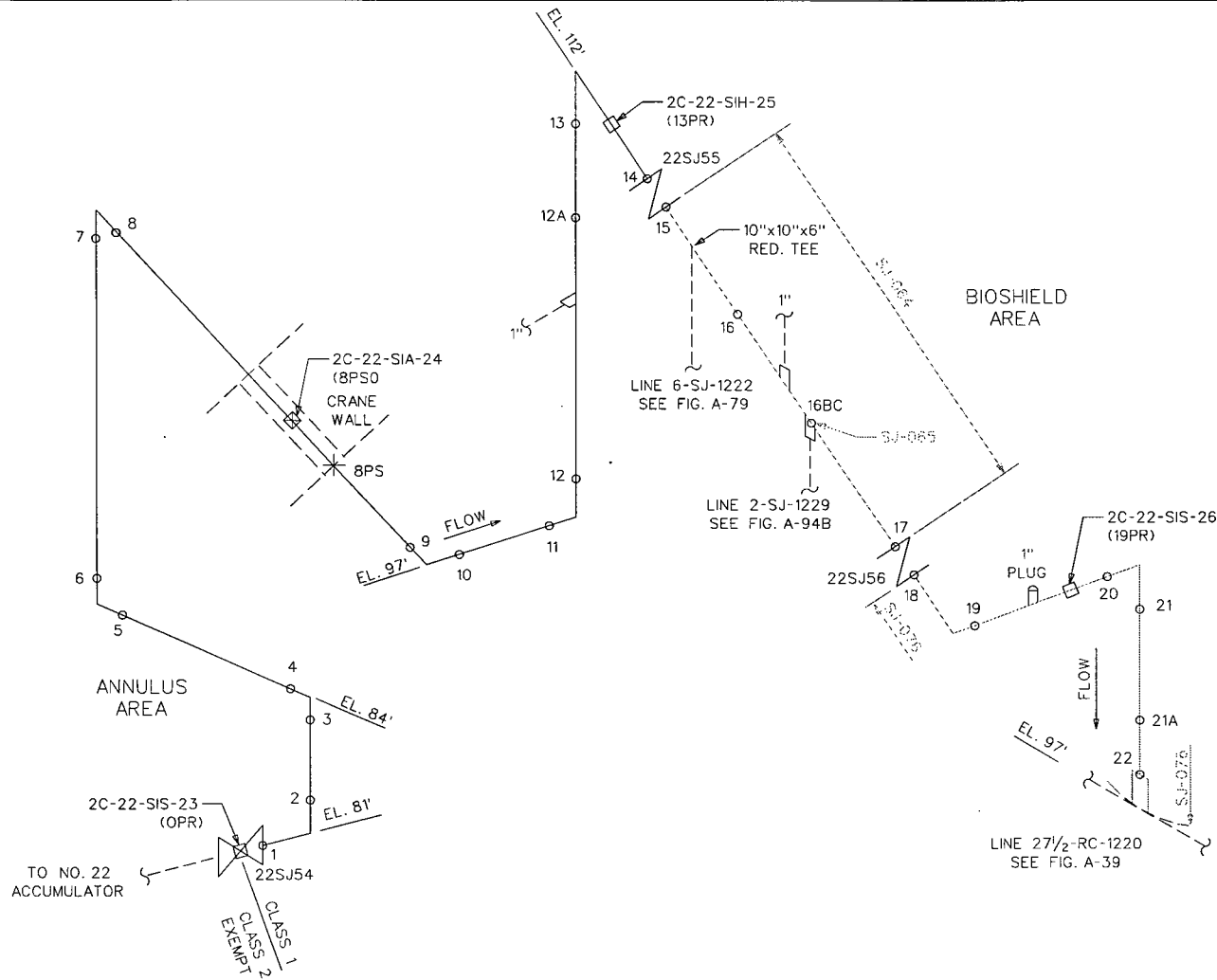
Description Elbow to Pipe

Page of

Comments Exam volume limited from elbow side due to short radius elbow intradose curvature.

Sketch





BUILDING: CONTAINMENT	LOCATION: BIOSHIELD ANNULUS	ELEVATIONS: 81' - 1122'
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PSEG ISO RH23-03  
P & ID 205301, 205334

ATTENTION: ANY REVISION TO THIS DRAWING SHALL BE MADE ONLY BY CAED		
1		REVISED PER ORDER No. 80038023.
REV.	DATE	DESCRIPTION

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

FIGURE: A-65	REVISION: 1
SYSTEM: SAFETY INJECTION SYSTEM ACCUMULATOR DISCHARGE	
LINE: 10-SJ-1221	
THIRD 10 YEAR INSPECTION INTERVAL	

LV 1 = COMMON INFORMATION  
LV 2 = WELD INFORMATION  
LV 3 = HANGER INFORMATION

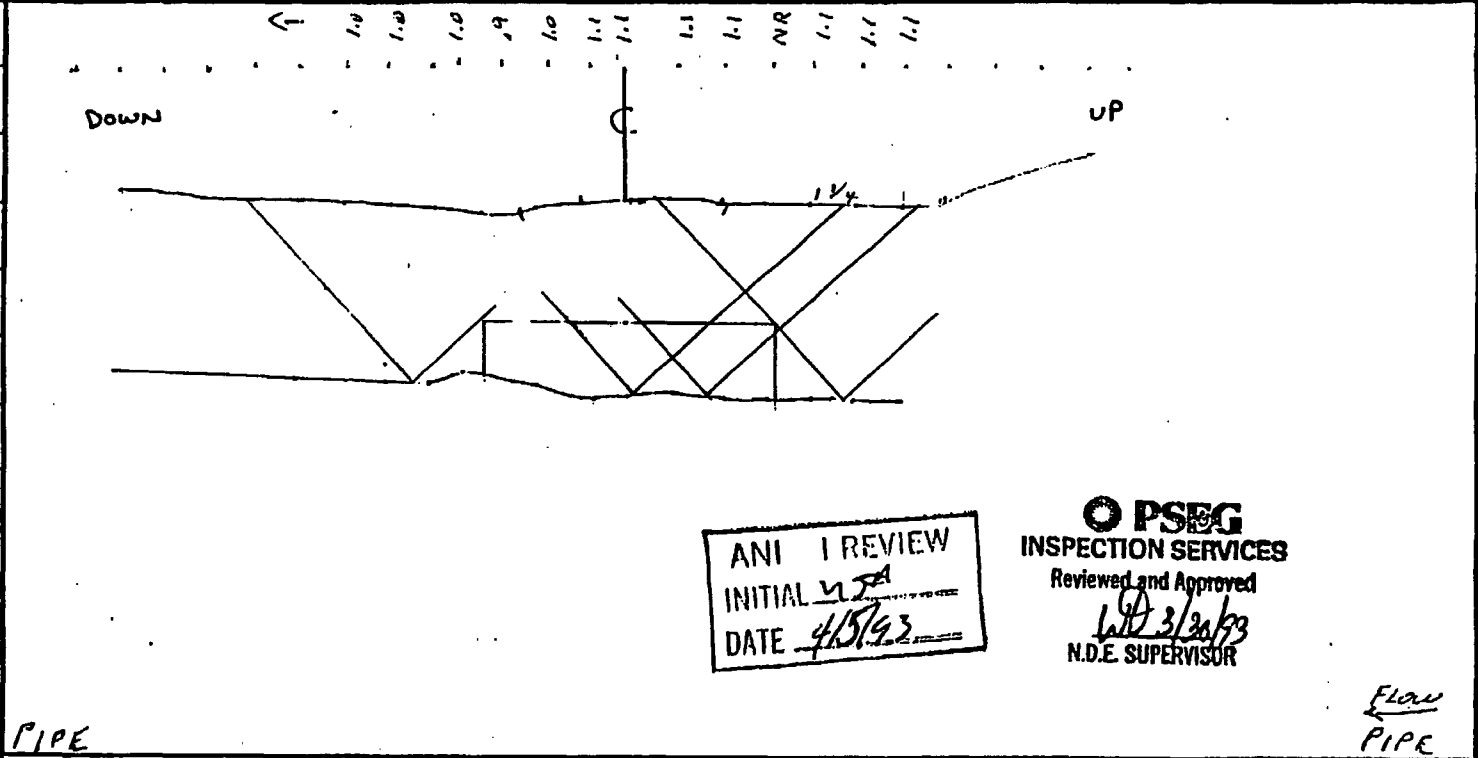


# SWRI PROFILE AND THICKNESS INFORMATION RECORD

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

EXAMINER <u>W. HAWKINS</u>	SNT LEVEL <u>II</u>	THK. MEAS. REQ'D BY PROCEDURE No. <u>5AM2-U13</u>	INSTRUMENT: SONIC MARK I <input type="checkbox"/> OTHER <u>136</u> <input checked="" type="checkbox"/>	SERIAL NO: <u>860K</u>	COMPONENT ID: <u>855-1262-10</u>
EXAMINER <u>W. BYLER</u>	SNT LEVEL <u>II</u>	REV <u>2</u> CHG <u>0</u> ICN <input checked="" type="checkbox"/> N/A	COUPLANT: GLYCERINE <input checked="" type="checkbox"/> WATER <input type="checkbox"/> OTHER (SPECIFY) _____		REFERENCE BLK NO: <u>55 113</u>

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



ANI I REVIEW  
INITIAL VM  
DATE 4/5/93

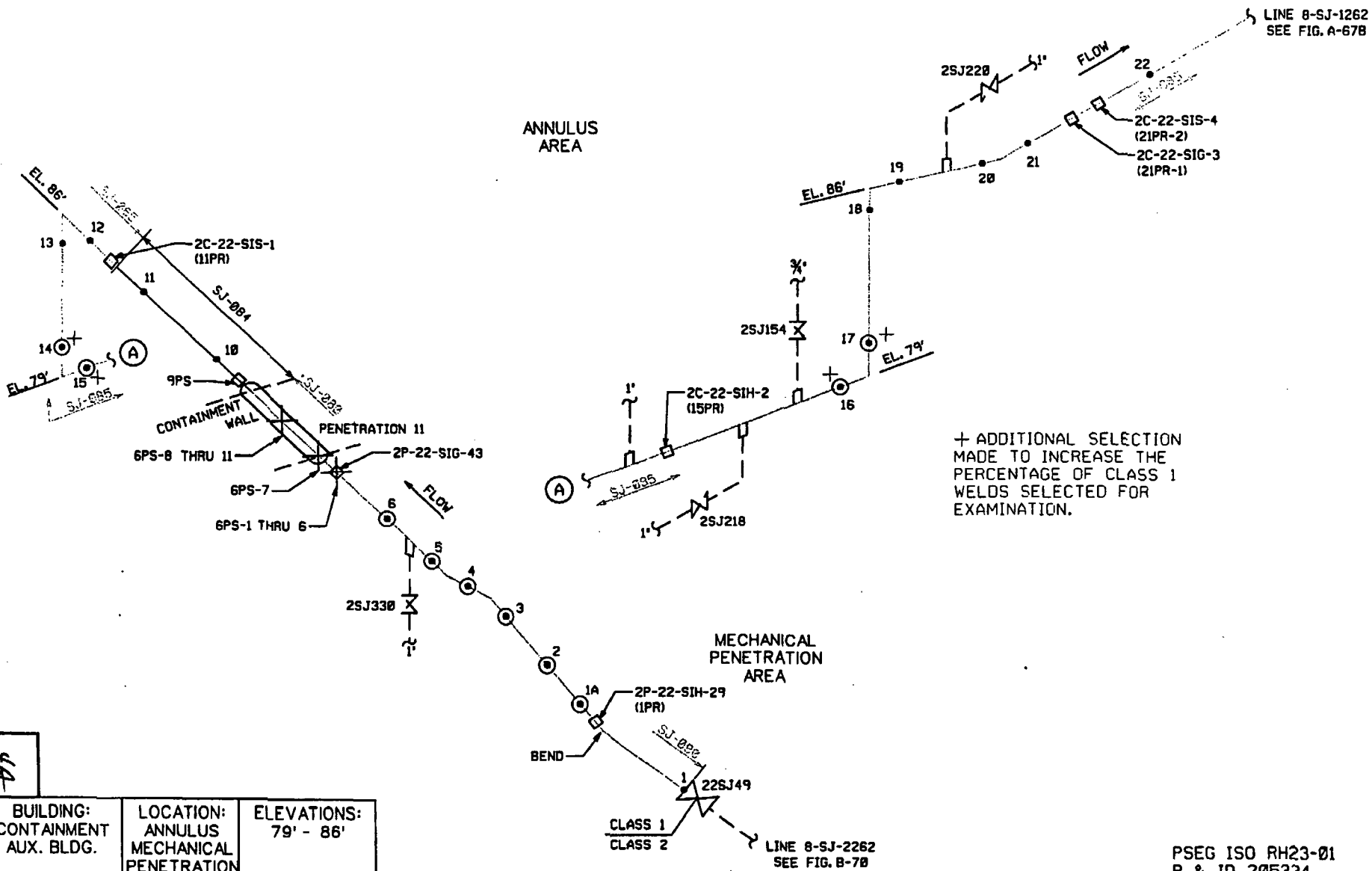
**PSEG**  
INSPECTION SERVICES  
Reviewed and Approved  
W.D. 3/26/93  
N.D.E. SUPERVISOR

Flow  
PIPE

JACK USED	PIPE <u>45</u> ° Search Unit chosen for coverage using <u>3/8 1/2 1 1/8</u> nodes.	NAME: <u>VICTOR MORTON</u>	SNT LEVEL: <u>III</u>
TRANS MODE	° Search Unit chosen for coverage using _____ nodes.		

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



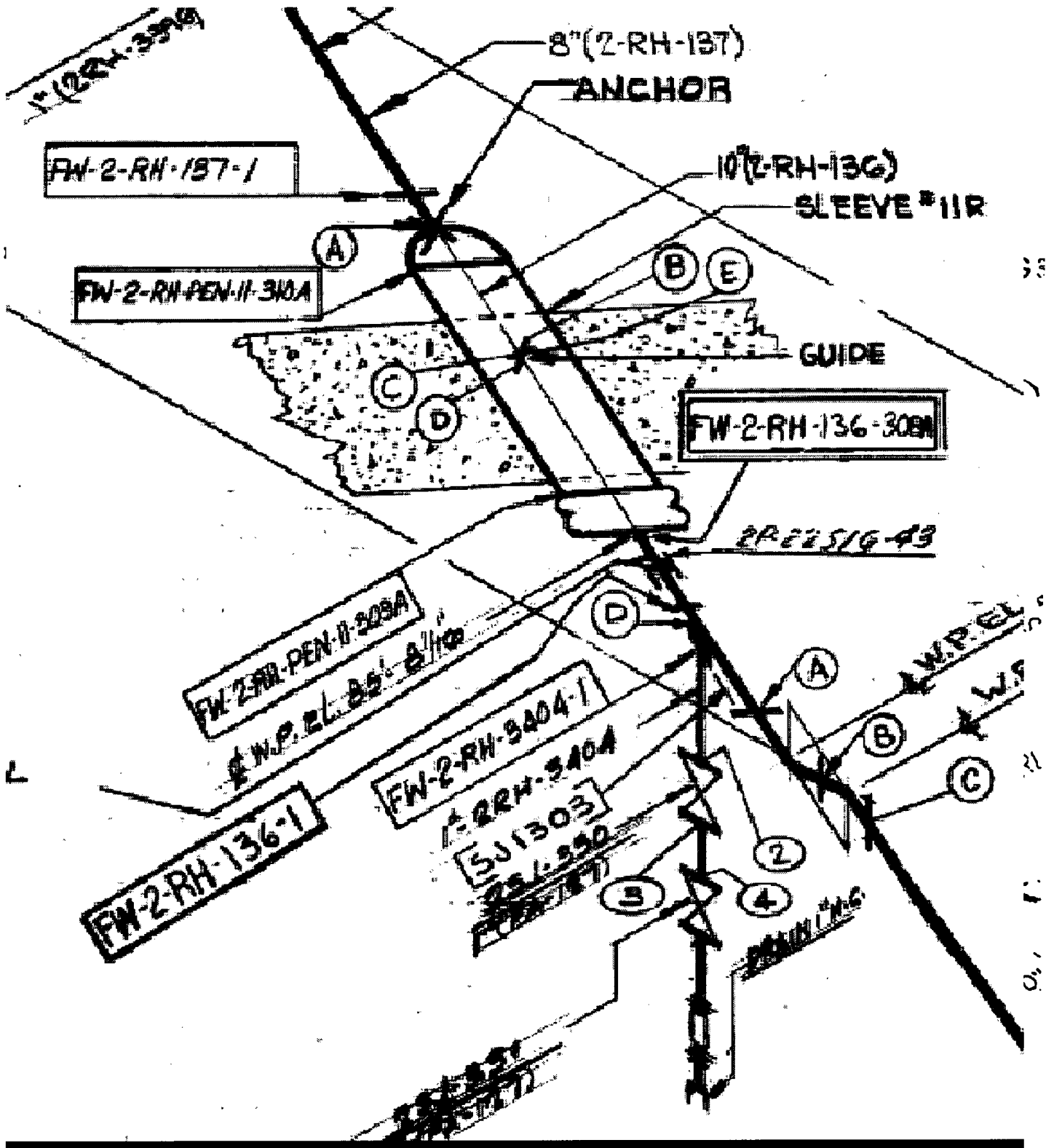


44

BUILDING: CONTAINMENT AUX. BLDG.	LOCATION: ANNULUS MECHANICAL PENETRATION	ELEVATIONS: 79' - 86'
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PSEG ISO RH23-01  
P & ID 205334

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-67A	REVISION: 1
1	REVISED PER ORDER No. 80038023.		SYSTEM: SAFETY INJECTION SYSTEM	
REV.	DATE	DESCRIPTION	LINE: 8-SJ-1262	THIRD 10 YEAR INSPECTION INTERVAL



**REQUEST FOR ADDITIONAL INFORMATION**  
**REQUEST FOR RELIEF REGARDING EXAMINATION COVERAGE**  
**SECOND TEN-YEAR IN-SERVICE INSPECTION INTERVAL**  
**SALEM NUCLEAR GENERATING STATION, UNIT NO. 2**  
**DOCKET NO. 50-311**

**QUESTION**      1.3 (c)    For certain piping welds, Information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers listed below.

Summary #      166000

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Component I.D.    8-SJ-1262-10

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Description      Pipe to Pipe

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		Comments			
1	Weld X-Section	See Attached			
2	Material	Stainless Steel			
3	Thickness / weld Crown	Thickness 1.1" / Weld Crown 1.25"			
4	Obstruction	Pipe Support			
5	Exam Area Highlighted on Drawing	<table border="1" style="display: inline-table;"> <tr> <td style="text-align: center;">Yes</td> <td style="text-align: center;">X</td> <td style="text-align: center;">No</td> </tr> </table>	Yes	X	No
Yes	X	No			
6	Transducer ray exit point	See Attached			

Comments \_\_\_\_\_

UT exam was performed of this component using 45 degree shear wave transducer. The ultrasonic examination completed was partially limited to 82% of the code required coverage being limited due to pipe support 9 PS. that restricted scanning to approx. 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 with no recordable indications observed.

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Supplemental Drawing

Summary # 166000

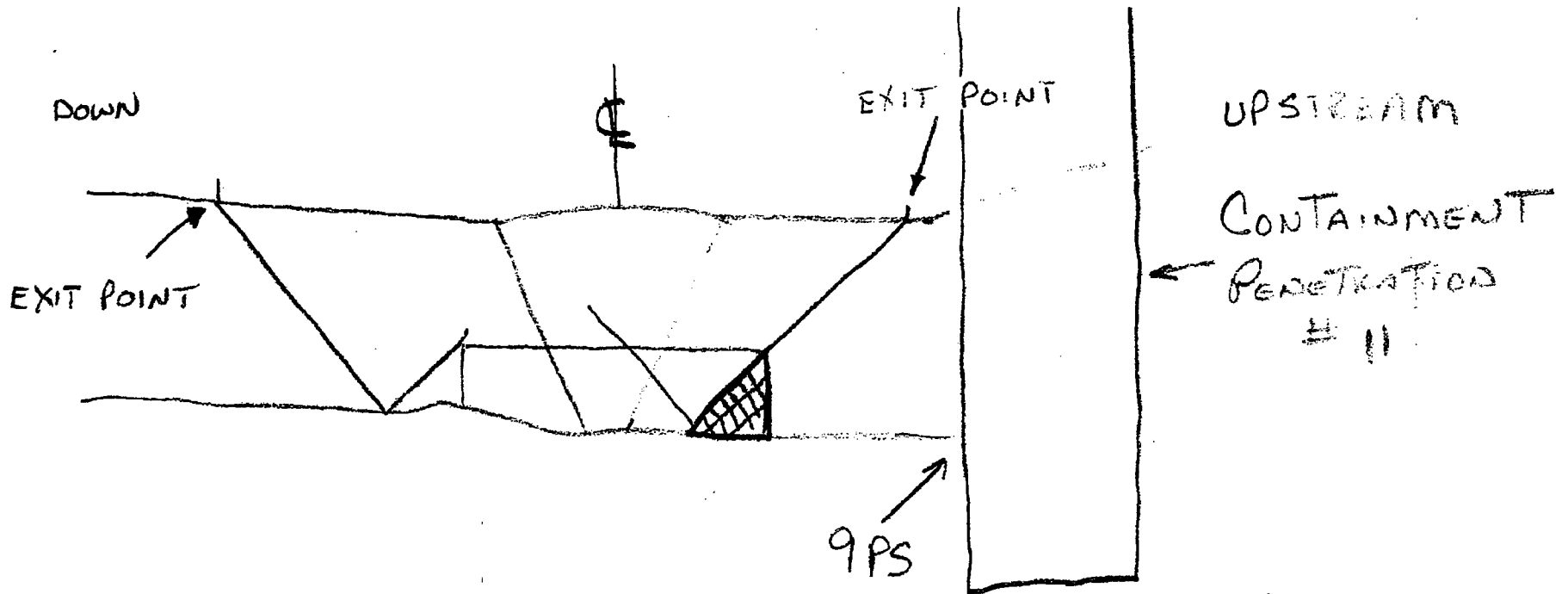
Component I.D. 8-SJ-1262-10


Description Pipe to Pipe

Page of

Comments Examination limitation due to 9PS pipe support which is the seal weld of the containment penetration #11

Sketch



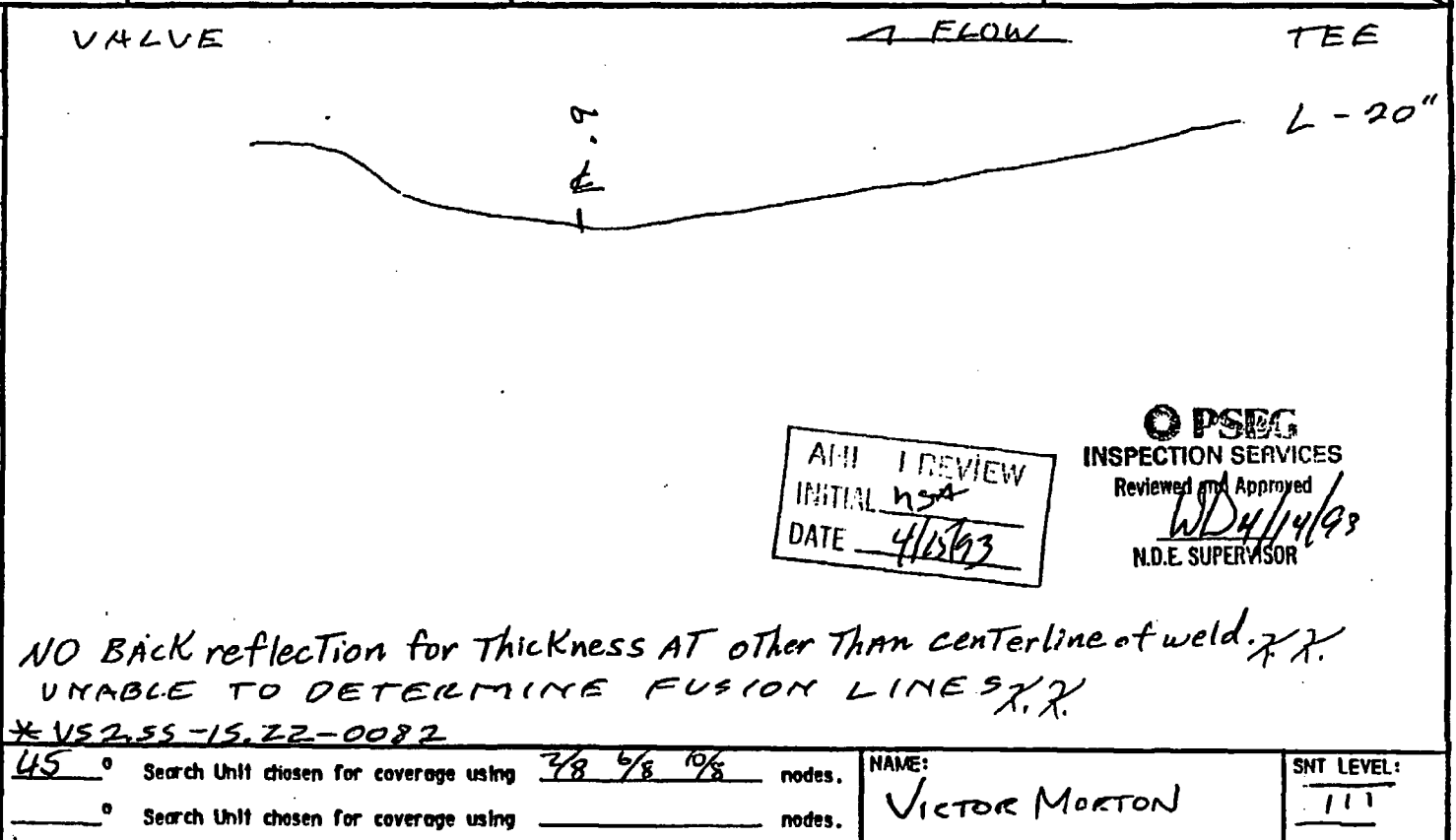
 = LIMITATION



# SWRI PROFILE AND THICKNESS INFORMATION RECORD

PROJECT NO: <b>17-5502</b>	SITE: <b>Salem Generating Station, Unit 2</b>	DATE: (DAY - MONTH - YEAR) <b>13 APRIL 93</b>	TIME (24 HR. CLOCK) INT. <b>1420</b> FINAL <b>1650</b>	SHEET NO: <b>135143</b>	
EXAMINER <b>K. KURTZ</b>	SNT LEVEL <b>II</b>	THK. MEAS. REQ'D BY PROCEDURE <input checked="" type="checkbox"/> No. <b>SAM 2 UT3</b>	INSTRUMENT: SONIC MARK I <input type="checkbox"/> OTHER <b>13C</b> <input checked="" type="checkbox"/>	SERIAL NO: <b>857K</b>	COMPONENT ID: <b>8-SJ-1245-1</b>
EXAMINER <b>F. BRAUN</b>	SNT LEVEL <b>IT</b>	REV <b>2</b> CHG <b>0</b> ICN <input checked="" type="checkbox"/> N/A	COUPLANT: GLYCERINE <input type="checkbox"/> WATER <input type="checkbox"/> OTHER (SPECIFY) <b>ULTRAGEL BATCH 9092</b>	REFERENCE BLK NO: <b>55113</b>	

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



ANN I REVIEW  
INITIAL **NSA**  
DATE **4/15/93**

**PSEB**  
INSPECTION SERVICES  
Reviewed and Approved  
**WDH/14/93**  
N.D.E. SUPERVISOR

4

REVIEWED BY: <b>Vic Kurtz</b>	SNT LEVEL: <b>III</b>	DATE: <b>14 APR 93</b>
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169450

## LIMITATION REPORT

Project: 17-5502

Unit: SALEM UNIT 2

System: SAFETY INJECTION

Weld No.: 8-SJ-1245-1

169451

### SURFACE EXAMINATIONS

Area To Be Examined (Length x Width - A)

A = N/A

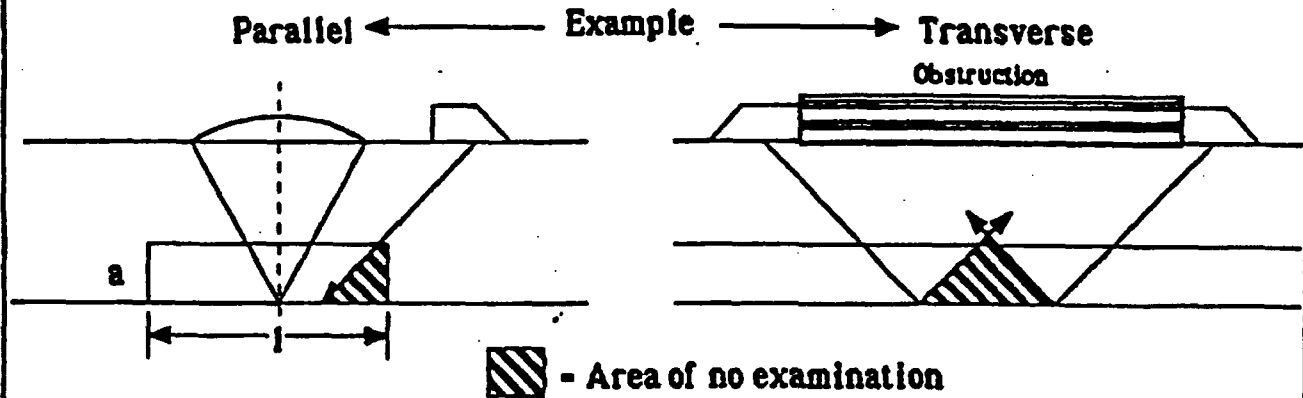
Area Of Limitation (Length x Width - AI)

AI =         

Percentage of Coverage (A - AI/A)

=         

### VOLUMETRIC EXAMINATIONS



1. Compute Area a x l	- Asq	<u>N/A</u>
2. Multiply Asq by Weld Length	- Vt (Volume Total)	<u>27.75</u>
3. Compute Area Not Covered	- a	<u>N/A</u>
4. Multiply "a" by Weld Length	- V1 (Volume Limited)	<u>17.75</u>
5. Percentage of Coverage	- (Vt - V1/Vt)	<u>36.03</u>

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

Prepared by: VICTOR MORTON Reviewed by: Vic Morton

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

Page 1 of 1

**REQUEST FOR ADDITIONAL INFORMATION**  
**REQUEST FOR RELIEF REGARDING EXAMINATION COVERAGE**  
**SECOND TEN-YEAR IN-SERVICE INSPECTION INTERVAL**  
**SALEM NUCLEAR GENERATING STATION, UNIT NO. 2**  
**DOCKET NO. 50-311**

**QUESTION**      1.3 (c)    For certain piping welds, information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers listed below.

Summary #      169450

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Component I.D.    8-SJ-1245-1

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Description      Tee to Valve

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		Comments
1	Weld X-Section	See Attached
2	Material	Stainless Steel
3	Thickness / weld Crown	Thickness .9" / Weld Crown 1.5"
4	Obstruction	Valve to Tee Configuration
5	Exam Area Highlighted on Drawing	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
6	Transducer ray exit point	See Attached

**Comments**

UT exam was performed of this component using 45 degree shear wave transducer. The ultrasonic examination completed was partially limited to 36% of the code required coverage being limited due to tee to valve configuration and 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.

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# Supplemental Drawing

Summary # 169450

Component I.D. TEE TO Valve

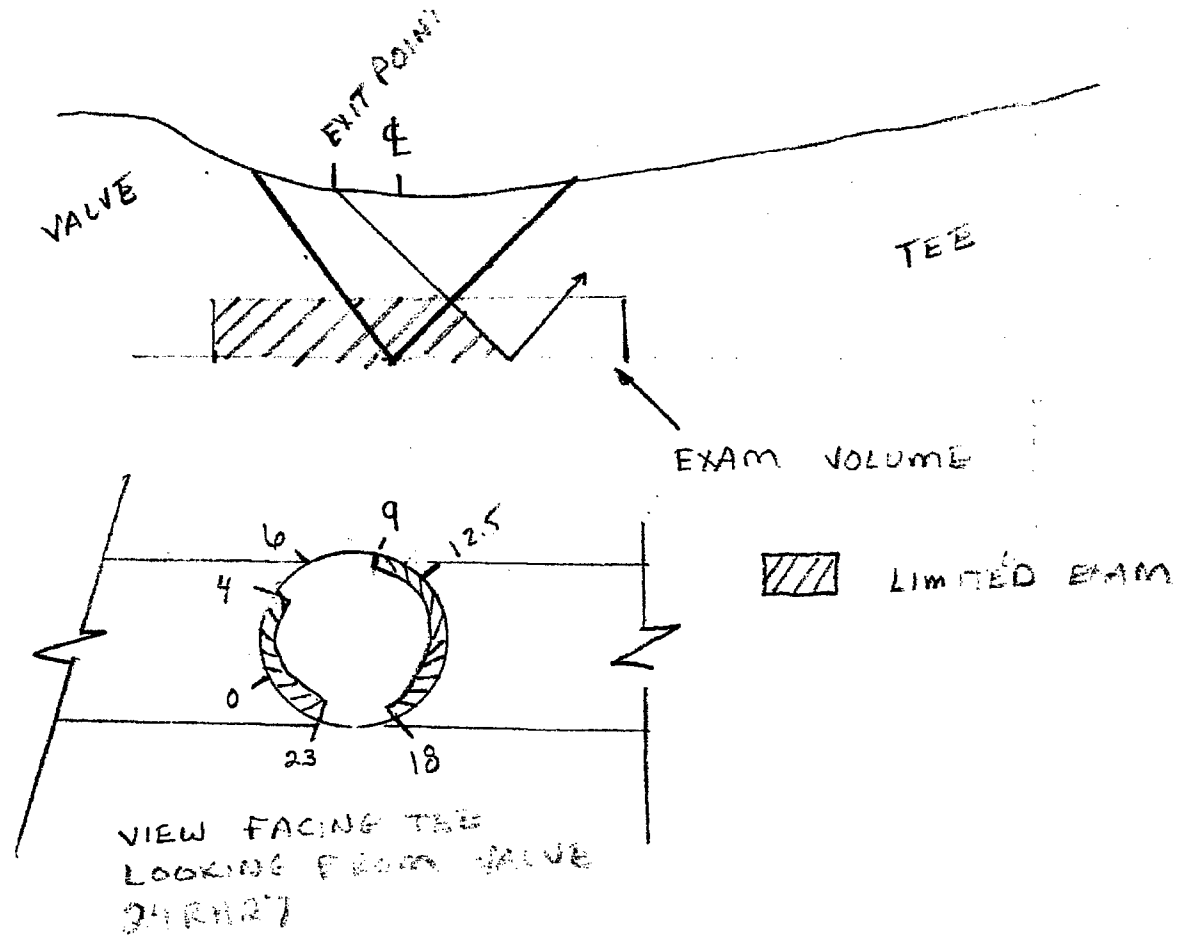
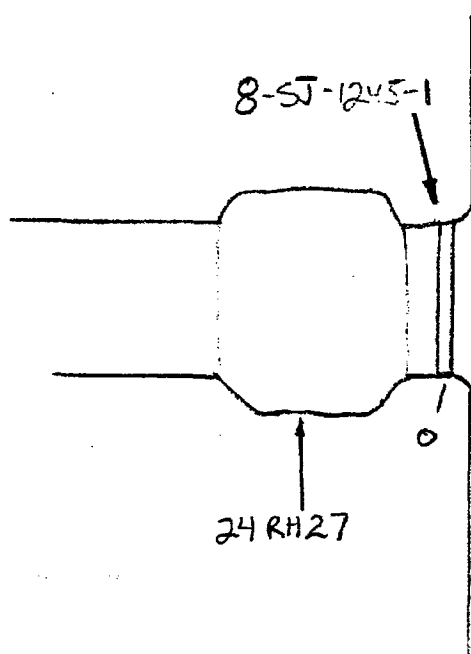
Description 8-SJ-1245-1

Page of

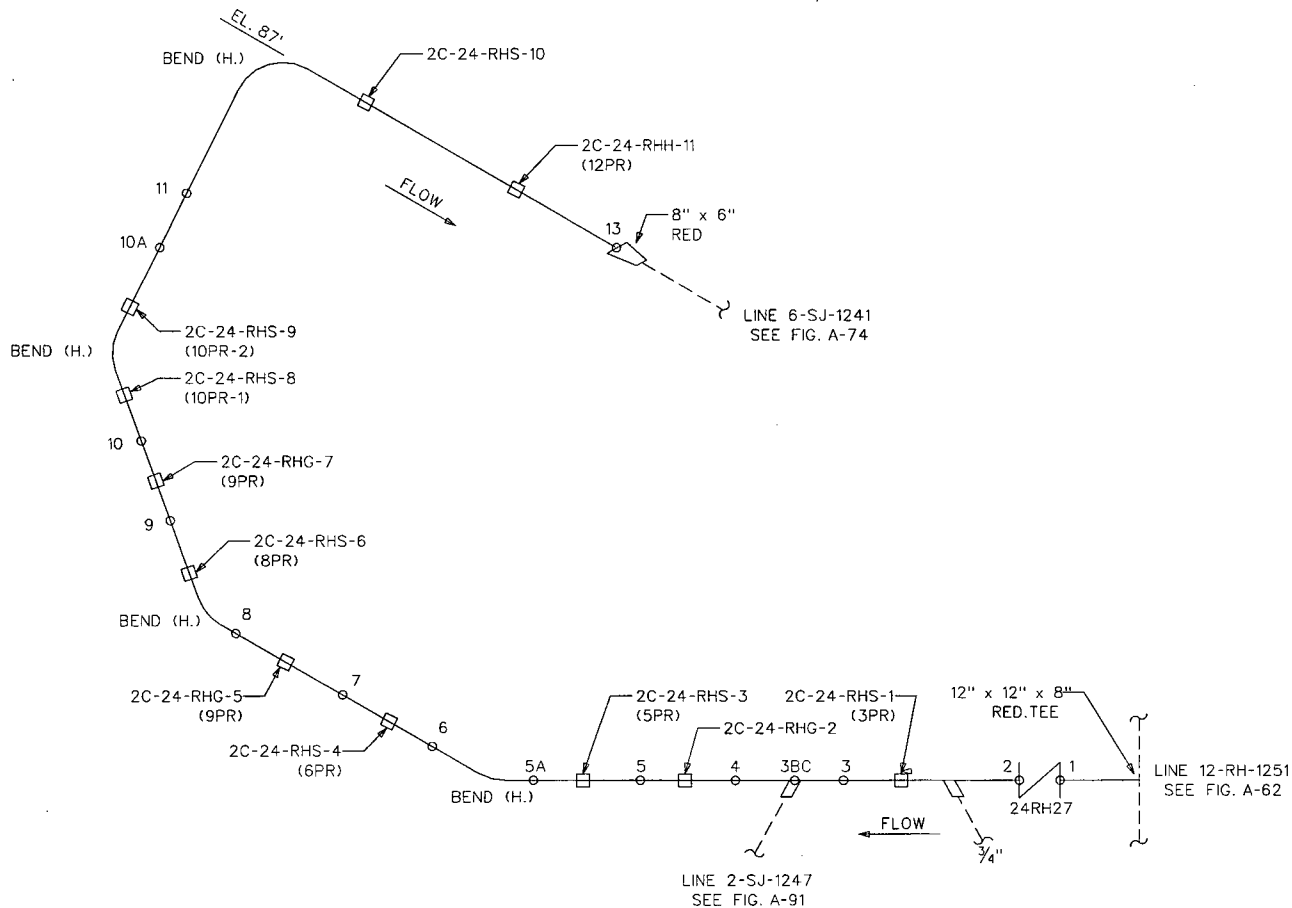
## Comments

The ultrasonic examination completed was partially limited to 36% of the code required coverage being limited due to tee to valve configuration and 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.

## Sketch







BUILDING: CONTAINMENT	LOCATION: BIOSHIELD	ELEVATIONS: 87'
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PSEG ISO RH23-02  
P & ID 205334

ATTENTION: ANY REVISION TO THIS DRAWING SHALL BE MADE ONLY BY CAED		
1		REVISED PER ORDER No. 80038023.
REV.	DATE	DESCRIPTION

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

FIGURE: A-71	REVISION: 1
SYSTEM: SAFETY INJECTION SYSTEM	
LINE: 8-SJ-1245	
THIRD 10 YEAR INSPECTION INTERVAL	

LV 1 = COMMON INFORMATION  
LV 2 = WELD INFORMATION  
LV 3 = HANGER INFORMATION



# SWRI PROFILE AND THICKNESS INFORMATION RECORD

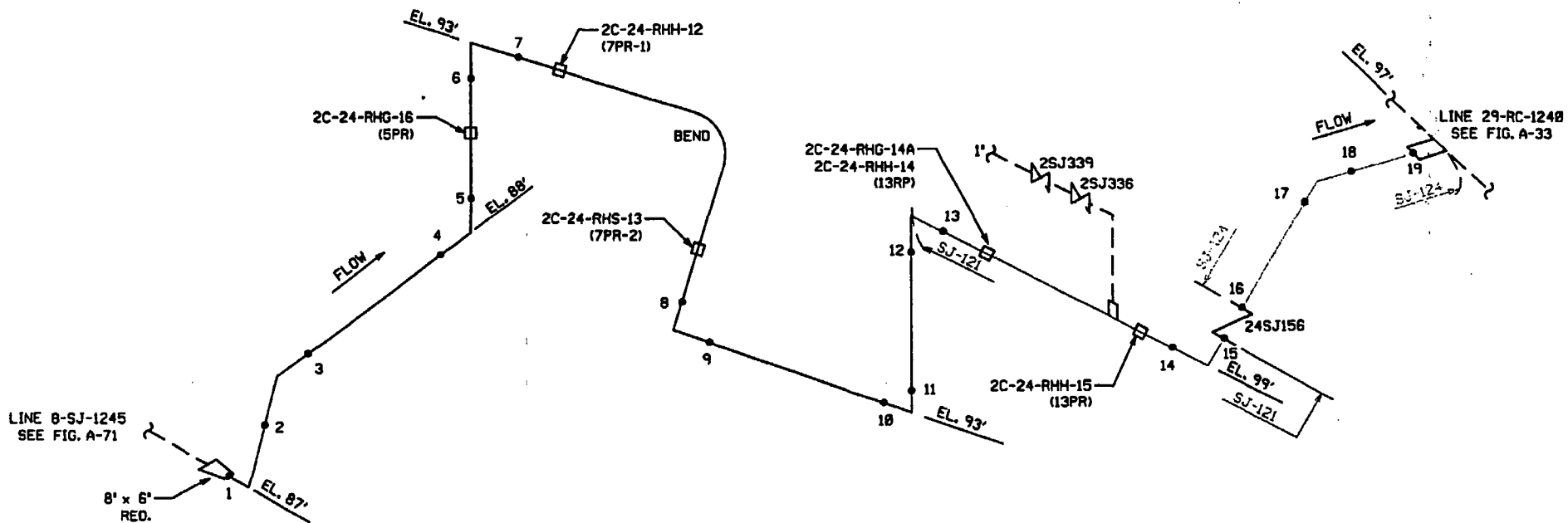
PROJECT NO: 17-5502		SITE: Salem Generating Station, Unit 2		DATE: (DAY - MONTH - YEAR) 2 APRIL 93		TIME (24 HR. CLOCK) INT. 1430 FINAL 1530		SHEET NO: 135050	
EXAMINER K. KURTZ		SNT LEVEL II	THK. MEAS. REQ'D BY PROCEDURE No. SAM 2 UT 3		INSTRUMENT: SONIC MARK I <input type="checkbox"/> OTHER 13C <input checked="" type="checkbox"/>		SERIAL NO: 857K		COMPONENT ID: C-5J1241-18
EXAMINER F. BRAUN		SNT LEVEL 1T	REV 2 CHO 0 ICN <input checked="" type="checkbox"/> N/A		COUPLANT: GLYCERINE <input type="checkbox"/> WATER <input type="checkbox"/> OTHER (SPECIFY) ULTRAGEL-PATCH #172		REFERENCE BLK. NO: K.K. 4/2/93 25 55113		
SEARCH UNITS		<p>BRAND AEROTECH</p> <p>SERIAL NO E11977</p> <p>SIZE 1/4</p> <p>FREQ. (MHz) 5 MHz</p> <p>INSTRUMENT SETTINGS</p> <p>SCREEN SIZE 2"</p> <p>DELAY .414</p> <p>MATL. CAL. .228</p> <p>RANGE 2"</p> <p>REP. RATE 4 KHz</p> <p>JACK USED OVAL</p> <p>TRANS MODE BOTH</p>							
		<p>DW K.K. 4-2-93</p> <p>.66 .68 .70 .63 .64 .60 .64 .72 .76 .76 .75 .75</p> <p>UP K.K. 4/2/93 45° ELBOW</p> <p>Flow</p> <p>nozzle weld pipe weld Elbow</p> <p>WELD CROWN 3/4" ARROW POINTING WRONG WAY</p> <p>45° Search Unit chosen for coverage using 2/8, 6/8, 198 nodes.</p> <p>Search Unit chosen for coverage using _____ nodes.</p>							
REVIEWED BY: Vic Morton		SNT LEVEL: III		NAME: VICTOR MORTON		DATE: 3 APR 93		SNT LEVEL: III	

ANI REVIEW  
INITIAL MS#  
DATE 4/1/93

**PSEG**  
INSPECTION SERVICES  
Reviewed and Approved  
1/10/4/16/99  
N.D.E. SUPERVISOR  
K.K. 4-2-93

✓

17530 (REV)



74

BUILDING: CONTAINMENT	LOCATION: BIOSHIELD	ELEVATIONS: 87' - 99'
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PSEG ISO RH23-02  
P & ID 205301, 205334

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-74	REVISION: 1
SYSTEM: SAFETY INJECTION SYSTEM	

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

LINE: 6-SJ-1241
THIRD 10 YEAR INSPECTION INTERVAL

**REQUEST FOR ADDITIONAL INFORMATION**  
**REQUEST FOR RELIEF REGARDING EXAMINATION COVERAGE**  
**SECOND TEN-YEAR IN-SERVICE INSPECTION INTERVAL**  
**SALEM NUCLEAR GENERATING STATION, UNIT NO. 2**  
**DOCKET NO. 50-311**

**QUESTION**      1.3 (c)    For certain piping welds, Information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers listed below.

Summary #      172500

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Component I.D.    6-SJ-1241-18

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Description      Elbow to Pipe

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		Comments
1	Weld X-Section	See Attached
2	Material	Stainless Steel
3	Thickness / weld Crown	Thickness .63" / Weld Crown .75"
4	Obstruction	Adjacent Weld Joint
5	Exam Area Highlighted on Drawing	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> X <input type="checkbox"/> No
6	Transducer ray exit point	See Attached

**Comments**

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 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.

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# Supplemental Drawing

Summary # 172500

Component I.D. Elbow to Pipe

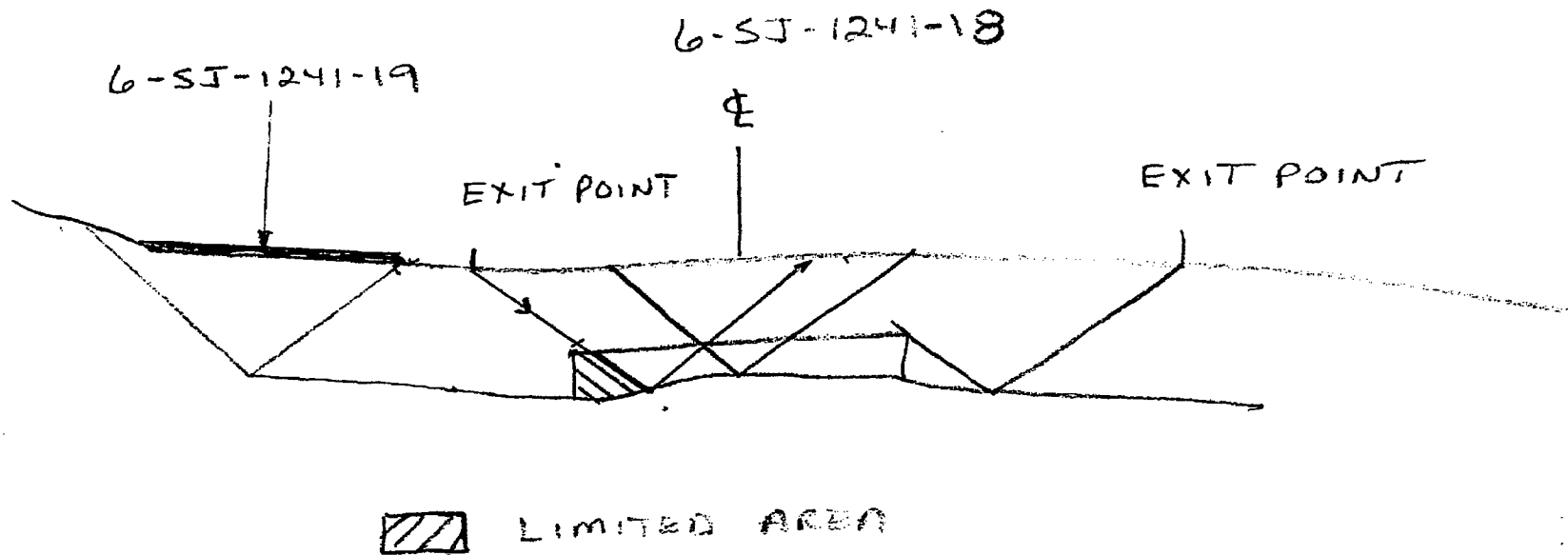
Description 6-SJ-1241-18

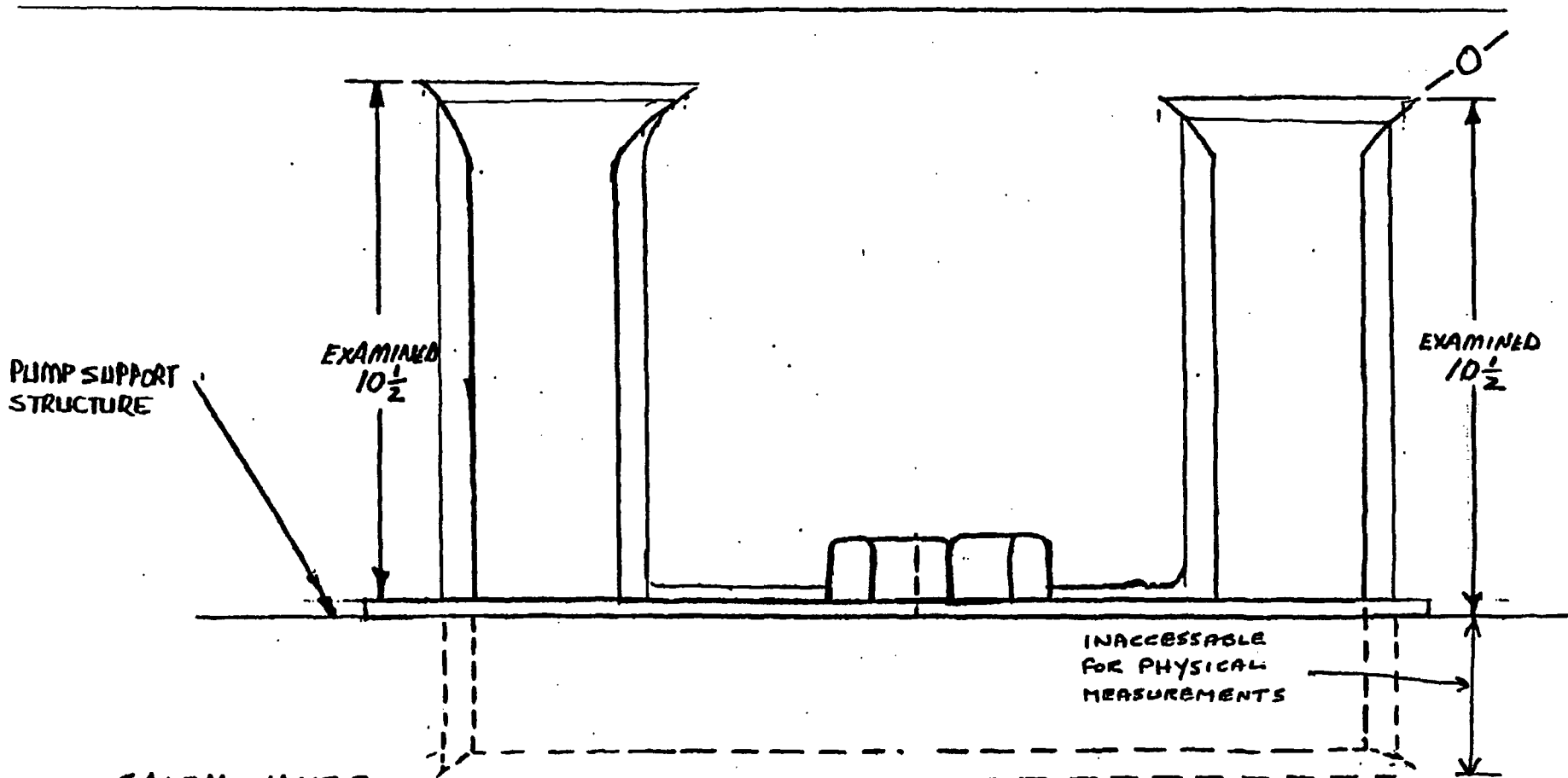
Page of

## Comments

The ultrasonic examination completed was partially limited to 90% of the code required coverage being limited due to close proximity of the adjacent weld #19 located downstream

## Sketch





PUMP SUPPORT  
STRUCTURE

EXAMINED  
10 1/2

EXAMINED  
10 1/2

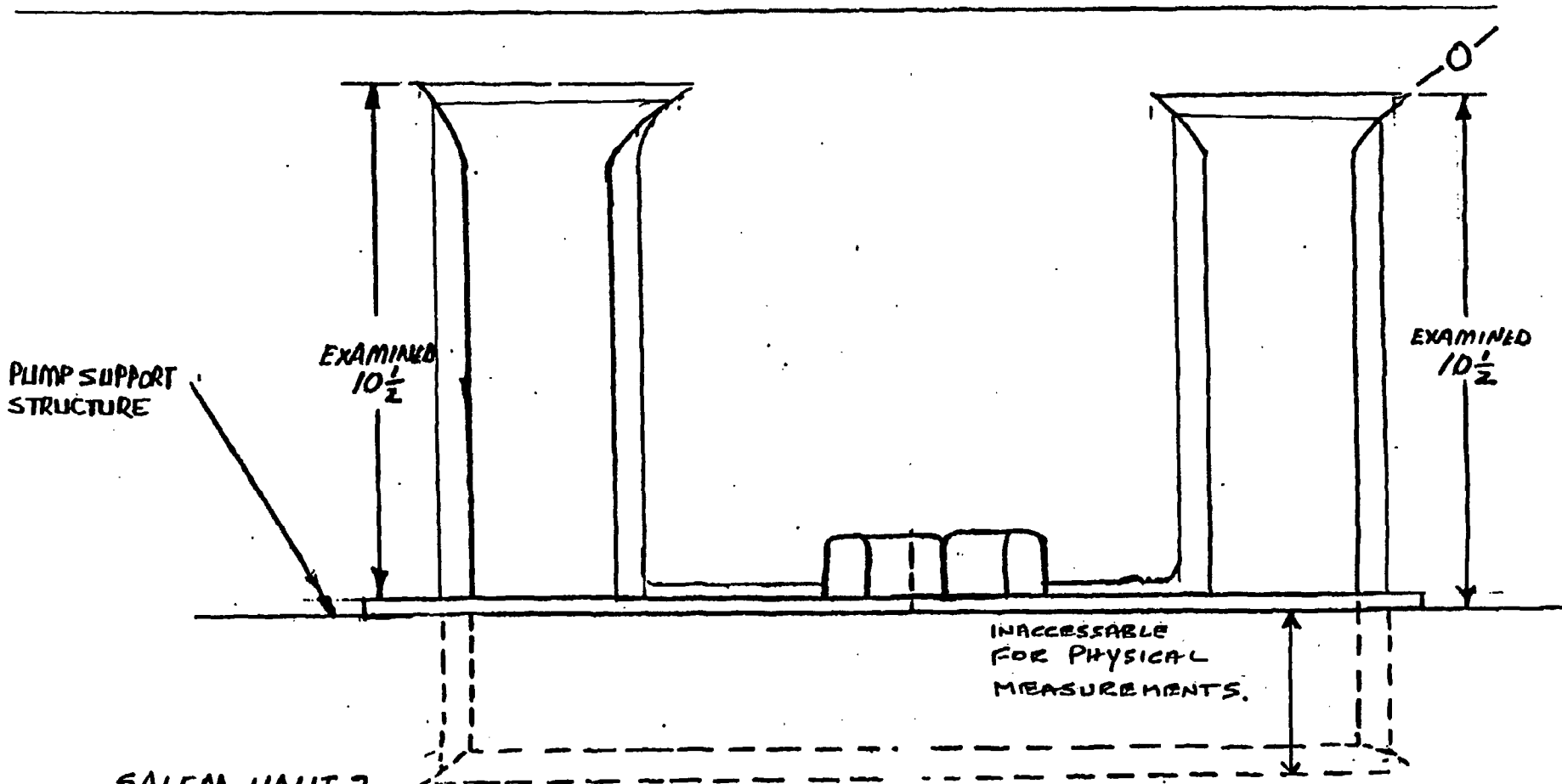
INACCESSIBLE  
FOR PHYSICAL  
MEASUREMENTS

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

8

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

751200



PUMP SUPPORT  
STRUCTURE

EXAMINED  
10 1/2

EXAMINED  
10 1/2

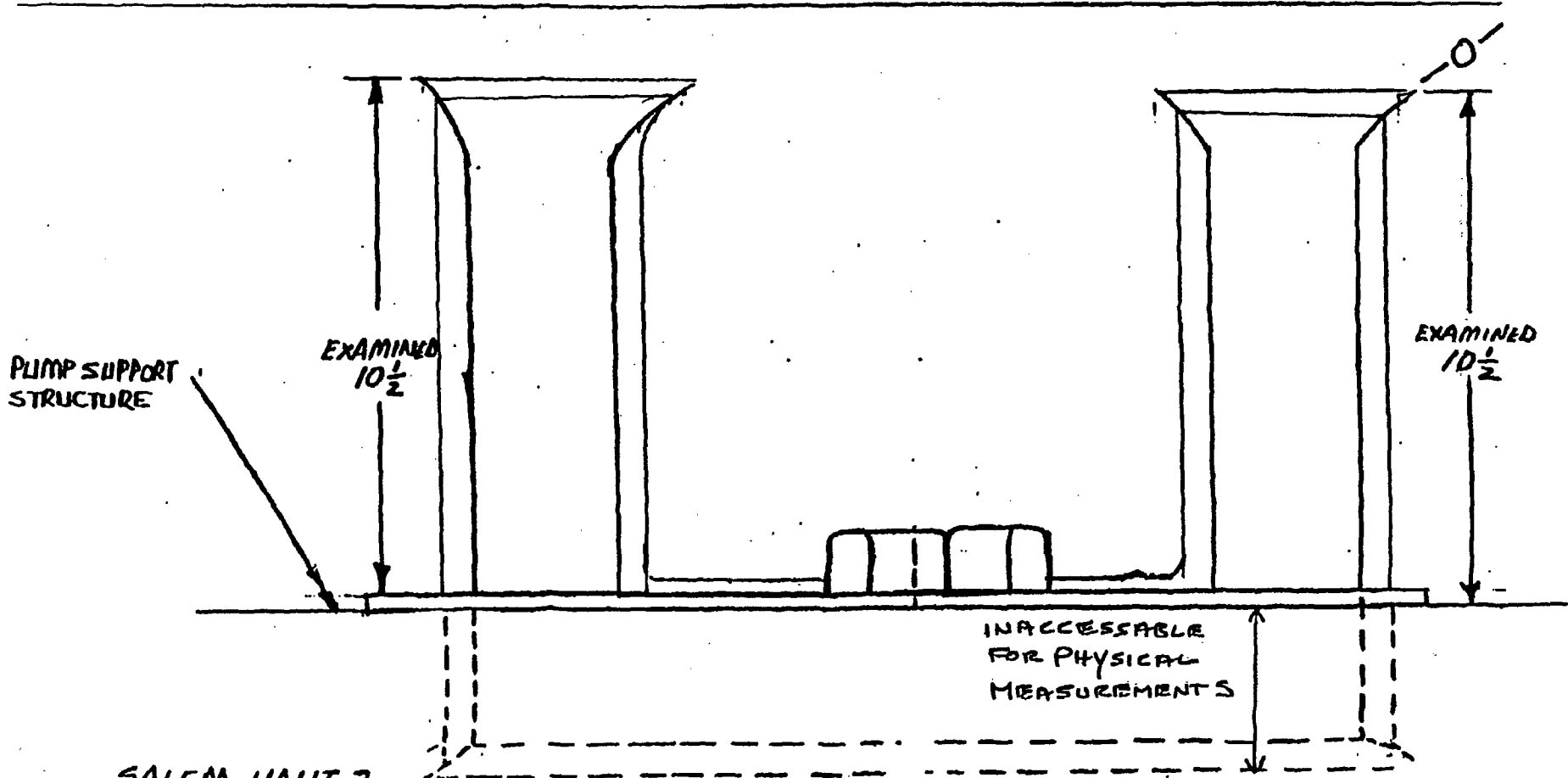
INACCESSIBLE  
FOR PHYSICAL  
MEASUREMENTS.

SALEM UNIT 2  
REACTOR COOLANT PUMP 27-PMP LG 2  
REF. DATA RC. 110136

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

6

251200



PUMP SUPPORT  
STRUCTURE

EXAMINED  
 $10\frac{1}{2}$

EXAMINED  
 $10\frac{1}{2}$

INACCESSIBLE  
FOR PHYSICAL  
MEASUREMENTS

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

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

10

251200



## LIMITATION REPORT

Project: 17-SS02

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

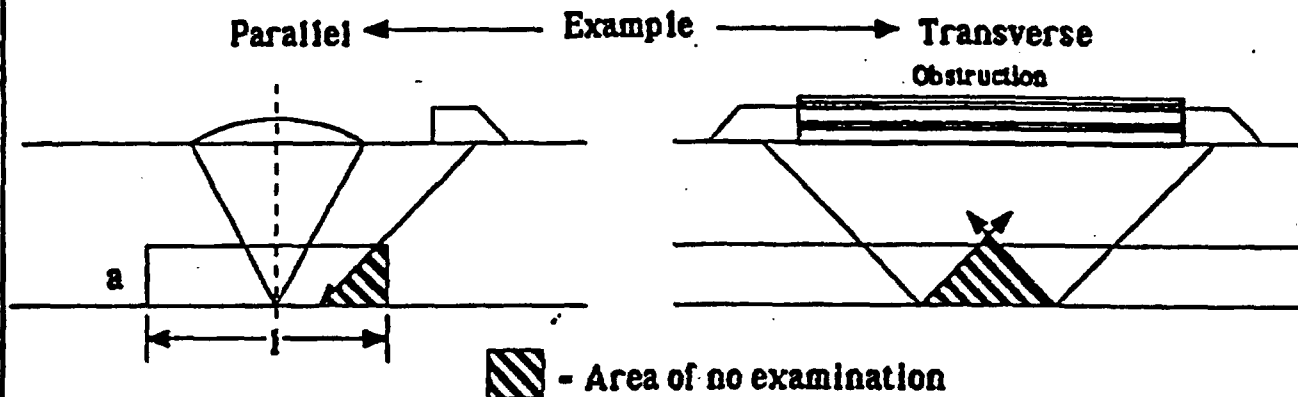
Area Of Limitation (Length x Width - A1)

A1- " "

Percentage of Coverage (A - A1/A)

= ≈ 67

### VOLUMETRIC EXAMINATIONS



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.

Prepared by: VICTOR MORTON

Reviewed by: Vic Morton

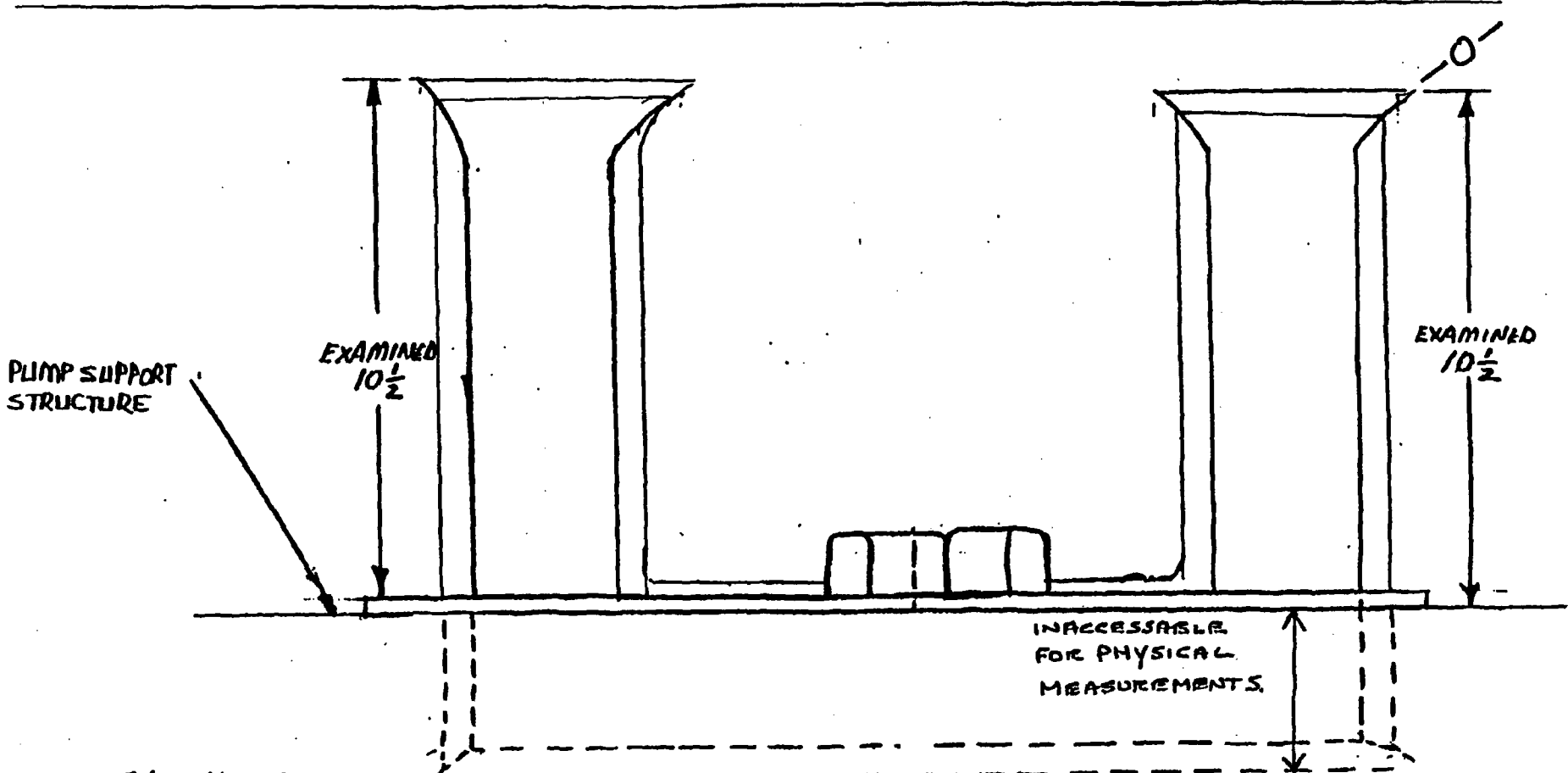
11

Date: 6 APR 93 Level: III

Date: 6 APR 93 Level: III

Page 1 of 1

11



PUMP SUPPORT  
STRUCTURE

EXAMINED  
10 1/2

EXAMINED  
10 1/2

INACCESSIBLE  
FOR PHYSICAL  
MEASUREMENTS.

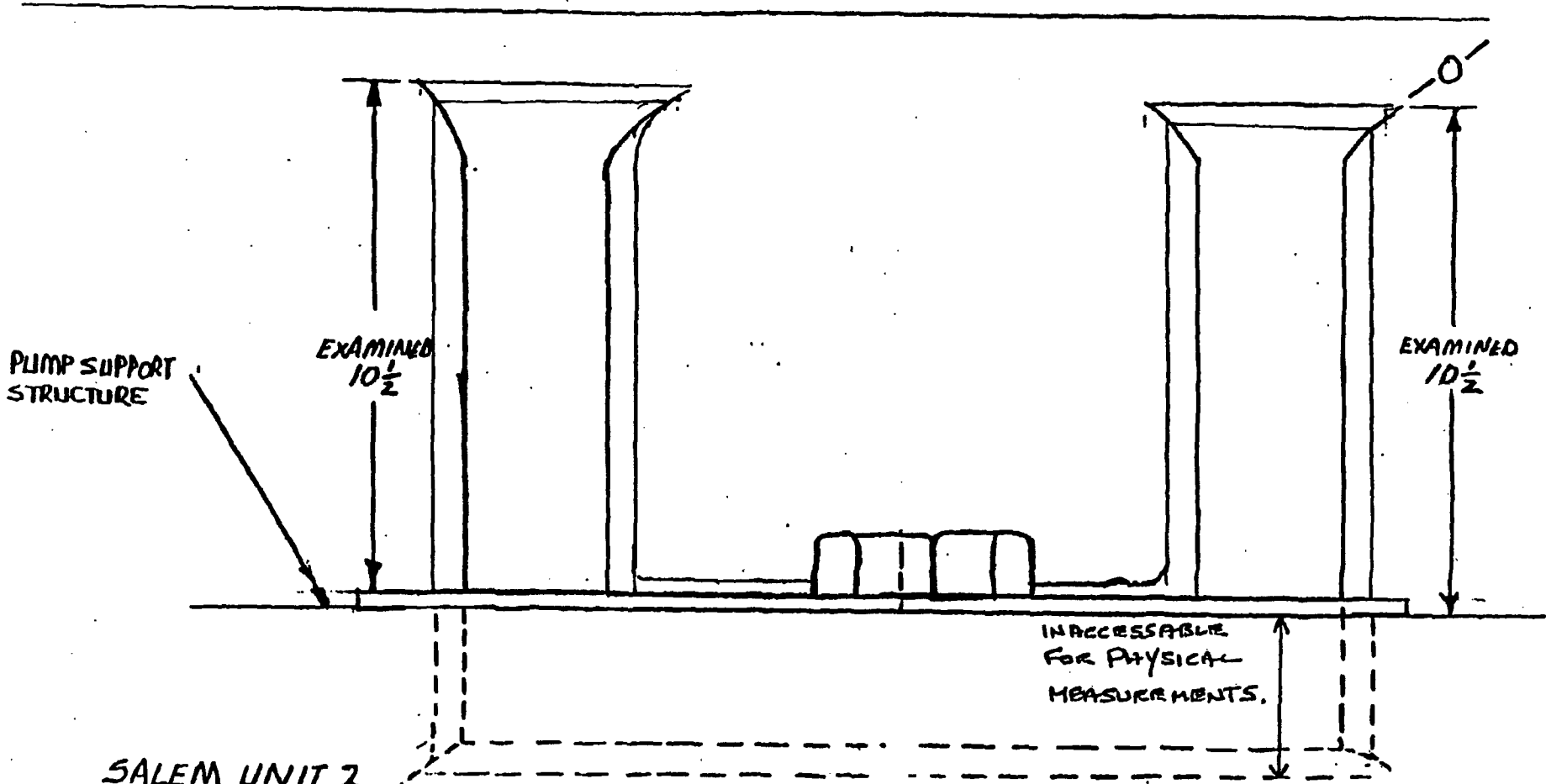
SALEM UNIT 2  
REACTOR COOLANT PUMP 21 PMP LG 1  
REF. DATA RC. 110133

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

12

12

751202



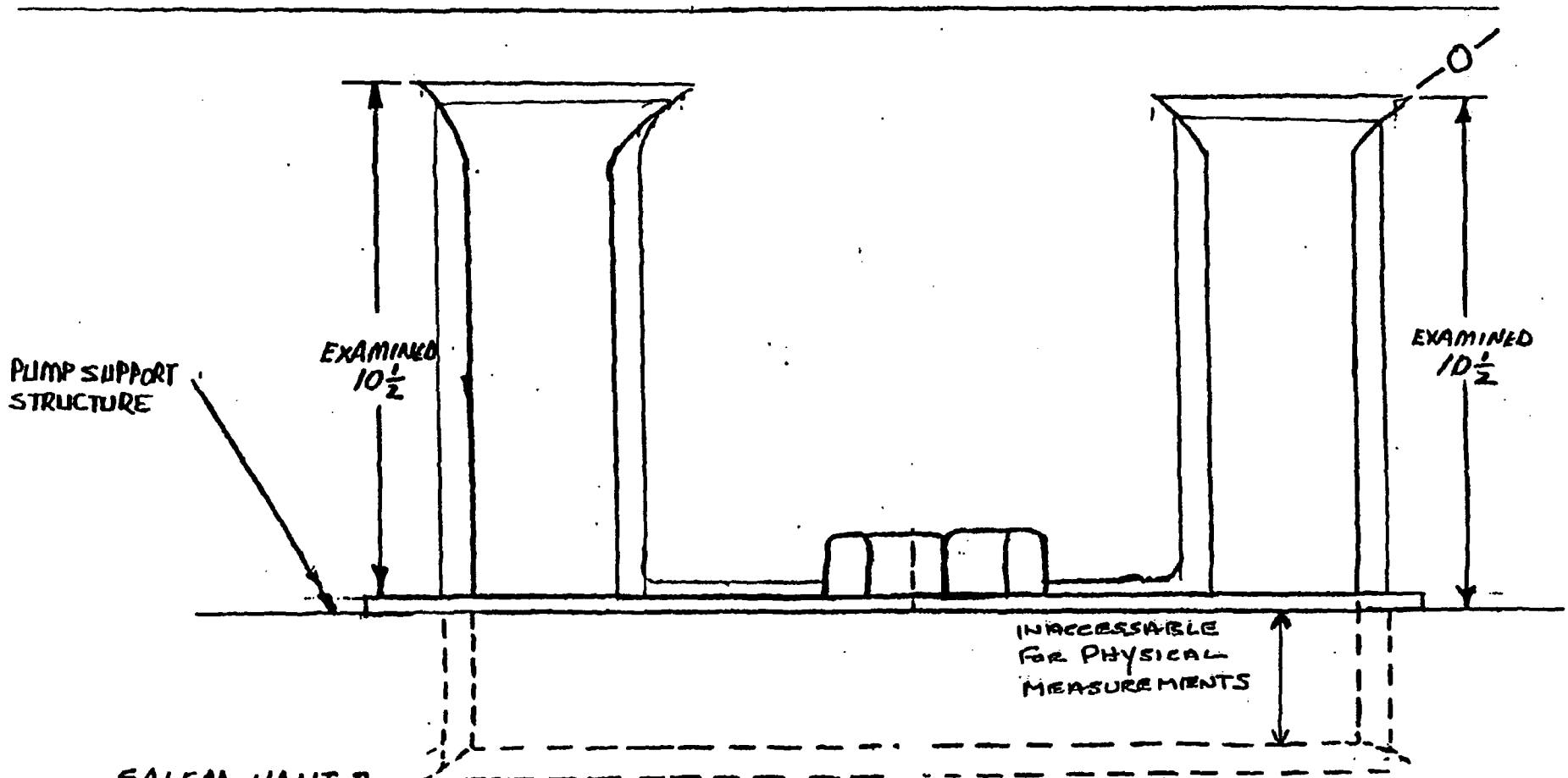
SALEM UNIT 2  
 REACTOR COOLANT PUMP 2 | PMP LG 2  
 REF. DATA RC. 110134

15

13

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

251300



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

71

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

5122A

## 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

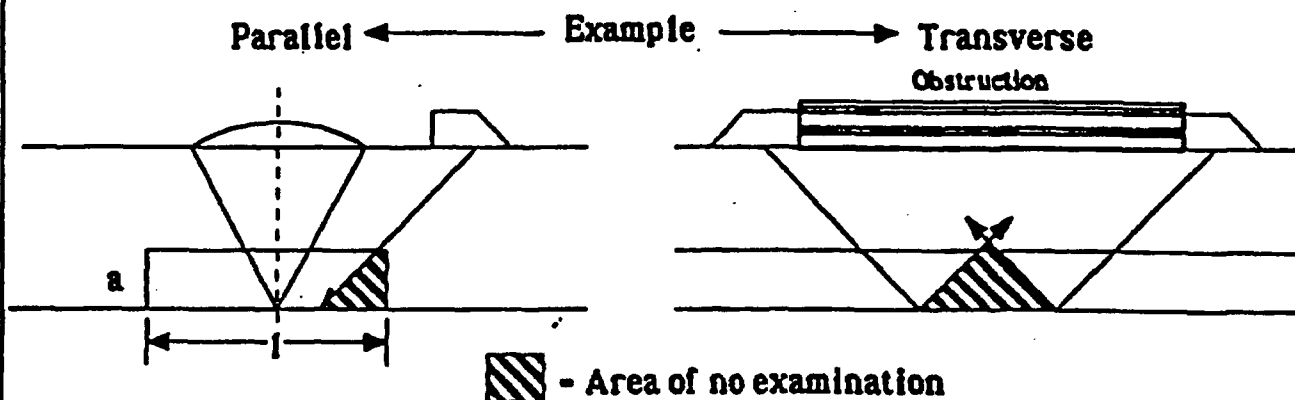
Area Of Limitation (Length x Width - A1)

A1 = " "

Percentage of Coverage (A - A1/A)

= ≈ 67

### VOLUMETRIC EXAMINATIONS



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	- V1 (Volume Limited)	
5. Percentage of Coverage	- (Vt - V1/Vt)	

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

Prepared by: VICTOR MORTON

Reviewed by: Vic Morton

Date: 6 APR 93 Level: III

Date: 6 APR 93 Level: III

Page 1 of 1



# SWRI PROFILE AND THICKNESS INFORMATION RECORD

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

EXAMINER: **L. VILLA**      SNT LEVEL: **II**      THK. MEAS. REQ'D BY PROCEDURE No. **SAM2-UT49**      INSTRUMENT: SONIC MARK I  OTHER **136**       SERIAL NO: **855 K**      COMPONENT ID: **CVC 2-CVCT-2**

EXAMINER: **M. COTTEN**      SNT LEVEL: **IT**      REV  CHGO  ICN \*  N/A      COUPLANT: GLYCERINE  WATER  OTHER (SPECIFY) **ULTRAREL II \***      REFERENCE BLK NO: **SS DC 43**

SEARCH UNITS	
BRAND	<b>KBA GAMMA</b>
SERIAL NO	<b>C30257</b>
SIZE	<b>1/4"</b>
FREQ. (MHz)	<b>2.25</b>
INSTRUMENT SETTINGS	
SCREEN SIZE	<b>1"</b>
DELAY	<b>0.270</b>
MATL. CAL.	<b>0-181</b>
RANGE	<b>1</b>
REP. RATE	<b>4 KHZ</b>
JACK USED	<b>RCV/XMT</b>
TRANS MODE	<b>DUAL</b>

**\* BATCH 9092**

**ANI I REVIEW**  
INITIAL **WJA**  
DATE **4/12/93**

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

**L LOCATION TAKEN AT 10"**

**\* PSEG VS2-SS-IS,ZZ-0088**

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

° Search Unit chosen for coverage using \_\_\_\_\_ nodes.

NAME: **VICTOR MORTON**      SNT LEVEL: **III**

REVIEWED BY: **Vic [Signature]**      SNT LEVEL: **III**      DATE: **5 APR 93**

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

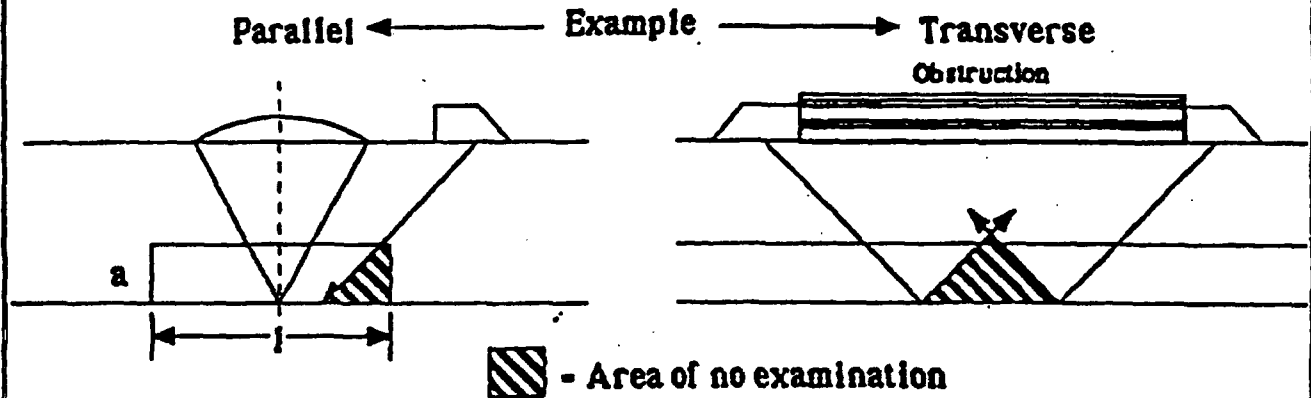
Area Of Limitation (Length x Width - AI)

AI =         

Percentage of Coverage (A - AI/A)

=         

### VOLUMETRIC EXAMINATIONS



1. Compute Area a x l	- Asq	<u>.65</u>
2. Multiply Asq by Weld Length	- Vt (Volume Total)	<u>185.25</u>
3. Compute Area Not Covered	- a	<u>.65</u>
4. Multiply "a" by Weld Length	- V1 (Volume Limited)	<u>53.00</u>
5. Percentage of Coverage	- (Vt - V1/Vt)	<u>71.39</u>

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

Prepared by: Vic MORTON Reviewed by: Vic [Signature] 17

Date: 5 APR 93 Level: III Date: 5 APR 93 Level: III  
 Page 1 of 1

# SWRI LIQUID PENETRANT EXAMINATION RECORD

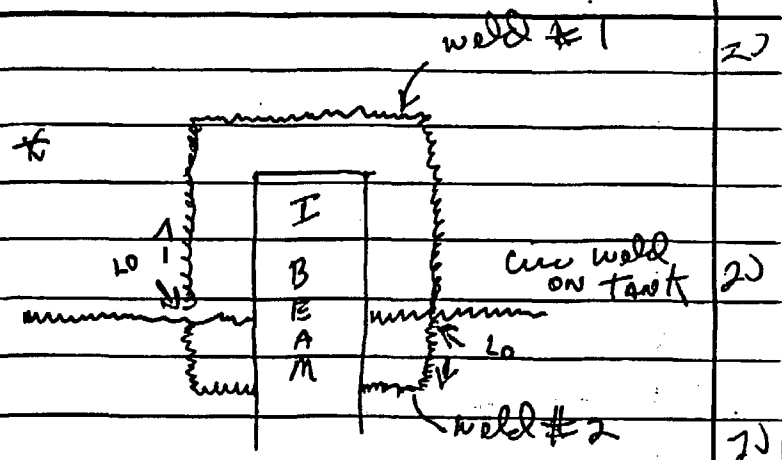
PROJECT No: <b>17-5502</b>		SITE: <b>Salem Generating Station, Unit 2</b>		DATE: (DAY - MONTH - YEAR) <b>03 APR 93</b>		W <sub>0</sub> LOCATION <b>E WELD</b>		SHEET No <b>110080</b>	
EXAMINATION AREA (SYST/COMP) <b>CVC TANK</b>		(LINE/SUBASSEMBLY) <b>2-CUCT-2VS</b>		(IDENTIFICATION) <b>1</b>		L <sub>0</sub> LOCATION <b>5 *</b>		WELD TYPE: (← FLOW →) <b>Fillet</b>	
EXAMINER <b>L. VILLA</b>		SNT LEVEL <b>II</b>	PROCEDURE <b>SAFETY-PT 2</b> No <b>USA-SS-15-22-0075</b>	SURFACE TEMP °F <b>71°</b>		PENETRANT TEMP °F <b>77°</b>		THERMOMETER SERIAL NUMBER <b>SWR 193</b>	
EXAMINER <b>M. COTTEN</b>		SNT LEVEL <b>IT</b>	REV <b>3</b> CHG <b>1</b> ICN <b>N/A</b>	SURFACE FINISH <b>AS WELDED</b>		WELD LENGTH <b>57" 40 1/2"</b>			

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

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

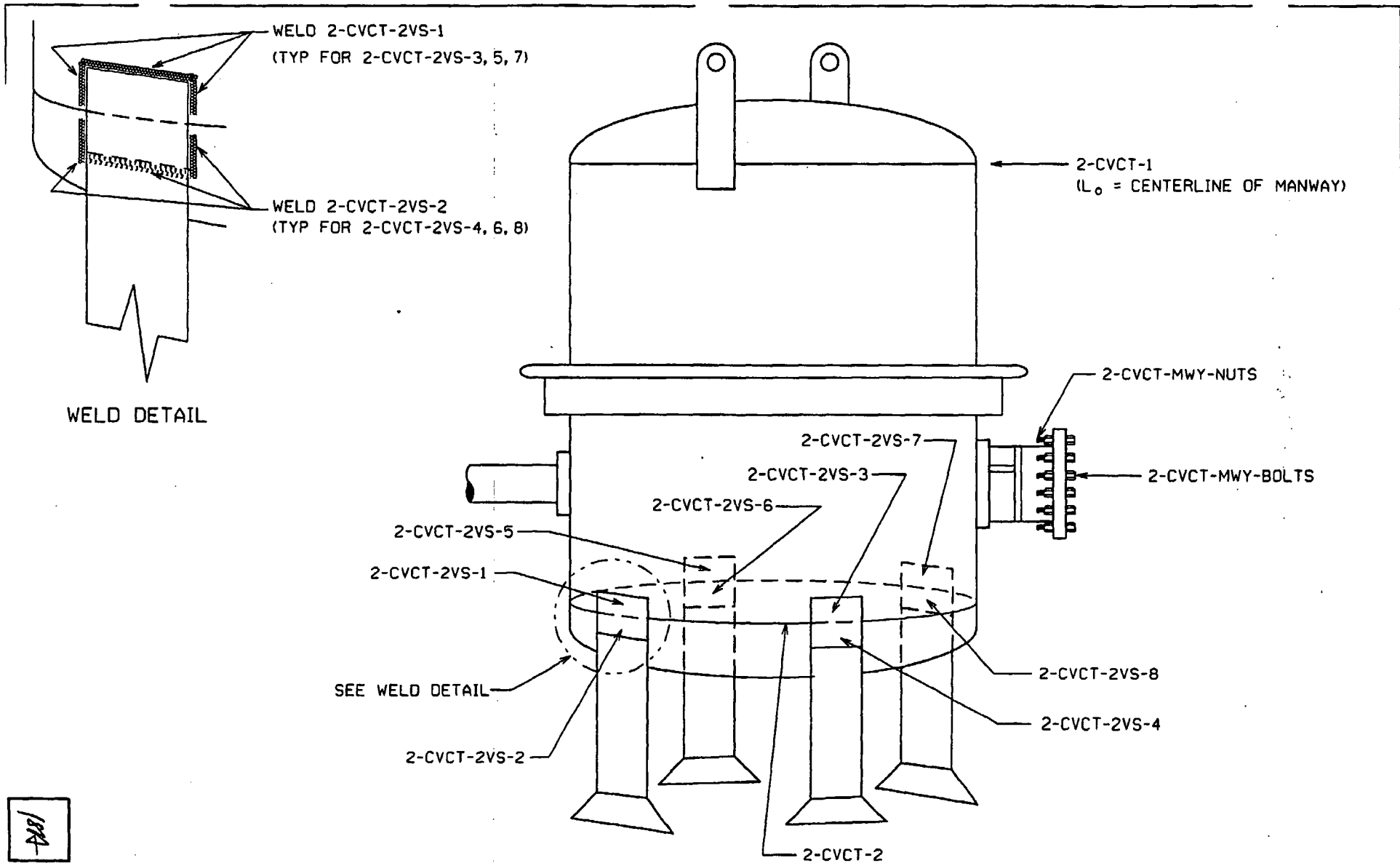
API REVIEW  
INITIAL WJA  
DATE 4/12/93

**PSEG**  
INSPECTION SERVICES  
Reviewed and Approved  
LD 4/6/93  
N.O.E. SUPERVISOR



EXAMINATION AREA LIMITATION - IF NONE, SO STATE <b>2-CVC-1VS-22VS 2)</b>				DATE <b>3 apr 93</b>		CONTINUED ON SHEET <b>N/A</b>		PAGE <b>1</b> OF <b>1</b>	
REVIEWED BY: <u>Vic [Signature]</u>		SNT LEVEL <b>III</b>	DATE <b>5 APR 93</b>		CONTINUED ON SHEET <b>N/A</b>		PAGE <b>1</b> OF <b>1</b>		





100

BUILDING: AUXILIARY	LOCATION: CVCT ROOM	ELEVATIONS: 122'
------------------------	------------------------	---------------------

P&ID 205328

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

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

## LIMITATION REPORT

Project: 17-SS02

Unit: SALEN UNIT 2

System: C.V.C. TANK

Weld No.: 2-CVCT-2VS-1and2

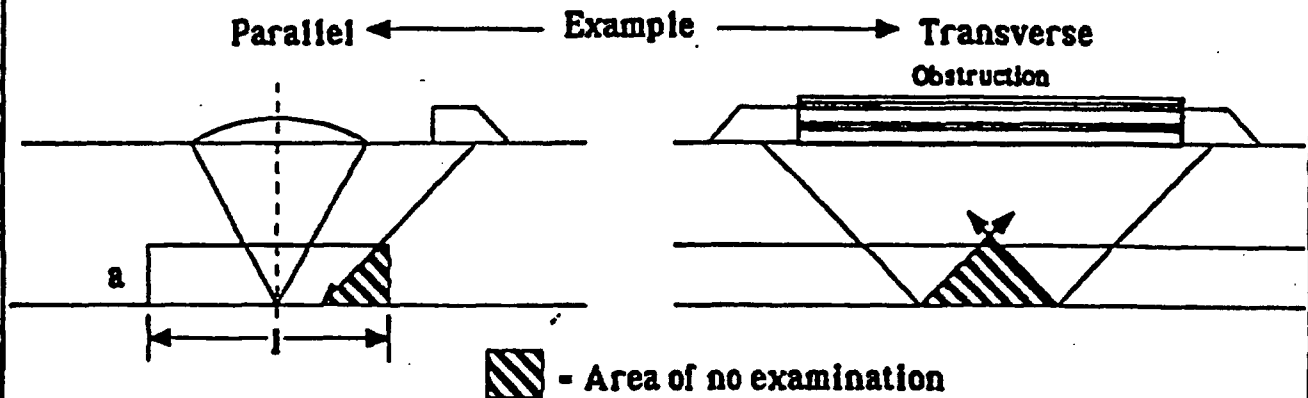
### SURFACE EXAMINATIONS

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

Area Of Limitation (Length x Width - AI) AI= 6.00

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

### VOLUMETRIC EXAMINATIONS



1. Compute Area $a \times l$	- $Asq$	<u>N/A</u>
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.

Prepared by: VICTOR MORTON

Reviewed by: Vic [Signature]

19

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-2 VS-3 and 4

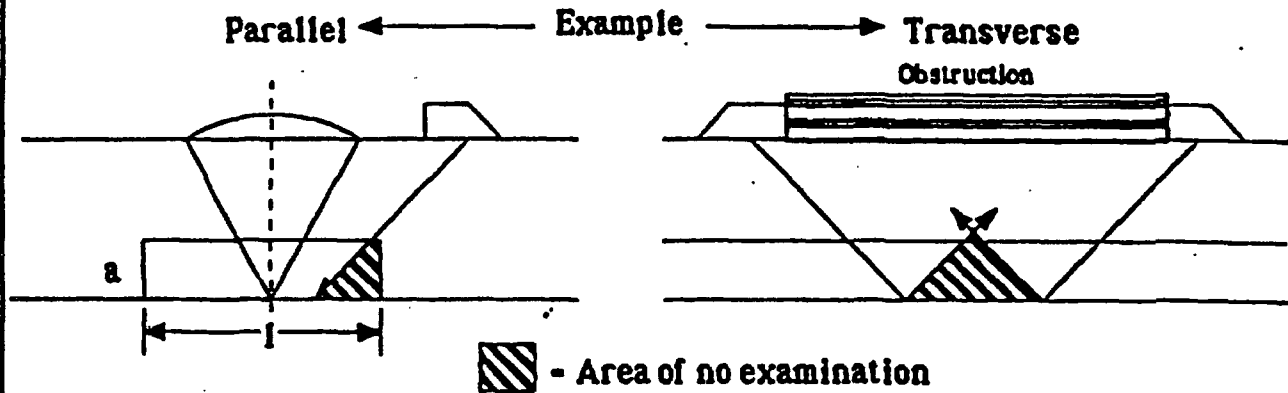
**SURFACE EXAMINATIONS**

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**



1. Compute Area a x l	- Asq	<u>N/A</u>
2. Multiply Asq by Weld Length	- Vt (Volume Total)	
3. Compute Area Not Covered	- a	
4. Multiply "a" by Weld Length	- V1 (Volume Limited)	
5. Percentage of Coverage	- (Vt - V1/Vt)	

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

Prepared by: VICTOR MORTON Reviewed by: Vic Morton 20

Date: 5 APR 93 Level: III Date: 5 APR 93 Level: III  
 Page 1 of 1

## LIMITATION REPORT

Project: 17-SSD2

Unit: SALEM UNIT 2

System: C.V.C. TANK

Weld No.: 2-CVCT-2VS-5A06

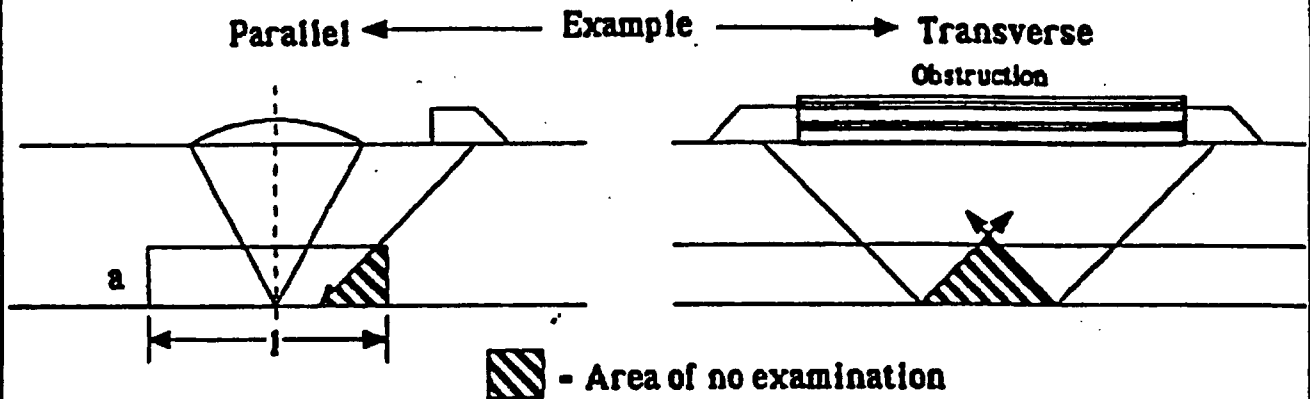
### SURFACE EXAMINATIONS

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



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	- V1 (Volume Limited)	
5. Percentage of Coverage	- (Vt - V1/Vt)	↓

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

Prepared by: VICTOR MORTON

Reviewed by: Vic Morton

21

Date: 5 APR 93 Level: III

Date: 5 APR 93 Level: III

## LIMITATION REPORT

Project: 17-SS02

Unit: SALEM UNIT 2

System: CVC TANK

Weld No.: 2-CVCT-2VS-7 AND 8

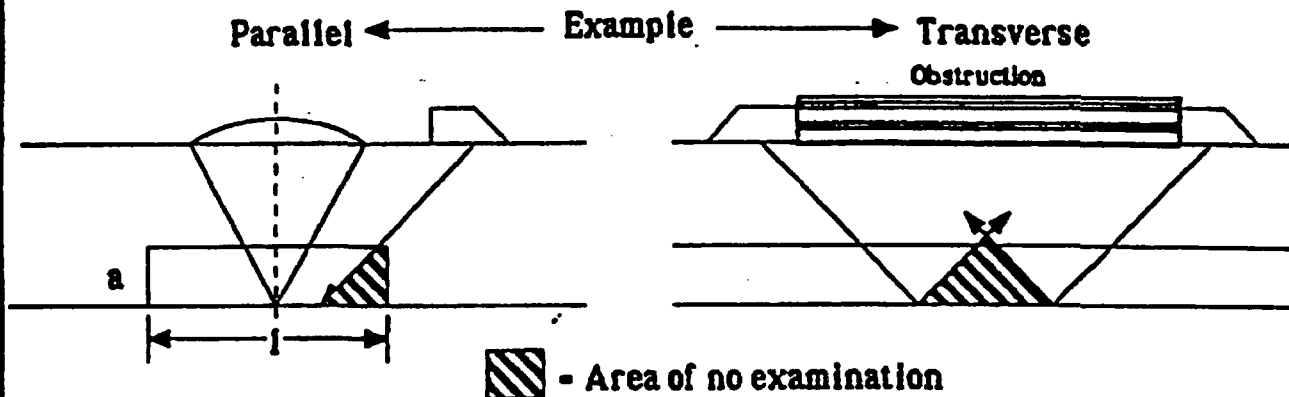
### SURFACE EXAMINATIONS

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



1. Compute Area $a \times l$	- $Asq$	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.

Prepared by: VICTOR MORTON Reviewed by: Vic Morton 22

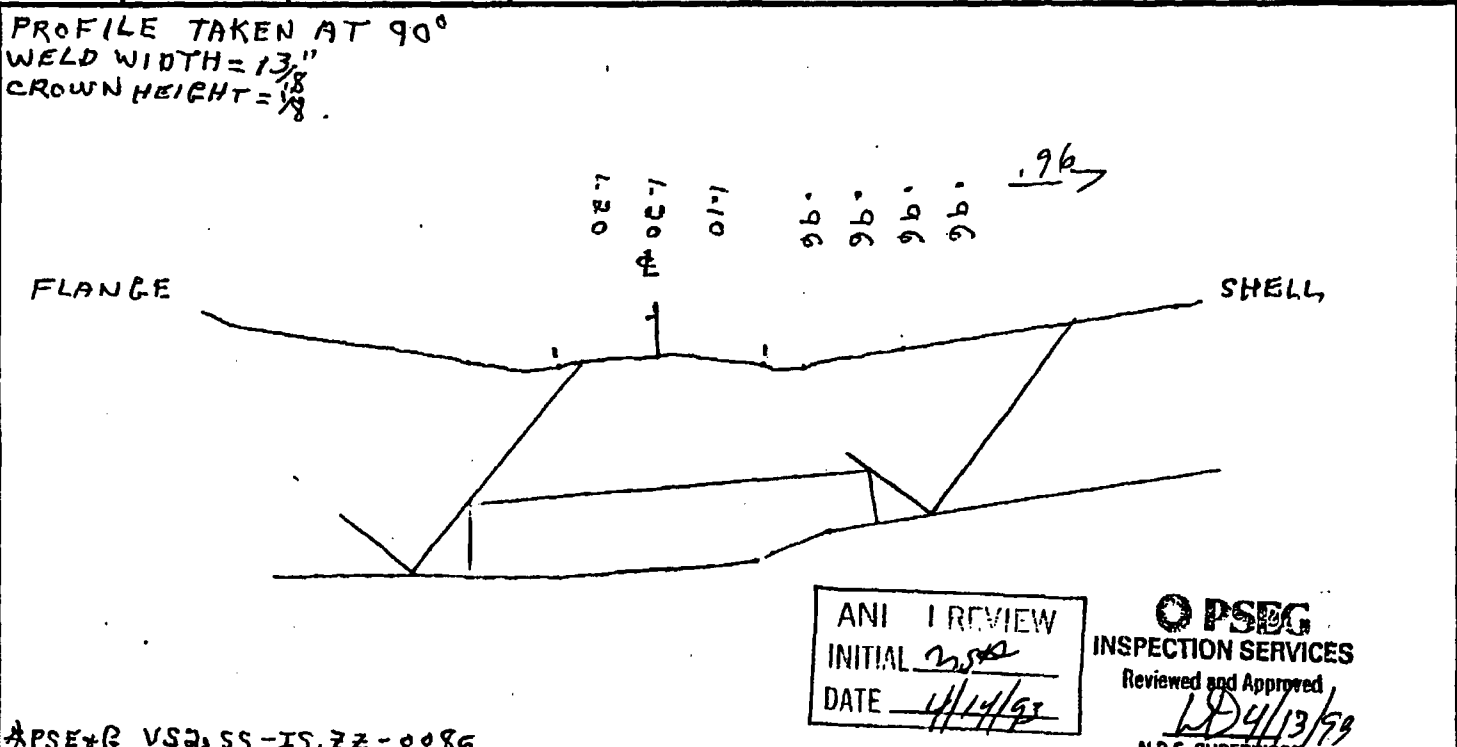
Date: 5 APR 93 Level: III Date: 5 APR 93 Level: III



# SWRI PROFILE AND THICKNESS INFORMATION RECORD

PROJECT NO: <b>17-5502</b>	SITE: <b>Salem Generating Station, Unit 2</b>	DATE: (DAY - MONTH - YEAR) <b>12 APR 93</b>	TIME (24 HR. CLOCK) INT. <b>0930</b> FINAL <b>0940</b>	SHEET NO: <b>135042</b>
EXAMINER <b>L. VILLA</b>	SNT LEVEL <b>II</b>	THK. MEAS. REQ'D BY PROCEDURE* No. <b>SANJ-UT30</b>	INSTRUMENT: SONIC MARK I <input type="checkbox"/> OTHER <b>136</b> <input checked="" type="checkbox"/>	SERIAL NO: <b>855K</b>
EXAMINER <b>M. COTTEN</b>	SNT LEVEL <b>IT</b>	REV <input type="checkbox"/> CHG <input type="checkbox"/> ICN <input checked="" type="checkbox"/> N/A	COUPLANT: GLYCERINE <input type="checkbox"/> WATER <input type="checkbox"/> OTHER (SPECIFY) <b>ULTRAGEL II BATCH 9092</b>	COMPONENT ID: <b>21-RHR-HEX-1</b>
				REFERENCE BLK NO: <b>55-113</b>

SEARCH UNITS	
BRAND	MATL. ASSURANCE
SERIAL NO	E7541
SIZE	1" 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



ANI I REVIEW  
INITIAL **MSR**  
DATE **4/14/93**

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

45° Search Unit chosen for coverage using 1/8, 5/8, 10/8 nodes.	NAME: <b>VICTOR MORTON</b>	SNT LEVEL: <b>III</b>
° Search Unit chosen for coverage using _____ nodes.		

REVIEWED BY: <b>Vic [Signature]</b>	SNT LEVEL: <b>III</b>	DATE: <b>12 APR 93</b>
-------------------------------------	-----------------------	------------------------

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

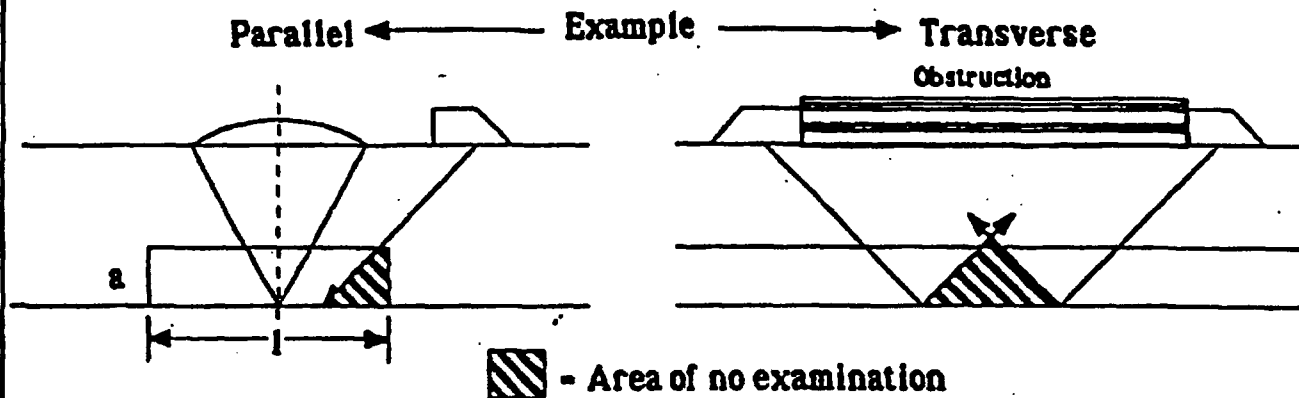
Area Of Limitation (Length x Width - AI)

AI =   

Percentage of Coverage (A - AI/A)

=   

### VOLUMETRIC EXAMINATIONS



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

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

Prepared by: VICTOR MORTON

Reviewed by: Vic [Signature]

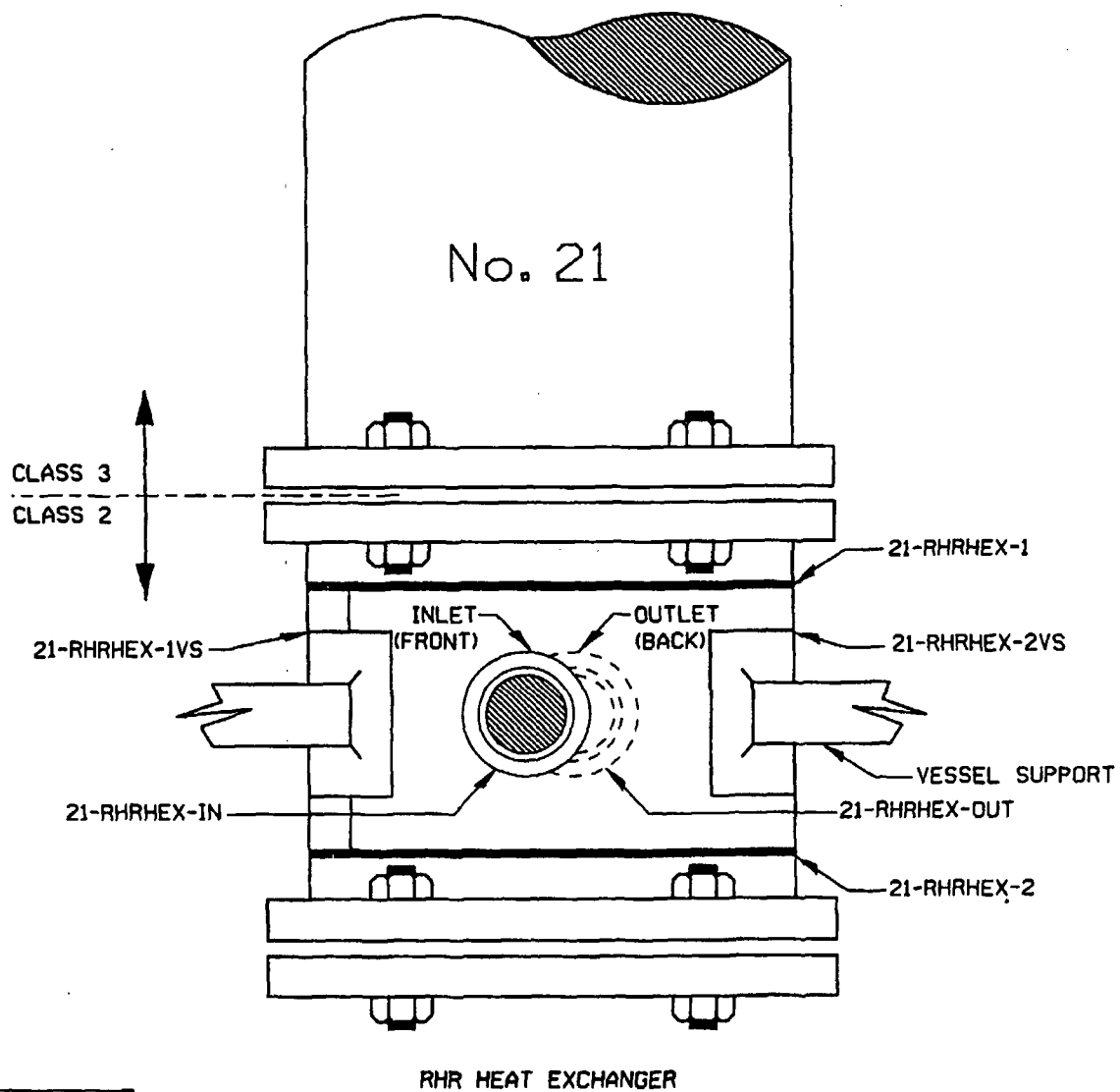
24

Date: 13 APR 93 Level: III

Date: 13 APR 93

Level: III

Page 1 of 1



RHR HEAT EXCHANGER

24A  
 24A

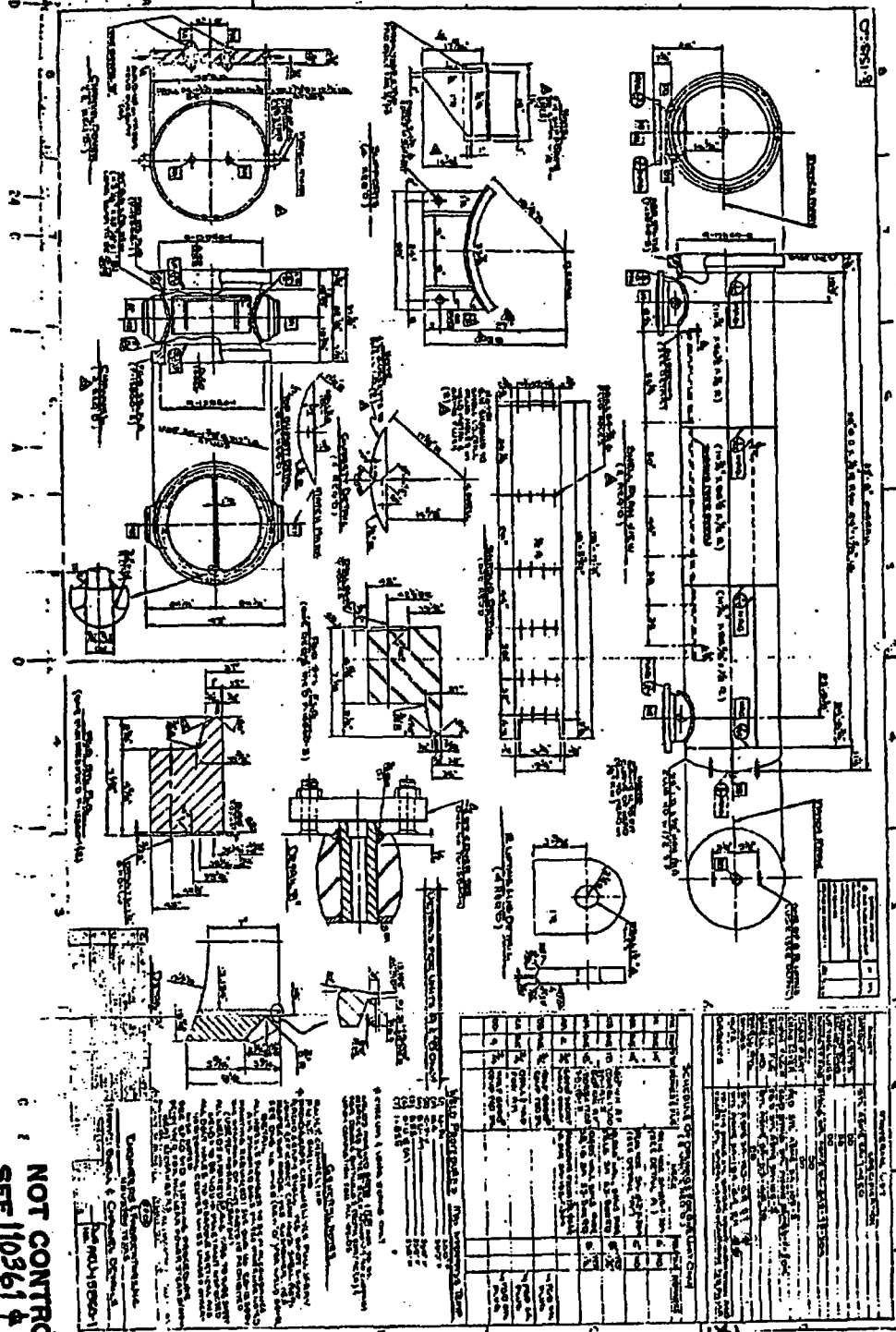
BUILDING: AUXILIARY	LOCATION: #21 RHR HEAT EXCHANGER ROOM	ELEVATIONS: 63'-8"
------------------------	--	-----------------------

P&ID 205332

ATTENTION:	ANY REVISION TO THIS DRAWING SHALL BE MADE ONLY BY CAED	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
1	REVISED PER ORDER No. 80038023.		LINE: N/A	
REV. DATE	DESCRIPTION		THIRD 10 YEAR INSPECTION INTERVAL	



248

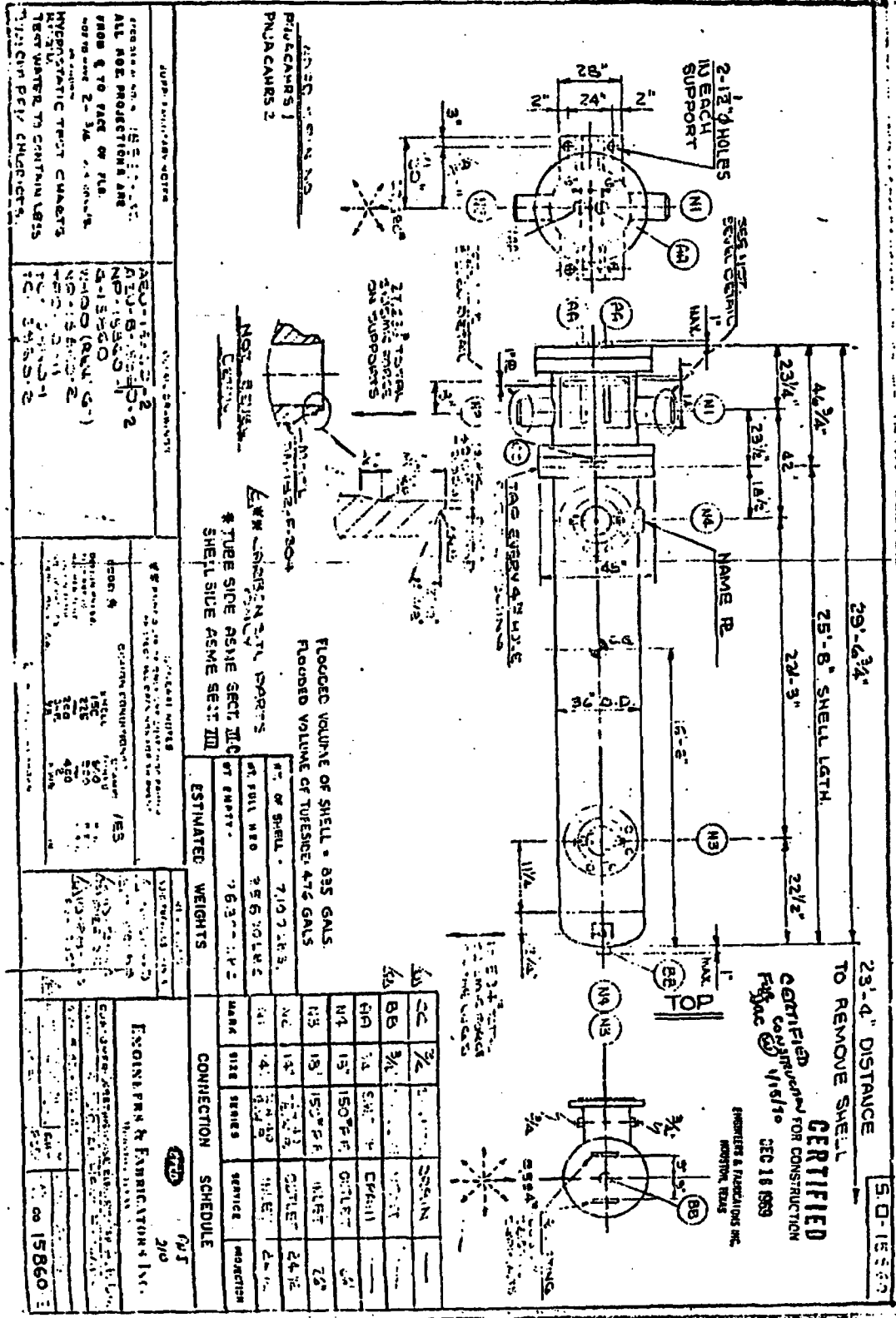


SEE MMS FOR LATEST DATA.

APPROVED BY: [Signature] / DATE: [Date]  
REV. 10/1/58-12/15/59

NOT CONTROLLED  
SEE 110361 & 117598

242



**NOT CONTROLLED**  
 SEE IDB342 & I17597

**CERTIFIED**  
 FOR CONSTRUCTION  
 FEB 18 1999  
 ENGINEERS & FABRICATORS INC.  
 BOSTON, MASS.

PLUGGERS 1  
 PLUGGERS 2  
 FLOODED VOLUME OF SHELL = 825 GALS.  
 FLOODED VOLUME OF TUBESIDE 472 GALS.  
 ESTIMATED WEIGHTS  
 SHELL SIDE ASME SECT III D

MARK	SIZE	SERIES	SERVICE	Welding
AA	3/4"	SS316		
BB	3/4"	SS316		
CC	3/4"	SS316		
DD	3/4"	SS316		
EE	3/4"	SS316		
FF	3/4"	SS316		
GG	3/4"	SS316		
HH	3/4"	SS316		
II	3/4"	SS316		
JJ	3/4"	SS316		
KK	3/4"	SS316		
LL	3/4"	SS316		
MM	3/4"	SS316		
NN	3/4"	SS316		
OO	3/4"	SS316		
PP	3/4"	SS316		
QQ	3/4"	SS316		
RR	3/4"	SS316		
SS	3/4"	SS316		
TT	3/4"	SS316		
UU	3/4"	SS316		
VV	3/4"	SS316		
WW	3/4"	SS316		
XX	3/4"	SS316		
YY	3/4"	SS316		
ZZ	3/4"	SS316		

ENGINEERS & FABRICATORS INC.  
 15860  
 242



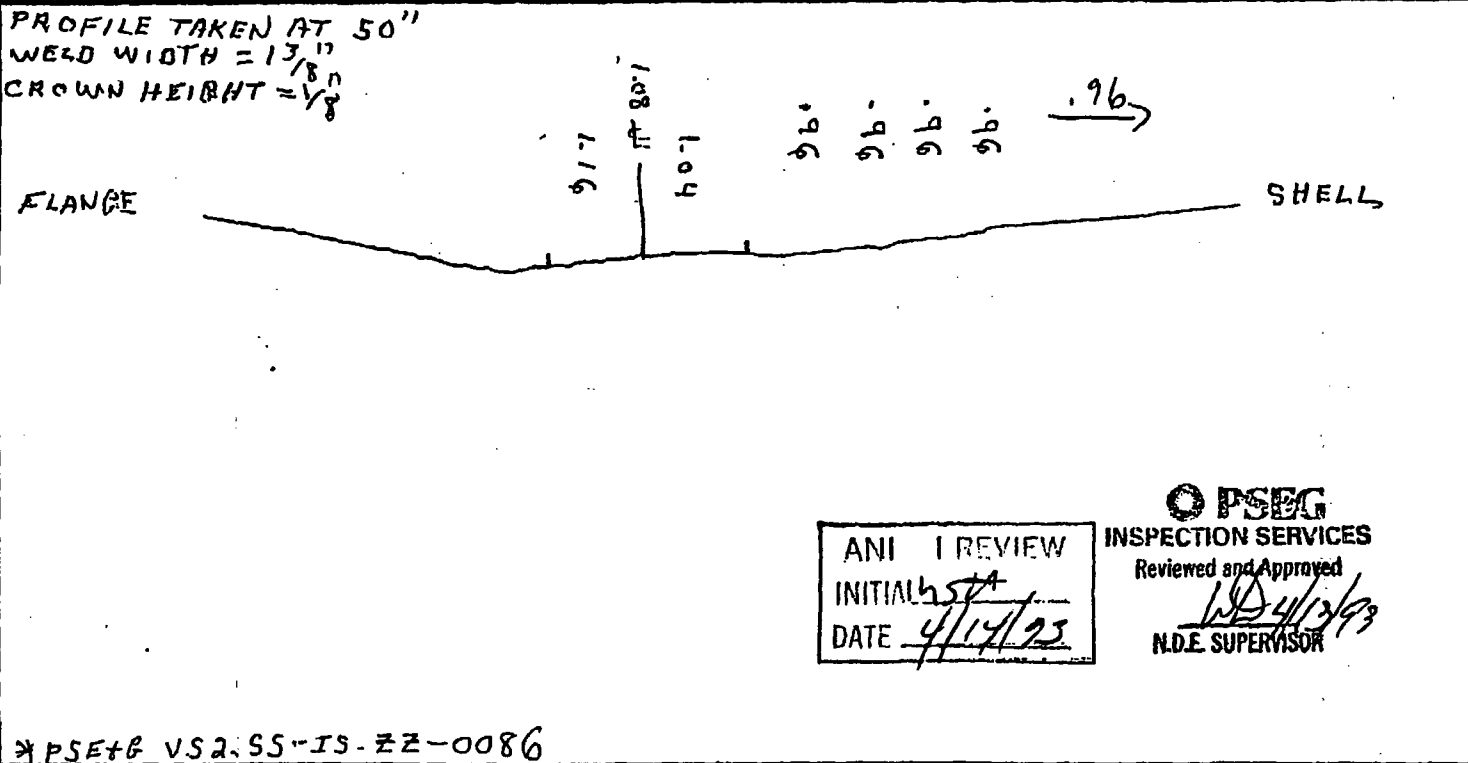
# SWRI PROFILE AND THICKNESS INFORMATION RECORD

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

EXAMINER: L. VILLA      SNT LEVEL: II      THK. MEAS. RECD BY PROCEDURE: No. SAM-3-UT30      INSTRUMENT: SONIC MARK I  OTHER 136       SERIAL NO: 855K      COMPONENT ID: 21-RHR-HEX-2

EXAMINER: M. COTTEN      SNT LEVEL: IT      REVO:      CHG:      ICN:  N/A      COUPLANT: GLYCERINE  WATER  OTHER (SPECIFY) ULTRARELIF BATCH 7092      REFERENCE BLK NO: 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



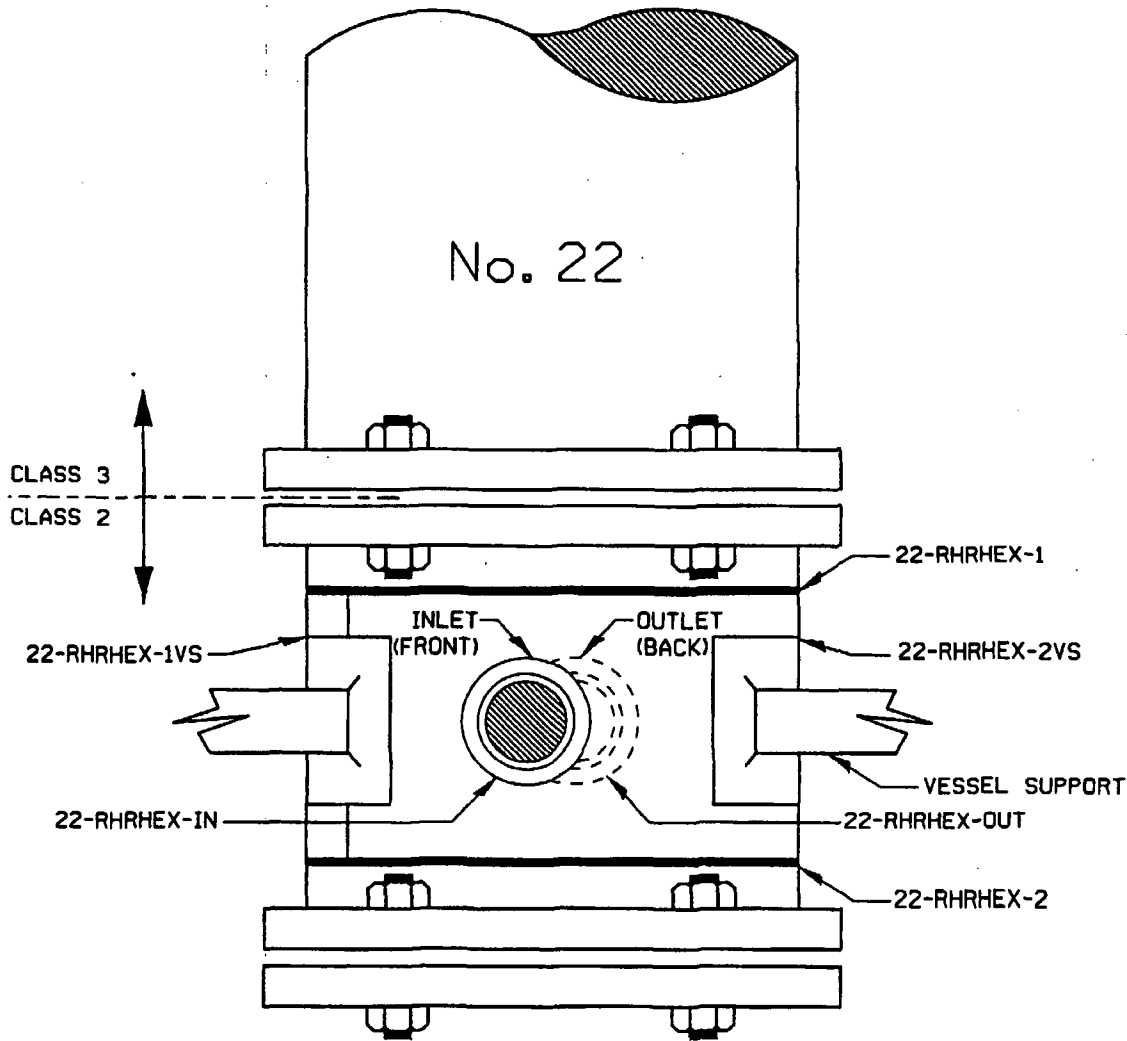
ANI I REVIEW  
INITIALS: hst  
DATE: 4/14/93

**PSEG**  
INSPECTION SERVICES  
Reviewed and Approved  
[Signature]  
N.D.E. SUPERVISOR

\*PSE+6 VS 2.55-IS-ZZ-0086

45° Search Unit chosen for coverage using 2/8, 4/8, 10/8 nodes.      NAME: VICTOR MORTON      SNT LEVEL: III

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



RHR HEAT EXCHANGER

BUILDING: AUXILIARY	LOCATION: *21 RHR HEAT EXCHANGER ROOM	ELEVATIONS: 63'-8"
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P&ID 205332

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

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

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	

## 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 - A1)

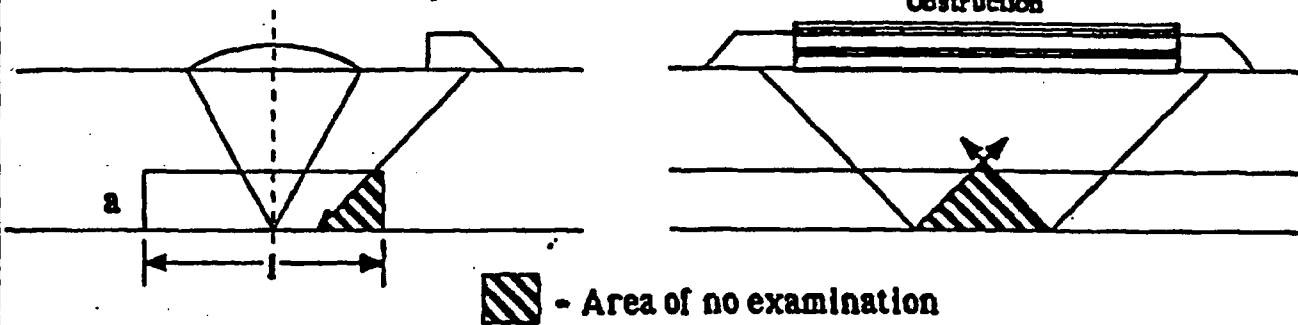
A1 =   

Percentage of Coverage (A - A1/A)

=   

### VOLUMETRIC EXAMINATIONS

Parallel ← Example → Transverse  
Obstruction



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

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

Prepared by: VICTOR MORTON

Reviewed by: Vic Morton 26

Date: 13 APR 93 Level: III

Date: 13 APR 93 Level: III

Page 1 of 1

## LIMITATION REPORT

Project: 17-5502

Unit: SALEM UNIT 2

System: FEEDWATER

Weld No.: 14-BF-2211-2

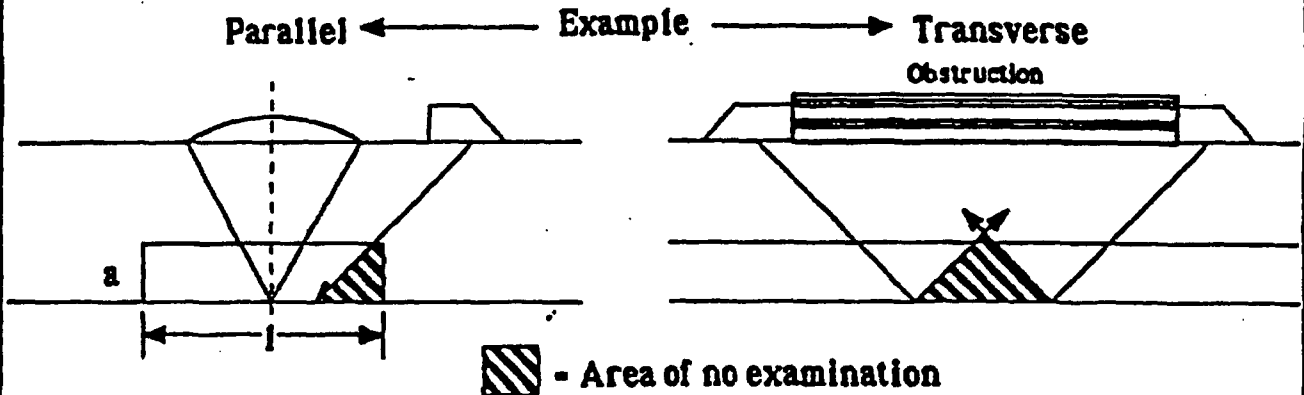
### SURFACE EXAMINATIONS

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

Area Of Limitation (Length x Width - A1) A1- 20.6

Percentage of Coverage (A - A1/A) = 84.3

### VOLUMETRIC EXAMINATIONS



1. Compute Area a x l	- Asq	<u>.92</u>
2. Multiply Asq by Weld Length	- Vt (Volume Total)	<u>40.94</u>
3. Compute Area Not Covered	- a	<u>.92</u>
4. Multiply "a" by Weld Length	- V1 (Volume Limited)	<u>6.44</u>
5. Percentage of Coverage	- (Vt - V1/Vt)	<u>84.3</u>

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

Prepared by: VICTOR MORTON

Reviewed by: Vic Morton

27

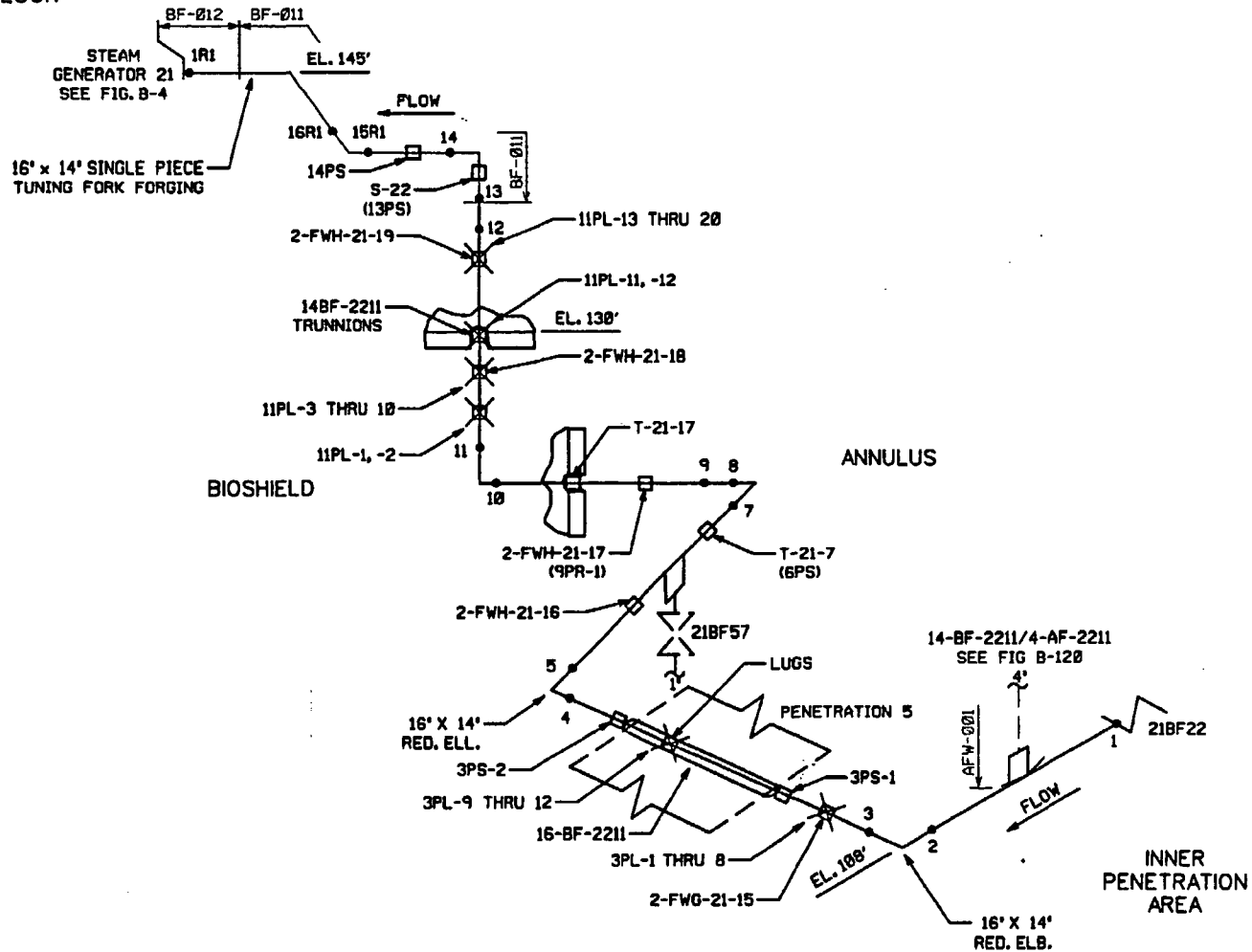
Date: 2 APR 93 Level: III

Date: 2 APR 93

Level: III

Page 1 of 1

REFUEL FLOOR



278

BUILDING: CONTAINMENT INNER PEN	LOCATION: REFUEL FLOOR BIOSHIELD ANNULUS INNER PEN	ELEVATIONS: 108' to 145'
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PSEG ISO SGF23-03  
P & ID 205302-07

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

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

**REQUEST FOR ADDITIONAL INFORMATION**  
**REQUEST FOR RELIEF REGARDING EXAMINATION COVERAGE**  
**SECOND TEN-YEAR IN-SERVICE INSPECTION INTERVAL**  
**SALEM NUCLEAR GENERATING STATION, UNIT NO. 2**  
**DOCKET NO. 50-311**

**QUESTION**      2.1 (c) For certain piping welds, Information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers listed below.

Summary #      330930

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Component I.D.      14-BF-2211-2

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Description      Pipe to Elbow

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		Comments			
1	Weld X-Section	See Attached			
2	Material	Carbon Steel			
3	Thickness / weld Crown	Thickness 1.1" / Weld Crown 1.5"			
4	Obstruction	Restraining Lug			
5	Exam Area Highlighted on Drawing	<table border="1" style="display: inline-table;"> <tr> <td style="text-align: center;">Yes</td> <td style="text-align: center;">X</td> <td style="text-align: center;">No</td> </tr> </table>	Yes	X	No
Yes	X	No			
6	Transducer ray exit point	See Attached			

**Comments**

UT exam was performed of this component using 45 degree shear wave transducer. The ultrasonic examination was limited to 84% of the code required coverage being limited due to permanently installed column support lug located immediately adjacent to the weld that interferes with scanning. No unacceptable indications were observed. A Magnetic Particle examination and system pressure test was also completed with no recordable indications observed.

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Supplemental Drawing

Summary # 330930

Component I.D. 14-BF-2211-2

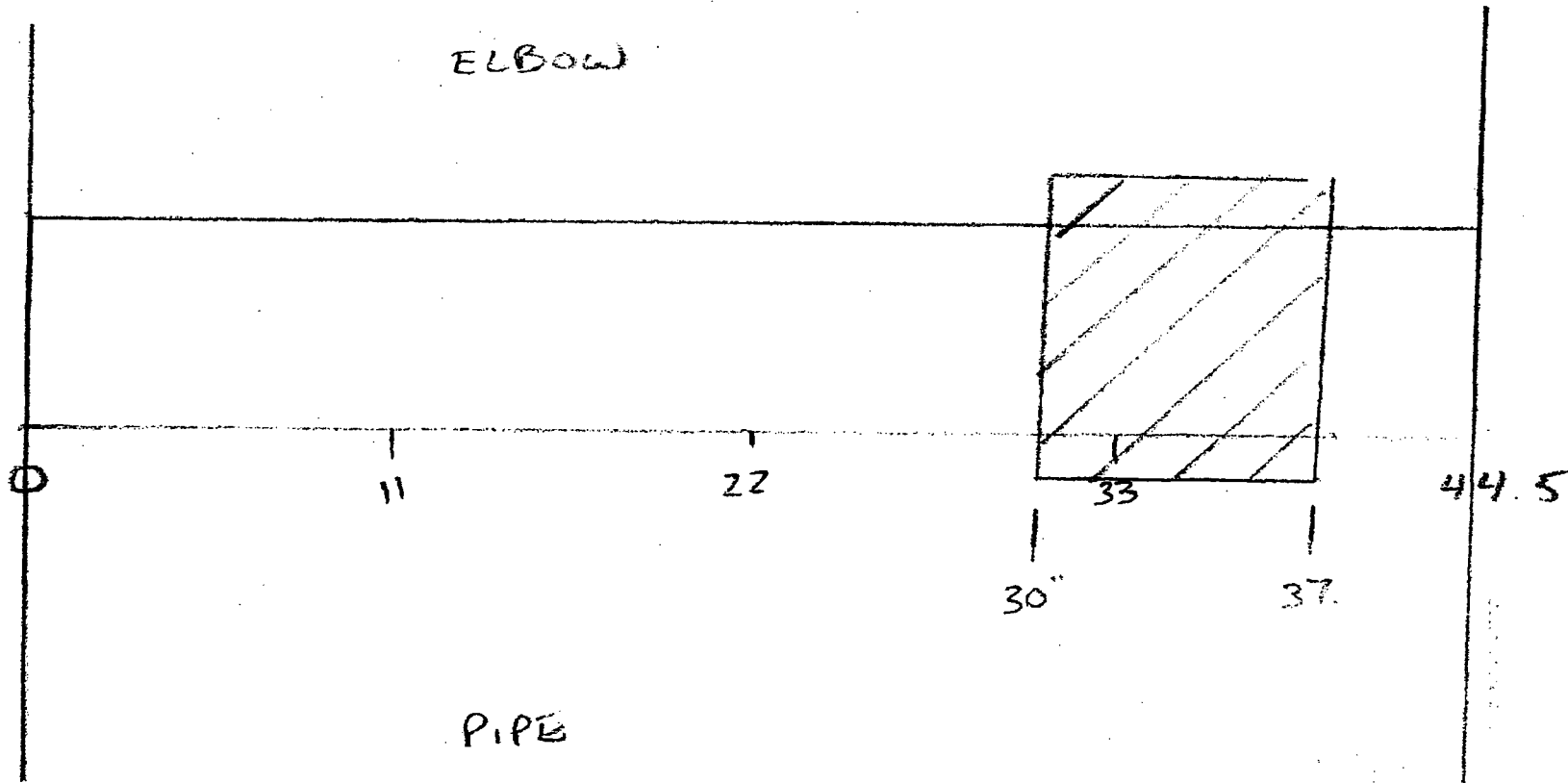
Description Pipe to Elbow

Page of

Comments

UT exam was performed of this component using 45 degree shear wave transducer. The ultrasonic examination was limited to 84% of the code required coverage being limited due to permanently installed column support lug located immediately adjacent to the weld that interferes with scanning

Sketch



NO EXAM IN ANY DIRECTION DUE TO RESTRAINING LUG



# SWRI ULTRASONIC EXAMINATION RECORD

PROJECT No: <b>17-5502</b>	SITE: <b>Salem Generating Station, Unit 2</b>	DATE: (DAY - MONTH - YEAR) <b>31 MAR 93</b>	TIME: (24 HR CLOCK) EXAM STARTED <b>1433</b> EXAM ENDED <b>1458</b>	SHEET No <b>860077</b>		
EXAMINATION AREA (SYST/COMP) <b>FEED WATER</b>	(LINE/SUBASSEMBLY) <b>14-BF-2211</b>	(IDENTIFICATION) <b>2</b>	L <sub>0</sub> LOCATION <b>1</b>	W <sub>0</sub> LOCATION Φ OF WELD		
EXAMINER <b>L. VILLA</b>	SNT LEVEL <b>II</b>	PROCEDURE No <b>VS 2.55-15-ZZ-0082</b> REV 2 SAM 3-UT3	CALIBRATION SHEET(S) <b>147044</b>	ANGLE USED <b>45°</b>	WELD TYPE <b>PIPE/ELBOW</b>	EXAM SURFACE TEMP. °F BEFORE AFTER
EXAMINER <b>M. COTTEN</b>	SNT LEVEL <b>IT</b>	CHG 0 ICN <input checked="" type="checkbox"/> N/A	SCANNING dB <b>59.6</b>	WELD LENGTH <b>44 1/2"</b>	<b>66°</b>	<b>66°</b>

IND No	% OF DAC MAX	W MAX		L <sub>1</sub>				L MAX	L <sub>2</sub>				SEARCH UNIT LOC	SEARCH UNIT ANGLE	DAMPS (IF YES, EXPLAIN)	REMARKS	INITIAL
		W	MP	20% DAC	50% DAC	100% DAC	1/2 MAX DAC		1/2 MAX DAC	100% DAC	50% DAC	20% DAC					
1	56	1 1/4	1.65		14 3/16			14 1/4			14 5/16		DN	45°	NO		2)
		NO RECORDABLE INDICATIONS										UP	45°			2)	

ANI REVIEW  
INITIAL **NSA**  
DATE **4/14/93**

**PSEG**  
INSPECTION SERVICES  
Reviewed and Approved  
**LD 4/5/93**  
N.D.E. SUPERVISOR

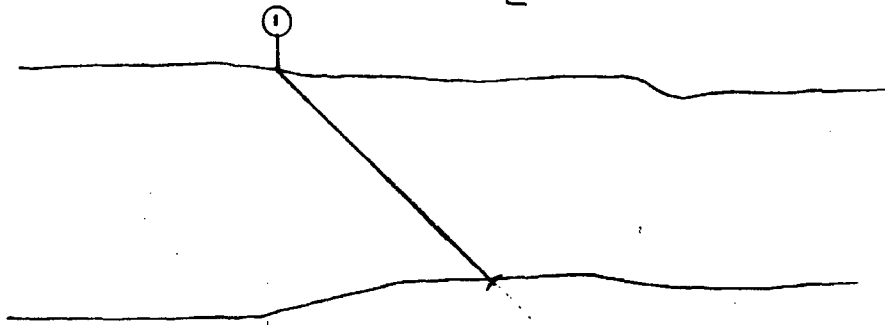
REMARKS / LIMITATIONS. IF NONE SO STATE: **NO EXAMINATION FROM 30" TO 37" DUE TO RESTRAINING LUG** 2)

REVIEWED BY: <b>Vie [Signature]</b>	SNT LEVEL <b>III</b>	DATE <b>2 APR 93</b>	CONTINUED ON SHEET <b>N/A</b>	PAGE <b>1</b> OF <b>1</b>
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DOWN  
ELBOW

← FLOW  
|  
E

UP  
PIPE.



SALEM UNIT 2 17-5502  
FEEDWATER 14-BF-2211-2  
VICTOR MORTON III 2 APR 93  
GEOMETRIC

① ROOT

ANI	REVIEW
INITIAL	<i>NSA</i>
DATE	<i>4/12/93</i>

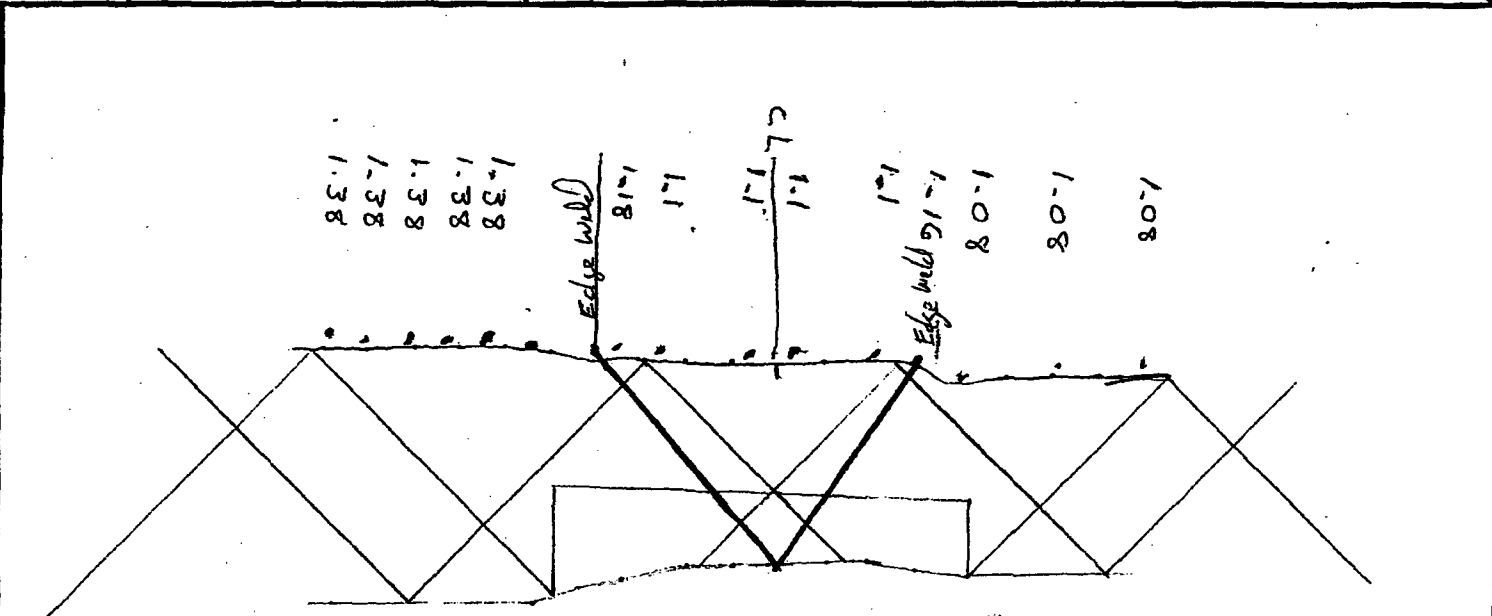
**O PSEG**  
INSPECTION SERVICES  
Reviewed and Approved  
*WD 4/15/93*  
M.D.E. SUPERVISOR

330930

# SWRI PROFILE AND THICKNESS INFORMATION RECORD

PROJECT NO: <b>17-5502</b>		SITE: <b>Salem Generating Station, Unit 2</b>		DATE: (DAY - MONTH - YEAR) <b>31 MAR 93</b>		TIME (24 HR. CLOCK) INT. <b>1410</b> FINAL <b>1425</b>		SHEET NO: <b>135040</b>	
EXAMINER <b>L. VILLA</b>		SNT LEVEL <b>II</b>	THK. MEAS. REQ'D BY PROCEDURE No. <b>SAM9-UT49</b>	INSTRUMENT: SONIC MARK 1 <input type="checkbox"/> OTHER <b>136</b> <input checked="" type="checkbox"/>		SERIAL NO: <b>855K</b>		COMPONENT ID: <b>14-BF-2211-2</b>	
EXAMINER <b>M. COTTEN</b>		SNT LEVEL <b>I+</b>	REV <input type="checkbox"/> CHG <input type="checkbox"/> ICN <input checked="" type="checkbox"/> <b>N/A</b>	COUPLANT: GLYCERINE <input type="checkbox"/> WATER <input type="checkbox"/> OTHER (SPECIFY) <b>ULTRABEL II BATCH 9092</b>		REFERENCE BLK NO: <b>CS134</b>			

SEARCH UNITS	
BRAND	<b>MATERIAL ASSURANCE</b>
SERIAL NO	<b>E-7541</b>
SIZE	<b>1/2"</b>
FREQ. (MHz)	<b>2.25</b>
INSTRUMENT SETTINGS	
SCREEN SIZE	<b>2"</b>
DELAY	<b>.006</b>
MATL. CAL.	<b>.224</b>
RANGE	<b>2</b>
REP. RATE	<b>4KHZ</b>
JACK USED	<b>RCV</b>
TRANS MODE	<b>P/E</b>



WELD WIDTH = **1 15/16"**

**INSIC**  
 ANI I REVIEW INSPECTION SERVICES  
 INITIAL **USA**  
 DATE **4/12/93**  
 Reviewed and Approved: **FLOW**  
**WD 4/5/93**  
 N.O.E. SUPERVISOR

$45^\circ$ Search Unit chosen for coverage using <b>4/8 8/8 12/8</b> nodes.	NAME: <b>VICTOR MORTON</b>	SNT LEVEL: <b>III</b>
$_____^\circ$ Search Unit chosen for coverage using _____ nodes.		

REVIEWED BY: <b>Vic [Signature]</b>	SNT LEVEL: <b>III</b>	DATE: <b>2 APR 93</b>
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# SWRI MAGNETIC PARTICLE EXAMINATION RECORD

PROJECT No: <b>17-5502</b>		SITE: <b>Salem Generating Station, Unit 2</b>		DATE: (DAY - MONTH - YEAR) <b>12 APR 93</b>		TIME (24 HR. CLOCK) EXAM STARTED: <b>0907</b> EXAM ENDED: <b>0924</b>		SHEET No.: <b>120016</b>		
EXAMINATION AREA: (SYST/COMP) <b>FEEDWATER</b>		LINE/SUBASSEMBLY: <b>14-BF-2211</b>		IDENTIFICATION: <b>TRUNNIONS</b>		L <sub>o</sub> LOCATION: <b>6</b>		W <sub>o</sub> LOCATION: <b>FUSION LINE MAIN RUN</b>		
EXAMINER: <b>W. HAWKINS</b>		SNT LEVEL <b>II</b>	PROCEDURE <b>Y 52.55-15.22-0070 No 5am 2 - M/T I</b>			SURFACE FINISH: <b>AS WELDED</b>		WELD TYPE (← FLOW →) <b>FILLET</b>		
EXAMINER: <b>W. BYLER</b>		SNT LEVEL <b>IT</b>	REV 1 CHG 1 ICN <input checked="" type="checkbox"/> N/A			MATERIAL BRAND: <b>DETEK</b> WET <input type="checkbox"/> DRY <input checked="" type="checkbox"/>		YOKE SPACING: <b>4</b> IN YOKE BRAND: <b>PARKER</b>		
CALIBRATION BLOCK SERIAL No.: <b>B 70198 10</b> WEIGHT: <b>11.3</b>		CALIBRATION VERIFICATION TIME: <b>0847</b> <b>1128</b> INITIALS: <b>WH</b> <b>WB</b>			DISTANCE FROM BLACK LIGHT TO SENSOR CELL <b>N/A</b> IN		MATERIAL BATCH No.: <b>7801-200</b> FLOURESCENT <input type="checkbox"/>		SURFACE TEMP. <b>N</b> °F THERMOMETER SERIAL No.: <b>A</b>	
BLACK LIGHT BRAND: <b>N</b> SERIAL No.: <b>A</b>		INTENSITY METER BRAND: <b>N</b> SERIAL No.: <b>A</b>		BLACK LIGHT OUTPUT <b>N</b> $\mu\text{w}/\text{cm}^2$			BLACK LIGHT OUTPUT VERIFICATION TIME: <b>N</b> INITIALS: <b>A</b>		MATERIAL APPLICATION: DUSTING <input checked="" type="checkbox"/> FLOODING <input type="checkbox"/> SPRAYING <input type="checkbox"/>	
IND No.	L	W	LOCATION	ROUND OR LINEAR	SIZE DIA. OR LENGTH	REMARKS:			INITIALS	
			<b>NO RECORDABLE INDICATIONS</b>						<b>NH</b>	
EXAMINATION AREA LIMITATION: (IF NONE, SO STATE) <b>WELD 7 1/2" LONG, 1/2" OF WELD CANNOT BE INSPECTED DUE TO CONFIGURATION,</b>										
REVIEWED BY: <b>Vie [Signature]</b>		SNT LEVEL <b>III</b>			DATE <b>12 APR 93</b>		PAGE <b>1</b> OF <b>1</b>			

## LIMITATION REPORT

Project: 17-5502

Unit: SALEM UNIT 2

System: FEEDWATER

Weld No.: 14-BF-2211  
TRUNNIONS

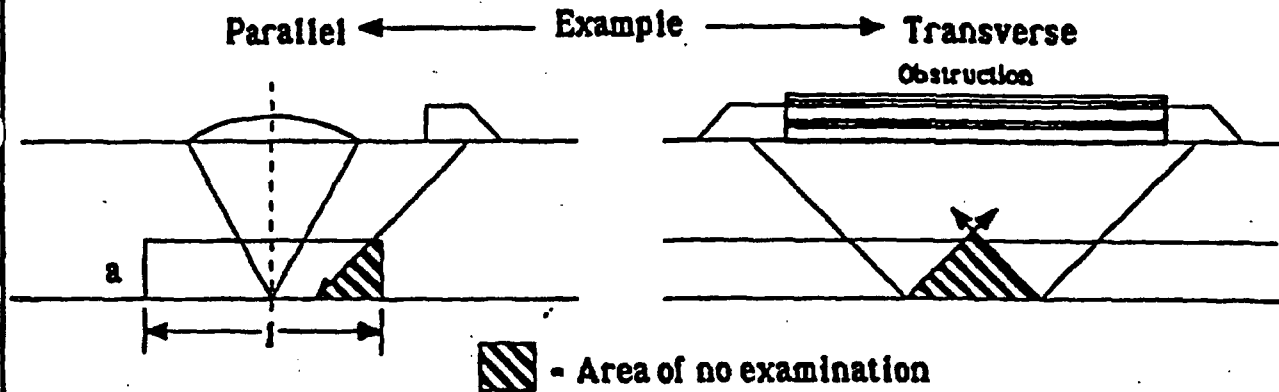
### SURFACE EXAMINATIONS

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

Area Of Limitation (Length x Width - A1) A1 = 1.5

Percentage of Coverage (A - A1/A) = 80

### VOLUMETRIC EXAMINATIONS



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.

Prepared by: VICTOR MORTON

Reviewed by: Vic Morton

29

Date: 12 APR 93 Level: III

Date: 12 APR 93 Level: III

Page 1 of 1

REQUEST FOR ADDITIONAL INFORMATION  
 REQUEST FOR RELIEF REGARDING EXAMINATION COVERAGE  
 SECOND TEN-YEAR IN-SERVICE INSPECTION INTERVAL  
 SALEM NUCLEAR GENERATING STATION, UNIT NO. 2  
 DOCKET NO. 50-311

**QUESTION**      2.2(a) For certain component attachments and support welds, Information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers listed below.

Summary #      331095

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Component I.D.    14-BF-2211 - 11PL11& 11PL12

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Description      TRUNION

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		Comments
<input type="checkbox"/> 1	Weld X-Section	N/A
<input type="checkbox"/> 2	Material	Carbon Steel
<input type="checkbox"/> 3	Thickness / weld Crown	UNKNOWN
<input type="checkbox"/> 4	Obstruction	11 PIPE SUPPORT
<input type="checkbox"/> 5	Exam Area Highlighted on Drawing	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
<input type="checkbox"/> 6	Transducer ray exit point	N/A

**Comments**

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.

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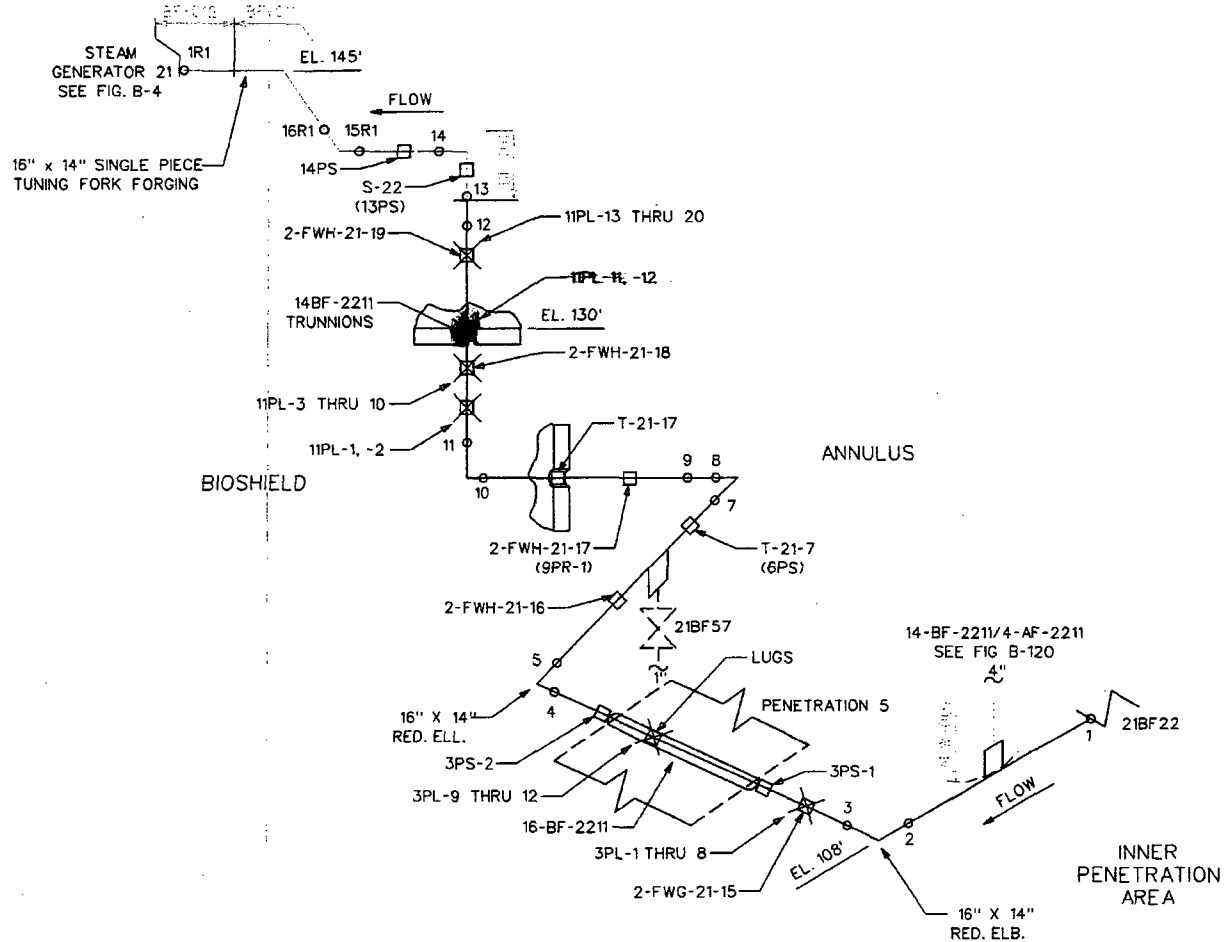


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REFUEL FLOOR



BUILDING: CONTAINMENT INNER PEN	LOCATION: REFUEL FLOOR BIOSHIELD ANNULUS INNER PEN	ELEVATIONS: 108' to 145'
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PSEG ISO SGF23-03  
P & ID 205302-07

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

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

- LV 1 = COMMON INFORMATION
- LV 2 = WELD INFORMATION
- LV 3 = HANGER INFORMATION



Supplemental Drawing

Summary # 331095

Component I.D. 14-BF-2211

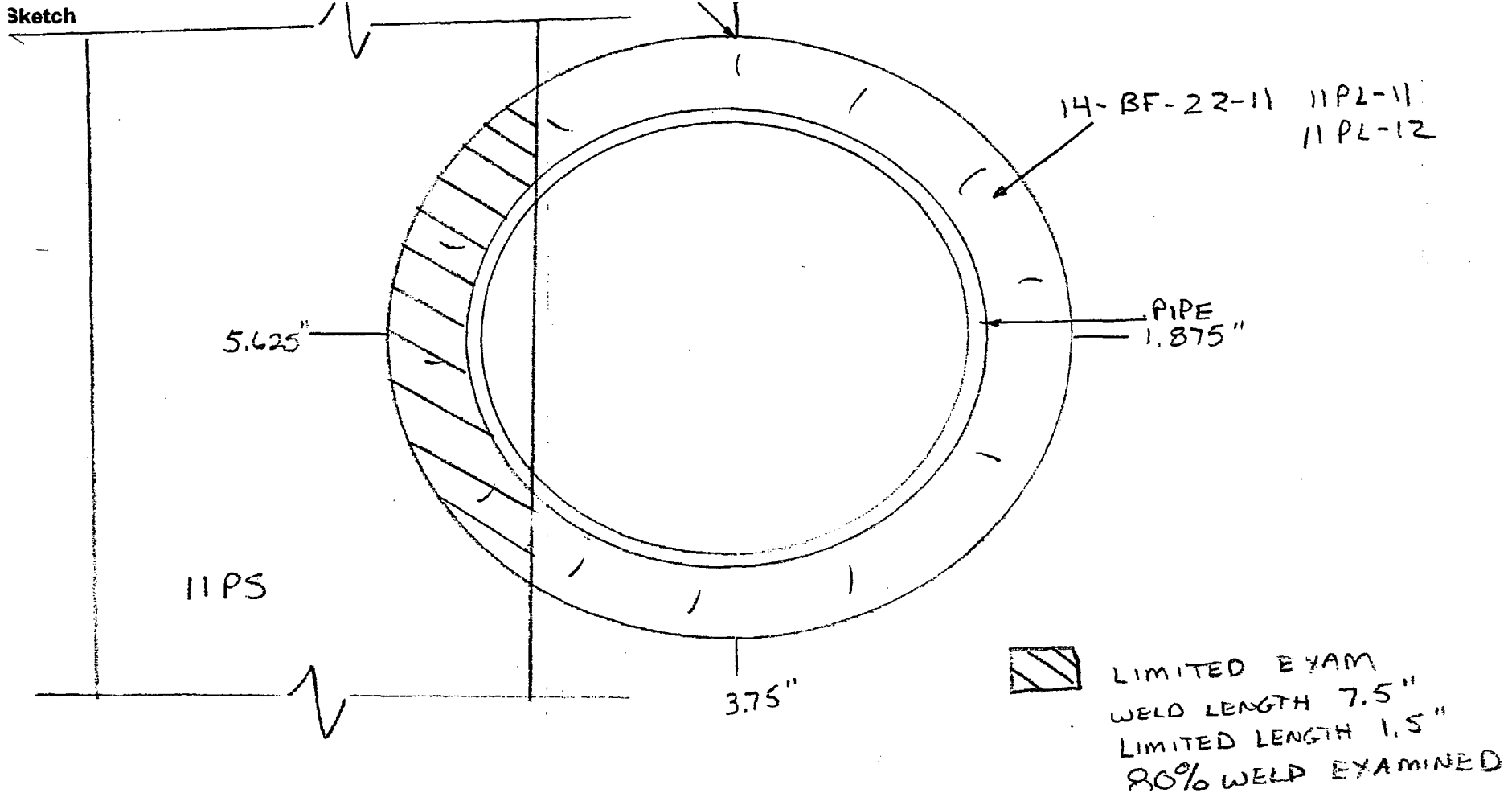
Description TRUNION

Page of

Comments

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).

Sketch

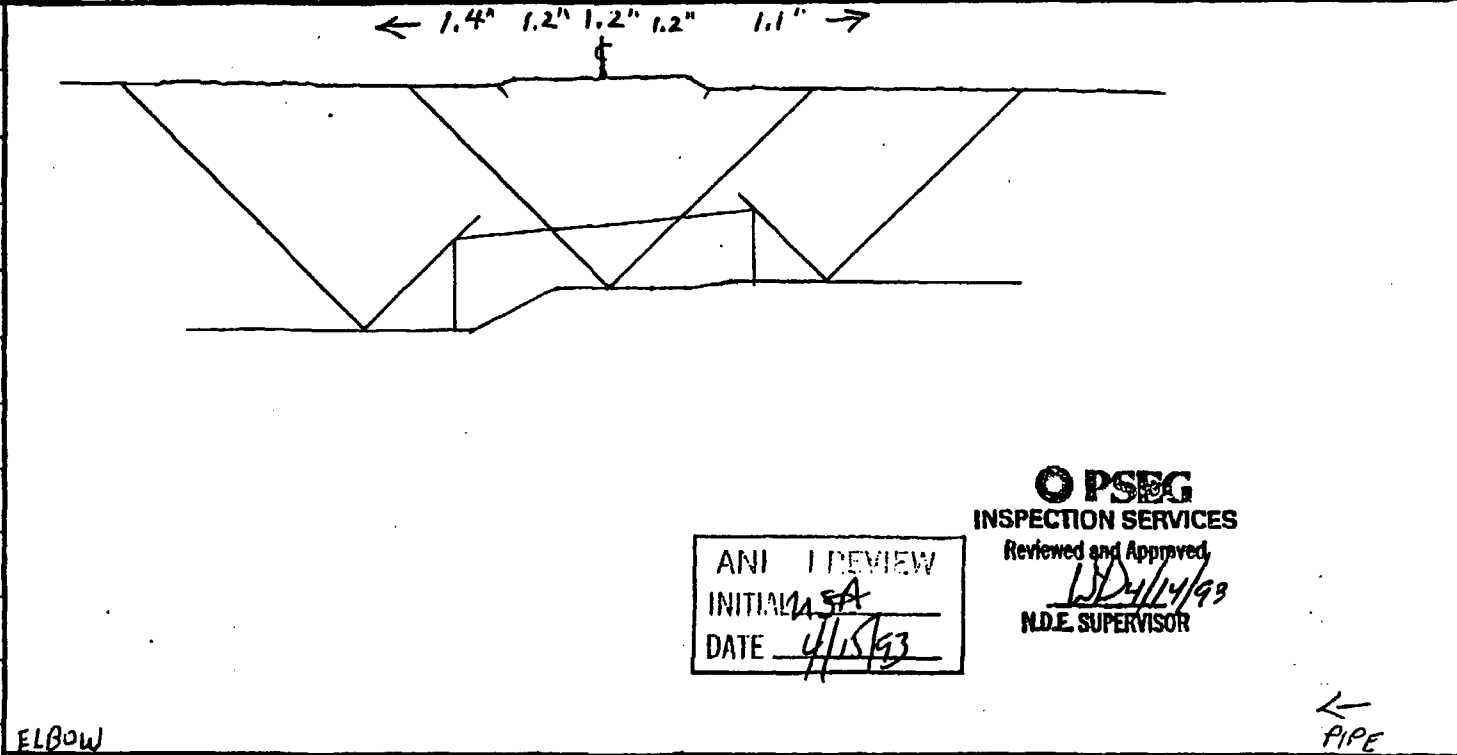


# SWRI PROFILE AND THICKNESS INFORMATION RECORD

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

EXAMINER <b>W. HAWKINS</b>	SNT LEVEL <b>II</b>	THK. MEAS. REQ'D BY PROCEDURE No. <b>YS1.55-15.22-0082</b> <b>SN 2-473</b>	INSTRUMENT: SONIC MARK I <input type="checkbox"/> OTHER <b>136</b> <input checked="" type="checkbox"/>	SERIAL NO: <b>860K</b>	COMPONENT ID: <b>30-m5-2211-9</b>
EXAMINER <b>W. BYLER</b>	SNT LEVEL <b>IT</b>	REV 2 CHG 0 ICN <input checked="" type="checkbox"/> N/A	COUPLANT: GLYCERINE <input type="checkbox"/> WATER <input type="checkbox"/> OTHER (SPECIFY) <b>ULTRAGEL BATCH NO. 9092</b>	REFERENCE BLK NO: <b>C5-134</b>	

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



ANI I REVIEW INITIALS <b>SA</b> DATE <b>4/15/93</b>
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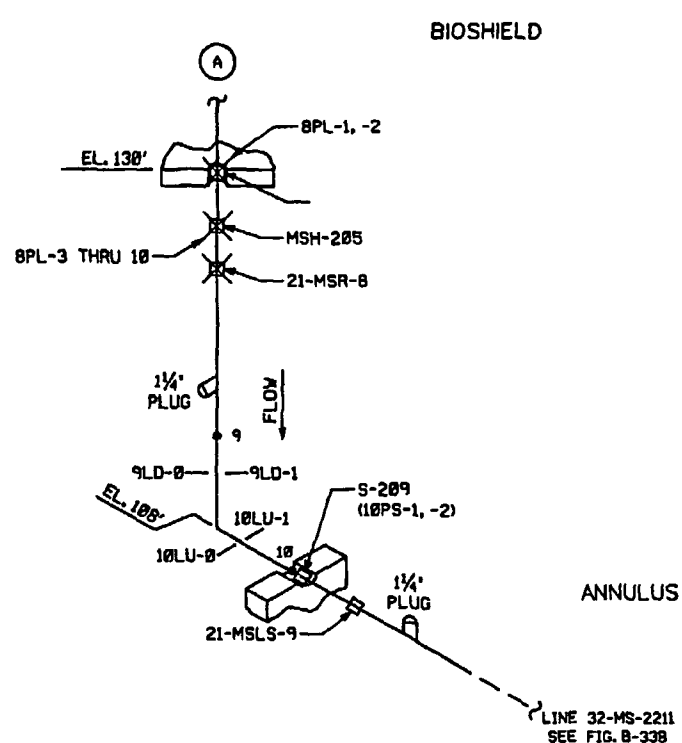
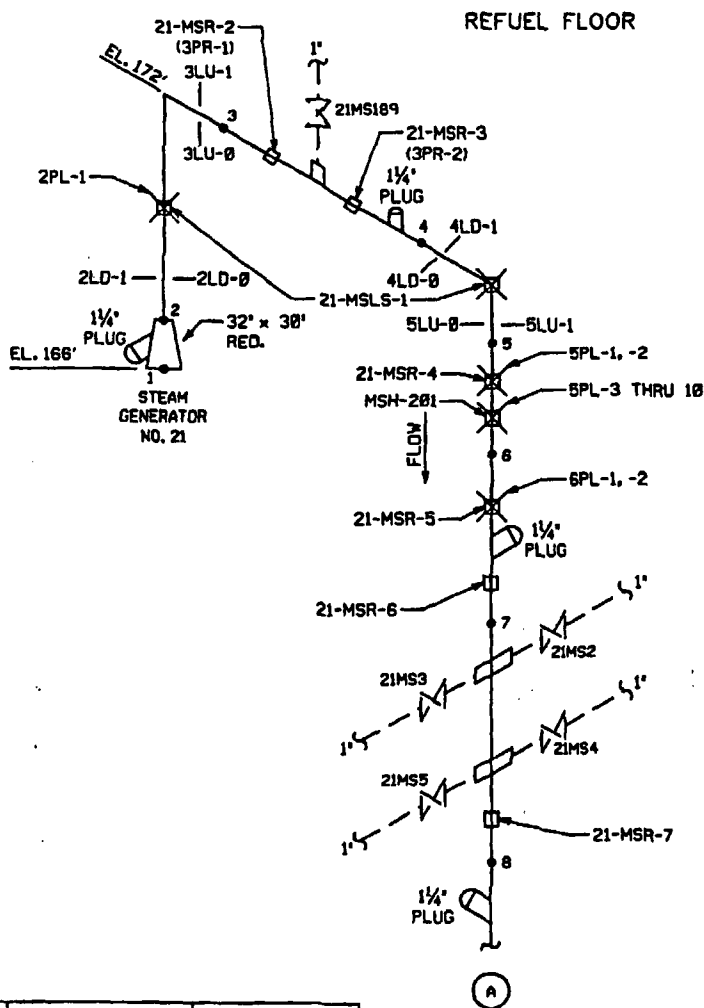
**PSEG**  
INSPECTION SERVICES  
Reviewed and Approved  
**LD 4/14/93**  
N.D.E. SUPERVISOR

REVIEWED BY: <b>[Signature]</b>	SNT LEVEL: <b>III</b>	NAME: <b>VICTOR MORTON</b>	DATE: <b>13 APR 93</b>
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SWRI FORM No. NDTR 17-135 (REV. 6/90)

33

382140



304

BUILDING: CONTAINMENT	LOCATION: REFUEL FLOOR BIOSHIELD ANNULUS	ELEVATIONS: 108' - 172'
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PSEG ISO MS23-01  
P & ID 205303

ATTENTION: ANY REVISION TO THIS DRAWING SHALL BE MADE ONLY BY CAED		
1	REVISED PER ORDER No. 80038023.	DESCRIPTION
REV.	DATE	

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	

**REQUEST FOR ADDITIONAL INFORMATION**  
**REQUEST FOR RELIEF REGARDING EXAMINATION COVERAGE**  
**SECOND TEN-YEAR IN-SERVICE INSPECTION INTERVAL**  
**SALEM NUCLEAR GENERATING STATION, UNIT NO. 2**  
**DOCKET NO. 50-311**

**QUESTION**      2.1 (c) For certain piping welds, Information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers listed below.

**Summary #**      382140

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**Component I.D.**      30-MS-2211-9

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**Description**      Pipe to Elbow

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		Comments
1	Weld X-Section	See Attached
2	Material	Carbon Steel
3	Thickness / weld Crown	Thickness 1.2" / weld Crown 1"
4	Obstruction	Branch Connection
5	Exam Area Highlighted on Drawing	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
6	Transducer ray exit point	See Attached

**Comments**

UT exam was performed of this component using 45 degree shear wave transducer. The ultrasonic examination was limited to 90% of the code required coverage being limited between 9/16" to 3 7/8" No unacceptable indications were observed. A liquid penetrant examination and system pressure test was also completed with no recordable indications observed.

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Supplemental Drawing

Summary # 382140

Component I.D. 30-MS-2211-9

Description Pipe to Elbow

Page of

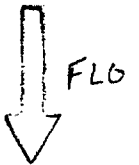
Comments

The ultrasonic examination was limited to 90% of the code required coverage being limited between 9/16" to 3 7/8"

Sketch

Sketch

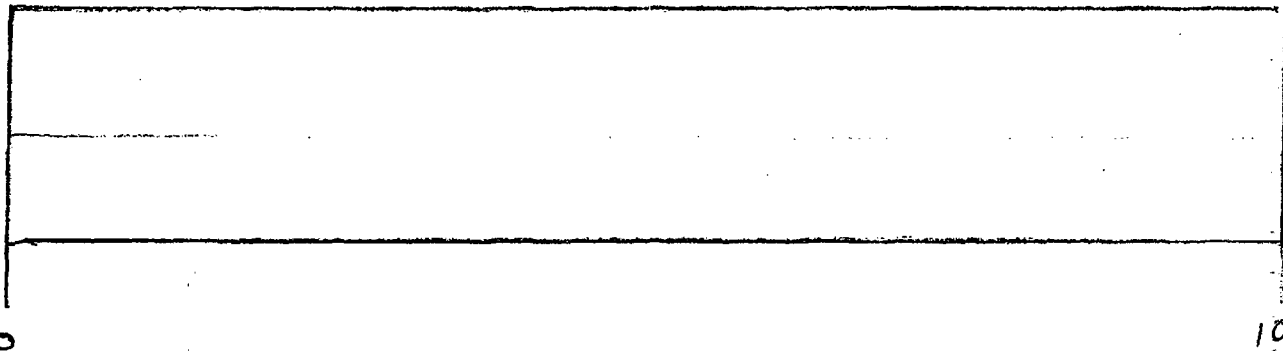
PIPE




BRANCH  
CONNECTION



WELD  
ROLLOUT



DOWNSTREAM

LIMITED SCAN 

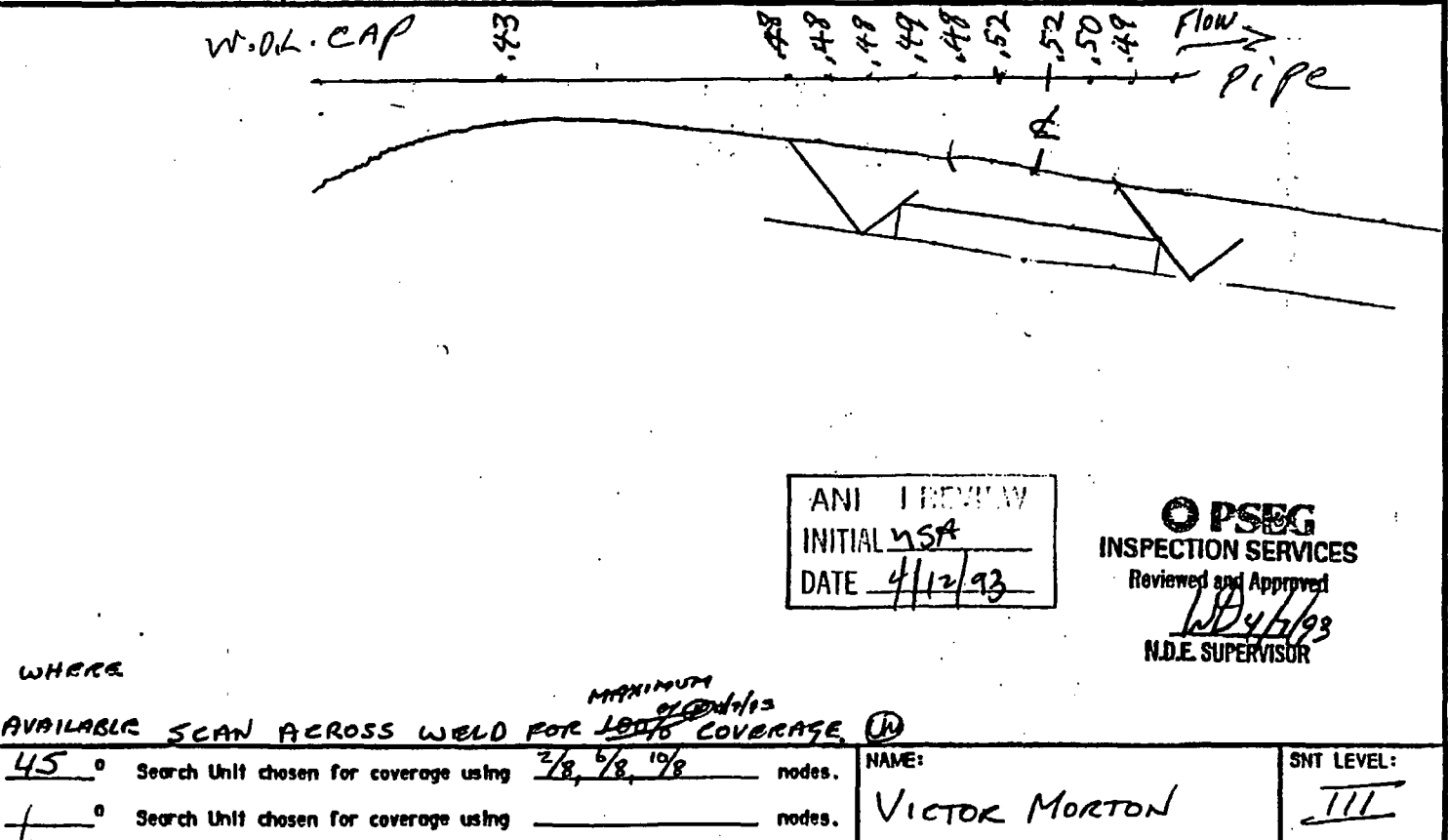
ELBOW



# SWRI PROFILE AND THICKNESS INFORMATION RECORD

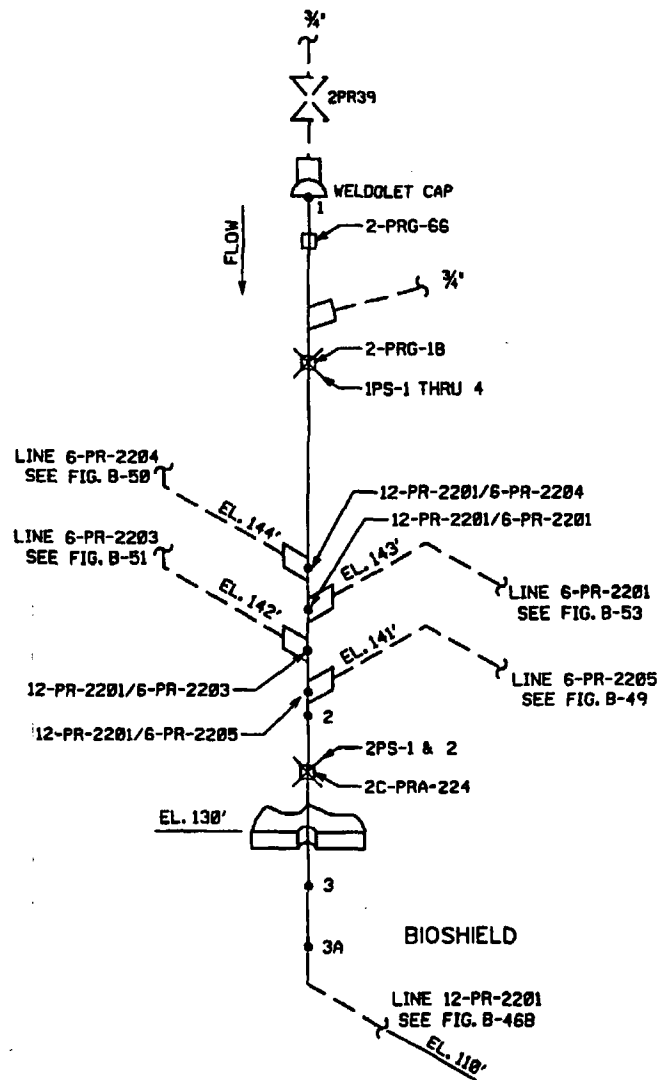
PROJECT NO: <b>17-5502</b>		SITE: <b>Salem Generating Station, Unit 2</b>		DATE: (DAY - MONTH - YEAR) <b>6 APRIL 93</b>		TIME (24 HR. CLOCK) INT. <b>1355</b> FINAL <b>1655</b>		SHEET NO: <b>135088</b>		
EXAMINER <b>K. KURTZ</b>		SNT LEVEL <b>II</b>	THK. MEAS. REQ'D BY PROCEDURE No. <b>SAM 2 UT3</b>		INSTRUMENT: SONIC MARK I <input type="checkbox"/> OTHER ULTRAGEL <input checked="" type="checkbox"/>		SERIAL NO: <b>857 K</b>		COMPONENT ID: <b>12-PR-2201-1</b>	
EXAMINER <b>F. BRAUN</b>		SNT LEVEL <b>IT</b>	REV 2 CHG 0 ICN <input checked="" type="checkbox"/> T/A		COUPLANT: <b>ULTRAGEL</b> GLYCERINE <input type="checkbox"/> WATER <input type="checkbox"/>		OTHER (SPECIFY) <b>BATCH NO. 9092</b>		REFERENCE BLK NO: <b>66 SAM</b>	

SEARCH UNITS	
BRAND	<b>KBA</b>
SERIAL NO	<b>C30257</b>
SIZE	<b>25</b>
FREQ. (MHz)	<b>2.25</b>
INSTRUMENT SETTINGS	
SCREEN SIZE	<b>1"</b>
DELAY	<b>.372</b>
MATL. CAL.	<b>.203</b>
RANGE	<b>1"</b>
REP. RATE	<b>4/KHz</b>
JACK USED	<b>77 DUM</b> <b>4/12/93 XPT</b>
TRANS MODE	<b>N/A</b>



REVIEWED BY: <b>Vic [Signature]</b>		SNT LEVEL: <b>III</b>		DATE: <b>7 APR 93</b>	
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16



31A

BUILDING: CONTAINMENT	LOCATION: PRESSURIZER BLOCK HOUSE BIOSHIELD	ELEVATIONS: 110' - 130'
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PSEG ISO RC23-03  
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: B-46A	REVISION: 1
SYSTEM: REACTOR COOLANT SYSTEM	
CONTAINMENT PRESSURIZER RELIEF	
LINE: 12-PR-2201	
THIRD 10 YEAR INSPECTION INTERVAL	

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

## LIMITATION REPORT

Project: 17-5502

Unit: SALEM UNIT 2

System: PRESSURIZER RELIEF

Weld No.: 12-PR-2201-1

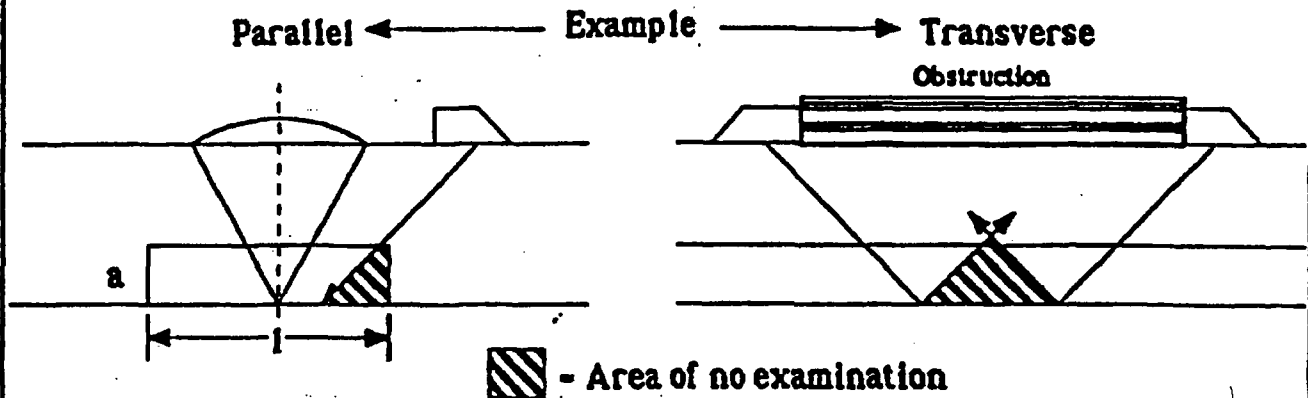
### SURFACE EXAMINATIONS

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



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

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: VII  
 Page 1 of 1



**REQUEST FOR ADDITIONAL INFORMATION**  
**REQUEST FOR RELIEF REGARDING EXAMINATION COVERAGE**  
**SECOND TEN-YEAR IN-SERVICE INSPECTION INTERVAL**  
**SALEM NUCLEAR GENERATING STATION, UNIT NO. 2**  
**DOCKET NO. 50-311**

**QUESTION**      2.1 (c)    For certain piping welds, Information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers listed below.

Summary #      500010

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Component I.D.    12-PR-2201-1

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Description      Cap to Pipe

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		Comments
1	Weld X-Section	See Attached
2	Material	Stainless Steel
3	Thickness / weld Crown	Thickness .52" / Weld Crown N/A
4	Obstruction	Pipe Support
5	Exam Area Highlighted on Drawing	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> X <input type="checkbox"/> No
6	Transducer ray exit point	See Attached

**Comments**

UT exam was performed of this component using 45 degree shear wave transducer. The ultrasonic examination was limited to 78% of the code required coverage. No UT exam from the upstream or downstream side between 10 3/4" to 14 1/4" and 26 3/4" to 31 3/4" due to installed pipe support. Scanned across weld from upstream side and on weld crown only on downstream side. No unacceptable indications were observed. A liquid penetrant examination and system pressure test was also completed with no recordable indications observed.

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# Supplemental Drawing

Summary # 500010

Component I.D. 12-PR-2201-1

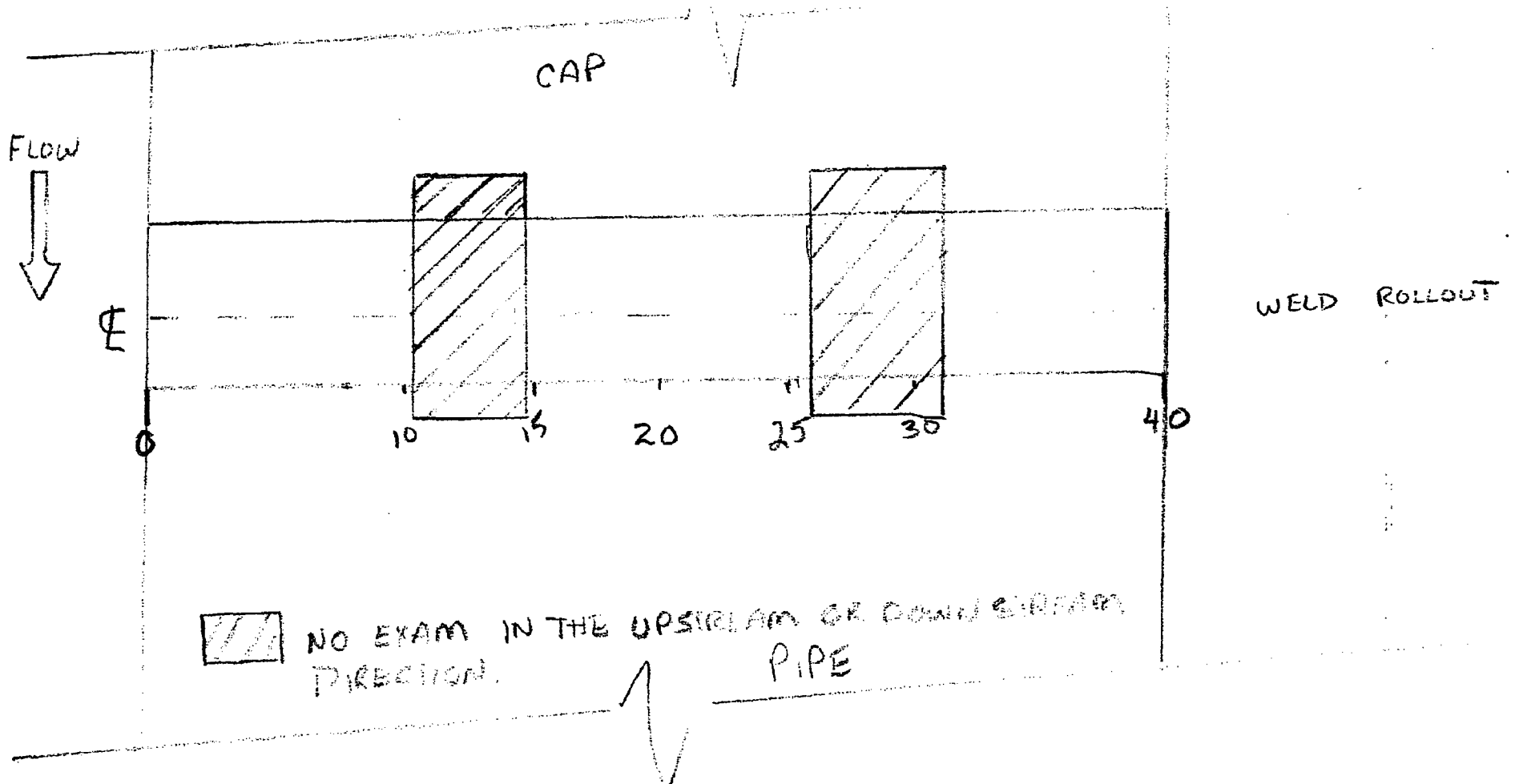
Description Cap to Pipe

Page of

## Comments

The ultrasonic examination was limited to 78% of the code required coverage. No UT exam from the upstream or downstream side between 10 3/4" to 14 1/4" and 26 3/4" to 31 3/4" due to installed pipe support

## Sketch



# 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

<u>NUMBER</u>	<u>CODE</u>	<u>L</u>	<u>W</u>	<u>LOCATION</u>
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

062000

## 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

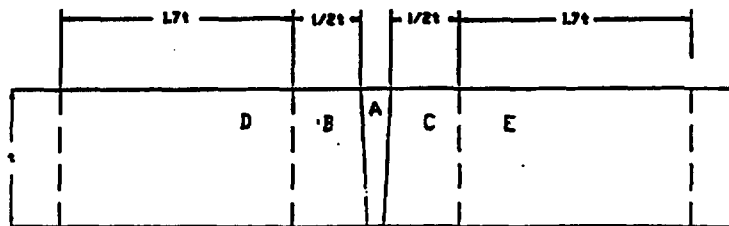
<u>VOLUME</u>	<u>ANGLE</u>	<u>EXAM TYPE</u>	<u>DIRECTION</u>	<u>% COVERAGE</u>
A	45 & 60	Parallel	2 Directions	<u>16.0 %</u>
	45 & 60	Transverse	2 Directions	<u>34.0 %</u>
B	45 & 60	Parallel	1 Direction	<u>34.0 %</u>
	45 & 60	Transverse	2 Directions	<u>40.0 %</u>
C	45 & 60	Parallel	1 Direction	<u>32.0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

"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

<u>NUMBER</u>	<u>CODE</u>	<u>L</u>	<u>W</u>	<u>LOCATION</u>
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

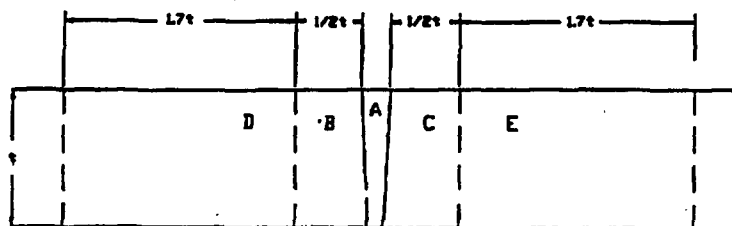
<u>VOLUME</u>	<u>ANGLE</u>	<u>EXAM TYPE</u>	<u>DIRECTION</u>	<u>% COVERAGE</u>
A	45 & 60	Parallel	2 Directions	<u>19.5 %</u>
	45 & 60	Transverse	2 Directions	<u>10.0 %</u>
B	45 & 60	Parallel	1 Direction	<u>35.4 %</u>
	45 & 60	Transverse	2 Directions	<u>15.0 %</u>
C	45 & 60	Parallel	1 Direction	<u>34.3 %</u>
	45 & 60	Transverse	2 Directions	<u>15.0 %</u>
ABCDE	0 deg.	Lamination	N / A	<u>60.6 %</u>
ABC	0 deg.	Planar (weld)	N / A	<u>23.2 %</u>
AVERAGE COVERAGE				<u>26.0 %</u>

"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

<u>NUMBER</u>	<u>CODE</u>	<u>L</u>	<u>W</u>	<u>LOCATION</u>
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

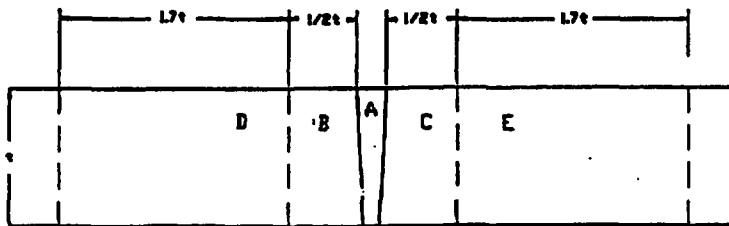
<u>VOLUME</u>	<u>ANGLE</u>	<u>EXAM TYPE</u>	<u>DIRECTION</u>	<u>% COVERAGE</u>
A	45 & 60	Parallel	2 Directions	<u>18.9 %</u>
	45 & 60	Transverse	2 Directions	<u>10.4 %</u>
B	45 & 60	Parallel	1 Direction	<u>59.5 %</u>
	45 & 60	Transverse	2 Directions	<u>13.2 %</u>
C	45 & 60	Parallel	1 Direction	<u>64.5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

"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

<u>NUMBER</u>	<u>CODE</u>	<u>L</u>	<u>W</u>	<u>LOCATION</u>
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

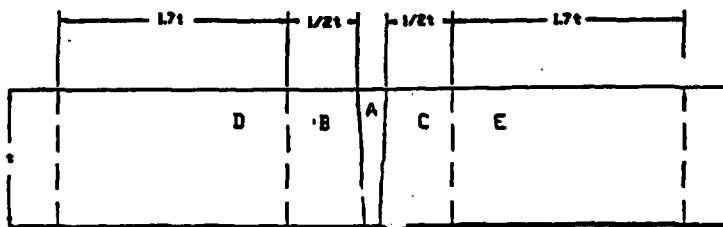
<u>VOLUME</u>	<u>ANGLE</u>	<u>EXAM TYPE</u>	<u>DIRECTION</u>	<u>% COVERAGE</u>
A	45 & 60	Parallel	2 Directions	<u>32.0 %</u>
	45 & 60	Transverse	2 Directions	<u>11.0 %</u>
B	45 & 60	Parallel	1 Direction	<u>66.0 %</u>
	45 & 60	Transverse	2 Directions	<u>15.0 %</u>
C	45 & 60	Parallel	1 Direction	<u>62.0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

"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

<u>NUMBER</u>	<u>CODE</u>	<u>L</u>	<u>W</u>	<u>LOCATION</u>
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

002400

41

## PSE&G LIMITATION REPORT

PROJECT: <u>17-6399</u>	UNIT: <u>SALEM Unit 2</u>
SYSTEM: <u>RPV Closure Head</u>	WELD NO.: <u>2-RPVCH-1445E / merid.@ 180</u>
Prepared By: <u>Hector Diaz Lv. III</u>	Date: <u>11 Nov. 1994</u>

### VOLUMETRIC EXAMINATIONS

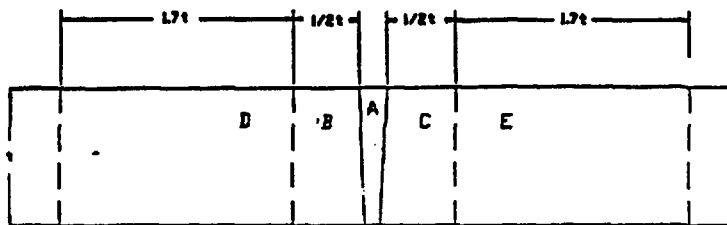
<u>VOLUME</u>	<u>ANGLE</u>	<u>EXAM TYPE</u>	<u>DIRECTION</u>	<u>% COVERAGE</u>
A	45 & 60	Parallel	2 Directions	<u>19.0 %</u>
	45 & 60	Transverse	2 Directions	<u>44.0 %</u>
B	45 & 60	Parallel	1 Direction	<u>36.0 %</u>
	45 & 60	Transverse	2 Directions	<u>45.0 %</u>
C	45 & 60	Parallel	1 Direction	<u>36.0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

"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

<u>NUMBER</u>	<u>CODE</u>	<u>L</u>	<u>W</u>	<u>LOCATION</u>
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

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## 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

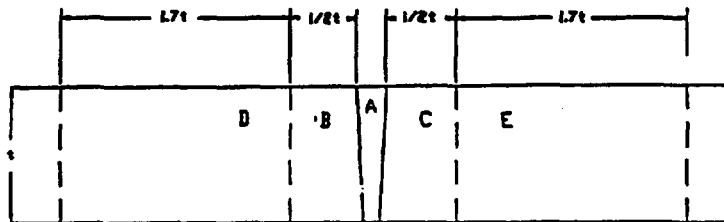
<u>VOLUME</u>	<u>ANGLE</u>	<u>EXAM TYPE</u>	<u>DIRECTION</u>	<u>% COVERAGE</u>
A	45 & 60	Parallel	2 Directions	<u>37.0 %</u>
	45 & 60	Transverse	2 Directions	<u>79.0 %</u>
B	45 & 60	Parallel	1 Direction	<u>77.0 %</u>
	45 & 60	Transverse	2 Directions	<u>5.0 %</u>
C	45 & 60	Parallel	1 Direction	<u>81.0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

"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.

<u>NUMBER</u>	<u>CODE</u>	<u>L</u>	<u>W</u>	<u>LOCATION</u>
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

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<u>NUMBER</u>	<u>CODE</u>	<u>L</u>	<u>W</u>	<u>LOCATION</u>
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

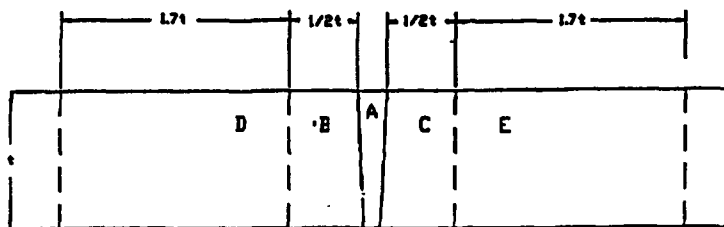
<u>VOLUME</u>	<u>ANGLE</u>	<u>EXAM TYPE</u>	<u>DIRECTION</u>	<u>% COVERAGE</u>
A	45 & 60	Parallel	2 Directions	<u>22.0 %</u>
	45 & 60	Transverse	2 Directions	<u>79.0 %</u>
B	45 & 60	Parallel	1 Direction	<u>82.0 %</u>
	45 & 60	Transverse	2 Directions	<u>67.0 %</u>
C	45 & 60	Parallel	1 Direction	<u>66.0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

"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.



**OT6000 SWRI PROFILE AND THICKNESS INFORMATION RECORD**

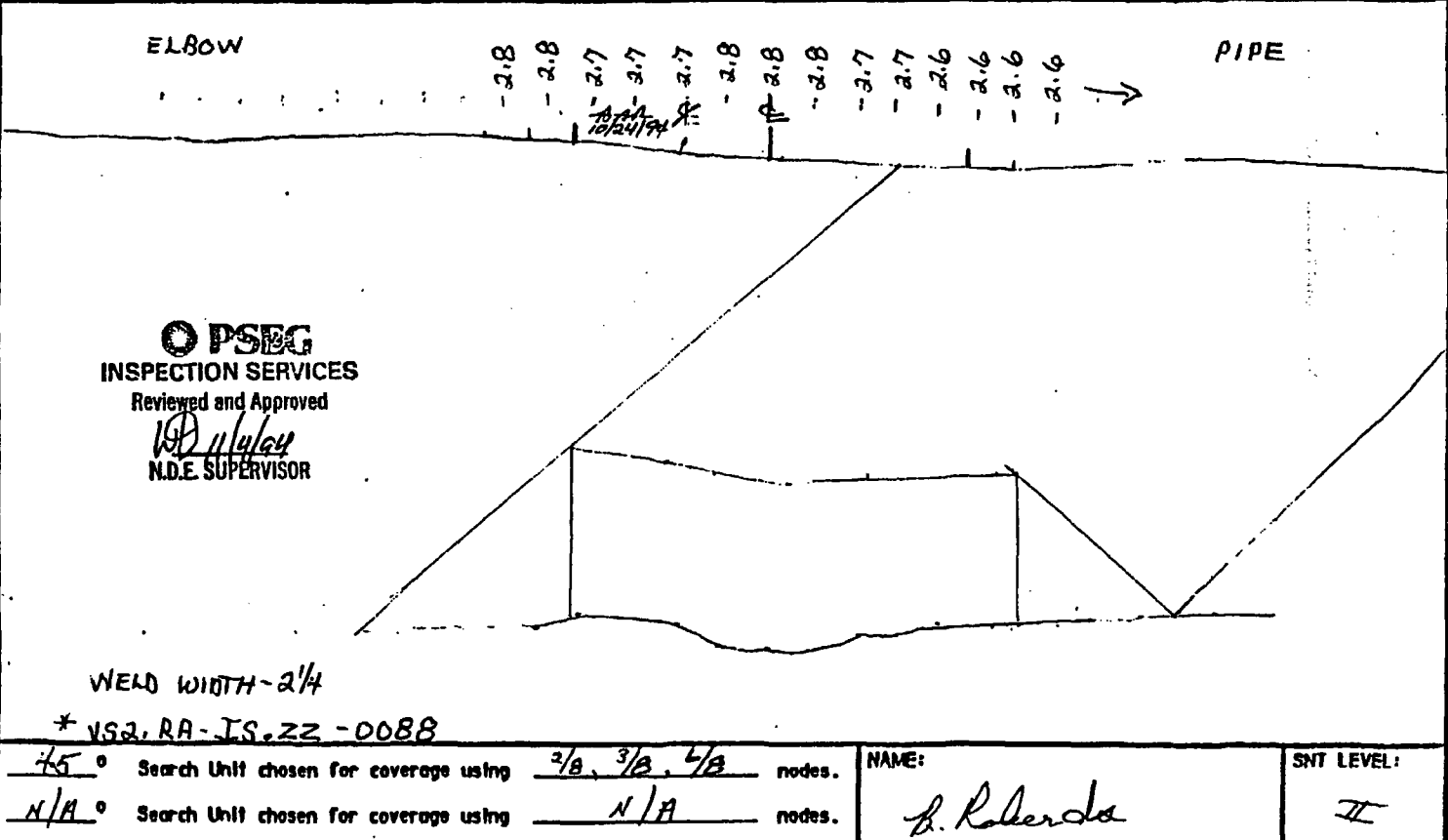
PROJECT NO: **17-6399** SITE: **Salem Generating Station, Unit 2** DATE: (DAY - MONTH - YEAR) **24 OCT 94** TIME (24 HR. CLOCK) INT. **0930** FINAL **1230** SHEET NO: **135013**

EXAMINER: **T. JACKSON** SNT LEVEL: **II** THK. MEAS. REC'D BY PROCEDURE\*: **No. SAM 2 - UT 49** INSTRUMENT: SONIC MARK I  OTHER **SONIC 136**  SERIAL NO: **6566** COMPONENT ID: **3-FRC-1220-4**

EXAMINER: **B. ROBERTS** SNT LEVEL: **II** REV: **0** COUPLANT: GLYCERINE  WATER  OTHER (SPECIFY): \_\_\_\_\_ REFERENCE BLK NO: **SS-DC-31**

ICN:  N/A

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



REVIEWED BY: *[Signature]* SNT LEVEL: **II** DATE: **27 OCT 94**

NAME: **B. Roberts** SNT LEVEL: **II**

45° Search Unit chosen for coverage using **2/8, 3/8, 4/8** nodes.

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

**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 = AI) AI= 3.5

Percentage Of Coverage (A-AI/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: \_\_\_\_\_  
\_\_\_\_\_

49

076000


49

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


Elbow

Pipe



 - Circumferential Upstream  
 Limitation due to  
 Elbow Acoustic Properties = 52.2 in<sup>3</sup>  
 (CW + CCW)

NO EXAM UP + DOWN FROM 55" + 62"  
 DUE TO BRANCH CONNECTION. = 17.0 in

 - AXIAL Limitation due  
 to Elbow Acoustic Properties = 26.1 in  
 (UP + DOWN)

076000

50

REQUEST FOR ADDITIONAL INFORMATION  
 REQUEST FOR RELIEF REGARDING EXAMINATION COVERAGE  
 SECOND TEN-YEAR IN-SERVICE INSPECTION INTERVAL  
 SALEM NUCLEAR GENERATING STATION, UNIT NO. 2  
 DOCKET NO. 50-311

**QUESTION**      1.3 (c) For certain piping welds, Information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers listed below.

Summary #      076000

Component I.D.    31-RC-1220-4

Description      Elbow to Pipe

		Comments
1	Weld X-Section	See Attached
2	Material	Elbow- cast S/S ASTM 351-65 Pipe- Stainless steel
3	Thickness / weld Crown	Thickness 2.8 / Weld Crown 2 1/4"
4	Obstruction	Elbow material and Branch connection
5	Exam Area Highlighted on Drawing	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
6	Transducer ray exit point	See Attached

**Comments**

Ut exam was performed from the pipe side with no exam able to be conducted from 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% of code required coverage. There were no unacceptable indications observed. 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 recordable indications observed.

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Supplemental Drawing

Summary # 076000

Component I.D. 31-RC-1220-4

Description Elbow to Pipe

Page of

Comments No Coverage in the downstream direction due to cast elbow material ASTM 351-65 CF8M additional limitation due to branch connections. Actual code coverage obtained is 73%.

Sketch

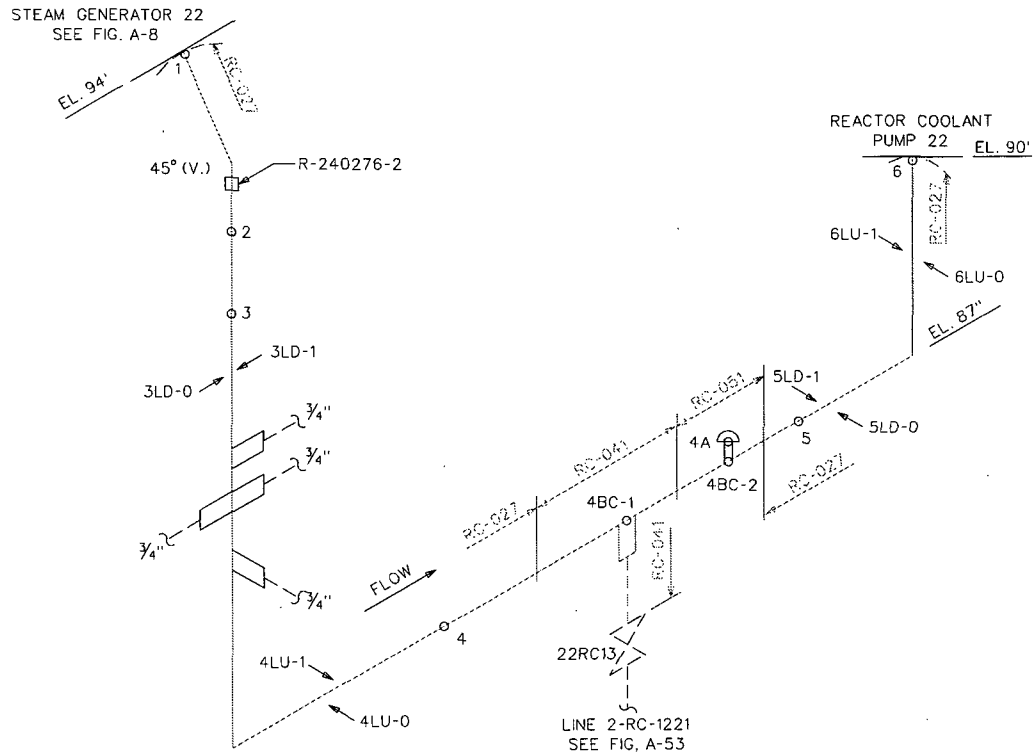
ELBOW →

28"



100% LIMITED  
IN THE DOWN  
DIRECTION





BUILDING: CONTAINMENT	LOCATION: BIOSHIELD	ELEVATIONS: 87' to 94'
--------------------------	------------------------	---------------------------

PSEG ISO RC23-01  
P & ID 205301

ATTENTION: ANY REVISION TO THIS DRAWING SHALL BE MADE ONLY BY CAED		
1		REVISED PER ORDER No. 80038023.
REV.	DATE	DESCRIPTION

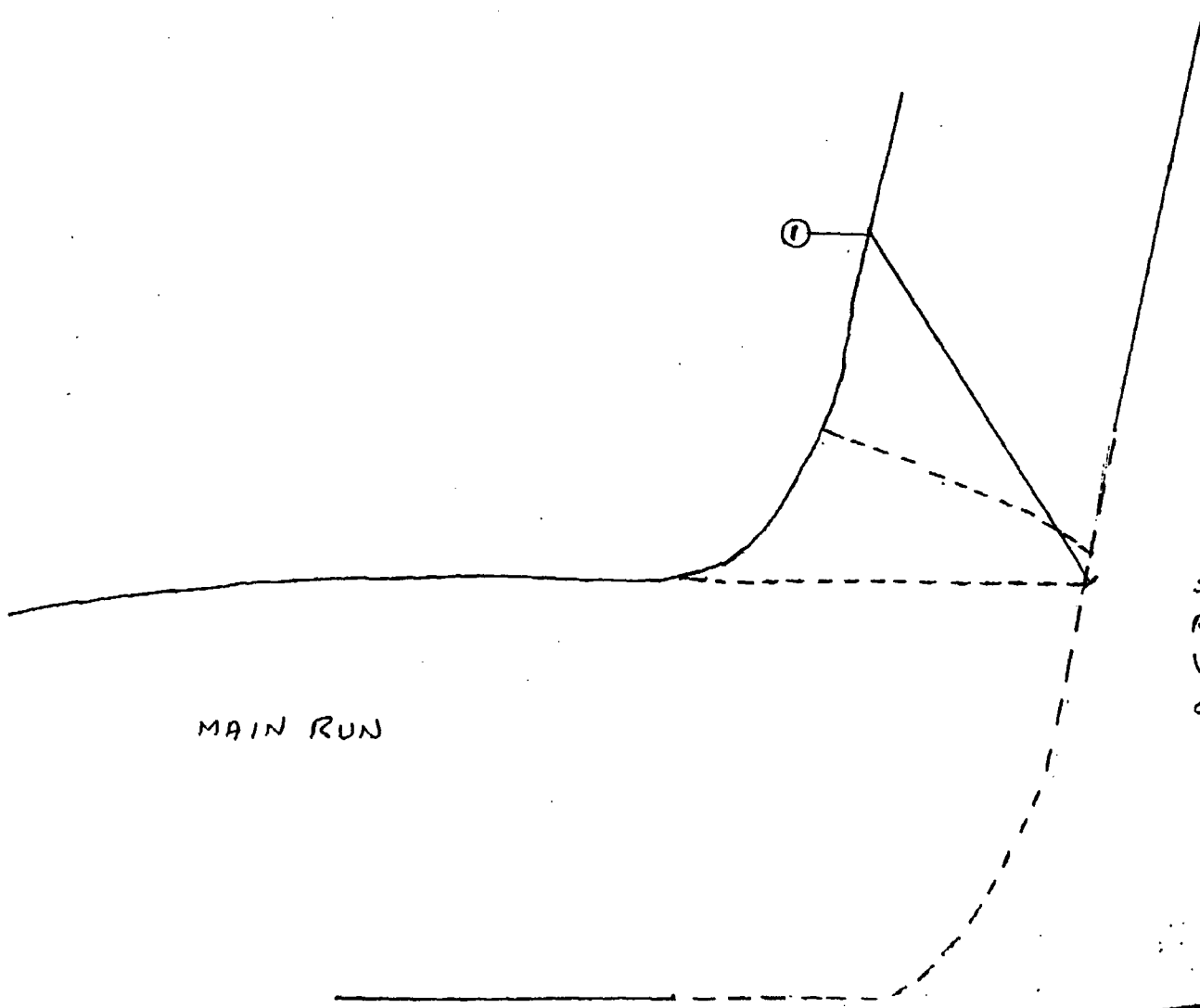
PSEG Nuclear, LLC  
SALEM NUCLEAR GENERATING STATION  
UNIT 2 - WELD / HANGER IDENTIFICATION FIGURE  
INSERVICE INSPECTION DRAWING

FIGURE: A-31	REVISION: 1
SYSTEM: REACTOR COOLANT SYSTEM	
CROSSOVER LEG	
LINE: 31-RC-1220	
THIRD 10 YEAR INSPECTION INTERVAL	

- LV 1 = COMMON INFORMATION
- LV 2 = WELD INFORMATION
- LV 3 = HANGER INFORMATION







BRANCH CONNECTION

① ROOT

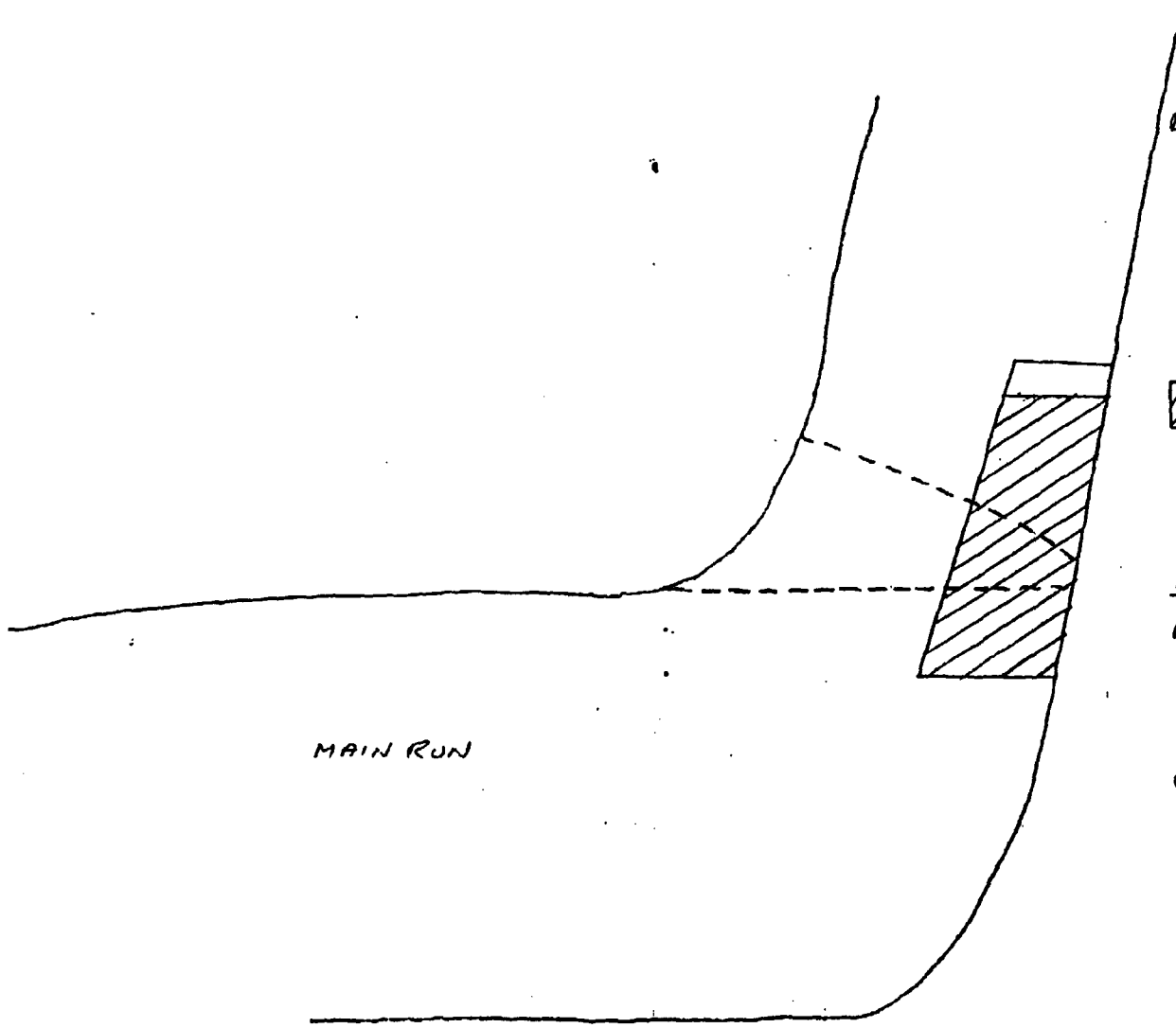
MAIN RUN

SALEM UNIT 2 17-6399  
 REACTOR COOLANT 27.5-RC-1230-1BC-5  
 VICTOR MORTON III 7 NOV 94  
 GEOMETRIC.  
 085000


REVIEWED & ACCEPTED  
 FACTORY MUTUAL  
 ENGINEERING ASSOCIATION  
*William O. Kirby* 11/19/94  
 AUTH. NUCLEAR INSERVICE INSP. DATE

**OPSEG**  
 INSPECTION SERVICES  
 Reviewed and Approved  
*W. D. [Signature]*  
 N.D.E. SUPERVISOR

52



BRANCH CONNECTION

 = AREA NOT COVERED  
CW/CCW

MAIN RUN

SALEM UNIT 2 17-6399  
REACTOR COOLANT 27.5-RC-1230-13C5  
VICTOR MORTON III 7 NOV 94  
FOR LIMITATIONS ONLY.

085000

53

## 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 | <u>23.63</u> |
| 2. Compute Vol. Not Covered Branch Connection      | = A                             | <u>0</u>     |
| 3. Compute Branch Connection Limitation Percentage | (A / Vt1) x 100 = Z1            | <u>0</u>     |
| 4. Compute Vol. Not Covered Main Run               | = B                             | <u>0</u>     |
| 5. Compute Main Run Limitation Percentage          | (B / Vt1) x 100 = Z2            | <u>0</u>     |

#### B. Circumferential Exams (Indications Perpendicular To Weld)

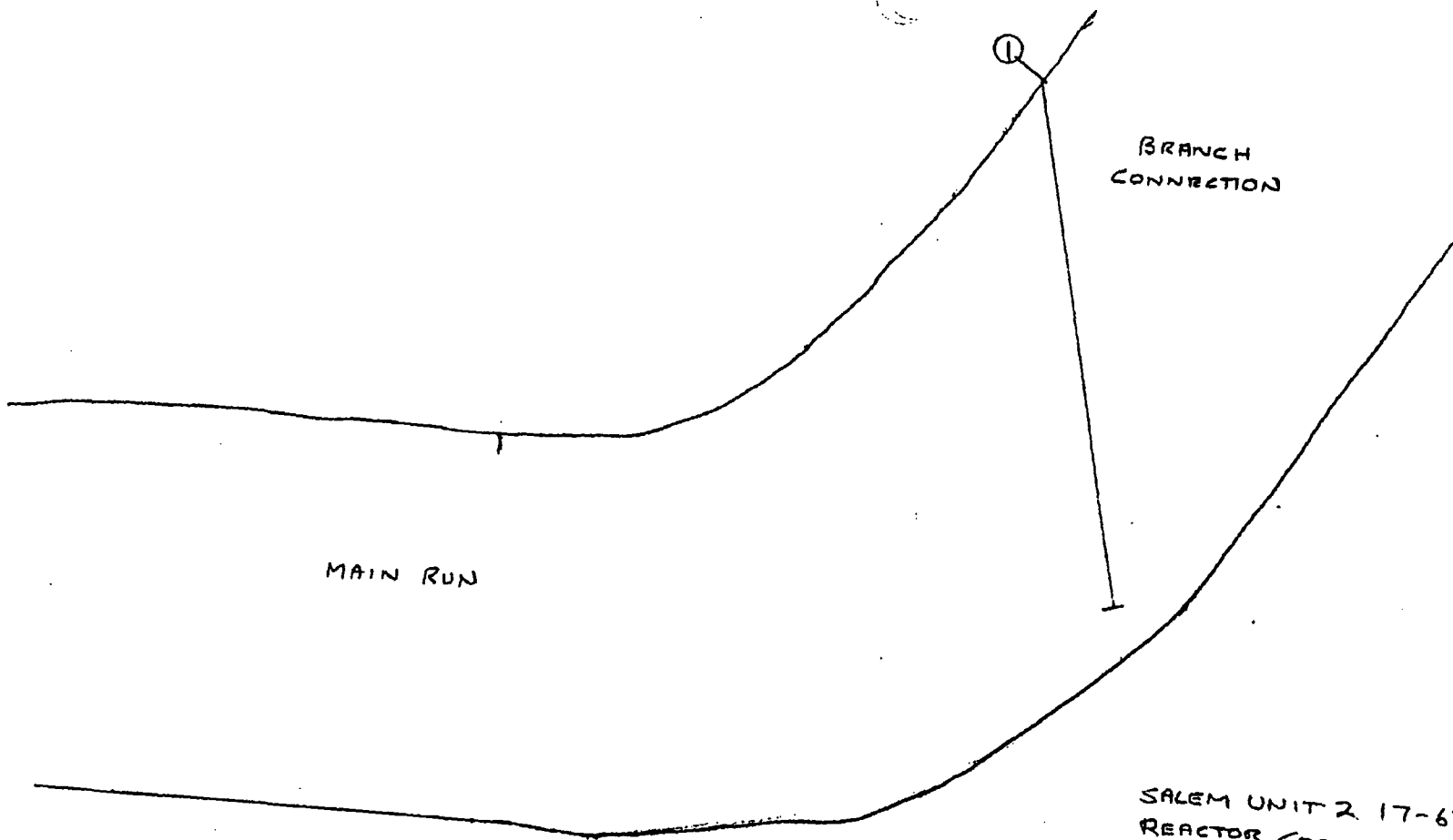
- |                                      |                                 |              |
|--------------------------------------|---------------------------------|--------------|
| 1. Compute Exam Volume               | (height x width x length) = Vt2 | <u>31.5</u>  |
| 2. Compute Vol. Not Covered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

#### C. Total Coverage

- |  |                             |            |
|--|-----------------------------|------------|
| 1. Compute Total Limitation Percentage | (Z1 + Z2 + Z3 + Z4) / 4 = L | <u>45%</u> |
| 2. Compute Total Coverage              | 100 - L                     | <u>55%</u> |

REMARKS: \_\_\_\_\_

085000



MAIN RUN

BRANCH  
CONNECTION


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

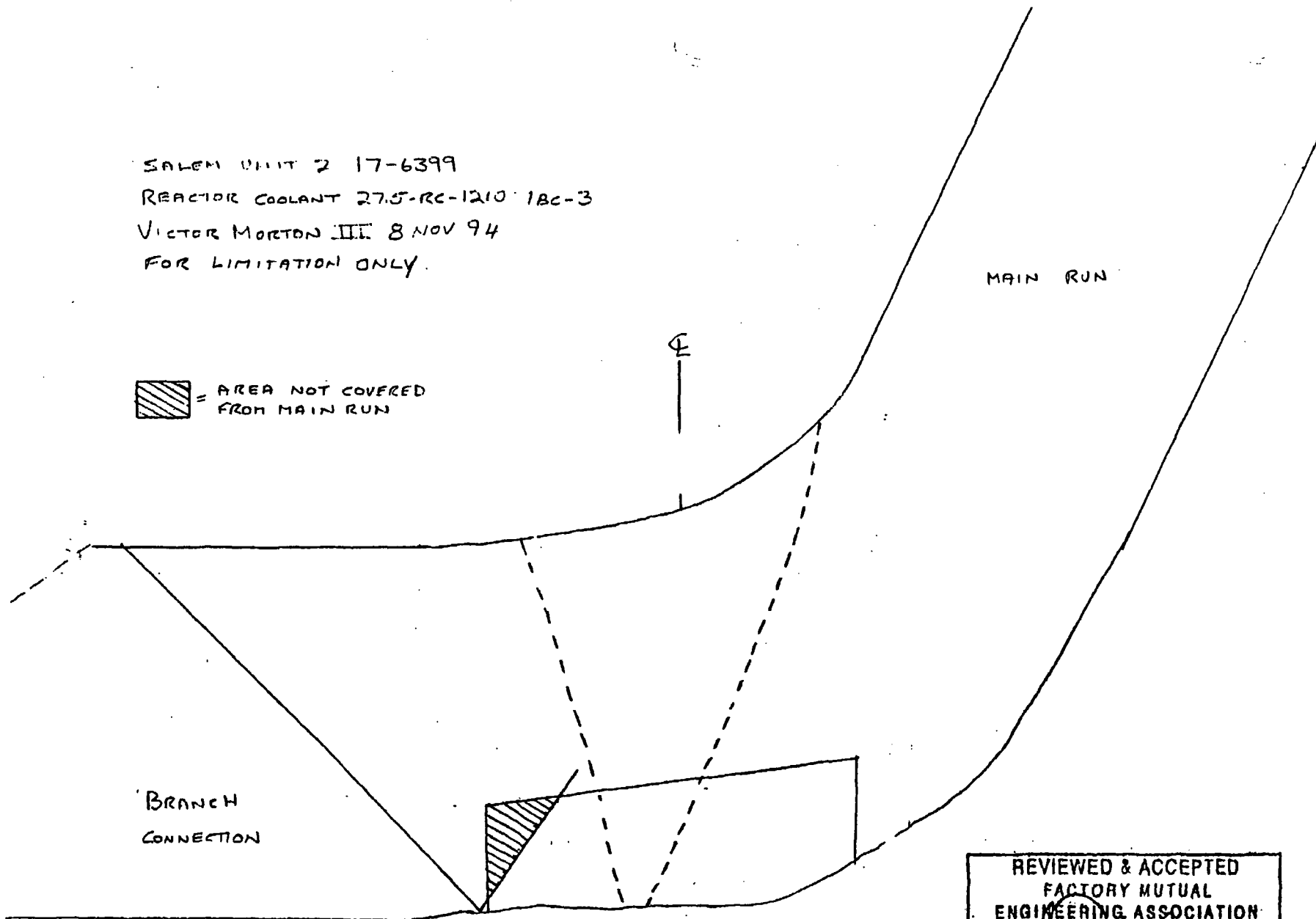
3

REVIEWED & ACCEPTED  
 FACTORY MUTUAL  
 ENGINEERING ASSOCIATION  
*William Kelly* 11/19/94  
 AUTH. NUCLEAR INSERVICE IASP. DATE

**PSEG**  
 INSPECTION SERVICES  
 Reviewed and Approved  
*W. D. [Signature]* 11/19/94  
 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.

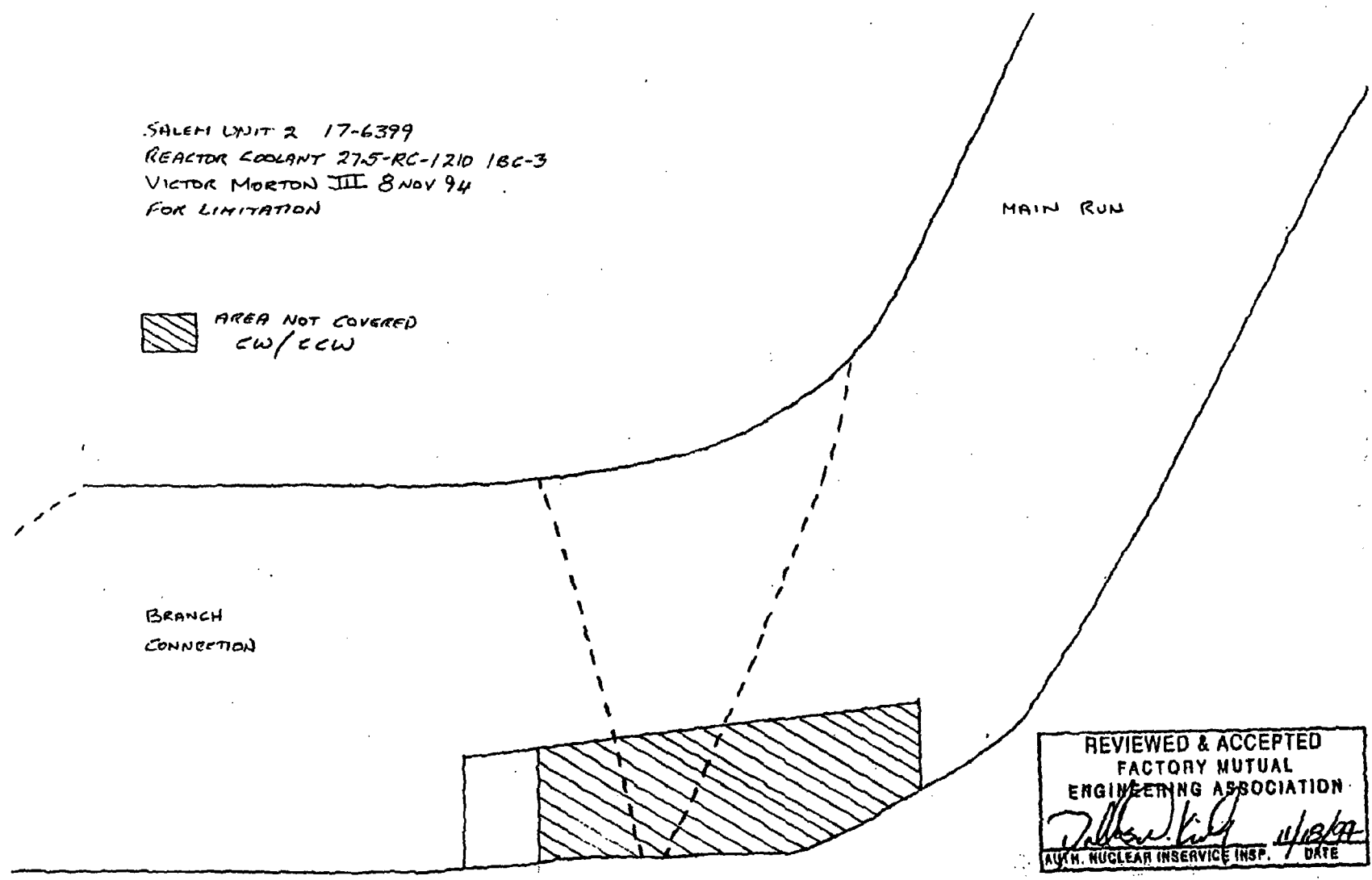
 = AREA NOT COVERED FROM MAIN RUN



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FACTORY MUTUAL  
ENGINEERING ASSOCIATION  
*Victor Morton III*  
AUT. NUCLEAR INSERVICE IESP. DATE

SALEM UNIT 2 17-6399  
REACTOR COOLANT 275-RC-1210 18C-3  
VICTOR MORTON III 8 NOV 94  
FOR LIMITATION

 AREA NOT COVERED  
CW/CCW



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FACTORY MUTUAL  
ENGINEERING ASSOCIATION  
*Victor Morton III* 11/13/94  
AUTH. NUCLEAR INSERVICE INSP. DATE

57

SALEM UNIT 2 17-6399

REACTOR COOLANT 27.5-RC-1210 18C-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

MAIN RUN

BRANCH  
CONNECTION

**PSEG**  
INSPECTION SERVICES  
Reviewed and Approved  
*W. D. [Signature]* 11/18/94  
N.D.E. SUPERVISOR

REVIEWED & ACCEPTED  
FACTORY MUTUAL  
ENGINEERING ASSOCIATION  
*Dallas [Signature]* 11/18/94  
AUT. NUCLEAR INSERVICE INSP. DATE

58

## PSE&G LIMITATION REPORT

PROJECT: 17-6399

UNIT: SALEM UNIT 2

SYSTEM: REACTOR COOLANT

WELD NO.: 275-RC-1210-18C-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 = AI)

AI =           

Percentage Of Coverage

(A-AI/A) =           

### VOLUMETRIC EXAMINATIONS

#### A. Axial Exams (Indications Parallel To Weld)

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

#### B. Circumferential Exams (Indications Perpendicular To Weld)

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

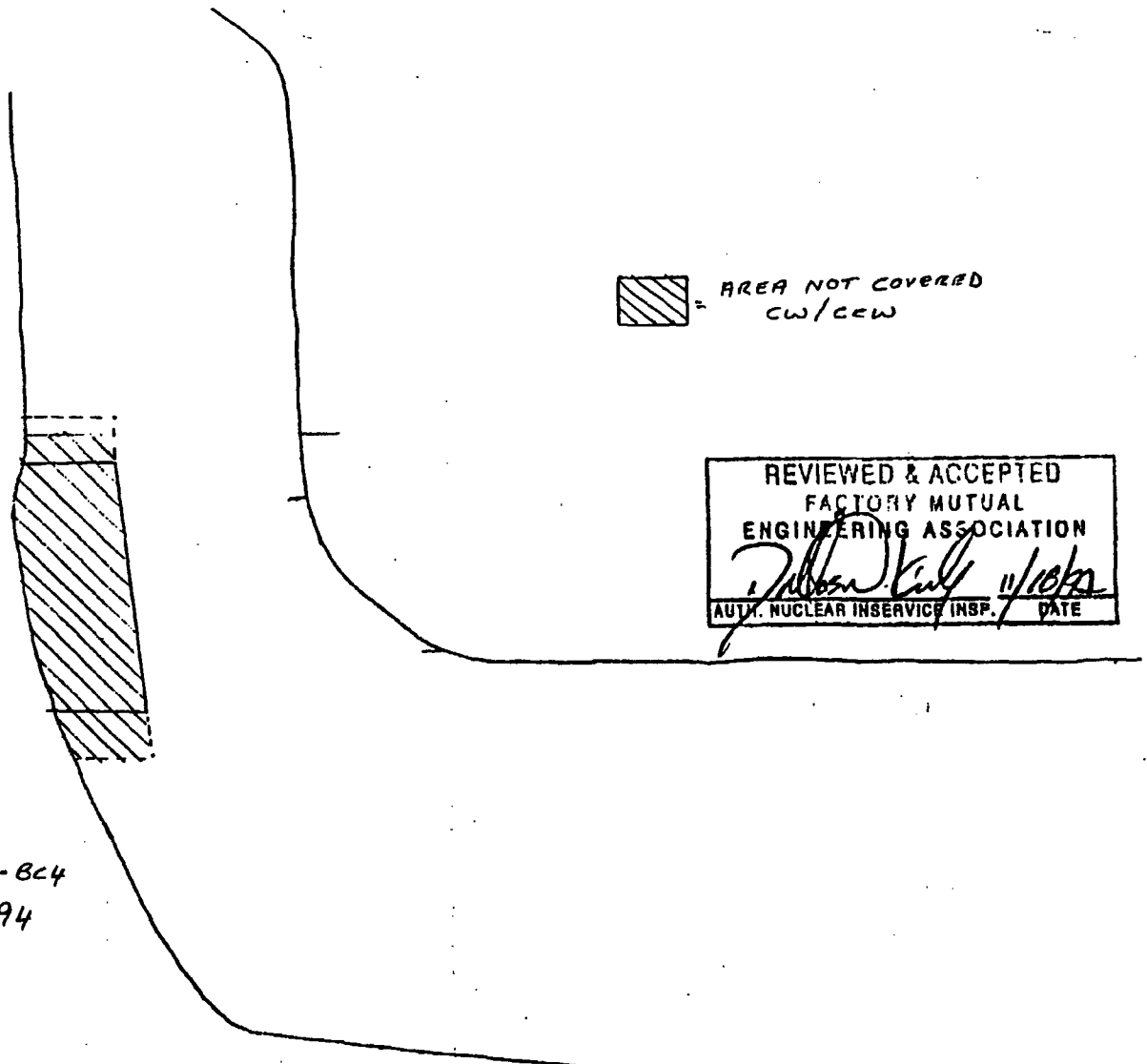
#### C. Total Coverage

- |  |                       |               |
|--|-----------------------|---------------|
| 1. Compute Total Limitation Percentage | (Z1+Z2+Z3+Z4) / 4 = L | <u>44.15</u>  |
| 2. Compute Total Coverage              | 100 - L               | <u>55.85%</u> |

REMARKS: \_\_\_\_\_

066600



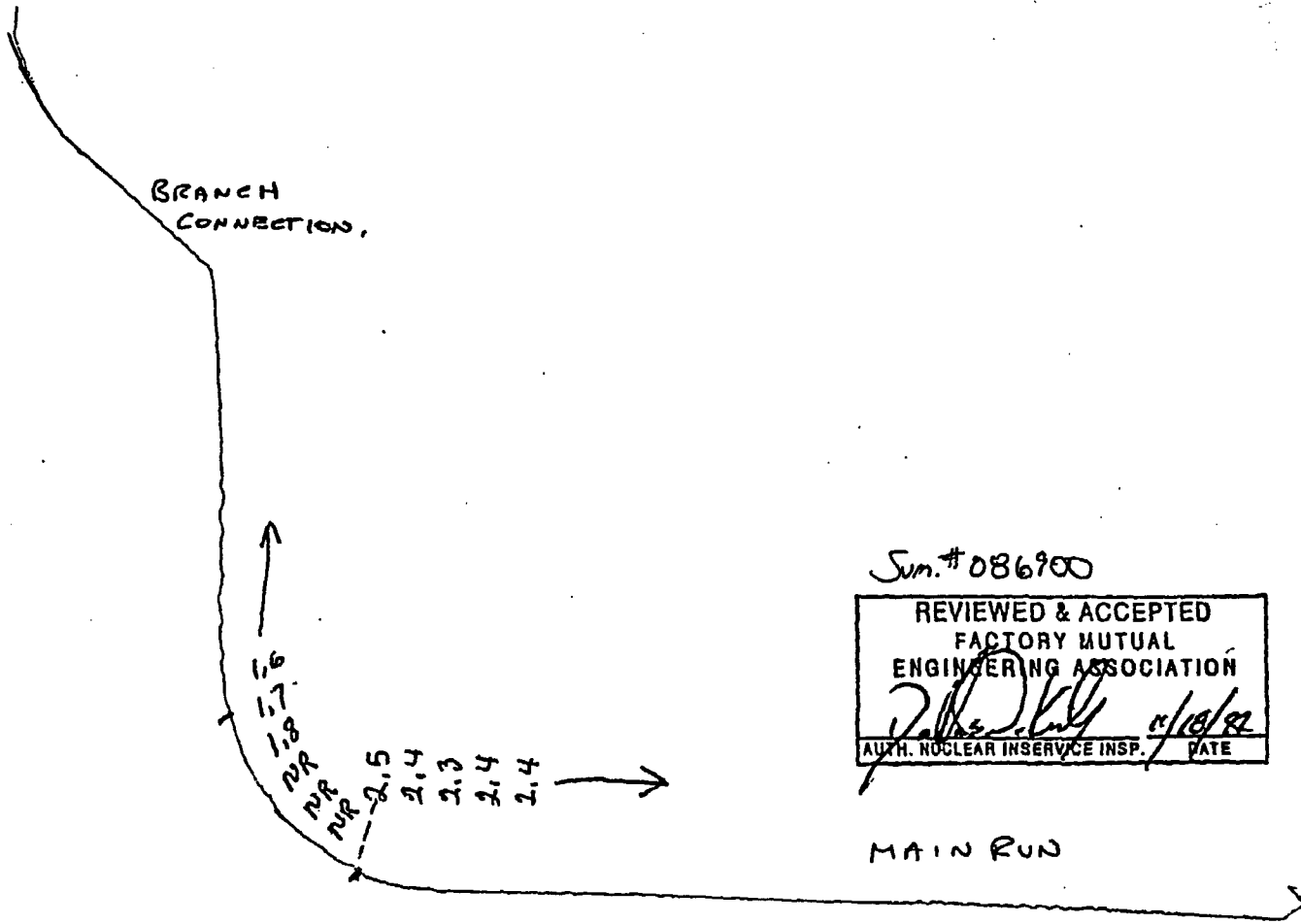


AREA NOT COVERED  
CW/CEW

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

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

69

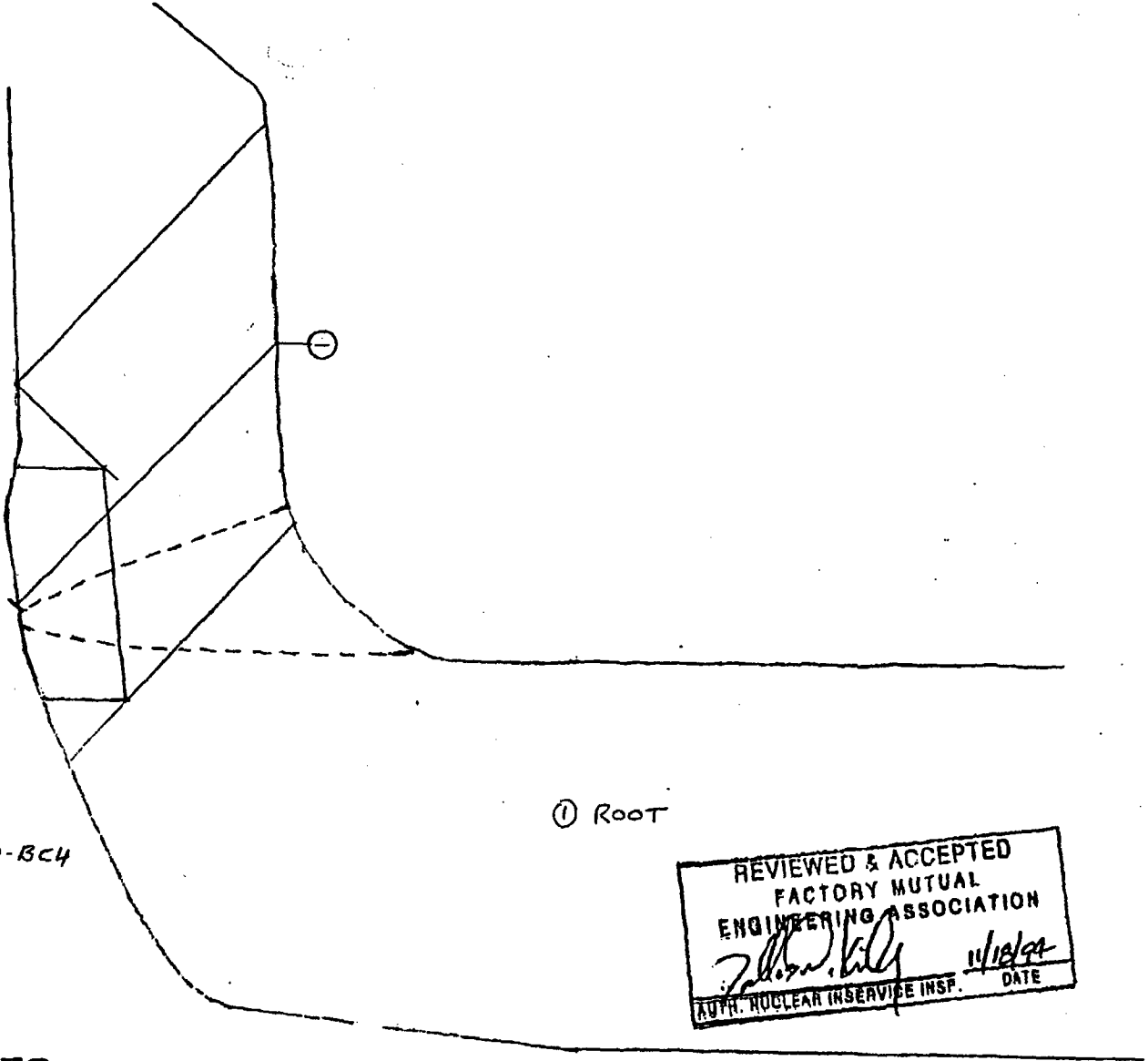


Sum. # 086900

REVIEWED & ACCEPTED  
FACTORY MUTUAL  
ENGINEERING ASSOCIATION

*[Signature]* 11/18/82

AUTH. NUCLEAR INSERVICE INSP. DATE



SALEM UNIT 2 17-6399  
 REACTOR COOLANT 27.5-RC-1210-BC4  
 VICTOR MORTON III 7 NOV 94  
 GEOMETRIC  
 086900

① Root

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

**PSEG**  
 INSPECTION SERVICES  
 Reviewed and Approved  
*W. D. [Signature]*  
 N.O.E. SUPERVISOR

62

## PSE&G LIMITATION REPORT

PROJECT: 17-6399  
 SYSTEM: REACTOR COOLANT  
 Prepared By: VICTOR MORTON

UNIT: SALEM UNIT 2  
 WELD NO.: 27.5-RC-1210-1BC-4  
 Date: 7 NOV 94

### SURFACE EXAMINATIONS

Area To Be Examined (length x Width = A)	A = <u>N/A</u>
Area Of Limitation (Length x Width = AI)	AI = <u>          </u>
Percentage Of Coverage	(A-AI) / A = <u>          </u>

### VOLUMETRIC EXAMINATIONS

#### A. Axial Exams (Indications Parallel To Weld)

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

#### B. Circumferential Exams (Indications Perpendicular To Weld)

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

#### C. Total Coverage

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

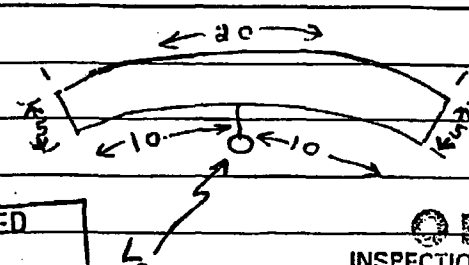
REMARKS: \_\_\_\_\_  
 \_\_\_\_\_

086900



330540

## SWRI MAGNETIC PARTICLE EXAMINATION RECORD

PROJECT No: <b>17-6399</b>		SITE: <b>Salem Generating Station, Unit 2</b>		DATE: (DAY - MONTH - YEAR) <b>28 OCT 94</b>		TIME (24 HR. CLOCK) EXAM STARTED: <b>1316</b> EXAM ENDED: <b>1319</b>		SHEET No.: <b>120016</b>		
EXAMINATION AREA: (SYST/COMP) <b>BOILER FEED SYSTEM</b>		LINE/SUBASSEMBLY: <b>14-BF-2231</b>		IDENTIFICATION: <b>17PS</b>		L. LOCATION: <b>6</b>		W. LOCATION: <b>EDGE OF WELD</b>		
EXAMINER: <b>W. ANGELL</b>		SNT LEVEL <b>II</b>	PROCEDURE No. <b>SAMA-MT1</b> REV <b>1</b> * CHG <b>1</b> ICN <input checked="" type="checkbox"/> N/A			SURFACE FINISH: <b>AS WELDED</b>		WELD TYPE (—FLOW—) <b>PIPE SUPPORT</b>		
EXAMINER: <b>M. COTTEN</b>		SNT LEVEL <b>IT</b>				MATERIAL BRAND: <b>MAGNAFLUX</b> WET <input type="checkbox"/> DRY <input checked="" type="checkbox"/> BATCH No.: <b>85J048</b> FLOURESCENT <input type="checkbox"/> TYPE: <b>DRY POWDER</b> MIXED NO <input type="checkbox"/> YES <input type="checkbox"/> COLOR: <b>1 GRAY</b> MIXED WITH _____		YOKE SPACING: <b>5 5/8</b> IN YOKE BRAND: <b>WHITELINE</b> SERIAL No.: <b>WL-1-18</b> SURFACE TEMP. °F THERMOMETER <b>N/A</b> SERIAL No.:		
CALIBRATION BLOCK SERIAL No.: <b>870198 14</b> WEIGHT: <b>11.3 LBS.</b>		CALIBRATION VERIFICATION TIME: <b>1230 1435</b> <b>FINAL</b> INITIALS: <b>WA WA</b>			DISTANCE FROM BLACK LIGHT TO SENSOR CELL <b>N/A</b> IN		BLACK LIGHT OUTPUT VERIFICATION TIME: _____ INITIALS: _____		MATERIAL APPLICATION: DUSTING <input checked="" type="checkbox"/> FLOODING <input type="checkbox"/> SPRAYING <input type="checkbox"/>	
BLACK LIGHT BRAND: <b>N/A</b> SERIAL No.:		INTENSITY METER BRAND: <b>N/A</b> SERIAL No.:		BLACK LIGHT OUTPUT <b>N/A</b> $\mu\text{w}/\text{cm}^2$		REMARKS: 				INITIALS <b>WA</b> <b>WA</b> <b>WA</b>
IND No.	L	W	LOCATION	ROUND OR LINEAR	SIZE DIA. OR LENGTH					
<b>NO RECORDABLE INDICATIONS</b>										
						<div data-bbox="798 1098 1244 1313" data-label="Text"> <p>REVIEWED &amp; ACCEPTED FACTORY MUTUAL ENGINEERING ASSOCIATION <i>[Signature]</i> 11/9/94 DATE</p> </div> <div data-bbox="1478 1106 1776 1296" data-label="Text"> <p><b>PSEG</b> INSPECTION SERVICES Reviewed and Approved <i>[Signature]</i> 11/3/94 N.D.E. SUPERVISOR</p> </div>				
EXAMINATION AREA LIMITATION: (IF NONE, SO STATE) <b>LIMITED EXAM. DUE TO PROXIMITY OF PIPE RESTRAINT at 10" to 15" and 35" to 40" WA</b>						* <b>VS2-SS-IS-22-0070 REV.00</b>				
REVIEWED BY: <i>[Signature]</i>		SNT LEVEL <b>III</b>		DATE <b>31 OCT 94</b>		PAGE <b>1</b> OF <b>1</b>				

## PSE&G LIMITATION REPORT

PROJECT: 17-6399

UNIT: SALEM UNIT 2

SYSTEM: FEEDWATER

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

Prepared By: VICTOR MERTON

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 | <u>N/A</u> |
| 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 | <u>N/A</u> |
| 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 | <u>N/A</u> |
| 2. Compute Total Coverage              | 100 - L                     |            |

REMARKS: \_\_\_\_\_  
 \_\_\_\_\_

REQUEST FOR ADDITIONAL INFORMATION  
 REQUEST FOR RELIEF REGARDING EXAMINATION COVERAGE  
 SECOND TEN-YEAR IN-SERVICE INSPECTION INTERVAL  
 SALEM NUCLEAR GENERATING STATION, UNIT NO. 2  
 DOCKET NO. 50-311

**QUESTION**      2.2(a)    For certain component attachments and support welds, Information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers listed below.

Summary #      330540

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Component I.D.    14-BF-2231-17PS

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Description      PIPE SUPPORT

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		Comments
1	Weld X-Section	N/A
2	Material	Carbon Steel
3	Thickness / weld Crown	N/A
4	Obstruction	PIPE RESTRAINT
5	Exam Area Highlighted on Drawing	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
6	Transducer ray exit point	N/A

**Comments**

MT exam was conducted of this component. The MT exam was limited to 50% of the code required exam due to proximity of permanent pipe restraint in close to the weld that prevented sufficient access for the weld to be examined in two directions. The lugs were examined completely in one direction and no unacceptable indications were observed. A system pressure test was also performed with no unacceptable indications observed.

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**Supplemental Drawing**

**Summary #** 330540

**Component I.D.** 14-BF-2231-17PS

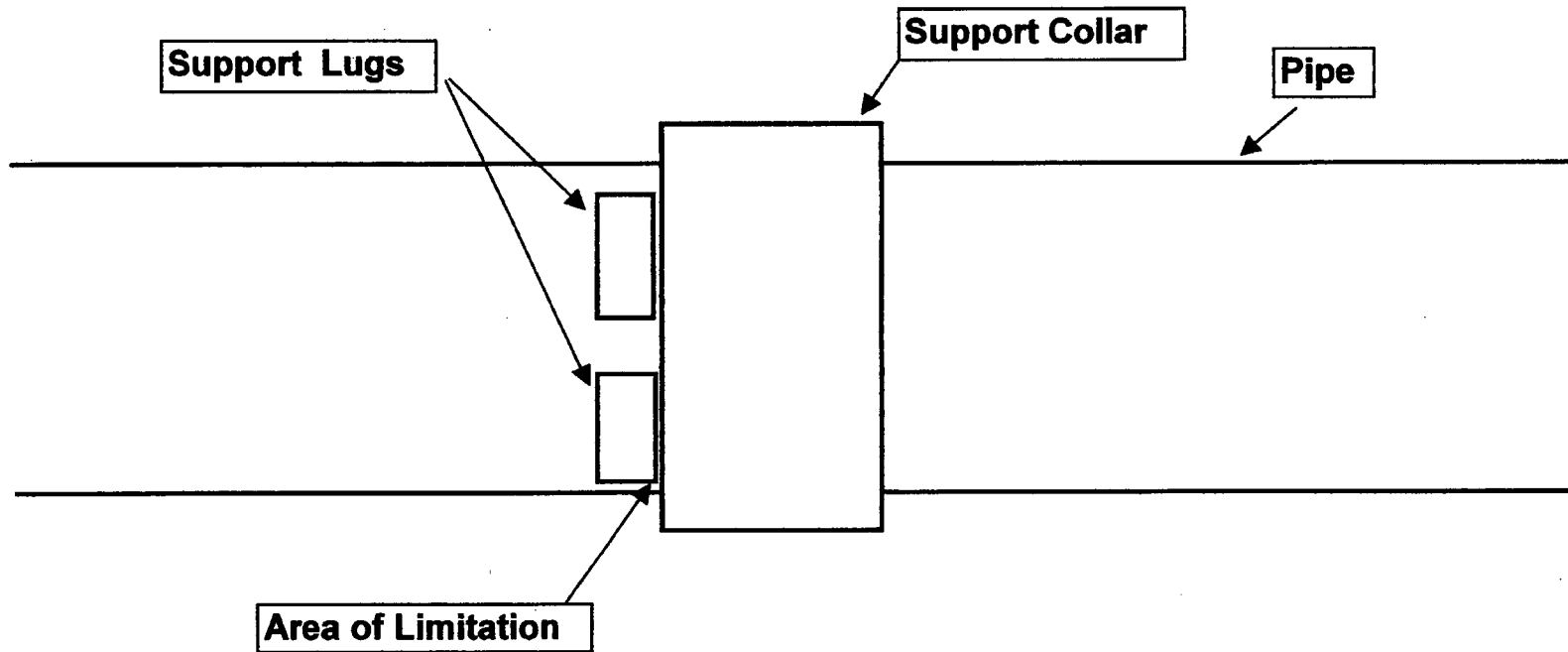
**Description** Pipe Support

**Page**      **of**

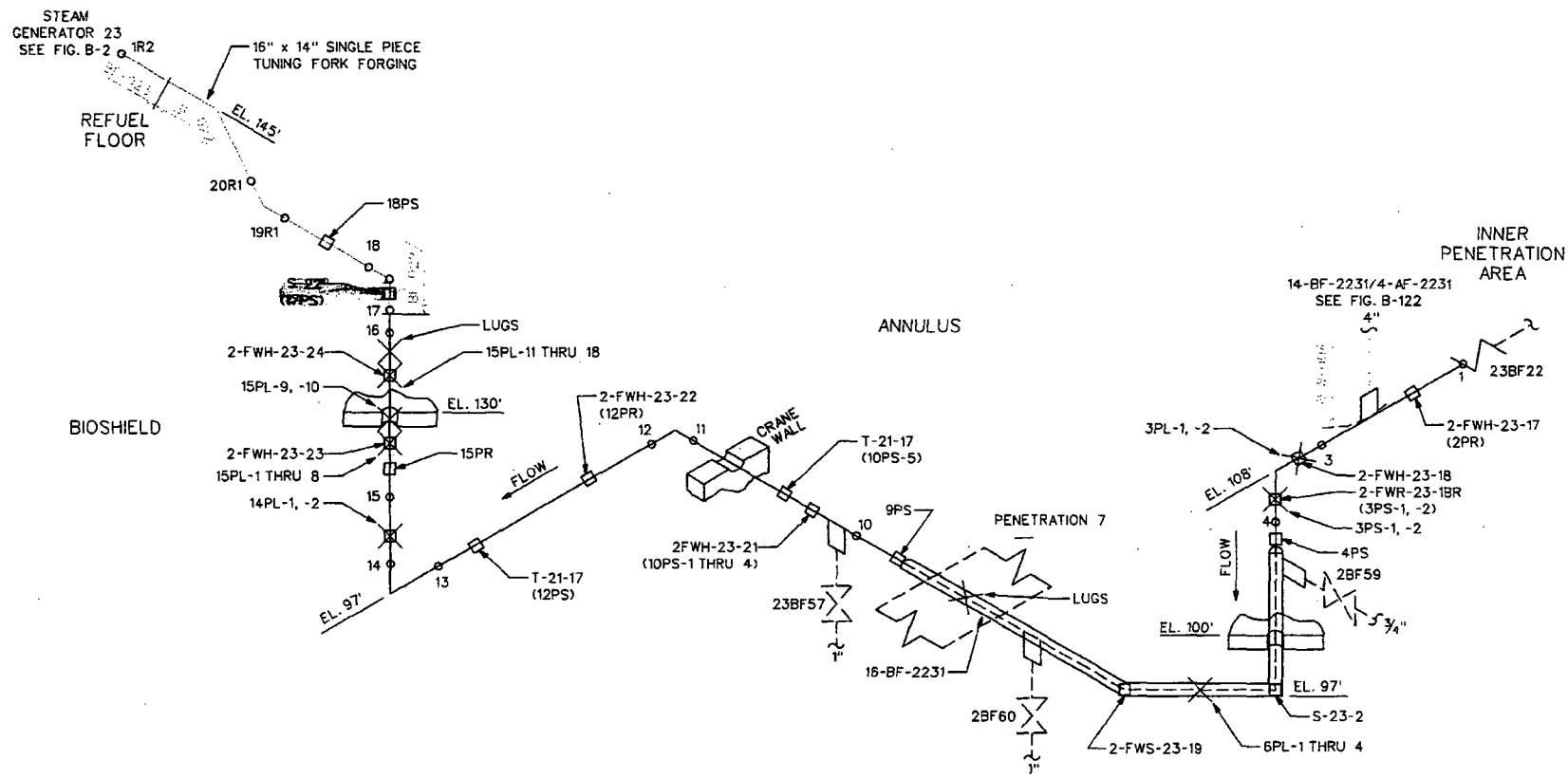
**Comments**

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

**Sketch**







BUILDING: CONTAINMENT INNER PEN	LOCATION: ANNULUS BIOSHIELD REFUEL FLOOR INNER PEN	ELEVATIONS: 97' to 145'
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PSEG ISO SGF23-01  
P & ID 205302-03

ATTENTION: ANY REVISION TO THIS DRAWING SHALL BE MADE ONLY BY CAED		
6	REVISED PER ORDER No. 80038023.	DESCRIPTION
REV.	DATE	DESCRIPTION

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	

LV 1 = COMMON INFORMATION  
LV 2 = WELD INFORMATION  
LV 3 = HANGER INFORMATION

SECOND INTERVAL, FIRST PERIOD, SECOND OUTAGE (94RF)

SUMMARY #: 330540

EXAMINATION SUMMARY RECORD  
SALEM NUCLEAR POWER STATION, UNIT 2

SYSTEM/COMPONENT: FEEDWATER SYSTEM  
LINE/SUBASSEMBLY: 14-BF-2231  
IDENTIFICATION: 14-BF-2231-17PS

PIPE SUPPORT S-22

RELIEF REQUEST #: RR-C1

LTP INSTRUCTIONS: EXAM LIMITED TO 50% CODE COVERAGE, DUE TO PROXIMITY OF A PERMANENT PIPE RESTRAINT.  
RESULTS REMARKS: 94 - W.O.#941023023 TO PERFORM NDE. LIMITATION: EXAM LIMITED TO 50% CODE COVERAGE, DUE TO THE PROXIMITY OF A PERMANENT PIPE RESTRAINT.

NDE METHOD IN LTP	PROCEDURE	RESULTS FILE NDE EXAM	EXAM RECORD	CALIBRATION RECORD	N O R	G E O	O T H	RESOLUTION RECORD
MT	VS2SSISZZ0070Q	MT	120009		X	-	-	

REVIEWED & ACCEPTED  
FACTORY MUTUAL  
ENGINEERING ASSOCIATION  
*Salasua Kily* 11/9/94  
AUTH. NUCLEAR INSERVICE NSP. DATE

Prepared by: *Steve J. Todd*  
Steve J. Todd (SwRI)

Date: 11/05/94

Reviewed by: *Scott W. Sienkiewicz*  
Scott W. Sienkiewicz (PSE&G)

## 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 | <u>N/A</u> |
| 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)

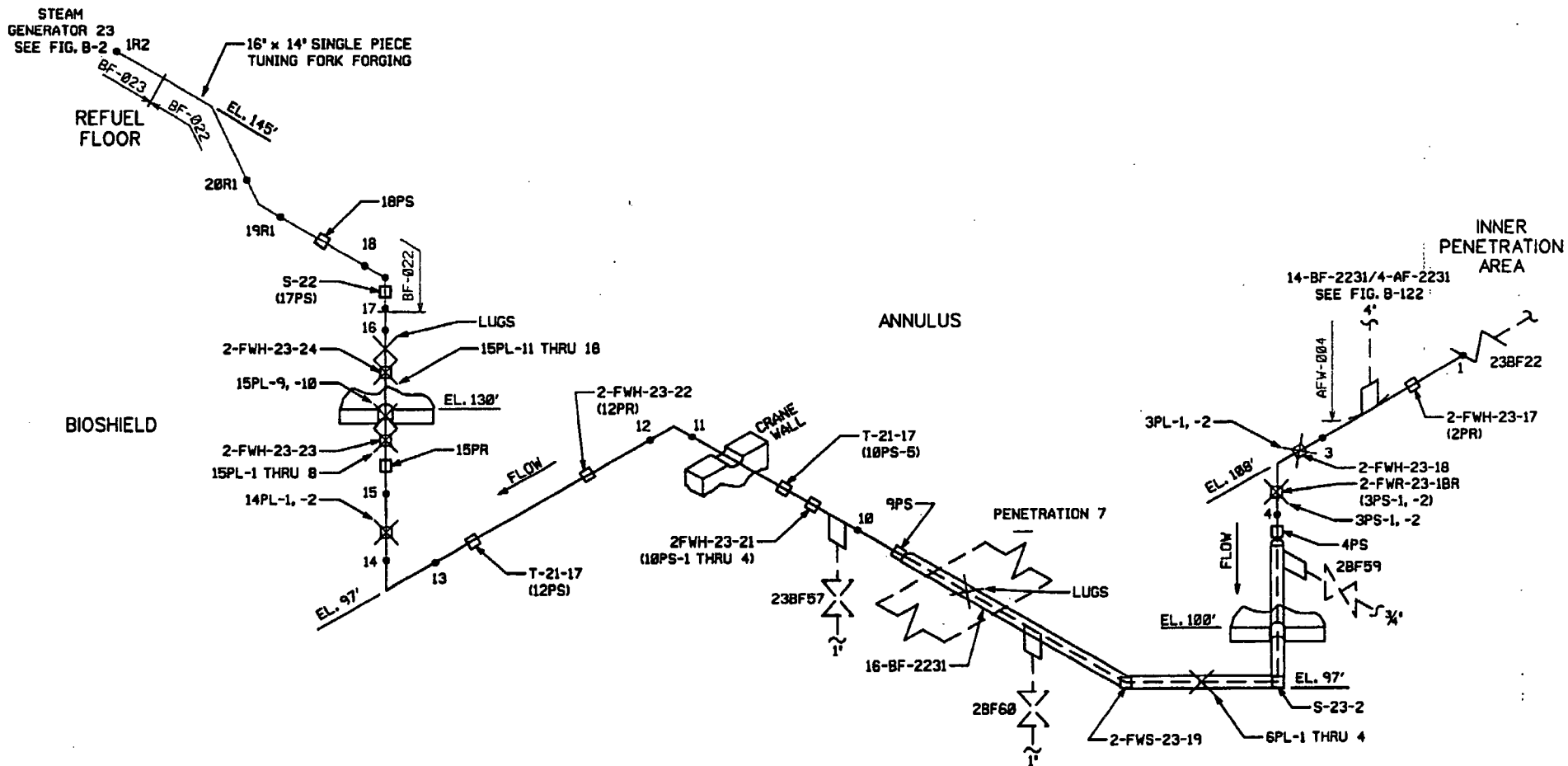
- |                                      |                                 |            |
|--------------------------------------|---------------------------------|------------|
| 1. Compute Exam Volume               | (height x width x length) = Vt2 | <u>N/A</u> |
| 2. Compute Vol. Not Covered CW       | = 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 | <u>N/A</u> |
| 2. Compute Total Coverage              | 100 - L               | ↓          |

REMARKS: \_\_\_\_\_  
 \_\_\_\_\_

66A



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

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	



**Supplemental Drawing**

**Summary #** 330560

**Component I.D.** 14-BF-2231-18PS

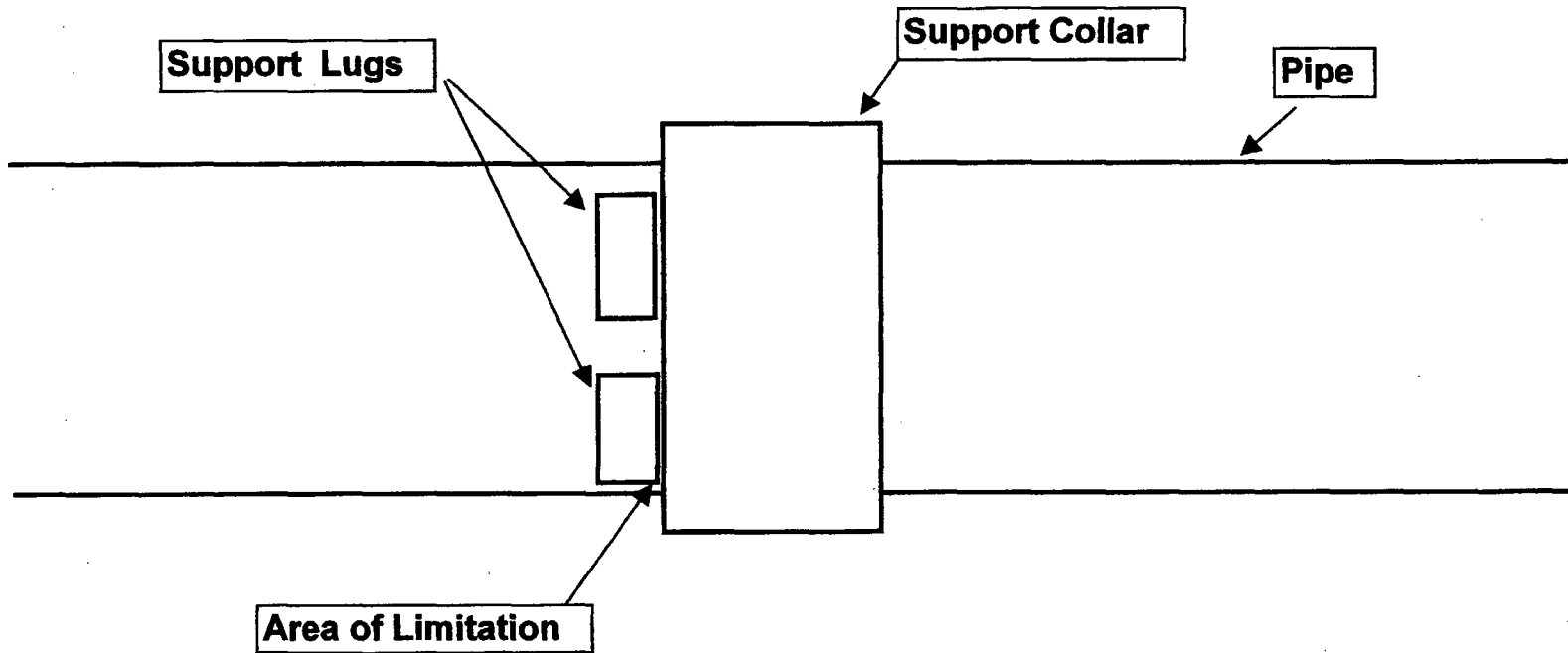
**Description** Pipe Support

**Page**      **of**

**Comments**

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

**Sketch**



SECOND INTERVAL, FIRST PERIOD, SECOND OUTAGE (94RF)

SUMMARY #: 330560

EXAMINATION SUMMARY RECORD  
SALEM NUCLEAR POWER STATION, UNIT 2

SYSTEM/COMPONENT: FEEDWATER SYSTEM  
LINE/SUBASSEMBLY: 14-BF-2231  
IDENTIFICATION: 14-BF-2231-18PS

PIPE SUPPORT  
RELIEF REQUEST #: RR-C1

LTP INSTRUCTIONS: EXAM LIMITED TO 50% CODE COVERAGE, DUE TO PROXIMITY OF A PERMANENT PIPE COLLAR.  
RESULTS REMARKS: 94 - W.O.#941023023 TO PERFORM NDE. LIMITATION: EXAM LIMITED TO 50% CODE COVERAGE, DUE TO PROXIMITY OF A PERMANENT PIPE COLLAR.

NDE METHOD IN LTP	PROCEDURE	RESULTS FILE NDE EXAM	EXAM RECORD	CALIBRATION RECORD	N O R	G E O	O T H	RESOLUTION RECORD
MT	VS2SSISZZ0070Q	MT	120018		X	-	-	

REVIEWED & ACCEPTED  
FACTORY MUTUAL  
ENGINEERING ASSOCIATION  
*Valerie Kinley* 11-9-94  
AUTH. NUCLEAR INSERVICE (NSI) DATE

Prepared by: *Steve J. Todd*  
Steve J. Todd (SwRI)

Date: 11/05/94

Reviewed by: *Scott W. Sienkiewicz*  
Scott W. Sienkiewicz (PSE&G)



330560

# SwRI MAGNETIC PARTICLE EXAMINATION RECORD

PROJECT No: <b>17-6399</b>		SITE: <b>Salem Generating Station, Unit 2</b>		DATE: (DAY - MONTH - YEAR) <b>28 Oct 94</b>		TIME (24 HR. CLOCK) EXAM STARTED: <b>1415</b> EXAM ENDED: <b>1418</b>		SHEET No.: <b>120018</b>			
EXAMINATION AREA: (SYST/COMP) <b>Boiler Feed System</b>		LINE/SUBASSEMBLY: <b>14-BF-2231</b>		IDENTIFICATION: <b>18PS</b>		L <sub>o</sub> LOCATION: <b>Downstream Side</b>		W <sub>o</sub> LOCATION: <b>Edge of weld</b>			
EXAMINER: <b>W. Angel</b>		SNT LEVEL <b>IR</b>	PROCEDURE REV CO <b>V52.55-IS-22-0010</b> No <b>5AM2-MT1</b>	SURFACE FINISH: <b>AS welded</b>		WELD TYPE (— FLOW —) <b>Pipe Support</b>		YOKE SPACING: <b>5/8</b> IN			
EXAMINER: <b>M. Cotton</b>		SNT LEVEL <b>IT</b>	REV 1 CHG 1 ICN <input checked="" type="checkbox"/> N/A	MATERIAL BRAND: <b>Magnaflux</b>		WET <input type="checkbox"/> DRY <input checked="" type="checkbox"/>		YOKE BRAND: <b>white line</b>			
CALIBRATION BLOCK SERIAL No.: <b>870198 14</b>		CALIBRATION VERIFICATION			DISTANCE FROM BLACK LIGHT TO SENSOR CELL <b>N/A</b> IN		FLOURESCENT <input type="checkbox"/>		SURFACE TEMP. °F		
WEIGHT: <b>11.3 Lbs</b>		TIME: <b>1230</b>	TIME: <b>1435</b>	INITIALS: <b>WA</b>	INITIALS: <b>WA</b>	TYPE: <b>Dry Powder</b>	MIXED NO <input type="checkbox"/> YES <input type="checkbox"/>		THERMOMETER <b>N/A</b>		
BLACK LIGHT BRAND: <b>N/A</b>		INTENSITY METER BRAND: <b>N/A</b>		BLACK LIGHT OUTPUT <b>N/A</b> $\mu\text{w}/\text{cm}^2$		BLACK LIGHT OUTPUT VERIFICATION		MATERIAL APPLICATION:		DUSTING <input checked="" type="checkbox"/>	
SERIAL No.:		SERIAL No.:		SERIAL No.:		TIME:		INITIALS:		FLOODING <input type="checkbox"/>	
IND No.		L	W	LOCATION	ROUND OR LINEAR	SIZE DIA. OR LENGTH	REMARKS:				INITIALS
				<b>No Recordable Indications</b>							<b>WA</b>

**PSEG**  
INSPECTION SERVICES  
Reviewed and Approved  
**WD 11/2/94**  
N.D.E. SUPERVISOR

REVIEWED & ACCEPTED  
FACTORY MUTUAL  
ENGINEERING ASSOCIATION  
**Dallas O. Kirby** 11-9-94  
AUTH. NUCLEAR INSERVICE INSP. DATE

EXAMINATION AREA LIMITATION: (IF NONE, SO STATE) **Examined Down Stream side only WA**  
**Examined 50% of weld Direct Lug 1, Bracket on UP Side WA**

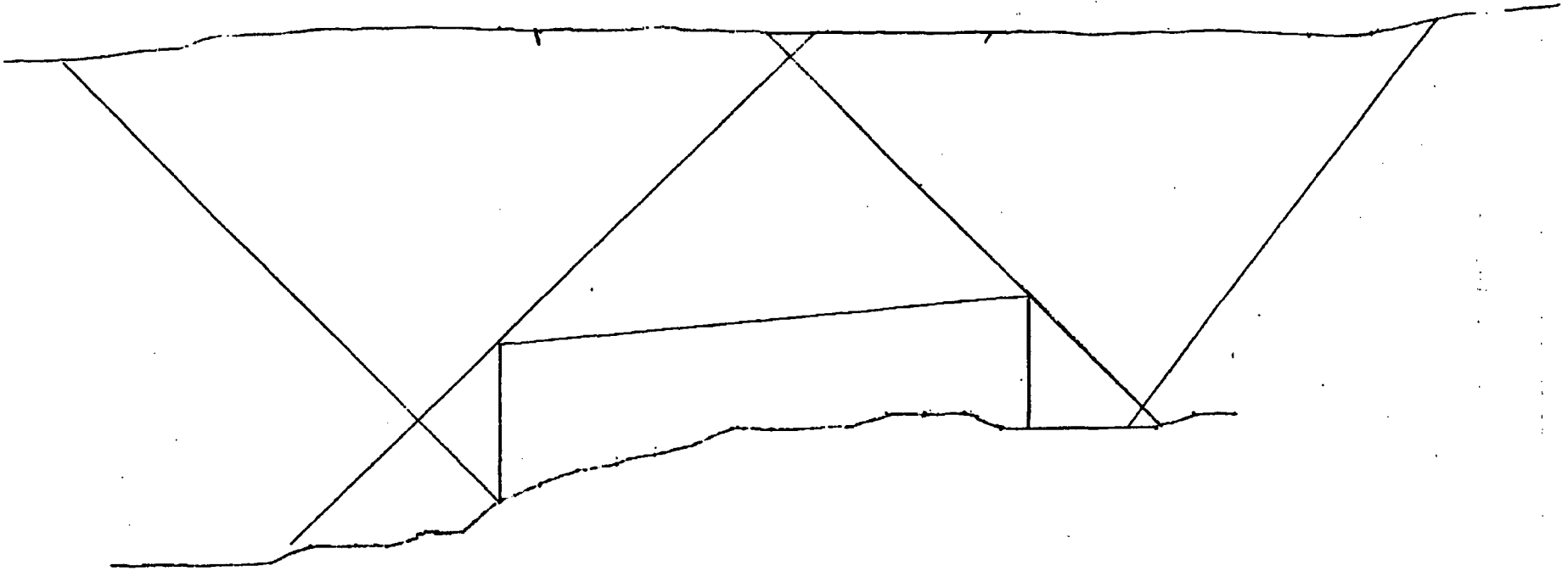
REVIEWED BY: <b>W. Angel</b>	SNT LEVEL <b>II</b>	DATE <b>28 31 OCT 94</b>	PAGE <b>1</b> OF <b>1</b>
---------------------------------	------------------------	-----------------------------	------------------------------



PIPE

FLOW  
→  
|  
⊕

VALVE

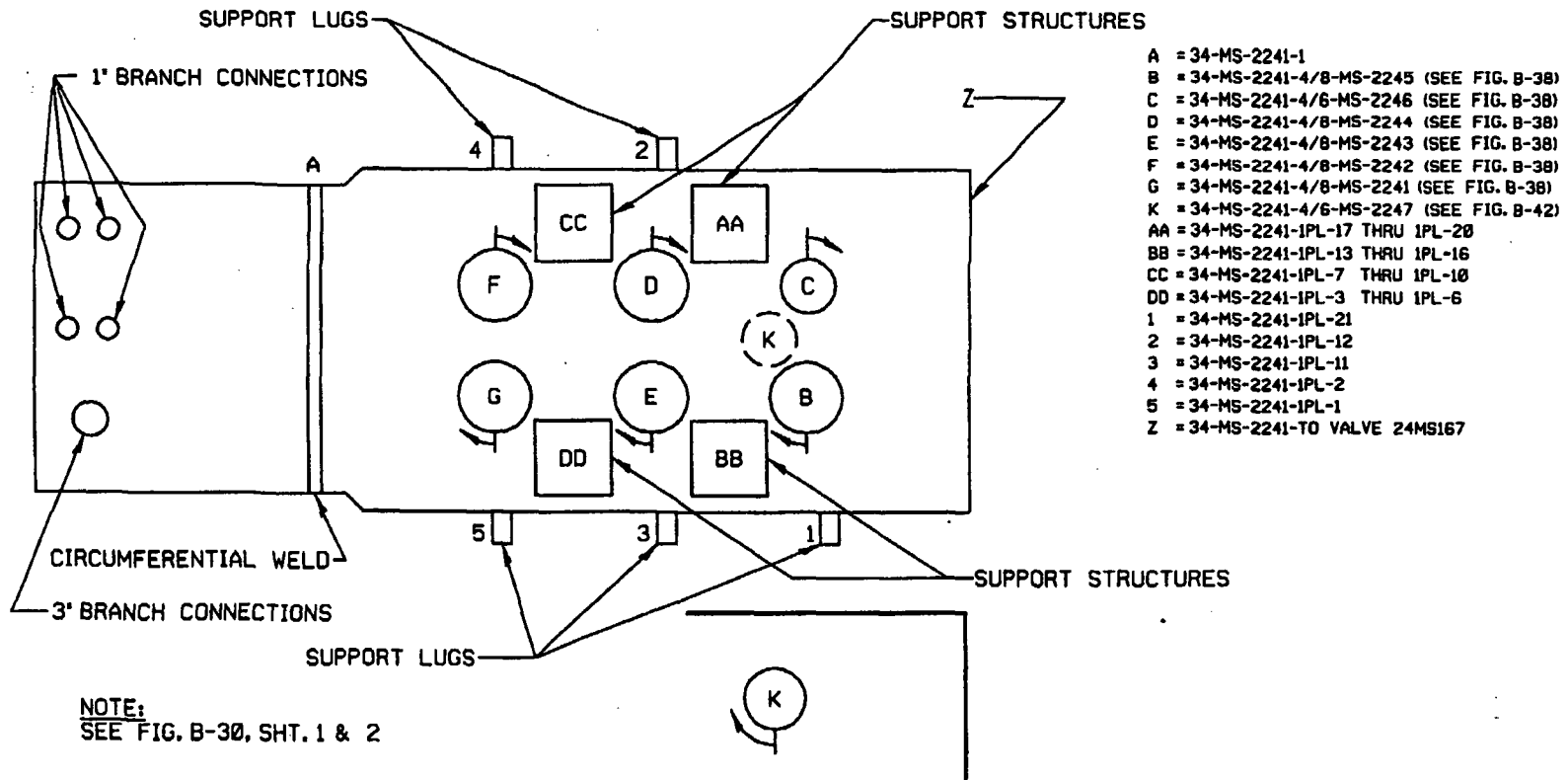


SALEM UNIT 2 17-6399  
MAIN STEAM 34-MS-2241-3  
VICTOR MORTON III 11 NOV 94  
FOR COVERAGE ONLY.  
380140

67

67A

# SALEM UNIT 2 MAIN STEAM HEADER



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

BUILDING: CONTAINMENT	LOCATION: OUTER PEN	ELEVATIONS: 108'
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PSEG ISO MS23-05  
P & ID 205303

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

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

REQUEST FOR ADDITIONAL INFORMATION  
 REQUEST FOR RELIEF REGARDING EXAMINATION COVERAGE  
 SECOND TEN-YEAR IN-SERVICE INSPECTION INTERVAL  
 SALEM NUCLEAR GENERATING STATION, UNIT NO. 2  
 DOCKET NO. 50-311

QUESTION 2.1 (c)

For certain piping welds, Information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers listed below.

Summary # 380140

Component I.D. 34-MS-2241-2

Description Pipe to Valve 24-MS-167

		Comments
1	Weld X-Section	See Attached
2	Material	Carbon Steel
3	Thickness / weld Crown	Thickness 2.5" / Weld Crown 2.75"
4	Obstruction	OD valve contour / Branch configuration
5	Exam Area Highlighted on Drawing	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> X <input type="checkbox"/> No
6	Transducer ray exit point	See Attached

Comments

UT exam was performed of this component using 45 and 32 degree shear wave transducer. The ultrasonic examination was limited to 85% of the code required coverage being limited between 7 1/2" W from 5" to 16" and 87 1/2" to 103" due to multiple branch connections. No unacceptable indications were observed. A magnetic particle examination and system pressure test was also completed with no recordable indications observed.

**NOTE:**

**Weld ID was miss labeled on data report program data base and piping isometrics so pipe to valve 24MS167 weld being weld #2 paperwork states weld 3 this was miss labeled only on data report.**

RFO # 8

SECOND INTERVAL, FIRST PERIOD, SECOND OUTAGE (94RF)

SUMMARY #: 380140

EXAMINATION SUMMARY RECORD  
SALEM NUCLEAR POWER STATION, UNIT 2

SYSTEM/COMPONENT: MAIN STEAM SYSTEM PIPE TO VALVE 24MS167

LINE/SUBASSEMBLY: 34-MS-2241 [PSE&G #34"-2MS1020]

IDENTIFICATION: 34-MS-2241-<sup>2</sup><sub>3-7-97</sub> RELIEF REQUEST #: RR-C1

LTP INSTRUCTIONS: LIMITED UT FROM UPSTREAM SIDE DUE TO BRANCH CONNECTION CONFIGURATION. NO UT FROM DOWNSTREAM SIDE DUE TO VALVE CONFIGURATION. LIMITATION: UT LONGITUDINAL SEAM IS LIMITED TO A MINIMUM OF 85% CODE COVERAGE, DUE TO BRANCH CONNECTIONS.

RESULTS REMARKS: 94 - W.O.#941023023 (NDE). EXAM TO INCLUDE 2.5T OF INTERSECTING LG SEAM ON UP STRM SIDE OF WELD. UT45 GEOMETRIC REFLECTOR IS FROM THE WELD COUNTERBORE & BRANCH CONNECTION INSIDE RADIUS. LIMITATION: UT EXAM LG SEAM LIMITED TO 85% CODE COVERAGE MIN. CH - C

NDE METHOD IN LTP	PROCEDURE	RESULTS FILE NDE EXAM	EXAM RECORD	CALIBRATION RECORD	N O R	G E O	O T H	RESOLUTION RECORD
UT	VS2SSISZZ0070Q	MT	120049	-	X	-	-	-
MT	"	MT	120045	-	X	-	-	-
	VS2RAISZZ0082Q	UT45	860065	147104	-	X	-	310043
	"	UT45T	860074	147112	-	X	-	310043
	VS2RAISZZ0088Q	PROFILE	135062	-	-	-	-	-

REVIEWED & ACCEPTED  
FACTORY MUTUAL  
ENGINEERING ASSOCIATION  
*[Signature]*  
AUTH. NUCLEAR INSERVICE INSP. DATE

Prepared by: Steve J. Todd (SwRI)

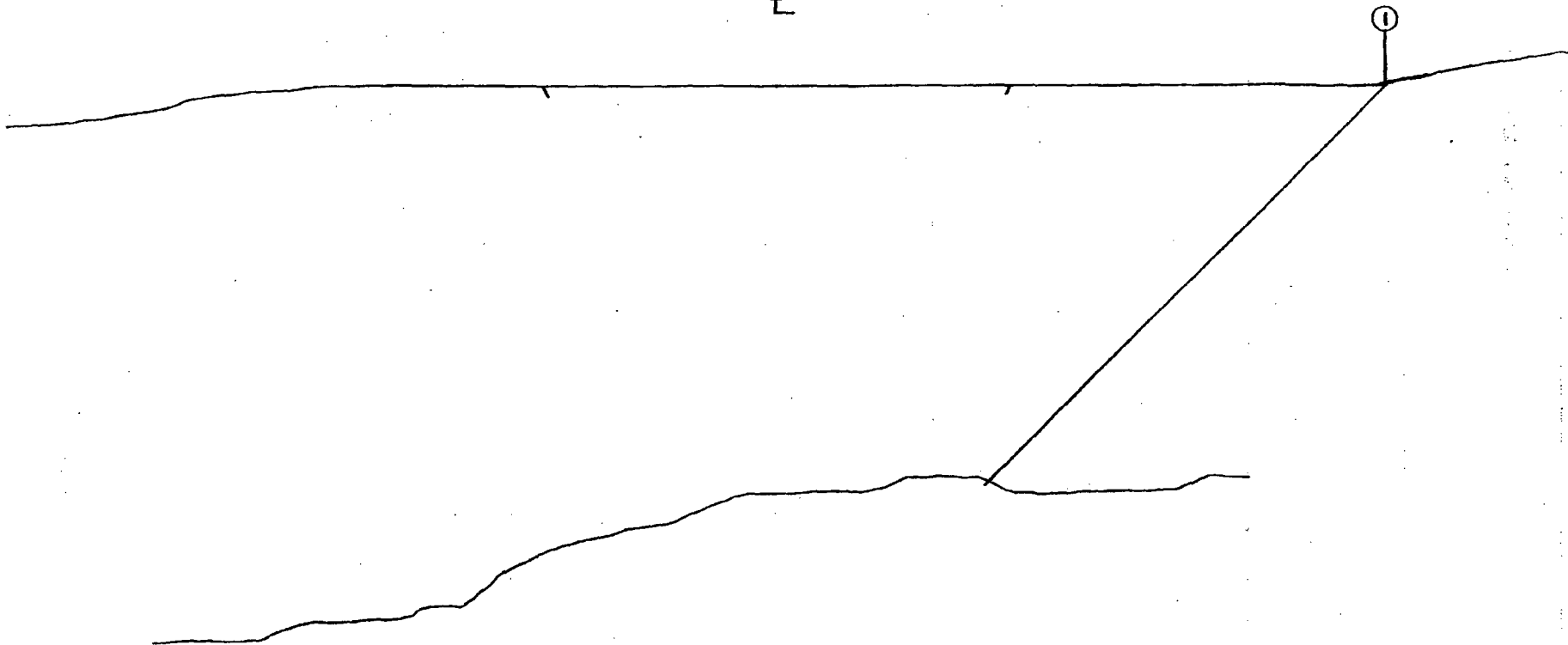
Reviewed by: Scott W. Sienkiewicz (PSE&G)

Date: 11/17/94

UP  
PIPE

FLOW →  
|  
⊕

DOWN  
VALVE



SALEM UNIT 2 17-6399  
MAIN STEAM 34-MS-2241-22  
VICTOR MORTON III 11 NOV 94  
GEOMETRIC.

380140

① COUNTERBORE.

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

## PSE&G LIMITATION REPORT

PROJECT: 17-6399

UNIT: SALEM UNIT 2

SYSTEM: MAIN STEAM

WELD NO.: 34-MS-2241-2 (LONG SEAM)

Prepared By: VICTOR MORTON

Date: 14 NOV 94

### SURFACE EXAMINATIONS

Area To Be Examined (length x <sup>NOT REQUIRED</sup>Width = A)

A = 8.75'

Area Of Limitation (Length x <sup>NOT REQUIRED</sup>Width = AI)

AI = 7.50' (WORST CASE BASIS)

Percentage Of Coverage

(A-AI/A) = 85.71%

### VOLUMETRIC EXAMINATIONS

#### A. Axial Exams (Indications Parallel To Weld)

- |   |                                 |            |
|---|---------------------------------|------------|
| 1. Compute Exam Volume                      | (height x width x length) = Vt1 | <u>N/A</u> |
| 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)

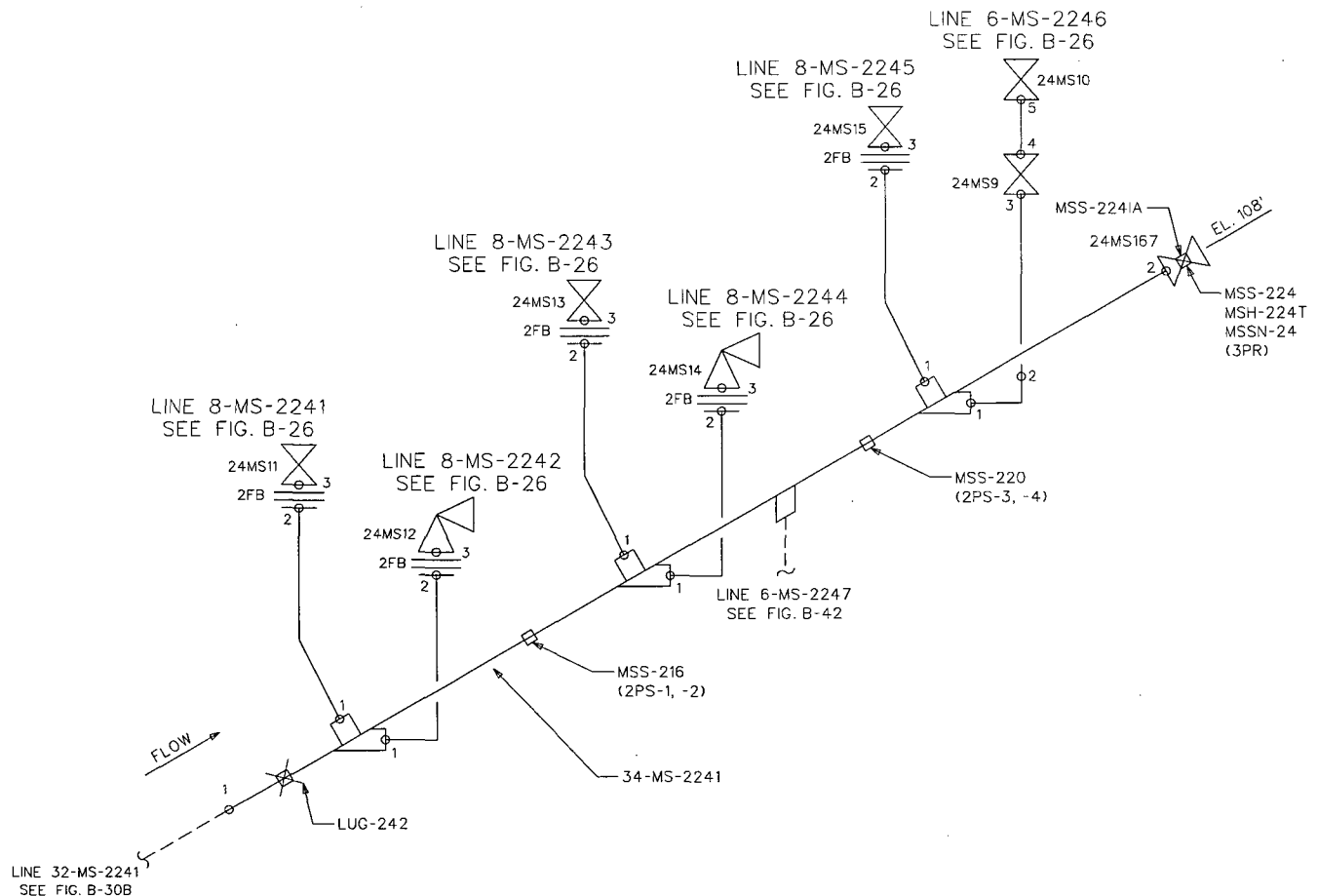
- |                                      |                                 |            |
|--------------------------------------|---------------------------------|------------|
| 1. Compute Exam Volume               | (height x width x length) = Vt2 | <u>N/A</u> |
| 2. Compute Vol. Not Covered CW       | = 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 | <u>N/A</u>      |
| 2. Compute Total Coverage              | 100 - L               | <u>* 85.71%</u> |

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

380140



NOTE:  
FOR ENLARGED DETAIL  
OF NO. 24 MANIFOLD  
SEE FIG. B-26.

- \* 34-MS-2241
- 8-MS-2241
- 8-MS-2242
- 8-MS-2243
- 8-MS-2244
- 8-MS-2245
- 6-MS-2246

PSEG ISO MS23-02  
P & ID 205303

BUILDING: OUTER PEN	LOCATION: OUTER PEN	ELEVATIONS: 108'
------------------------	------------------------	---------------------

ATTENTION: ANY REVISION TO THIS DRAWING SHALL BE MADE ONLY BY CAED		
1	REVISED PER ORDER No. 80038023.	
REV.	DATE	DESCRIPTION

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

FIGURE: B-38	REVISION: 1
SYSTEM: MAIN STEAM SYSTEM MAIN STEAM RELIEF	
LINE: * SEE ABOVE	
THIRD 10 YEAR INSPECTION INTERVAL	

LV 1 = COMMON INFORMATION  
LV 2 = WELD INFORMATION  
LV 3 = HANGER INFORMATION

## PSE&G LIMITATION REPORT

PROJECT: 17-6399

UNIT: SALRM 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 <sup>NOT REQUIRED</sup>Width = A)

A = 8.75'

Area Of Limitation (Length x <sup>NOT REQUIRED</sup>Width = AI)

AI = 7.50' (WORST CASE BASIS)

Percentage Of Coverage

(A-AI)/A = 85.71%

### VOLUMETRIC EXAMINATIONS

#### A. Axial Exams (Indications Parallel To Weld)

- |   |                                 |            |
|---|---------------------------------|------------|
| 1. Compute Exam Volume                      | (height x width x length) = Vt1 | <u>N/A</u> |
| 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 | <u>N/A</u> |
| 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 | <u>N/A</u>      |
| 2. Compute Total Coverage              | 100 - L               | <u>* 85.71%</u> |

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

380140

69

69



**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 <sup>NOT REQUIRED</sup> Width = A)	A = <u>100%</u>
Area Of Limitation (Length x <sup>NOT REQUIRED</sup> Width = AI)	AI = <u>28.8</u>
Percentage Of Coverage	(A-AI/A) = <u>71.2%</u>

**VOLUMETRIC EXAMINATIONS**

**A. Axial Exams (Indications Parallel To Weld)**

- |   |                                 |            |
|---|---------------------------------|------------|
| 1. Compute Exam Volume                      | (height x width x length) = Vt1 | <u>N/A</u> |
| 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 | <u>N/A</u> |
| 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 | <u>N/A</u> |
| 2. Compute Total Coverage              | 100 - L               | <u>↓</u>   |

REMARKS: \_\_\_\_\_  
 \_\_\_\_\_

381070

REQUEST FOR ADDITIONAL INFORMATION  
 REQUEST FOR RELIEF REGARDING EXAMINATION COVERAGE  
 SECOND TEN-YEAR IN-SERVICE INSPECTION INTERVAL  
 SALEM NUCLEAR GENERATING STATION, UNIT NO. 2  
 DOCKET NO. 50-311

QUESTION 2.2(a) For certain component attachments and support welds, Information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers listed below.

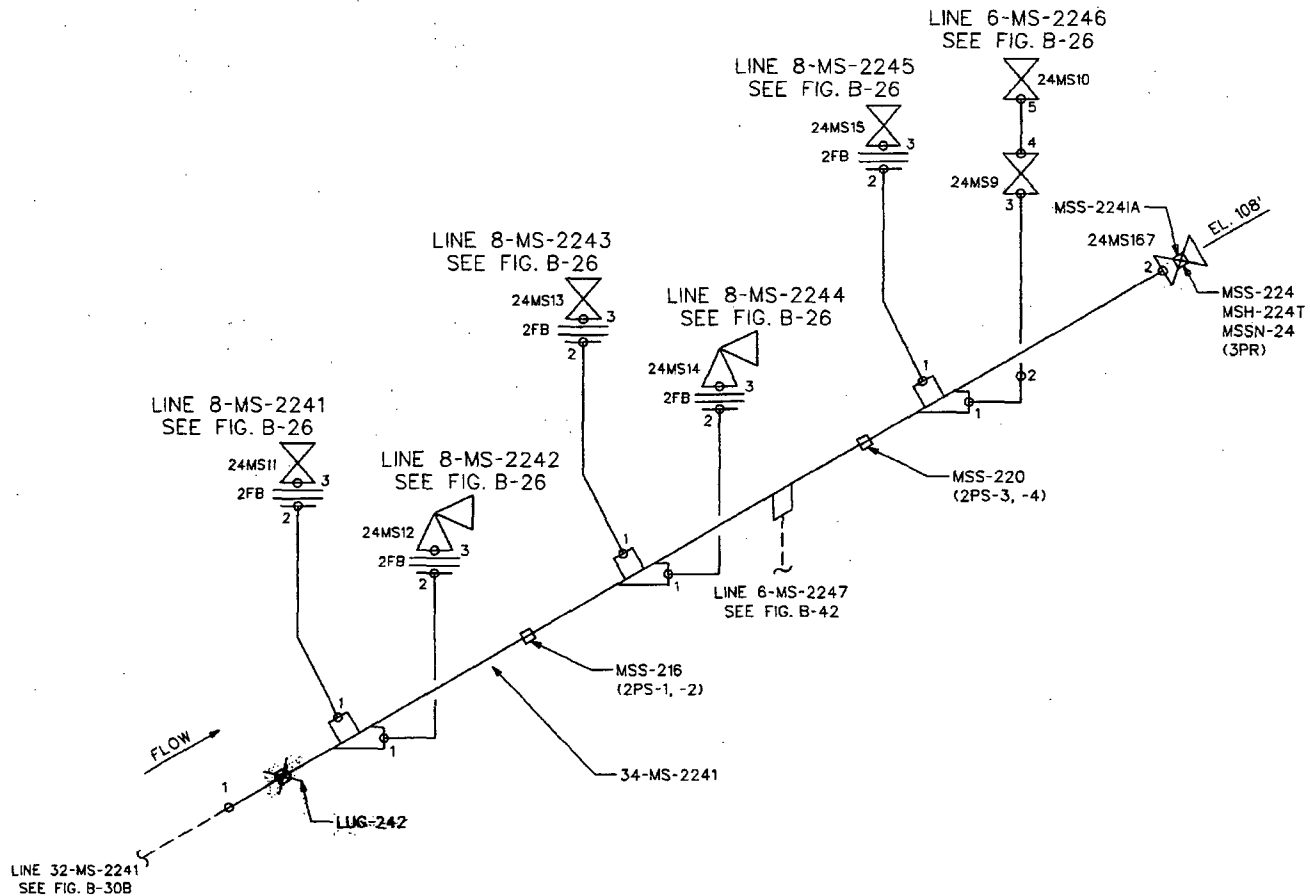
Summary # 381070  
 Component I.D. 34-MS-2241-242-PL  
 Description PIPE LUG

		Comments
1	Weld X-Section	N/A
2	Material	Carbon Steel
3	Thickness / weld Crown	N/A
4	Obstruction	PERMANENT BEAM
5	Exam Area Highlighted on Drawing	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
6	Transducer ray exit point	N/A

Comments

MT -exam was conducted on this component. The MT exam was limited to 71% because of a permanently installed beam that obstructed access to lug #2. No exam could 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 #1. A system pressure test was also completed with no inaccessible indications observed.

No Further Information Available



NOTE:  
FOR ENLARGED DETAIL  
OF NO. 24 MANIFOLD  
SEE FIG. B-26.

- \* 34-MS-2241
- 8-MS-2241
- 8-MS-2242
- 8-MS-2243
- 8-MS-2244
- 8-MS-2245
- 6-MS-2246

PSEG ISO MS23-02  
P & ID 205303

BUILDING: OUTER PEN	LOCATION: OUTER PEN	ELEVATIONS: 108'
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ATTENTION: ANY REVISION TO THIS DRAWING SHALL BE MADE ONLY BY CAED		
1		REVISED PER ORDER No. 80038023.
REV.	DATE	DESCRIPTION

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

FIGURE: B-38	REVISION: 1
SYSTEM: MAIN STEAM SYSTEM	
MAIN STEAM RELIEF	
LINE: * SEE ABOVE	
THIRD 10 YEAR INSPECTION INTERVAL	

- LV 1 = COMMON INFORMATION
- LV 2 = WELD INFORMATION
- LV 3 = HANGER INFORMATION

SECOND INTERVAL, FIRST PERIOD, SECOND OUTAGE (94RF)

SUMMARY #: 381070

EXAMINATION SUMMARY RECORD  
SALEM NUCLEAR POWER STATION, UNIT 2

SYSTEM/COMPONENT: MAIN STEAM SYSTEM PIPE LUG 242  
LINE/SUBASSEMBLY: 34-MS-2241 [PSE&G #34"-2MS1019]  
IDENTIFICATION: 34-MS-2241-242PL RELIEF REQUEST #: RR-C1

LTP INSTRUCTIONS: LIMITATION: MT EXAM LIMITED TO 71% CODE COVERAGE ON LUG #2, DUE TO INACCESSIBILITY (PERMANENT BEAM OBSTRUCTION).  
RESULTS REMARKS: 94 - W.O.#941023023 TO PERFORM NDE. LIMITATION: MT EXAM LIMITED TO 71% CODE COVERAGE ON LUG #2, DUE TO INACCESSIBILITY (PERMANENT BEAM OBSTRUCTION).

NDE METHOD IN LTP	PROCEDURE	RESULTS FILE NDE EXAM	EXAM RECORD	CALIBRATION RECORD	N O R	G E O	O T H	RESOLUTION RECORD
MT	VS2SSISZZ0070Q	MT	120046	-	X	-	-	-

REVIEWED & ACCEPTED  
FACTORY MUTUAL  
ENGINEERING ASSOCIATION  
*John S. Kelly* 11/17/94  
AUT. NUCLEAR INSERVICE INSP. DATE

Prepared by: *Steve J. Todd*  
Steve J. Todd (SwRI)  
Reviewed by: *Scott W. Sienkiewicz*  
Scott W. Sienkiewicz (PSE&G)

Date: 11/15/94



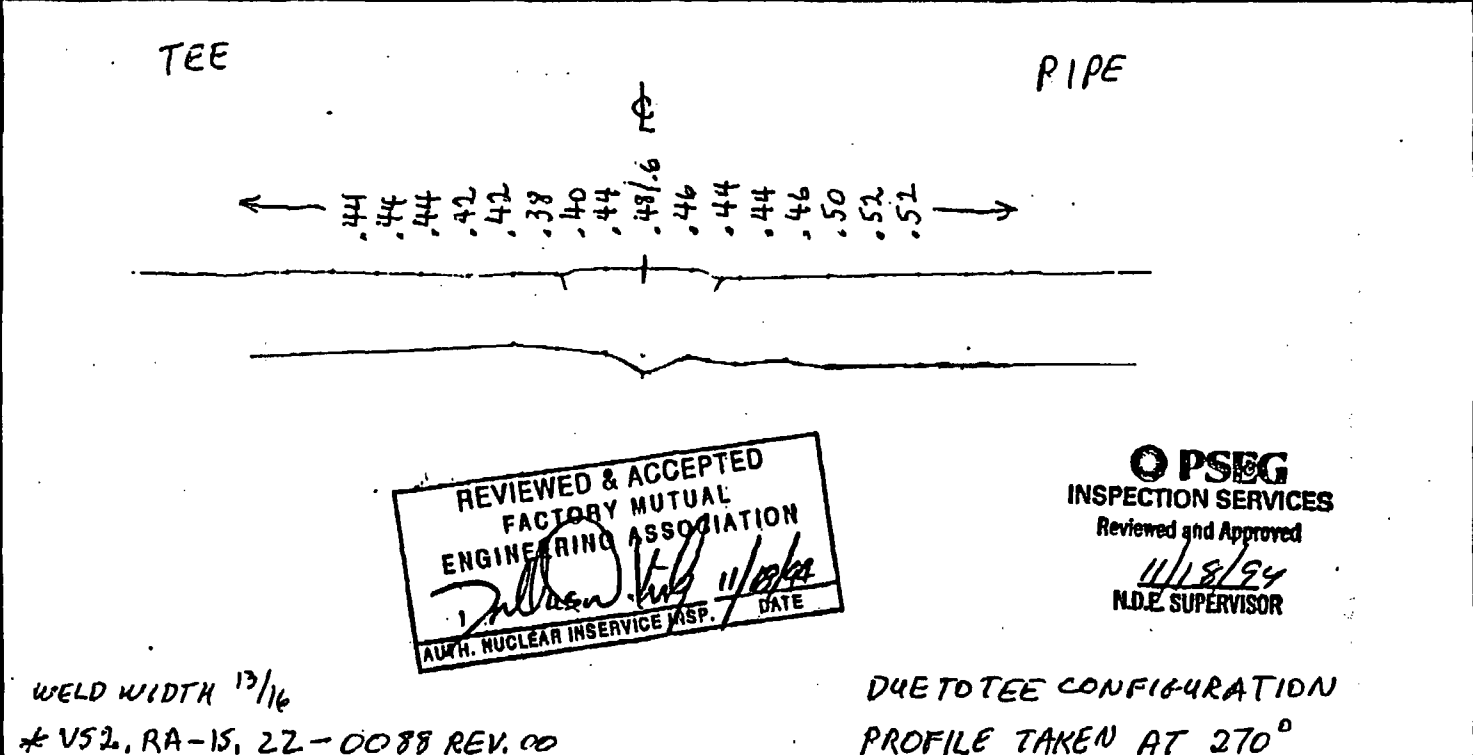
**385510 SWRI PROFILE AND THICKNESS INFORMATION RECORD**

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 2-4749      INSTRUMENT: SONIC MARK I  OTHER SONIC 136       SERIAL NO: 855 K      COMPONENT ID: 6-MS-2211-13

EXAMINER: H. HENZE      SNT LEVEL: I T      REV 0      CHG 1      ICN  N/A      COUPLANT: GLYCERINE  WATER  OTHER (SPECIFY) SONATRACE 40 # 94014      REFERENCE BLK NO: CS-DG-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	RGV/XMT



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

12  
TRANS MODE: DUAL      N/A      Search Unit chosen for coverage using N/A nodes.      NAME: Victor Morton      SNT LEVEL: III

REVIEWED BY: *Victor Morton*      SNT LEVEL: III      DATE: 17 NOV 94

**REQUEST FOR ADDITIONAL INFORMATION**  
**REQUEST FOR RELIEF REGARDING EXAMINATION COVERAGE**  
**SECOND TEN-YEAR IN-SERVICE INSPECTION INTERVAL**  
**SALEM NUCLEAR GENERATING STATION, UNIT NO. 2**  
**DOCKET NO. 50-311**

**QUESTION**      2.1 (c)    For certain piping welds, Information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers listed below.

Summary #      385510

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Component I.D.    6-MS-2211-13

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Description      Tee to Pipe

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		Comments			
1	Weld X-Section	See Attached			
2	Material	Carbon Steel			
3	Thickness / weld Crown	Thickness .48" / weld Crown .8"			
4	Obstruction	Tee OD Contour			
5	Exam Area Highlighted on Drawing	<table border="1" style="display: inline-table;"> <tr> <td style="text-align: center;">Yes</td> <td style="text-align: center;">X</td> <td style="text-align: center;">No</td> </tr> </table>	Yes	X	No
Yes	X	No			
6	Transducer ray exit point	See Attached			

**Comments**

UT exam was performed of this component using 45 degree shear wave transducer. The ultrasonic examination was limited to 73% of the code required coverage being limited between 8 1/2" to 14 1/2" and 20" to 3 1/2" due to the OD configuration of the tee's blend radius. UT scans were performed on and across the weld in both directions No unacceptable indications were observed. A liquid penetrant examination and system pressure test was also completed with no recordable indications observed.

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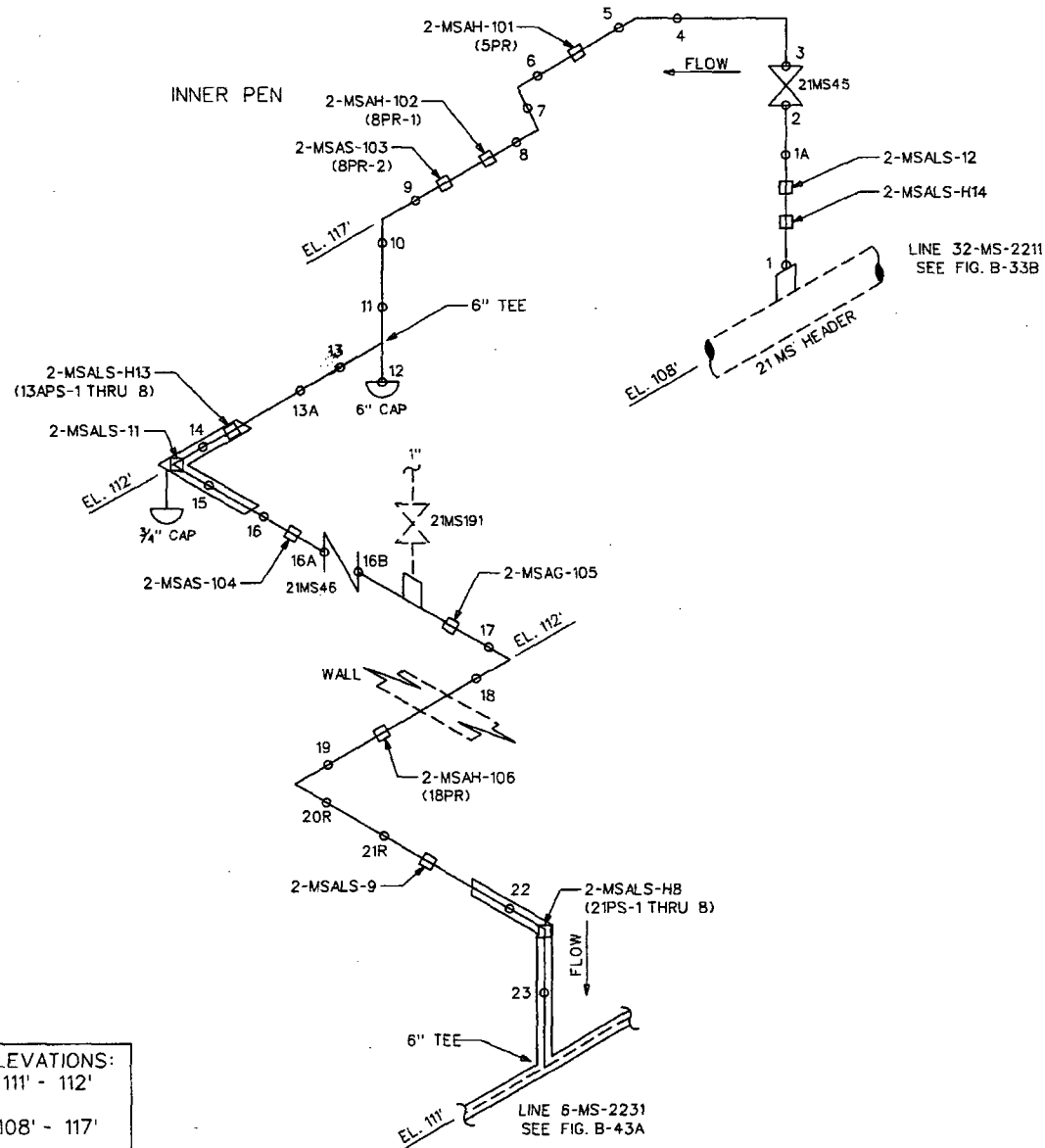
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BUILDING: CONTAINMENT	LOCATION: ANNULUS	ELEVATIONS: 111' - 112'
AUXILIARY INNER PEN	INNER PEN	108' - 117'

ATTENTION: ANY REVISION TO THIS DRAWING SHALL BE MADE ONLY BY CAED		
1		REVISED PER ORDER No. 80038023.
REV.	DATE	DESCRIPTION

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

FIGURE: B-45	REVISION: 1
SYSTEM: MAIN STEAM SYSTEM AUXILIARY MAIN STEAM	
LINE: 6-MS-2211	
THIRD 10 YEAR INSPECTION INTERVAL	

- LV 1 = COMMON INFORMATION
- LV 2 = WELD INFORMATION
- LV 3 = HANGER INFORMATION

PSEG ISO MS22-01  
 P & ID 205303



Supplemental Drawing

Summary # 385510

Component I.D. 6-MS-2211-13

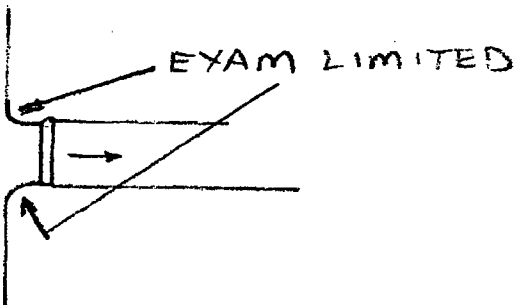
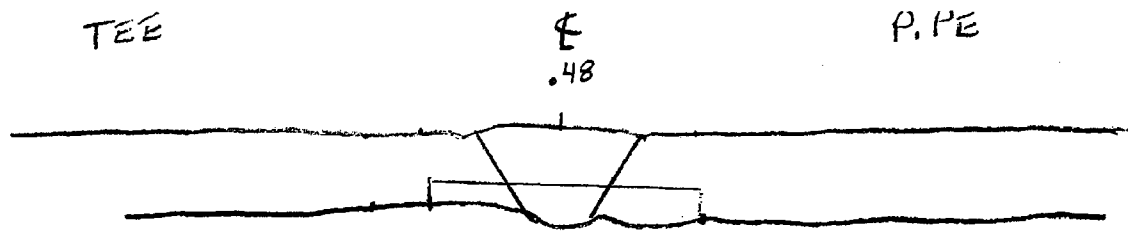
Description Tee to Pipe

Page of

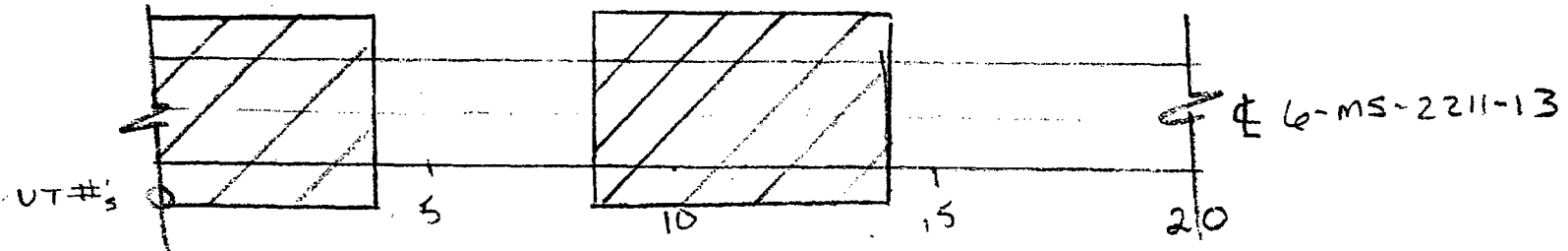
Comments

The ultrasonic examination was limited to 73% of the code required coverage being limited between 8 1/2" to 14 1/2" and 20" to 3 1/2" due to the OD configuration of the tee's blend radius

Sketch



DOWNSTREAM SCAN LIMITED BY TEE CONFIGURATION



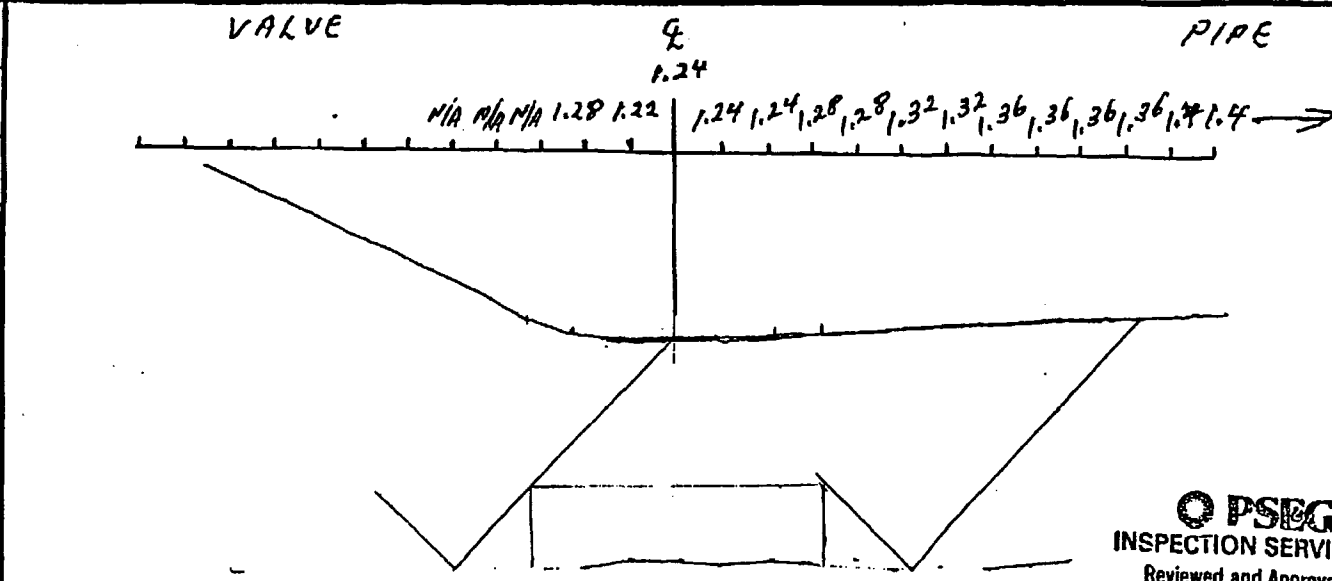


# SO1800 SWRI PROFILE AND THICKNESS INFORMATION RECORD

PROJECT NO: <b>17-6399</b>	SITE: <b>Salem Generating Station, Unit 2</b>	DATE: (DAY - MONTH - YEAR) <b>9 NOV 94</b>	TIME (24 HR. CLOCK) INT. <b>0900</b> FINAL <b>1036</b>	SHEET NO: <b>195052</b>
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EXAMINER <b>B. ROBERDS</b>	SNT LEVEL <b>II</b>	THK. MEAS. RECD BY PROCEDURE No. <b>SAM 2-AT49</b> REV <b>0</b> CHG <b>1</b> * ICN <input checked="" type="checkbox"/> N/A	INSTRUMENT: SONIC MARK I <input type="checkbox"/> OTHER <b>136</b> <input checked="" type="checkbox"/>	SERIAL NO: <b>860K</b>	COMPONENT ID: <b>14-RH-2212-1</b>
EXAMINER <b>T. JACKSON</b>	SNT LEVEL <b>II</b>		COUPLANT: GLYCERINE <input type="checkbox"/> WATER <input type="checkbox"/> OTHER (SPECIFY) <b>SONOTRACE 40 #94014</b>		REFERENCE BLK NO: <b>SS-6</b>

SEARCH UNITS	
BRAND	<b>SWRI</b>
SERIAL NO	<b>3129</b>
SIZE	<b>3/8</b>
FREQ. (MHz)	<b>2.25</b>
INSTRUMENT SETTINGS	
SCREEN SIZE	<b>2.0</b>
DELAY	<b>.331</b>
MATL. CAL.	<b>.223</b>
RANGE	<b>2.00</b>
REP. RATE	<b>4KHZ.</b>
WALK USED	<b>RCU/XMT</b>



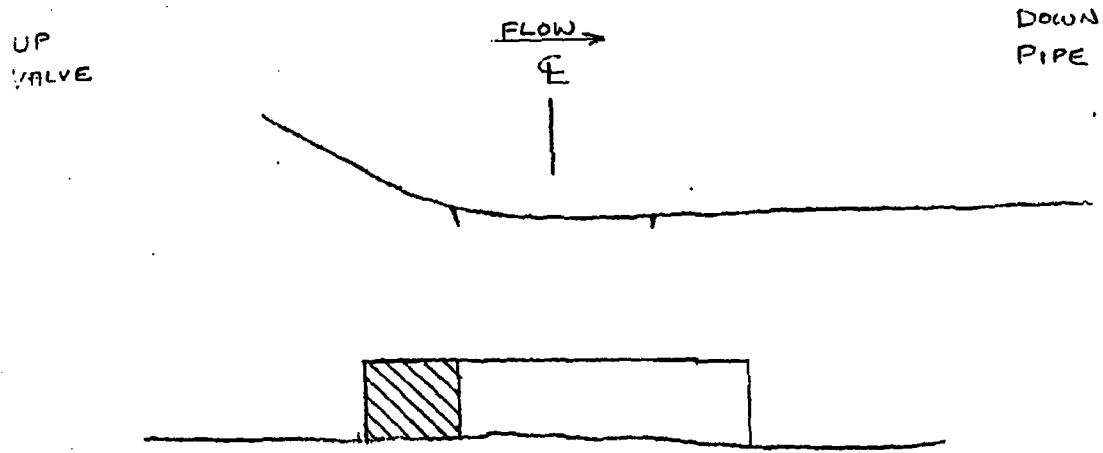
WELD WIDTH -  $1\frac{1}{8}$  INCH  
 \* VS2.RA-IS.22-0088 REV. 00 INCH

**PSEG**  
 INSPECTION SERVICES  
 Reviewed and Approved  
*[Signature]*  
 N.O.E. SUPERVISOR


SEARCH UNIT CHOSEN FOR COVERAGE USING <b>45°</b> nodes.	SEARCH UNIT CHOSEN FOR COVERAGE USING <b>N/A</b> nodes.	NAME: <b>B. Roberds</b>	SNT LEVEL: <b>II</b>
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REVIEWED BY: <i>[Signature]</i>	SNT LEVEL: <b>III</b>	DATE: <b>9 NOV 94</b>
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22



SALEM UNIT 2 17-6399  
RESIDUAL HEAT REMOVAL  
14-RH-2212-1  
VICTOR MORTON III. 9 NOV 94  
FOR LIMITATIONS ONLY.  
501800

 = AREA NOT COVERED  
CW/CCW

## PSE&G LIMITATION REPORT

PROJECT: 17-6399

UNIT: SALEM UNIT 2

SYSTEM: RESIDUAL HEAT REMOVAL

WELD NO.: 14-RH-2212-1

Prepared By: VICTOR MCINTOSH

Date: 9 NOV 94

### SURFACE EXAMINATIONS

Area To Be Examined (length x Width = A)

A = N/A

Area Of Limitation (Length x Width = AI)

AI = ↓

Percentage Of Coverage

(A-AI/A) = ↓

### VOLUMETRIC EXAMINATIONS

#### A. Axial Exams (Indications Parallel To Weld)

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

#### B. Circumferential Exams (Indications Perpendicular To Weld)

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

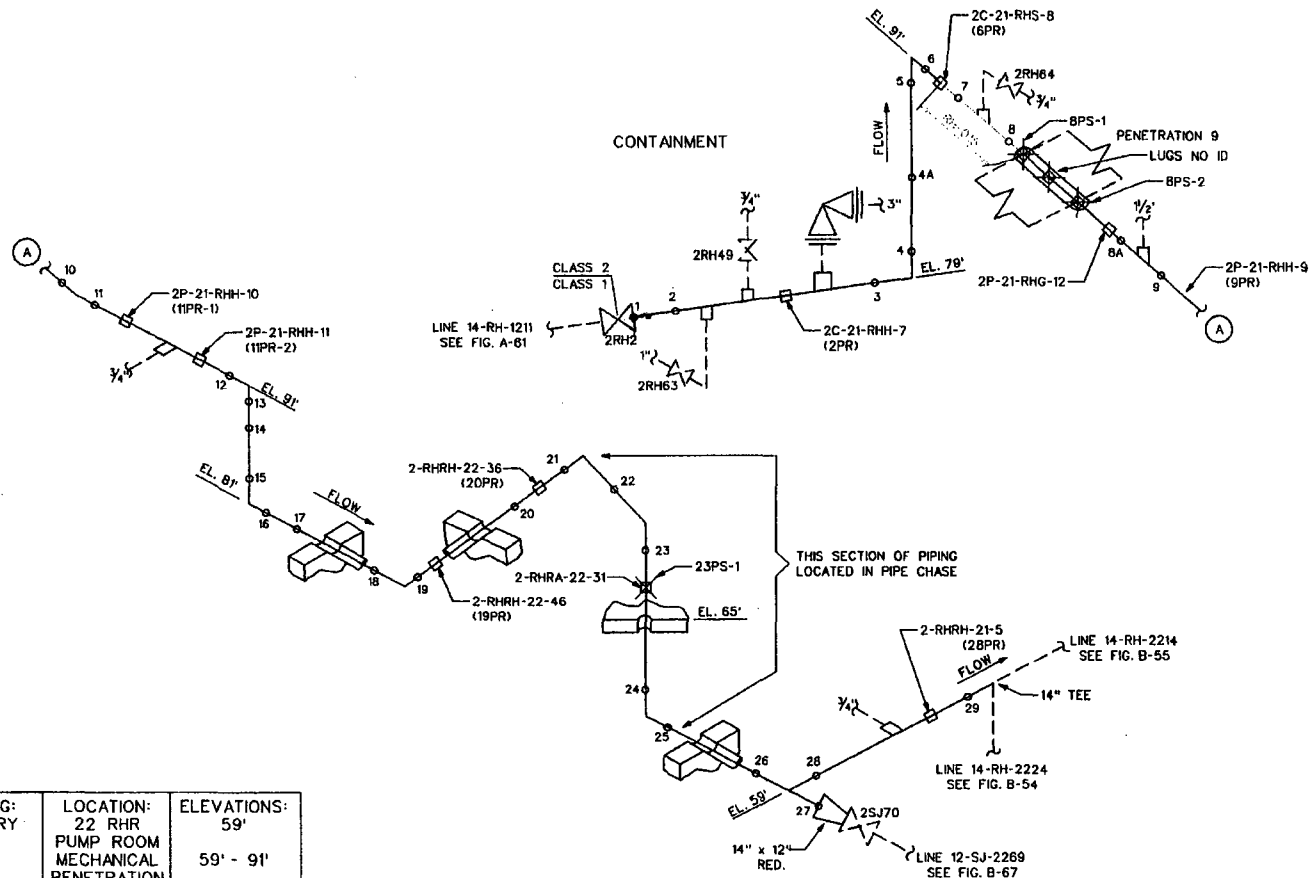
#### C. Total Coverage

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

REMARKS: \_\_\_\_\_  
 \_\_\_\_\_

501800





BUILDING: AUXILIARY	LOCATION: 22 RHR PUMP ROOM MECHANICAL PENETRATION NORTH AREA ANNULUS	ELEVATIONS: 59' 59' - 91' 79' - 81'
CONTAINMENT		

ATTENTION: ANY REVISION TO THIS DRAWING SHALL BE MADE ONLY BY CAED		
1	REVISED PER ORDER No. 80038023.	
REV.	DATE	DESCRIPTION

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

FIGURE: B-56	REVISION: 1
SYSTEM: RESIDUAL HEAT REMOVAL	
LINE: 14-RH-2212	
THIRD 10 YEAR INSPECTION INTERVAL	

PSEG ISO RH22-07, RH23-43  
 P & ID 205332

LV 1 = COMMON INFORMATION  
 LV 2 = WELD INFORMATION  
 LV 3 = HANGER INFORMATION

Supplemental Drawing

Summary # 501800

Component I.D. 14-RH-2212-1

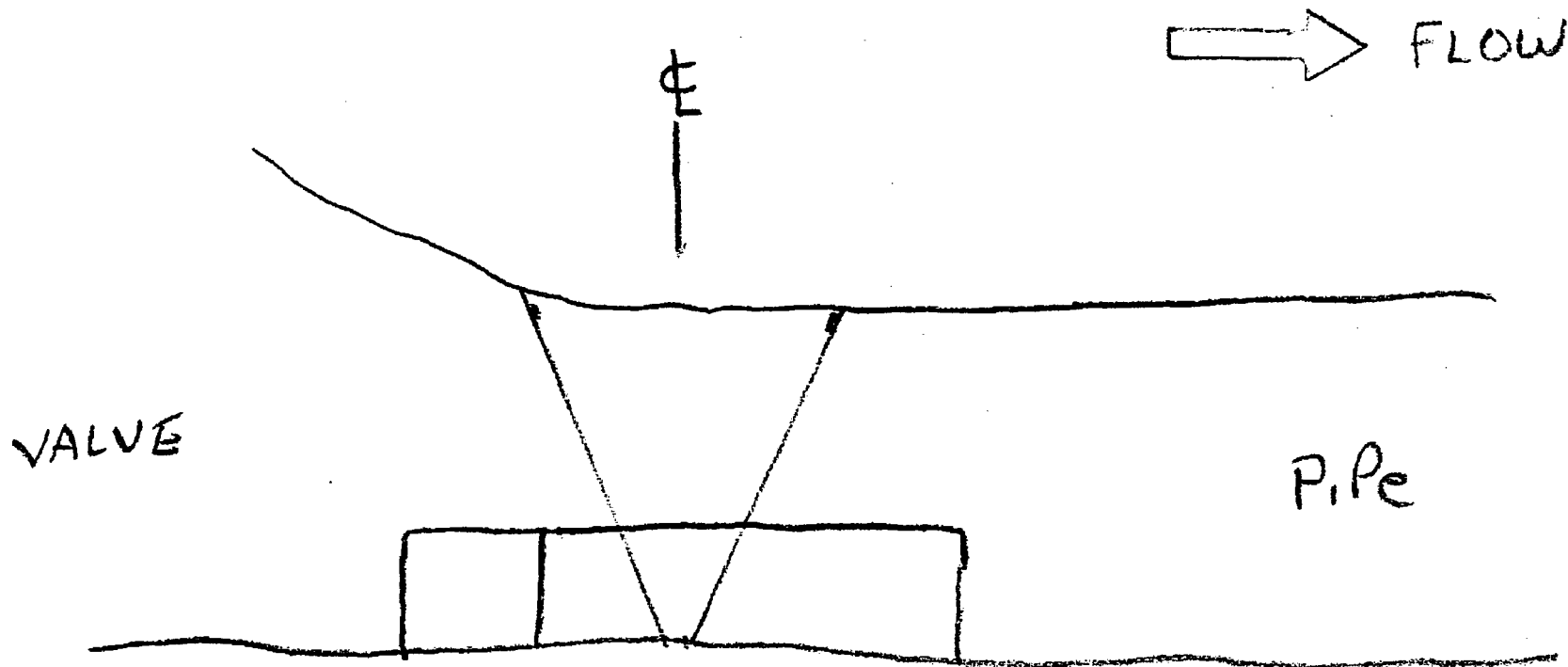
Description Valve 2RH2 to Pipe

Page of

Comments

The ultrasonic examination was limited to 87% of the code required coverage being limited due to upstream side valve OD configuration that restricted scanning.

Sketch





S10010

## SWRI PROFILE AND THICKNESS INFORMATION RECORD

PROJECT NO: 17-6399		SITE: Salem Generating Station, Unit 2		DATE: (DAY - MONTH - YEAR) 12 NOV 94		TIME (24 HR. CLOCK) INT. 1300 FINAL 1444		SHEET NO: 135067		
EXAMINER W. ANGELL		SNT LEVEL II	THK. MEAS. REQ'D BY PROCEDURE No. SAM 2-UT 49 REV 0 *		INSTRUMENT: SONIC MARK I <input type="checkbox"/> OTHER SONIC 136 <input checked="" type="checkbox"/>		SERIAL NO: 859K		COMPONENT ID: 14-RA-2224-1 SJ 2/1/94	
EXAMINER T. JACKSON		SNT LEVEL II	CHG 1 ICN <input checked="" type="checkbox"/> N/A		COUPLANT: GLYCERINE <input type="checkbox"/> WATER <input type="checkbox"/> OTHER (SPECIFY) SONOTRACE 40 #94014		REFERENCE BLK NO: SS-6			
SEARCH UNITS		VALVE ELBOW								
BRAND	SWRI 30-WA 12NFV									
SERIAL NO	3008									
SIZE	3/8									
FREQ. (MHz)	2.25									
INSTRUMENT SETTINGS										
SCREEN SIZE	1.0									
DELAY	.444									
VEL. CAL.	.222									
RANGE	1.00									
REP. RATE	4 KHR.									
WACK USED	RCV/XMT									
TRANS MODE	DUAL									
REVIEWED BY:	SNT LEVEL:		DATE:							
[Signature]		III		14 NOV 94						

REVIEWED & ACCEPTED  
FACTORY MUTUAL  
ENGINEERING ASSOCIATION  
[Signature] 11/17/94  
AUT. NUCLEAR INSERVICE MSP. DME

PSEG  
INSPECTION SERVICES  
Reviewed and Approved  
[Signature]  
N.D.E. SUPERVISOR

WELD WIDTH = 9/16 WA  
\* VS 2-RA-15-ZZ-0088 REV. 00 WA

45° Search Unit chosen for coverage using 3/8, 1/2 and 10/8 nodes.  
1/2° Search Unit chosen for coverage using N/A nodes.

NAME: W. Angell  
SNT LEVEL: II

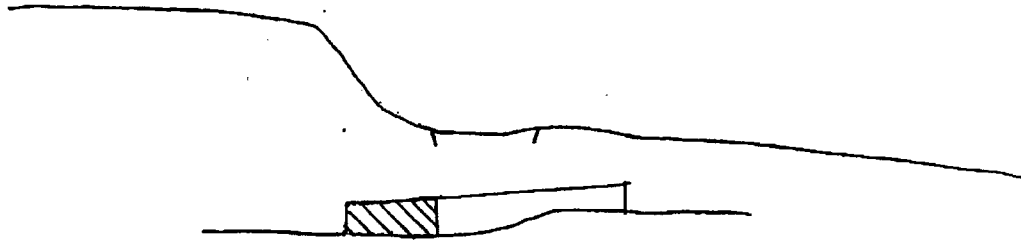



UP  
VALVE

FLOW →

DOWN  
ELBOW

£



 = AREA NOT COVERED  
CW/CCW

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.: 14-784-2224-1  
55 83 11/11/93

Prepared By: VICTOR MORTON

Date: 14-NOV 93

### SURFACE EXAMINATIONS

Area To Be Examined (length x Width = A)	A= <u>N/A</u>
Area Of Limitation (Length x Width = AI)	AI= <u>↓</u>
Percentage Of Coverage	(A-AI)/A= <u>↓</u>

### VOLUMETRIC EXAMINATIONS

#### A. Axial Exams (Indications Parallel To Weld)

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

#### B. Circumferential Exams (Indications Perpendicular To Weld)

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

#### C. Total Coverage

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

REMARKS: \_\_\_\_\_

77

570010

**REQUEST FOR ADDITIONAL INFORMATION**  
**REQUEST FOR RELIEF REGARDING EXAMINATION COVERAGE**  
**SECOND TEN-YEAR IN-SERVICE INSPECTION INTERVAL**  
**SALEM NUCLEAR GENERATING STATION, UNIT NO. 2**  
**DOCKET NO. 50-311**

**QUESTION**      2.1 (c) For certain piping welds, Information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers listed below.

Summary #      570010

Component I.D.    14-RH-2224-1

Description      Valve 22SJ44 to Elbow

		Comments
1	Weld X-Section	See Attached
2	Material	Stainless Steel
3	Thickness / weld Crown	Thickness .52" / weld Crown .600"
4	Obstruction	Valve OD Contour
5	Exam Area Highlighted on Drawing	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
6	Transducer ray exit point	See Attached

**Comments**

UT exam was performed of this component using 45 degree shear wave transducer. The ultrasonic examination was limited to 75% of the code required coverage being limited due to upstream side valve OD configuration that restricted scanning. UT scans were performed on and across the weld in both directions. No unacceptable indications were observed. A liquid penetrant examination and system pressure test was also completed with no recordable indications observed.

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SECOND INTERVAL, FIRST PERIOD, SECOND OUTAGE (94RF)

SUMMARY #: 573383

EXAMINATION SUMMARY RECORD  
SALEM NUCLEAR POWER STATION, UNIT 2

SYSTEM/COMPONENT: RESIDUAL HEAT REMOVAL SYSTEM PIPE SUPPORT  
LINE/SUBASSEMBLY: 12-RH-2252 [PSE&G #12"-2RH1006]  
IDENTIFICATION: 12-RH-2252-38PS-1&2 RELIEF REQUEST #: RR-C1

LTP INSTRUCTIONS: LIMITATION: PT EXAM OF 38PS-1 IS LIMITED TO 71% CODE COVERAGE, DUE TO THE PROXIMITY OF A PERMANENT SUPPORT.  
RESULTS REMARKS: 94 - W.O.#941023023 TO PERFORM NDE. LIMITATION: PT EXAM OF 38PS-1 WAS LIMITED TO 71% CODE COVERAGE, DUE TO THE PROXIMITY OF A PERMANENT SUPPORT.

NDE METHOD IN LTP	PROCEDURE	RESULTS FILE NDE EXAM	EXAM RECORD	CALIBRATION RECORD	N O R	G E O	O T H	RESOLUTION RECORD
PT	VS2SSISZZ0075Q	PT 38PS-1	110195	-	X	-	-	-
"	"	PT 38PS-2	110192	-	X	-	-	-

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

Prepared by: *Steve J. Todd*  
Steve J. Todd (SwRI)  
Reviewed by: *Scott W. Sienkiewicz*  
Scott W. Sienkiewicz (PSE&G)

Date: 11/17/94

573583 **SwRI LIQUID PENETRANT EXAMINATION RECORD**

PROJECT No: <b>17-6399</b>	SITE: <b>Salem Generating Station, Unit 2</b>	DATE: (DAY - MONTH - YEAR) <b>14 NOV 94</b>	W <sub>0</sub> LOCATION <i>FUSION</i> <b>LINE PIPE SIDE</b>	SHEET No <b>110195</b>
EXAMINATION AREA (SYST/COMP) <b>RESIDUAL HEAT REMOVAL</b>	(LINE/SUBASSEMBLY) <b>12-RH-2252</b>	(IDENTIFICATION) <b>38 PS-1</b>	L <sub>0</sub> LOCATION <b>6</b>	WELD TYPE: (← FLOW →) <b>PIPE SUPPORT</b>
EXAMINER <b>T. JACKSON</b>	SNT LEVEL <b>II</b>	PROCEDURE * No. <b>SAM 2-PT1</b>	SURFACE TEMP °F <b>76</b>	PENETRANT TEMP °F <b>78</b>
EXAMINER <b>B. ROBERTS</b>	SNT LEVEL <b>II</b>	REV 2 CHG / ICN /	THERMOMETER SERIAL NUMBER <b>SWRI 187</b>	
PRE CLEANER	PENETRANT		REMOVER	
BRAND <b>SPOTCHECK</b>	BRAND <b>SPOTCHECK</b>	REMOVER <b>SPOTCHECK</b>	DEVELOPER	
TYPE <b>SKL-S</b>	TYPE <b>SKL-SP</b>	TYPE <b>SKL-S</b>	DEVELOPER <b>SKD-NF</b>	
BATCH No <b>94G05K</b>	BATCH No <b>92K08K</b>	BATCH No <b>94G05K</b>	BATCH No <b>92A01P</b>	
CLEANING COMPLETED <b>1447</b>	TIME APPLIED <b>1454</b>	REMOVAL COMPLETED <b>1512</b>	TIME APPLIED <b>1518</b>	
	TIME REMOVED <b>1507</b>		TIME READ <b>1526</b>	

INDICATION No	L	W	LOCATION UP OR DOWN STREAM	TYPE ROUND OR LINEAR	SIZE DIAMETER OR LENGTH	REMARKS	INITIAL
NO RECORDABLE INDICATIONS						* VS 2.95-IS.22-0075 REV.1	BRM
<div data-bbox="955 1049 1386 1263" data-label="Text"> <p>REVIEWED &amp; ACCEPTED FACTORY MUTUAL ENGINEERING ASSOCIATION <i>J. Kelly 11/16/94</i></p> </div> <div data-bbox="1396 1148 1617 1329" data-label="Text"> <p>PSEG INSPECTION SERVICES Reviewed and Approved <i>W.D. 11/16/94</i> N.D.E. SUPERVISOR</p> </div>							

EXAMINATION AREA LIMITATION - IF NONE, SO STATE  
**NO EXAM FROM L=20 TO L=38 DUE TO PROXIMITY OF OTHER SUPPORT COMPONENTS**

REVIEWED BY: <i>Vic [Signature]</i>	SNT LEVEL <b>III</b>	DATE <b>15 NOV 94</b>	CONTINUED ON SHEET <b>N/A</b>	PAGE <b>1 OF 1</b>
--	-------------------------	--------------------------	----------------------------------	-----------------------



ST3383

## SWRI LIQUID PENETRANT EXAMINATION RECORD

PROJECT No: 17-6399		SITE: Salem Generating Station, Unit 2		DATE: (DAY - MONTH - YEAR) 14 NOV 94		W <sub>0</sub> LOCATION FUSION LINE PIPE SIDE		SHEET No 110192	
EXAMINATION AREA (SYST/COMP) RESIDUAL HEAT REMOVAL		LINE/SUBASSEMBLY 12-AH-2253		(IDENTIFICATION) 3B RS-2		L <sub>0</sub> LOCATION 6		WELD TYPE: (— FLOW —) PIPE SUPPORT	
EXAMINER T. JACKSON		SNT LEVEL II		PROCEDURE* No SAIMR-ATL		SURFACE TEMP °F 76		PENETRANT TEMP °F 78	
EXAMINER B. ROBERAS		SNT LEVEL II		REV 2 CHG / ICM / <input type="checkbox"/> N/A		THERMOMETER SERIAL NUMBER SWRI 117197		WELD LENGTH 28	
PRE CLEANER		PENETRANT		REMOVER		DEVELOPER			
BRAND SPOTCHECK		BRAND SPOTCHECK		BRAND SPOTCHECK		BRAND SPOTCHECK			
TYPE SKC-S		TYPE SKL-SP		TYPE SKC-S		TYPE SKD-NE			
BATCH No 94G05K		BATCH No 92K0BK		BATCH No 94G05K		BATCH No 92A01P			
CLEANING COMPLETED 1358		TIME APPLIED 1406		REMOVAL COMPLETED 1420		TIME APPLIED 1430			
TIME REMOVED 1417						TIME READ 1438			
INDICATION No	L	W	LOCATION UP OR DOWN STREAM	TYPE ROUND OR LINEAR	SIZE DIAMETER OR LENGTH	REMARKS			INITIAL
			NO RECORDABLE INDICATIONS			*VS2.SS-IS.ZZ-0075 REV 01			
REVIEWED & ACCEPTED FACTORY MUTUAL ENGINEERING ASSOCIATION NUCLEAR INSERVICE IASB						PSEG INSPECTION SERVICES Reviewed and Approved N.E. SUPERVISOR			
EXAMINATION AREA LIMITATION - IF NONE, SO STATE NONE									
REVIEWED BY [Signature]		SNT LEVEL III		DATE 15 NOV 94		CONTINUED ON SHEET N/A		PAGE 1 OF 1	

## 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 <sup>NOT REQUIRED</sup>Width = A) A= 45.5

Area Of Limitation (Length x <sup>NOT REQUIRED</sup>Width = 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 | <u>N/A</u> |
| 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 | <u>N/A</u> |
| 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

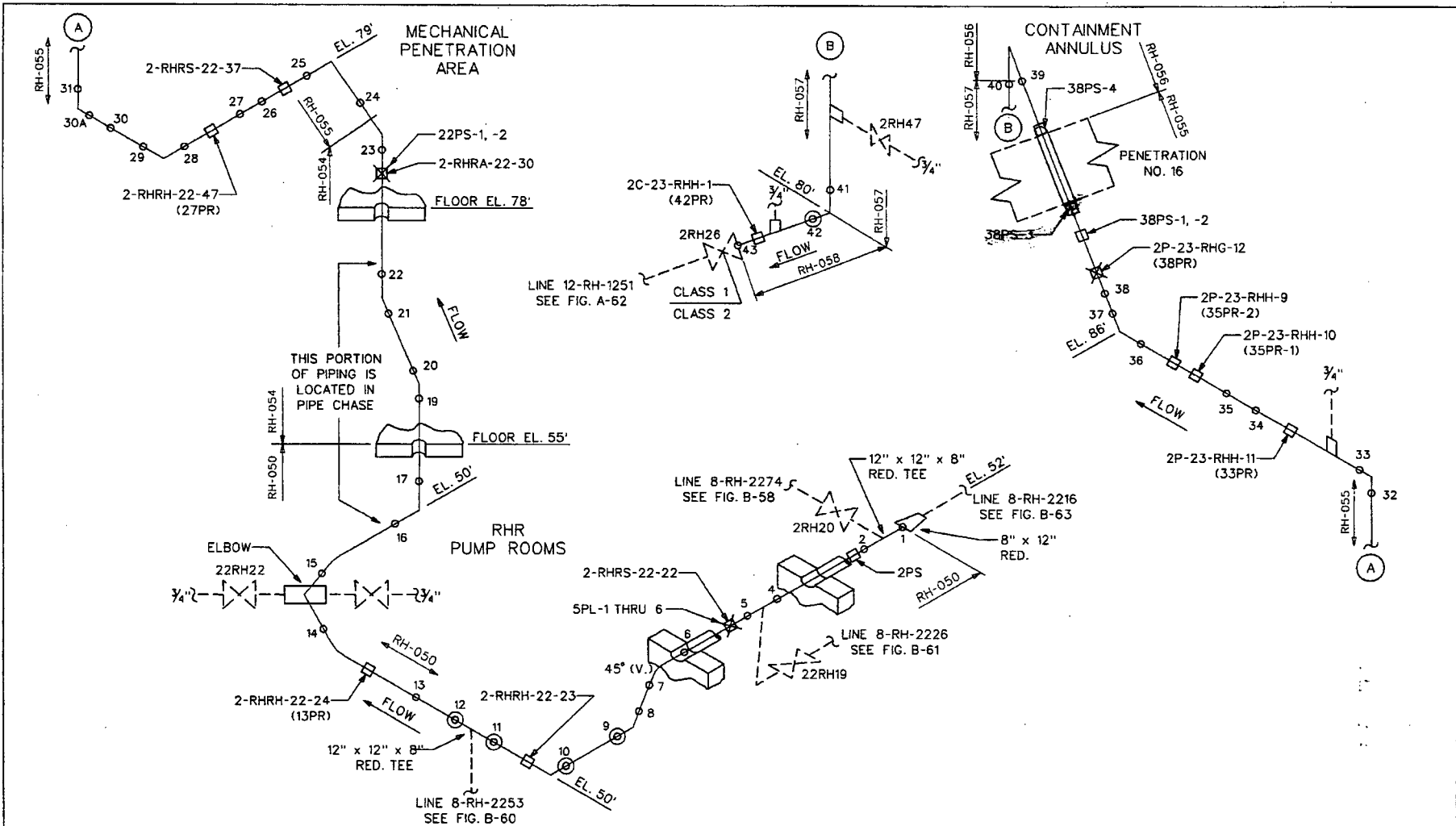
- |  |                       |            |
|--|-----------------------|------------|
| 1. Compute Total Limitation Percentage | (Z1+Z2+Z3+Z4) / 4 = L | <u>N/A</u> |
| 2. Compute Total Coverage              | 100 - L               | ↓          |

REMARKS: \_\_\_\_\_

573387







BUILDING: AUXILIARY	LOCATION: 22 RHR PUMP ROOM MECHANICAL PENETRATION AREA	ELEVATIONS: 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

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	

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

LV 1 = COMMON INFORMATION  
LV 2 = WELD INFORMATION  
LV 3 = HANGER INFORMATION

SECOND INTERVAL, FIRST PERIOD, SECOND OUTAGE (94RF)

SUMMARY #: 573387

EXAMINATION SUMMARY RECORD  
SALEM NUCLEAR POWER STATION, UNIT 2

SYSTEM/COMPONENT: RESIDUAL HEAT REMOVAL SYSTEM PIPE SUPPORT  
 LINE/SUBASSEMBLY: 12-RH-2252 [PSE&G #12"-2RH1006]  
 IDENTIFICATION: 12-RH-2252-38PS-3 RELIEF REQUEST #: RR-C1

LTP INSTRUCTIONS: LIMITATION: PT EXAM IS LIMITED TO 71% CODE COVERAGE, DUE TO THE PROXIMITY OF ADJACENT PIPING.  
 RESULTS REMARKS: 94 - W.O.#941023023 TO PERFORM NDE. LIMITATION: PT EXAM IS LIMITED TO 71% CODE COVERAGE, DUE TO THE PROXIMITY OF ADJACENT PIPING.

NDE METHOD IN LTP	PROCEDURE	RESULTS FILE NDE EXAM	EXAM RECORD	CALIBRATION RECORD	N O R	G E O	O T H	RESOLUTION RECORD
PT	VS2SSISZZ0075Q	PT	110134	-	X	-	-	-

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

Prepared by: *Steve J. Todd*  
 Steve J. Todd (SWRI)  
 Reviewed by: *Scott W. Sienkiewicz*  
 Scott W. Sienkiewicz (PSE&G)

Date: 11/17/94

ST3387 **SWRI LIQUID PENETRANT EXAMINATION RECORD**

PROJECT No: **17-6399** SITE: **Salem Generating Station, Unit 2** DATE: (DAY - MONTH - YEAR) **14 NOV 94** W. LOCATION FUSION **LINE PIPE SIDE** SHEET No. **110134**

EXAMINATION AREA (SYST/COMP) **RESIDUAL HEAT REMOVAL** (LINE/SUBASSEMBLY) **12-RH-2252** (IDENTIFICATION) **3BR9-3** L. LOCATION **TAC** WELD TYPE: (← FLOW →) **PIPE SUPPORT**

EXAMINER **T. JACKSON** SNT LEVEL **II** PROCEDURE No. **SAM 2-PT 1** SURFACE TEMP °F **76** PENETRANT TEMP °F **78** THERMOMETER SERIAL NUMBER **SWRI 187**

EXAMINER **B. ROBERTS** SNT LEVEL **II** CHG 1 **\*** ICH 1  N/A SURFACE FINISH **GROUND** WELD LENGTH **45 1/2**

PRE CLEANER PENETRANT REMOVER DEVELOPER

BRAND **SPOT CHECK** BRAND **SPOT CHECK** BRAND **SPOT CHECK** BRAND **SPOT CHECK**

TYPE **SKC-5** TYPE **SKL-SP** TYPE **SKC-5** TYPE **SKD-NF**

BATCH No **94605K** BATCH No **92K08K** BATCH No **94605K** BATCH No **92A01P**

CLEANING COMPLETED **1448** TIME APPLIED **1456** REMOVAL COMPLETED **1517** TIME APPLIED **1522**  
TIME REMOVED **1508** TIME READ **1534**

INDICATION No	L	W	LOCATION UP OR DOWN STREAM	TYPE ROUND OR LINEAR	SIZE DIAMETER OR LENGTH	REMARKS	INITIAL
NO RECORDABLE INDICATIONS						* V52,55 - IS, 22 - 0075 REV. 1	BR
<div data-bbox="997 1098 1669 1346" data-label="Text"> <p><b>REVIEWED &amp; ACCEPTED INSPECTION SERVICES</b>  <b>FACTORY MUTUAL ENGINEERING ASSOCIATION</b>                  Reviewed and Approved  <i>[Signature]</i> 11/14/94                  N.D.E. SUPERVISOR                  AUTH. NUCLEAR INSERVICE INSP. DATE</p> </div>							

EXAMINATION AREA LIMITATION - IF NONE, SO STATE **NO EXAM FROM L=7 1/2 TO L=14 AND FROM L=30 TO L=36 1/2** **BR**  
**DUE TO PROXIMITY OF ADJACENT PIPING.** **BR**

REVIEWED BY: *[Signature]* SNT LEVEL **III** DATE **15 NOV 94** CONTINUED ON SHEET **N/A** PAGE **1** OF **1**



# 707130 SWRI PROFILE AND THICKNESS INFORMATION RECORD

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

EXAMINER: T. JACKSON      SNT LEVEL: II      THK. MEAS. REQ'D BY PROCEDURE X No. SAM 2-UT 49      INSTRUMENT: SONIC MARK I  OTHER SONIC 636       SERIAL NO: 6566      COMPONENT ID: 4-CV-2257-1

EXAMINER: B. ROBERTS      SNT LEVEL: II      REV 0      CHG 1      COUPLANT: GLYCERINE  WATER  OTHER (SPECIFY) SONOTRACE 40      REFERENCE BLK NO: SS-DC-31

ICN  N/A

SEARCH UNITS

BRAND: SWRT

SERIAL NO: 3129

SIZE: 3/8

FREQ. (MHz): 2.25

INSTRUMENT SETTINGS

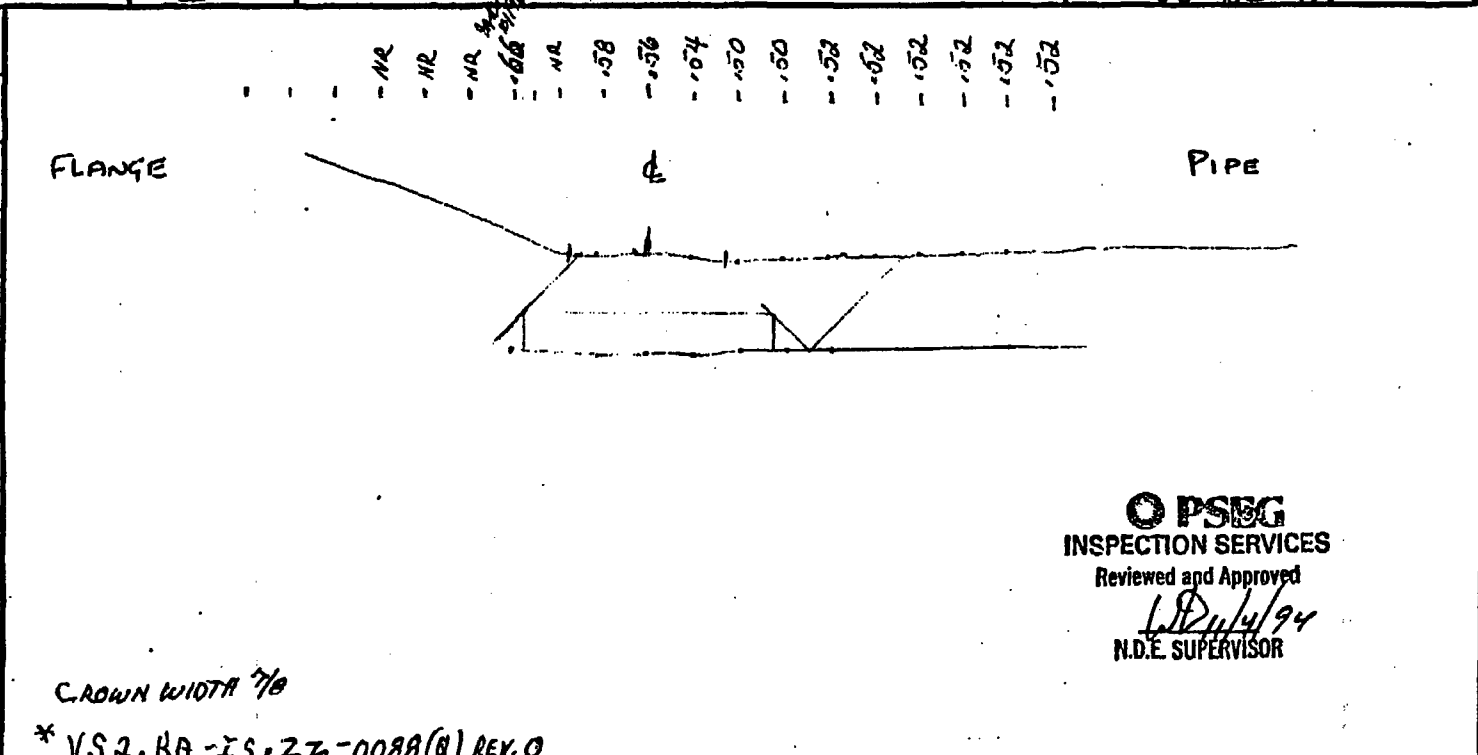
SCREEN SIZE: 1.00

DELAY: .369

MATL. CAL.: .222

RANGE: 1.00

REP. RATE: 4 kHz



**PSEG**  
INSPECTION SERVICES  
Reviewed and Approved  
*[Signature]*  
N.D.E. SUPERVISOR

82 JACK USED: RCV/XMT      45° Search Unit chosen for coverage using 2/8, 6/8, 10/8 nodes.      NAME: VICTOR MORTON      SNT LEVEL: III

82 TRANS MODE: DUAL      N/A° Search Unit chosen for coverage using N/A nodes.

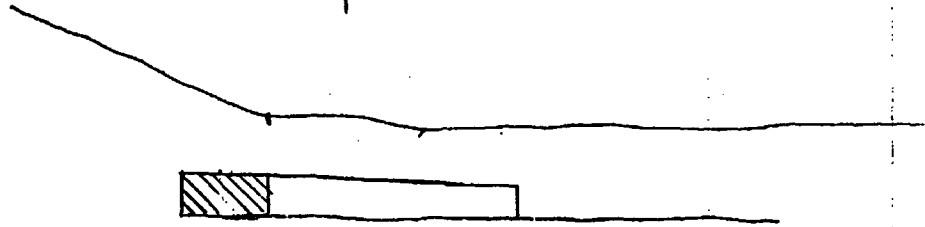
REVIEWED BY: Vic [Signature]      SNT LEVEL: III      DATE: 21 OCT 94

UP  
FLANGE

FLOW →

DOWN  
PIPE

⊕



 = AREA NOT COVERED CW/CCW

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

701130

83

**PSE&G LIMITATION REPORT**

PROJECT: 17-6399 UNIT: SALEM UNIT 2  
 SYSTEM: CHEMICAL VALVE 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)  $A = \underline{N/A}$   
 Area Of Limitation (Length x Width = AI)  $AI = \underline{\quad}$   
 Percentage Of Coverage  $(A-AI/A) = \underline{\quad}$

**VOLUMETRIC EXAMINATIONS**

**A. Axial Exams (Indications Parallel To Weld)**

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

**B. Circumferential Exams (Indications Perpendicular To Weld)**

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

**C. Total Coverage**

1. Compute Total Limitation Percentage	$(Z1+Z2+Z3+Z4) / 4 = L$	<u>13.16</u>
2. Compute Total Coverage	$100 - L$	<u>86.84%</u>

REMARKS: \_\_\_\_\_  
 \_\_\_\_\_

707130

84

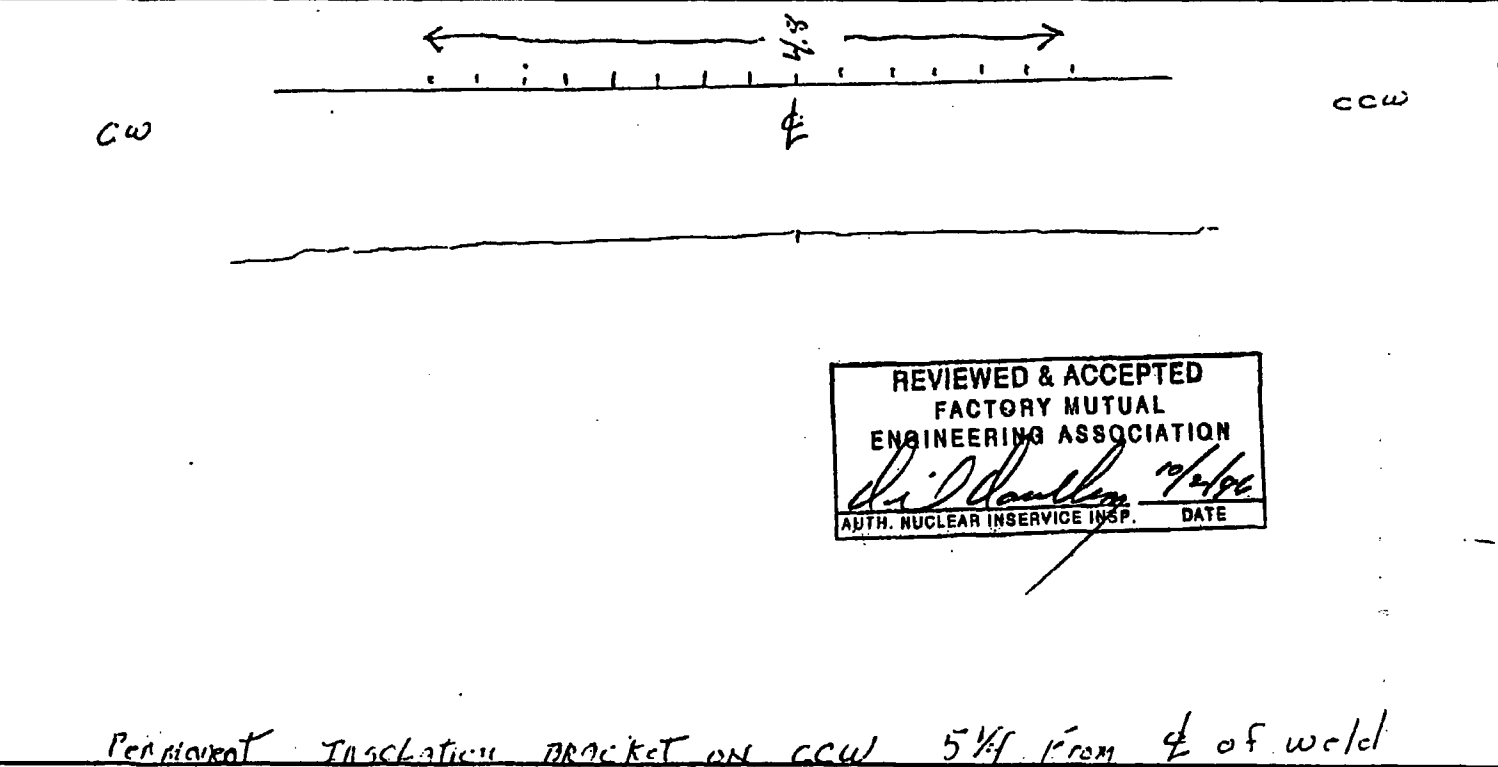
SWRI PROFILE AND THICKNESS INFORMATION RECORD

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

EXAMINER: L. Duran SNT LEVEL: II THK. MEAS. REQ'D BY PROCEDURE: No. PSE UT 15 INSTRUMENT: SONIC MARK I  OTHER SONIC 13C  SERIAL NO: 860 K COMPONENT ID: 2-PZR Long D

EXAMINER: M KLEINJAN SNT LEVEL: II REV 1 CHG 1 ICN  N/A COUPLANT: GLYCERINE  WATER  OTHER (SPECIFY) Sonatrace REFERENCE BLK NO: CS DC 25

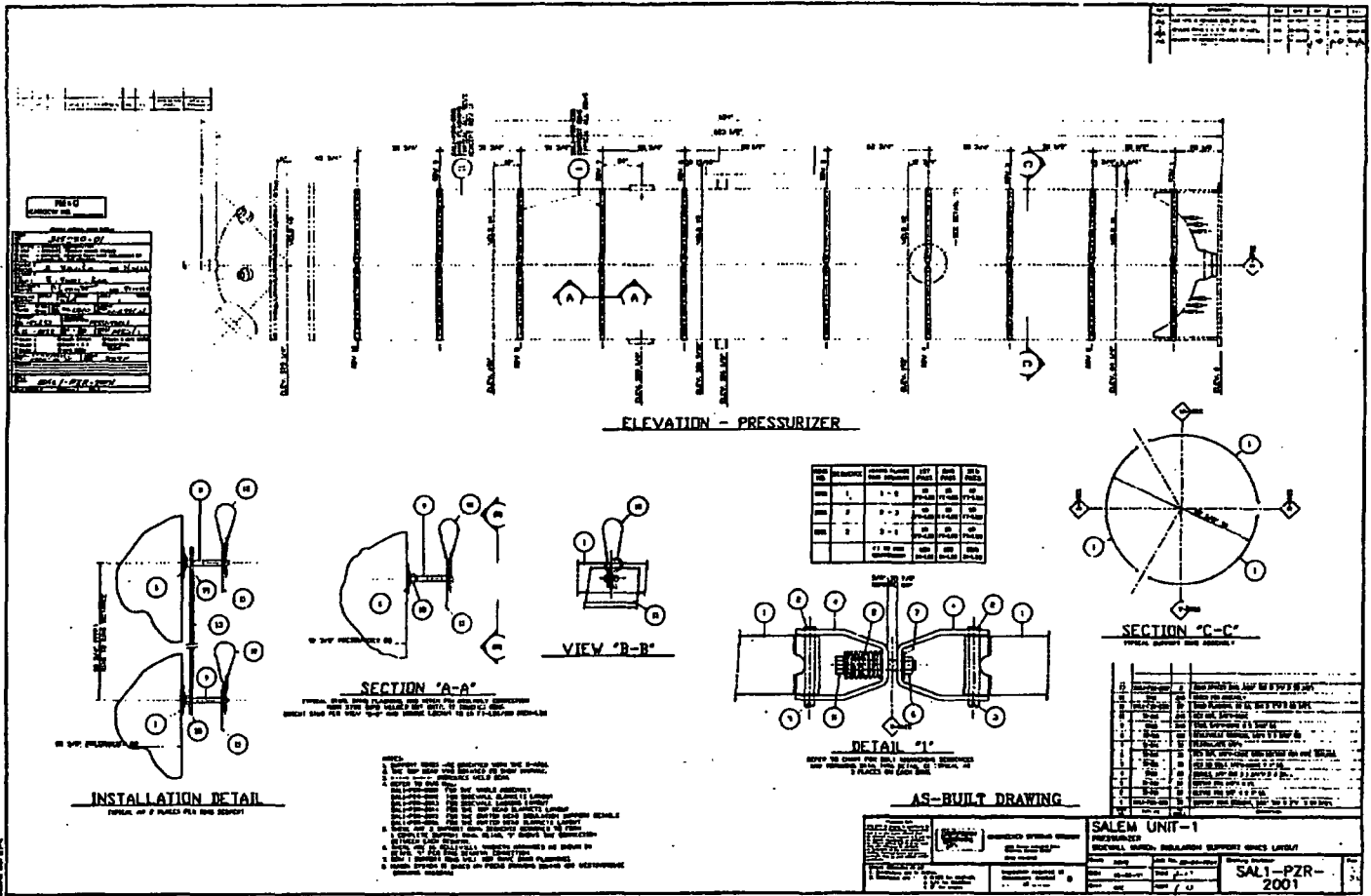
SEARCH UNITS	
BRAND	AEROTECH
SERIAL NO	L08363
SIZE	3/4
FREQ. (MHz)	2.25
INSTRUMENT SETTINGS	
SCREEN SIZE	10
DELAY	.006
MATL. CAL.	.231
RANGE	10
REP. RATE	2K
JACK USED	RCV
TRANS MODE	PE



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

Permanent Insulation Bracket on CCW 5 1/4" from φ of weld  
45° Search Unit chosen for coverage using 1/8, 3/8, 1/2, 5/8 nodes.  
60° Search Unit chosen for coverage using 1/4, 2/8, 3/8, 1/2 nodes.

REVIEWED BY: *M. Kleinjan* SNT LEVEL: II DATE: 7 SEPT 96



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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-Low D  
 PREPARED BY: Hector Diaz Lv. III DATE: 10 SEP 79 6  
 REVIEWED BY: Steven A. Dadd Lv. II DATE: 16 Sept. 96  
John W. Henkle 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 X Width of obstructed area X Length of obstructed area = Volume with NO exam coverage  
 \_\_\_\_\_ X \_\_\_\_\_ X \_\_\_\_\_ = \_\_\_\_\_ \*

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  
 \_\_\_\_\_ 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}
	=		<u>69</u> %
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}
			<u>100</u> %
<i>Laminar exam coverage was achieved in all areas where angle beam was done.</i>			
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			= _____ *

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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}
	=		<u>69</u> %
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}
	=		<u>69</u> %
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}
	=		<u>69</u> %
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}
	=		<u>69</u> %
11.0 CALCULATE PERCENT OF TOTAL VOLUME EXAMINED			
Examination Coverage	=	Sum of Exam Volumes % (step 5 thru 10) / No. of exams(6)	
	=	<u>74</u> %	
REMARKS:			CW exam
* Exam performed from 0" to 9" and was limited from 9" to 13" due to permanent insulation brackets.			

Sum# 011100 **SWRI PROFILE AND THICKNESS INFORMATION RECORD**

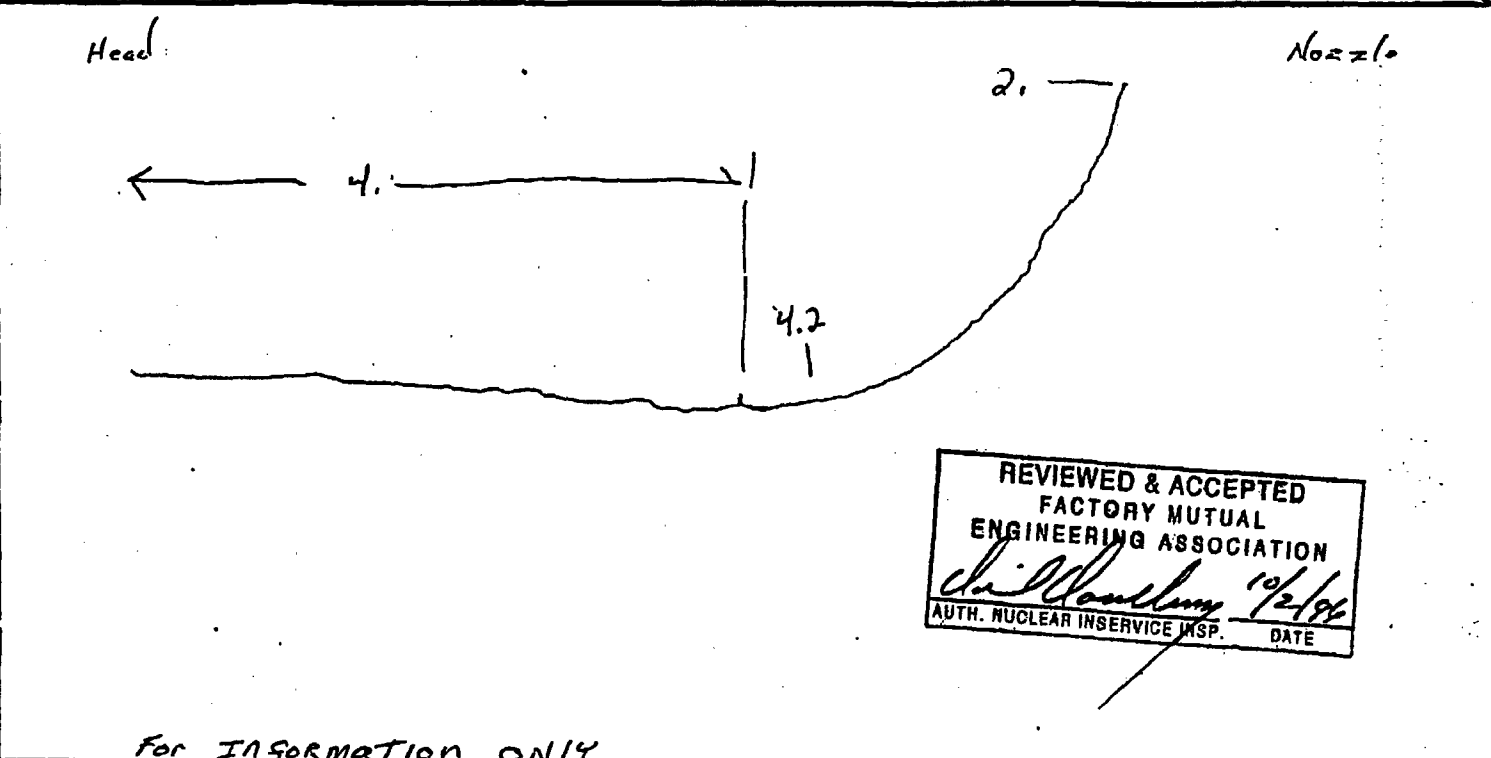
PROJECT NO: 17-7824 SITE: Salem UNIT 2 DATE: (DAY - MONTH - YEAR) 5 Sept 96 TIME (24 HR. CLOCK) INT. 1632 FINAL 1635 SHEET NO: 135001

EXAMINER: L. DURAN SNT LEVEL: II THK. MEAS. REQ'D BY PROCEDURE No. N/A INSTRUMENT: SONIC MARK I  OTHER  SERIAL NO: 860 K COMPONENT ID: PRESSURIZER 4-PSN-1231-IRS

EXAMINER: M. KLEINJAN SNT LEVEL: II THK. MEAS. REQ'D BY PROCEDURE No. N/A INSTRUMENT: SONIC MARK I  OTHER  SERIAL NO: 860 K COMPONENT ID: PRESSURIZER 4-PSN-1231-IRS

COUPLANT: GLYCERINE  WATER  OTHER (SPECIFY) SoniTrace REFERENCE BLK NO: CS-DC-25

SEARCH UNITS	
BRAND	<u>Aerotech</u>
SERIAL NO	<u>L08363</u>
SIZE	<u>3/4</u>
FREQ. (MHz)	<u>2.25</u>
INSTRUMENT SETTINGS	
SCREEN SIZE	<u>10</u>
DELAY	<u>100</u>
MATL. CAL.	<u>1231</u>
RANGE	<u>10</u>
REP. RATE	<u>2K</u>
JACK USED	<u>RCV</u>
TRANS MODE	<u>PE</u>



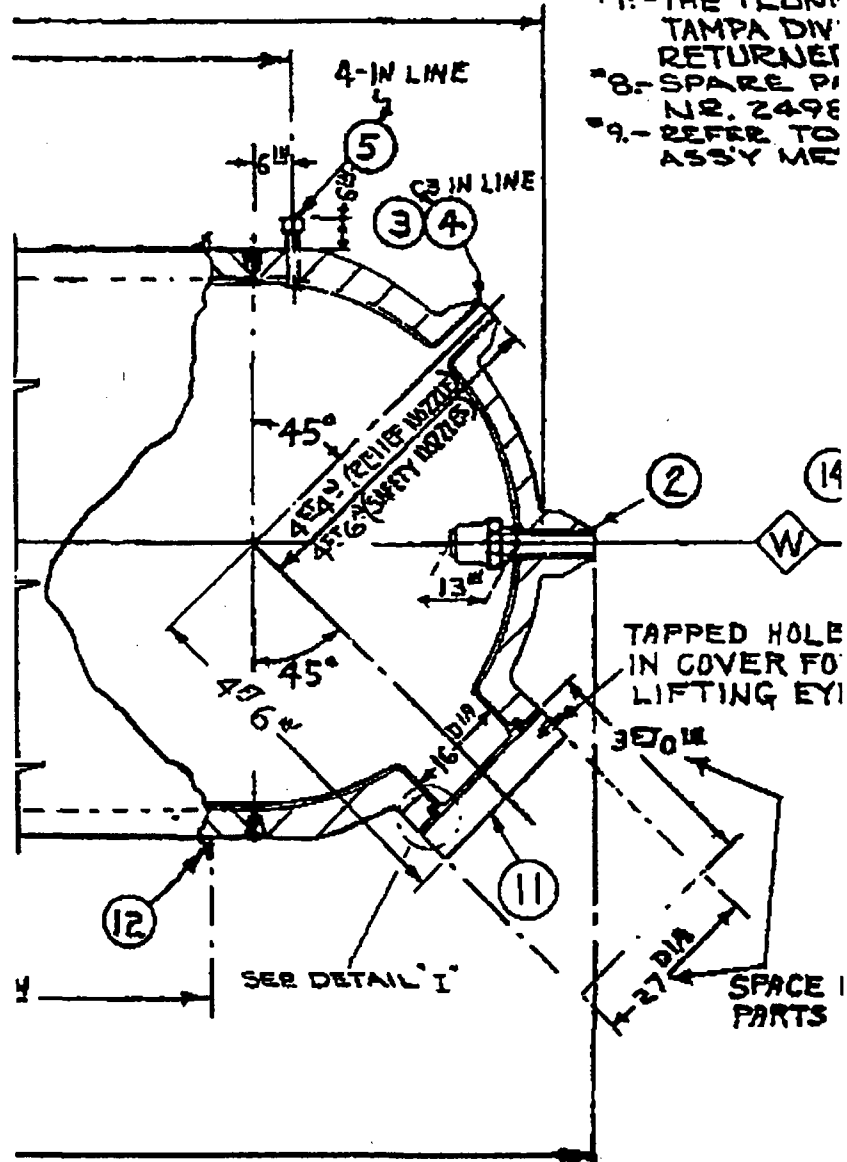
For INFORMATION ONLY

N/A Search Unit chosen for coverage using N/A nodes. NAME: N/A SNT LEVEL: N/A

N/A Search Unit chosen for coverage using N/A nodes. NAME: N/A SNT LEVEL: N/A

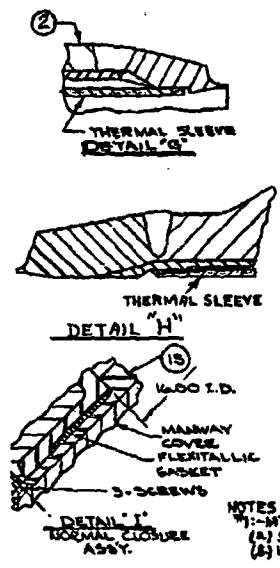
REVIEWED BY: Neeth Duran SNT LEVEL: III DATE: 7 SEPT 96

- VESSEL CODE, SI  
 \*5- DESIGN PI  
 DESIGN TI  
 \*6- TOTAL HEN  
 \*7- THE TRUNK  
 TAMPA DIV  
 RETURNER  
 \*8- SPARE PI  
 NR. 2498  
 \*9- REFER TO  
 ASSY ME

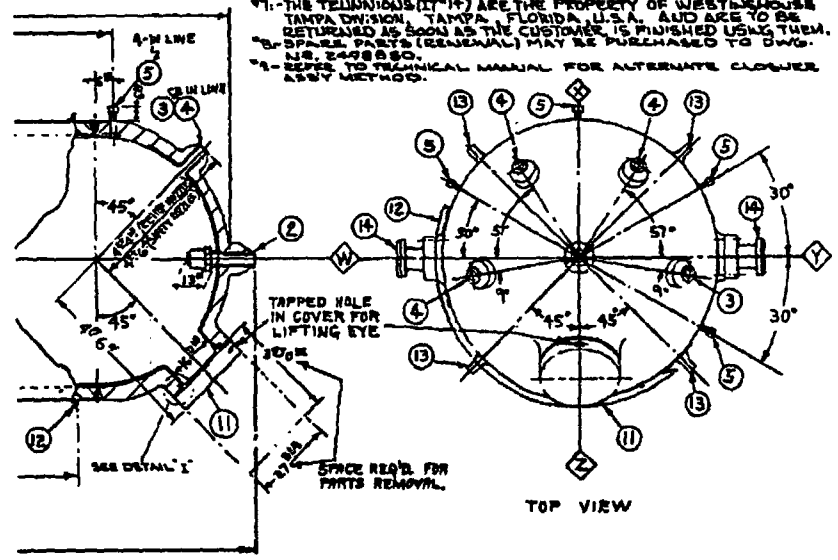


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ITEM NO.	TITLE	NOTES	QTY.	SIZE	END PREP
1	BURGE NOZZLE	12122	1	14" SCH. 140	DET. C & H
2	SPRAY NOZZLE	12122	1	4" SCH. 160	DET. C & H
3	RELIEF NOZZLE	12122	1	4" SCH. 160	DET. C
4	SAFETY NOZZLE	12122	2	6"	DET. C
5	INSTRUMENT NOZZLE		3	2 1/2" SCH. 160	DET. D
6	SAMPLE NOZZLE		3	2 1/2" SCH. 160	DET. D
7					
8	IMMERSION HEATER		78		DET. B
9	RATING R. & BRACKET		1		
10	NAME R. & BRACKET		1		
11	MANWAY COVER		1	APPROX. WT. 650 LBS.	
12	INSULATION ANGLE		5		
13	GUIDE BRACKET		4		
14	TRUNNION (NOTE 1)		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: MR-M6-STEEL PLATE SA-302 GR. B (FIRE BOX QUALITY).
  - (B) UPPER & LOWER HEAD & NOZZLE (TR. 9) THRU (3) - CARBON STEEL CASTING SA-216 WCC TO MEET ASME NUCLEAR VESSELS CODE SECT. III.
  - (C) SUPPORT SKIRT: CARBON STEEL PLATE TO SA-516 GR. 70
  - (D) NOZZLE END: STAINLESS STEEL MTL.
  - (E) SA-312 TP 316.
  - (F) SA-182 TP 316.
  - (G) NOZZLE, STAINLESS STEEL, SA-276 TP 316.
  - (H) VESSEL TO BE BUILT IN ACCORDANCE WITH ASME BOILER & PRESSURE VESSEL CODE, SECT. III, NUCLEAR VESSELS.
  - (I) DESIGN PRESSURE - 2485 P.S.I.G.
  - (J) DESIGN TEMPERATURE - 680° F.
  - (K) TOTAL HEATER CAPACITY 100KW, EACH HEATER RATED 23.08KW, 480 IACS.
  - (L) THE TRUNNIONS (IT\*IT) 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.
  - (M) SPECIAL PARTS (REPAIRS) MAY BE PURCHASED TO O.W.G. N.S. 249880.
  - (N) REFER TO TECHNICAL MANUAL FOR ALTERNATE CLOSURE ASBY METHOD.



301105

FIGURE 5-1. Outline

8915

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: Steven J. Nichol DATE: 17 Sept. 1996  
Steven J. Nichol 10/2/96

1.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT BEAM PLANAR FLAWS

$$\begin{array}{ccccccc} \text{Exam height} & \times & \text{Exam width} & \times & \text{Exam length} & = & \text{Exam Volume} \\ \underline{\hspace{2cm}} & & \underline{\hspace{2cm}} & & \underline{\hspace{2cm}} & = & \underline{N/A} \end{array}$$

2.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT LAMINAR PLANAR FLAWS

$$\begin{array}{ccccccc} \text{Exam height} & \times & \text{Exam width} & \times & \text{Exam length} & = & \text{Exam Volume} \\ \underline{\hspace{2cm}} & & \underline{\hspace{2cm}} & & \underline{\hspace{2cm}} & = & \underline{N/A} \end{array}$$

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

$$\begin{array}{ccccccc} \text{Exam height} & \times & \text{Exam width} & \times & \text{Exam length} & = & \text{Exam Volume} \\ \underline{\hspace{2cm}} & & \underline{\hspace{2cm}} & & \underline{\hspace{2cm}} & = & \underline{N/A} \end{array}$$

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

$$\begin{array}{ccccccc} \text{Exam height} & \times & \text{Exam width} & \times & \text{Exam length} & = & \text{Exam Volume} \\ \underline{\hspace{2cm}} & & \underline{\hspace{2cm}} & & \underline{\hspace{2cm}} & = & \underline{N/A} \end{array}$$

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
<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
X	X	=	<u>N/A</u>

5.2 LIMITED BELOW/CW EXAM VOLUME

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

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



FORM 3  
(Page 2 of 4)

VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

Sum. # 01100

5.3 PERCENT VOLUME EXAMINED

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

6.0 CALCULATE STRAIGHT BEAM LAMINAR EXAM COVERAGE

6.1 LIMITED ABOVE/CW EXAM VOLUME

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

6.2 LIMITED BELOW/CW EXAM VOLUME

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

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	-	{ [ _____ ]	/	[ _____ ]	X	100
	=						<u>N/A</u>	%

7.0 CALCULATE PARALLEL <sup>53°</sup> EXAM COVERAGE

7.1 LIMITED ABOVE/CW EXAM VOLUME

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

7.2 LIMITED BELOW/CCW EXAM VOLUME

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

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

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FORM 3  
(Page 3 of 4)

VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

Sim# 011100

7.3 PERCENT VOLUME EXAMINED

Percent Volume Examined	= 100	-	Total <sup>53°</sup> parallel vol w/No coverage	/	Total 45° parallel Exam Vol	X	100
	= 100	-	{ [ _____ ]	/	<u>N/A</u>	X	100
	=				<u>* 50</u>		%

8.0 CALCULATE PARALLEL 60° EXAM COVERAGE

8.1 LIMITED ABOVE/CW EXAM VOLUME

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

8.2 LIMITED BELOW/CCW EXAM VOLUME

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

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	-	{ [ _____ ]	/	<u>N/A</u>	X	100
	=				<u>N/A</u>		%

9.0 CALCULATE TRANSVERSE 45° EXAM COVERAGE

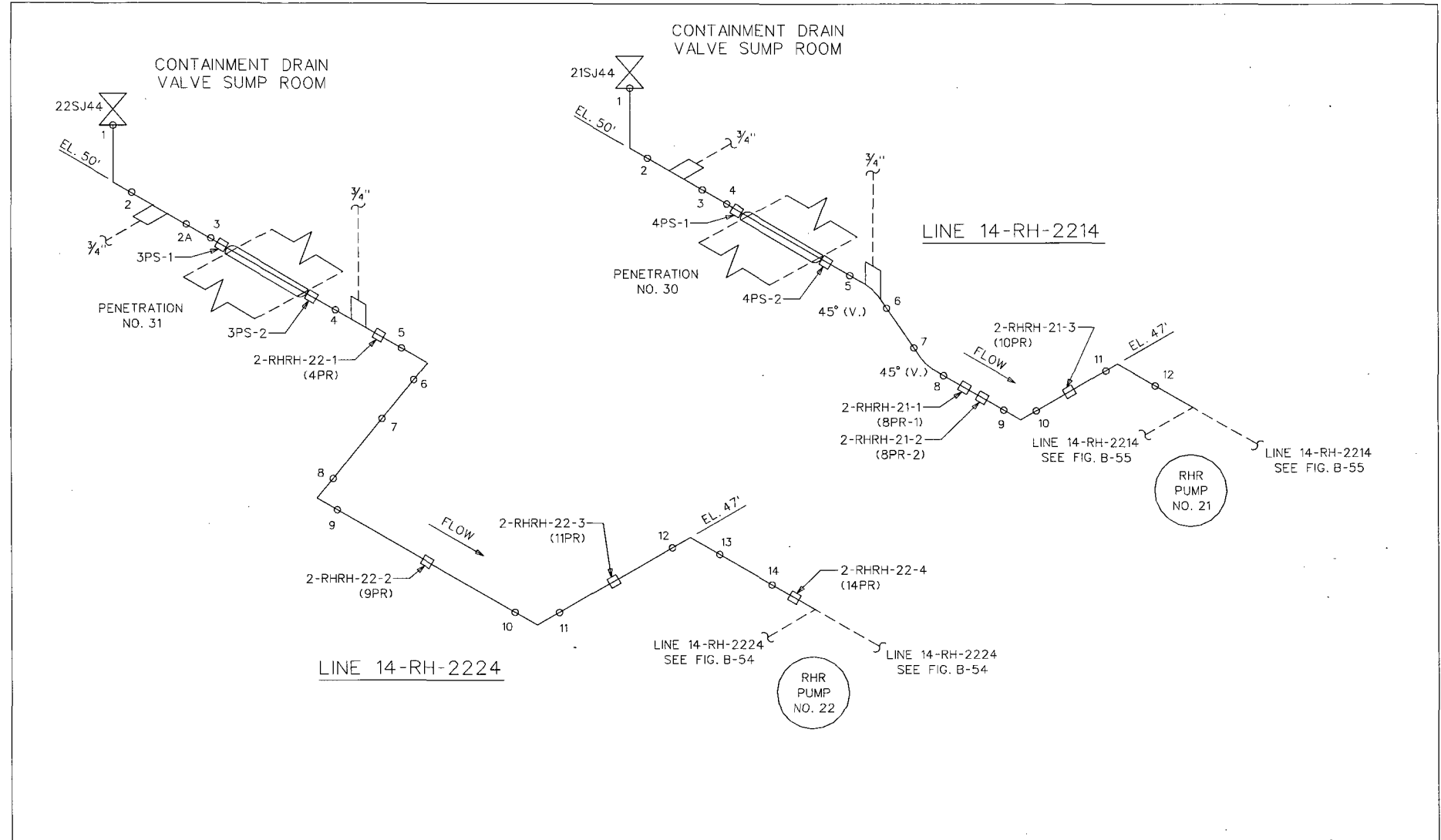
9.1 LIMITED CLOCKWISE EXAM VOLUME

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

9.2 LIMITED COUNTERCLOCKWISE EXAM VOLUME

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

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



BUILDING: AUXILIARY	LOCATION: 21 & 22 RHR PUMP ROOM	ELEVATIONS: 47' - 50'
CONTAINMENT	CONTAINMENT DRAIN VALVE SUMP ROOM	

CONTAINMENT DRAIN  
VALVE SUMP ROOM

PSEG ISO RH22-03, RH22-07  
P & ID 205334

ATTENTION: ANY REVISION TO THIS DRAWING SHALL BE MADE ONLY BY CAED		
1	REVISED PER ORDER No. 80038023.	DESCRIPTION
REV.	DATE	DESCRIPTION

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

FIGURE: B-65	REVISION: 1
SYSTEM: SAFETY INJECTION	
LINE: 14-RH-2224, 14-RH-2214	
THIRD 10 YEAR INSPECTION INTERVAL	

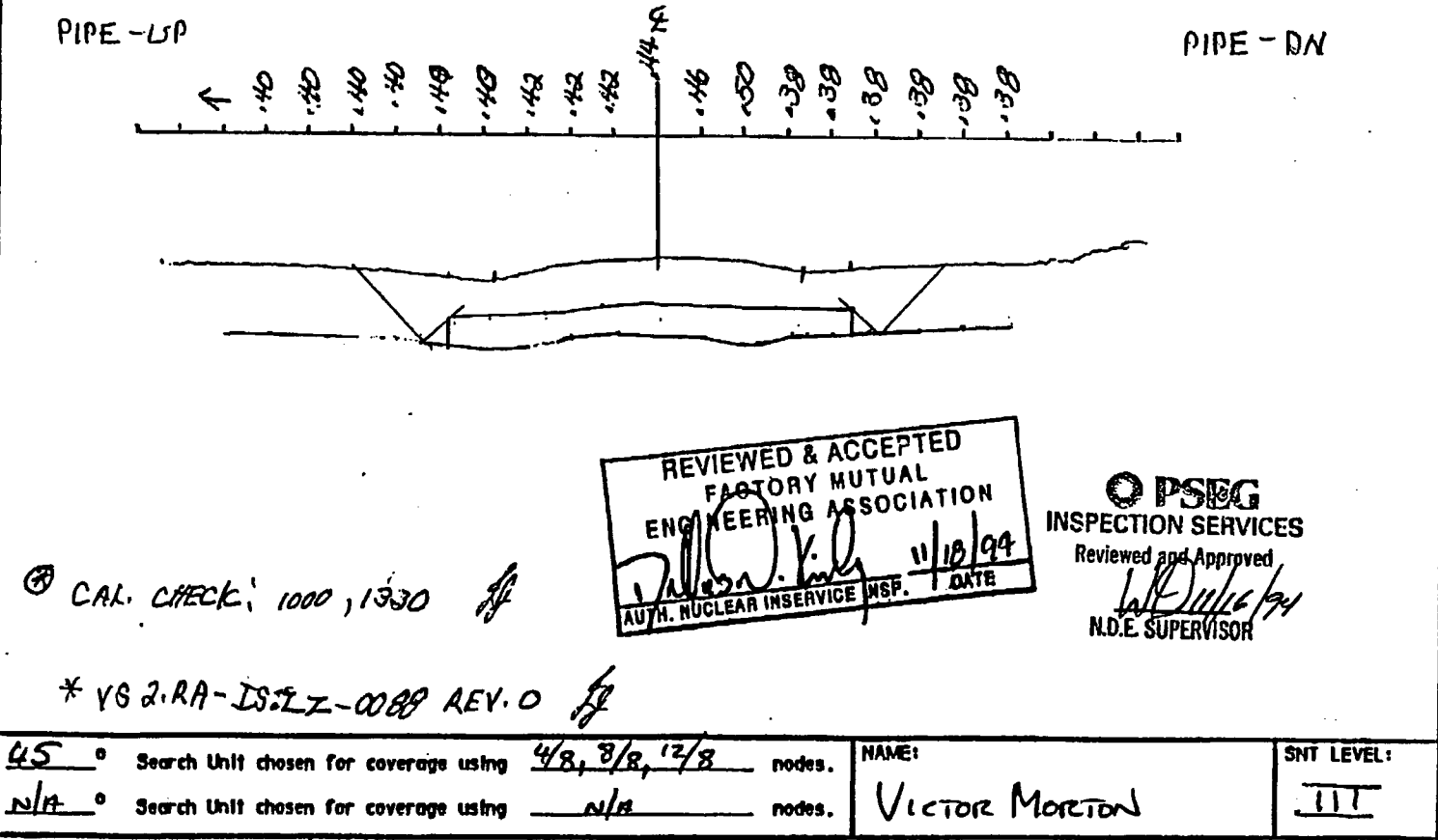
LV 1 = COMMON INFORMATION  
LV 2 = WELD INFORMATION  
LV 3 = HANGER INFORMATION

**515380 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 <b>B. ROBERTS</b>	SNT LEVEL <b>II</b>	THK. MEAS. REQ'D BY PROCEDURE * No. <b>SAM 2-UT49</b>	INSTRUMENT: SONIC MARK I <input type="checkbox"/> OTHER <b>SONIC 136</b> <input checked="" type="checkbox"/>	SERIAL NO: <b>860K</b>	COMPONENT ID: <b>12-RH-2252-38</b>
EXAMINER <b>T. JACKSON</b>	SNT LEVEL <b>II</b>	REV <b>0</b> CHO <b>/</b> ICN <input checked="" type="checkbox"/> N/A	COUPLANT: <b>BATCH 94014</b> GLYCERINE <input type="checkbox"/> WATER <input type="checkbox"/> OTHER (SPECIFY) <b>SONOTRACE 40</b>	REFERENCE BLK NO: <b>SS-BC-31</b>	

SEARCH UNITS	
BRAND	<b>SWRI</b>
SERIAL NO	<b>3129</b>
SIZE	<b>3/8</b>
FREQ. (MHz)	<b>2.25</b>
INSTRUMENT SETTINGS	
SCREEN SIZE	<b>1.0</b>
DELAY	<b>1.341</b>
MATL. CAL.	<b>1219</b>
RANGE	<b>1.00</b>
REP. RATE	<b>4KHz</b>
JACK USED	<b>RCV/XMT</b>
TRANS MODE	<b>QUAL</b>



**REVIEWED & ACCEPTED**  
**FACTORY MUTUAL**  
**ENGINEERING ASSOCIATION**  
*Victor Morton*  
 AUTH. NUCLEAR INSERVICE NSP. DATE **11/18/94**

**PSEG**  
**INSPECTION SERVICES**  
 Reviewed and Approved  
*W. D. ...*  
 N.D.E. SUPERVISOR

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

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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=	<u>N/A</u>
Area Of Limitation (Length x Width = AI)	AI=	<u>1</u>
Percentage Of Coverage	(A-AI)/A=	<u>1</u>

### VOLUMETRIC EXAMINATIONS

#### A. Axial Exams (Indications Parallel To Weld)

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

#### B. Circumferential Exams (Indications Perpendicular To Weld)

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

#### C. Total Coverage

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

REMARKS: \_\_\_\_\_  
 \_\_\_\_\_

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573580

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**REQUEST FOR ADDITIONAL INFORMATION**  
**REQUEST FOR RELIEF REGARDING EXAMINATION COVERAGE**  
**SECOND TEN-YEAR IN-SERVICE INSPECTION INTERVAL**  
**SALEM NUCLEAR GENERATING STATION, UNIT NO. 2**  
**DOCKET NO. 50-311**

**QUESTION**      2.1 (c) For certain piping welds, Information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers listed below.

Summary #      573380

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Component I.D.      12-RH-2252-38

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Description      Pipe to Pipe

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		Comments
1	Weld X-Section	See Attached
2	Material	Stainless Steel
3	Thickness / weld Crown	Thickness .44" / Weld Crown 1 3/4"
4	Obstruction	Welded Plug / Proximity to adjacent weld
5	Exam Area Highlighted on Drawing	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> X <input type="checkbox"/> No
6	Transducer ray exit point	See Attached

**Comments**

UT exam was performed of this component using 45 degree shear wave transducer. The ultrasonic examination was limited to 67% of the code required coverage being limited 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 observed. A liquid penetrant examination and system pressure test was also completed with no recordable indications observed.

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Supplemental Drawing

Summary # 573380

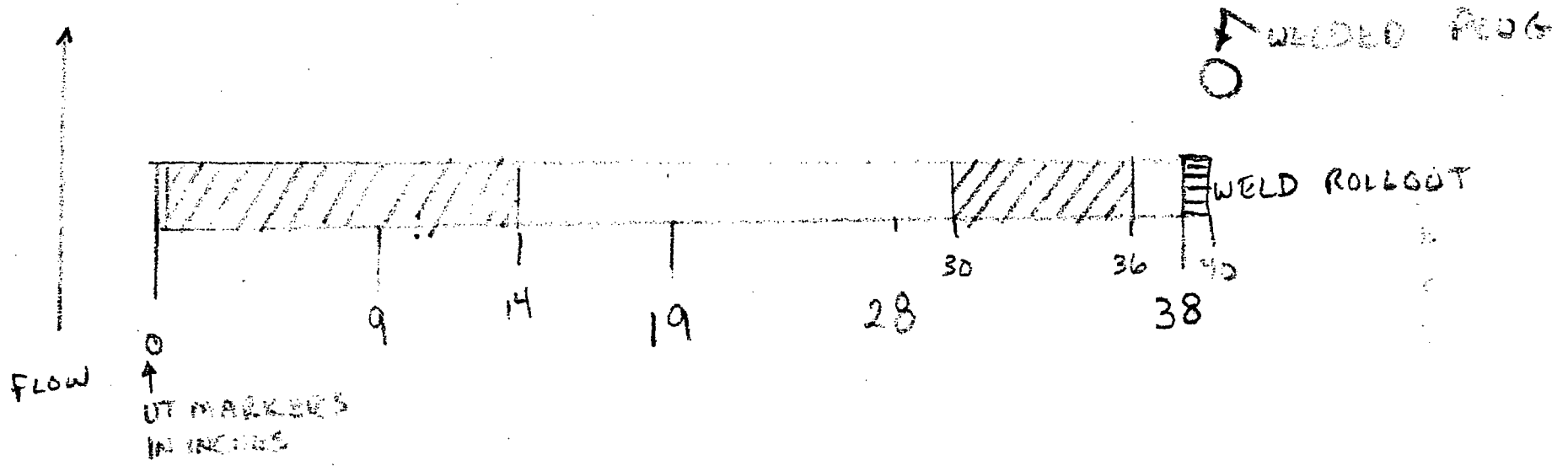
Component I.D. 12-RH-2252-38



Description Pipe to Pipe

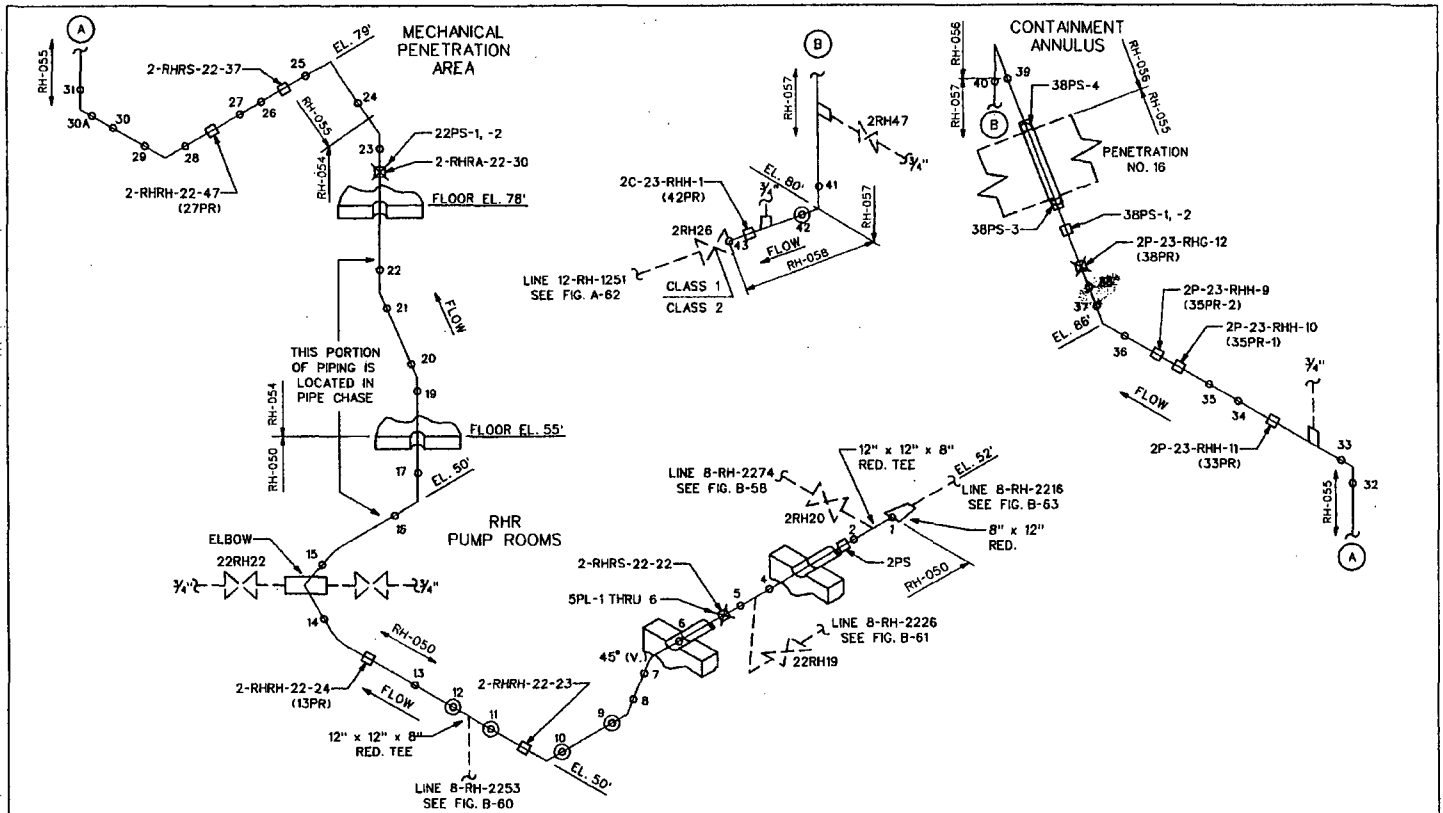
Page of

Comments The ultrasonic examination was limited to 67% of the code required coverage being limited due to welded plug and close proximity of adjacent piping that impedes access to scan

Sketch



WELD LENGTH APPROX 40"  NO EXAM PERFORMED  
 LIMITED EXAM DUE TO WELDED PLUG INTERFERENCE



BUILDING: AUXILIARY	LOCATION: 22 RHR PUMP ROOM MECHANICAL PENETRATION AREA	ELEVATIONS: 50' - 86'
CONTAINMENT	ANNULUS	80' - 82'

ATTENTION: ANY REVISION TO THIS DRAWING SHALL BE MADE ONLY BY CAED		
1		REVISED PER ORDER No. 80038023.
REV.	DATE	DESCRIPTION

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	

LV 1 = COMMON INFORMATION  
 LV 2 = WELD INFORMATION  
 LV 3 = HANGER INFORMATION



**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 = AI) AI= 8.00

Percentage Of Coverage (A-AI)/A= 71.43

**VOLUMETRIC EXAMINATIONS**

**A. Axial Exams (Indications Parallel To Weld)**

- |   |                                 |            |
|---|---------------------------------|------------|
| 1. Compute Exam Volume                      | (height x width x length) = Vt1 | <u>N/A</u> |
| 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 | <u>N/A</u> |
| 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 | <u>N/A</u> |
| 2. Compute Total Coverage              | 100 - L               | <u>↓</u>   |

REMARKS: \_\_\_\_\_  
 \_\_\_\_\_

573583

**REQUEST FOR ADDITIONAL INFORMATION  
REQUEST FOR RELIEF REGARDING EXAMINATION COVERAGE  
SECOND TEN-YEAR IN-SERVICE INSPECTION INTERVAL  
SALEM NUCLEAR GENERATING STATION, UNIT NO. 2  
DOCKET NO. 50-311**

**QUESTION**            2.2(a)    For certain component attachments and support welds, Information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers listed below.

**Summary #**            331095

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**Component I.D.**    14-BF-2211 - 11PL11& 11PL12

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**Description**            TRUNION

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		Comments
1	Weld X-Section	N/A
2	Material	Carbon Steel
3	Thickness / weld Crown	UNKNOWN
4	Obstruction	11 PIPE SUPPORT
5	Exam Area Highlighted on Drawing	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
6	Transducer ray exit point	N/A

**Comments**

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.

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\_\_\_\_\_

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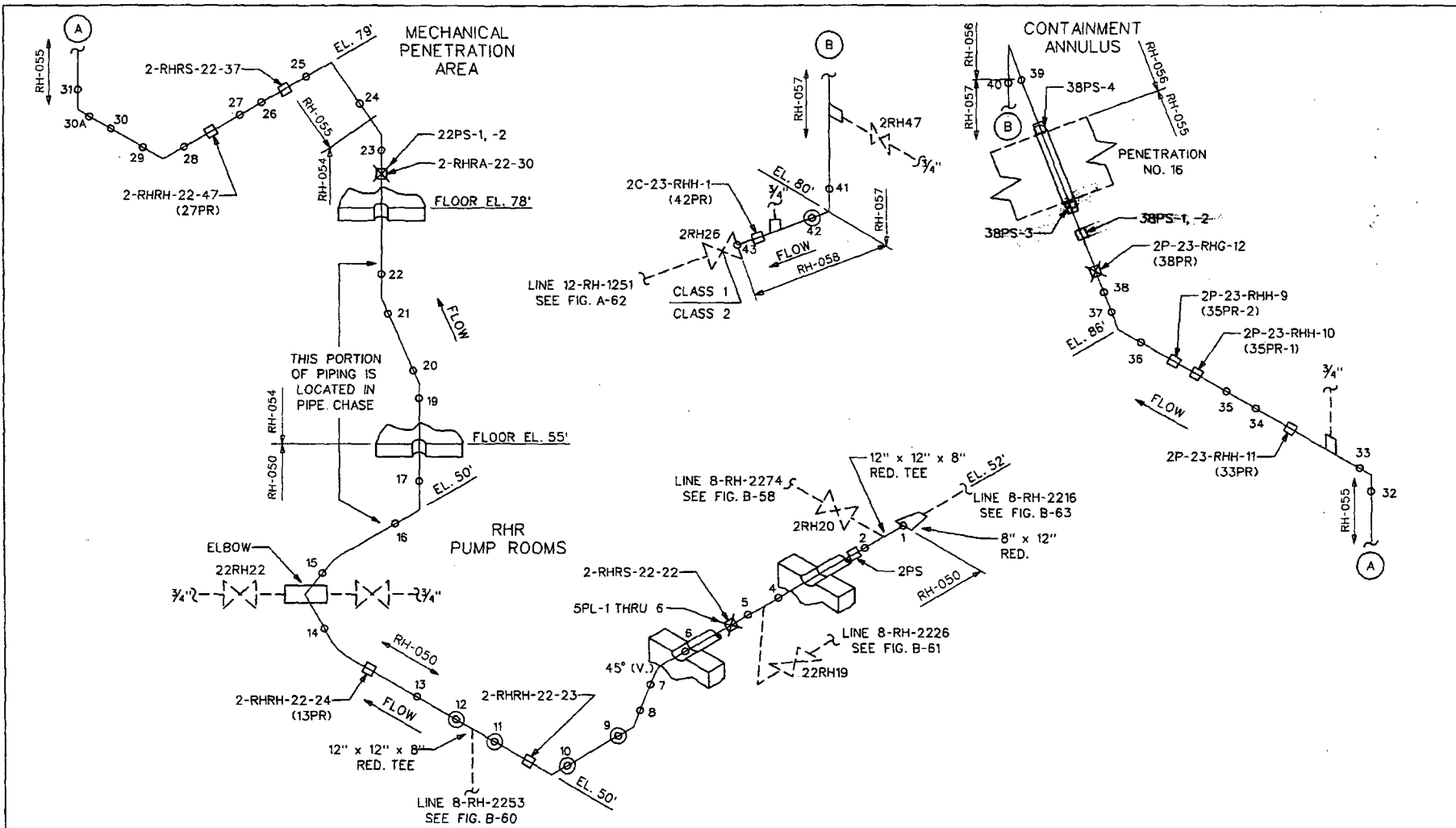
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\_\_\_\_\_

\_\_\_\_\_



BUILDING: AUXILIARY	LOCATION: 22 RHR PUMP ROOM MECHANICAL PENETRATION AREA	ELEVATIONS: 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		
1		REVISED PER ORDER No. 80038023.
REV.	DATE	DESCRIPTION

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	

- LV 1 = COMMON INFORMATION
- LV 2 = WELD INFORMATION
- LV 3 = HANGER INFORMATION

FORM 3  
(Page 4 of 4)

VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

Sum # 01100

9.3 PERCENT VOLUME EXAMINED

Percent Volume Examined	= 100	-	Total 45° parallel vol w/No coverage	/	Total 45° parallel Exam Vol	X	100
	= 100	-	{ [ _____ ]	/	<u>N/A</u>	X	100
	=				<u>N/A</u>		%

10.0 CALCULATE TRANSVERSE 60° EXAM COVERAGE

10.1 LIMITED CLOCKWISE EXAM VOLUME

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

10.2 LIMITED COUNTERCLOCKWISE EXAM VOLUME

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

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	-	{ [ _____ ]	/	<u>N/A</u>	X	100
	=				<u>N/A</u>		%

11.0 CALCULATE PERCENT OF TOTAL VOLUME EXAMINED

Examination Coverage	=	Sum of Exam Volumes % (step 5 thru 10)	/	No. of exams(6)
	=	* 50	/	
	=	<u>50</u>		%

REMARKS: CW exam

\* NO EXAM from 0° to 180° due to raised ID numbers, and MANUFACTURERS STAMP. EXAMINATION performed from 180° to 360° only.

ULTRASONIC WELD PROFILE AND THICKNESS EXAMINATION RECORD  
 Summary No.: 381055

SH.RA-AP.ZZ-0101(Q) FORM 11

NDE Lab: <u>VCR</u>		SITE: <u>SALEM UNIT 2</u>		DATE: <u>1-11-96</u>		TIME (24 HR. CLOCK) INT. <u>1445</u> FINAL <u>1458</u>		SHEET NO: <u>090022</u>	
Examiner (Signature) <u>Patricia Cole</u>		SNT Level: <u>II</u>	Couplant, Specify Type: <u>SONOTRACE 40</u>	Instrument Model: <u>EPOCH II</u> SIN: <u>92086704</u>		SERIAL NO: <u>92086704</u>		COMPONENT ID: <u>32-MS-2241-3</u>	
Examiner (Signature) <u>David Hillard</u>		SNT Level: <u>II</u>	# <u>95243</u>	Procedure No. & Rev: <u>SH.RA-15.ZZ-0137Q (REV 0)</u>			REFERENCE BLK NO: <u>92-6683</u>		
SEARCH UNITS									
BRAND	<u>KBA</u>								
SERIAL NO	<u>04872</u>								
SIZE	<u>.35x10</u>	<u>1.90</u>	<u>1.90</u>	<u>1.90</u>	<u>1.87</u>	<u>1.82</u>	<u>1.73</u>	<u>1.65</u>	<u>1.65</u>
FREQ. (MHz)	<u>4 mhz</u>	<u>1.57</u>	<u>1.57</u>	<u>1.57</u>	<u>1.57</u>	<u>1.57</u>	<u>1.57</u>	<u>1.57</u>	<u>1.57</u>
INSTRUMENT SETTINGS									
SCREEN SIZE	<u>5.0 inch</u>								
DELAY	<u>9.700</u>								
MATL. CAL.	<u>.2293</u>								
RANGE	<u>.500</u>								
REP. RATE	<u>FIXED</u>								
JACK USED	<u>T/R</u>								
Trans Mode	<u>LONG</u>	<u>45°</u> Search Unit chosen for coverage using <u>1/2</u> nodes.		PROFILE TAKEN AT 95" FROM L <sub>0</sub>					
		<u>N/A°</u> Search Unit chosen for coverage using <u>N/A</u> nodes.							
Reviewed By: <u>Z W G</u>			SNT Level: <u>III</u>			Date: <u>1-13-96</u>			

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 AUTH. NUCLEAR INSERVICE INSP. DATE

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[Signature]

66

11055

SALEM UNIT 2

32 MS-2241-3

1-96

CW/CCW LIMITATION

$$.49 \times 1.1 \times 8 = 4.31$$

EXAM. VOLUME 121.85

$$4.31 / 121.85 \times 100 = 3.54$$

3.54% LIMITATION CW/CCW

LIMITATION UPSTREAM

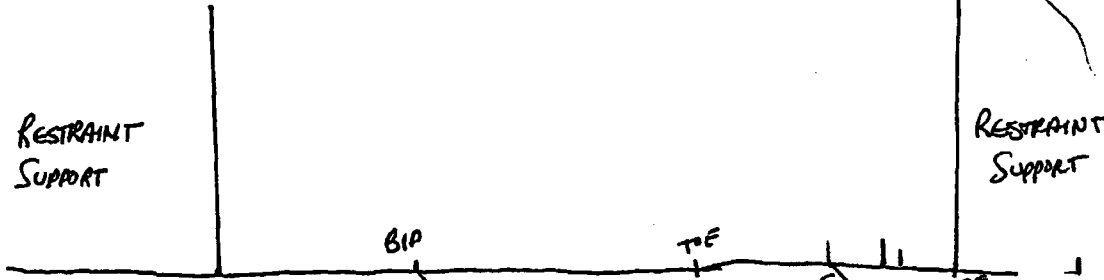
$$.49 \times 1.95 \times 8 = 7.64$$

EXAM. VOLUME 96.98

$$7.64 / 96.98 \times 100 = 7.87$$

7.87% LIMITATION DOWNSTREAM

FLOW →



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LIMITATION IS FROM 18" TO 26" FROM L<sub>0</sub>

**PSEG**  
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 N.D.E. SUPERVISOR

*[Signature]* III  
1-13-96

100

FORM 2  
(Page 1 of 1)

## VOLUMETRIC PIPING EXAMINATION COVERAGE REPORT

UNIT: SALEM 2 LTP SUMMARY NO.: 38/055  
 SYSTEM: MAIN STEAM LTP COMPONENT ID: 32-M5-2241.3  
 PREPARED BY: J. W. Lag DATE: 1-25-96  
 REVIEWED BY: John W. Stenhouse DATE: 1/27/96

## VOLUMETRIC PIPING EXAMINATIONS

## 1.0 AXIAL EXAMS (INDICATIONS PARALLEL TO WELD)

1.1 Compute Exam Volume  $(\overset{.49}{\text{height}} \times \overset{1.95}{\text{width}} \times \overset{101.5}{\text{length}}) = Vt1$  96.98  
 1.2 Compute Vol. Not Covered Upstream \* \* \* = A 7.64  
 1.3 Compute Upstream Limitation Percentage  $(A / Vt1) \times 100 = Z1$  7.87  
 1.4 Compute Vol. Not Covered Downstream \* \* \* = B 0  
 1.5 Compute Downstream Limitation Percentage  $(B / Vt1) \times 100 = Z2$  0

## 2.0 CIRCUMFERENTIAL EXAMS (INDICATIONS PERPENDICULAR TO WELD)

2.1 Compute Exam Volume  $(\overset{.49}{\text{height}} \times \overset{2.45}{\text{width}} \times \overset{101.5}{\text{length}}) = Vt2$  121.85  
 2.2 Compute Vol. Not Covered CW \* \* \* = C 4.31  
 2.3 Compute CW Limitation Percentage  $(\overset{E}{C} / Vt2) \times 100 = Z3$  3.54  
 2.4 Compute Vol. Not Covered CCW \* \* \* = D 4.31  
 2.5 Compute CCW Limitation Percentage  $(\overset{D}{B} / Vt2) \times 100 = Z4$  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

FORM 1  
(Page 1 of 1)

SURFACE EXAMINATION COVERAGE REPORT

UNIT:	<u>SALEM 2</u>	LTP SUMMARY NO.:	<u>381120</u>
SYSTEM:	<u>MAIN STEAM</u>	LTP COMPONENT ID:	<u>32-MS-2231-1PS-2</u>
PREPARED BY:	<u>Z. W. Ly</u>	DATE:	<u>1-17-96</u>
REVIEWED BY:	<u>J. W. Jordan</u>	DATE:	<u>1/26/96</u>

SURFACE EXAMINATIONS

1.0 CALCULATE REQUIRED EXAM AREA

Exam length	X	Exam Width	=	Exam Area	FOR TWO DIRECTION EXAM.
<u>101.25</u>		<u>4</u>		<u>405 x 2 = 810</u>	

2.0 CALCULATE AREA NOT EXAMINED

2.1	Length of obstructed area	X	Width of obstructed area	=	Area with NO exam coverage
A.	* <u>101.25</u>	X	<u>4</u>	=	<u>405</u>
B.	<u>NA</u>	X	<u>NA</u>	=	<u>NA</u>
C.	<u>↓</u>	X	<u>↓</u>	=	<u>↓</u>
D.	<u>↓</u>	X	<u>↓</u>	=	<u>↓</u>

3.0 CALCULATE PERCENT AREA NOT EXAMINED

Percent Area NOT Examined	=	Total Area w/No Coverage	/	Exam Area	X	100
	=	<u>405</u>	/	<u>810</u>	X	100
	=	<u>50 %</u>				

4.0 CALCULATE PERCENT OF TOTAL AREA EXAMINED

100%	-	Percent Area NOT Examined	=	Examination Coverage
100%	-	<u>50</u>	=	<u>50 %</u>

LIMITATION EXPLANATION / REMARKS:

\* M.T. EXAM. PERFORMED IN ONLY ONE DIRECTION DUE TO CONFIGURATION.



**REQUEST FOR ADDITIONAL INFORMATION**  
**REQUEST FOR RELIEF REGARDING EXAMINATION COVERAGE**  
**SECOND TEN-YEAR IN-SERVICE INSPECTION INTERVAL**  
**SALEM NUCLEAR GENERATING STATION, UNIT NO. 2**  
**DOCKET NO. 50-311**

**QUESTION**      2.2(a) For certain component attachments and support welds, Information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers listed below.

Summary #      381120  


---

 Component I.D.      32-MS-2231-1PS-2  


---

 Description      SUPPORT  


---

		Comments
1	Weld X-Section	N/A
2	Material	Carbon Steel
3	Thickness / weld Crown	N/A
4	Obstruction	LUG CONFIGURATION
5	Exam Area Highlighted on Drawing	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
6	Transducer ray exit point	N/A

**Comments**

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 was unable to be examined in two directions due to its configuration. there is no IWF support associated with this attachment. This component is located at a containment wall penetration and is limited due to inaccessibility to back portion of lugs. a system pressure test was also completed with no unacceptable indications observed. Component selected for MEB 3-1 Augmented exam requirements.

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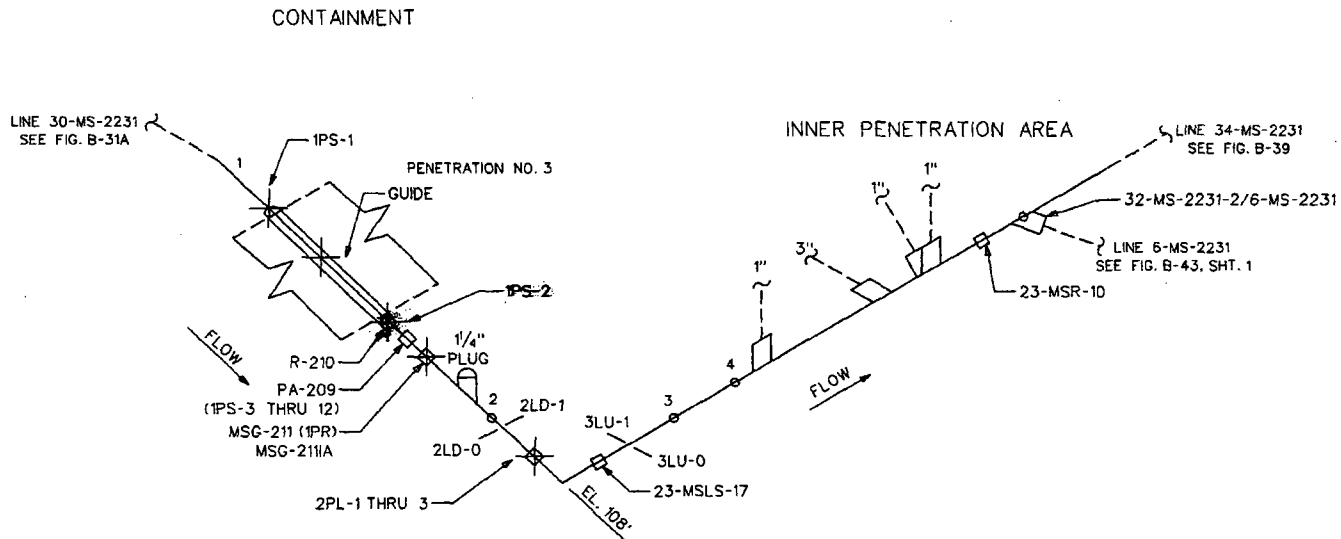
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BUILDING: CONTAINMENT INNER PEN	LOCATION: ANNULUS INNER PEN	ELEVATIONS: 108'
---------------------------------------	-----------------------------------	---------------------

PSEG ISO MS23-04  
P & ID 205303

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: B-31B	REVISION: 1
SYSTEM: MAIN STEAM SYSTEM	
LINE: 34-MS-2231, 32-MS-2231	
THIRD 10 YEAR INSPECTION INTERVAL	

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

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LV 1 = COMMON INFORMATION  
LV 2 = WELD INFORMATION  
LV 3 = HANGER INFORMATION

**SECOND INTERVAL, SECOND PERIOD, FIRST OUTAGE**

SUMMARY #: 381120 **96RF EXAMINATION SUMMARY RECORD**  
**SALEM NUCLEAR GENERATING STATION, UNIT 2**

SYSTEM/COMPONENT: MAIN STEAM SYSTEM /PIPE SUPPORT R-210  
 LINE/SUBASSEMBLY: 32-MS-2231 [PSE&G #32"-2MS1011] RELIEF REQUEST:  
 IDENTIFICATION: 32-MS-2231-1PS-2

LTP INSTRUCTIONS: LIMITATION: EXAMINED (MT) 50% OF THE CODE REQUIRED SURFACE, DUE TO THE CONFIGURATION OF THE LUG. A-E IAW MEB 3-1. NO RELIEF REQUEST REQUIRED (A-E).

NDE METHOD IN LTP	PROCEDURE	RESULTS FILE NDE EXAMS	EXAM RECORD	CALIBRATION RECORD	N O R	G O E	O T H	RESOLUTION RECORD	REMARKS
MT	SHRAISZZ0117Q	MT	090038	-	X	-	-	-	96RF - W.O.#960508025 TO PERFORM NDE. PERFORM EXAM IAW MEB 3-1. LIMITATION: EXAMINED (MT) 50% OF THE CODE REQUIRED SURFACE, DUE TO THE CONFIGURATION OF THE LUG.

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**FACTORY MUTUAL**  
**ENGINEERING ASSOCIATION**  
*[Signature]* 1/24/96  
DATE

Prepared by: *[Signature]*  
 Reviewed by: *[Signature]*

Date: 01/19/96

Total dose received while performing the required NDE examinations:  
 Man Mrem

MAGNETIC PARTICLE EXAMINATION RECORD

SH.RA-AP.ZZ-0101(Q) FORM 7

Summary No.: 361120

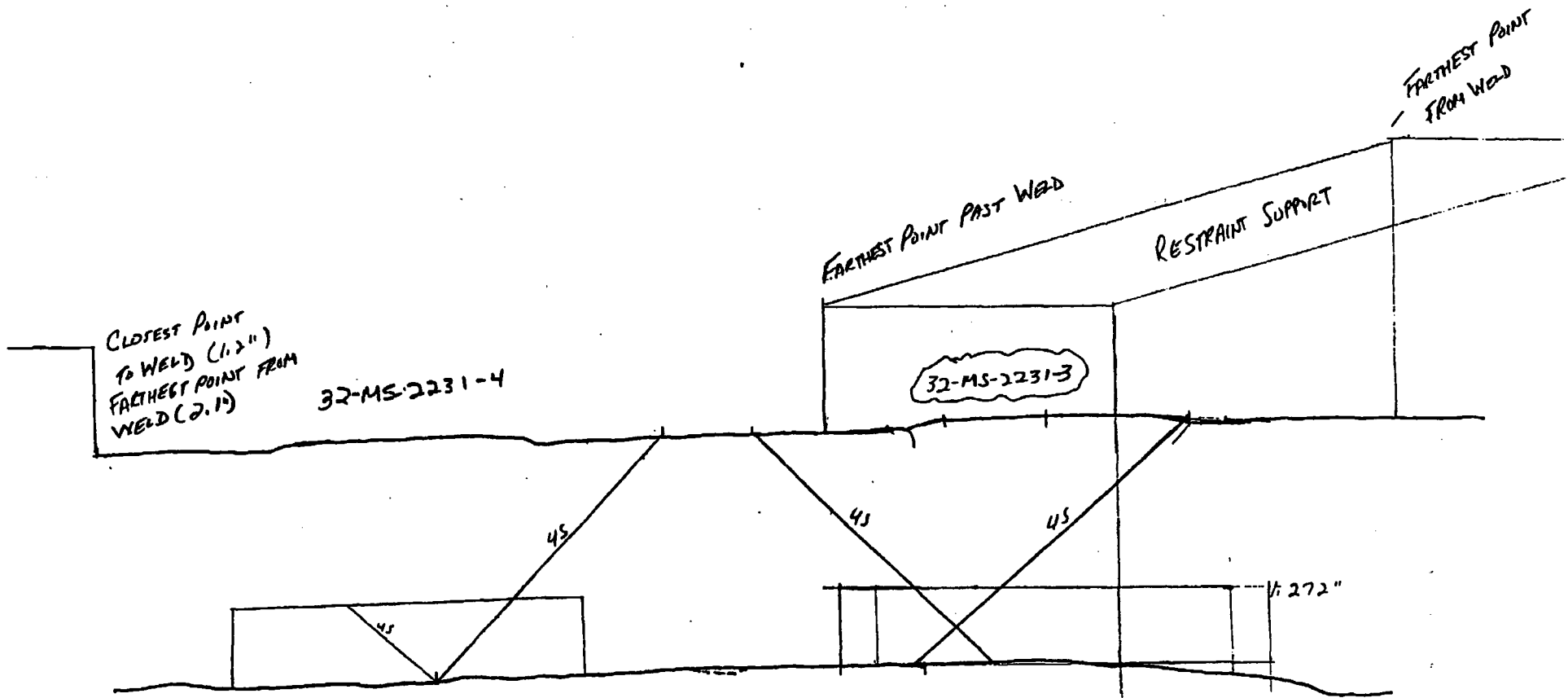
NDE Lab: <i>UCR</i>	SITE: <i>Subm 2</i>	DATE: <i>1-16-95</i>	Dia: <i>N/A</i>	Sched: <i>N/A</i>	Length: <i>N/A</i>	TIME (24 HR. CLOCK) EXAM STARTED: <i>1100</i> EXAM ENDED: <i>1140</i>	SHEET No.: <i>090038</i>
Exam IDENTIFICATION: Area: <i>32-MS-2231-1PS-2</i>	PROCEDURE No & REV. <i>SH.RA-IS.22-0117(Q) Rev.2</i>				Width: <i>Varied</i>	L <sub>0</sub> LOCATION: Rule <i>6</i>	W <sub>0</sub> LOCATION: <i>6</i>
Examiner & SNT Level: <i>Herry A. Wade III</i>				SURFACE FINISH: <i>As Ground</i>		WELD TYPE <input checked="" type="checkbox"/> FLOW PIPE SUPPORT <i>Fillet</i>	
Examiner & SNT Level: <i>Pat Lewis II</i>				MATERIAL BRAND: <i>Detak</i>		Y <sub>0</sub> SPACING: <i>6</i> IN	
CALIBRATION BLOCK SERIAL No.: <i>SV-NDE-0015</i> WEIGHT: <i>10lb9</i>		CALIBRATION VERIFICATION TIME: <i>0810 1220</i> INITIALS: <i>DW DW</i>		DISTANCE FROM BLACK LIGHT TO SENSOR CELL <i>N/A</i> IN		Y <sub>0</sub> BRAND: <i>Econospect</i> SERIAL No.: <i>UCR-Y-02</i>	
BLACK LIGHT BRAND: <i>N/A</i> SERIAL No.:		INTENSITY METER BRAND: <i>N/A</i> SERIAL No.:		BLACK LIGHT OUTPUT <i>N/A</i>		SURFACE TEMP. <i>54</i> °F THERMOMETER SERIAL No.: <i>SV-NDE-0065</i> Cal Due Date: <i>2-29-95</i>	
BLACK LIGHT OUTPUT VERIFICATION TIME: <i>N/A</i> INITIALS: <i>N/A</i>				MATERIAL APPLICATION: DUSTING <input checked="" type="checkbox"/> FLOODING <input type="checkbox"/> SPRAYING <input type="checkbox"/>			
IND No.	L	W	LOCATION	ROUND OR LINEAR	SIZE DIA. OR LENGTH	REMARKS:	INITIALS
						<i>No Recordable Indications</i>	<i>DW</i>
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;"> <p>REVIEWED &amp; ACCEPTED FACTORY MUTUAL ENGINEERING ASSOCIATION <i>[Signature]</i> AUTH. NUCLEAR INSERVICE INSP. DATE <i>1/24/96</i></p> </div>							
EXAMINATION AREA LIMITATION: (IF NONE, SO STATE)				<i>SEE LIMITATION REPORT</i>			
Exam Performed in one Direction only Due to Configuration							
REVIEWED BY: <i>LWlg</i>				SNT LEVEL: <i>III</i>		DATE: <i>1-17-96</i>	
						PAGE: <i>1</i> OF <i>1</i>	

Salem/Hope Creek Common

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Rev. 5



32-MS-2231-4

32-MS-2231-3

← FLOW

SCALE 1:1

RESTRAINT HEIGHT NOT TO SCALE

381155

J W G, III  
1-18-96

ULTRASONIC WELD PROFILE AND THICKNESS EXAMINATION RECORD

SH.RA-AP.ZZ-0101(Q) FORM 11

Summary No.: 381155

NDE Lab: <b>VCR</b>		SITE: <b>SALEM UNIT 2</b>		DATE: <b>1-16-96</b>		TIME (24 HR. CLOCK) INIT. <b>0850</b> FINAL <b>0903</b>		SHEET NO: <b>090041</b>	
Examiner (Signature) <i>Ruthell Cole</i>		SNT Level: <b>II</b>	Couplant, Specify Type: <b>SONOTRACE</b>	Instrument Model: <b>EPOCH II</b> S/N: <b>92086704</b>		SERIAL NO: <b>92086704</b>		COMPONENT ID: <b>32-MS-2231-3</b>	
Examiner (Signature) <i>David ...</i>		SNT Level: <b>II</b>	40 #95243	Procedure No. & Rev: <b>SH.RA-IS.ZZ-0137(Q) Rev 0</b>			REFERENCE BLK NO: <b>92-6683</b>		
<b>SEARCH UNITS</b>									
BRAND	<b>KBA</b>								
SERIAL NO	<b>04872</b>								
SIZE	<b>.35x10</b>								
FREQ. (MHz)	<b>4mhz</b>								
<b>INSTRUMENT SETTINGS</b>									
SCREEN SIZE	<b>5.0</b>								
DELAY	<b>9.700</b>								
MATH. CAL.	<b>.2293</b>								
RANGE	<b>.500</b>								
REP. RATE	<b>FIXED</b>								
JACK USED	<b>T/R</b>								
Trans Mode	<b>LONG</b>								
<p>45° Search Unit chosen for coverage using <u>1/2</u> nodes.</p> <p>N/A° Search Unit chosen for coverage using <u>N/A</u> nodes.</p> <p style="text-align: right;">PROFILE TAKEN AT 30" FROM LO PSE</p>									
Reviewed By: <i>LWly</i>				SNT Level: <u>III</u>			Date: <b>1-18-96</b>		

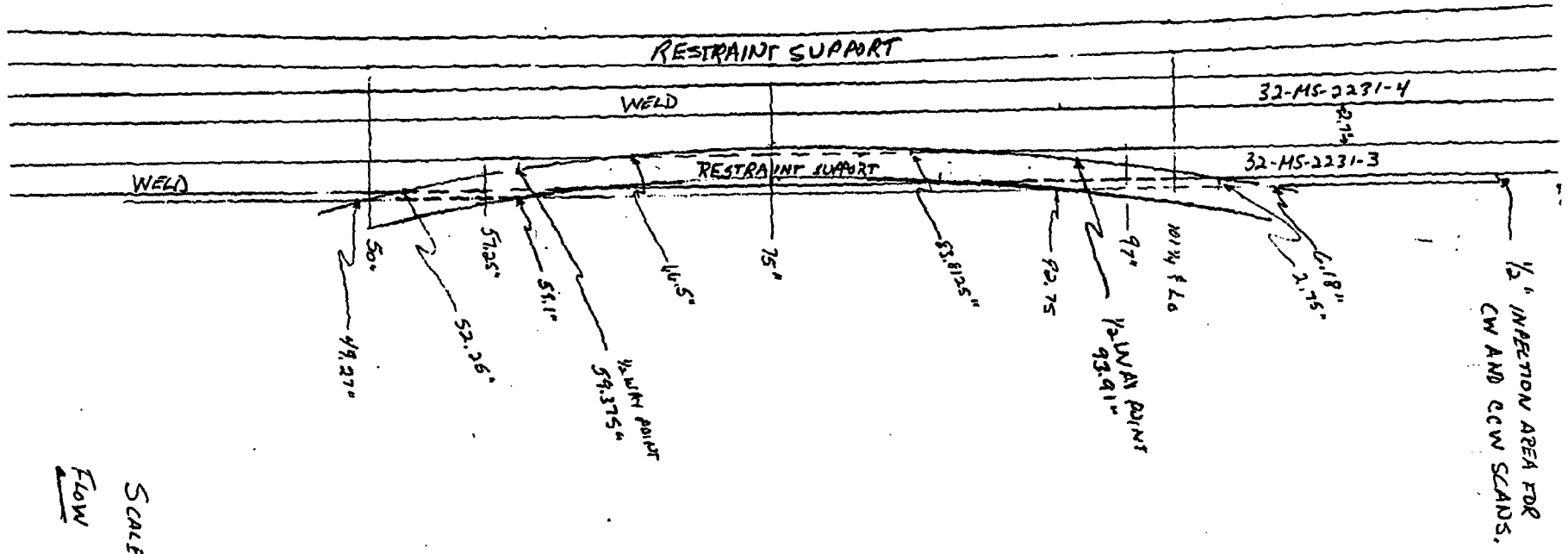
103A

Salem/Hope Creek Common

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*David ...* 1/26/96  
AUTH. NUCLEAR INSPECTION

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*W.D. ...* 1/24/96  
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Rev. 5



SCALE = .11" = 1"  
 FLOW

551182  
 JW  
 96-8-1-18-96

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. FRICKLAND DATE: 1-16-96  
 REVIEWED BY: [Signature] 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  
 $(A / Vt1) \times 100 = Z1$  0%  
 1.4 Compute Vol. Not Covered Downstream = B 0.00"  
 1.5 Compute Downstream Limitation Percentage  
 $(B / Vt1) \times 100 = Z2$  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  $(A / Vt2) \times 100 = Z3$  25.86%  
 2.4 Compute Vol. Not Covered CCW = D 48.96"  
 2.5 Compute CCW Limitation Percentage  $(B / Vt2) \times 100 = Z4$  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:

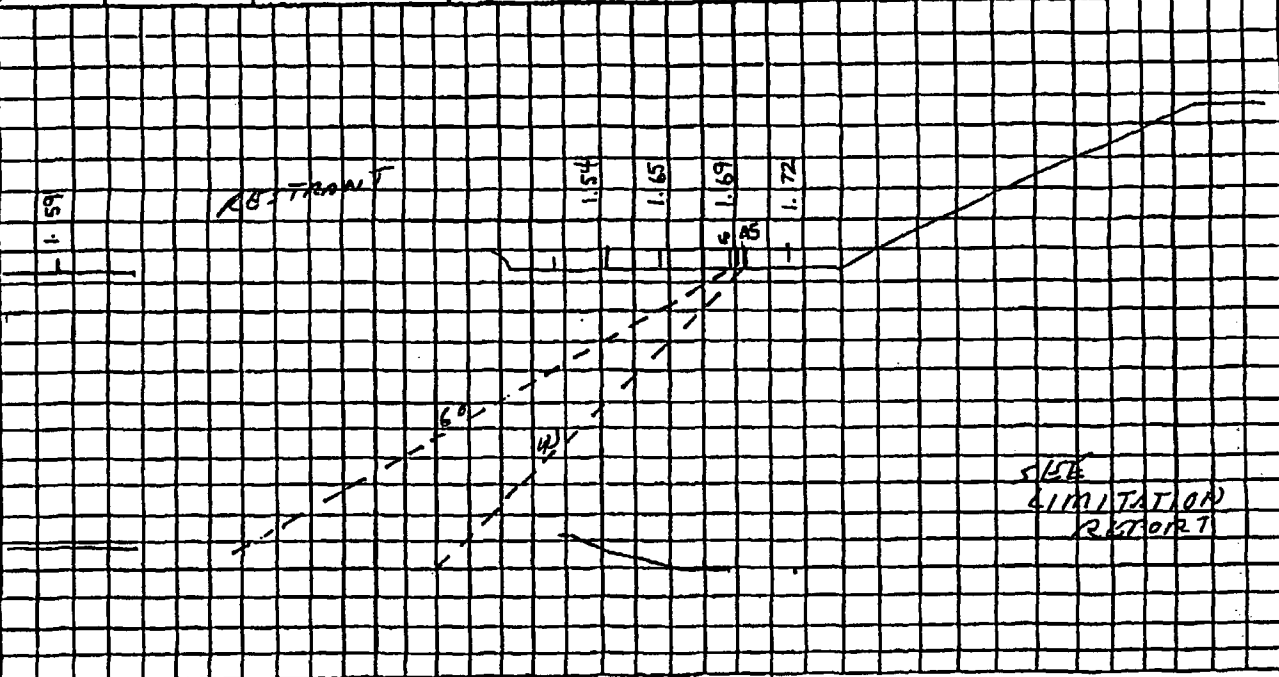
LIMITATION DUE TO WHERE THE RESTRAINT SUPPORT CROSSES OVER THE WELD AND THE 1/2" AREA ON THE UP STREAM SIDE OF THE WELD.



ULTRASONIC WELD PROFILE AND THICKNESS EXAMINATION RECORD  
 Summary No.: 381175

SH.RA-AP.ZZ-0101(Q) FORM 11

NDE Lab: <u>VCR</u>		SITE: <u>SALEM UNIT 2</u>		DATE: <u>1-20-96</u>		TIME (24 HR. CLOCK) INT. <u>1005</u> FINAL <u>1015</u>		SHEET NO: <u>090087</u>	
Examiner (Signature) <u>Patricia Cole</u>		SNT Level: <u>II</u>	Couplant, Specify Type: <u>SONOTRACE 40</u>	Instrument Model: <u>S/N: 92086704</u>	SERIAL NO: <u>92086704</u>		COMPONENT ID: <u>34-MS-2231-1</u>		
Examiner (Signature) <u>Kevin A. ...</u>		SNT Level: <u>II</u>	<u>95243</u>	Procedure No. & Rev: <u>SH.RA-15.ZZ 0137(Q) Rev 0</u>			REFERENCE BLK NO: <u>92-6683</u>		
SEARCH UNITS									
BRAND	<u>KBA</u>								
SERIAL NO	<u>04872</u>								
SIZE	<u>3.5X10MM</u>								
FREQ. (MHz)	<u>4 MHz</u>								
INSTRUMENT SETTINGS									
SCREEN SIZE	<u>5.0 inches</u>								
DELAY	<u>9.700</u>								
MATH. CAL.	<u>.2293</u>								
RANGE	<u>.500</u>								
REP. RATE	<u>FIXED</u>								
JACK USED	<u>TIR</u>								
Trans Mode	<u>SHEAR</u>								
Reviewed By: <u>Z W G</u>		SNT Level: <u>III</u>		Date: <u>1-26-96</u>					



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WD 1/20/96  
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P STREAM LIMIT AREA (ORANGE)  
 THICK THAN TH. 1" LENGTH.

①  $.3 \times .54 = .1659" \times 80.125" = 12.82 \text{ cu}$   
 ②  $(.54 \times .85) \div 2 = .2359" \times 80.125" = 18.43 \text{ cu}$

12.82  
 18.43  
 1.25 cu } TOTAL VOL IN ORANGE AREA  
 $\div 103.75 = 30.12\%$

20.85% 21.63"  
 30.12% + 31.25  
 0.97% 52.88"  $\div 103.75 = 50.97\%$

CW, CCW LIMITATION AREA (ORANGE) VE 2.1

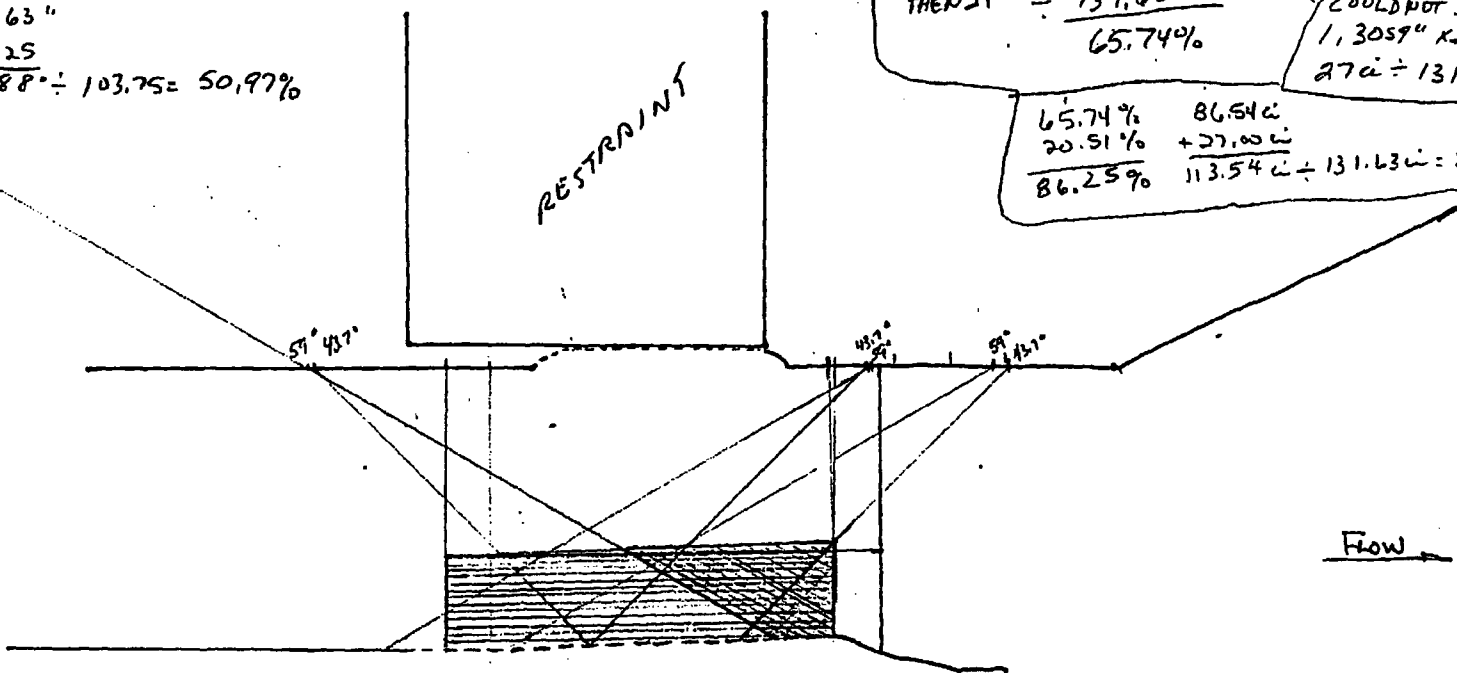
$.48" \times 2.15" = 1.03$   
 $(.05" \times 2.15") \div 2 = .05$

LIMITED AREA CW AND CCW IN WELD OTHER THAN 21" =  $\frac{1.0859"}{84.54 \text{ cu}} = 131.63 \text{ cu}$   
 $65.74\%$

$1.48" \times 2.43" = 1.99$   
 $(.05" \times 2.15") \div 2 = .0559$   
 $(.58" \times .28") \div 2 = .0859$   
 $1.3059"$   
 $\times 101.125" = 131.63 \text{ cu}$   
 COULD NOT SCAN 21" CW OR CCW  
 $1.3059" \times 21" = 27 \text{ cu}$   
 $27 \text{ cu} \div 131.63 \text{ cu} = 20.51\%$

$65.74\% + 20.51\% = 86.25\%$   
 $86.54 \text{ cu} + 27.00 \text{ cu} = 113.54 \text{ cu} \div 131.63 \text{ cu} = 86.26\%$

34-MS-2231-1



VE 1 = 103.75 cu  
 $(1.90 \times .54) 1.03 \times 101.125 = 103.75$   
 $1.90 \times .54 = 1.03 \times 21" = 21.63"$   
 UPSTREAM LIMITATION PERCENTAGE AREA FOR 21" LENGTH  $\frac{103.75}{20.85\%}$

CAN NOT SCAN AREA 3" to 24" ON THE UP SIDE  
 21" total  
 $\frac{101.125}{21.000} = 30.125$

103

DN STREAM LIMITATION AREA (GREEN)

$(.77 \times .36) \div 2 = .139" \times 101.125 = 14.06$   
 $14.06 \div 101.125 = 13.90\%$

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 ENGINEERING ASSOCIATION

*[Signature]*  
 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: J W G JD 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  
 $(A / Vt1) \times 100 = Z1$  50.97%  
 1.4 Compute Vol. Not Covered Downstream = B 14.06 ci  
 1.5 Compute Downstream Limitation Percentage  
 $(B / Vt1) \times 100 = Z2$  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  $(A / Vt2) \times 100 = Z3$  86.26%  
 2.4 Compute Vol. Not Covered CCW = D 113.54 ci  
 2.5 Compute CCW Limitation Percentage  $(B / Vt2) \times 100 = Z4$  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 PPE  
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-2221-1P-2  
 PREPARED BY: Z W G DATE: 1-19-96  
 REVIEWED BY: [Signature] DATE: 1/26/96

SURFACE EXAMINATIONS

1.0 CALCULATE REQUIRED EXAM AREA

Exam length X Exam Width = Exam Area FOR  
101.25 X 3 = 303.75 X 2 = 607.5

2.0 CALCULATE AREA NOT EXAMINED

2.1	Length of obstructed area		Width of obstructed area		Area with NO exam coverage
A.	<u>101.25</u>	X	<u>3</u>	=	<u>303.75</u>
B.	<u>NA</u>	X	<u>NA</u>	=	<u>NA</u>
C.	<u>↓</u>	X	<u>↓</u>	=	<u>↓</u>
D.	<u>↓</u>	X	<u>↓</u>	=	<u>↓</u>

3.0 CALCULATE PERCENT AREA NOT EXAMINED

Percent Area NOT Examined = Total Area w/No Coverage / Exam Area X 100  
 =  $\frac{303.75}{607.5} \times 100$   
 = 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.

**REQUEST FOR ADDITIONAL INFORMATION**  
**REQUEST FOR RELIEF REGARDING EXAMINATION COVERAGE**  
**SECOND TEN-YEAR IN-SERVICE INSPECTION INTERVAL**  
**SALEM NUCLEAR GENERATING STATION, UNIT NO. 2**  
**DOCKET NO. 50-311**

**QUESTION**      2.2(a) For certain component attachments and support welds, Information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers listed below.

Summary #      381220

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Component I.D.      32-MS-2221-1PS-2

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Description      PIPE SUPPORT

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		Comments
1	Weld X-Section	N/A
2	Material	Carbon Steel
3	Thickness / weld Crown	N/A
4	Obstruction	LUG CONFIGURATION
5	Exam Area Highlighted on Drawing	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
6	Transducer ray exit point	N/A

**Comments**

MT exam was conducted of this component. The MT exam was limited to 50% because 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 was no IWF support associated with this weld attachment. a system pressure test was also completed with no unacceptable indications observed.

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**Supplemental Drawing**

**Summary #** 381220

**Component I.D.** 32-MS-2221-1PS-2

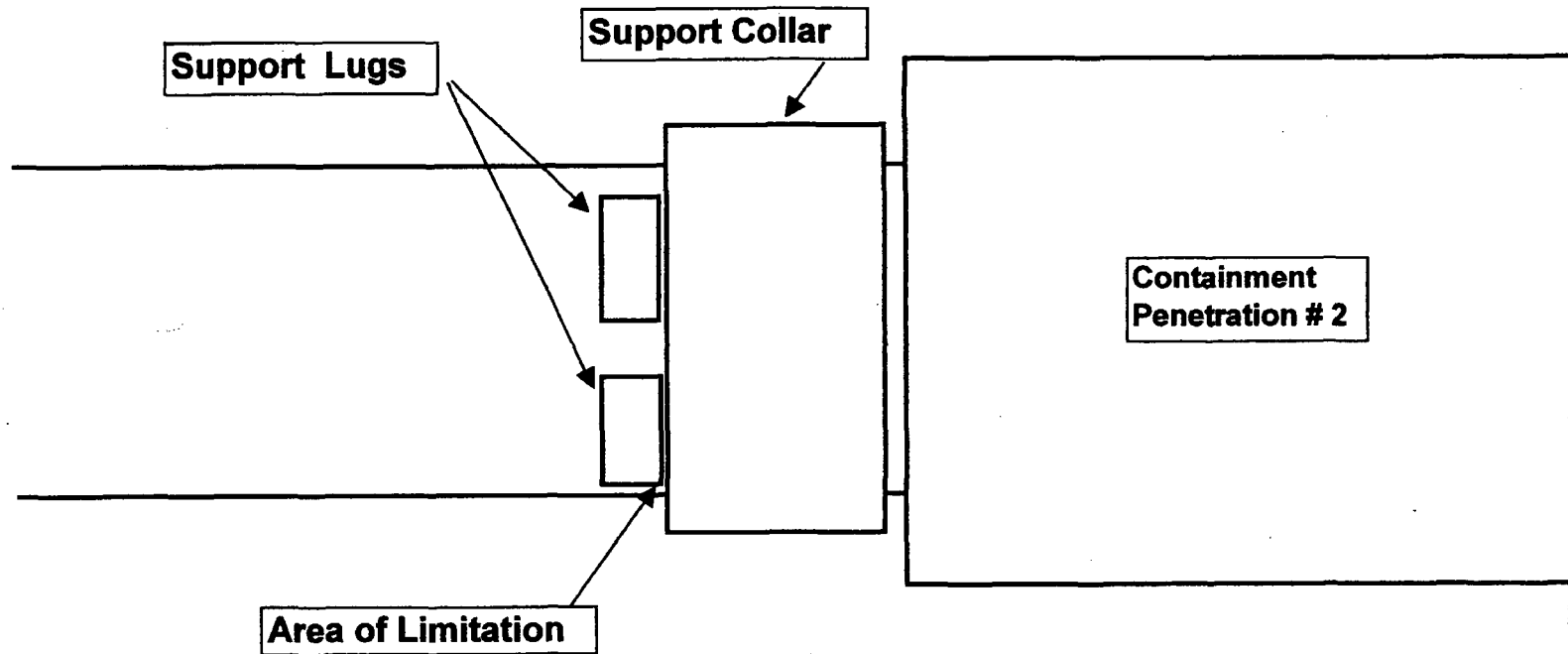
**Description** Pipe Support

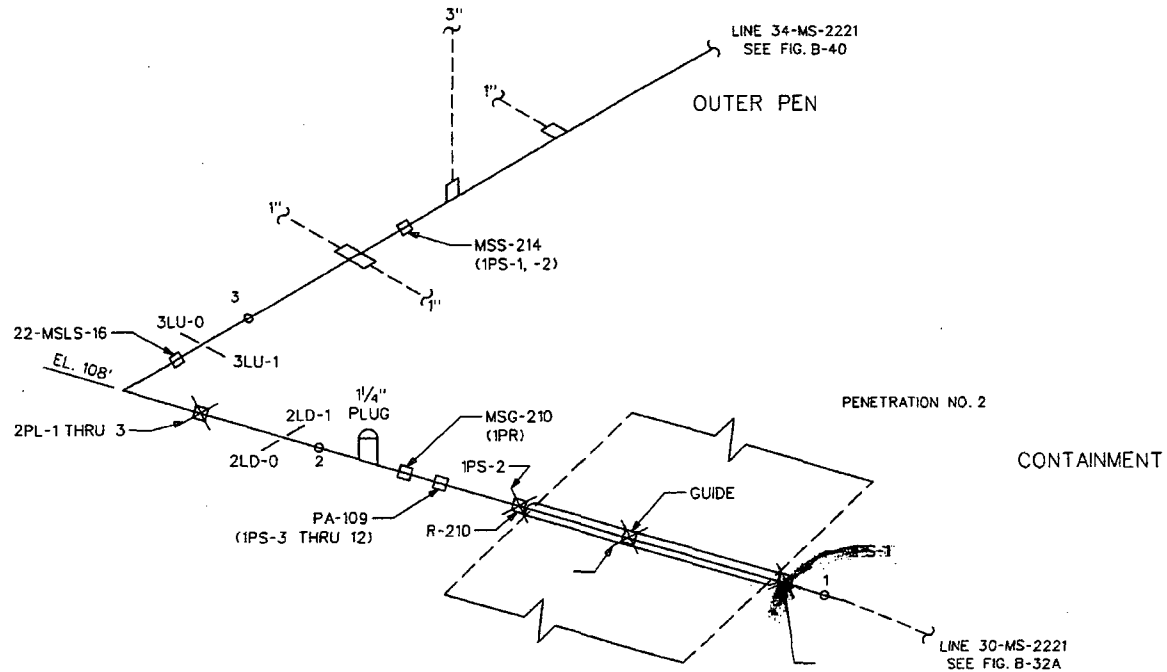
**Page**      **of**

**Comments**

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

**Sketch**





BUILDING: CONTAINMENT OUTER PEN	LOCATION: ANNULUS OUTER PEN	ELEVATIONS: 108'
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PSEG ISO MS23-02, MS23-03  
P & ID 205303

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: B-32B	REVISION: 1
SYSTEM: MAIN STEAM SYSTEM	
LINE: 34-MS-2221, 32-MS-2221	
THIRD 10 YEAR INSPECTION INTERVAL	

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

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LV 1 = COMMON INFORMATION  
LV 2 = WELD INFORMATION  
LV 3 = HANGER INFORMATION

. SECOND INTERVAL, SECOND PERIOD, FIRST OUTAGE

SUMMARY #: 381220		<b>96RF EXAMINATION SUMMARY RECORD</b>						SALEM NUCLEAR GENERATING STATION, UNIT 2	
SYSTEM/COMPONENT: MAIN STEAM SYSTEM				/PIPE SUPPORT R-210					
LINE/SUBASSEMBLY: 32-MS-2221 [PSE&G #32"-2MS1027]				RELIEF REQUEST:					
IDENTIFICATION: 32-MS-2221-1PS-2									
LTP INSTRUCTIONS: LIMITATION: EXAMINED (MT) 50% OF THE CODE REQUIRED SURFACE, DUE TO THE CONFIGURATION OF THE LUG. A-E IAW MEB 3-1. NO RELIEF REQUEST REQUIRED (A-E).									
NDE METHOD IN LTP	PROCEDURE	RESULTS FILE NDE EXAMS	EXAM RECORD	CALIBRATION RECORD	N O R	G E O	T H	RESOLUTION RECORD	REMARKS
MT	SHRAISZZ0117Q	MT	090051	-	X	-	-	-	96RF - W.O.#960508025 TO PERFORM NDE. PERFORM EXAM IAW MEB 3-1. LIMITATION: EXAMINED (MT) 50% OF THE CODE REQUIRED SURFACE, DUE TO THE CONFIGURATION OF THE LUG. <div style="border: 1px solid black; padding: 5px; margin-top: 10px; text-align: center;">             REVIEWED &amp; ACCEPTED              FACTORY MUTUAL              ENGINEERING ASSOCIATION               AUTH. NUCLEAR INSERVICE INSP.      DATE           </div>
Prepared by: <u><i>Scott A. Kiewit</i></u>					Date: 01/19/96				Total dose received while performing the required NDE examinations:
Reviewed by: <u><i>Wayne D. ...</i></u>									



MAGNETIC PARTICLE EXAMINATION RECORD

SH.RA-AP.ZZ-0101(Q) FORM 7

Summary No.: 381220

NDE Lab: <u>VCR</u>	SITE: <u>Salem 2</u>	DATE: <u>1-18-96</u>	Dia: <u>32"</u>	Sched: <u>N/A</u>	Length: <u>101 1/4"</u>	TIME (24 HR. CLOCK) EXAM STARTED: <u>0955</u> EXAM ENDED: <u>1108</u>	SHEET No.: <u>090051</u>
Exam IDENTIFICATION: Arpa: <u>32-M5-2221-1PS-2</u>	PROCEDURE No & REV. <u>SH.RA-IS.ZZ-0117(Q) Rev 2</u>			Width: <u>1"</u>	Lo Rule: <u>1</u>	LOCATION: <u>W0</u>	LOCATION: <u>E</u>
Examiner & SNT Level: <u>Werry A. Wade III</u>				SURFACE FINISH: <u>As Ground</u>		WELD TYPE: <u>PIPE TO PENETRATION</u>	
Examiner & SNT Level: <u>Pat Shwin II</u>				MATERIAL: BRAND: <u>Detek</u> WET <input type="checkbox"/> DRY <input checked="" type="checkbox"/> BATCH No.: <u>7801-202-00</u> FLUORESCENT <input type="checkbox"/> TYPE: <u>N/A MPW-410</u> MIXED NO <input checked="" type="checkbox"/> YES <input type="checkbox"/> COLOR: <u>Yellow</u> MIXED WITH <u>N/A</u>		Yoke Spacing: <u>6</u> IN Yoke Brand: <u>Electrospect</u> SERIAL No.: <u>VCR-4-02</u> SURFACE TEMP. <u>56</u> °F THERMOMETER SERIAL No.: <u>SV-NDE-0065</u> Cal Due Date: <u>2-27-96</u>	
CALIBRATION BLOCK SERIAL No.: <u>SV-NDE-0015</u> WEIGHT: <u>10lbs</u>		CALIBRATION VERIFICATION TIME: <u>0821</u> <u>1154</u> <u>N/A</u> INITIALS: <u>SW</u> <u>SW</u> <u>N/A</u>		DISTANCE FROM BLACK LIGHT TO SENSOR CELL <u>N/A</u> IN		BLACK LIGHT OUTPUT VERIFICATION TIME: <u>N/A</u> INITIALS: <u>N/A</u>	
BLACK LIGHT BRAND: <u>N/A</u> SERIAL No.: <u>N/A</u>		INTENSITY METER BRAND: <u>N/A</u> SERIAL No.: <u>N/A</u>		BLACK LIGHT OUTPUT <u>N/A</u> $\mu\text{W}/\text{cm}^2$		MATERIAL APPLICATION: DUSTING <input checked="" type="checkbox"/> FLOODING <input type="checkbox"/> SPRAYING <input type="checkbox"/>	
IND No.	L	W	LOCATION	ROUND OR LINEAR	SIZE DIA. OR LENGTH	REMARKS:	INITIALS
						<u>No Recordable Indications</u>	<u>SW</u>
						REVIEWED & ACCEPTED FACTORY MUTUAL ENGINEERING ASSOCIATION <u>[Signature]</u> 1/24/96 AUTH. NUCLEAR INSERVICE INSP. DATE	
EXAMINATION AREA LIMITATION: (IF NONE, SO STATE)							
<u>Exam Limited to one Direction Due to Configuration</u>							
REVIEWED BY: <u>LW Ly</u>				SNT LEVEL: <u>III</u>		DATE: <u>1-19-96</u>	
						PAGE: <u>1</u> OF <u>1</u>	

ULTRASONIC WELD PROFILE AND THICKNESS EXAMINATION RECORD  
 Summary No.: 381260

SH.RA-AP.ZZ-0101(Q) FORM 11

NDE Lab: <b>VCR</b>		SITE: <b>SALEM UNIT 2</b>		DATE: <b>1-13-96</b>		TIME (24 HR. CLOCK) INT. <b>1025</b> FINAL <b>1035</b>		SHEET NO: <b>090028</b>											
Examiner (Signature) <i>Pete U. Cole</i>		SNT Level: <b>II</b>	Couplant, Specify Type: <b>SONOTRACE 40</b>	Instrument Model: <b>EPGCH II</b> S/N: <b>92086704</b>		SERIAL NO: <b>92086704</b>		COMPONENT ID: <b>32-MS-2221-3</b>											
Examiner (Signature) <i>Dennis A. Stuckel</i>		SNT Level: <b>II</b>	# <b>95243</b>	Procedure No. & Rev: <b>SH.RA-15.ZZ 0137(Q) REV 0</b>		REFERENCE BLK NO: <b>92-6683</b>													
SEARCH UNITS																			
BRAND	<b>KBA</b>	<b>PIPE</b>							<b>ELBOW</b>										
SERIAL NO	<b>04872</b>																		
SIZE	<b>.35x10</b>	<b>1.57</b>	<b>1.57</b>	<b>N/R</b>	<b>1.57</b>	<b>1.57</b>	<b>1.57</b>	<b>1.57</b>	<b>N/R</b>	<b>1.57</b>	<b>1.57</b>	<b>1.57</b>	<b>1.57</b>	<b>1.57</b>	<b>1.57</b>	<b>1.57</b>	<b>1.57</b>	<b>1.57</b>	<b>1.57</b>
FREQ. (MHz)	<b>4 mhz</b>																		
INSTRUMENT SETTINGS																			
SCREEN SIZE	<b>5.0</b>																		
DELAY	<b>9.700</b>																		
MATL. CAL.	<b>.2293</b>																		
RANGE	<b>.500</b>																		
REP. RATE	<b>FIXED</b>																		
JACK USED	<b>TIR</b>																		
Trans Mode	<b>LONG</b>																		
Reviewed By: <b>ZWY</b>		SNT Level: <b>III</b>		Date: <b>1-15-96</b>															

REVIEWED & ACCEPTED  
 FACTORY MUTUAL  
 ENGINEERING ASSOCIATION  
*[Signature]*  
 AUTH. NUCLEAR INSPECTION SERVICES  
 DATE

**INSPECTION SERVICES**  
 reviewed and approved  
*[Signature]*  
 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**



PAD PLUS 1/2 WEDGE WIDTH  
 $0.8 \times .53 \text{ in} = 8.9 \text{ in}$   
 TOTAL PAD LENGTH  
 AVG. HEIGHT OF BOX (A) X (D) EQUALS BOX OF BOX (E)  
 $101.25 - 21 = 80.25 \text{ LENGTH OF WELD NOT EFFECTED BY PADS}$

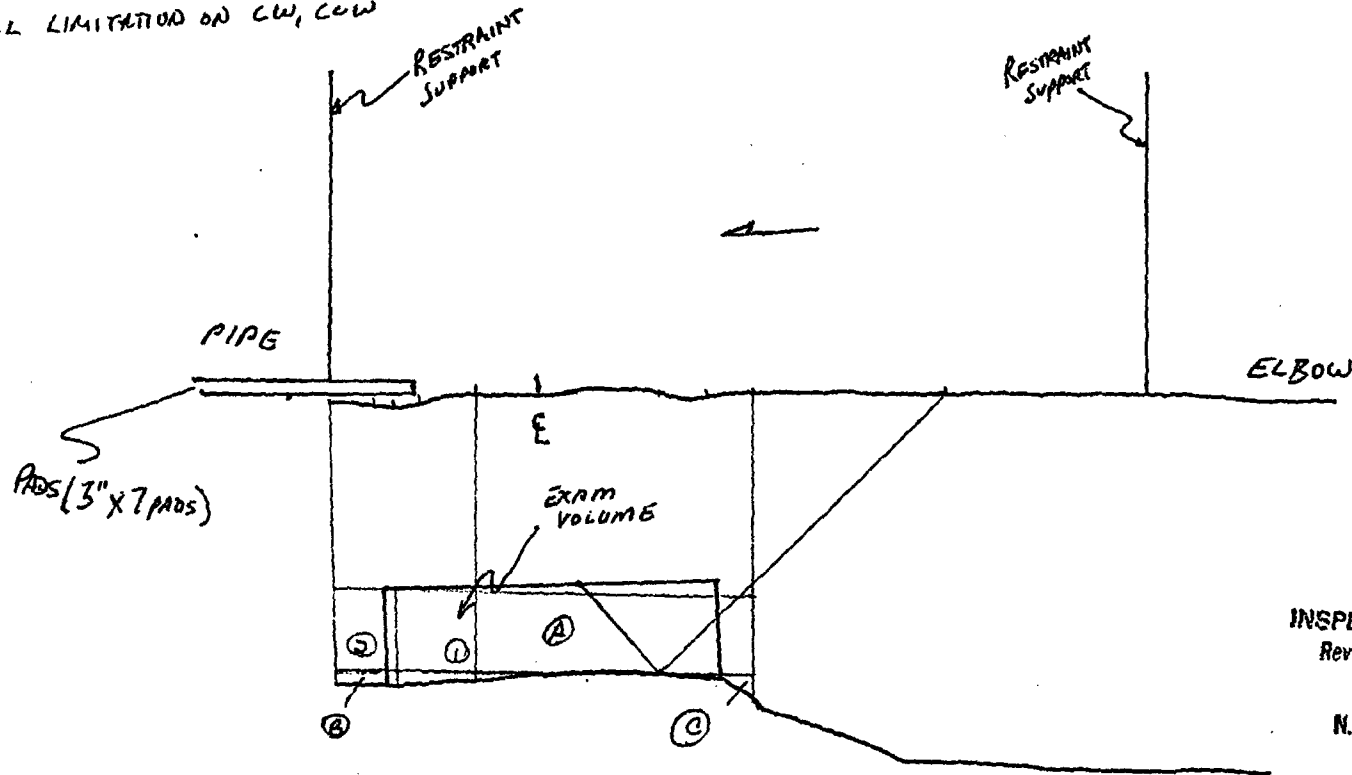
1/2 DOWEL WEDGE  
 $0.35 \times .54 \times 80.25 = 15.17 \text{ in}$   
 BOX HEIGHT (D) x LENGTH OF WELD MINUS PAD AREA

$8.90 \text{ in}$   
 $+ 15.17 \text{ in}$   
 $24.07 \text{ in}$  TOTAL LIMITATION ON CW, COW

CW E C C W

- (A)  $.46 \times 2.4 = 1.1059$
- (B)  $(1.03 \times .07) \div 2 = .02$
- (C)  $(.25 \times .11) \div 2 = .01$

$A+B+C = 1.13 \times 101.25 = 114.41 \text{ in}$   
 TOTAL LENGTH OF WELD



**PSEG**  
 INSPECTION SERVICES  
 Reviewed and Approved  
*[Signature]*  
 N.D.E. SUPERVISOR

32-MS-2221-3

1-13-96

SUMMARY # 381260

*[Signature]*  
 1-15-96

112

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: LW by [Signature] 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	<u>99.81"</u>
1.2	Compute Vol. Not Covered Upstream = A	<u>8.30"</u>
1.3	Compute Upstream Limitation Percentage (A / Vt1) x 100 = Z1	<u>8.32%</u>
1.4	Compute Vol. Not Covered Downstream = B	<u>0.00</u>
1.5	Compute Downstream Limitation Percentage (B / Vt1) x 100 = Z2	<u>0%</u>

## 2.0 CIRCUMFERENTIAL EXAMS (INDICATIONS PERPENDICULAR TO WELD)

2.1	Compute Exam Volume (height x width x length) = Vt2	<u>114.41</u>
2.2	Compute Vol. Not Covered CW = C	<u>24.07</u>
2.3	Compute CW Limitation Percentage (A / Vt2) x 100 = Z3	<u>21.04 %</u>
2.4	Compute Vol. Not Covered CW = D	<u>24.07</u>
2.5	Compute CCW Limitation Percentage (B / Vt2) x 100 = Z4	<u>21.04%</u>

## 3.0 TOTAL COVERAGE

3.1	Compute Total Limitation Percentage (Z1 + Z2 + Z3 + Z4)/4 = L	<u>12.60%</u>
3.2	Compute Total Coverage 100 - L	<u>87.40%</u>

## 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.

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
<u>101.25</u>		<u>≈ 4"</u>		<u>405 x 2 = 810</u>

FOR TWO DIRECTION EXAM

2.0 CALCULATE AREA NOT EXAMINED

2.1	Length of obstructed area	X	Width of obstructed area	=	Area with NO exam coverage
A.	* <u>101.25</u>	X	<u>≈ 4"</u>	=	<u>405 x 2 = 810</u>
B.	<u>N/A</u>	X	<u>N/A</u>	=	<u>N/A</u>
C.	<u>↓</u>	X	<u>↓</u>	=	<u>↓</u>
D.	<u>↓</u>	X	<u>↓</u>	=	<u>↓</u>

3.0 CALCULATE PERCENT AREA NOT EXAMINED

Percent Area NOT Examined	=	Total Area w/No Coverage	/	Exam Area	X	100
	=	<u>405</u>	/	<u>810</u>	X	100
	=	<u>50 %</u>				

4.0 CALCULATE PERCENT OF TOTAL AREA EXAMINED

100%	-	Percent Area NOT Examined	=	Examination Coverage
100%	-	<u>50</u>	=	<u>50 %</u>

LIMITATION EXPLANATION / REMARKS:

\* M.I. EXAM. PERFORMED IN ONLY ONE DIRECTION  
DUE TO CONFIGURATION.

**REQUEST FOR ADDITIONAL INFORMATION**  
**REQUEST FOR RELIEF REGARDING EXAMINATION COVERAGE**  
**SECOND TEN-YEAR IN-SERVICE INSPECTION INTERVAL**  
**SALEM NUCLEAR GENERATING STATION, UNIT NO. 2**  
**DOCKET NO. 50-311**

**QUESTION**          2.2(a)    For certain component attachments and support welds, Information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers listed below.

Summary #          381320

Component I.D.    32-MS-2211-1PS-2

Description        SUPPORT

		Comments			
<input type="checkbox"/> 1	Weld X-Section	N/A			
<input type="checkbox"/> 2	Material	Carbon Steel			
<input type="checkbox"/> 3	Thickness / weld Crown	N/A			
<input type="checkbox"/> 4	Obstruction	LUG CONFIGURATION			
<input type="checkbox"/> 5	Exam Area Highlighted on Drawing	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px 10px;">Yes</td> <td style="text-align: center;">X</td> <td style="padding: 2px 10px;">No</td> </tr> </table>	Yes	X	No
Yes	X	No			
<input type="checkbox"/> 6	Transducer ray exit point	N/A			

**Comments**

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 was unable to be examined in two directions due to its configuration. there is no IWF support associated with this attachment. This component is located at a containment wall penetration and is limited due to inaccessibility to back portion of lugs. a system pressure test was also completed with no unacceptable indications observed. Component selected for MEB 3-1 Augmented exam requirements.

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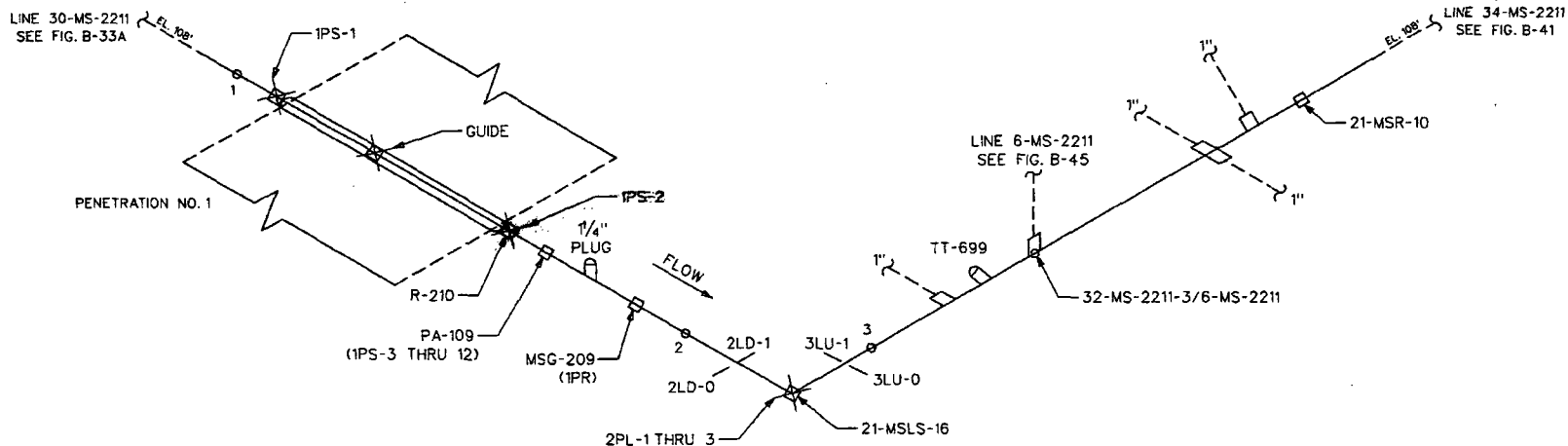
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BUILDING: CONTAINMENT  
 LOCATION: ANNULUS  
 ELEVATIONS: 108'

PSEG ISO MS23-01  
 P & ID 205303

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: B-33B	REVISION: 1
SYSTEM: MAIN STEAM SYSTEM	
LINE: 34-MS-2211, 32-MS-2211	
THIRD 10 YEAR INSPECTION INTERVAL	

1	REVISED PER ORDER No. 80038023.
REV.	DESCRIPTION

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- LV 1 = COMMON INFORMATION
- LV 2 = WELD INFORMATION
- LV 3 = HANGER INFORMATION

**SECOND INTERVAL, SECOND PERIOD, FIRST OUTAGE**

SUMMARY #: 381320

**96RF EXAMINATION SUMMARY RECORD  
SALEM NUCLEAR GENERATING STATION, UNIT 2**

SYSTEM/COMPONENT: MAIN STEAM SYSTEM

/PIPE SUPPORT R-210

LINE/SUBASSEMBLY: 32-MS-2211 [PSE&G #32"-2MS1002]

RELIEF REQUEST:

IDENTIFICATION: 32-MS-2211-1PS-2

LTP INSTRUCTIONS: LIMITATION: EXAMINED (MT) 50% OF THE CODE REQUIRED SURFACE, DUE TO THE CONFIGURATION OF THE LUG. A-E IAW MEB 3-1. NO RELIEF REQUEST REQUIRED (A-E).

NDE METHOD IN LTP	PROCEDURE	RESULTS FILE NDE EXAMS	EXAM RECORD	CALIBRATION RECORD	N O R	G E O	O T H	RESOLUTION RECORD	REMARKS
MT	SHRAISZZ0117Q	MT	090037	-	X	-	-	-	96RF - W.O.#960508025 TO PERFORM NDE. PERFORM EXAM IAW MEB 3-1. LIMITATION: EXAMINED (MT) 50% OF THE CODE REQUIRED SURFACE, DUE TO THE CONFIGURATION OF THE LUG.

**REVIEWED & ACCEPTED  
FACTORY MUTUAL  
ENGINEERING ASSOCIATION**  
*J. P. [Signature]* 1/24/96  
AUTH. NUCLEAR INSERVICE INSP. DATE

Prepared by: *Art W. [Signature]*

Date: 01/19/96

Reviewed by: *Wayne [Signature]*

Total dose received while performing the required NDE examinations:

Man Mrem



MAGNETIC PARTICLE EXAMINATION RECORD

SH.RA-AP.ZZ-0101(Q) FORM 7

Summary No.: 381320

NDE Lab: <u>VCR</u>	SITE: <u>Salem 2</u>	DATE: <u>1-16-96</u>	Dia: <u>N/A</u>	Sched: <u>N/A</u>	Length: <u>N/A</u>	TIME (24 HR. CLOCK) EXAM STARTED: <u>0940</u> EXAM ENDED: <u>1015</u>	SHEET No.: <u>090037</u>
Exam IDENTIFICATION: Area: <u>32-MS-2211-1PS-2</u>	PROCEDURE No & REV. <u>SH.RA-IS.ZZ-0117(Q) Rev 2</u>				Width: <u>Varied</u>	L <sub>0</sub> LOCATION: <u>Rule 6</u>	W <sub>0</sub> LOCATION: <u>£</u>
Examiner & SNT Level: <u>Pat Jamin II</u>				SURFACE FINISH: <u>As Ground</u>		WELD TYPE (FLOW PIPE SUPPORT) <u>Fillet</u>	YOKES SPACING: <u>6</u> IN YOKES BRAND: <u>Econospect</u>
Examiner & SNT Level: <u>Pat Jamin II</u>				MATERIAL BRAND: <u>Detek</u> WET <input type="checkbox"/> DRY <input checked="" type="checkbox"/> BATCH No.: <u>7801-22-00</u> FLUORESCENT <input type="checkbox"/> TYPE: <u>N/A</u> MIXED NO <input checked="" type="checkbox"/> YES <input type="checkbox"/> COLOR: <u>Yellow</u> MIXED WITH <u>N/A</u>		SERIAL No.: <u>VCR-Y-02</u> SURFACE TEMP. <u>54</u> °F THERMOMETER SERIAL No.: <u>SV-MDE-0065</u> Cal Due Date: <u>2-29-96</u>	
CALIBRATION BLOCK SERIAL No.: <u>SV-MDE-0015</u> WEIGHT: <u>10 lbs</u>	CALIBRATION VERIFICATION TIME: <u>0810</u> <u>1220</u> <u>N</u> INITIALS: <u>JDW</u> <u>JDW</u> <u>A</u>			DISTANCE FROM BLACK LIGHT TO SENSOR CELL <u>N/A</u> IN		BLACK LIGHT OUTPUT VERIFICATION TIME: <u>N/A</u> INITIALS: <u>N/A</u>	
BLACK LIGHT BRAND: <u>N/A</u> SERIAL No.:	INTENSITY METER BRAND: <u>N/A</u> SERIAL No.:		BLACK LIGHT OUTPUT <u>N/A</u> <u>µW/cm<sup>2</sup></u>		MATERIAL APPLICATION: DUSTING <input checked="" type="checkbox"/> FLOODING <input type="checkbox"/> SPRAYING <input type="checkbox"/>		
IND No.	L	W	LOCATION	ROUND OR LINEAR	SIZE DIA. OR LENGTH	REMARKS: <u>No Reasonable Indications</u>	
						INITIALS <u>JDW</u>	
EXAMINATION AREA LIMITATION: (IF NONE, SO STATE) <u>SEE LIMITATION REPORT</u>						Exam Performed in only one direction due to configuration <u>PSI</u>	
REVIEWED BY: <u>JW by</u>				SNT-LEVEL <u>III</u>		DATE <u>1-17-96</u>	PAGE <u>1</u> OF <u>1</u>

REVIEWED & ACCEPTED  
FACTORY MUTUAL  
ENGINEERING ASSOCIATION  
[Signature]  
AUTH. NUCLEAR INSERVICE INSP. DATE

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DOCUMENT NUMBER: 76

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PUBLIC SERVICE ELECTRIC AND GAS COMPANY

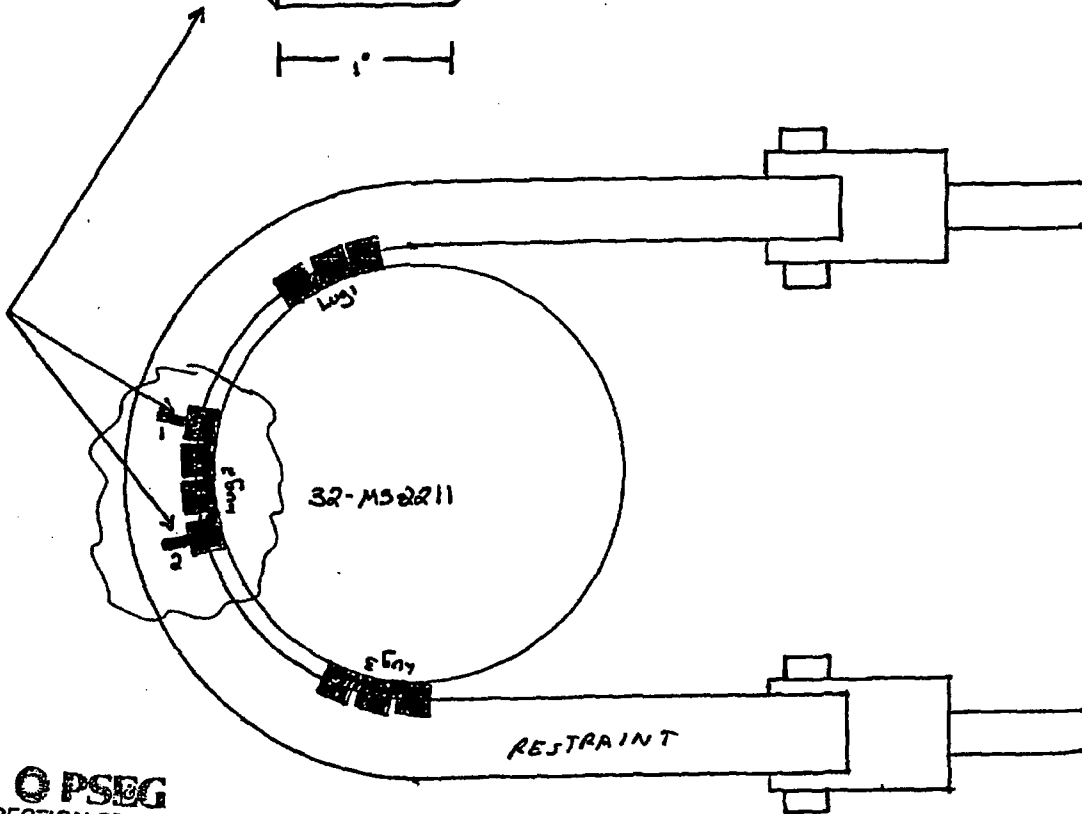
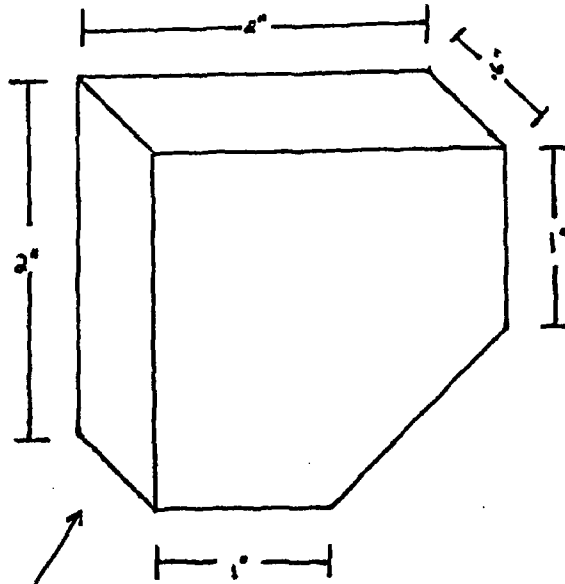
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COMPUTATION SHEET

PREPARED BY \_\_\_\_\_  
DATE \_\_\_\_\_  
CHECKED BY \_\_\_\_\_  
DATE \_\_\_\_\_

Restraint Lug

SUMMARY NO 381310  
VNF 096406  
EXAM SHT 090034



**PSE&G**  
INSPECTION SERVICES  
Reviewed and Approved  
*[Signature]*  
N.D.E. SUPERVISOR

*[Signature]*  
1-16-96

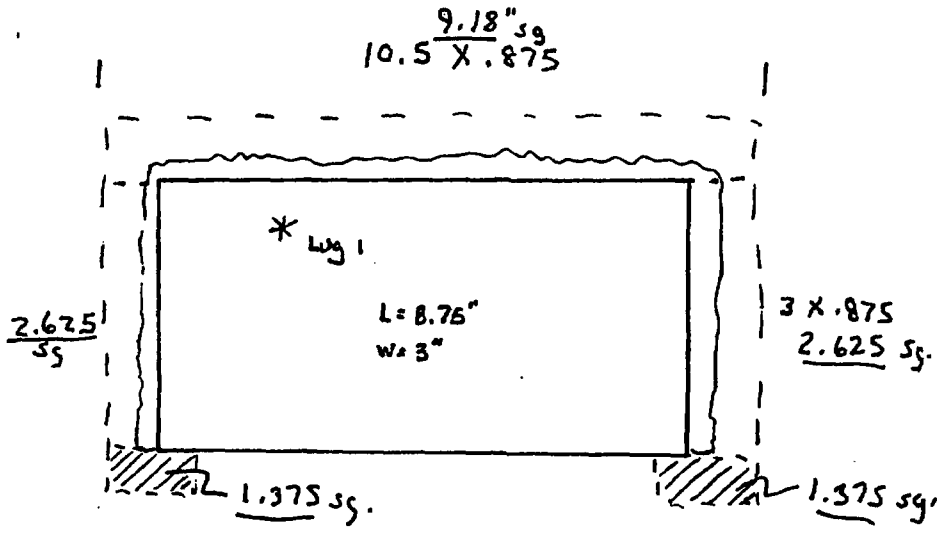
PUBLIC SERVICE ELECTRIC AND GAS COMPANY

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 SUBJECT 361350  
 FILE \_\_\_\_\_  
 ESTIMATE \_\_\_\_\_

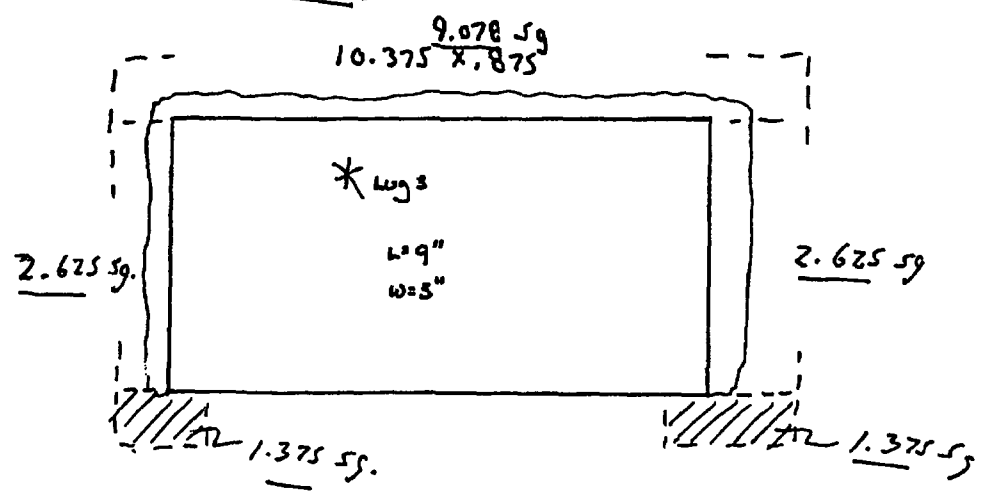
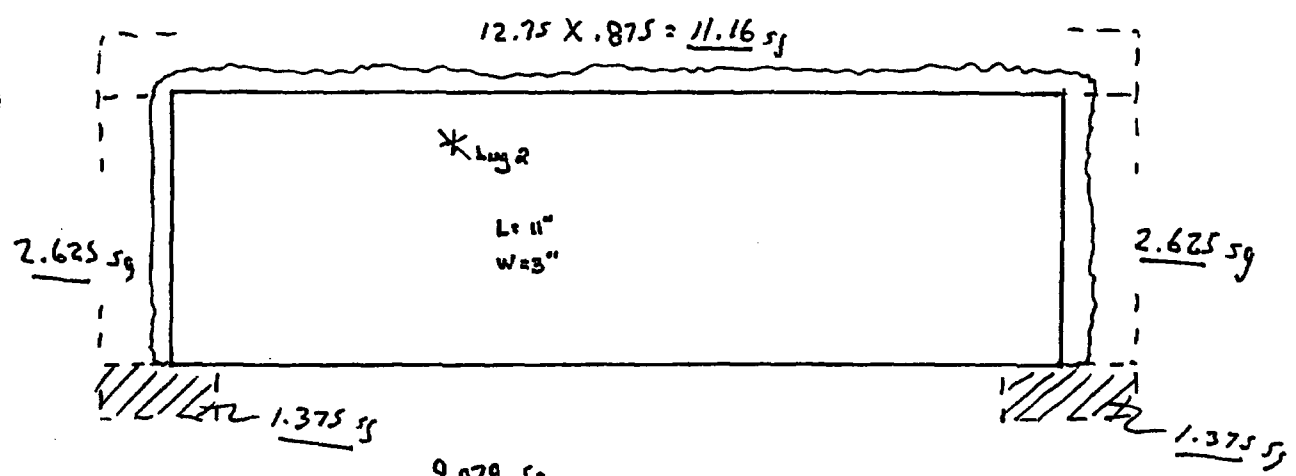
COMPUTATION SHEET

32-MS-2211-2PL-1 Thru 3

PREPARED BY [Signature]  
 DATE 1-15-96  
 CHECKED BY \_\_\_\_\_  
 DATE \_\_\_\_\_



= NO EXAM. LIMITATION



116

J W G III  
 1-16-96  
 116

FORM 1  
(Page 1 of 1)

SURFACE EXAMINATION COVERAGE REPORT

UNIT:	<u>SALEM 2</u>	LTP SUMMARY NO.:	<u>381350</u>
SYSTEM:	<u>MAIN STEAM</u>	LTP COMPONENT ID:	<u>32-MS-2211-2 PL-1 TUB3</u>
PREPARED BY:	<u>Z W Lg</u>	DATE:	<u>1-16-96</u>
REVIEWED BY:	<u>Jatt W Jenkins</u>	DATE:	<u>1-27-96</u>

SURFACE EXAMINATIONS

1.0 CALCULATE REQUIRED EXAM AREA

Exam length	X	Exam Width	=	Exam Area
<u>*SEE PLOTS 3 LUGS *</u>				<u>53.42 sq.</u>

2.0 CALCULATE AREA NOT EXAMINED

2.1	Length of obstructed area		Width of obstructed area		Area with NO exam coverage
A.	<u>LUG 1 *</u>	X	<u>-</u>	=	<u>2.75</u>
B.	<u>LUG 2 *</u>	X	<u>-</u>	=	<u>2.75</u>
C.	<u>LUG 3 *</u>	X	<u>-</u>	=	<u>2.75</u>
D.	<u>-</u>	X	<u>-</u>	=	<u>-</u>

3.0 CALCULATE PERCENT AREA NOT EXAMINED

Percent Area NOT Examined	=	Total Area w/No Coverage	/	Exam Area	X	100
	=	<u>8.75</u>	/	<u>53.42</u>	X	100
	=	<u>16.37 %</u>				

4.0 CALCULATE PERCENT OF TOTAL AREA EXAMINED

100%	-	Percent Area NOT Examined	=	Examination Coverage
100%	-	<u>16.37</u>	=	<u>83.63 %</u>

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

**REQUEST FOR ADDITIONAL INFORMATION**  
**REQUEST FOR RELIEF REGARDING EXAMINATION COVERAGE**  
**SECOND TEN-YEAR IN-SERVICE INSPECTION INTERVAL**  
**SALEM NUCLEAR GENERATING STATION, UNIT NO. 2**  
**DOCKET NO. 50-311**

**QUESTION**      2.2(a)    For certain component attachments and support welds, information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers listed below.

Summary #      381350  


---

 Component I.D.    32-MS-2211-2PL-1 thru 3  


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 Description      PIPE LUGS  


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		Comments			
1	Weld X-Section	N/A			
2	Material	Carbon Steel			
3	Thickness / weld Crown	N/A			
4	Obstruction	CONFIGURATION			
5	Exam Area Highlighted on Drawing	<table border="1" style="display: inline-table;"> <tr> <td style="text-align: center;">Yes</td> <td style="text-align: center;">X</td> <td style="text-align: center;">No</td> </tr> </table>	Yes	X	No
Yes	X	No			
6	Transducer ray exit point	N/A			

**Comments** \_\_\_\_\_

MT exam was conducted of this component. The MT exam was limited to 84% because 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 was no IWF support associated with this weld attachment. a system pressure test was also completed with no unacceptable indications observed.

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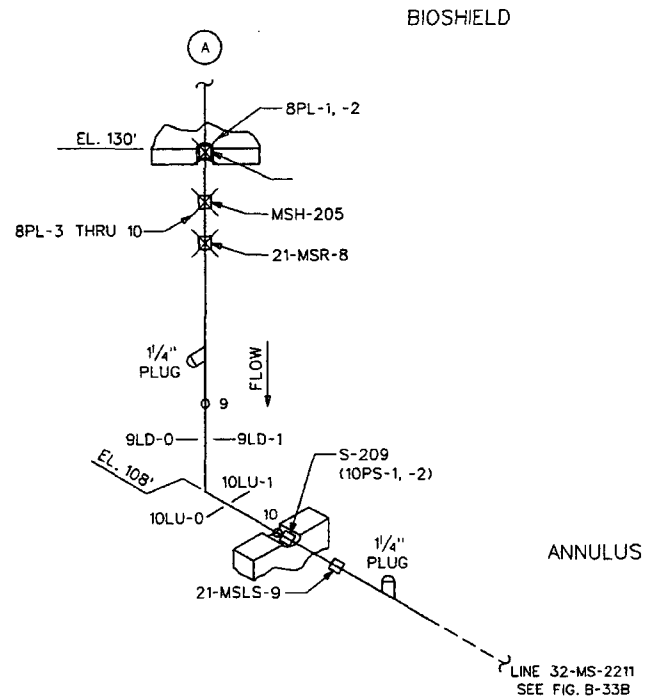
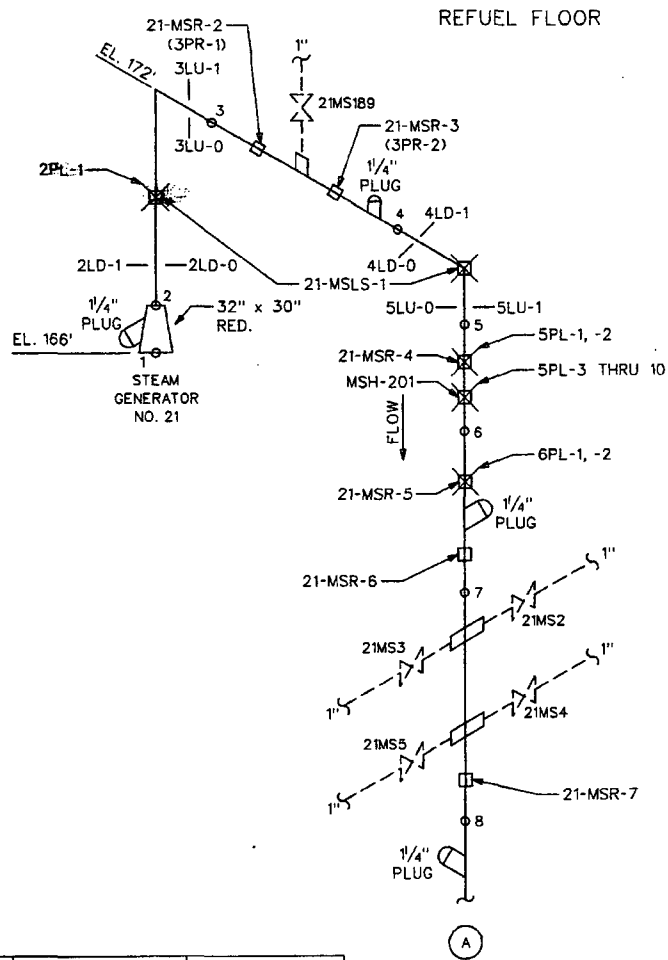
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BUILDING: CONTAINMENT	LOCATION: REFUEL FLOOR BIOSHIELD ANNULUS	ELEVATIONS: 108' - 172'
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PSEG ISO MS23-01  
P & ID 205303

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

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

LV 1 = COMMON INFORMATION  
LV 2 = WELD INFORMATION  
LV 3 = HANGER INFORMATION

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FORM 2  
(Page 1 of 1)

## VOLUMETRIC PIPING EXAMINATION COVERAGE REPORT

UNIT:	<u>SALEM 2</u>	LTP SUMMARY NO.:	<u>381355</u>
SYSTEM:	<u>MAIN STEAM</u>	LTP COMPONENT ID:	<u>32-MS-2211-3</u>
PREPARED BY:	<u>M. OLIVERI</u>	DATE:	<u>3-13-97</u>
REVIEWED BY:	<u>[Signature]</u>	DATE:	<u>3/13/97</u>

## 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 CCW = 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%

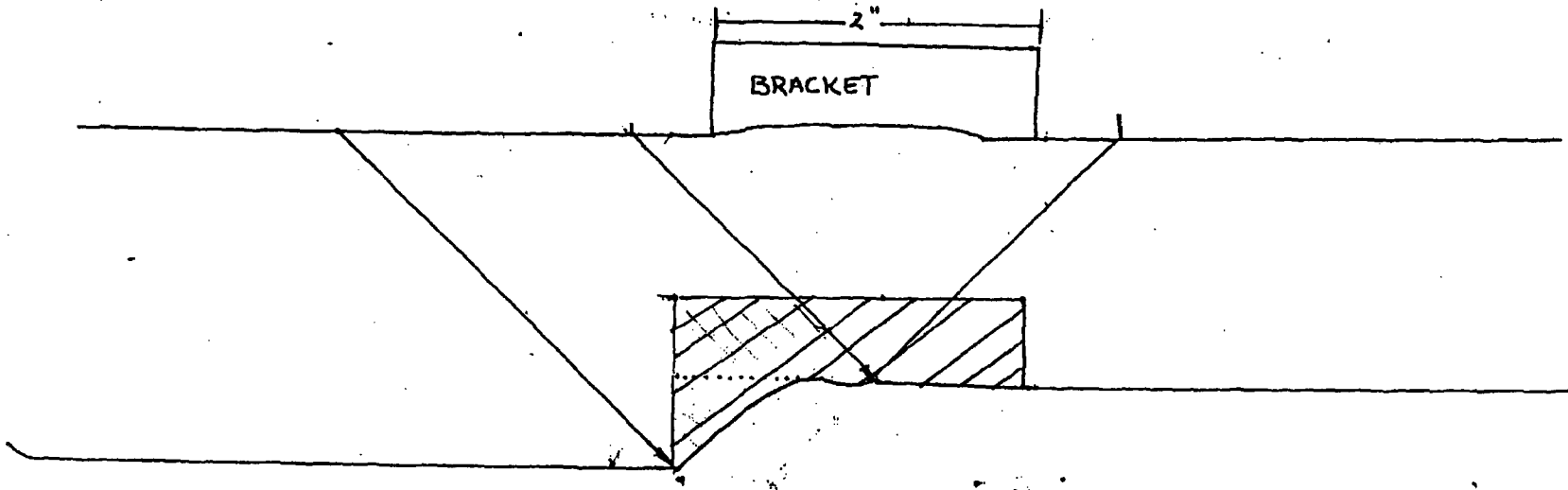
## LIMITATION EXPLANATION / REMARKS:

PERMANENT BRACKET CAUSED LIMITATION "B"

PERMANENT BRANCH CONNECTIONS CAUSED LIMITATION "A"

REF # 3817-15  
32-MS-2a-13

Sheet No.



LIMITATIONS

NO SCAN IN THE DOWN STREAM DIRECTION  
FROM 62.5" TO 80.5" (18")  $18 \times .312 = 5.58 \text{ sq"}^*$

NO SCAN IN THE ~~DOWNSTREAM~~ <sup>UPSTREAM</sup> DIRECTION <sup>MAO 3-13-97</sup>  
FROM 94.5" TO 75" = (14.5")  $14.5 \times \frac{2.248}{968} = 3.34 \text{ sq"}^*$

NO SCAN IN THE UPSTREAM DIRECTION <sup>8.992"</sup>  
FROM 74.5" TO 78.5" (4")  $4 \times \frac{2.248}{968} = 3.84 \text{ sq"}^*$

TOTAL LIMITATIONS = <sup>MAO 3-13-97</sup>  $23.45 \text{ sq"}^*$  47.16 18%

.312 sq" OF COVERAGE IS OBTAINED FROM  
THE DOWNSTREAM SCAN TOTAL =  $.312 \times 101.5 = 31.68 \text{ sq"}^*$

2.248" <sup>MAO 3-13-97</sup>  
968" OF COVERAGE IS OBTAINED  
FROM THE UPSTREAM SCAN  
THE UPSTREAM SCAN TOTAL =

$.968 \times 101.5 = 98.25 \text{ sq"}^*$   
 $2.248 \times \frac{97}{968} = 228.17$

EXAM VOLUME ///  
EXAM VOLUME = 1.28 sq"  
WELD LENGTH = 101.5"  
TOTAL WELD VOLUME = 129.92 sq"  
NUMBER OF DIRECTIONS  
SCANNED = 2

$\frac{129.92 \text{ sq"}^*}{2} = 259.84 \text{ sq"}^*$

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UP STREAM "4" 100% LIMITATION  
SEE V#1 BLOCK & WAGLE 1.03 COMES FROM

$$\frac{1.03 \times 24''}{6 \times 4 \times (L)} = \frac{24.72}{103.77} = 23.82\%$$

ORANGE/GREEN LENGTH

$$100.75 - 24'' = 76.75'' \text{ (LENGTH OF WELD AFFECTED)}$$

ORANGE/GREEN AREA = 32.2 cu

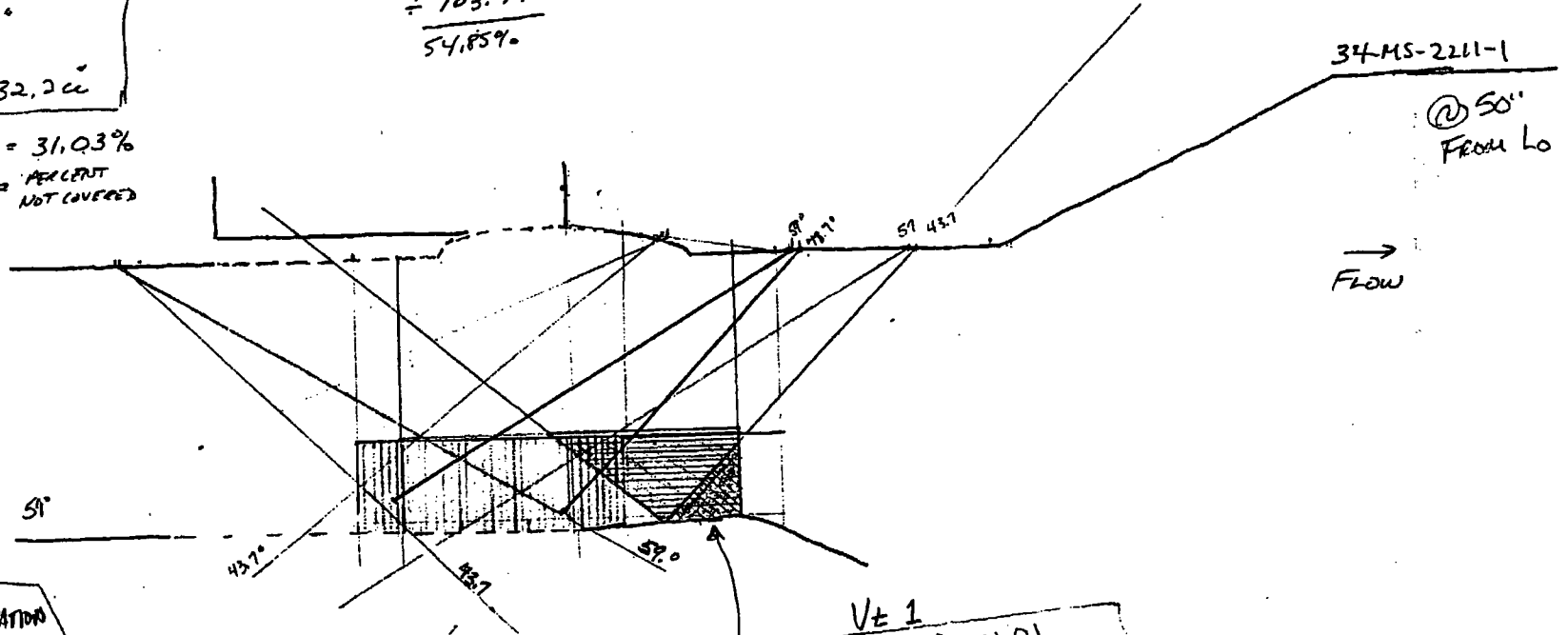
$$\begin{aligned} .5 \times .51 &= .26 \text{ sq} \\ (.35 \times .03) \div 2 &= .01 \text{ sq} \\ (.37 \times .6) \div 2 &= .11 \text{ sq} \\ .26 + .01 + .11 &= .38 \text{ sq} \\ .38 \text{ sq} \times 76.75'' &= 29.2 \text{ cu} \end{aligned}$$

$$32.2 \text{ cu} + 103.77 \text{ cu} = 31.03\%$$

ORANGE/GREEN V#1 = PERCENT NOT COVERED

$$\begin{array}{r} 23.82\% \\ + 31.03\% \\ \hline 54.85\% \end{array} \quad \begin{array}{r} 24.72'' \\ + 32.20 \text{ cu} \\ \hline 56.92'' \\ \div 103.77 \\ \hline 54.85\% \end{array}$$

24" OF UPSTREAM CANNOT BE SCANNED  
DUE TO PIPE VIBRATIONS, THE REST  
OF THE UPSTREAM WELD IS LIMITED AS  
SHOWN IN THE ORANGE AREA PLUS THE  
GREEN AREA



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BLUE AREA  
CW, CCW SCAN  
LIMITATION

$$\begin{aligned} (.48 \times 2.48) &= 1.19 \\ (2.23 \times .07) \div 2 &= .08 \\ (.25 \times .04) \div 2 &= .01 \\ \hline 1.29 \\ \times 100.75 & \end{aligned}$$

$$129.97 \text{ cu} = V\#2$$

AREA COVERED  
 $(.9 \times .48) = .432 \text{ sq} \times 100.75'' = 43.52 \text{ cu}$

$$129.97 \div 43.52 \text{ cu} = 86.45 \text{ cu NOT COVERED}$$

$$86.45 \div 129.97 = 66.52\%$$

DOWNSTREAM LIMITATION 100% OF WELD

$$\begin{aligned} (.3 \times .63) \div 2 &= .0945 \times 101.75 = 9.62'' \\ 9.62 \div 106.75 &= 9.55\% \end{aligned}$$

V#1

$$\begin{aligned} (.51 \times 1.98) &= 1.01 \\ (.02 \times 1.98) \div 2 &= .02 \\ \hline 1.03 \\ \times 100.75 & \\ \hline 103.77 \end{aligned}$$

$$\frac{101.75'' - 24''}{77.75''} \text{ LIMIT AREA}$$

34-MS-2211-1  
@ 50'  
FROM LO

→  
FLOW

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-M5-2211-1  
 PREPARED BY: DENNIS P. STRICKLAND DATE: 1-20-96  
 REVIEWED BY: [Signature] 80 / 1/29/96 DATE: 1-24-96

VOLUMETRIC PIPING EXAMINATIONS

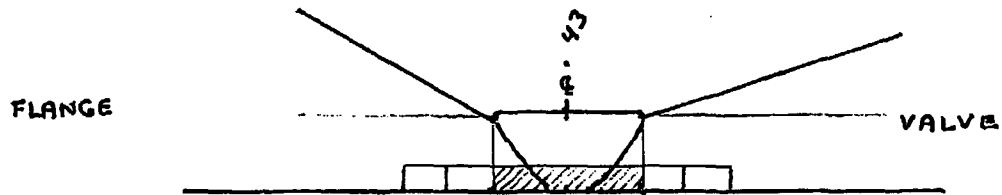
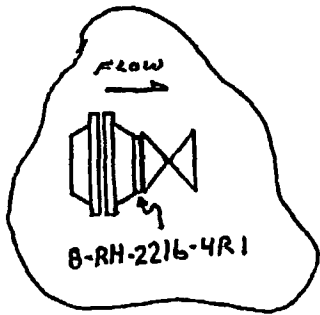
1.0	AXIAL EXAMS (INDICATIONS PARALLEL TO WELD)		
1.1	Compute Exam Volume	(height x width x length) = Vt1	<u>103.77</u>
1.2	Compute Vol. Not Covered Upstream	= A	<u>56.92"</u>
1.3	Compute Upstream Limitation Percentage	(A / Vt1) x 100 = Z1	<u>54.85%</u>
1.4	Compute Vol. Not Covered Downstream	= B	<u>9.62"</u>
1.5	Compute Downstream Limitation Percentage	(B / Vt1) x 100 = Z2	<u>9.55%</u>
2.0	CIRCUMFERENTIAL EXAMS (INDICATIONS PERPENDICULAR TO WELD)		
2.1	Compute Exam Volume	(height x width x length) = Vt2	<u>129.97</u>
2.2	Compute Vol. Not Covered CW	= C	<u>86.45"</u>
2.3	Compute CW Limitation Percentage	(A / Vt2) x 100 = Z3	<u>66.52%</u>
2.4	Compute Vol. Not Covered CCW	= D	<u>86.45"</u>
2.5	Compute CCW Limitation Percentage	(B / Vt2) x 100 = Z4	<u>66.52%</u>
3.0	TOTAL COVERAGE		
3.1	Compute Total Limitation Percentage	(Z1 + Z2 + Z3 + Z4) / 4 = L	<u>49.36%</u>
3.2	Compute Total Coverage	100 - L	<u>50.64%</u>



LIMITATION EXPLANATION / REMARKS:

UPSTREAM SCAN LIMITED DUE TO THE FOLLOWING APE OBSTRUCTIONS:

22 1/2" to 27'6", 79" to 81", 88" to 90" AND 93 3/4" to 7" (14") FOR A

TOTAL OF 24"; RESTRAINT SUPPORT PARTIALLY COVERS WELD 360°.



 = EXAM. VOLUME COVERED  
 = EXAM. VOLUME NOT COVERED

- 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  
*John W. Jenkins* 5/16/96  
 AUTH. NUCLEAR INSERVICE INSP. DATE

*John W. Jenkins*  
 5-16-96

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FORM 2  
(Page 1 of 1)

## VOLUMETRIC PIPING EXAMINATION COVERAGE REPORT

UNIT:	<u>SALEM 2</u>	LTP SUMMARY NO.:	<u>503340</u>
SYSTEM:	<u>RH</u>	LTP COMPONENT ID:	<u>8-RH-2216-4R1</u>
PREPARED BY:	<u>TRAVIS W. LANG</u>	DATE:	<u>5-16-96</u>
REVIEWED BY:	<u>[Signature]</u>	DATE:	<u>5-16-96</u>

**VOLUMETRIC PIPING EXAMINATIONS**

1.0 AXIAL EXAMS (INDICATIONS PARALLEL TO WELD)

1.1	Compute Exam Volume	$(\text{height} \times \text{width} \times \text{length}) = Vt1$	<u>4.611</u>
		$.129 \times 1.300 \times 27.500$	
1.2	Compute Vol. Not Covered Upstream	$= A$	<u>4.611</u>
		$.129 \times 1.300 \times 27.5$	
1.3	Compute Upstream Limitation Percentage	$(A / Vt1) \times 100 = Z1$	<u>100</u>
1.4	Compute Vol. Not Covered Downstream	$= B$	<u>4.611</u>
		$.129 \times 1.300 \times 27.5$	
1.5	Compute Downstream Limitation Percentage	$(B / Vt1) \times 100 = Z2$	<u>100</u>

2.0 CIRCUMFERENTIAL EXAMS (INDICATIONS PERPENDICULAR TO WELD)

2.1	Compute Exam Volume	$(\text{height} \times \text{width} \times \text{length}) = Vt2$	<u>6.385</u>
		$.129 \times 1.8 \times 27.5$	
2.2	Compute Vol. Not Covered CW	$.129 \times 1.0 \times 27.5 = C$	<u>3.548</u>
2.3	Compute CW Limitation Percentage	$(C / Vt2) \times 100 = Z3$	<u>55.568</u>
2.4	Compute Vol. Not Covered CCW	$.129 \times 1.0 \times 27.5 = D$	<u>3.548</u>
2.5	Compute CCW Limitation Percentage	$(D / Vt2) \times 100 = Z4$	<u>55.568</u>

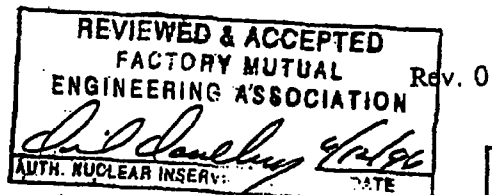
3.0 TOTAL COVERAGE

3.1	Compute Total Limitation Percentage	$(Z1 + Z2 + Z3 + Z4) / 4 = L$	<u>77.784</u>
3.2	Compute Total Coverage	$100 - L$	<u>22.216</u>

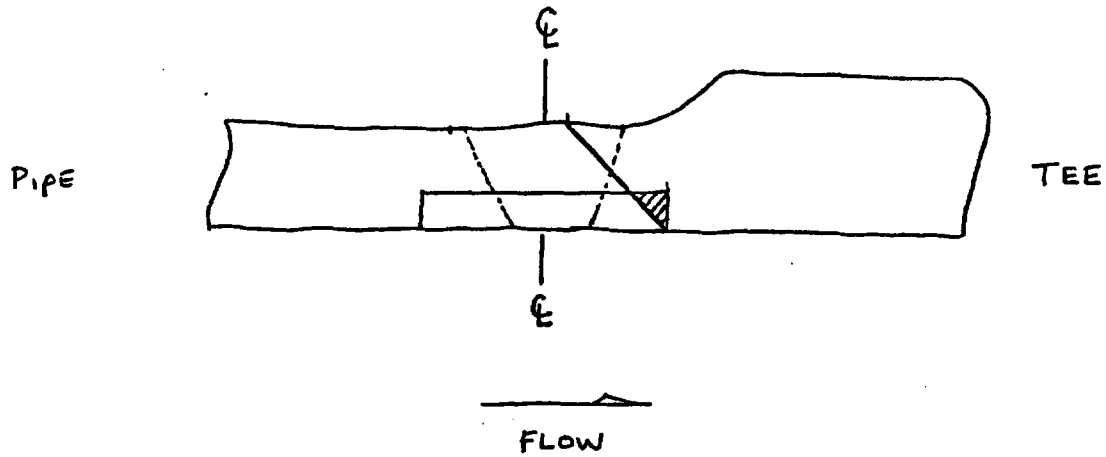
LIMITATION EXPLANATION / REMARKS:

UNABLE TO PROFILE COMPONENT DUE TO FLANGE TO VALVE CONFIGURATION


HEIGHT BASED ON THICKNESS AT WELD CENTERLINE



# UT COVERAGE PLOT



 NOT EXAMINED

 EXAMINED

WELD: 4PR-1200-7

FIGURE #: B9.11.003

Summary: 054400

Nominal Pipe OD: 4.0"

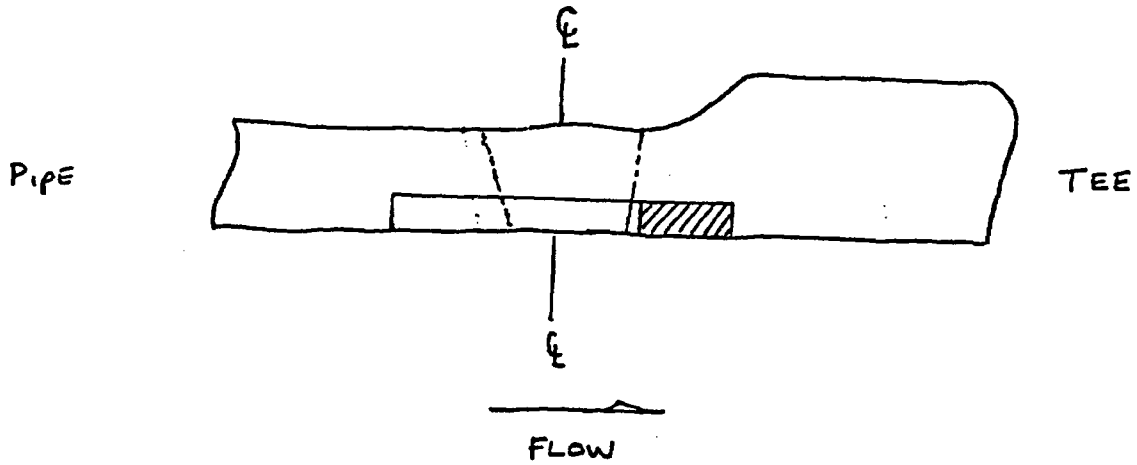
Beam Direction: AXIAL

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

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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) =  $Vt_1$       $0.177" \times 1.4" \times 11.9" = 2.95 \text{ cu. in.}$
- 1.2 Compute Volume Not Examined on Upstream Side of Weld = A      $2.95 \text{ in.}^3$  (Beam Direction-US)
- 1.3 Compute Upstream Limitation Percentage  $(A + Vt_1) \times 100 = Z1$      100 % (Beam Direction-US)
- 1.4 Compute Volume Not Examined on Downstream Side of Weld = B      $0.177" \times 0.16" \times 11.9" = 0.34 \text{ in.}^3$
- 1.5 Compute Downstream Limitation Percentage  $(B + Vt_1) \times 100 = Z2$       $0.34 \text{ in.}^3 + 2.95 \text{ in.}^3 \times 100 = 11.5 \%$   
(Beam Direction-DS)

##### 2.0 CIRCUMFERENTIAL ULTRASONIC EXAMINATIONS (Indications Perpendicular to the Weld)

- 2.1 Compute Examination Volume (Height x Width x Length) =  $Vt_2$       $0.177" \times 1.9" \times 11.9" = 4.00 \text{ cu in.}$
- 2.2 Compute Volume Not Examined in the Clock Wise Direction = C      $0.177" \times 0.50" \times 11.9" = 1.05 \text{ in.}^3$
- 2.3 Compute Clock Wise Limitation Percentage  $(C + Vt_2) \times 100 = Z3$       $1.05 \text{ in.}^3 + 4.00 \text{ in.}^3 \times 100 = 26.3 \%$
- 2.4 Compute Volume Not Examined in the Counter CW Direction = D      $0.177" \times 0.50" \times 11.9" = 1.05 \text{ in.}^3$
- 2.5 Compute Counter CW Limitation Percentage  $(D + Vt_2) \times 100 = Z4$       $1.05 \text{ in.}^3 + 4.00 \text{ in.}^3 \times 100 = 26.3 \%$

##### 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: <i>D. J. Langsfeld</i>	DATE: <i>05/17/99</i>	REVIEWER: <i>[Signature]</i>	DATE: <i>5/20/99</i>
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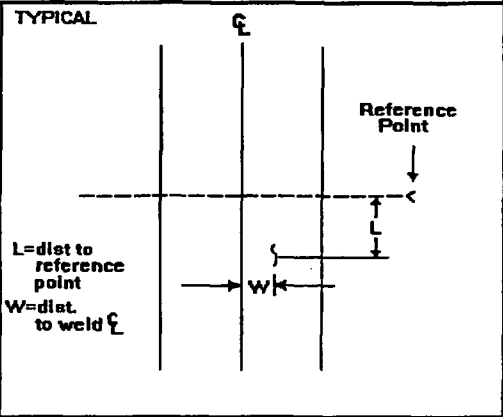


## LIQUID PENETRANT EXAMINATION

Customer: <b>SALEM UNIT-2, 10 RFO</b>	Exam Date: <b>04/29/99</b>	Figure No.: <b>B10.10.001</b>
System/Component I.D.: <b>4-PS-1231-11PS-1 Thru 4 (Sum. #061700)</b>		Nominal Thickness: <b>N/A</b>
Component Description: <b>Pipe Support Weld</b>		
Stage of Fabrication (End Prep, Repair, Root, In Process, Final): <b>FINAL</b>		ISO/Drawing No: <b>RC-2-3, A-26</b>
Surface (ISI Prep, As Welded, Ground, Other): <b>ISI PREP</b>		Procedure No./Rev.: <b>54-ISI-240, Rev. 36</b>
Temperature (F): <b>79</b>		
M&TE No. (Thermometer): <b>DB# 15361</b>	Calibration Due Date: <b>07/19/1999</b>	Acceptance Std (ASME/ANSI, etc): <b>ASME 1986, SECTION XI</b>
M&TE No. (Black Light Meter): <b>N/A</b>	Calibration Due Date: <b>N/A</b>	Measure Intensity uW/CM <sup>2</sup> : <b>N/A</b>

Penetrant Material Cleaner: **98A11K** Penetrant: **95L03K** Developer: **98L03K**  
 Batch or Lot Numbers

INDICATION LOCATION					
IND #	Ref Point Location	Size	Location L W	Status A / U	Orientation to Weld
NRI					



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: <b>P. L. Cave</b> Level: <b>II</b> Date: <b>04/29/99</b> Sign: <i>Peter L. Cave</i>	Examiner: <b>N/A</b> Level: <b>N/A</b> Date: _____ Sign: <b>FACTORY MUTUAL Insurance Association</b>
Reviewed: <b>D.J. Langenfeld</b> Level: <b>II</b> Date: <b>4-30-99</b> Sign: <i>D.J. Langenfeld</i>	ANII Review: <b>James J. Lang</b> Date: <b>5-12-99</b> Sign: <i>James J. Lang</i>
Customer: <b>WAYNE DENLINGER</b> Date: <b>5-12-99</b> Sign: <i>Wayne Denlinger</i>	NCR No.: <b>N/A</b>

SH.RA-IS.ZZ-0145-1  
(Page 1 of 1)

SURFACE EXAMINATION COVERAGE REPORT

UNIT:	<u>2</u>	LTP SUMMARY NO.:	<u>061700</u>
SYSTEM:	<u>Pressurized Spray</u>	LTP COMPONENT ID:	<u>4-PS-1231-11B</u>
PREPARED BY:	<u>Peter Caine</u>	DATE:	<u>(6-4) 4-29-99</u>
REVIEWED BY:	<u>Denny J. Langenfeld</u>	DATE:	<u>4-30-99</u>

SURFACE EXAMINATIONS

1.0 CALCULATE REQUIRED EXAM AREA

Exam length	X	Exam Width	=	Exam Area
<u>= 13"</u>		<u>1/4"</u>		<u>= 3.25</u>

2.0 CALCULATE AREA NOT EXAMINED

2.1	Length of obstructed area		Width of obstructed area		Area with NO exam coverage
A.	<u>= 6.5"</u>	X	<u>1/4"</u>	=	<u>= 1.63"</u>
B.	<u>N/A</u>	X	<u>N/A</u>	=	<u>N/A</u>
C.	<u>N/A</u>	X	<u>N/A</u>	=	<u>N/A</u>
D.	<u>N/A</u>	X	<u>N/A</u>	=	<u>N/A</u>

3.0 CALCULATE PERCENT AREA NOT EXAMINED

Percent Area NOT Examined	=	Total Area w/No Coverage	/	Exam Area	X	100
	=	<u>= 1.63"</u>	/	<u>= 3.25</u>	X	100
	=	<u>50%</u>				

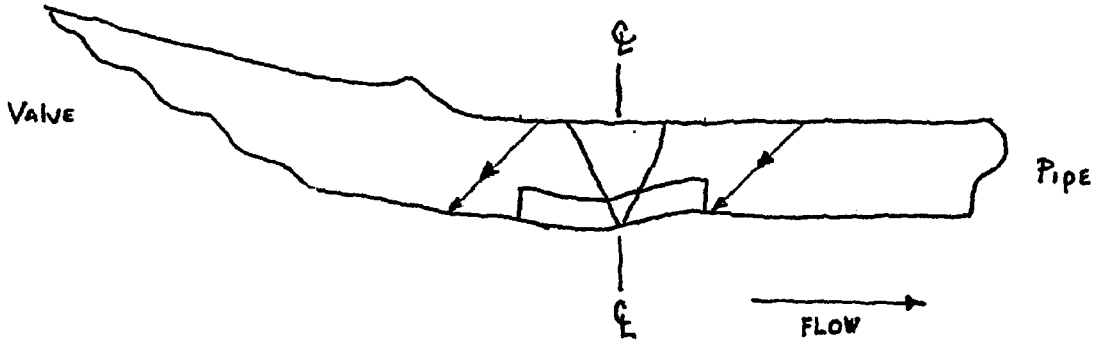
4.0 CALCULATE PERCENT OF TOTAL AREA EXAMINED

100%	-	50%	Percent Area NOT Examined	=	Examination Coverage
100%	-	50%	<u>= 50%</u>	=	<u>= 50%</u>

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"

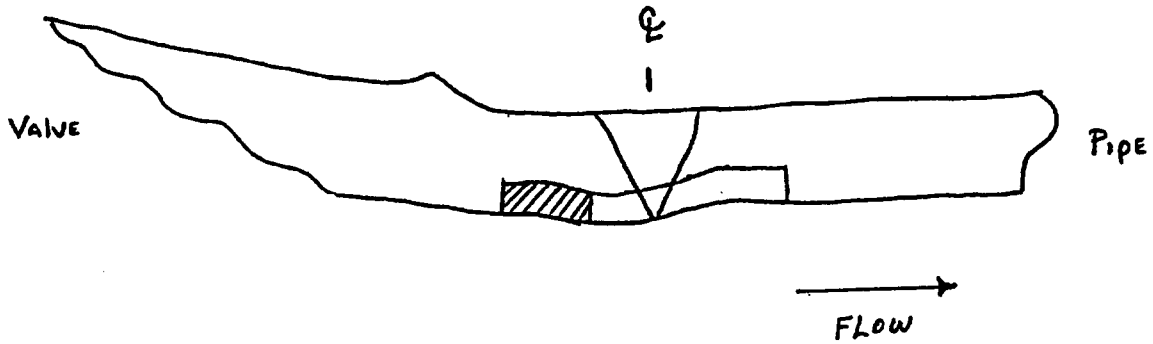
BEAM DIRECTION: AXIAL

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

<b>CUSTOMER:</b> PSE&G SALEM UNIT-2, 10 RFO	<b>SYSTEM:</b> REACTOR COOLANT SYSTEM, PRESSURIZER SPRAY
<b>SUMMARY NO.:</b> 063000	<b>COMPONENT ID:</b> 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  $(A + Vt_1) \times 100 = Z1$      0.00% (Beam Direction-US)
- 1.4 Compute Volume Not Examined on Downstream Side of Weld = B     2.32 in.<sup>3</sup> (Beam Direction-DS)
- 1.5 Compute Downstream Limitation Percentage  $(B + Vt_1) \times 100 = Z2$      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.<sup>3</sup>
- 2.3 Compute Clock Wise Limitation Percentage  $(C + Vt_2) \times 100 = Z3$      1.1 in.<sup>3</sup> + 3.37 in.<sup>3</sup> 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.<sup>3</sup>
- 2.5 Compute Counter CW Limitation Percentage  $(D + Vt_2) \times 100 = Z4$      1.1 in.<sup>3</sup> + 3.37 in.<sup>3</sup> 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.

<b>PREPARED BY:</b> <i>D. J. Langenfeld</i>	<b>DATE:</b> <i>05/17/99</i>	<b>REVIEWER:</b> <i>[Signature]</i>	<b>DATE:</b> <i>5/20/99</i>
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Supplemental Drawing

Summary # 063000

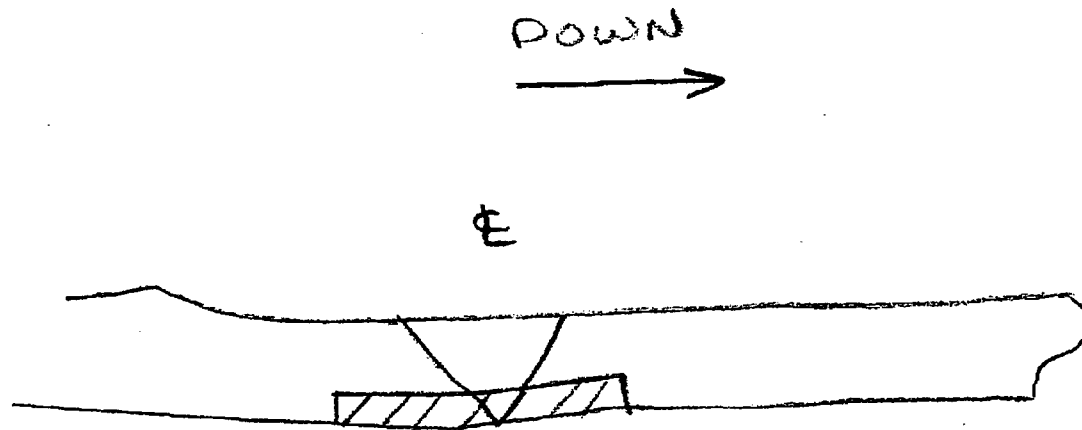
Component I.D. Valve to Pipe

Description 4PS-1231-20

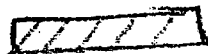
Page of

Comments The ultrasonic examination was limited to 59% of the code required coverage being limited due to upstream side valve OD configuration that restricted scanning.

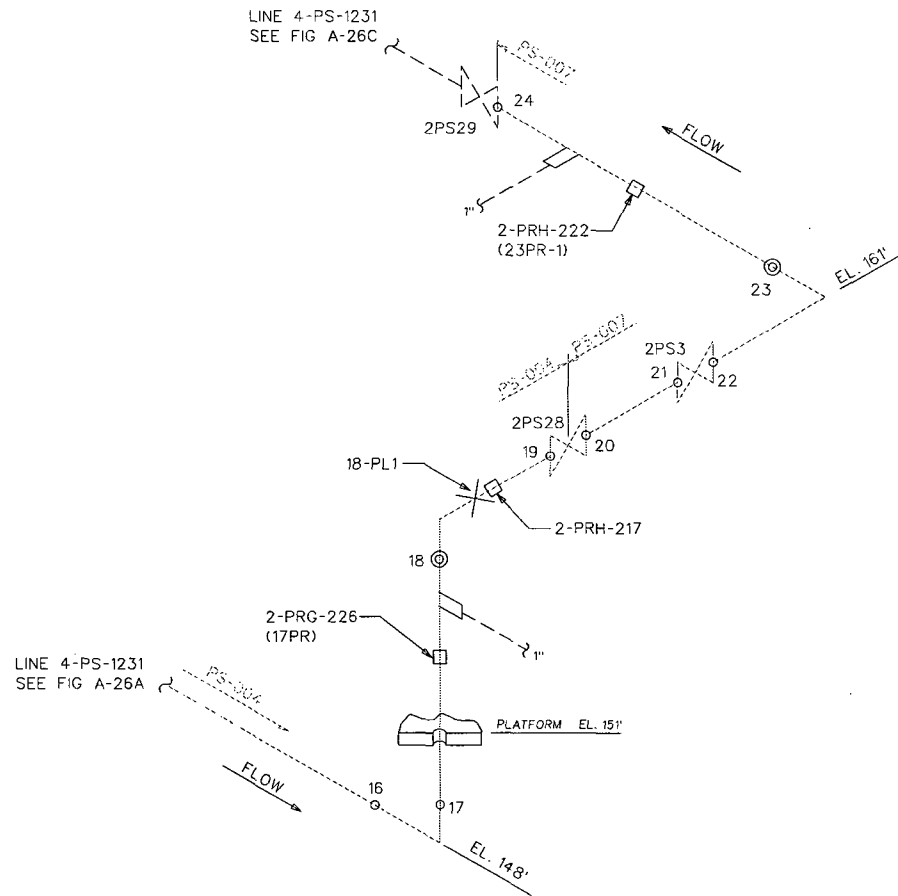
Sketch



EXAM LIMITED  
IN THE DOWN  
DIRECTION







BUILDING: CONTAINMENT	LOCATION: PZR BLOCKHOUSE	ELEVATIONS: 148' - 161'
--------------------------	-----------------------------	----------------------------

PSEG ISO RC23-06  
P & ID 205301

ATTENTION: ANY REVISION TO THIS DRAWING SHALL BE MADE ONLY BY CAED		
1		REVISED PER ORDER No. 80038023.
REV.	DATE	DESCRIPTION

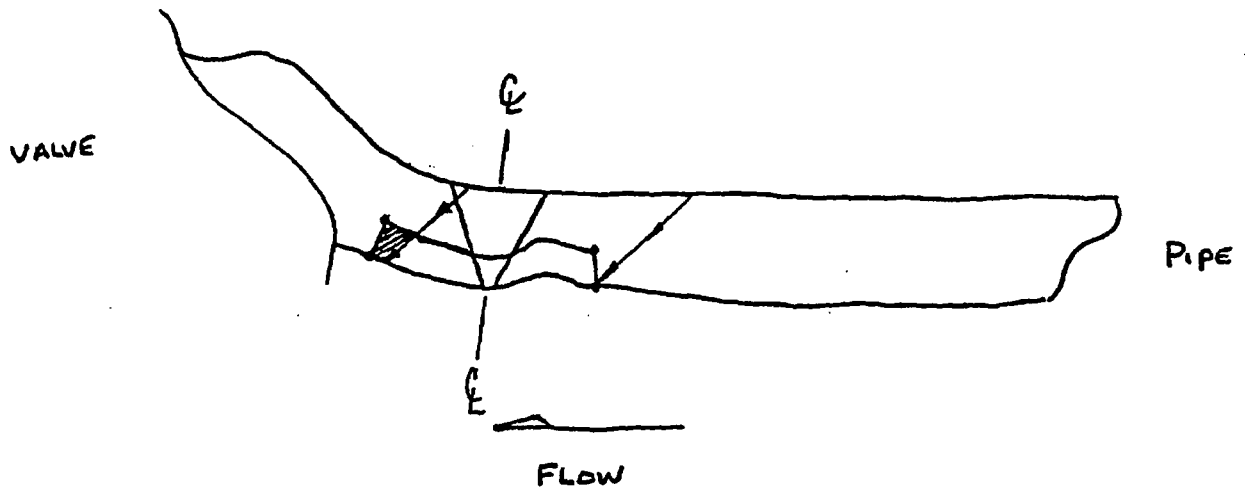
PSEG Nuclear, LLC  
SALEM NUCLEAR GENERATING STATION  
UNIT 2 - WELD / HANGER IDENTIFICATION FIGURE  
INSERVICE INSPECTION DRAWING

FIGURE: A-26B	REVISION: 1
SYSTEM: REACTOR COOLANT SYSTEM PRESSURIZER SPRAY	
LINE: 4-PS-1231	
THIRD 10 YEAR INSPECTION INTERVAL	

LV 1 = COMMON INFORMATION  
LV 2 = WELD INFORMATION  
LV 3 = HANGER INFORMATION

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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"

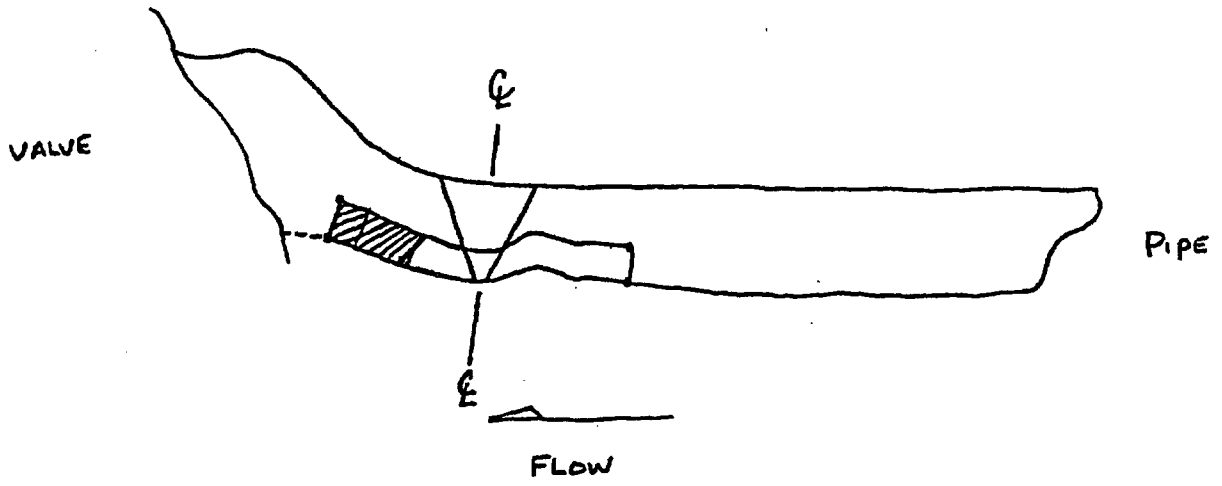
BEAM DIRECTION: AXIAL

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

<b>CUSTOMER:</b> PSE&G SALEM UNIT-2, 10 RFO	<b>SYSTEM:</b> REACTOR COOLANT SYSTEM, PRESSURIZER SPRAY
<b>SUMMARY NO.:</b> 063100	<b>COMPONENT ID:</b> 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) =  $Vt_1$       $0.177" \times 1.0" \times 11.9" = 2.10 \text{ cu. in.}$
- 1.2 Compute Volume Not Examined on Upstream Side of Weld = A      $2.10 \text{ in.}^3$  (Beam Direction-US)
- 1.3 Compute Upstream Limitation Percentage  $(A + Vt_1) \times 100 = Z1$      100 % (Beam Direction-US)
- 1.4 Compute Volume Not Examined on Downstream Side of Weld = B      $0.177" \times 0.176" \times 11.9" = 0.37 \text{ in.}^3$
- 1.5 Compute Downstream Limitation Percentage  $(B + Vt_1) \times 100 = Z2$       $0.37 \text{ in.}^3 + 2.10 \text{ in.}^3 \times 100 = 17.6 \%$   
(Beam Direction-DS)

##### 2.0 CIRCUMFERENTIAL ULTRASONIC EXAMINATIONS (Indications Perpendicular to the Weld)

- 2.1 Compute Examination Volume (Height x Width x Length) =  $Vt_2$       $0.177" \times 1.5" \times 11.9" = 3.15 \text{ cu. in.}$
- 2.2 Compute Volume Not Examined in the Clock Wise Direction = C      $0.177" \times 0.47" \times 11.9" = 1.0 \text{ in.}^3$
- 2.3 Compute Clock Wise Limitation Percentage  $(C + Vt_2) \times 100 = Z3$       $1.0 \text{ in.}^3 + 3.15 \text{ in.}^3 \times 100 = 31.7 \%$
- 2.4 Compute Volume Not Examined in the Counter CW Direction = D      $0.177" \times 0.47" \times 11.9" = 1.0 \text{ in.}^3$
- 2.5 Compute Counter CW Limitation Percentage  $(D + Vt_2) \times 100 = Z4$       $1.0 \text{ in.}^3 + 3.15 \text{ in.}^3 \times 100 = 31.7 \%$

##### 3.0 TOTAL EXAMINATION COVERAGE OBTAINED

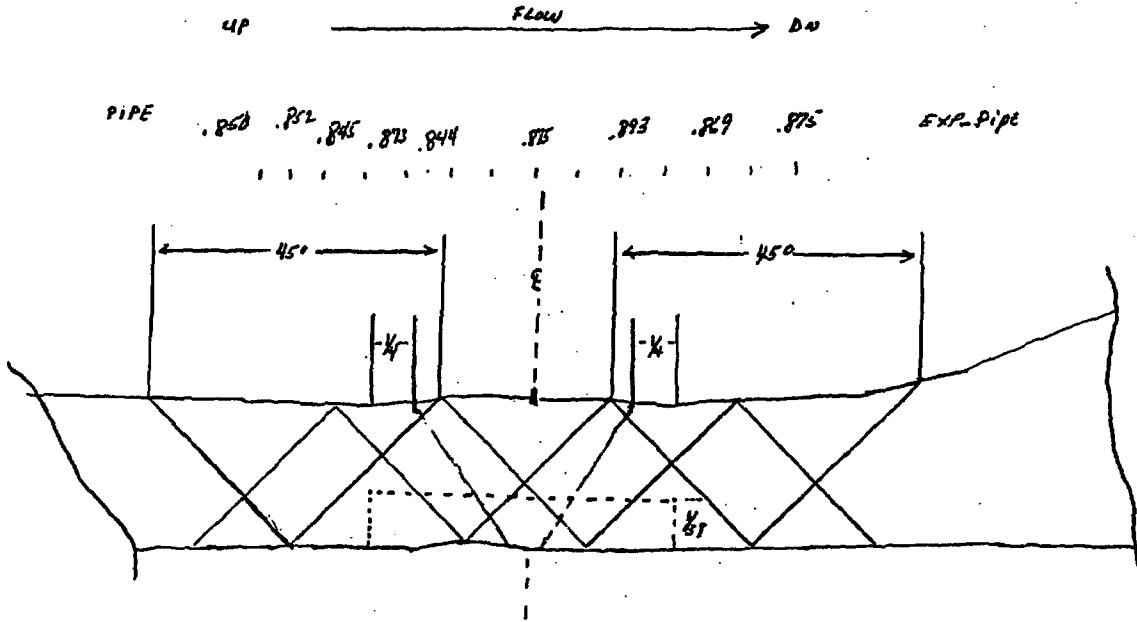
- 3.1 Compute Total Limitation Percentage  $(Z1 + Z2 + Z3 + Z4) / 4 = L$      45.3 %
- 3.2 Compute Total Coverage      $100 - L$      54.7 %

#### LIMITATION EXPLANATION/REMARKS

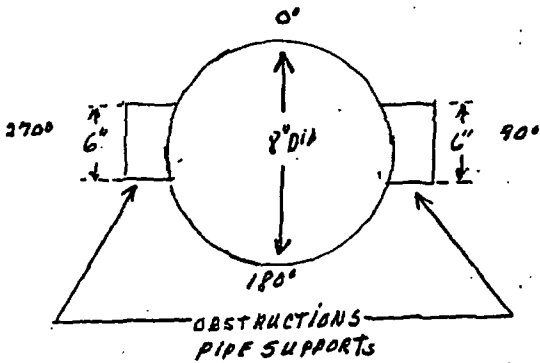
Limitation exists on the Valve side of the weld for the circumferential and axial examinations. See the attached UT Coverage Plot. The 45 degree refracted longitudinal wave transducer was scanned over the required volume from the pipe side of the weld only (one-sided examination), in order to achieve 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.

<b>PREPARED BY:</b> <i>D.J. Langerfeld</i>	<b>DATE:</b> <i>05/17/99</i>	<b>REVIEWER:</b> <i>[Signature]</i>	<b>DATE:</b> <i>5/20/99</i>
---	---------------------------------	--	--------------------------------

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 # 16P200  
SALEM UNIT 2, 10 RED  
45° REFRACTED SHEAR  
ID, OD, ID  
45° REFRACTED LONGITUDINAL  
HALF VEE.  
BEAM DIRECTION: AXIAL  
FIGURE No.: B9.11.020

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### 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) =  $V_{t1}$  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  $(A + V_{t1}) \times 100 = Z1$  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  $(B + V_{t1}) \times 100 = Z2$  7.02 in.<sup>3</sup> + 12.50 in.<sup>3</sup> x 100 = 56.0%

##### 2.0 CIRCUMFERENTIAL ULTRASONIC EXAMINATIONS (Indications Perpendicular to the Weld)

- 2.1 Compute Examination Volume (Height x Width x Length) =  $V_{t2}$  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  $(C + V_{t2}) \times 100 = Z3$  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  $(D + V_{t2}) \times 100 = Z4$  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 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.

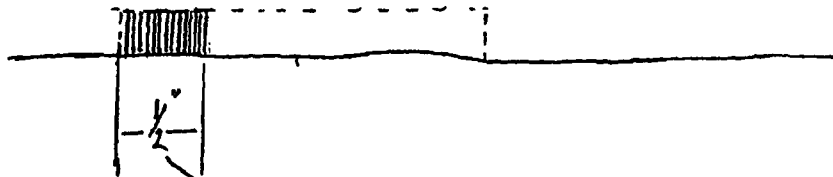
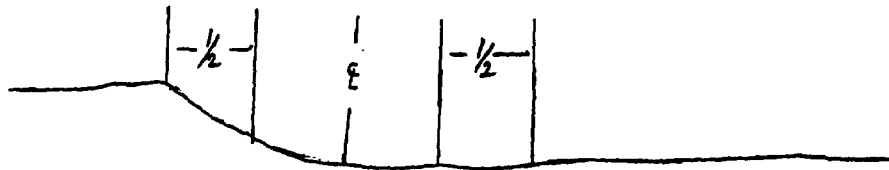
PREPARED BY: *Danny J. Langsfell* DATE: *5-19-99*

REVIEWER: *John T. ...* DATE: *5-19-99*

FACTORY MUTUAL  
ENGINEERING ASSOCIATION  
*Coordinating 6/14/99*

LT COVERAGE Plot  
CIR SCAN

VALVE ← FLOW → ELBOW



AREA OF OBSTRUCTION  
CIR SCAN  
.5X.26"



AREA NOT EXAMINED

WELD: 6-SJ-1242-2  
SUMMARY # 170250  
6-SJ-1242-2  
SALEM UNIT 2  
FIGURE NO.: B9.11.023  
DAVID G. GARDNER  
4-27-99

REVIEWED & ACCEPTED	
FACTORY MUTUAL	
ENGINEERING ASSOCIATION	
<i>David Gardner</i>	5-28-99
DATE	DATE

PAGE 6 OF 8

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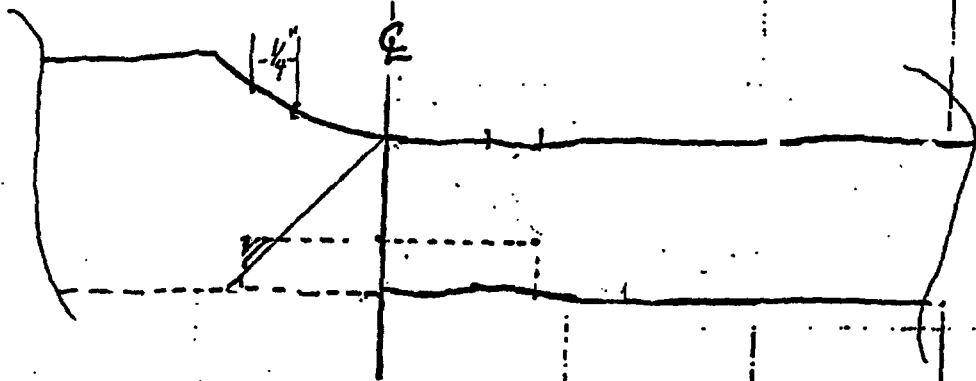
UT COVERAGE PLOT

6-SJ-1242-2

VALVE

FLOW  
←  
45, 45 RL

Elbow



▨ AREA NOT EXAMINED

SUMMARY # 170850

6-SJ-1242-2

NOMINAL PIPE O.D. 6"

FIGURE NO.: B9.11.023

DAVID GARCIA LEVEL II  
4-27-99

REVIEWED & ACCEPTED  
FACTORY MUTUAL  
ENGINEERING ASSOCIATION.  
*[Signature]* 5-28-99  
AUT. NUCLEAR SERVICE 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) =  $Vt_1$        $0.255" \times 1.66" \times 17.6" = 7.45 \text{ cu. in.}$
- 1.2 Compute Volume Not Examined on Upstream Side of Weld = A       $0.255" \times 1.66" \times 17.6" = 7.45 \text{ cu. in.}$
- 1.3 Compute Upstream Limitation Percentage  $(A + Vt_1) \times 100 = Z1$       100 % (Beam Direction-US)
- 1.4 Compute Volume Not Examined on Downstream Side of Weld = B       $0.015 \text{ in.}^3 \times 17.6" = 0.264 \text{ cu. in.}$
- 1.5 Compute Downstream Limitation Percentage  $(B + Vt_1) \times 100 = Z2$        $0.264 \text{ in.}^3 + 7.45 \text{ in.}^3 \times 100 = 3.54\%$   
(Beam Direction-DS)

##### 2.0 CIRCUMFERENTIAL ULTRASONIC EXAMINATIONS (Indications Perpendicular to the Weld)

- 2.1 Compute Examination Volume (Height x Width x Length) =  $Vt_2$        $0.255" \times 2.10" \times 17.6" = 9.24 \text{ cu. in.}$
- 2.2 Compute Volume Not Examined in the Clock Wise Direction = C       $0.255" \times 0.50" \times 17.6" = 2.24 \text{ cu. in.}$
- 2.3 Compute Clock Wise Limitation Percentage  $(C + Vt_2) \times 100 = Z3$        $2.24 \text{ in.}^3 + 9.24 \text{ in.}^3 \times 100 = 24.3\%$
- 2.4 Compute Volume Not Examined in the Counter CW Direction = D       $0.255" \times 0.50" \times 17.6" = 2.24 \text{ cu. in.}$
- 2.5 Compute Counter CW Limitation Percentage  $(D + Vt_2) \times 100 = Z4$        $2.24 \text{ in.}^3 + 9.24 \text{ in.}^3 \times 100 = 24.3\%$

##### 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:

*David Hone*

DATE:

5-19-99

REVIEWER:

*D.J. Langerfeld*

DATE:

05-19-99

*Dallas King 5-28-99*

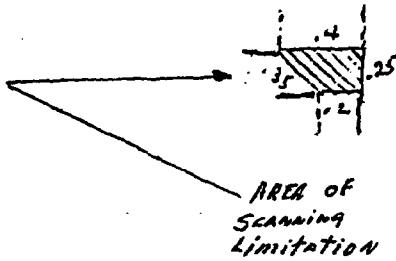
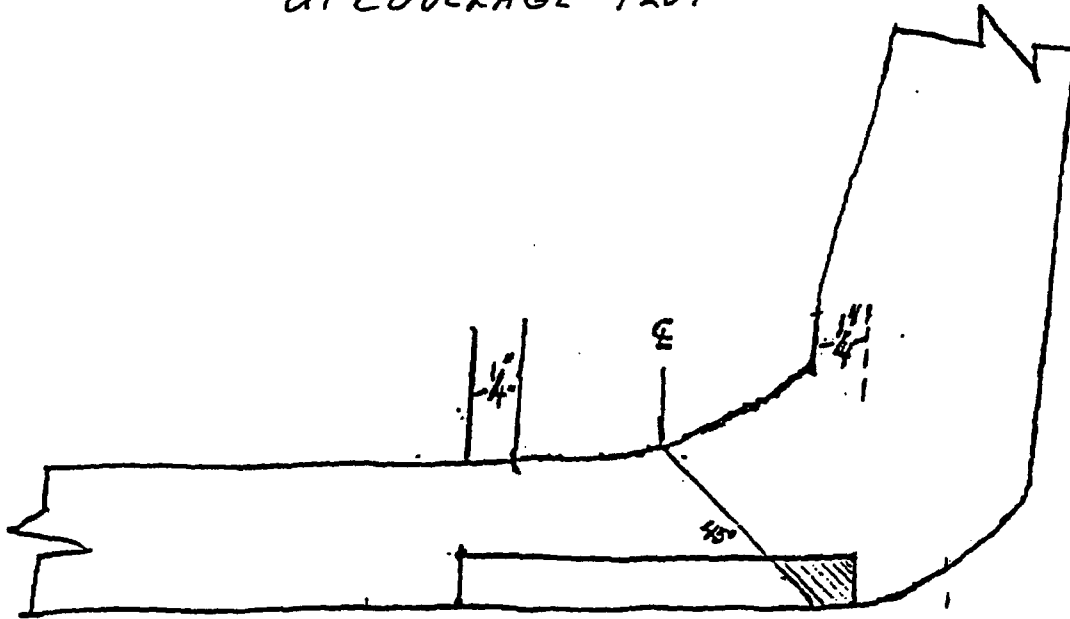
FACTORY MUTUAL  
ENGINEERING ASSOCIATION

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PIPE  $\xrightarrow{\text{FLOW}}$  TEE

### UT COVERAGE PLOT

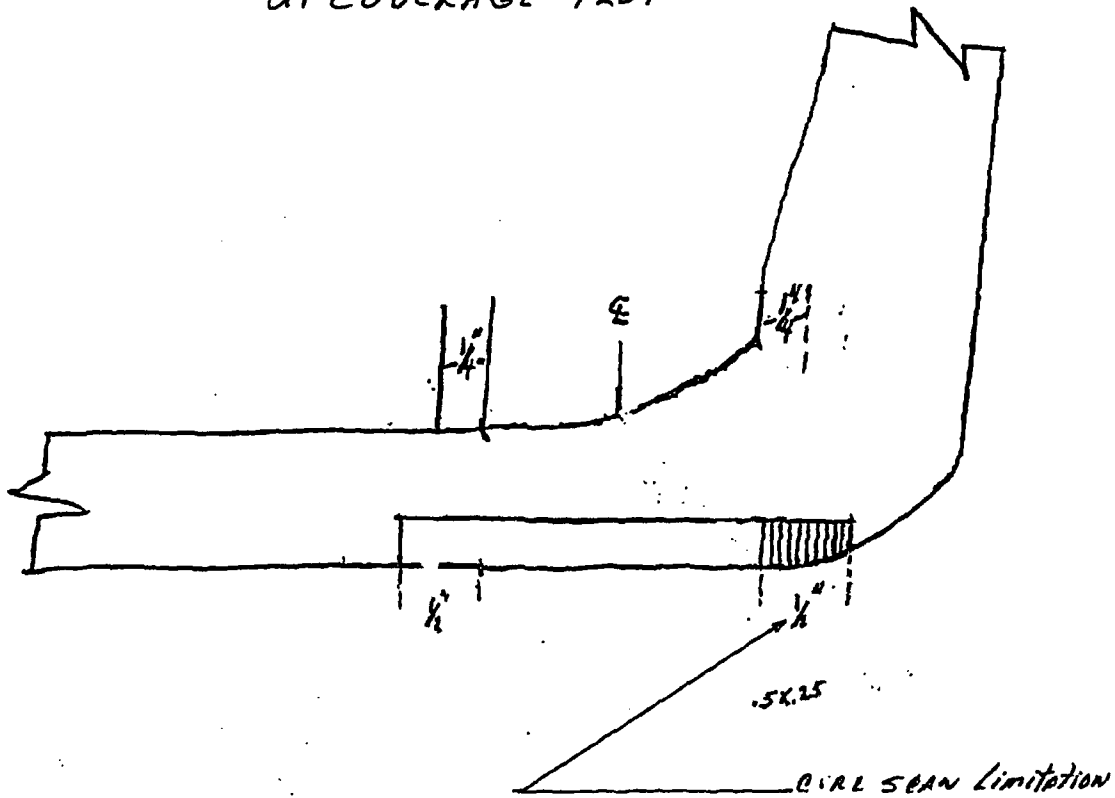


WELD NO. 6-SJ-1232-12  
SALEM UNIT 2  
SUMMARY # 173300  
FIGURE No.: B9.011.026  
NOMINAL PIPE OD: 6.0"  
BEAM DIRECTION: AXIAL  
45° RL & RS

PAGE 6 OF 8

PIPE  $\xrightarrow{\text{FLOW}}$  TEE

### UT COVERAGE PLOT



WELD NO. 6-SJ-1232-12  
SALEM UNIT 2  
SUMMARY # 173300  
FIGURE No.: B9.11.026  
NOMINAL PIPE OD: 6.0"  
BEAM DIRECTION: CIRC

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**FRAMATOME  
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**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) =  $V_{t1}$   $0.255" \times 2.20 \times 17.6" = 9.87 \text{ cu. in.}$
- 1.2 Compute Volume Not Examined on Upstream Side of Weld = A  $0.255" \times 2.20" \times 17.6" = 9.87 \text{ cu. in.}$
- 1.3 Compute Upstream Limitation Percentage  $(A + V_{t1}) \times 100 = Z1$  100 % (Beam Direction-US)
- 1.4 Compute Volume Not Examined on Downstream Side of Weld = B  $0.068 \text{ in.}^2 \times 17.6" = 1.20 \text{ cu. in.}$
- 1.5 Compute Downstream Limitation Percentage  $(B + V_{t1}) \times 100 = Z2$   $1.20 \text{ in.}^3 + 9.87 \text{ in.}^3 \times 100 = 12.2\%$   
(Beam Direction-DS)

**2.0 CIRCUMFERENTIAL ULTRASONIC EXAMINATIONS (Indications Perpendicular to the Weld)**

- 2.1 Compute Examination Volume (Height x Width x Length) =  $V_{t2}$   $0.255" \times 2.70 \times 17.6" = 12.11 \text{ cu. in.}$
- 2.2 Compute Volume Not Examined in the Clock Wise Direction = C  $0.255" \times 0.50" \times 17.6" = 2.24 \text{ cu. in.}$
- 2.3 Compute Clock Wise Limitation Percentage  $(C + V_{t2}) \times 100 = Z3$   $2.24 \text{ in.}^3 + 9.87 \text{ in.}^3 \times 100 = 22.74\%$
- 2.4 Compute Volume Not Examined in the Counter CW Direction = D  $0.255" \times 0.50" \times 17.6" = 2.24 \text{ cu. in.}$
- 2.5 Compute Counter CW Limitation Percentage  $(D + V_{t2}) \times 100 = Z4$   $2.24 \text{ in.}^3 + 9.87 \text{ in.}^3 \times 100 = 22.74\%$

**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.

142

PREPARED BY: *David Danna*

DATE: 5-21-99

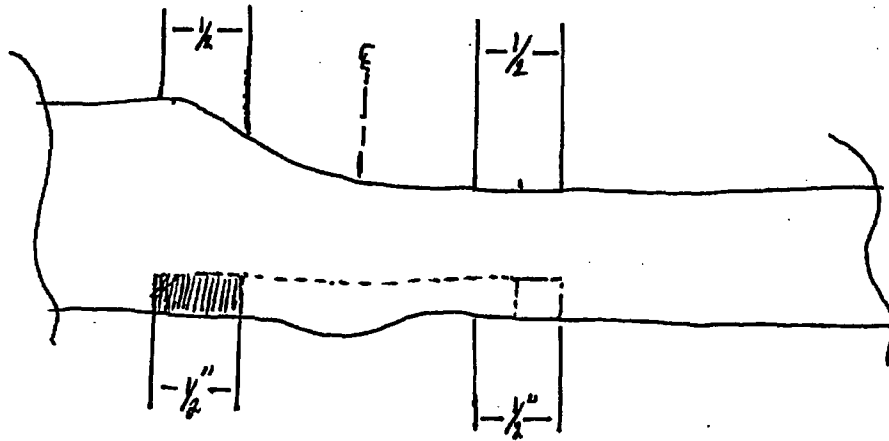
REVIEWER: *D.P. Longfellow*

DATE: 05-21-99

LIT COVERAGE PLOT.

CIRC SCAN

VALVE  $\xrightarrow{\text{FLOW}}$  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) =  $V_{t1}$       $0.255" \times 1.80 \times 17.6" = 8.07 \text{ cu. in.}$
- 1.2 Compute Volume Not Examined on Upstream Side of Weld = A      $0.05 \text{ in.}^3 \times 17.6" = 0.88 \text{ cu. in.}$
- 1.3 Compute Upstream Limitation Percentage  $(A + V_{t1}) \times 100 = Z1$       $0.88 \text{ in.}^3 + 8.07 \text{ in.}^3 \times 100 = 10.9\%$
- 1.4 Compute Volume Not Examined on Downstream Side of Weld = B      $0.255" \times 1.80 \times 17.6" = 8.07 \text{ cu. in.}$
- 1.5 Compute Downstream Limitation Percentage  $(B + V_{t1}) \times 100 = Z2$      100 % (Beam Direction-DS)

##### 2.0 CIRCUMFERENTIAL ULTRASONIC EXAMINATIONS (Indications Perpendicular to the Weld)

- 2.1 Compute Examination Volume (Height x Width x Length) =  $V_{t2}$       $0.255" \times 2.30 \times 17.6" = 10.32 \text{ cu. in.}$
- 2.2 Compute Volume Not Examined in the Clock Wise Direction = C      $0.255" \times 0.50" \times 17.6" = 2.24 \text{ cu. in.}$
- 2.3 Compute Clock Wise Limitation Percentage  $(C + V_{t2}) \times 100 = Z3$       $2.24 \text{ in.}^3 + 10.32 \text{ in.}^3 \times 100 = 21.7\%$
- 2.4 Compute Volume Not Examined in the Counter CW Direction = D      $0.255" \times 0.50" \times 17.6" = 2.24 \text{ cu. in.}$
- 2.5 Compute Counter CW Limitation Percentage  $(D + V_{t2}) \times 100 = Z4$       $2.24 \text{ in.}^3 + 10.32 \text{ in.}^3 \times 100 = 21.7\%$

##### 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.

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PREPARED BY: *David Bonia*

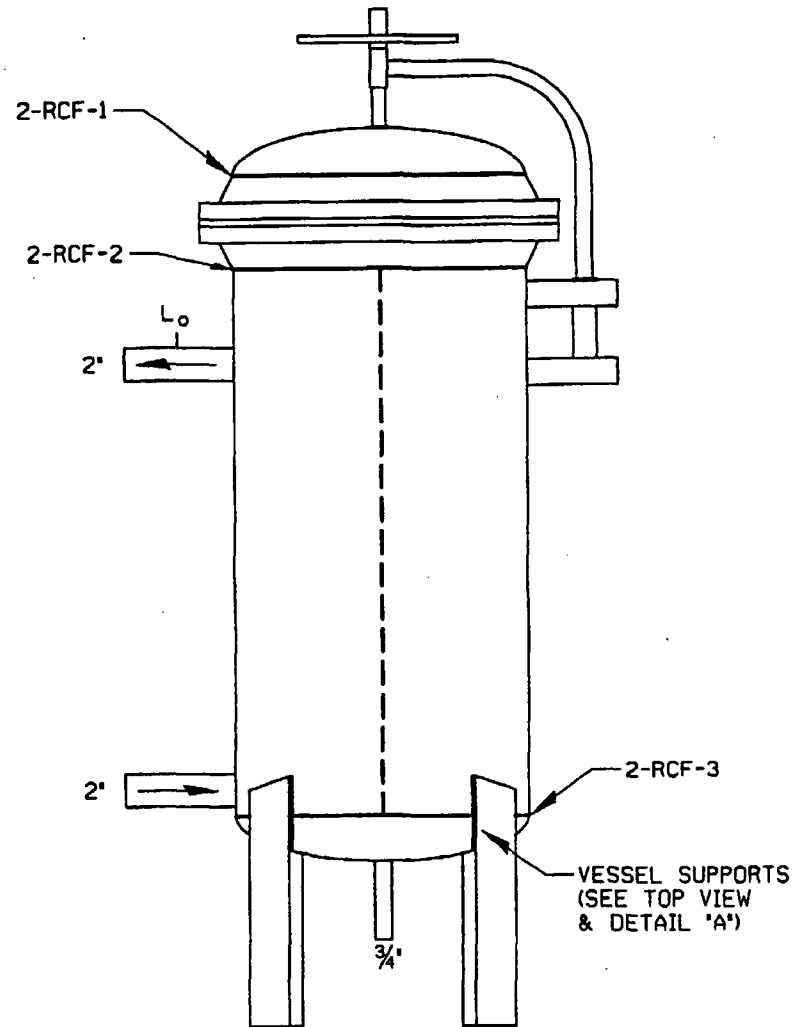
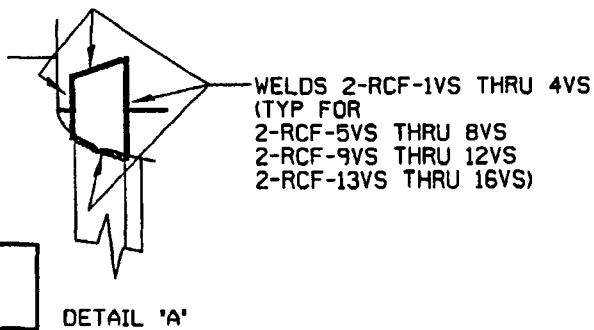
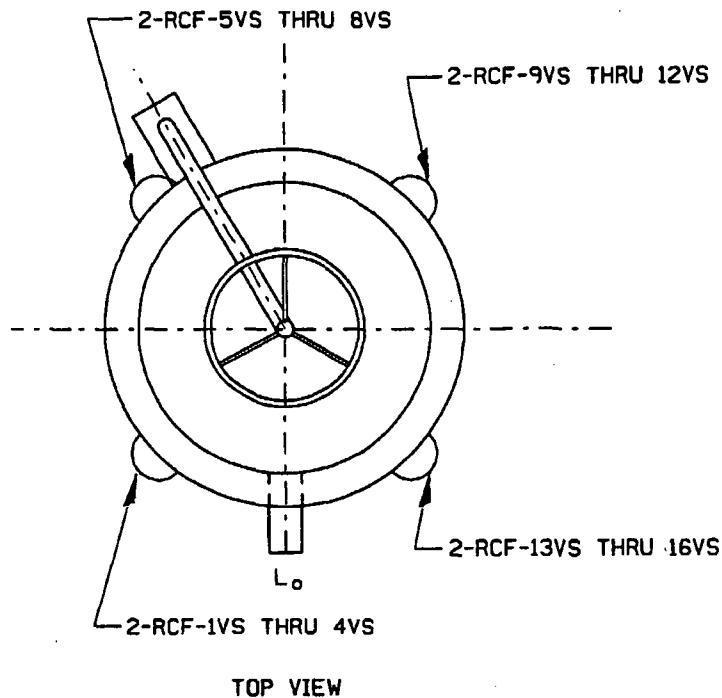
DATE: 5-14-99

REVIEWER: *D.J. Langefeld*

DATE: 05/19/99

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

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:	<u>2, 10 RFO</u>	LTP SUMMARY NO.:	<u>275230</u>
SYSTEM:	<u>2-RCF-1</u>	LTP COMPONENT ID:	<u>2-RCF-1</u>
PREPARED BY:	<u>[Signature]</u>	DATE:	<u>3-30-99</u>
REVIEWED BY:	<u>Danny J. Langford</u>	DATE:	<u>4-9-99</u>

1.0 ~~CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT BEAM PLANAR FLAWS~~ N/A

Exam height	X	Exam width	X	Exam length	=	Exam Volume
<u>N/A</u>	X	<u>N/A</u>	X	<u>N/A</u>	=	<u>N/A</u>

2.0 ~~CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT LAMINAR PLANAR FLAWS~~

Exam height	X	Exam width	X	Exam length	=	Exam Volume
<u>N/A</u>	X	<u>N/A</u>	X	<u>N/A</u>	=	<u>N/A</u>

3.0 ~~CALCULATE REQUIRED PARALLEL EXAM VOLUME FOR 45° AND 65°~~ 70°

Exam height	X	Exam width	X	Exam length	=	Exam Volume
<u>0.25"</u>	X	<u>1.40"</u>	X	<u>43.9"</u>	=	<u>15.36 CU. INCHES</u>

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

Exam height	X	Exam width	X	Exam length	=	Exam Volume
<u>0.25"</u>	X	<u>1.40"</u>	X	<u>43.9"</u>	=	<u>15.36</u>

5.0 ~~CALCULATE STRAIGHT BEAM PLANAR EXAM COVERAGE~~ N/A

5.1 ~~LIMITED ABOVE/CW EXAM VOLUME~~ N/A

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~~ N/A

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

<del>5.3 PERCENT VOLUME EXAMINED</del>		<i>N/A</i>		<i>Sum. 275230</i>	
Percent Volume Examined	= 100	-	Total 0° vol w/No coverage	/	Total 0° Exam Vol X 100
	= 100	-	{ [ ]	/	[ ] X 100
	=				<u><i>N/A</i></u> %
<del>6.0 CALCULATE STRAIGHT BEAM LAMINAR EXAM COVERAGE</del>					
<del>6.1 LIMITED ABOVE/CW EXAM VOLUME</del>					
Height of obstructed volume	X	Width of obstructed area	X	Length of obstructed area	= Volume with NO exam coverage
<del>6.2 LIMITED BELOW/CW EXAM VOLUME</del>					
Height of obstructed volume	X	Width of obstructed area	X	Length of obstructed area	= Volume with NO exam coverage
Total straight beam laminar exam volume not examined =					
<del>6.3 PERCENT VOLUME EXAMINED</del>					
Percent Volume Examined	= 100	-	Total 0° vol w/No coverage	/	Total 0° Exam Vol X 100
	= 100	-	{ [ ]	/	[ ] X 100
	=				<u><i>N/A</i></u> %
7.0 CALCULATE PARALLEL 45° EXAM COVERAGE					
7.1 LIMITED ABOVE/CW EXAM VOLUME					
Height of obstructed volume	X	Width of obstructed area	X	Length of obstructed area	= Above/CW exam volume with NO exam coverage
<i>N/A</i>		<i>N/A</i>		<i>N/A</i>	<i>N/A</i>
7.2 LIMITED BELOW/CCW EXAM VOLUME					
Height of obstructed volume	X	Width of obstructed area	X	Length of obstructed area	= Below/CCW exam volume with NO exam coverage
<i>N/A</i>		<i>N/A</i>		<i>N/A</i>	<i>N/A</i>
Total 45° parallel exam volume not examined = <i>N/A</i>					

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(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 ]	X 100}
	=	<u>70°</u>	<u>N/A</u> %
8.0 CALCULATE PARALLEL 60° EXAM COVERAGE <sup>087</sup> <sub>3-30-99</sub>			
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
<u>N/A</u>	X <u>N/A</u>	X <u>N/A</u>	= <u>N/A</u>
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
<u>N/A</u>	X <u>N/A</u>	X <u>N/A</u>	= <u>N/A</u>
Total 60° parallel exam volume not examined			= <u>N/A</u>
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}
			<u>100</u> %
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
<u>0.250"</u>	X <u>0.90"</u>	X <u>43.9"</u>	= <u>9.87 cu. inches</u>
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
<u>0.25"</u>	X <u>0.90"</u>	X <u>43.9"</u>	= <u>9.87 cu. inches</u>
Total 45° transverse exam volume not examined			= <u>9.87 cu. inches</u>

① LIMITED FROM THE FLANGE SIDE ONLY.  
SCANNED FROM THE HEAD SIDE ONLY.

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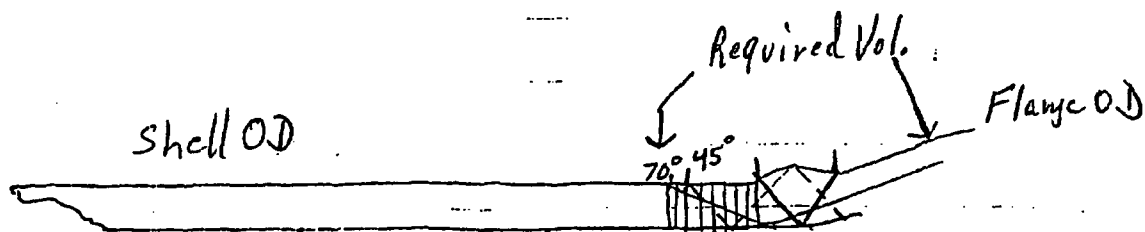
SH.RA-IS.ZZ-0145-3  
(Page 4 of 4)

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 <sup>3</sup> IN. }	{ 15.36 <sup>3</sup> IN } X 100
	= 100 -	64.26	<u>35.74</u> %
<del>10.0 CALCULATE TRANSVERSE 60° EXAM COVERAGE</del> 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	_____ =	<u>N/A</u>
<del>10.2 LIMITED COUNTERCLOCKWISE EXAM VOLUME</del> N/A			
Height of obstructed volume	Width of obstructed area	Length of obstructed area	CCW exam volume with NO exam coverage
_____ X	_____ X	_____ =	<u>N/A</u>
Total 60° transverse exam volume not examined			= <u>N/A</u>
<del>10.3 PERCENT VOLUME EXAMINED</del> N/A			
Percent Volume Examined	= 100 -	Total 60° trans vol w/No coverage	Total 60° trans Exam Vol X 100
	= 100 -	{ _____ }	{ <u>N/A</u> } X 100
			<u>N/A</u> %
11.0 CALCULATE PERCENT OF TOTAL VOLUME EXAMINED			
Examination Coverage	=	Sum of Exam Volumes % (step 5 thru 10) / No. of exams	# 082 3-30-99
135.74/2	=	<u>67.87</u> %	EW 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

*M. D. ...*

4-9-99

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(Page 1 of 4)

VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

UNIT:	<u>2, 10 RFO</u>	LTP SUMMARY NO.:	<u>275240</u>
SYSTEM:	<u>2-RCF-2</u>	LTP COMPONENT ID:	<u>2-RCF-2</u>
PREPARED BY:	<u>[Signature]</u>	DATE:	<u>3-30-99</u>
REVIEWED BY:	<u>Danny J. Langford</u>	DATE:	<u>4-9-99</u>

1.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT BEAM PLANAR FLAWS

$$\begin{array}{r} \text{Exam height} \\ \text{Exam width} \\ \text{Exam length} \end{array} \begin{array}{l} \times \\ \times \\ = \end{array} \begin{array}{r} \text{Exam width} \\ \text{Exam length} \\ \text{Exam Volume} \end{array}$$

2.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT LAMINAR PLANAR FLAWS

$$\begin{array}{r} \text{Exam height} \\ \text{Exam width} \\ \text{Exam length} \end{array} \begin{array}{l} \times \\ \times \\ = \end{array} \begin{array}{r} \text{Exam width} \\ \text{Exam length} \\ \text{Exam Volume} \end{array}$$

3.0 CALCULATE REQUIRED PARALLEL EXAM VOLUME FOR 45° AND 65° 70° *NA*

$$\begin{array}{r} \text{Exam height} \\ \text{Exam width} \\ \text{Exam length} \end{array} \begin{array}{l} \times \\ \times \\ = \end{array} \begin{array}{r} \text{Exam width} \\ \text{Exam length} \\ \text{Exam Volume} \end{array}$$

0.25"  $\times$  1.40"  $\times$  43.9" = 15.36<sup>3</sup> inches

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

$$\begin{array}{r} \text{Exam height} \\ \text{Exam width} \\ \text{Exam length} \end{array} \begin{array}{l} \times \\ \times \\ = \end{array} \begin{array}{r} \text{Exam width} \\ \text{Exam length} \\ \text{Exam Volume} \end{array}$$

0.25"  $\times$  1.40"  $\times$  43.9" = 15.36 in<sup>3</sup>

~~5.0 CALCULATE STRAIGHT BEAM PLANAR EXAM COVERAGE~~ *NA*

~~5.1 LIMITED ABOVE/CW EXAM VOLUME~~ *NA*

Height of obstructed volume	Width of obstructed area	Length of obstructed area	Volume with NO exam coverage
_____	_____	_____	_____
$\times$	$\times$	=	

~~5.2 LIMITED BELOW/CW EXAM VOLUME~~ *NA*

Height of obstructed volume	Width of obstructed area	Length of obstructed area	Volume with NO exam coverage
_____	_____	_____	_____
$\times$	$\times$	=	

Total straight beam planar exam volume not examined = \_\_\_\_\_

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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
	=					<u>N/A</u>		%

~~6.0 CALCULATE STRAIGHT BEAM LAMINAR EXAM COVERAGE~~ *N/A*

~~6.1 LIMITED ABOVE/CW EXAM VOLUME~~

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

~~6.2 LIMITED BELOW/CW EXAM VOLUME~~ *N/A*

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

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

~~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
	=					<u>N/A</u>		%

7.0 CALCULATE PARALLEL 45° EXAM COVERAGE

7.1 LIMITED ABOVE/CW EXAM VOLUME *70° Exam Coverage Only*

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

7.2 LIMITED BELOW/CCW EXAM VOLUME

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

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

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VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

UNIT:	<u>2, 10 RFO</u>	LTP SUMMARY NO.:	<u>275240</u>
SYSTEM:	<u>2-RCF-2</u>	LTP COMPONENT ID:	<u>2-RCF-2</u>
PREPARED BY:	<u>[Signature]</u>	DATE:	<u>3-30-99</u>
REVIEWED BY:	<u>Denny J. Langford</u>	DATE:	<u>4-9-99</u>

1.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT BEAM PLANAR FLAWS

$$\begin{array}{ccccccc} \text{Exam height} & \times & \text{Exam width} & \times & \text{Exam length} & = & \text{Exam Volume} \\ \underline{\hspace{1cm}} & & \underline{\hspace{1cm}} & & \underline{\hspace{1cm}} & = & \underline{\hspace{1cm}} \end{array}$$

2.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT LAMINAR PLANAR FLAWS

$$\begin{array}{ccccccc} \text{Exam height} & \times & \text{Exam width} & \times & \text{Exam length} & = & \text{Exam Volume} \\ \underline{\hspace{1cm}} & & \underline{\hspace{1cm}} & & \underline{\hspace{1cm}} & = & \underline{\hspace{1cm}} \end{array}$$

3.0 CALCULATE REQUIRED PARALLEL EXAM VOLUME FOR 45° AND 65° 70° ~~NA~~

$$\begin{array}{ccccccc} \text{Exam height} & \times & \text{Exam width} & \times & \text{Exam length} & = & \text{Exam Volume} \\ \underline{0.25''} & \times & \underline{1.40''} & \times & \underline{43.9''} & = & \underline{15.36^3 \text{ inches}} \end{array}$$

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

$$\begin{array}{ccccccc} \text{Exam height} & \times & \text{Exam width} & \times & \text{Exam length} & = & \text{Exam Volume} \\ \underline{0.25''} & \times & \underline{1.40''} & \times & \underline{43.9''} & = & \underline{15.36 \text{ in}^3} \end{array}$$

~~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
<u>          </u>	X	<u>          </u>	X	<u>          </u>	=	<u>          </u>

~~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
<u>          </u>	X	<u>          </u>	X	<u>          </u>	=	<u>          </u>

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	-	{ [ <u>N/A</u> ]	/	[ <u>N/A</u> ]	X	100
	=					<u>N/A</u>		%

8.0 CALCULATE PARALLEL <sup>70°</sup> EXAM COVERAGE ~~100~~

8.1 LIMITED ABOVE/CW EXAM VOLUME

Height of obstructed volume	X	Width of obstructed area	X	Length of obstructed area	=	Above/CW exam volume with NO exam coverage
<u>.250"</u>	X	<u>1.40"</u>	X	<u>3.50"</u>	=	<u>1.23 cu."</u>

8.2 LIMITED BELOW/CCW EXAM VOLUME

Height of obstructed volume	X	Width of obstructed area	X	Length of obstructed area	=	Below/CCW exam volume with NO exam coverage
<u>.250"</u>	X	<u>1.40"</u>	X	<u>3.50"</u>	=	<u>1.23 cu."</u>

Total <sup>70°</sup> parallel exam volume not examined = 1.23 cu."

8.3 PERCENT VOLUME EXAMINED

Percent Volume Examined	=	100	-	Total <sup>70°</sup> parallel vol w/No coverage	/	Total <sup>70°</sup> par. Exam Vol	X	100
	=	100	-	{ [ <u>1.23 cu."</u> ]	/	[ <u>15.36 cu."</u> ]	X	100
	=	100	-	<u>8</u>	=	<u>92</u>		%

9.0 CALCULATE TRANSVERSE 45° EXAM COVERAGE

9.1 LIMITED CLOCKWISE EXAM VOLUME

Height of obstructed volume	X	Width of obstructed area	X	Length of obstructed area	=	CW exam volume with NO exam coverage	Total
<sup>Up</sup> <u>.250</u>	X	<u>0.90</u>	X	<u>43.9</u>	=	<u>9.87 cu."</u>	<u>10.66 cu."</u>
<sup>Down</sup> <u>.250</u>	X	<u>0.90</u>	X	<u>3.5</u>	=	<u>0.79 cu."</u>	

9.2 LIMITED COUNTERCLOCKWISE EXAM VOLUME

Height of obstructed volume	X	Width of obstructed area	X	Length of obstructed area	=	CCW exam volume with NO exam coverage	Total
<sup>Up</sup> <u>.25</u>	X	<u>.90</u>	X	<u>43.9</u>	=	<u>9.87 cu."</u>	<u>10.66 cu."</u>
<sup>Down</sup> <u>.25</u>	X	<u>.90</u>	X	<u>3.5</u>	=	<u>.79 cu."</u>	

Total 45° transverse exam volume not examined = 10.66 cu."

① Scanned from Shell Side Only.

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	-	{ 10.66m <sup>3</sup>	/	15.36m <sup>3</sup>	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	X	Width of obstructed area	X	Length of obstructed area	=	CW exam volume with NO exam coverage
						N/A

~~10.2 LIMITED COUNTERCLOCKWISE EXAM VOLUME~~ N/A

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

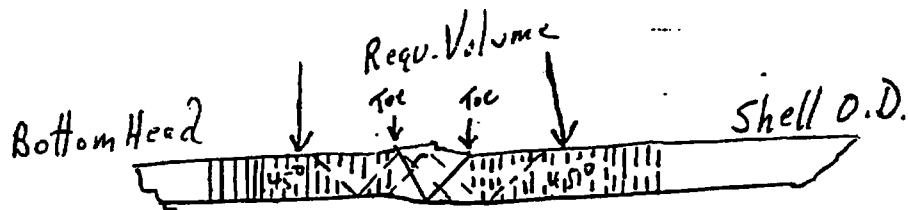
11.0 CALCULATE PERCENT OF TOTAL VOLUME EXAMINED

Examination Coverage	=	Sum of Exam Volumes % (step 5 thru 10)	/	No. of exams (6) (2)
122.6/2	=	61.3		%

REMARKS:

Performed 70° shear wave scans from the shell side only using a 1 1/2 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

M. U. Quinn  
4-9-99

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VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

UNIT:	<u>2, 10 RFO</u>	LTP SUMMARY NO.:	<u>275250</u>
SYSTEM:	<u>2-RCF-3</u>	LTP COMPONENT ID:	<u>2-RCF-3</u>
PREPARED BY:	<u>Hans During</u>	DATE:	<u>3-30-99</u>
REVIEWED BY:	<u>Danny J. Lengenfeld</u>	DATE:	<u>4-8-99</u>

~~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 <sup>Base Metal</sup> STRAIGHT LAMINAR PLANAR FLAWS

Exam height X Exam width X Exam length = Exam Volume  
.250" X <sup>2.00"</sup>~~.750"~~ X 43.9" = 21.95 cu.

3.0 CALCULATE REQUIRED PARALLEL EXAM VOLUME FOR 45° AND ~~65°~~ 19

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°~~ 19

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~~ N/A

~~5.1 LIMITED ABOVE/CW EXAM VOLUME~~ N/A

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

~~5.2 LIMITED BELOW/CW EXAM VOLUME~~ N/A

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

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

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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
	=					<u>      </u>		<u>      </u> %

6.0 CALCULATE STRAIGHT BEAM LAMINAR EXAM COVERAGE (BM)

6.1 LIMITED ABOVE/CW EXAM VOLUME

Height of obstructed volume	X	Width of obstructed area	X	Length of obstructed area	=	Volume with NO exam coverage
<u>0.250"</u>	X	<u>1.0"</u>	X	<u>20.5"</u>	=	<u>5.12 cu"</u>

6.2 LIMITED BELOW/CW EXAM VOLUME

Height of obstructed volume	X	Width of obstructed area	X	Length of obstructed area	=	Volume with NO exam coverage
<u>0.250"</u>	X	<u>1.0"</u>	X	<u>20.5"</u>	=	<u>5.12 cu"</u>

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	-	{ [ <u>10.24 cu"</u> ]	/	<u>21.95 cu"</u>	X	100
	=	100	-	<u>46.6</u>		<u>53.4</u>		<u>      </u> %

7.0 CALCULATE PARALLEL 45° EXAM COVERAGE

7.1 LIMITED ABOVE/CW EXAM VOLUME

Height of obstructed volume	X	Width of obstructed area	X	Length of obstructed area	=	Above/CW exam volume with NO exam coverage
<u>0.250"</u>	X	<u>1.40"</u>	X	<u>20.5"</u>	=	<u>7.2 cu"</u>

7.2 LIMITED BELOW/CCW EXAM VOLUME

Height of obstructed volume	X	Width of obstructed area	X	Length of obstructed area	=	Below/CCW exam volume with NO exam coverage
<u>0.250"</u>	X	<u>1.40"</u>	X	<u>20.5"</u>	=	<u>7.2 cu"</u>

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 <sup>ac</sup> ]	/	15.36 <sup>ac</sup>	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	X	Width of obstructed area	X	Length of obstructed area	=	Above/CW exam volume with NO exam coverage
<u>N/A</u>	X	<u>N/A</u>	X	<u>N/A</u>	=	<u>N/A</u>

8.2 LIMITED BELOW/CCW EXAM VOLUME

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

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
						<u>N/A</u>		%

9.0 CALCULATE TRANSVERSE 45° EXAM COVERAGE

9.1 LIMITED CLOCKWISE EXAM VOLUME

Height of obstructed volume	X	Width of obstructed area	X	Length of obstructed area	=	CW exam volume with NO exam coverage
<u>.250<sup>"</sup></u>	X	<u>1.40<sup>"</sup></u>	X	<u>20.5<sup>"</sup></u>	=	<u>7.2<sup>ac</sup></u>

9.2 LIMITED COUNTERCLOCKWISE EXAM VOLUME

Height of obstructed volume	X	Width of obstructed area	X	Length of obstructed area	=	CCW exam volume with NO exam coverage
<u>.250<sup>"</sup></u>	X	<u>1.40<sup>"</sup></u>	X	<u>20.5<sup>"</sup></u>	=	<u>7.2<sup>ac</sup></u>

Total 45° transverse exam volume not examined = 7.2<sup>ac</sup>

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VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

9.3 PERCENT VOLUME EXAMINED

Percent Volume Examined	=	100	-	Total 45° <sup>transverse</sup> parallel vol w/No coverage	/	Total 45° <sup>transverse</sup> parallel Exam Vol	X	100
	=	100	-	{ [ 7.2 cu. ' ]	/	15.36 cu. '	X	100%
	=	100	-	46.8		53.2		%

~~10.0 CALCULATE TRANSVERSE 60° EXAM COVERAGE~~

10.1 LIMITED CLOCKWISE EXAM VOLUME

Height of obstructed volume	X	Width of obstructed area	X	Length of obstructed area	=	CW exam volume with NO exam coverage
<u>n/a</u>	X	<u>n/a</u>	X	<u>n/a</u>	=	<u>NA</u>

~~10.2 LIMITED COUNTERCLOCKWISE EXAM VOLUME~~

Height of obstructed volume	X	Width of obstructed area	X	Length of obstructed area	=	CCW exam volume with NO exam coverage
<u>n/a</u>	X	<u>n/a</u>	X	<u>n/a</u>	=	<u>NA</u>

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%
						<u>NA</u>		%

11.0 CALCULATE PERCENT OF TOTAL VOLUME EXAMINED

Examination Coverage =  $\frac{\text{Sum of Exam Volumes \% (step 5 thru 10)}}{\text{No. of exams (6)}}$  <sup>2</sup>

159.8/3 = 53.3 %

~~CW exam~~ NA

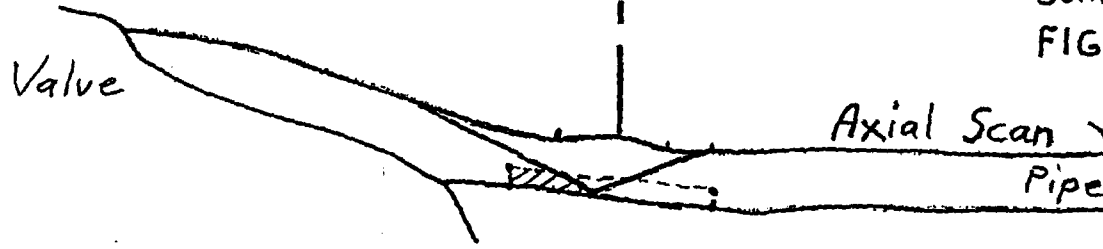
REMARKS:

Performed 45° shear wave scans from the shell and head side using a 1 1/2 V-Path technique. Also examined the Base Metal with a 0° longitudinal scan as stated above.

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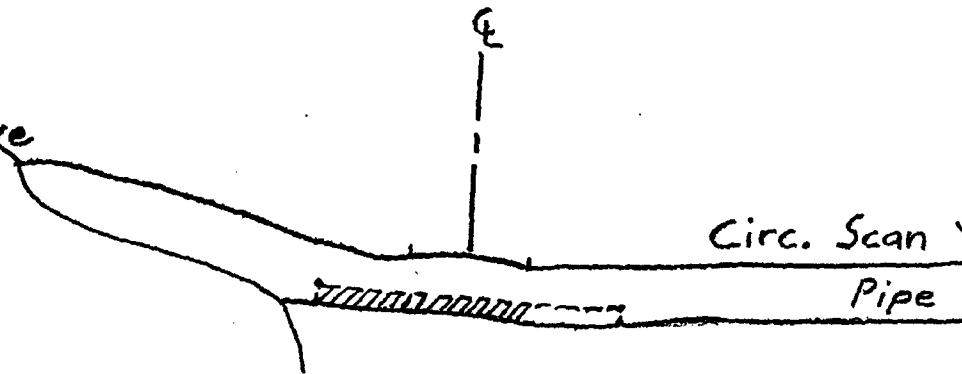
69° Shear Wave  
||||| = Not Covered  
Profile Taken at 12:00

WELD: 3-CV-2255-9  
Nominal OD = 3.0"  
Summary # 710140  
FIGURE No.: C5.21.001



43° Shear Wave

Valve  
||||| NOT COVERED



← Flow

UT COVERAGE PLOT

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REVIEWED & ACCEPTED  
FACTORY MUTUAL  
ENGINEERING ASSOCIATION  
*[Signature]* 5-27-99  
RUTH NUCLEAR SERVICE INC. DATE





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) =  $V_{t1}$        $0.12" \times 1.125" \times 8.73" = 1.18 \text{ cu. in.}$
- 1.2 Compute Volume Not Examined on Upstream Side of Weld = A       $1.18 \text{ cu. in. (Beam Direction-US)}$
- 1.3 Compute Upstream Limitation Percentage  $(A + V_{t1}) \times 100 = Z1$        $100 \% \text{ (Beam Direction-US)}$
- 1.4 Compute Volume Not Examined on Downstream Side of Weld = B       $0.12" \times 0.40" \times 8.73" = 0.42 \text{ cu. in.}$
- 1.5 Compute Downstream Limitation Percentage  $(B + V_{t1}) \times 100 = Z2$        $0.42 \text{ in.}^3 + 1.18 \text{ in.}^3 \times 100 = 35.6 \% \text{ (Beam Direction-DS)}$

##### 2.0 CIRCUMFERENTIAL ULTRASONIC EXAMINATIONS (Indications Perpendicular to the Weld)

- 2.1 Compute Examination Volume (Height x Width x Length) =  $V_{t2}$        $0.12" \times 1.625" \times 8.73" = 1.70 \text{ cu. in.}$
- 2.2 Compute Volume Not Examined in the Clock Wise Direction = C       $0.12" \times 1.125" \times 8.73" = 1.18 \text{ cu. in.}$
- 2.3 Compute Clock Wise Limitation Percentage  $(C + V_{t2}) \times 100 = Z3$        $1.18 \text{ in.}^3 + 1.70 \text{ in.}^3 \times 100 = 69.4\%$
- 2.4 Compute Volume Not Examined in the Counter CW Direction = D       $0.12" \times 1.125" \times 8.73" = 1.18 \text{ cu. in.}$
- 2.5 Compute Counter CW Limitation Percentage  $(D + V_{t2}) \times 100 = Z4$        $1.18 \text{ in.}^3 + 1.70 \text{ in.}^3 \times 100 = 69.4\%$

##### 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: *[Signature]* DATE: 5/19/99

REVIEWER: *[Signature]* DATE: 05/17/99

*[Signature]* 5/27/99 FACTORY MUTUAL INSURANCE ASSOCIATION

**REQUEST FOR ADDITIONAL INFORMATION**  
**REQUEST FOR RELIEF REGARDING EXAMINATION COVERAGE**  
**SECOND TEN-YEAR IN-SERVICE INSPECTION INTERVAL**  
**SALEM NUCLEAR GENERATING STATION, UNIT NO. 2**  
**DOCKET NO. 50-311**

**QUESTION**      2.1 (c) For certain piping welds, Information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers listed below.

Summary #	710140
Component I.D.	3-CV-2255-9
Description	Valve 2CV70 to Pipe

		Comments
1	Weld X-Section	See Attached
2	Material	Stainless Steel
3	Thickness / weld Crown	Thickness .35" / weld Crown .600"
4	Obstruction	Valve OD Contour
5	Exam Area Highlighted on Drawing	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> X <input type="checkbox"/> No
6	Transducer ray exit point	See Attached

**Comments**

UT exam was performed of this component using 45, 60 and 70 degree shear wave transducer. The ultrasonic examination was limited to 31% of the code required coverage being limited due to upstream side valve OD configuration that restricted scanning. UT scans were performed on and across the weld in both directions No unacceptable indications were observed. A liquid penetrant examination and system pressure test was also completed with no recordable indications observed.

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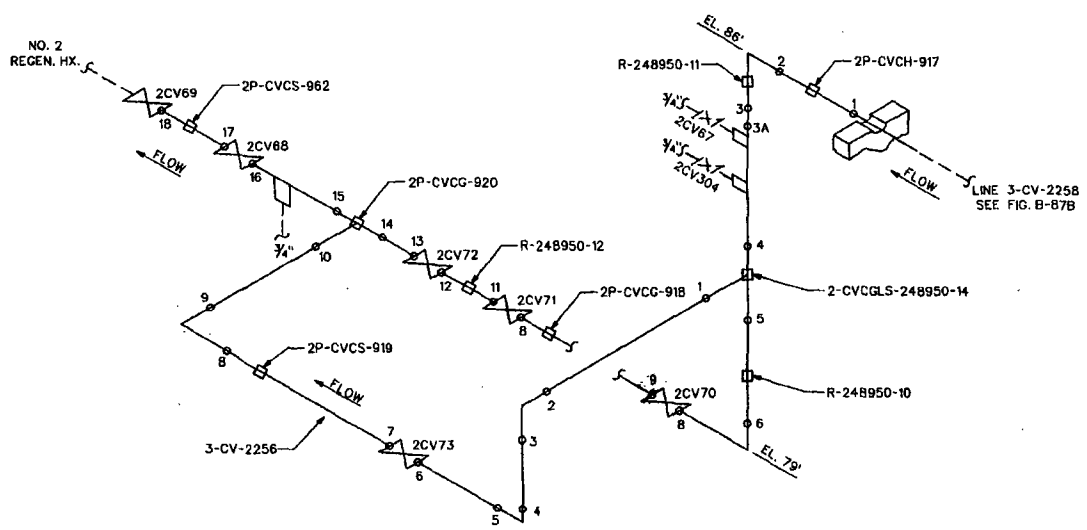
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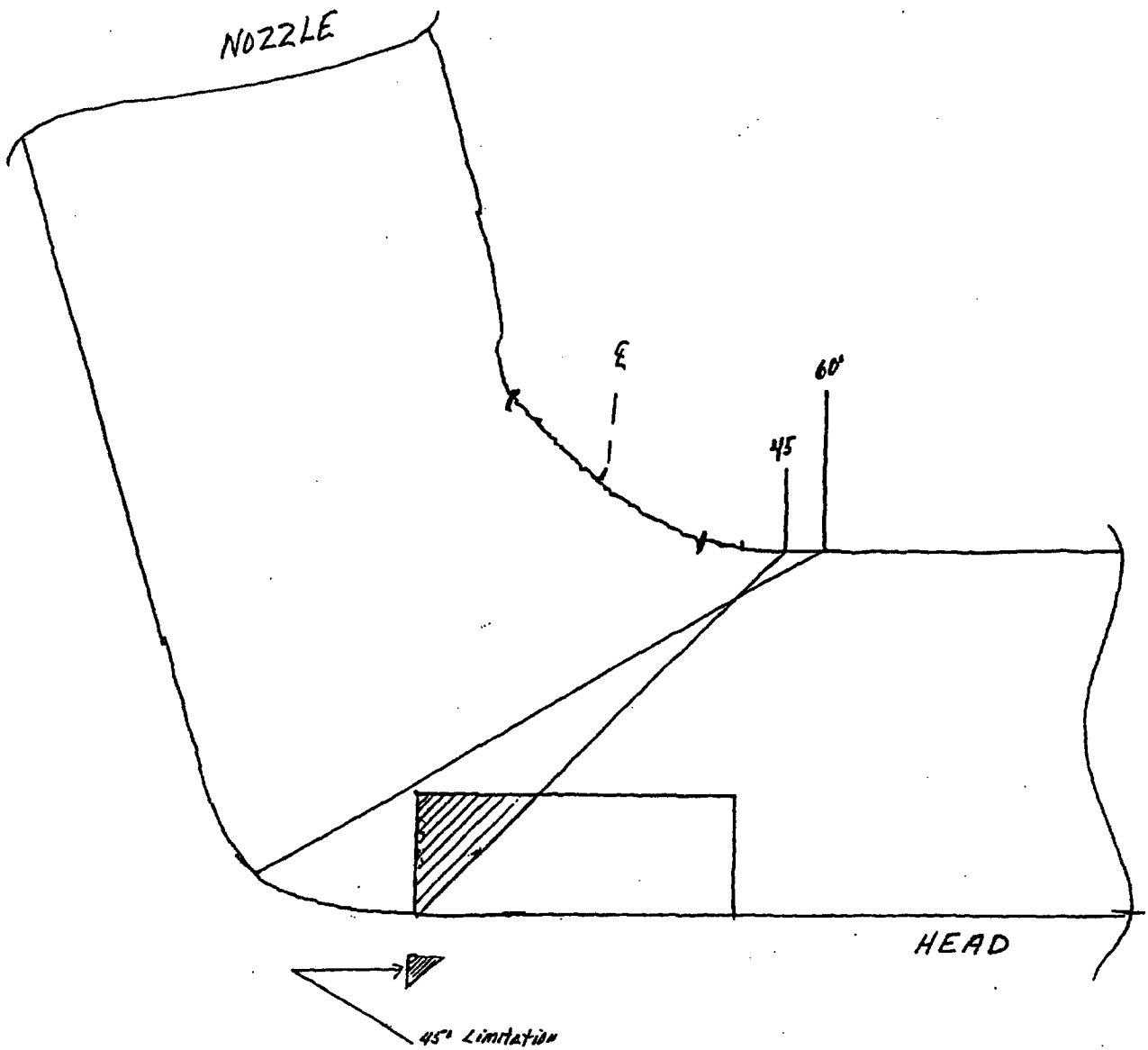


BUILDING: AUXILIARY	LOCATION: NO. 2 REGEN. HX. AREA	ELEVATIONS: 79' - 86'	HPSI	PSEG ISO CV23-02 P & ID 205328
ATTENTION: ANY REVISION TO THIS DRAWING SHALL BE MADE ONLY BY CAED		PSEG Nuclear, LLC SALEM NUCLEAR GENERATING STATION UNIT 2 - WELD / HANGER IDENTIFICATION FIGURE INSERVICE INSPECTION DRAWING		FIGURE: B-95 SYSTEM: CHEMICAL & VOLUME CONTROL REVISION: 1
1	REVISED PER ORDER No. 80038023.	LINE: 3-CV-2256, 3-CV-2255		THIRD 10 YEAR INSPECTION INTERVAL
REV.	DATE	DESCRIPTION		

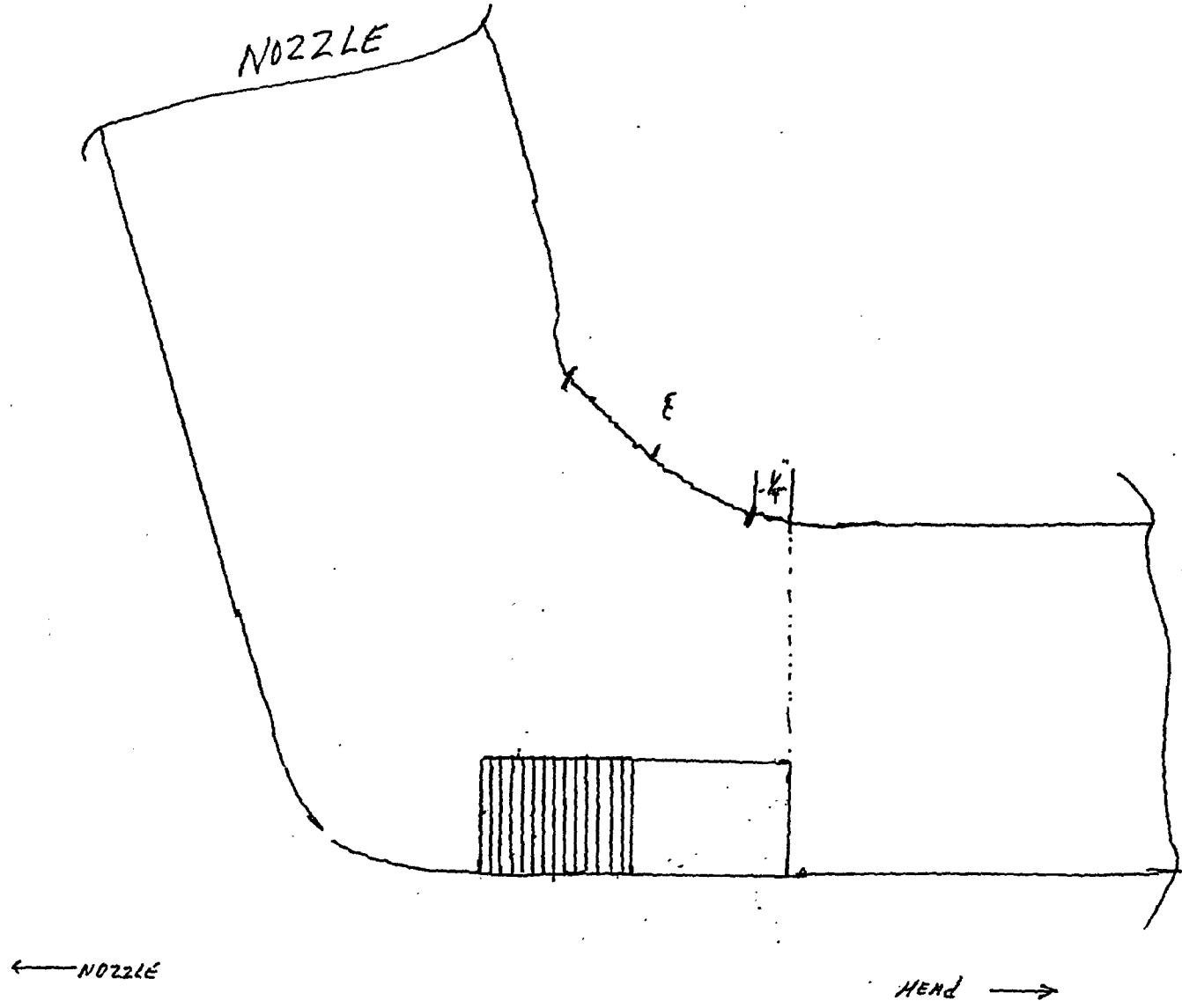
LV 1 = COMMON INFORMATION  
 LV 2 = WELD INFORMATION  
 LV 3 = HANGER INFORMATION

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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  
LIT COVERAGE PLOT  
CIRC SCANS AND 0'  
BORON INJECTION TANK NOZZLE  
TO LOWER HEAD



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(Page 1 of 4)

VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

UNIT: <u>SALEM UNIT 2 10RFO</u>	LTP SUMMARY NO.: <u>715140</u>
SYSTEM: <u>2.BIT-1</u>	LTP COMPONENT ID: <u>NOZZLE TO LOWER HEAD WELD</u>
PREPARED BY: <u>DAVID GARCIA</u>	DATE: <u>5-14-99</u>
REVIEWED BY: <u>Nancy J. Langford</u>	DATE: <u>5-15-99</u>

1.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT BEAM PLANAR FLAWS

$$\begin{array}{rcccccc} \text{Exam height} & \times & \text{Exam width} & \times & \text{Exam length} & = & \text{Exam Volume} \\ \underline{.73} & & \underline{2.0} & & \underline{24.1} & = & \underline{35.19} \end{array}$$

2.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT LAMINAR PLANAR FLAWS

*PERFORMED LAMINATION SCAN BUT NO VOLUMETRIC COVERAGE CALCULATED.*

$$\begin{array}{rcccccc} \text{Exam height} & \times & \text{Exam width} & \times & \text{Exam length} & = & \text{Exam Volume} \\ \underline{N/A} & & \underline{N/A} & & \underline{N/A} & = & \underline{N/A} \end{array}$$

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

$$\begin{array}{rcccccc} \text{Exam height} & \times & \text{Exam width} & \times & \text{Exam length} & = & \text{Exam Volume} \\ \underline{.73} & & \underline{2.0} & & \underline{24.1} & = & \underline{35.19} \end{array}$$

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

$$\begin{array}{rcccccc} \text{Exam height} & \times & \text{Exam width} & \times & \text{Exam length} & = & \text{Exam Volume} \\ \underline{.73} & & \underline{2.0} & & \underline{24.1} & = & \underline{35.19} \end{array}$$

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
<u>0</u>	X	<u>0</u>	X	<u>0</u>	=	<u>0</u>

5.2 LIMITED BELOW/CW EXAM VOLUME

Height of obstructed volume		Width of obstructed area		Length of obstructed area		Volume with NO exam coverage
<u>.73</u>	X	<u>1.75</u>	X	<u>24.1</u>	=	<u>30.78</u>

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	X	Width of obstructed area	X	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	X	Width of obstructed area	X	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	X	Width of obstructed area	X	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	X	Width of obstructed area	X	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

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(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	X	Width of obstructed area	X	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	X	Width of obstructed area	X	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	X	Width of obstructed area	X	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	X	Width of obstructed area	X	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	X	Width of obstructed area	X	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	X	Width of obstructed area	X	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 =  $\frac{\text{Sum of Exam Volumes \% (step 5 thru 10)}}{\text{No. of exams(6)(5)}}$  *DGL 5-15-99*  
 = 30.5 %

REMARKS:

NO ZERO DEGREE LAMINATION SCAN CALCULATED.

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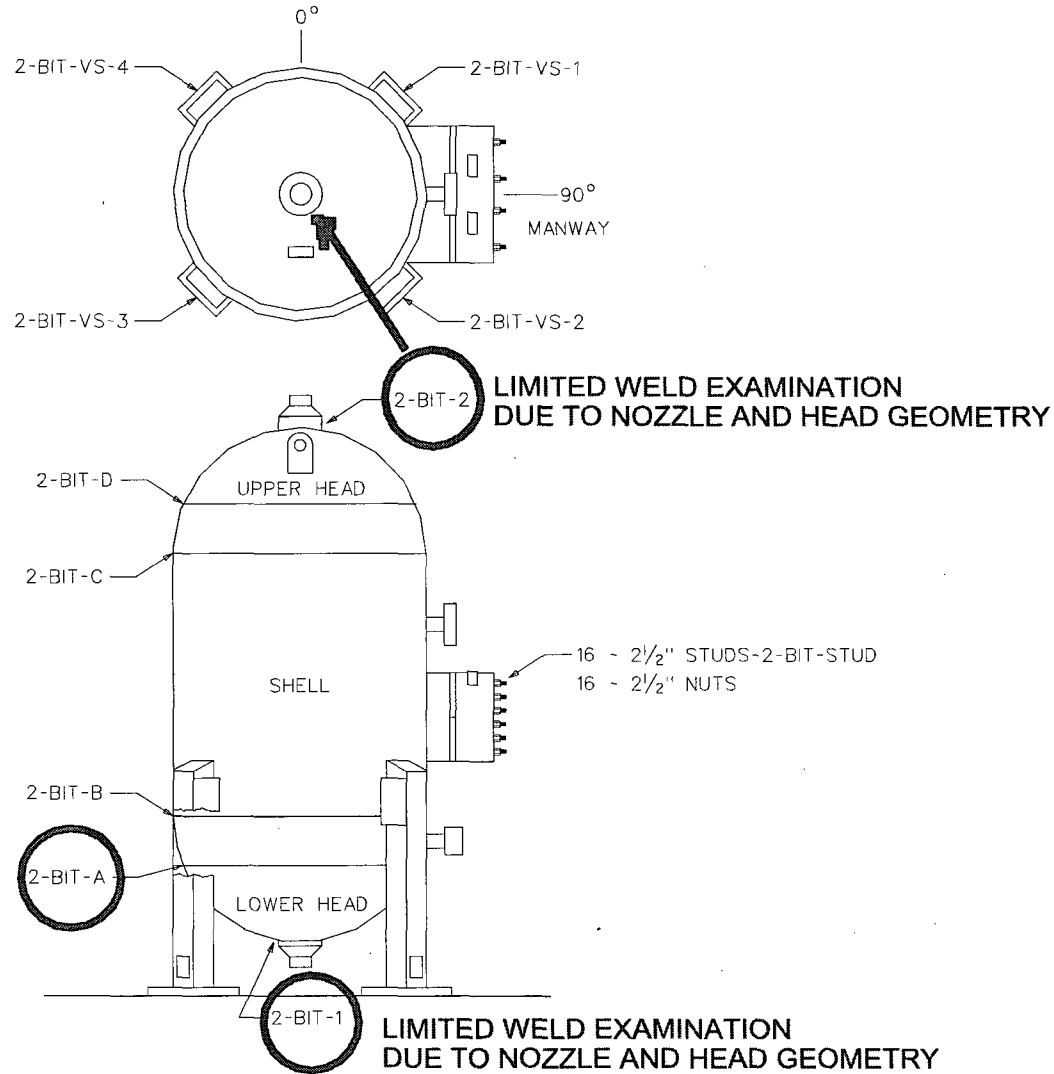


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BUILDING: AUXILIARY	LOCATION: BORON INJECTION TANK AREA	ELEVATIONS: 84'
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ATTENTION: ANY REVISION TO THIS DRAWING SHALL BE MADE ONLY BY CAED		
1	REVISED PER ORDER No. 80038023.	
REV.	DATE	DESCRIPTION

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

FIGURE: B-119	REVISION: 1
SYSTEM: BORON INJECTION TANK	
LINE: N/A	
THIRD 10 YEAR INSPECTION INTERVAL	

- LV 1 = COMMON INFORMATION
- LV 2 = WELD INFORMATION
- LV 3 = HANGER INFORMATION

SECOND INTERVAL, THIRD PERIOD, FIRST OUTAGE

SUMMARY #: 715160

02RF EXAMINATION SUMMARY RECORD  
SALEM NUCLEAR GENERATING STATION, UNIT 2

SYSTEM: BORON INJECTION TANK CONFIG.: NOZZLE TO UPPER HEAD  
 LINE #: NOZZLE-TO-VESSEL WELDS RELIEF REQ.:  
 COMP. ID.: 2-BIT-2 (UPPER HD) CAL. BLOCK: PL-CSCL-3.0-76-SAM-R  
 LTP FIG.: B-119 ASME CAT/ITEM: C-B / C2.21

LTP INSTRUCTIONS:

NDE METHOD IN LTP	PROCEDURE	REV.	RESULTS FILE NDE EXAMS	EXAM RECORD	CALIBRATION RECORD	N O R	G E O	O T H	RESOLUTION RECORD	REMARKS
UT	54-ISI-130-33	33	UT-0L	DPO42	043	X	-	-	-	02RF - FTI UNDER W/O# 50029032 TO PERFORM NDE. UT LIMITED TO 62.5% OF CODE REQUIRED COVERAGE DUR TO NOZZLE AND UPPER HEAD CONFIGURATION.  FACTORY MUTUAL INSURANCE COMPANY <i>DE Tilley 5-1-02</i>
MT	54-ISI-130-33	33	UT-45S	DPO42	044	X	-	-	-	

Prepared by: *[Signature]*  
 Reviewed by: *Wayne DeLonge*

Date: 04/29/2002

Total dose received while performing the required NDE examinations  Man Mrem

NUMMARY 715160	DATA PACKAGE S2R12DP042	DATE Apr 25 2002
SITE: SALEM 2, RFO-12	EXAMINATION METHOD: UT, MT	
SYSTEM / COMPONENT ID: 2-BIT-2 (UPPER HD)	EXAMINATION PROCEDURES:	
COMPONENT DESCRIPTION: NOZZLE TO UPPER HEAD	54-ISI-130-33	
EXAMINATION CATEGORY: C2.21	54-ISI-270-37	
ISO / DRAWING: B-119		
CALIBRATION SHEET NO(S): 043, 044		
	EXAMINATION RESULTS:	<input checked="" type="checkbox"/> No Reportable Indications <input type="checkbox"/> Reportable Indications <input type="checkbox"/> Geometric

ADD MT

A UT EXAMINATION WAS PERFORMED ON THE BORON INJECTION TANK NOZZLE TO UPPER HEAD WELD, 2-BIT-2 (UPPER HEAD)

THE EXAMINATION WAS PERFORMED WITH NO REPORTABLE INDICATIONS AND WAS LIMITED TO AN AGGREGATE TOTAL COVERAGE OF 62.5%. EACH INDIVIDUAL SCAN HAS INDICATED IT'S RESPECTIVE COVERAGE. THE LIMITATION WAS DUE TO THE NOZZLE TO UPPER HEAD WELD CONFIGURATION. THE MT EXAMINATION HAD NO RESTRICTIONS.

THERE WERE NO PREVIOUS EXAMINATION RESULTS AVAILABLE FOR COMPARSION..

ALL HANDWRITTEN ADDITIONS BY B. Kelleher 4/29/02

FACTORY MUTUAL  
INSURANCE COMPANY

DE Tilley 5-1-02

Prepared By: <i>J.R. Goya</i>	Date: 24 APR 02	Reviewed By: <i>Bob Kelleher</i>	Date: 4/25/02	Utility Review By: <i>[Signature]</i>	Date: 4-29-02
					Page 1 of 9



**FRAMATOME ANP**

**VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT**

**CUSTOMER:** SALEM 2, RFO 12

**SYSTEM:** BORON INJECTION TANK

**SUMMARY NO:** 715160

**COMPONENT ID:** 2-BIT-2 (UPPER HEAD)

**1.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT BEAM PLANAR FLAWS**

1.1 Exam Height X Exam Width X Exam Length = Exam  $0.73 \times 2.00 \times 41.50 = 60.59 \text{ cu.in}$

**2.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT BEAM LAMINAR FLAWS**

2.1 Exam Height X Exam Width X Exam Length = Exam  $0.00 \times 0.00 \times 0.00 = 0.00 \text{ cu.in}$

**3.0 CALCULATE REQUIRED PARALLEL EXAM VOLUME FOR 45° AND 60°**

3.1 Exam Height X Exam Width X Exam Length = Exam  $0.73 \times 2.00 \times 83.00 = 121.18 \text{ cu.in}$

**4.0 CALCULATE REQUIRED TRANSVERSE EXAM VOLUME FOR 45° AND 60°**

4.1 Exam Height X Exam Width X Exam Length = Exam  $0.73 \times 2.00 \times 83.00 = 121.18 \text{ cu.in}$

**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
--------------------------------	-----------------------------	------------------------------	---------------------------------

5.2 Limited Below / CW exam volume  $0.73 \times 1.00 \times 41.50 = 30.30$

5.2 Limited Below / CW exam volume

Height of Obstructed Volume	Width of Obstructed Area	Length of Obstructed Area	Volume with no Exam Coverage
--------------------------------	-----------------------------	------------------------------	---------------------------------

$0.73 \times 0.75 \times 41.50 = 22.72$

Total straight beam planar exam volume not examined =  $53.02$

5.3 Percent Volume Examined

Total 0 vol w/No Coverage	Total 0 Exam Volume	Percent Volume Examined
------------------------------	------------------------	----------------------------

$100 - \left\{ \left[ \frac{53.02}{60.59} \right] \times 100 \right\} = 12.50 \%$

FACTORY MUTUAL  
INSURANCE COMPANY

DE Tilley 5-1-02

EX 42502  
6/9



## 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			
0.73	X	2.00	X	41.50	=	60.59

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 45° parallel exam volume not examined = 60.59

## 7.3 Percent Volume Examined

Total 45° parallel vol w/No Coverage	Total 45° parallel Exam Volume	Percent Volume Examined
100 - { [ 60.59 / 121.18 ] x 100 }	=	50.00 %

FACTORY MUTUAL  
INSURANCE COMPANY  
*D E Tiller* 5-1-02

B/L 42502  
7/9



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
0.73	X 2.00	X 41.50	= 60.59

## 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
0.00	X 0.00	X 0.00	= 0.00

Total 60° parallel exam volume not examined = 60.59

## 8.3 Percent Volume Examined

Total 60° parallel Vol w/No Coverage	Total 60° parallel Exam Volume	Percent Volume Examined
100 - { [ 60.59 / 121.18 ] x 100 }		= 50.00 %

## 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
0.00	X 0.00	X 0.00	= 0.00

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 45° transverse exam volume not examined = 0.00

## 9.3 Percent Volume Examined

Total 45° parallel	Total 45° parallel Exam Volume	Percent Volume Examined
100 - { [ 0.00 / 121.18 ] x 100 }		= 100.00 %

FACTORY MUTUAL  
INSURANCE COMPANY  
DE Tillery 5-1-02

BC 42502  
8/9



# 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
<u>0.00</u> X	<u>0.00</u> X	<u>0.00</u>	= <u>0.00</u>

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
<u>0.00</u> X	<u>0.00</u> X	<u>0.00</u>	= <u>0.00</u>

Total 60 transverse exam volume not examined = 0.00

10.3 Percent Volume Examined

Total 60° Trans Vol w/NoCoverage	Total 60° Trans Exam Volume	Percent Volume Examined
<u>0.00</u>	<u>121.18</u>	
100 - { [ <u>0.00</u> / <u>121.18</u> ] x 100 }		= <u>100.00 %</u>

## 11.0 CALCULATE PERCENT OF TOTAL VOLUME EXAMINED

11.1 Sum of Exam Volumes %

Steps 5 Thur 10	No. Of Exams (6)	Examination Coverage
<u>312.50</u>	<u>5.00</u>	= <u>62.50 %</u>

Scan limited by nozzle weld design. This is a set-in nozzle. No scan from the nozzle side nor on or across the weld.

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Examiner: David Kleinjan Sign:	Level: II Date: 04/25/02	Reviewer: Sign:	Level: Date: 04/25/02
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FACTORY MUTUAL INSURANCE COMPANY

9/9



# Sw. R.I. STRAIGHT BEAM LAMINATION EXAMINATION RECORD

PROJECT No. 17-2259	SITE: Salem, Unit 2	DATE: (DAY - MON. - YR.) 21 SEP 88	TIME: (24 - HR. CLOCK) SHEET STARTED 1132 SHEET ENDED 1139	SHEET No. 180134
------------------------	------------------------	---------------------------------------	--	---------------------

EXAMINATION AREA: (SYSTEM / COMPONENT) CHEMICAL & Vol. Control	(LINE / SUBASSEMBLY) 3-CV-1241	(IDENTIFICATION) 13	L <sub>0</sub> LOCATION 1	W <sub>0</sub> LOCATION WELD
---	-----------------------------------	------------------------	------------------------------	---------------------------------

EXAMINER: C. MINOR	SNT LEVEL II	PROCEDURE No. 600-3	CALIBRATION SHEET (S) 250092	MEASURED THICKNESS			CROWN HEIGHT FLUSH	ATTENUATION		WELD TYPE (-FLOW- VALVE → FELLOW)
				UP	€	DOWN		UP	DOWN	
EXAMINER: M. WARYNIAK	SNT LEVEL I	REV 62 PAV 5		N/A	.5	.47	9/16	N/A	8dB	WELD LENGTH 11 1/8

IND No.	% LOSS OF BW	IND AMP / FS.	POSITION 1				POSITION				POSITION				POSITION 2				SEARCH UNIT LOCATION	REMARKS	IN
			L1	W1	W2	MP	L	W1	W2	MP	L	W1	W2	MP	L2	W1	W2	MP			
			NO RECORDABLE INDICATIONS																		

REMARKS: 168	<b>PSEG</b> INSPECTION SERVICES Reviewed and Approved DATE 9/21/88 N.D.E. SUPERVISOR
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EXAMINATION AREA LIMITATIONS: (IF NONE, SO STATE):  
 NO EXAMINATION UPSTREAM TO VALVE CONFIGURATION CAM

REVIEWED BY: <i>Uic Nuth</i>	SNT LEVEL: III	DATE: 22 SEP 88	PAGE 1 OF 1
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VOLUMETRIC PIPING EXAMINATION COVERAGE REPORT

<b>CUSTOMER:</b> SALEM 2, RFO 11	<b>SYSTEM:</b> CHEMICAL AND VOLUME CONTROL SYSTEM
<b>SUMMARY NO:</b> 034500	<b>COMPONENT ID:</b> 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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<b>PREPARED BY:</b> <i>[Signature]</i>	<b>DATE:</b> 10/15/2000	<b>REVIEWER:</b> <i>[Signature]</i>	<b>DATE:</b> 10/14/00	Page <u>6</u> of <u>6</u>
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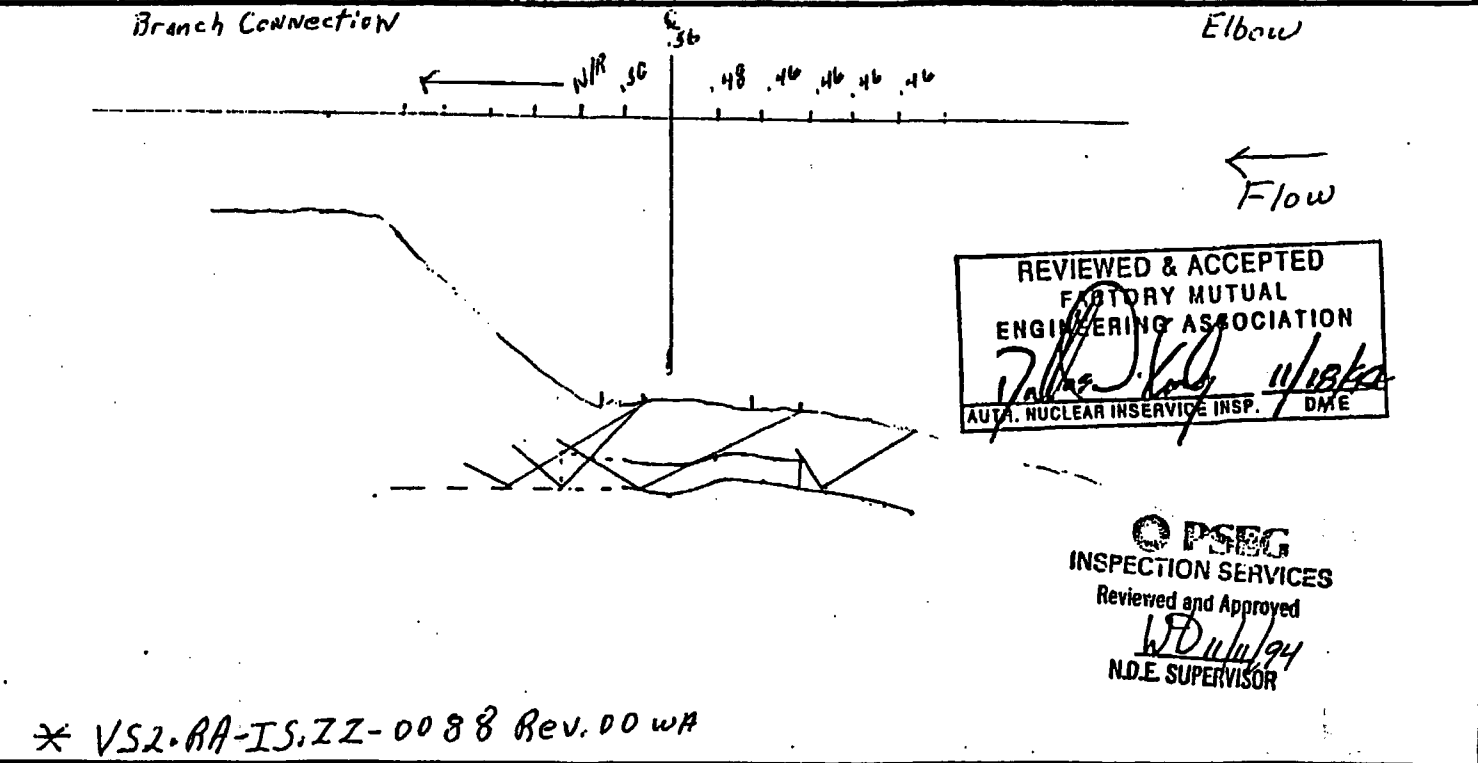
034600

# SWRI PROFILE AND THICKNESS INFORMATION RECORD

PROJECT NO: <b>17-6399</b>	SITE: <b>Salem Generating Station, Unit 2</b>	DATE: (DAY - MONTH - YEAR) <b>4 Nov 94</b>	TIME (24 HR. CLOCK)		SHEET NO: <b>135038</b>
			INT. <b>1302</b>	FINAL <b>1527</b>	

EXAMINER <b>W. Angell</b>	SNT LEVEL <b>II</b>	THK. MEAS. REQ'D BY PROCEDURE No. <b>SAM2-11749</b>	INSTRUMENT: SONIC MARK I <input type="checkbox"/> OTHER <b>Sonic 13b</b> <input checked="" type="checkbox"/>	SERIAL NO: <b>859K</b>	COMPONENT ID: <b>3-CV-1241-14</b>
EXAMINER <b>T. Jackson</b>	SNT LEVEL <b>II</b>	REV <b>0 *</b> CHK 1 ICN <input checked="" type="checkbox"/> N/A	COUPLANT: GLYCERINE <input type="checkbox"/> WATER <input type="checkbox"/> OTHER (SPECIFY) <b>SonicTrace 40 Batch No 94014</b>	REFERENCE BLK NO: <b>SS-DC-31</b>	

SEARCH UNITS	
BRAND	<b>SwRI</b>
SERIAL NO	<b>3008</b>
SIZE	<b>3/8</b>
FREQ. (MHz)	<b>2.25</b>
INSTRUMENT SETTINGS	
SCREEN SIZE	<b>1.00</b>
DELAY	<b>412</b>
Vel. MATL. CAL.	<b>.222</b>
RANGE	<b>1.00</b>
REP. RATE	<b>4KHz</b>
JACK USED	<b>RCV/XMT</b>
TRANS MODE	<b>Dual</b>



* <b>VS2-RA-IS-22-0088 Rev. 00 WA</b>	<b>45°</b> Search Unit chosen for coverage using <b>2/8, 6/8 &amp; 10/8</b> nodes.	NAME: <b>W. Angell</b>	SNT LEVEL: <b>II</b>
	<b>60°</b> Search Unit chosen for coverage using <b>2/8, 6/8 &amp; 10/8</b> nodes.		

VIEWED BY: <b>[Signature]</b>	SNT LEVEL: <b>II</b>	DATE: <b>07 NOV 94</b>
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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 =V1)	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 / V1) 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 / V1) 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 =V2)	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 / V2) 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 / V2) 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.

171

PREPARED BY: *[Signature]*

DATE: 10/13/2000

REVIEWER: *[Signature]*

DATE: 10/14/00 Page 4 of 6



### VOLUMETRIC PIPING EXAMINATION COVERAGE REPORT

<b>CUSTOMER:</b> SALEM 2, RFO 11	<b>SYSTEM:</b> CHEMICAL AND VOLUME CONTROL SYSTEM
<b>SUMMARY NO:</b> 036000	<b>COMPONENT ID:</b> 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.

*[Signature]*  
 FACTORY MUTUAL  
 INSURANCE COMPANY  
 10-25-00

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<b>PREPARED BY:</b> <i>[Signature]</i>	<b>DATE:</b> 10/13/2000	<b>REVIEWER:</b> <i>[Signature]</i>	<b>DATE:</b> 10/13/2000	Page 4 of 6
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**REQUEST FOR ADDITIONAL INFORMATION**  
**REQUEST FOR RELIEF REGARDING EXAMINATION COVERAGE**  
**SECOND TEN-YEAR IN-SERVICE INSPECTION INTERVAL**  
**SALEM NUCLEAR GENERATING STATION, UNIT NO. 2**  
**DOCKET NO. 50-311**

**QUESTION**      1.3 (c) For certain piping welds, Information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers listed below.

Summary #      036000

Component I.D.    3-CV-1231-14

Description      Pipe to Valve 2CV74

	Comments
<input type="checkbox"/> 1      Weld X-Section	See Attached
<input type="checkbox"/> 2      Material	Stainless Steel
<input type="checkbox"/> 3      Thickness / weld Crown	Unknown
<input type="checkbox"/> 4      Obstruction	OD contour on valve side
<input type="checkbox"/> 5      Exam Area Highlighted on Drawing	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
<input type="checkbox"/> 6      Transducer ray exit point	See Attached

**Comments**

**UT exam was performed of this component using 45 degree shear wave transducer. The ultrasonic examination was limited to 75% of the code required coverage being limited due to upstream side valve OD configuration that restricted scanning. UT scans were performed on and across the weld in both directions No unacceptable indications were observed. A liquid penetrant examination and system pressure test was also completed with no recordable indications observed.**

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Supplemental Drawing

Summary # 036000

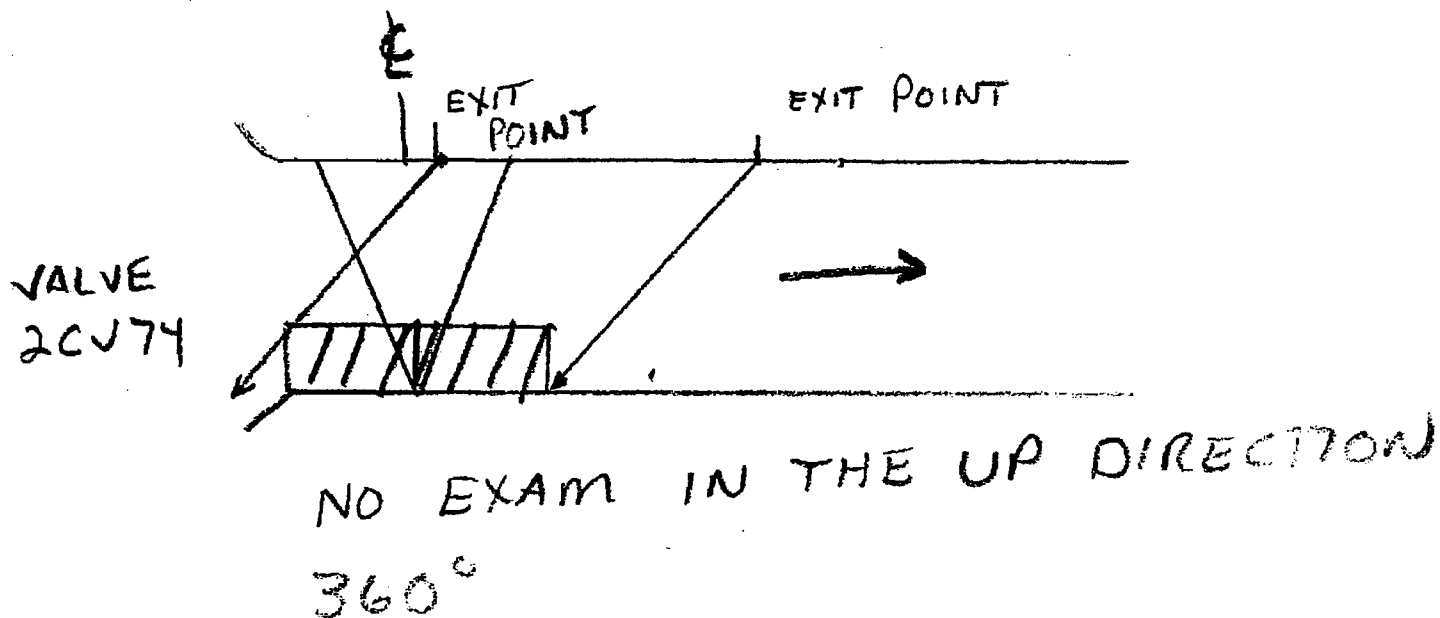
Component I.D. Pipe to Valve

Description 3-CV-1231-14

Page          of         

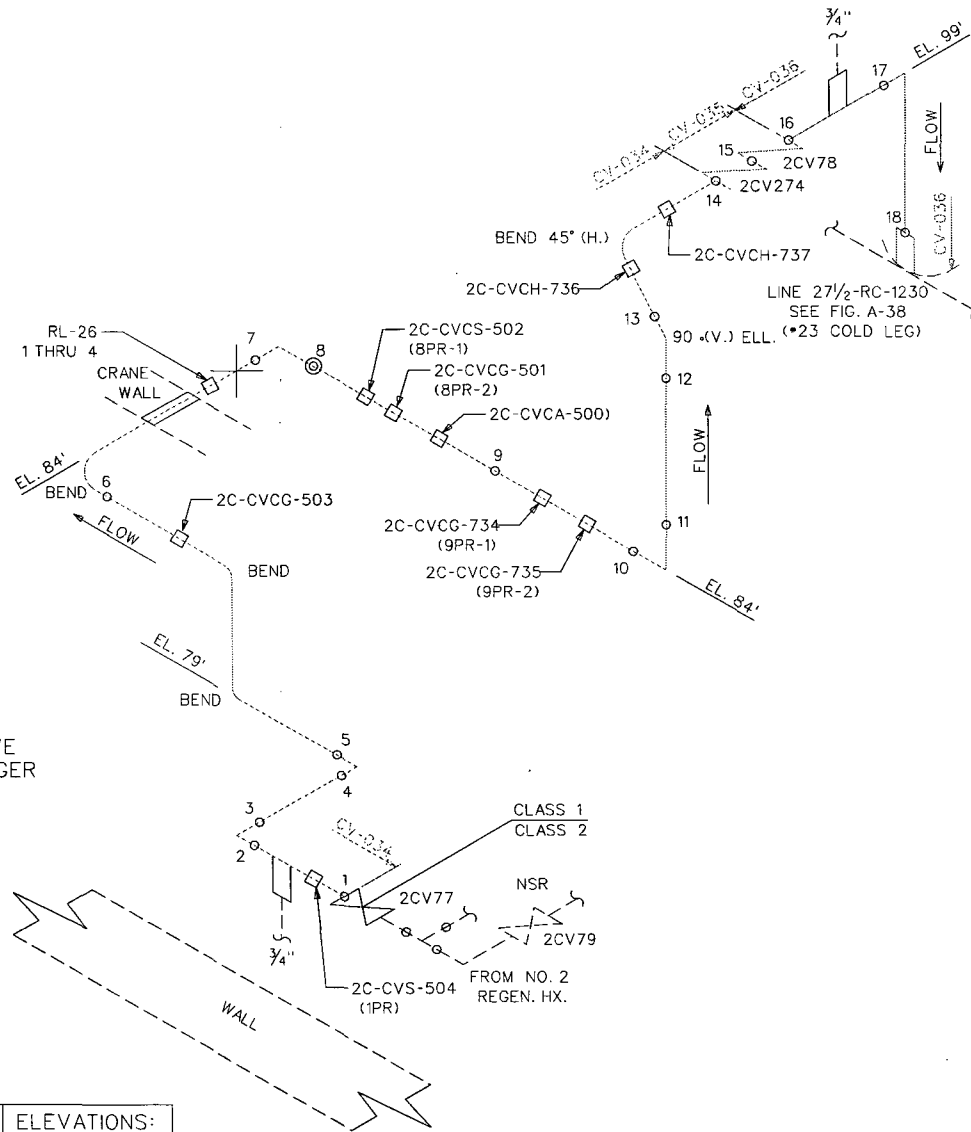
Comments The ultrasonic examination was limited to 75% of the code required coverage being limited due to upstream side valve OD configuration that restricted scanning.

Sketch



BIOSHIELD

REGENERATIVE  
HEAT EXCHANGER  
ROOM



BUILDING: CONTAINMENT	LOCATION: BIOSHIELD ANNULUS	ELEVATIONS: 79' to 99'
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PSEG ISO CV23-02  
P & ID 205301, 205328

ATTENTION: ANY REVISION TO THIS DRAWING SHALL BE MADE ONLY BY CAED		
1	REVISED PER ORDER No. 80038023.	DESCRIPTION
REV.	DATE	DESCRIPTION

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

FIGURE: A-13	REVISION: 1
SYSTEM: CHEMICAL AND VOLUME CONTROL CHARGING	
LINE: 3-CV-1231	
THIRD 10 YEAR INSPECTION INTERVAL	

LV 1 = COMMON INFORMATION  
LV 2 = WELD INFORMATION  
LV 3 = HANGER INFORMATION





**PROFILE AND THICKNESS**

Exam Date: 10/14/00

Summary No.: 084400

Site: Salem Unit 2, RFO 11

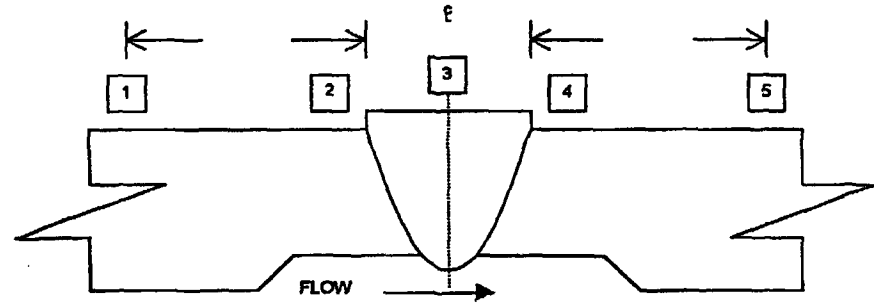
Examination Method: UT

System: REACTOR COOLANT SYSTEM

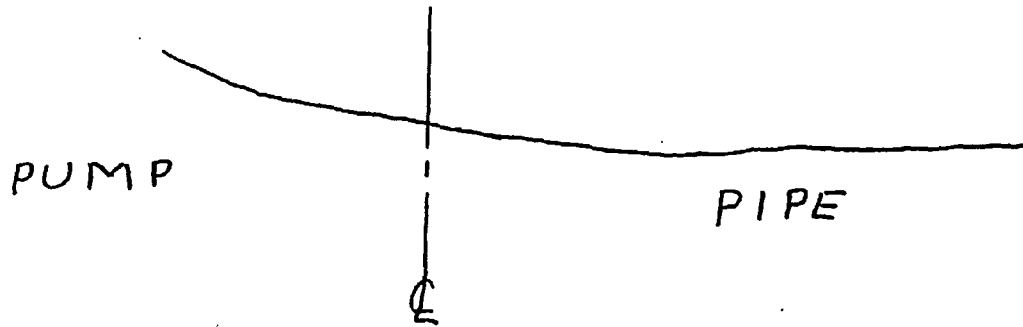
Identification: 27.5-RC-1230-1

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

Pa. 6 of 6

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LR Morse 10-14-00  
Prepared By Date

B. Keller 10/19/00  
Reviewed By Date

W. [Signature] 10-24-00  
Utility Review By Date



**VOLUMETRIC PIPING EXAMINATION COVERAGE REPORT**

<b>CUSTOMER:</b> SALEM 2, RFO 11	<b>SYSTEM:</b> REACTOR COOLANT SYSTEM
<b>SUMMARY NO:</b> 084400	<b>COMPONENT ID:</b> 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: *CE [Signature]* DATE: 10/14/02 REVIEWER: *Bob Keller* DATE: 10/19/02 Page 5 of 6

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**REQUEST FOR ADDITIONAL INFORMATION**  
**REQUEST FOR RELIEF REGARDING EXAMINATION COVERAGE**  
**SECOND TEN-YEAR IN-SERVICE INSPECTION INTERVAL**  
**SALEM NUCLEAR GENERATING STATION, UNIT NO. 2**  
**DOCKET NO. 50-311**

**QUESTION**      1.3 (c)    For certain piping welds, Information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers listed below.

Summary #      084400

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Component I.D.    27.5-RC-1230-1

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Description      Pump to Pipe

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		Comments
1	Weld X-Section	See Attached
2	Material	Stainless Steel
3	Thickness / weld Crown	Thickness 2.4" / Weld Crown 2 3/8"
4	Obstruction	Pump OD contour
5	Exam Area Highlighted on Drawing	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
6	Transducer ray exit point	Not Available

Comments

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Ut exam was performed of this component using 45 and 60 degree shear wave transducer. The ultrasonic examination completed was limited to 49% of the code required coverage being achieved 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. There were no unacceptable indications observed. A liquid penetrant examination and system pressure test was also completed with no recordable indications observed.

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Supplemental Drawing

Summary # 084400

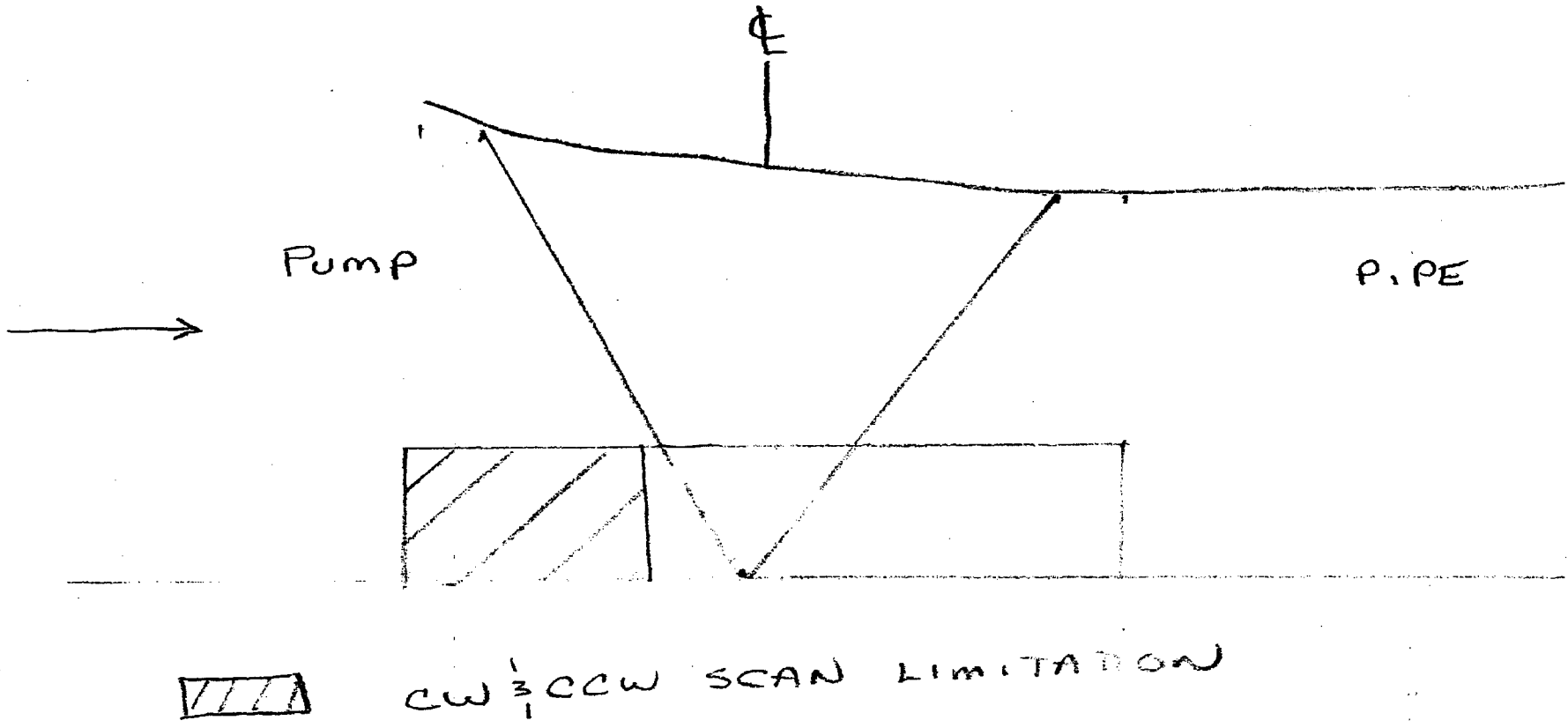
Component I.D. 27.5-RC-1230-1

Description Pump to Pipe

Page of

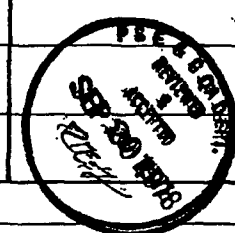
Comments No examination performed in the downstream direction due to pump nozzle configuration.

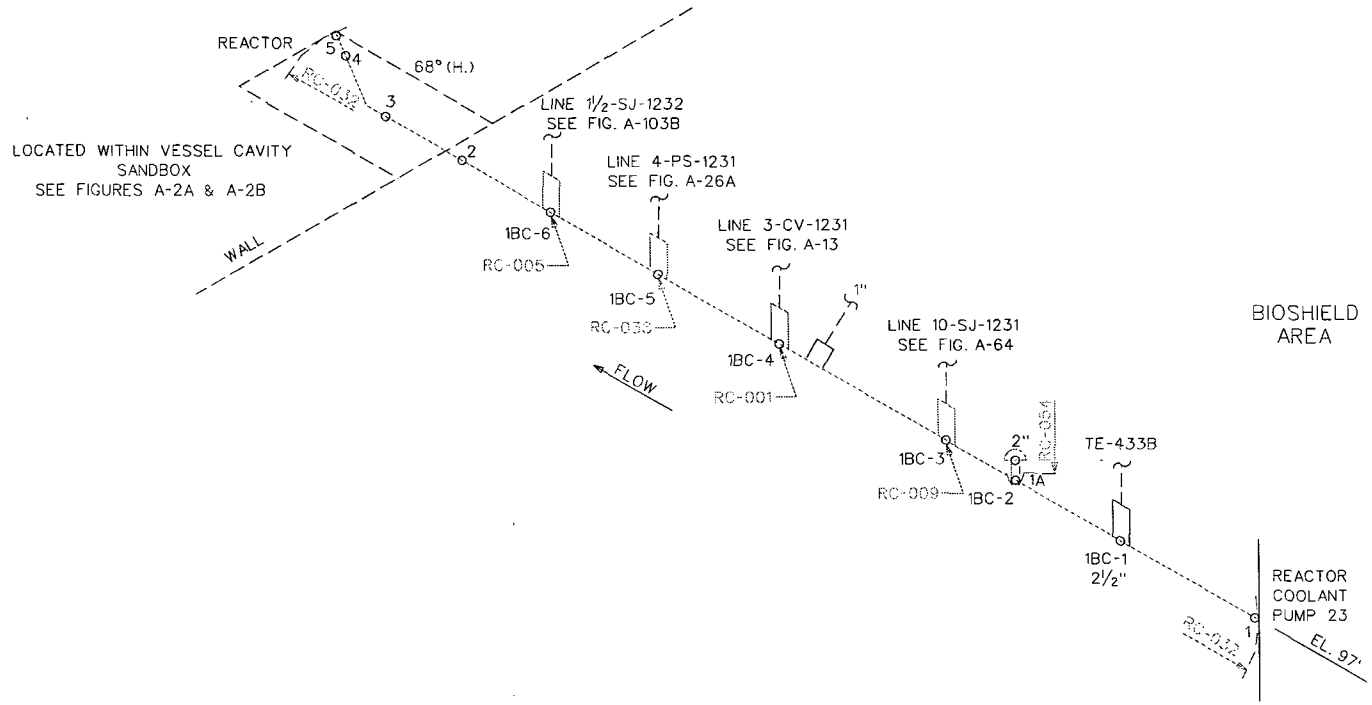
Sketch



## Sw. R.I. STRAIGHT BEAM LAMINATION EXAMINATION RECORD

PROJECT No. <b>17-3052</b>		SITE: <b>Salem Generating Station, Unit 2</b>		DATE: (DAY - MON. - YR.) <b>28 JUNE 78</b>		TIME: (24 - HR. CLOCK) SHEET STARTED <b>1512</b> SHEET ENDED <b>1523</b>		SHEET No. <b>180995</b>										
EXAMINATION AREA: (SYSTEM / COMPONENT) <b>REACTOR COOLANT</b>		(LINE / SUBASSEMBLY) <b>27.5 - RC - 1230</b>		(IDENTIFICATION) <b>1</b>		L <sub>0</sub> LOCATION <b>1</b>		W <sub>0</sub> LOCATION <b>☉ OF WELD</b>										
EXAMINER: <b>P.C. GAINES</b>		SNT LEVEL <b>I</b>		PROCEDURE <b>No. 600-3</b>		CALIBRATION SHEET (S) <b>250A0</b>		MEASURED THICKNESS UP    ♀    DOWN <b>*    "    "</b> <b>2.45 2.4</b>										
EXAMINER: <b>J.P. MELENDEZ</b>		SNT LEVEL <b>I LTD</b>		REV <b>39</b>		CROWN HEIGHT <b>1/8"</b>		ATTENUATION UP    DOWN <b>NA    7dB</b>										
CROWN WIDTH <b>2 3/8"</b>		WELD TYPE (-FLOW-) <b>NOZZLE-PIPE</b>		WELD LENGTH <b>102"</b>														
IND No.	% LOSS OF BW	IND AMP OF FS.	POSITION 1				POSITION 2				SEARCH UNIT LOCATION	REMARKS	IN					
			L <sub>1</sub>	W <sub>1</sub>	W <sub>2</sub>	MP	L	W <sub>1</sub>	W <sub>2</sub>	MP	L <sub>2</sub>	W <sub>1</sub>	W <sub>2</sub>	MP				
			<b>NO RECORDABLE INDICATIONS</b>											<b>dn</b>				
REMARKS: <b>* No THICKNESS MEASUREMENT UP due to NOZZLE - (P9)</b>																		
EXAMINATION AREA LIMITATIONS: (IF NONE, SO STATE): <b>No EXAMINATION UP due to NOZZLE CONFIGURATION. LIMITED EXAMINATION DN FROM 101"-3" L due to</b>																		
REVIEWED BY: <b>Larry McFarland</b>										SNT LEVEL: <b>II</b>			DATE <b>29 June 78</b>		PAGE 1 OF 1		BRANCH CORNER	





BUILDING: CONTAINMENT		LOCATION: BIOSHIELD	ELEVATIONS: 97'	PSEG ISO RC23-02 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-38   REVISION: 1
					SYSTEM: REACTOR COOLANT SYSTEM
					#23 COLD LEG
					LINE: 27 1/2-RC-1230
					THIRD 10 YEAR INSPECTION INTERVAL
1		REVISED PER ORDER No. 80038023.			
REV.	DATE	DESCRIPTION			

LV 1 = COMMON INFORMATION  
 LV 2 = WELD INFORMATION  
 LV 3 = HANGER INFORMATION



# 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

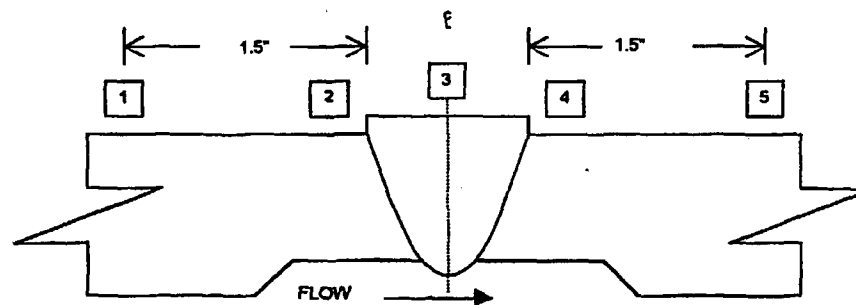
POSITION	0	90	180	270
1				
2				
3				
4				
5				

CROWN HEIGHT: \_\_\_\_\_

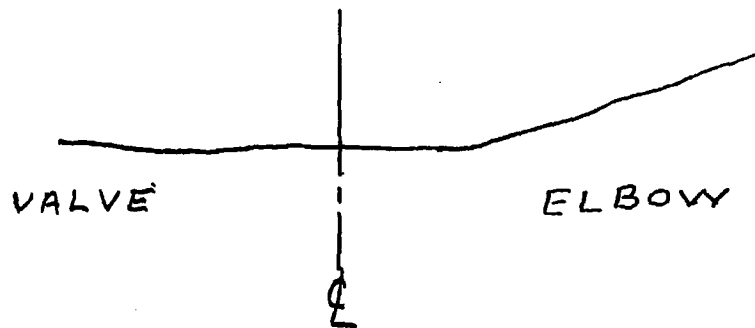
CROWN WIDTH: \_\_\_\_\_

NOM DIAMETER: \_\_\_\_\_

WELD LENGTH: \_\_\_\_\_



THICKNESS FROM TB DATA



175

R. Goff

175

C.R. Meredith 10-18-00  
Prepared By Date

Bob Keller 10/19/00  
Reviewed By Date

W. J. ... 10-23-00  
Utility Review By Date



**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 =V1)	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 / V1) 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 / V1) 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 =V2)	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 / V2) 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 / V2) 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: *[Signature]*

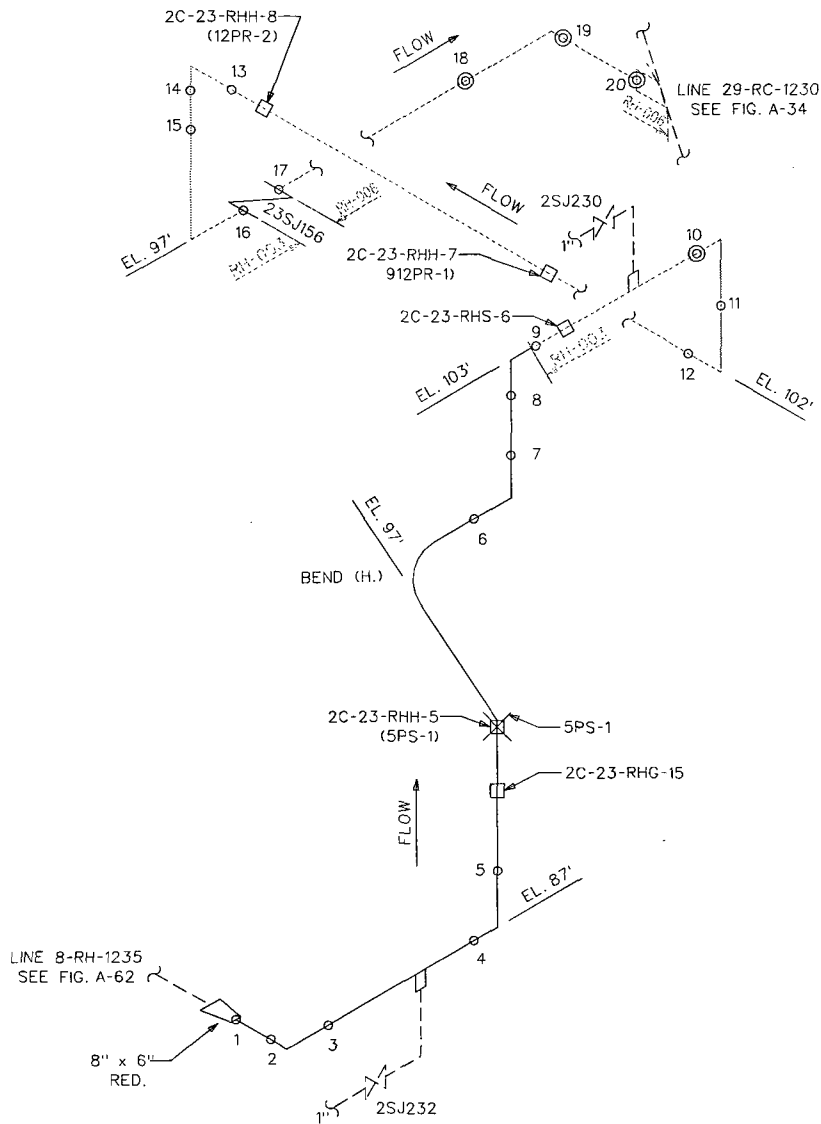
DATE: 10/18/2K

REVIEWER: *[Signature]*

DATE: Page 5 of 6

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BUILDING: CONTAINMENT	LOCATION: BIOSHIELD	ELEVATIONS: 87' - 103'
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PSEG ISO RH23-02  
P & ID 205301, 205334

ATTENTION: ANY REVISION TO THIS DRAWING SHALL BE MADE ONLY BY CAED		
1		REVISED PER ORDER No. 80038023.
REV.	DATE	DESCRIPTION

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

FIGURE: A-77	REVISION: 1
SYSTEM: RESIDUAL HEAT REMOVAL SYSTEM	
LINE: 6-RH-1231	
THIRD 10 YEAR INSPECTION INTERVAL	

- LV 1 = COMMON INFORMATION
- LV 2 = WELD INFORMATION
- LV 3 = HANGER INFORMATION



**PROFILE AND THICKNESS**

Exam Date: 10/14/00

Summary No.: 275210

Site: Salem Unit 2, RFO 11

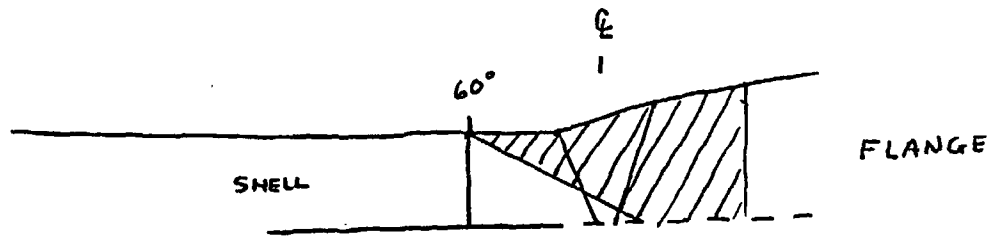
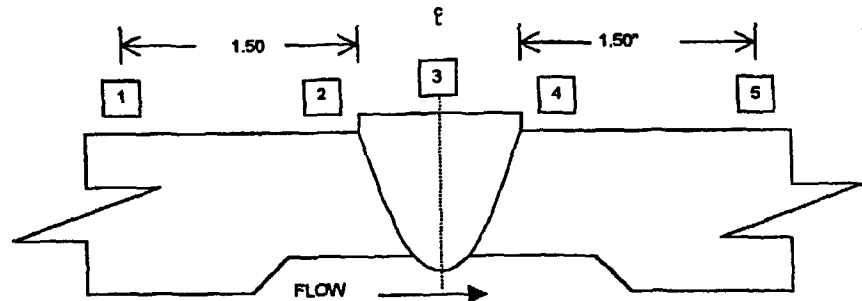
Examination Method: UT

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"



Limited Examination

FACTORY MUTUAL  
INSURANCE COMPANY

NOV 3 2000

*[Signature]*

11/10

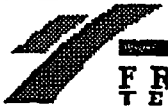
177

*[Signature]* 10/14/2000  
Prepared By Date

*[Signature]* 10/26/00  
Reviewed By Date

*[Signature]* 10-27-00  
Utility Review By Date

177



<b>CUSTOMER:</b> SALEM 2, RFO-11	<b>SYSTEM:</b> LETDOWN HEAT EXCHANGERS
<b>SUMMARY NO:</b> 275210	<b>COMPONENT ID:</b> 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  $0.54 \times 1.70 \times 68.10 = 62.52 \text{ cu.}$

**2.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT BEAM LAMINAR**

2.1 Exam Height X Exam Width X Exam Length = Exam  $0.54 \times 1.70 \times 68.10 = 62.52 \text{ cu.}$

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

3.1 Exam Height X Exam Width X Exam Length = Exam  $0.54 \times 1.70 \times 136.20 = 125.03 \text{ cu.}$

**4.0 CALCULATE REQUIRED TRANSVERSE EXAM VOLUME FOR 45° AND 60°**

4.1 Exam Height X Exam Width X Exam Length = Exam  $0.54 \times 1.70 \times 136.20 = 125.03 \text{ cu.}$

**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	0.85	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	0.35	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
44.13	62.52	29.41 %

178  
110



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
<u>0.54</u> X	<u>1.70</u> X	<u>68.10</u>	= <u>62.52</u>

6.2 Limited Below / CW exam volume

Height of Obstructed Volume	Width of Obstructed Area	Length of Obstructed Area	Volume with no Exam Coverage
<u>0.00</u> X	<u>0.00</u> X	<u>0.00</u>	= <u>0.00</u>

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
$100 - \{ \frac{62.52}{62.52} \} \times 100$		= <u>0.00 %</u>

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
<u>0.54</u> X	<u>0.85</u> X	<u>68.10</u>	= <u>31.26</u>

7.2 Limited Below / CCW exam volume

Height of Obstructed Volume	Width of Obstructed Area	Length of Obstructed Area	Volume with no Exam Coverage
<u>0.54</u> X	<u>0.35</u> X	<u>68.10</u>	= <u>12.87</u>

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
$100 - \{ \frac{44.13}{125.03} \} \times 100$		= <u>64.71 %</u>

179

8/10

179



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
<u>0.54</u>	X	<u>0.85</u>	X	<u>68.10</u>	=	<u>31.26</u>

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
<u>0.54</u>	X	<u>0.35</u>	X	<u>68.10</u>	=	<u>12.87</u>

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
<u>44.13</u>	/	<u>125.03</u>	x 100	= <u>64.71 %</u>

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
<u>0.54</u>	X	<u>1.70</u>	X	<u>68.10</u>	=	<u>62.52</u>

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
<u>0.54</u>	X	<u>0.85</u>	X	<u>68.10</u>	=	<u>31.26</u>

Total 45° transverse exam volume not examined = 93.77

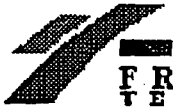
9.3 Percent Volume Examined

Total 45° parallel Vol w/No Coverage		Total 45° parallel Exam Volume		Percent Volume Examined
<u>93.77</u>	/	<u>125.03</u>	x 100	= <u>25.00 %</u>

180

9/10

180



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
<u>0.54</u>	X	<u>1.70</u>	X	<u>68.10</u>	=	<u>62.52</u>

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
<u>0.54</u>	X	<u>0.85</u>	X	<u>68.10</u>	=	<u>31.26</u>

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
<u>93.77</u>	<u>125.03</u>	<u>25.00 %</u>

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
<u>208.82</u>	<u>5.00</u>	= <u>41.76 %</u>

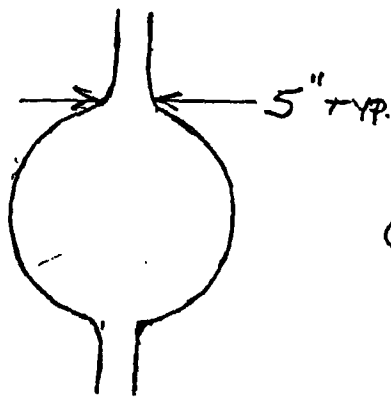
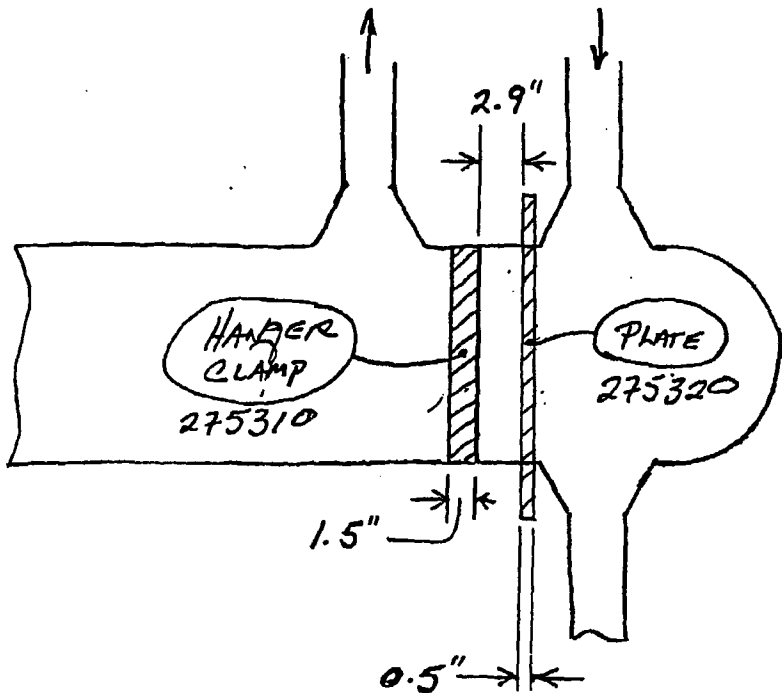
LIMITED BY FLANGE & NOZZLES

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181 10/10

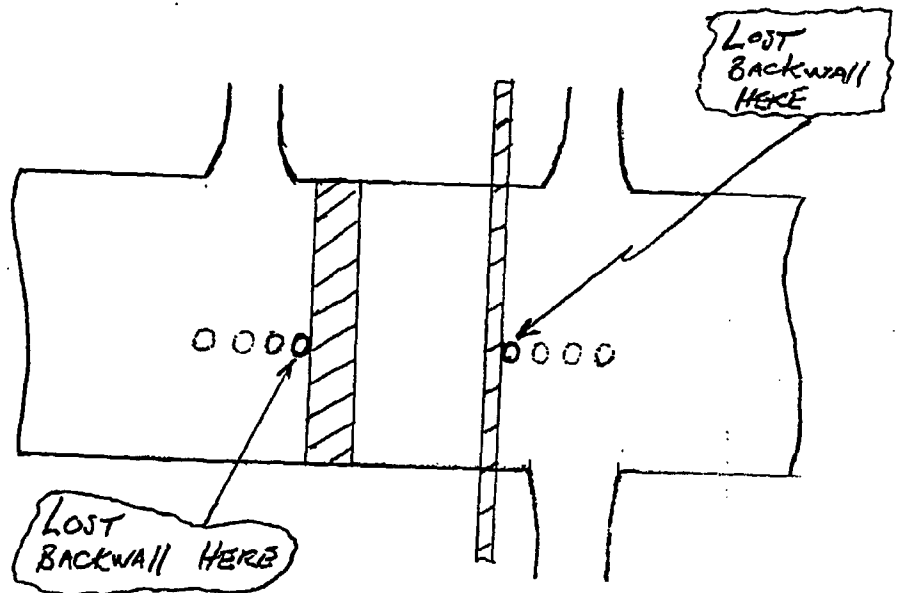
Examiner:	Level:	Date:	Reviewer:	Level:	Date:
<u>[Signature]</u>		<u>10-24-00</u>	<u>[Signature]</u>		<u>10/26/00</u>
Sign:			Sign:		

Sum # 275310 & 275320  
 REGENERATIVE HEAT EXCH.  
 COMPONENTS 2-RHE 2 & 3



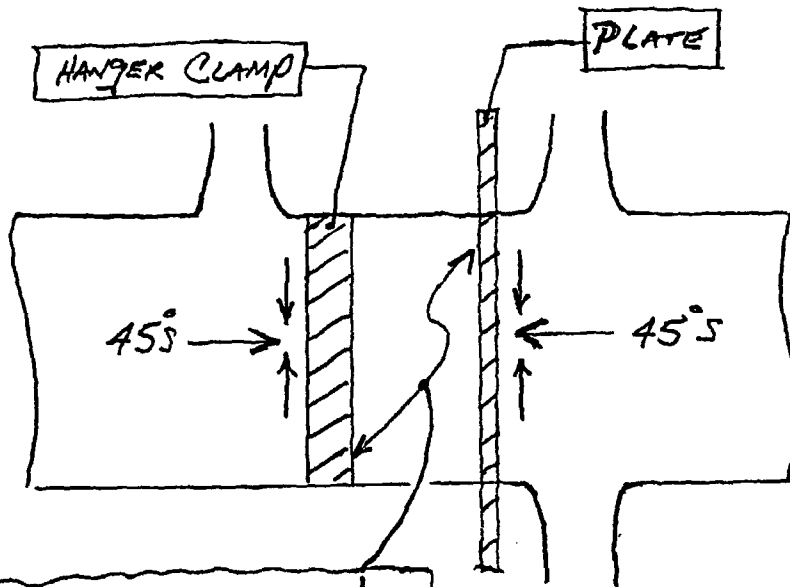
CIRCUMFERENCE = 29 1/2"

ASSUMED WELD IS LOCATED  
 ADJACENT TO REGION WHERE  
 BACKWALL IS LOST.



Pg. 4 of 6  
 R. 275310, 275320, 275320

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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 1/2 VEE COVERAGE.

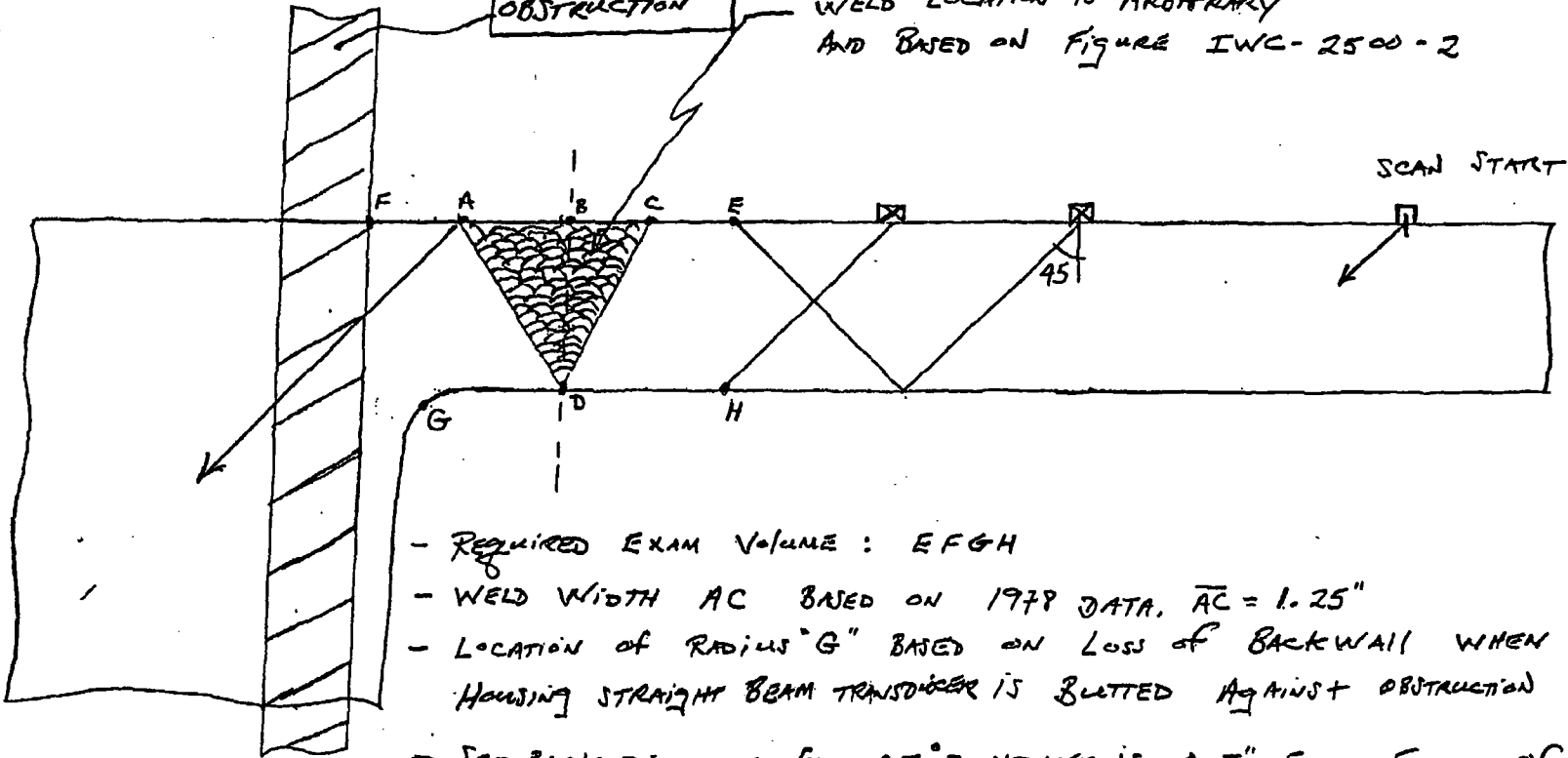
Pgs 5 of 6  
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SUM # 275310  
275320

PLATE  
HANGER CLAMP  
OBSTRUCTION

WELD LOCATION IS ARBITRARY  
AND BASED ON FIGURE IWC-2500-2



- REQUIRED EXAM VOLUME : EFGH
- WELD WIDTH AC BASED ON 1979 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 XDUCE 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.

Pg. 2 of 2  
of 2  
of 2  
of 2

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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

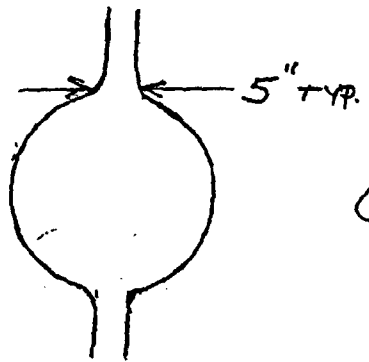
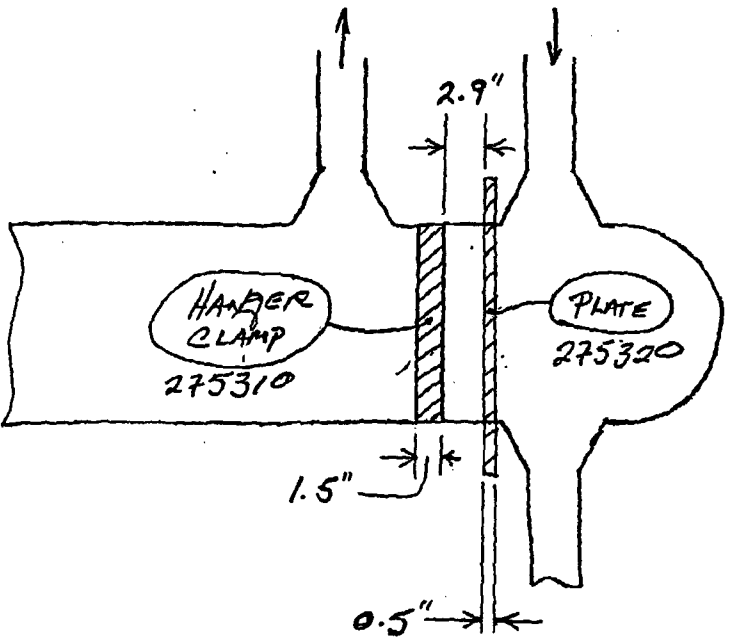
IN THE ABOVE CALCULATIONS FOR STEPS 1.2, 2.2, AND 2.4 THE FIRST SET OF PARENTHESIS ADDRESSES THE HANGER CLAMP OBSTRUCTION, AND THE SECOND SET ADDRESSES THE NOZZLE OBSTRUCTION.

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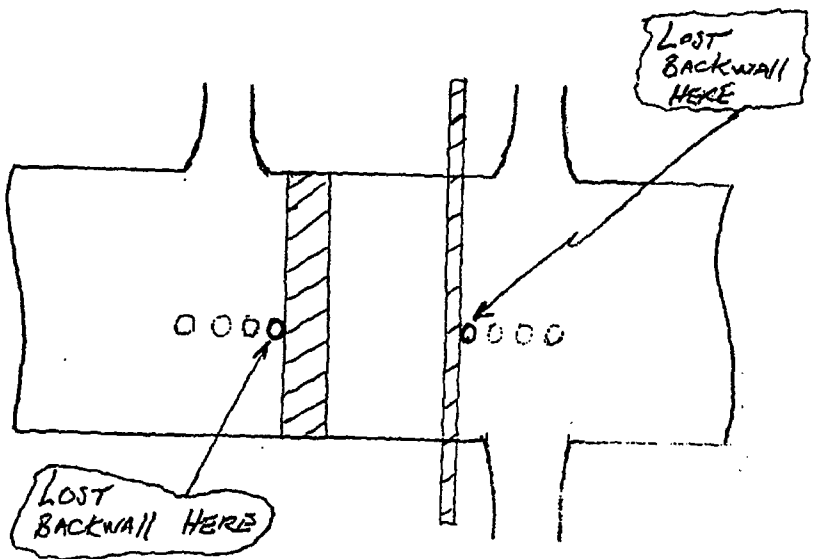
PREPARED BY: *C R Merritt* DATE: 10-10-00

REVIEWER: *Bob Keller* DATE: 10/19/00 Page 3 of 6

Sum # 275310 & 275320  
 REGENERATIVE HEAT EXCHANGER  
 COMPONENTS 2-RHE 2 & 3



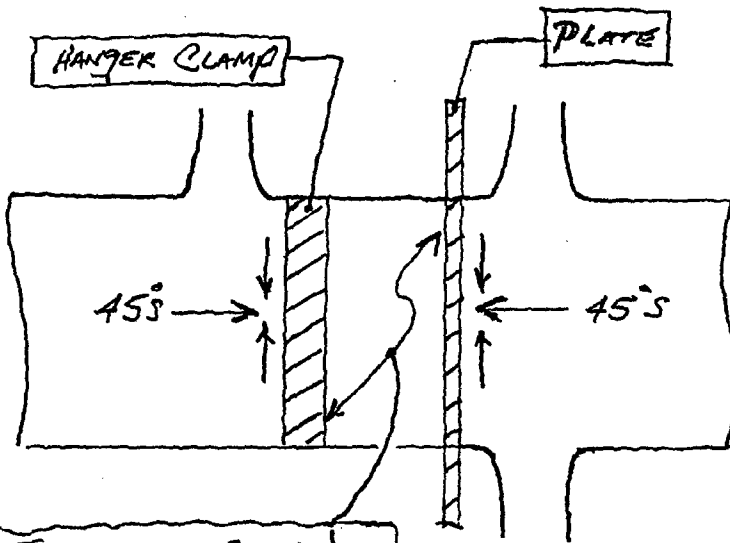
CIRCUMFERENCE = 29 1/2"



ASSUMED WELD IS LOCATED  
 ADJACENT TO REGION WHERE  
 BACKWALL IS LOST.

Do not  
 weld  
 on  
 this  
 area

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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.

TUBESHEET REGION.  
 DID NOT SCAN IN THIS REGION  
 SINCE HANGER CLAMP AND PLATE  
 PREVENT HALF-VEE COVERAGE AND  
 TUBESHEET PREVENTS FULL-VEE  
 AND 1/2 VEE COVERAGE.

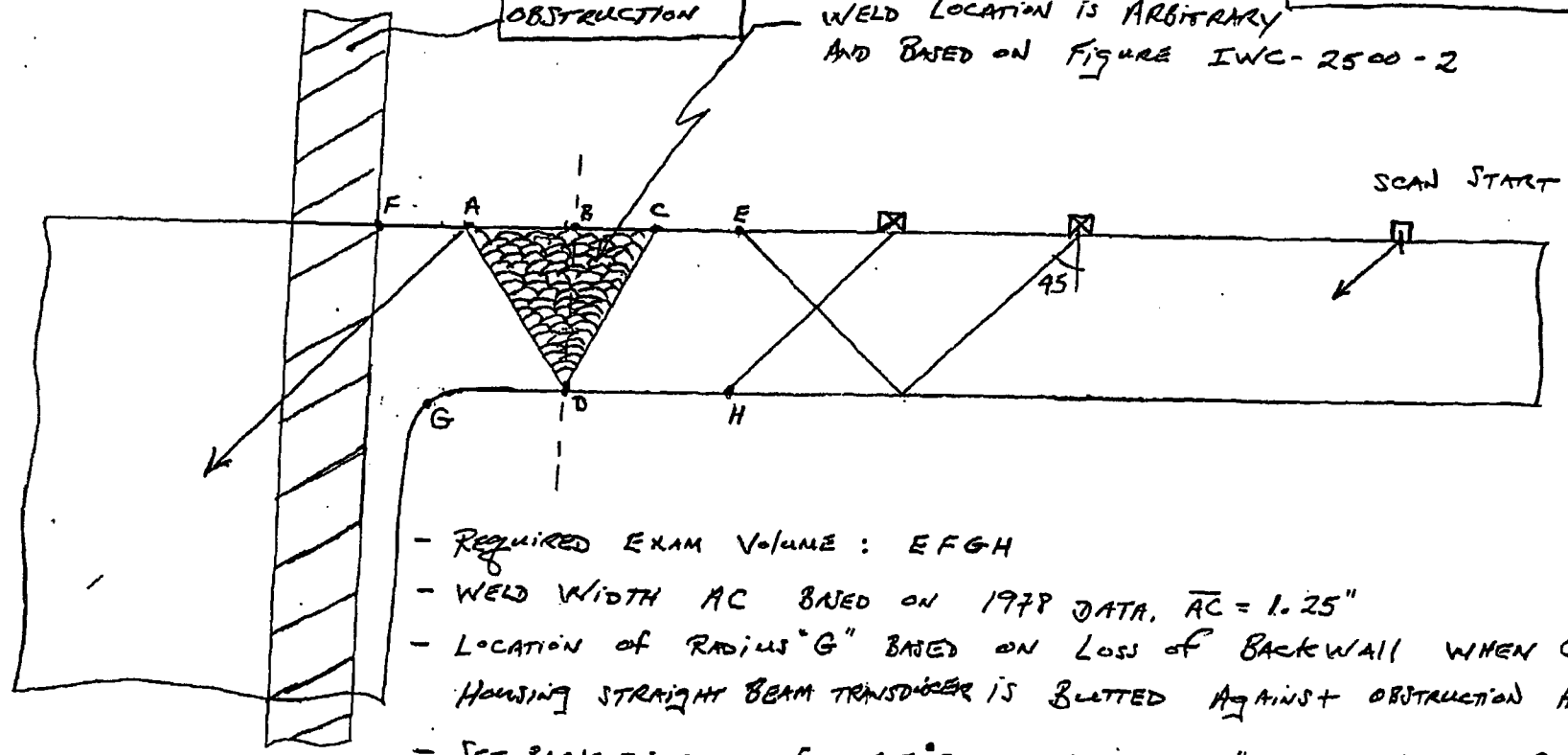
Pg. 5 of 6  
 BILKINS/BUDD/COOPER

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Sum # 275310  
275320

PLATE  
HANGER CLAMP  
OBSTRUCTION

WELD LOCATION IS ARBITRARY  
AND BASED ON FIGURE IWC-2500-2



- 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 TRANSFORMER IS BUTTED AGAINST OBSTRUCTION AT "F"
- SET BACK DISTANCE FOR 45°S XDUCKER 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.

Project 18

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**VOLUMETRIC PIPING EXAMINATION COVERAGE REPORT**

<b>CUSTOMER:</b> SALEM 2, RFO 11	<b>SYSTEM:</b> REGIN HEAT EXCHANGER
<b>SUMMARY NO:</b> 275320	<b>COMPONENT ID:</b> 2-RHE-3

**VOLUMETRIC PIPING EXAMINATIONS**

<b>1.0 AXIAL ULTRASONIC EXAMINATIONS - Upstream (US) and Downstream (DS)</b>	
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%
<b>2.0 CIRCUMFERENTIAL ULTRASONIC EXAMINATIONS (Clockwise and Counterclockwise)</b>	
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%
<b>3.0 TOTAL EXAMINATION COVERAGE OBTAINED</b>	
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:

*[Signature]*

DATE:

Page 3 of 6



# PROFILE AND THICKNESS (cont.)

Exam Date: 10/18/00

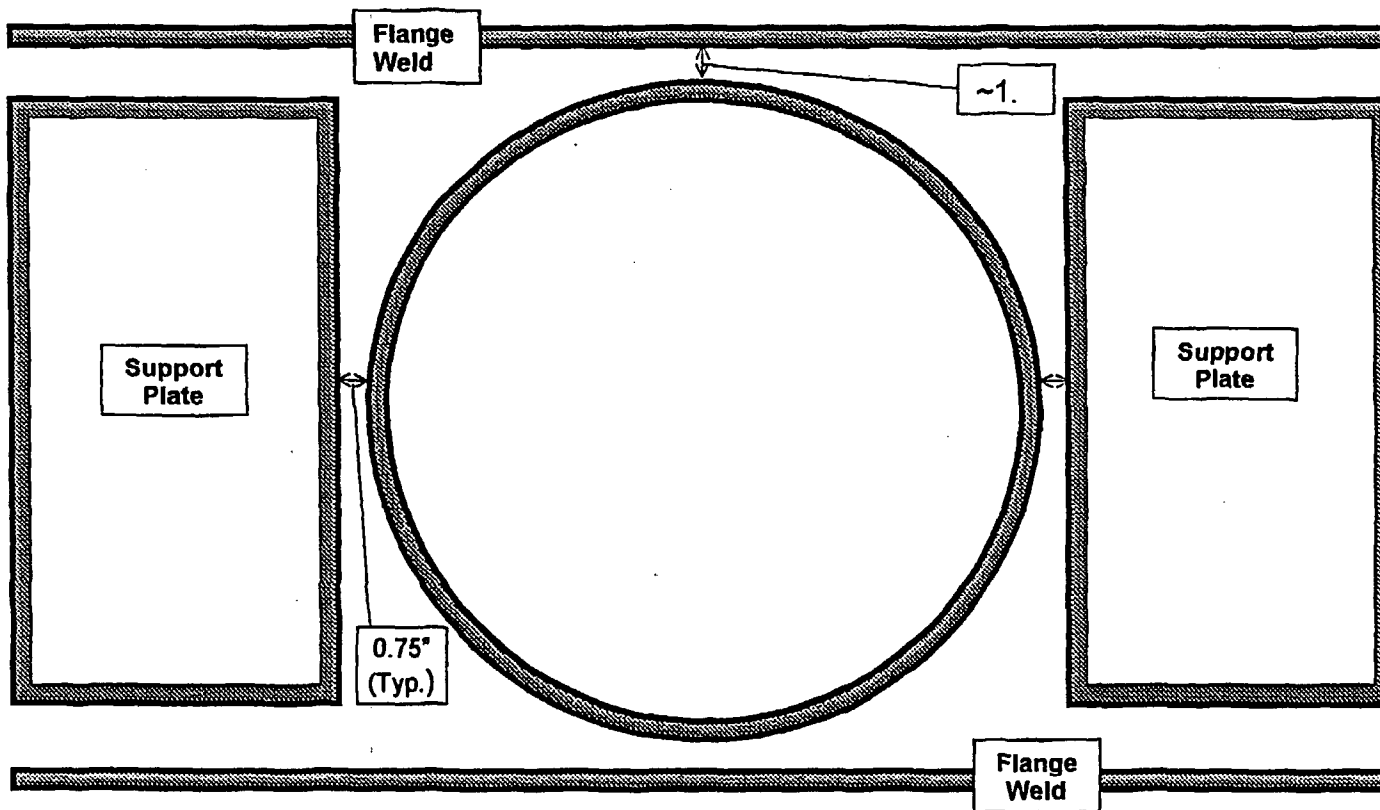
Summary No.: 275400

Site: Salem Unit 2, RFO 11

Examination Method: UT

System: Residual Heat Removal Exchangers

Identification: 21-RHRHEX-OUT



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Welds

12/13

*[Signature]* 10/16/2000  
Prepared By Date

*[Signature]* 10/23/00  
Reviewed By Date

*[Signature]* 10/26/00  
Utility Review By Date



FRAMATOME  
TECHNOLOGIES

### PROFILE AND THICKNESS (cont.)

Exam Date: 10/06/00

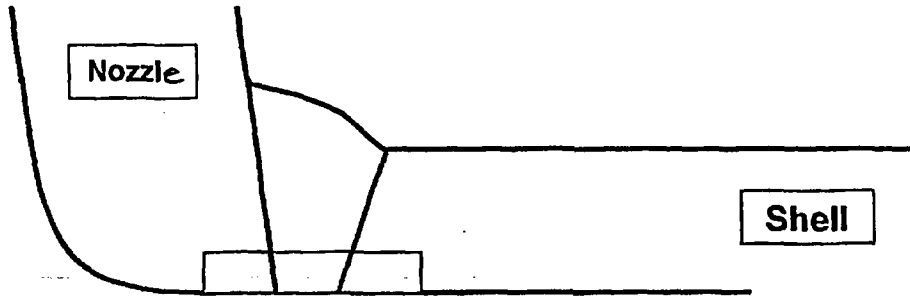
Summary No.: 275400

Site: Salem Unit 2, RFO 11

Examination Method: UT

System: Residual Heat Removal Exc

Identification: 21-RHRHEX-OUT



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<i>WJG</i>	10/16/2000	<i>Bob Volker</i>	10/13/00	<i>Wayne Deninger</i>	10/26/00
Prepared By	Date	Reviewed By	Date	Utility Review By	Date

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**FRAMATOME  
TECHNOLOGIES**
**VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT**

CUSTOMER: 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**

$$1.1 \quad \text{Exam Height} \times \text{Exam Width} \times \text{Exam Length} = \text{Exam} \quad \underline{0.33 \times 1.50 \times 183.00 = 90.58 \text{ cu.}}$$

**2.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT BEAM LAMINAR**

$$2.1 \quad \text{Exam Height} \times \text{Exam Width} \times \text{Exam Length} = \text{Exam} \quad \underline{1.00 \times 2.00 \times 102.00 = 204.00 \text{ cu.}}$$

**3.0 CALCULATE REQUIRED PARALLEL EXAM VOLUME FOR 45° AND 60°**

$$3.1 \quad \text{Exam Height} \times \text{Exam Width} \times \text{Exam Length} = \text{Exam} \quad \underline{0.33 \times 1.50 \times 366.00 = 181.17 \text{ cu.}}$$

**4.0 CALCULATE REQUIRED TRANSVERSE EXAM VOLUME FOR 45° AND 60°**

$$4.1 \quad \text{Exam Height} \times \text{Exam Width} \times \text{Exam Length} = \text{Exam} \quad \underline{0.33 \times 1.50 \times 366.00 = 181.17 \text{ cu.}}$$

**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
<u>0.33</u>	X <u>1.25</u>	X <u>183.00</u>	= <u>75.49</u>

**5.2 Limited Below / CW exam volume**

Height of Obstructed Volume	Width of Obstructed Area	Length of Obstructed Area	Volume with no Exam Coverage
<u>0.00</u>	X <u>0.00</u>	X <u>0.00</u>	= <u>0.00</u>

$$\text{Total straight beam planar exam volume not examined} = \underline{75.49}$$

**5.3 Percent Volume Examined**

Total 0 vol w/No Coverage	Total 0 Exam Volume	Percent Volume Examined
<u>100 - { [ <u>75.49</u> / <u>90.58</u> ] x 100}</u>	=	<u>16.67 %</u>

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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
<u>1</u>	X <u>2.00</u>	X <u>74.00</u>	= <u>148.00</u>

6.2 Limited Below / CW exam volume

Height of Obstructed Volume	Width of Obstructed Area	Length of Obstructed Area	Volume with no Exam Coverage
<u>0.00</u>	X <u>0.00</u>	X <u>0.00</u>	= <u>0.00</u>

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
$100 - \{ \frac{148.00}{204.00} \} \times 100$		= <u>27.45 %</u>

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
<u>0.33</u>	X <u>1.50</u>	X <u>183.00</u>	= <u>90.58</u>

7.2 Limited Below / CCW exam volume

Height of Obstructed Volume	Width of Obstructed Area	Length of Obstructed Area	Volume with no Exam Coverage
<u>0.33</u>	X <u>1.50</u>	X <u>183.00</u>	= <u>90.58</u>

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
$100 - \{ \frac{181.17}{181.17} \} \times 100$		= <u>0.00 %</u>

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## 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
<u>0.33</u> X	<u>1.50</u> X	<u>183.00</u>	= <u>90.58</u>

## 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
<u>0.33</u> X	<u>1.50</u> X	<u>183.00</u>	= <u>90.58</u>

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
$100 - \left\{ \left[ \frac{181.17}{181.17} \right] \times 100 \right\}$		= <u>0.00 %</u>

## 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
<u>0.33</u> X	<u>1.50</u> X	<u>183.00</u>	= <u>90.58</u>

## 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
<u>0.33</u> X	<u>1.50</u> X	<u>155.00</u>	= <u>76.72</u>

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
$100 - \left\{ \left[ \frac{167.31}{181.17} \right] \times 100 \right\}$		= <u>7.65 %</u>

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9/13  
BR

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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
<u>0.33</u>	X <u>1.50</u>	X <u>183.00</u>	= <u>90.58</u>

## 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
<u>0.33</u>	X <u>1.50</u>	X <u>155.00</u>	= <u>76.72</u>

Total straight beam planar exam volume not examined	=	<u>167.31</u>
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## 10.3 Percent Volume Examined

Total 60° Trans Vol w/NoCoverage	Total 60° Trans Exam Volume	Percent Volume Examined
$100 - \left\{ \left[ \frac{167.31}{181.17} \right] \times 100 \right\}$	=	<u>7.65 %</u>

**11.0 CALCULATE PERCENT OF TOTAL VOLUME EXAMINED**

## 11.1 Sum of Exam Volumes %

Steps 5 Thur 10	No. Of Exams (6)	Examination Coverage
$\left[ \frac{59.42}{6.00} \right]$	=	<u>9.90 %</u>

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10/13  
EX

Examiner: Steve M. Herman

Level: II

Date:  
10/16/00

Reviewer:

Level:

Date:

195

Sign:

Sign:

195



# PROFILE AND THICKNESS

Exam Date: 10/14/00

Summary No.: 384320

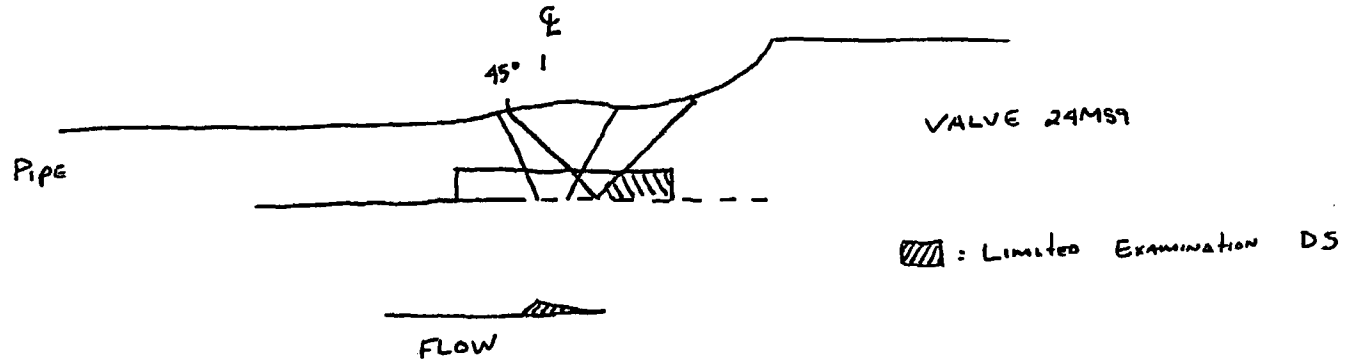
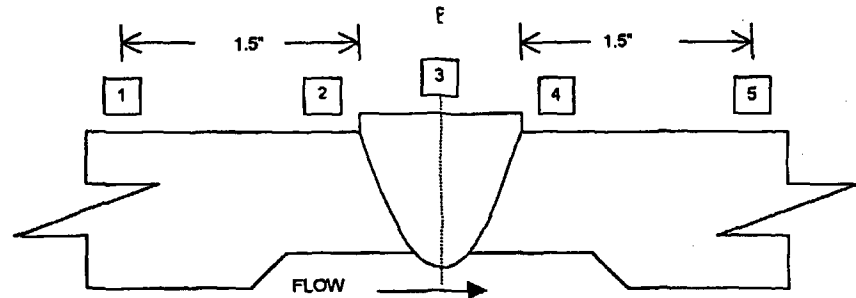
Site: Salem Unit 2, RFO 11

Examination Method: UT

System: MAIN STEAM SYSTEM

Identification: 6-MS-2246-3

POSITION	0	90	180	270	
1	0.44"				CROWN HEIGHT: <u>0.050"</u>
2	0.44"				CROWN WIDTH: <u>0.650"</u>
3	0.52"				NOM DIAMETER: <u>6.0"</u>
4	N/A				WELD LENGTH: <u>20.81"</u>
5	N/A				



FACTORY MUTUAL  
INSURANCE COMPANY

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RFO

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[Signature] 10-14-2000  
Prepared By Date

[Signature] 10/14/00  
Reviewed By Date

[Signature] 10-24-00  
Utility Review By Date



**PROFILE AND THICKNESS**

Exam Date: 10/14/2000

Summary No.: 384320

Site: Salem Unit 2, RFO 11

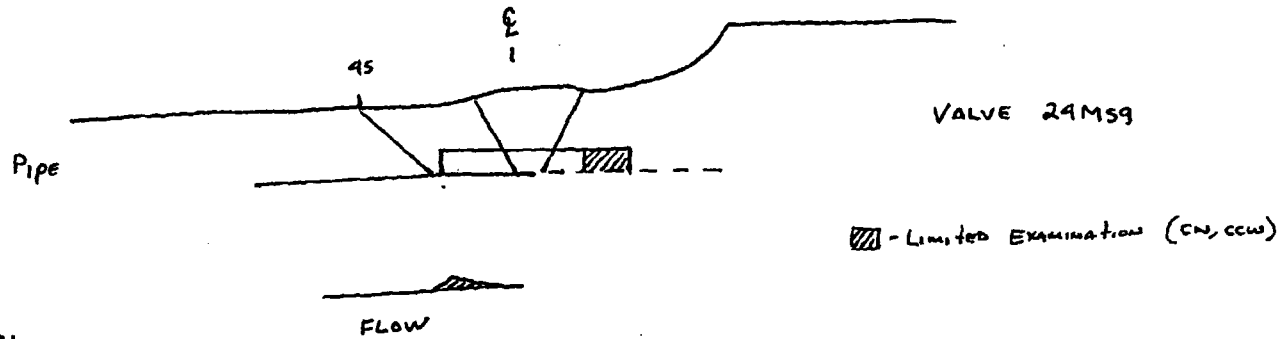
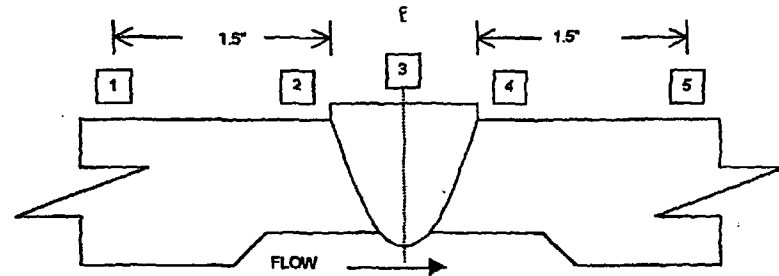
Examination Method: UT

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: 0.060"  
 CROWN WIDTH: 0.650"  
 NOM DIAMETER: 6.0"  
 WELD LENGTH: 20.81"



FACTORY MUTUAL  
INSURANCE COMPANY

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 Prepared By [Signature] Date 10-14-2000 Reviewed By [Signature] Date 10/17/00 Utility Review By [Signature] Date 10-24-00



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.

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198

PREPARED BY:

DATE: 10-14-2000

REVIEWER:

DATE: 10/17/01 Page 5 of 87

198



# PROFILE AND THICKNESS

Exam Date: 10/06/00

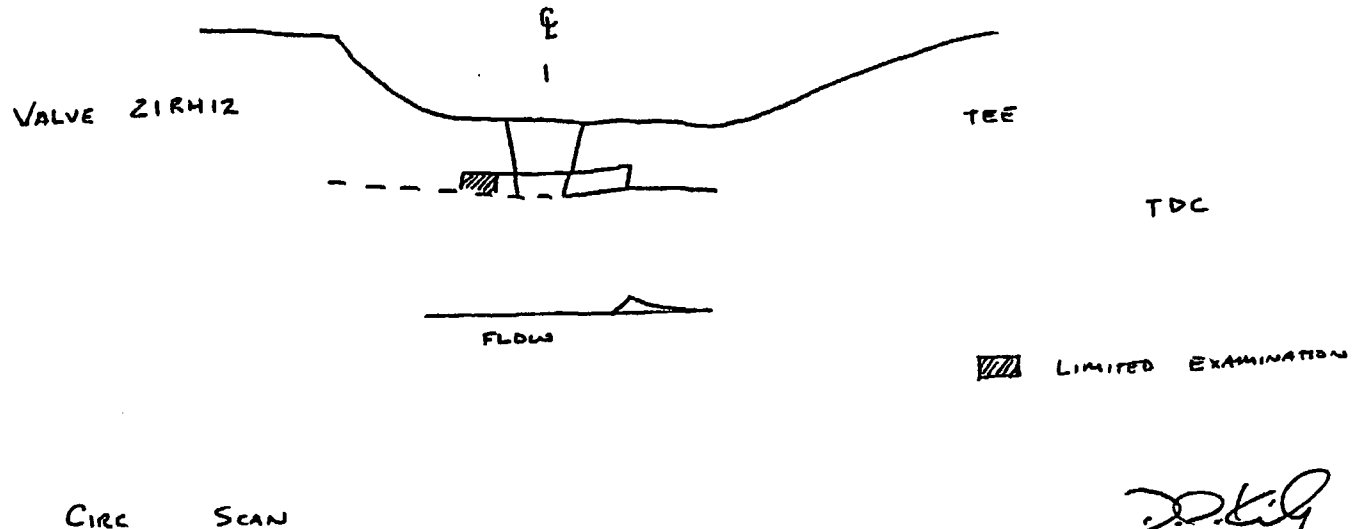
Summary No.: 502580

Site: Salem Unit 2, RFO 11

Examination Method: UT

System: Residual Heat Removal System

Identification: 8-RH-2273-18



*J. King*  
FACTORY MUTUAL  
INSURANCE COMPANY  
10-26-00

195  
10/3  
Prepared By *mmk* Date 10/3/2000

*Bob Keller* 10/2/00  
Reviewed By Date

*W. Denhart* 10-10-00  
Utility Review By Date





# PROFILE AND THICKNESS

Exam Date: 10/06/00

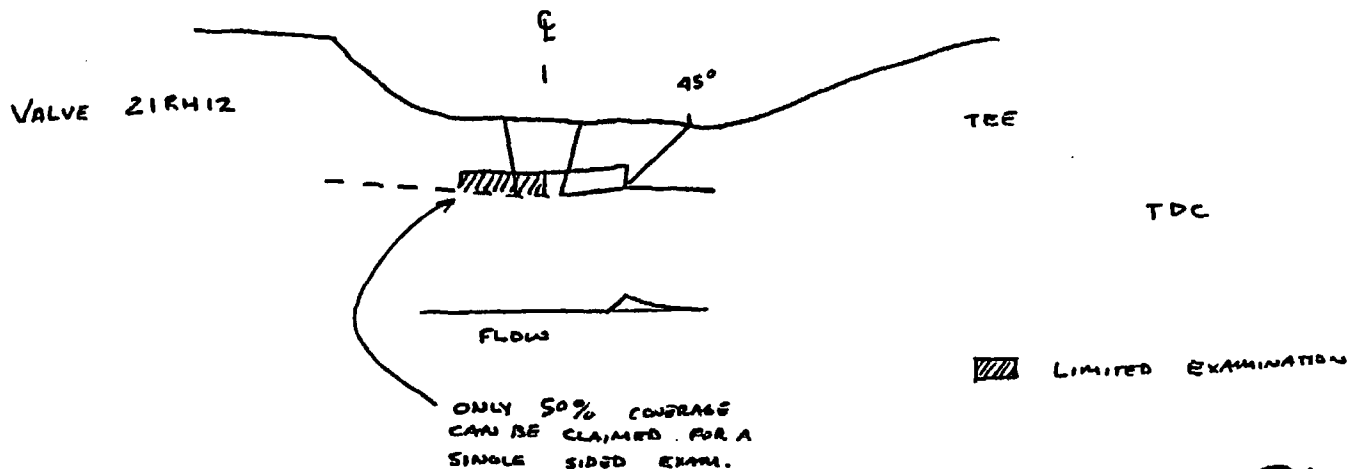
Summary No.: 502580

Site: Salem Unit 2, RFO 11

Examination Method: UT

System: Residual Heat Removal System

Identification: 8-RH-2273-18



*D. Kelly*  
FACTORY MUTUAL  
INSURANCE COMPANY  
10-26-00

*Pg. 7 of 7*

*2/15* *10/8/2000*  
Prepared By Date

*B. Kelly* *10/7/00*  
Reviewed By Date

*W. D. ...* *10-10-00*  
Utility Review By Date



**VOLUMETRIC PIPING EXAMINATION COVERAGE REPORT**

<b>CUSTOMER:</b> SALEM 2, RFO-11	<b>SYSTEM:</b> RESIDUAL HEAT REMOVAL SYSTEM
<b>SUMMARY NO:</b> 502580	<b>COMPONENT ID:</b> 8-RH-2273-18

**VOLUMETRIC PIPING EXAMINATIONS**

<b>1.0 AXIAL ULTRASONIC EXAMINATIONS - Upstream (US) and Downstream (DS)</b>		
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%	
<b>2.0 CIRCUMFERENTIAL ULTRASONIC EXAMINATIONS (Clockwise and Counterclockwise)</b>		
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%	
<b>3.0 TOTAL EXAMINATION COVERAGE OBTAINED</b>		
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.

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*[Signature]*  
**FACTORY MUTUAL  
 INSURANCE COMPANY**  
 10-26-99

PREPARED BY: *[Signature]* DATE: 10/13/2000 REVIEWER: Bob Keller DATE: 10/17/00 Page 5 of 7



# PROFILE AND THICKNESS

Exam Date: 10/06/00

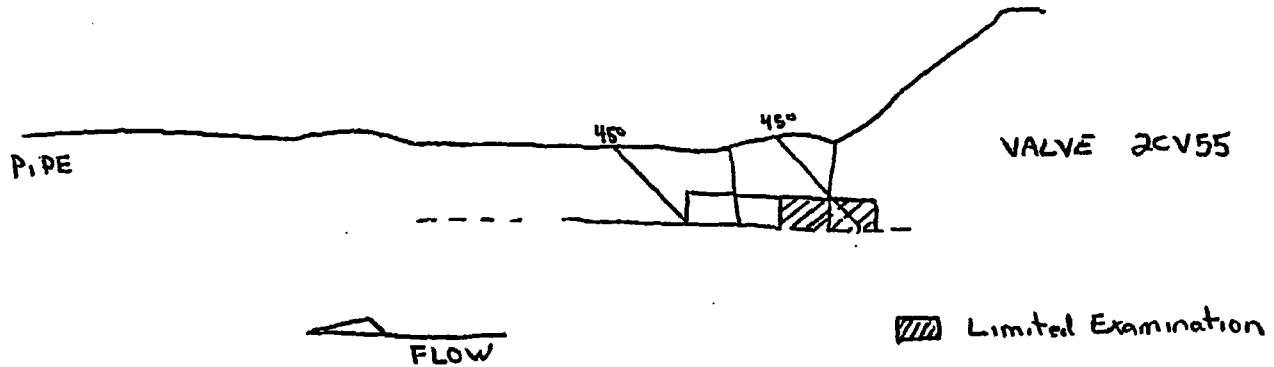
Summary No.: 707620

Site: Salem Unit 2, RFO 11

Examination Method: UT

System: Chemical and Volume Control System

Identification: 3-CV-2259-14R1



▨ Limited Examination

TDC

*[Signature]*  
FACTORY MUTUAL  
INSURANCE COMPANY  
10-31-00

Axial Scan

202

Pa. 8 of 9

*[Signature]* 10/7/00  
Prepared By Date

*[Signature]* 10/7/00  
Reviewed By Date

*[Signature]* 10-12-00  
Utility Review By Date



# PROFILE AND THICKNESS

Exam Date: 10/06/00

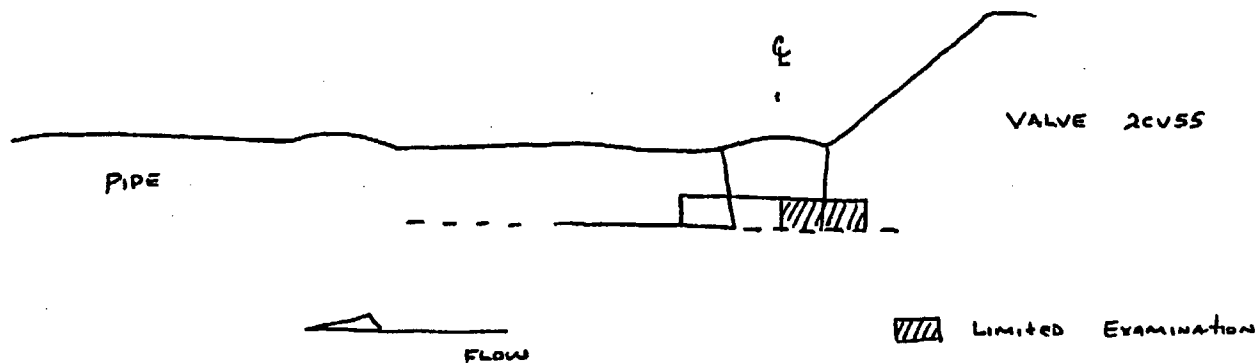
Summary No.: 707620

Site: Salem Unit 2, RFO 11

Examination Method: UT

System: Chemical and Volume Control System

Identification: 3-CV-2259-14R1



*Walter J. Dallas*  
 FACTORY MUTUAL  
 INSURANCE COMPANY  
 10-31-00

Pg. 9 of 9

203

203

*Wally MURKEY* 10/7/2000  
 Prepared By Date

*Bob Keller* 10/7/00  
 Reviewed By Date

*Wagner Daniels* 10/2/00  
 Utility Review By Date



<b>CUSTOMER:</b> SALEM 2, RFO-11	<b>SYSTEM:</b> CHEMICAL AND VOLUME CONTROL SYSTEM
<b>SUMMARY NO:</b> 707620	<b>COMPONENT ID:</b> 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**

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<b>PREPARED BY:</b> <i>[Signature]</i>	<b>DATE:</b> 10/7/2000	<b>REVIEWER:</b> <i>[Signature]</i>	<b>DATE:</b> 10/7/00	<b>Page</b> 5 <b>of</b> 9 <b>204</b>
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# PROFILE AND THICKNESS

Exam Date: 10/06/00

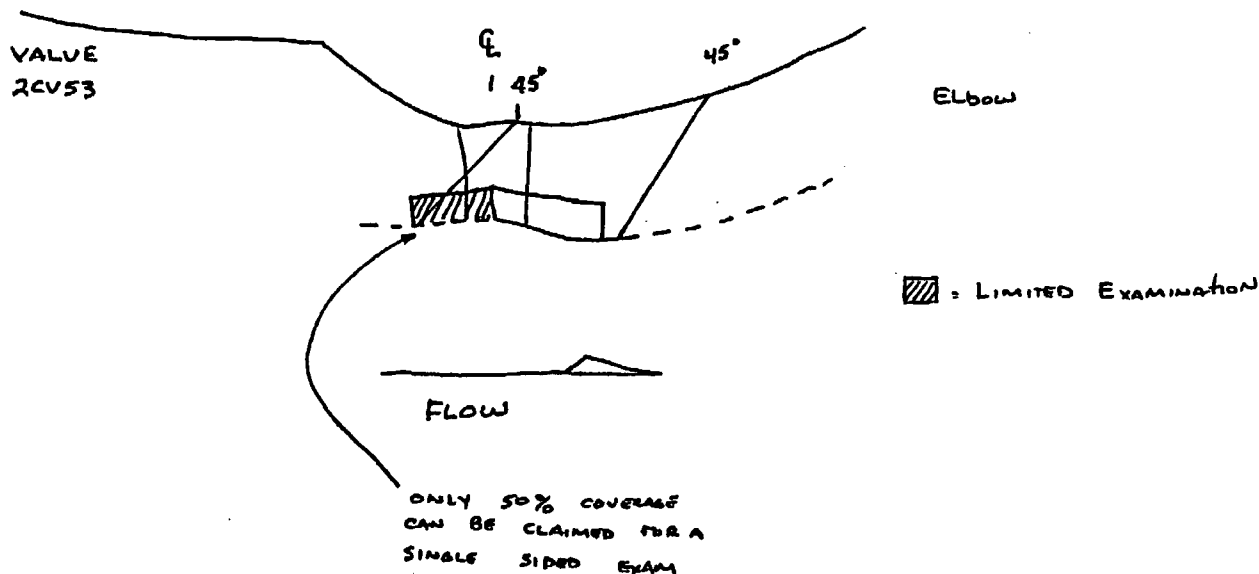
Summary No.: 707320

Site: Salem Unit 2, RFO 11

Examination Method: UT

System: Chemical and Volume Control System

Identification: 4-CV-2257-16



Pa. 7-89

Axial Scan

205  
Prepared By Wiley Mincey Date 10/5/00

Reviewed By Bob Keller Date 10/10/00

Utility Review By Wayne Denlinger Date 10-26-00



# PROFILE AND THICKNESS

Exam Date: 10/06/00

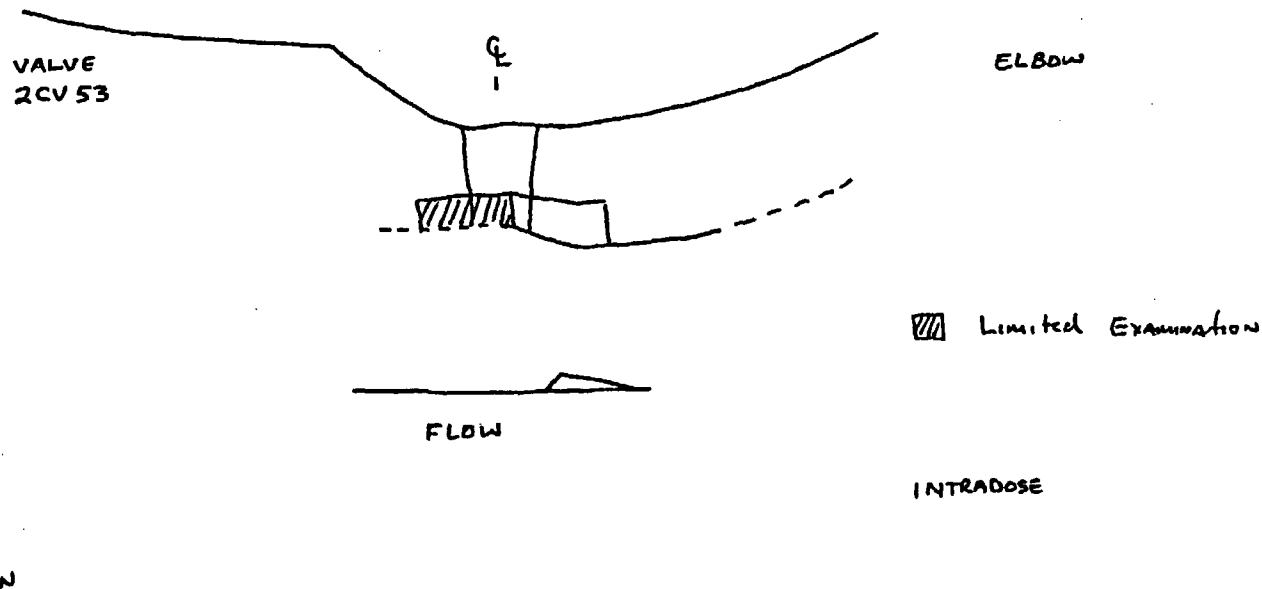
Summary No.: 707620

Site: Salem Unit 2, RFO 11

Examination Method: UT

System: Chemical and Volume Control System

Identification: 3-CV-2259-14R1

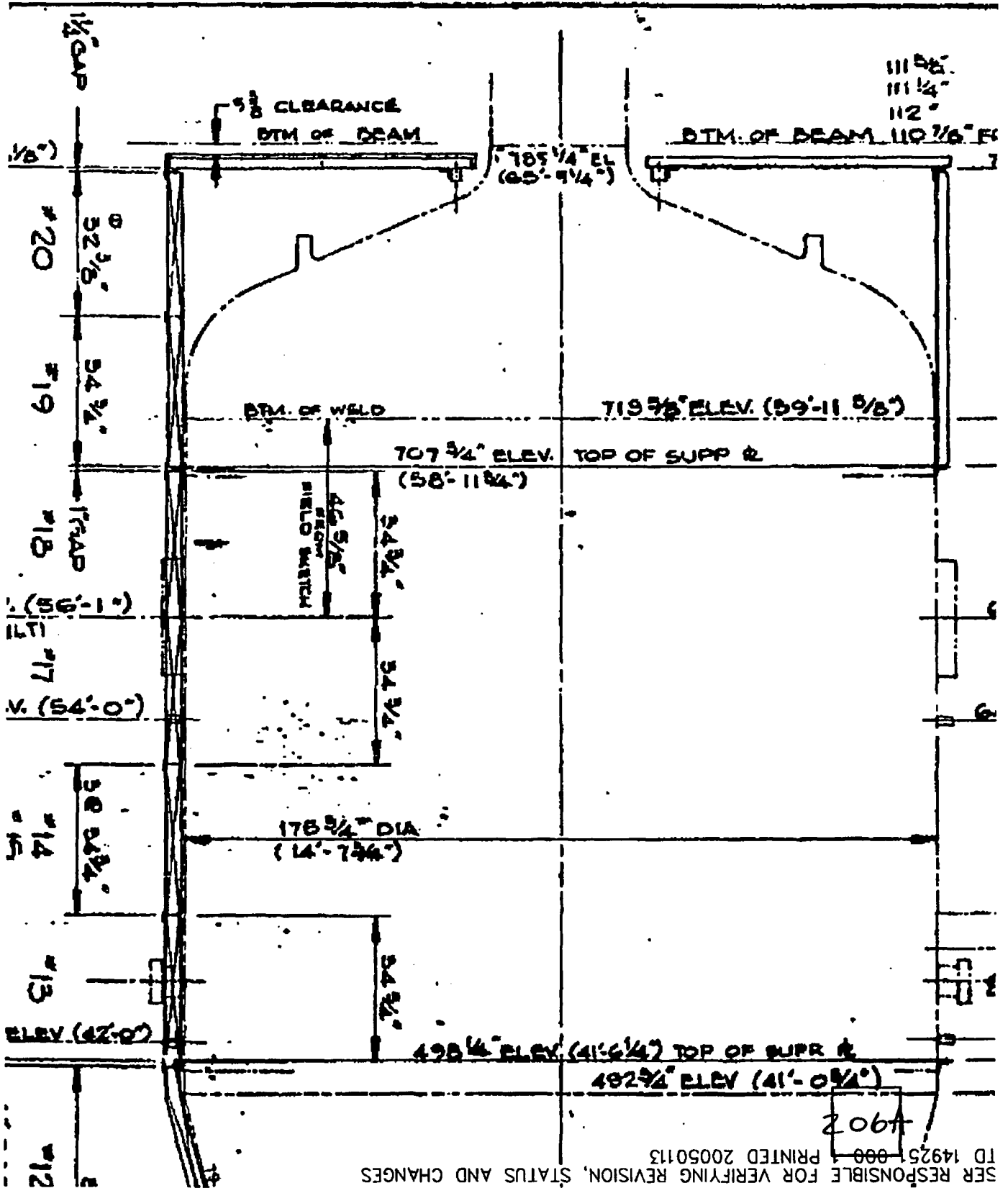


Pg. 8 of 9

206  
206  
Prepared By nelly Date 10/5/00

Reviewed By Bob Keller Date 10/10/00

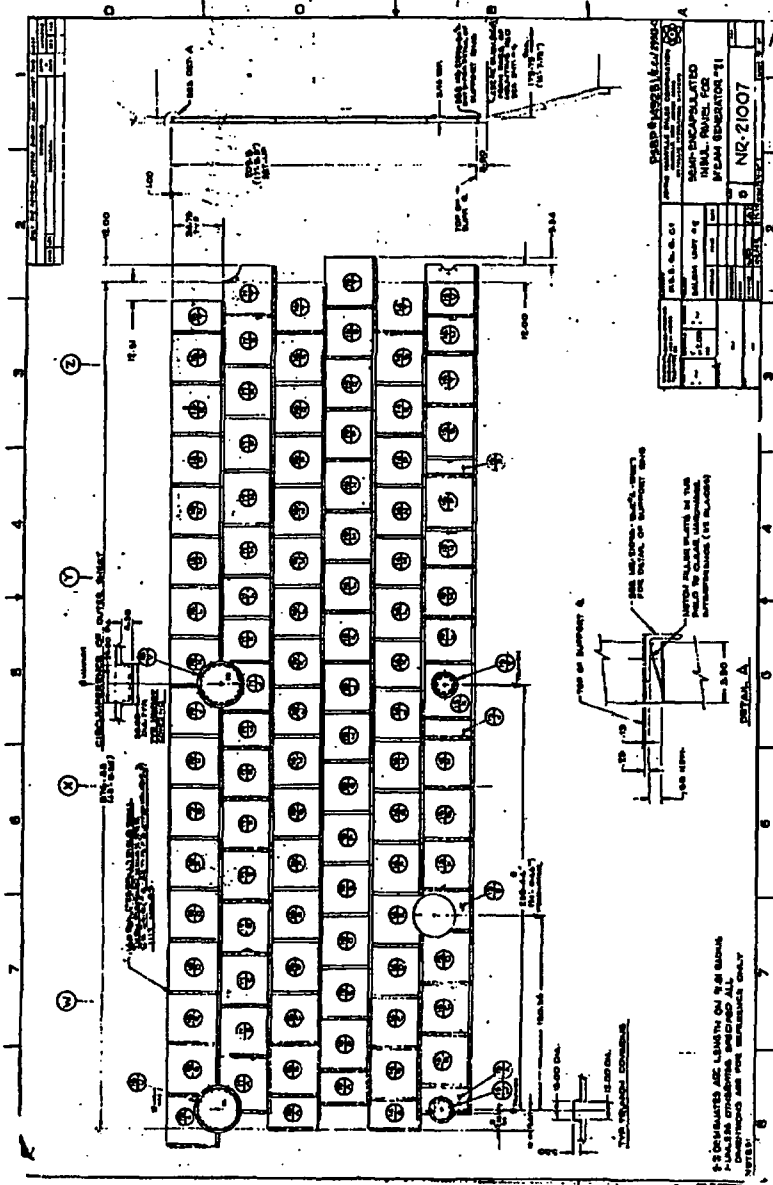
Utility Review By Wesley Sealings Date 10/26/00



A902



USER RESPONSIBLE FOR VERIFYING REVISION, STATUS AND CHANGES  
 VTD 149251 000 1 PRINTED 20050113



149251

0.02

4-1-78

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206B  
 206B





# PROFILE AND THICKNESS

Exam Date: 10/06/00

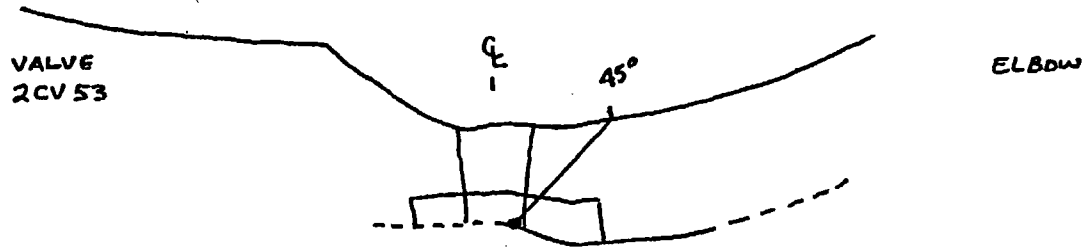
Summary No.: 707620

Site: Salem Unit 2, RFO 11

Examination Method: UT

System: Chemical and Volume Control System

Identification: 3-CV-2259-14R1



Limited Examination

INTRADOSE

Pa. 9829

207

Prepared By

Date

10/5/2000

Reviewed By

Date

Bob Keller, 10/10/00

Utility Review By

Date

Wayne Perkins, 10-26-00



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  
Page 6 of 9

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208



# PROFILE AND THICKNESS

Exam Date: 10/16/00

Summary No.: 709960

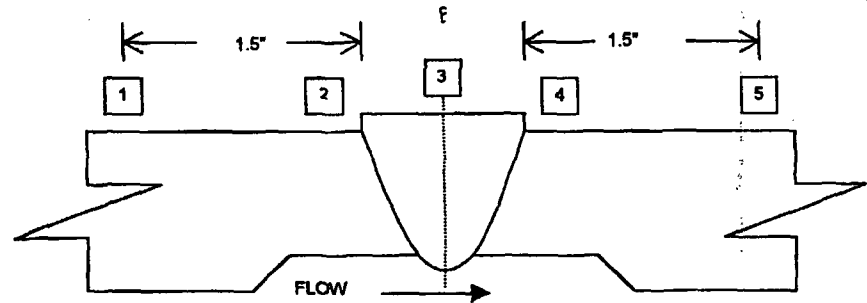
Site: Salem Unit 2, RFO 11

Examination Method: UT

System: CHEMICAL AND VOLUME CONTROL SYSTEM

Identification: 3-CV-2256-6

POSITION	0	90	180	270	
1	0.40				CROWN HEIGHT: **
2	0.40				CROWN WIDTH: 0.5"
3	0.44				NOM DIAMETER: 3.0"
4	*				WELD LENGTH: 11.0"
5	*				



PIPE → VALVE

0 degree Top dead center

\* Valve Body. Thickness not taken.

\*\* Crown height approximately 1/10" . As welded condition.

Pg. 6 of 6

204

Prepared By CE [Signature] Date 10/16/00

Reviewed By Bob Keller [Signature] Date 10/19/00

Utility Review By Wayne Denlinger [Signature] Date 10-24-00



**VOLUMETRIC PIPING EXAMINATION COVERAGE REPORT**

<b>CUSTOMER:</b> SALEM 2, RFO 11	<b>SYSTEM:</b> CHEMICAL AND VOLUME CONTROL SYSTEM
<b>SUMMARY NO:</b> 709960	<b>COMPONENT ID:</b> 3-CV-2256-6

**VOLUMETRIC PIPING EXAMINATIONS**

<b>1.0 <u>AXIAL ULTRASONIC EXAMINATIONS - Upstream (US) and Downstream (DS)</u></b>	
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	50.00%
<b>2.0 <u>CIRCUMFERENTIAL ULTRASONIC EXAMINATIONS (Clockwise and Counterclockwise)</u></b>	
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%
<b>3.0 <u>TOTAL EXAMINATION COVERAGE OBTAINED</u></b>	
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: *[Signature]* DATE: 10/16/2K REVIEWER: Bob Keller DATE: 10/19/00 Page 5 of 6 210



Supplemental Drawing

Summary # 709960

Component I.D. 3-CV-2256-6

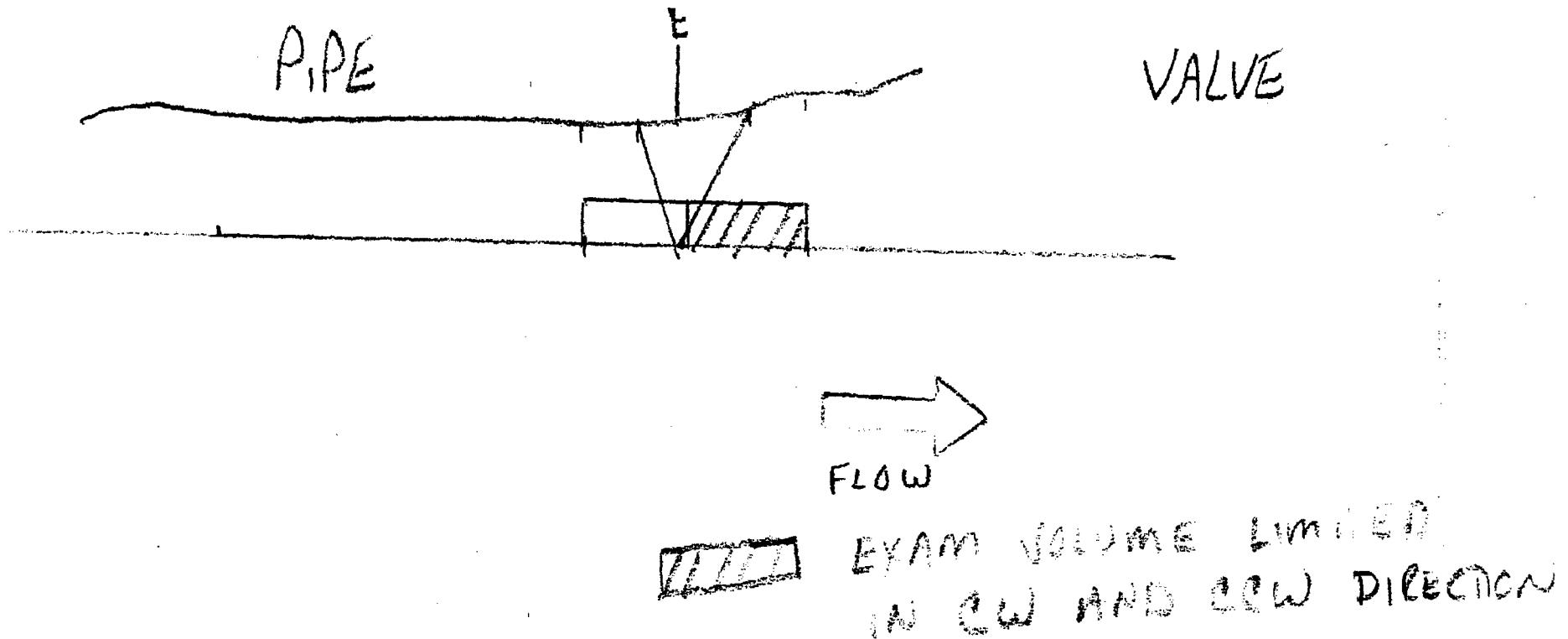
Description Pipe to Valve 2CV73

Page of

Comments

The ultrasonic examination was limited to 50% of the code required coverage being limited due to downstream side valve OD configuration that restricted scanning.

Sketch







**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.

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213

PREPARED BY: *[Signature]* DATE: 10/16/2K

REVIEWER: Bob Keller DATE: 10/19/00 Page 5 of 6

*[Signature]* 213



# PROFILE AND THICKNESS

Exam Date: 10/16/00

Summary No.: 710190

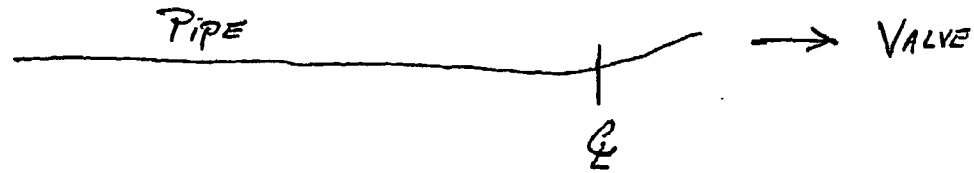
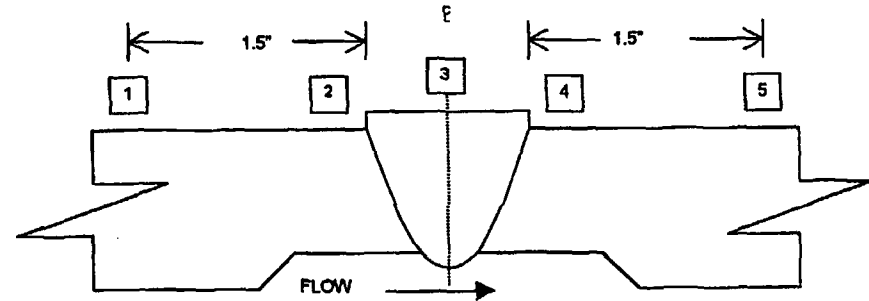
Site: Salem Unit 2, RFO 11

Examination Method: UT

System: CHEMICAL AND VOLUME CONTROL SYSTEM

Identification: 3-CV-2255-12

POSITION	0	90	180	270	
1	0.42				CROWN HEIGHT: **
2	0.40				CROWN WIDTH: 0.4"
3	0.46				NOM DIAMETER: 3.0"
4	*				WELD LENGTH: 11.0"
5	*				



217

0 degree Top dead center

\* Valve Body. Thickness not taken.

\*\* Weld crown tapers from pipe to valve as shown by profile.

R. Gofle

217

CE [Signature] 10/16/00  
Prepared By Date

Bob Kellehall 10/19/00  
Reviewed By Date

Wayne Denbize 10-24-00  
Utility Review By Date



Supplemental Drawing

Summary # 710190

Component I.D. 3-CV-2255-12

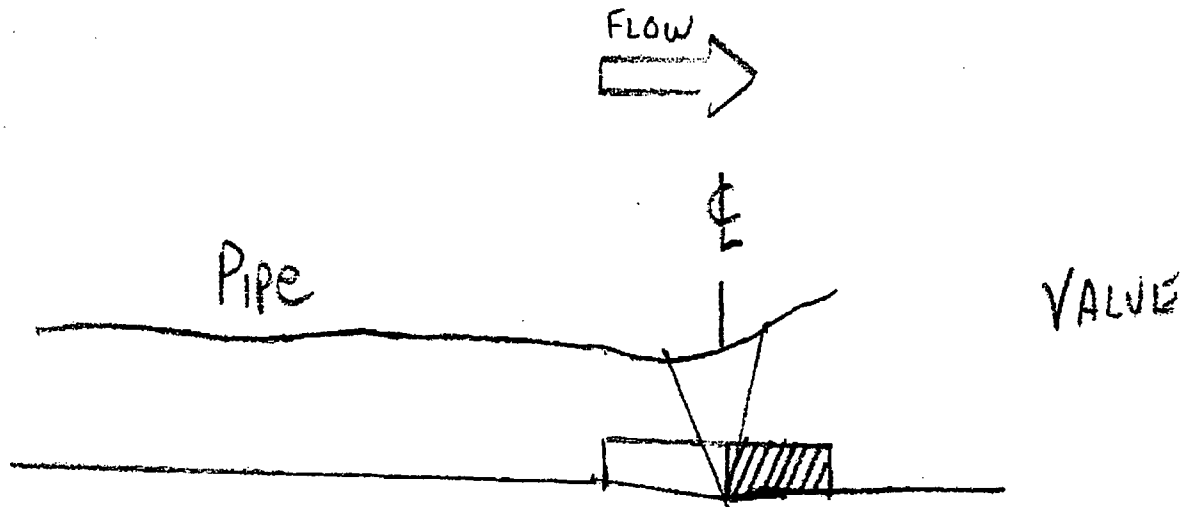
Description Pipe to Valve 2CV72


Page of

Comments

The ultrasonic examination was limited to 50% of the code required coverage being limited due to downstream side valve OD configuration that restricted scanning.

Sketch



 EXAM LIMITED IN THE CW AND CCW DIRECTION

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 Will Little DATE 4/17/02

Comments \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

215A

215A

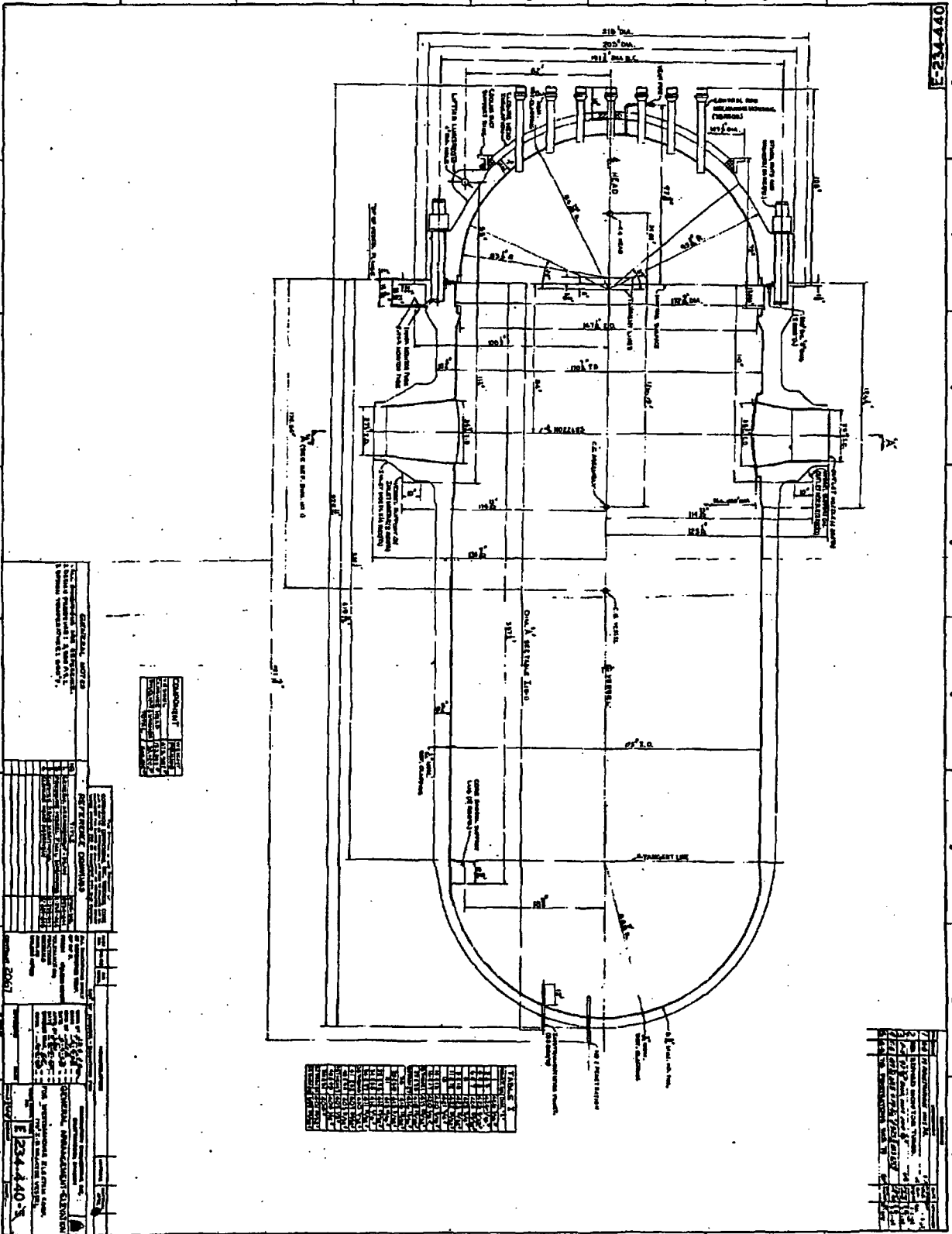


Fig. 1 General Arrangement—Elev. 8-1/8-2



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

Will WTB DATE 4/17/02

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 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 Will Witt DATE 4/17/02

Comments \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

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## R.V. COVERAGE ESTIMATE BREAKDOWNS

PLANT NAME Salem #2

# WesDyne

COMPONENT LOWER LONGSEAM

# International

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		
Perpendicular	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		
<b>AVERAGE</b>	80.05		80.25		81.20			

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

COMBINED AVERAGE 80.50 Analyst *[Signature]* Date 4/18/02

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## R.V. COVERAGE ESTIMATE BREAKDOWNS

PLANT NAME Salem #2

# WesDyne

COMPONENT LOWER LONGSEAM

# International

WELD NO 2-RPV-3442-B

### BEAM ANGLE BREAK DOWN

BEAM DIRECTION	45 Shear		45 L Single		45 L Dual		WELD	VOLUME
	WELD	VOLUME	WELD	VOLUME	WELD	VOLUME		
Perpendicular	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		
<b>AVERAGE</b>	80.05		80.25		81.20			

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

COMBINED AVERAGE 80.50 Analyst *[Signature]* Date 4/18/02

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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 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 [Signature] DATE 4/17/02

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 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 Bean* DATE 4/17/02

UT Operator Signature

*Will Withers* DATE 4/17/02

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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

*[Signature]* DATE *4/17/02*

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 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 W. J. R. DATE 4/17/02

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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 [Signature] DATE 4/17/02

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 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 [Signature] DATE 4/17/02

Comments \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

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## R.V. COVERAGE ESTIMATE BREAKDOWNS

PLANT NAME Salem #2

# WesDyne

COMPONENT LOWER LONGSEAM

# International

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
Perpendicular	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		
<b>AVERAGE</b>	80.05		80.25		81.20			

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

COMBINED AVERAGE 80.50 Analyst *[Signature]* Date 4/18/07

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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 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

*[Signature]* DATE 04/17/02

UT Operator Signature

*[Signature]* DATE 4/17/02

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Comments \_\_\_\_\_

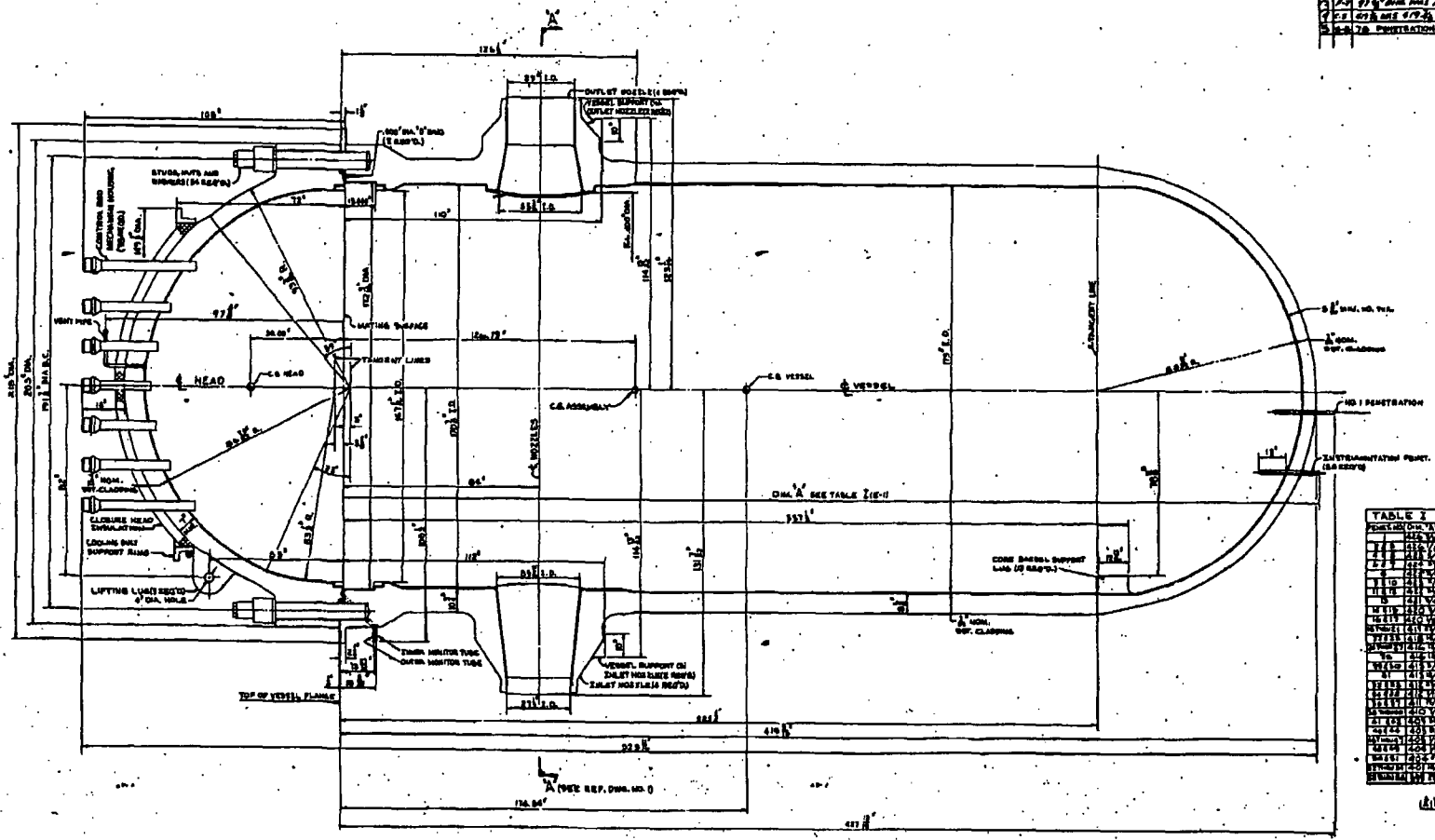
\_\_\_\_\_

\_\_\_\_\_

4L22

4L22

E-234440



NO.	DESCRIPTION	DATE	BY	CHKD.
1	ISSUED FOR CONSTRUCTION	10/1/50	JTD	JTD
2	REVISED MONITOR TUBES	10/1/50	JTD	JTD
3	REVISED MONITOR TUBES	10/1/50	JTD	JTD
4	REVISED MONITOR TUBES	10/1/50	JTD	JTD
5	REVISED MONITOR TUBES	10/1/50	JTD	JTD
6	REVISED MONITOR TUBES	10/1/50	JTD	JTD
7	REVISED MONITOR TUBES	10/1/50	JTD	JTD
8	REVISED MONITOR TUBES	10/1/50	JTD	JTD
9	REVISED MONITOR TUBES	10/1/50	JTD	JTD
10	REVISED MONITOR TUBES	10/1/50	JTD	JTD

TABLE 1  
GENERAL DATA

ITEM NO.	DESCRIPTION	UNIT	VALUE
1	...	...	...
2	...	...	...
3	...	...	...
4	...	...	...
5	...	...	...
6	...	...	...
7	...	...	...
8	...	...	...
9	...	...	...
10	...	...	...
11	...	...	...
12	...	...	...
13	...	...	...
14	...	...	...
15	...	...	...
16	...	...	...
17	...	...	...
18	...	...	...
19	...	...	...
20	...	...	...
21	...	...	...
22	...	...	...
23	...	...	...
24	...	...	...
25	...	...	...
26	...	...	...
27	...	...	...
28	...	...	...
29	...	...	...
30	...	...	...

COMPONENT	WEIGHT	VOLUME
VESEL	...	...
VESEL HEAD	...	...
VESEL SUPPORT	...	...
TOTAL	...	...

**GENERAL NOTES**

- ALL DIMENSIONS ARE EXPANDED.
- DESIGN PRESSURE IS 1500 P.S.I.
- DESIGN TEMPERATURE IS 100°F.

**REFERENCE DRAWINGS**

NO.	TITLE	DATE
1	...	...
2	...	...
3	...	...
4	...	...
5	...	...
6	...	...
7	...	...
8	...	...
9	...	...
10	...	...

**LIST OF MATERIALS - QUANTITIES FOR**

ITEM NO.	DESCRIPTION	UNIT	QUANTITY
1	...	...	...
2	...	...	...
3	...	...	...
4	...	...	...
5	...	...	...
6	...	...	...
7	...	...	...
8	...	...	...
9	...	...	...
10	...	...	...
11	...	...	...
12	...	...	...
13	...	...	...
14	...	...	...
15	...	...	...
16	...	...	...
17	...	...	...
18	...	...	...
19	...	...	...
20	...	...	...
21	...	...	...
22	...	...	...
23	...	...	...
24	...	...	...
25	...	...	...
26	...	...	...
27	...	...	...
28	...	...	...
29	...	...	...
30	...	...	...

**GENERAL ARRANGEMENT ELEVATION**

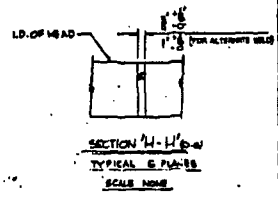
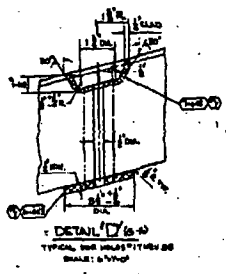
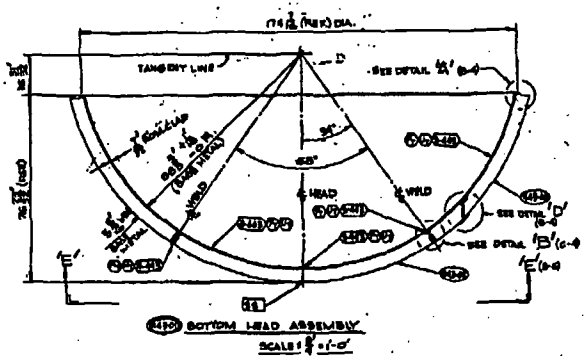
DRAWN BY: JTD  
 CHECKED BY: JTD  
 DATE: 10/1/50

PROJECT: ...  
 SHEET NO.: ...  
 TOTAL SHEETS: ...

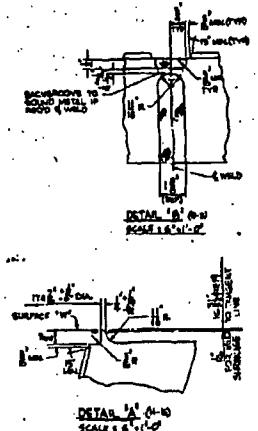
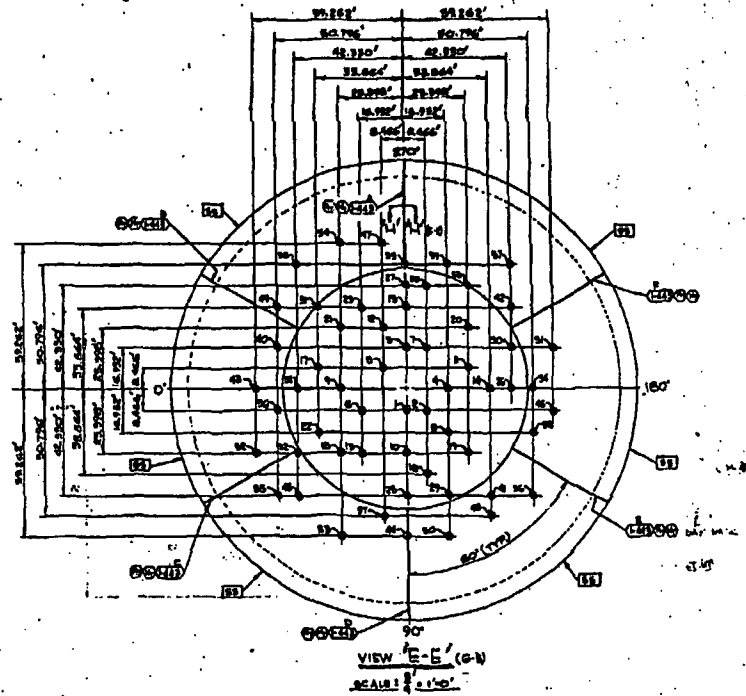
E-234440

USER RESPONSIBLE FOR VERIFYING REVISION, STATUS AND CHANGES  
 VTD 325044 004 1 PRINTED 20050112

234-444



NO.	DESCRIPTION	DATE	BY	CHKD.
1	ADDED NEW DETAIL 17 (A-B)	11-11-54	...	...
2	REVISED DETAIL 17 (A-B)	11-11-54	...	...
3	ADDED WELD TABLE	11-11-54	...	...
4	ADDED SECTION 14 (H-H)	11-11-54	...	...
5	ADDED SECTION 14 (H-H)	11-11-54	...	...
6	ADDED SECTION 14 (H-H)	11-11-54	...	...
7	ADDED SECTION 14 (H-H)	11-11-54	...	...
8	ADDED SECTION 14 (H-H)	11-11-54	...	...
9	ADDED SECTION 14 (H-H)	11-11-54	...	...
10	ADDED SECTION 14 (H-H)	11-11-54	...	...
11	ADDED SECTION 14 (H-H)	11-11-54	...	...
12	ADDED SECTION 14 (H-H)	11-11-54	...	...
13	ADDED SECTION 14 (H-H)	11-11-54	...	...
14	ADDED SECTION 14 (H-H)	11-11-54	...	...
15	ADDED SECTION 14 (H-H)	11-11-54	...	...
16	ADDED SECTION 14 (H-H)	11-11-54	...	...
17	ADDED SECTION 14 (H-H)	11-11-54	...	...
18	ADDED SECTION 14 (H-H)	11-11-54	...	...
19	ADDED SECTION 14 (H-H)	11-11-54	...	...
20	ADDED SECTION 14 (H-H)	11-11-54	...	...



**MATERIAL NOTES:**  
 A: AS SUPPLEMENTED BY CE PURCHASE SPECIFICATION PER (E)(1)

REV. 11-11-54  
 SHEET 2 OF 2  
 VTD 325044

NO.	DESCRIPTION	DATE	BY	CHKD.
1	ADDED NEW DETAIL 17 (A-B)	11-11-54	...	...
2	REVISED DETAIL 17 (A-B)	11-11-54	...	...
3	ADDED WELD TABLE	11-11-54	...	...
4	ADDED SECTION 14 (H-H)	11-11-54	...	...
5	ADDED SECTION 14 (H-H)	11-11-54	...	...
6	ADDED SECTION 14 (H-H)	11-11-54	...	...
7	ADDED SECTION 14 (H-H)	11-11-54	...	...
8	ADDED SECTION 14 (H-H)	11-11-54	...	...
9	ADDED SECTION 14 (H-H)	11-11-54	...	...
10	ADDED SECTION 14 (H-H)	11-11-54	...	...
11	ADDED SECTION 14 (H-H)	11-11-54	...	...
12	ADDED SECTION 14 (H-H)	11-11-54	...	...
13	ADDED SECTION 14 (H-H)	11-11-54	...	...
14	ADDED SECTION 14 (H-H)	11-11-54	...	...
15	ADDED SECTION 14 (H-H)	11-11-54	...	...
16	ADDED SECTION 14 (H-H)	11-11-54	...	...
17	ADDED SECTION 14 (H-H)	11-11-54	...	...
18	ADDED SECTION 14 (H-H)	11-11-54	...	...
19	ADDED SECTION 14 (H-H)	11-11-54	...	...
20	ADDED SECTION 14 (H-H)	11-11-54	...	...

22715  
 22718



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

*[Signature]* DATE 04/17/02 228

UT Operator Signature

*[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

*James P. Kitter* DATE 04/17/02

UT Operator Signature

*[Signature]* DATE 4/17/02

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 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

Robot Operator Signature

*James P. Keith*  
 \_\_\_\_\_ DATE 04/17/02

UT Operator Signature

*[Signature]*  
 \_\_\_\_\_ DATE 4/17/02

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## R.V. COVERAGE ESTIMATE BREAKDOWNS

PLANT NAME SALEM UNIT 2

# WesDyne

COMPONENT MERIDONAL WELD

# International

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		
Perpendicular	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		
<b>AVERAGE</b>	88.06		88.06		87.15			

Comments: \_\_\_\_\_

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COMBINED AVERAGE 87.76

Analyst *Janet R*

Date 4/18/02

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## R.V. COVERAGE ESTIMATE BREAKDOWNS

PLANT NAME SALEM UNIT 2

# WesDyne

COMPONENT MERIDONAL WELD

# International

WELD NO 2-RPV-1443C

### BEAM ANGLE BREAK DOWN

BEAM DIRECTION	45 Shear		45 L Single		45 L Dual		WELD	VOLUME
	WELD	VOLUME	WELD	VOLUME	WELD	VOLUME		
Perpendicular	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		
<b>AVERAGE</b>	87.75		88.87		87.91			

Comments: \_\_\_\_\_

COMBINED AVERAGE 88.18

Analyst *J. [Signature]*

Date 4/18/02

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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 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

*[Signature]* DATE 04/17/02

UT Operator Signature

*[Signature]* DATE 4/17/02

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 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

*[Signature]* DATE 04/17/02

UT Operator Signature

*[Signature]* DATE 4/17/02

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 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

*Greg P. Katers* DATE 04/17/02

UT Operator Signature

*[Signature]* DATE 4/17/02

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 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

*Jerry J. Kithler* DATE 04/17/02

UT Operator Signature

*[Signature]* DATE \_\_\_\_\_

Comments \_\_\_\_\_

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## R.V. COVERAGE ESTIMATE BREAKDOWNS

PLANT NAME SALEM UNIT 2

# WesDyne

COMPONENT MERIDONAL WELD

# International

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		
Perpendicular	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		
<b>AVERAGE</b>	72.50		72.50		72.50			

Comments: \_\_\_\_\_

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COMBINED AVERAGE 72.50

Analyst *[Signature]*

Date 4/18/02

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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 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

*[Handwritten Signature]* DATE 04/17/02

UT Operator Signature

*[Handwritten Signature]* DATE 4/17/02

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 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

*[Signature]* DATE 04/17/02

UT Operator Signature

*[Signature]* DATE 4/17/02

Comments \_\_\_\_\_

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## 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

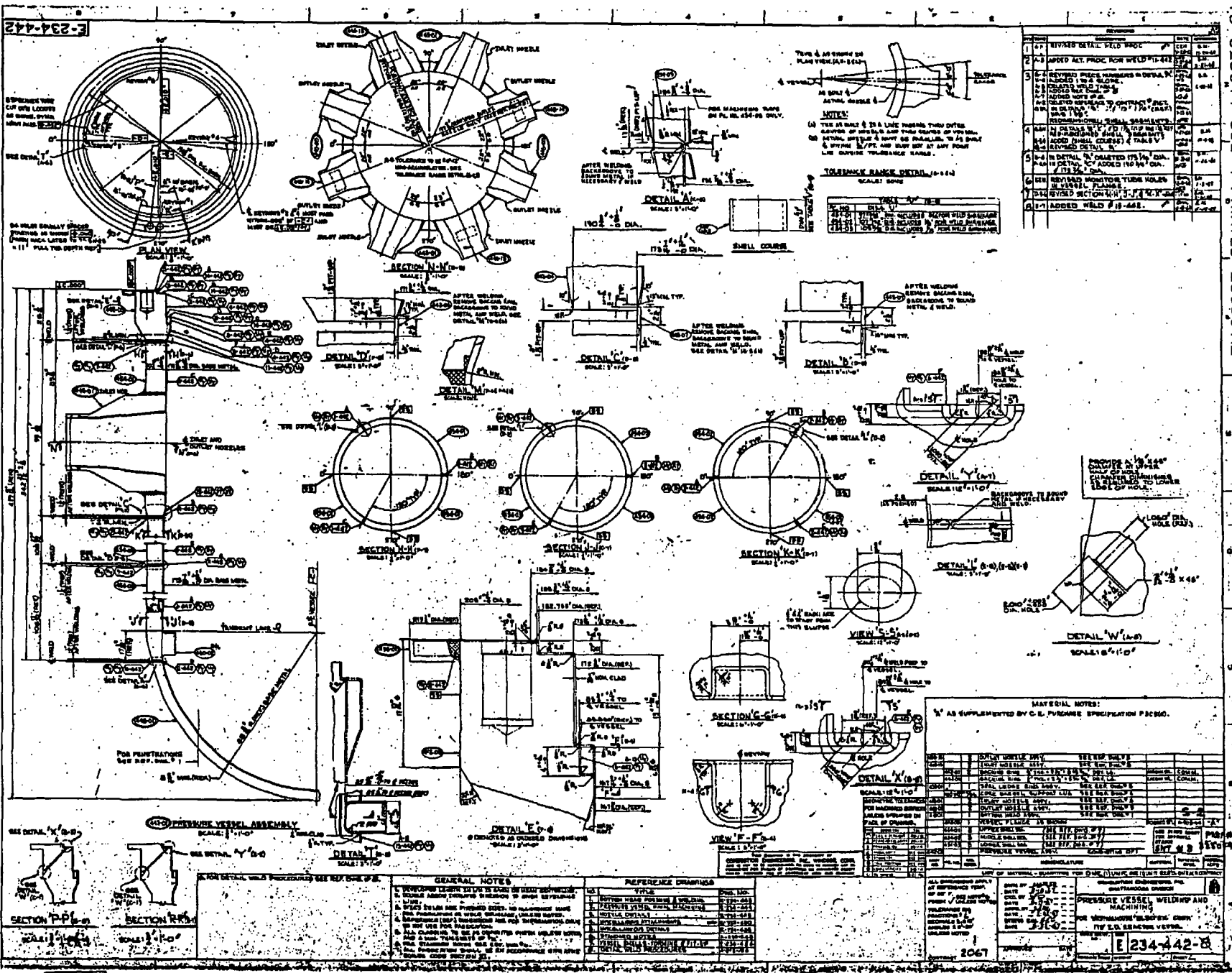
BEAM DIRECTION	45 Shear		45 L Single		45 L Dual		WELD	VOLUME
	WELD	VOLUME	WELD	VOLUME	WELD	VOLUME		
Perpendicular	81.00	81.00	81.00	81.00	81.00	81.00		
Parallel	82.20	82.20	82.20	82.20	82.20	82.20		
<b>AVERAGE</b>	81.60		81.60		81.60			

Comments: \_\_\_\_\_

COMBINED AVERAGE 81.60 Analyst *Jul F* Date *4/19/02*

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240A  
240A

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 Brown* DATE *4/18/02*

UT Operator Signature

*William J. Kelly* 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 - 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

*J. P. Smith* DATE 04/18/02

UT Operator Signature

*W. D. G. Kelly* 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 - 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

*Joseph K. Miller* DATE 04/18/02

UT Operator Signature

*William J. Halley* 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 - 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

*Joseph V. Kistler* DATE 04/18/02

UT Operator Signature

*William G. Kelly* DATE 4/18/02

Comments \_\_\_\_\_

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[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

*Greg P. Kitter* DATE 04/18/02

UT Operator Signature

*William H. Halliday* DATE 4/18/02

Comments \_\_\_\_\_

255

255  
 [245-254] 08 NOT  
 255

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

*[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 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

*Greg P. Kester* 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 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

*[Handwritten Signature]* DATE 04/18/02

UT Operator Signature

*[Handwritten 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 IDENTIFICATION - 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

*Jay S. Kestler* DATE 04/18/02

UT Operator Signature

*William G. Kelly* 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 - 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 *Greg P. Kitter* DATE 04/18/02  
 UT Operator Signature *William J. Kelly* 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 - 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		
Scan Completed	21:48:30	04/18/02
	22:04:43	04/18/02

Robot Operator Signature

*Joseph P. Kithen* DATE 04/18/02

UT Operator Signature

*William J. Kelly* 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 - 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 *Greg P. Kistner* DATE 4/18/02  
 UT Operator Signature *William J. Kelley* 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 - 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

*Jay P. Keiller* DATE 04/18/02

UT Operator Signature

*William G. Holly* 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 - 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

*[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 IDENTIFICATION - 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

*Greg P. Kistler* 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 IDENTIFICATION - 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

*Greg Lither* DATE 04/19/02

UT Operator Signature

*[Signature]* DATE 4/19/02

Comments \_\_\_\_\_

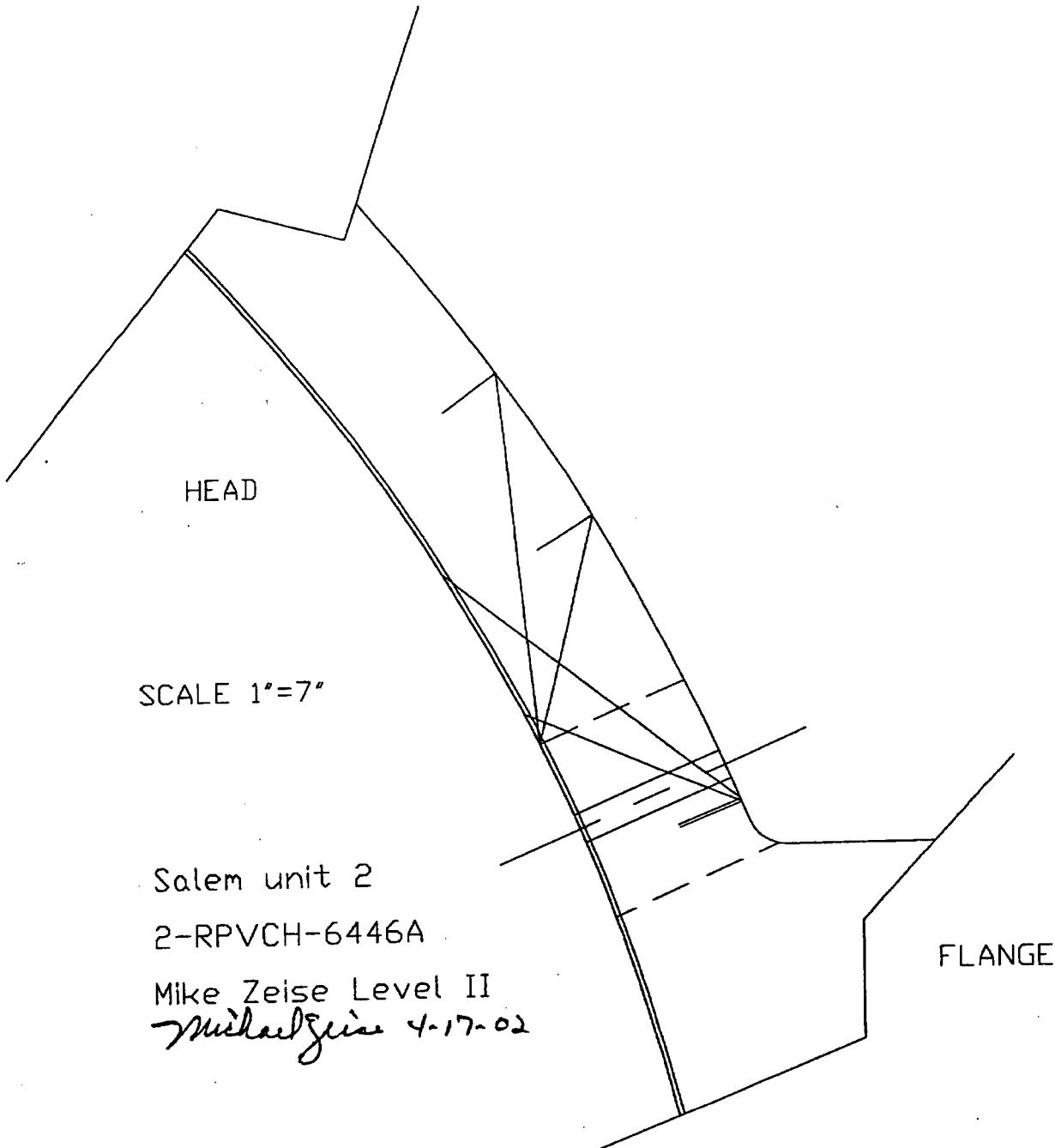
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265

  
 265

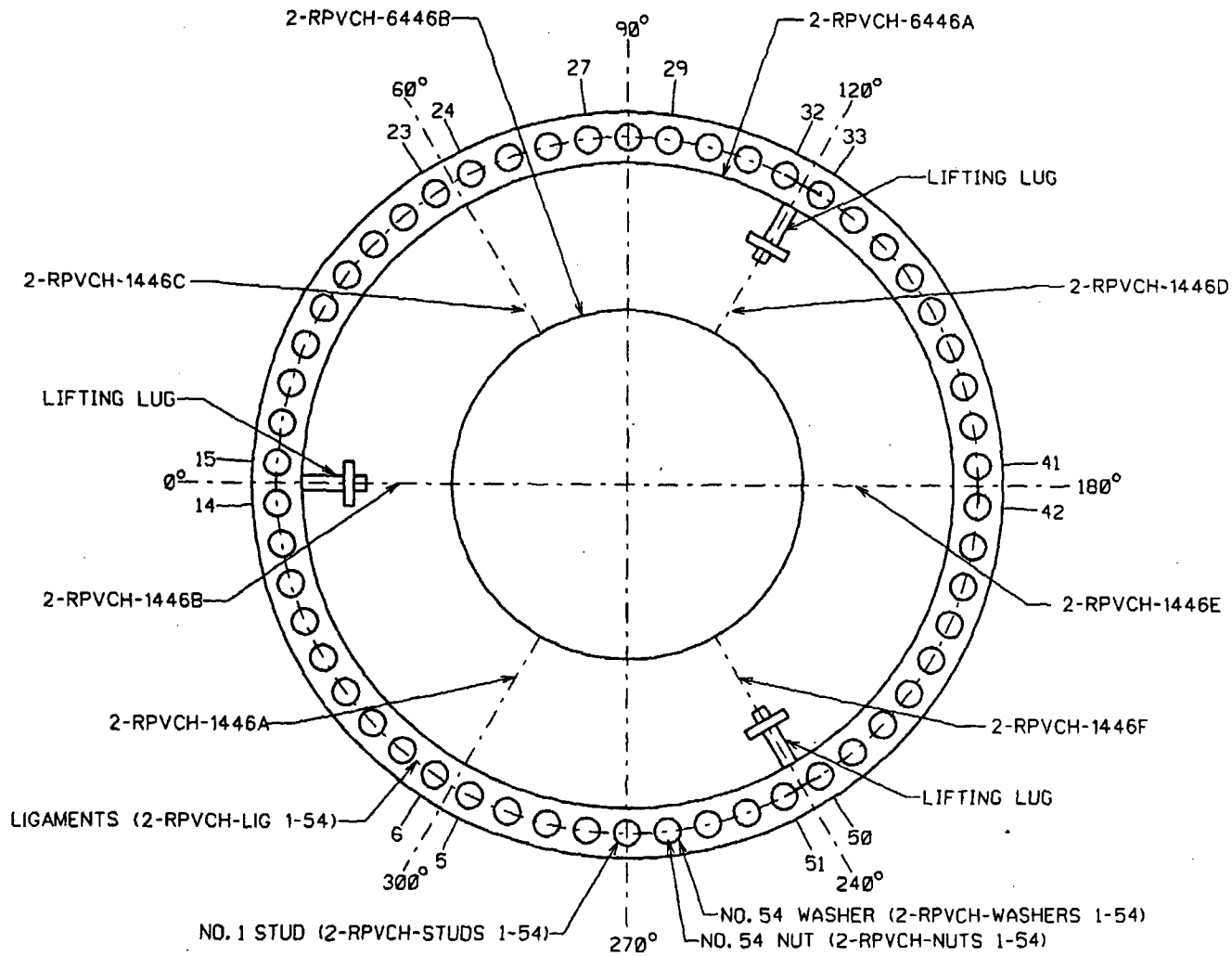
SUMMARY # 002800  
RPV HD/FLG. WELD



FACTORY MUTUAL  
INSURANCE COMPANY  
DE Tilly 4-25-02

266

Bob Kellerhall  
4/17/02 10/19 266



REACTOR PRESSURE VESSEL CLOSURE HEAD LAYOUT

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266A

P&ID 205301

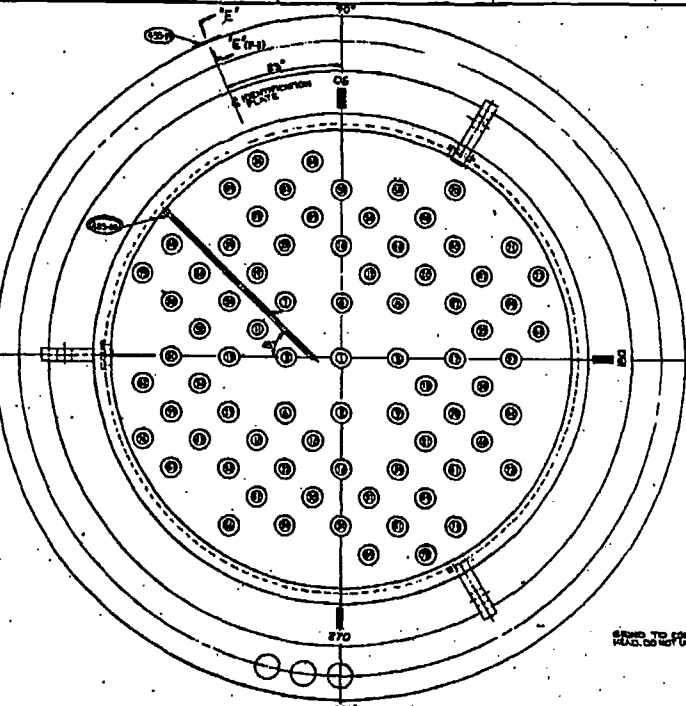
ATTENTION: ANY REVISION TO THIS DRAWING SHALL BE MADE ONLY BY CAED

1	REVISOR	REVISION	DATE	DESCRIPTION
1		REVISED PER ORDER No. 80038023.		

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

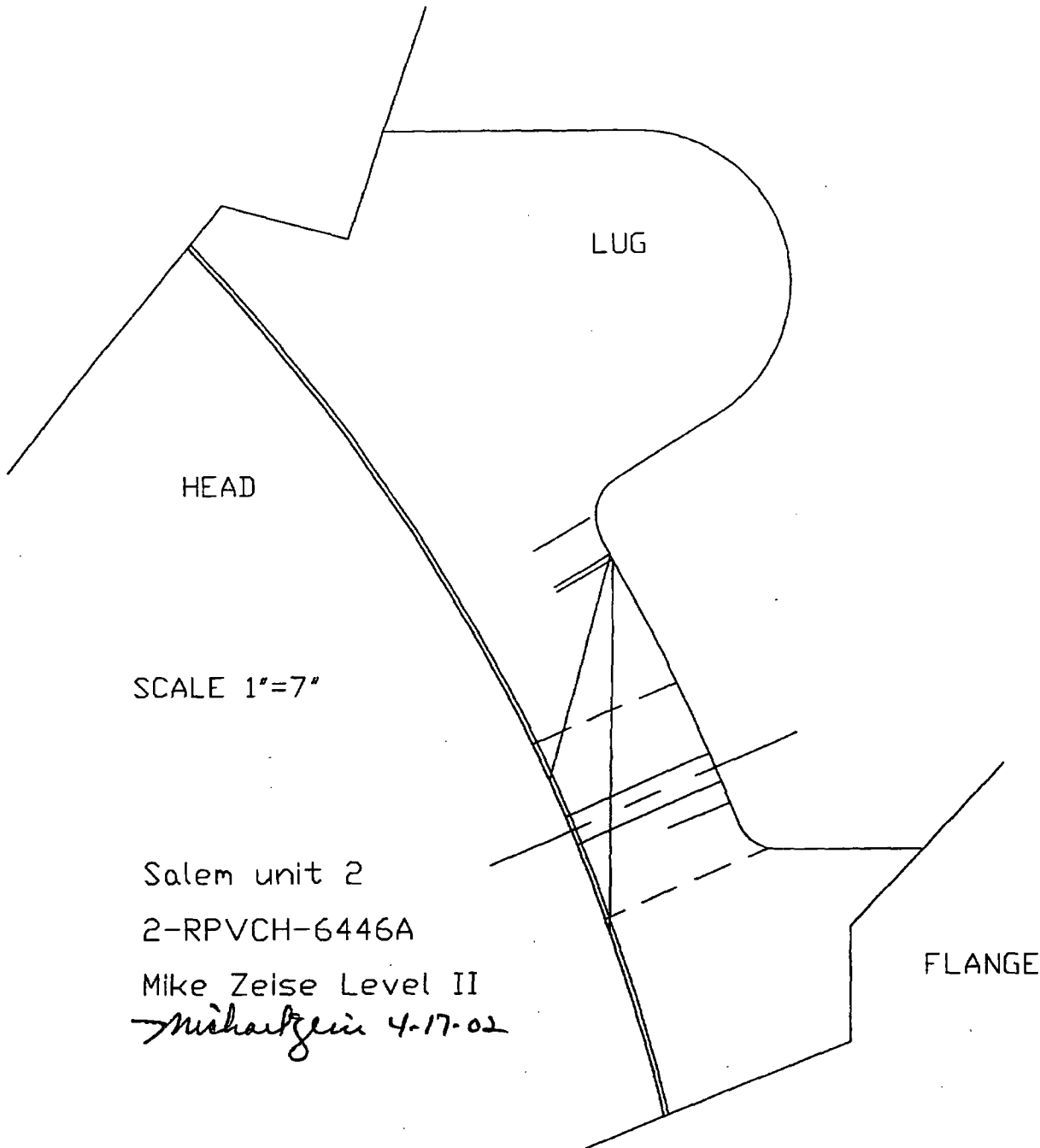
FIGURE: A-3	REVISION: 1
SYSTEM: REACTOR PRESSURE VESSEL	
CLOSURE HEAD LAYOUT	
LINE: N/A	
THIRD 10 YEAR INSPECTION INTERVAL	

E-234-448



REV	DESCRIPTION	DATE
01	ISSUED	10/15/57
02	REVISION	11/15/57
03	REVISION	12/15/57
04	REVISION	01/15/58
05	REVISION	02/15/58
06	REVISION	03/15/58
07	REVISION	04/15/58
08	REVISION	05/15/58
09	REVISION	06/15/58
10	REVISION	07/15/58
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162	REVISION	03/15/71
163	REVISION	04/15/71
164	REVISION	05/15/71
165	REVISION	06/15/71
166	REVISION	07/15/71
167	REVISION	08/15/71
168	REVISION	09/15/71
169	REVISION	10/15/71
170	REVISION	11/15/71
171	REVISION	12/15/71
172	REVISION	01/15/72
173	REVISION	02/15/72
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293	REVISION	02/15/82
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295	REVISION	04/15/82
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364	REVISION	01/15/88
365	REVISION	02/15/88
366	REVISION	03/15/88
367	REVISION	04/15/88
368	REVISION	05/15/88
369	REVISION	06/15/88
370		

SUMMARY # 002800  
RPV HD/FLG. WELD



FACTORY MUTUAL  
INSURANCE COMPANY  
DE Tilly 4-25-02

Bob Keller  
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  
AK 41702



# 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
<u>1.70</u>	X <u>9.40</u>	X <u>10.00</u>	= <u>159.80</u>

### 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
<u>5.72</u>	X <u>9.40</u>	X <u>185.00</u>	= <u>9,947.08</u>

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
<u>10,106.88</u>	<u>27,824.00</u>	<u>63.68 %</u>

## 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
<u>8.00</u>	X <u>1.25</u>	X <u>185.00</u>	= <u>1,850.00</u>

### 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
<u>8.00</u>	X <u>1.25</u>	X <u>185.00</u>	= <u>1,850.00</u>

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
<u>3,700.00</u>	<u>27,824.00</u>	<u>86.70 %</u>

FACTORY MUTUAL  
INSURANCE COMPANY

*D E Tillery 4-25-02*

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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 }		= <u>86.70 %</u>

## 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 ]		= <u>78.70 %</u>

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 Tilly 4-25-02*

Examiner: Mike Zeise

Sign:

*Michael Zeise*

Level: II

Date:  
04/17/02

Reviewer:

Sign:

*Bob Kelleher*

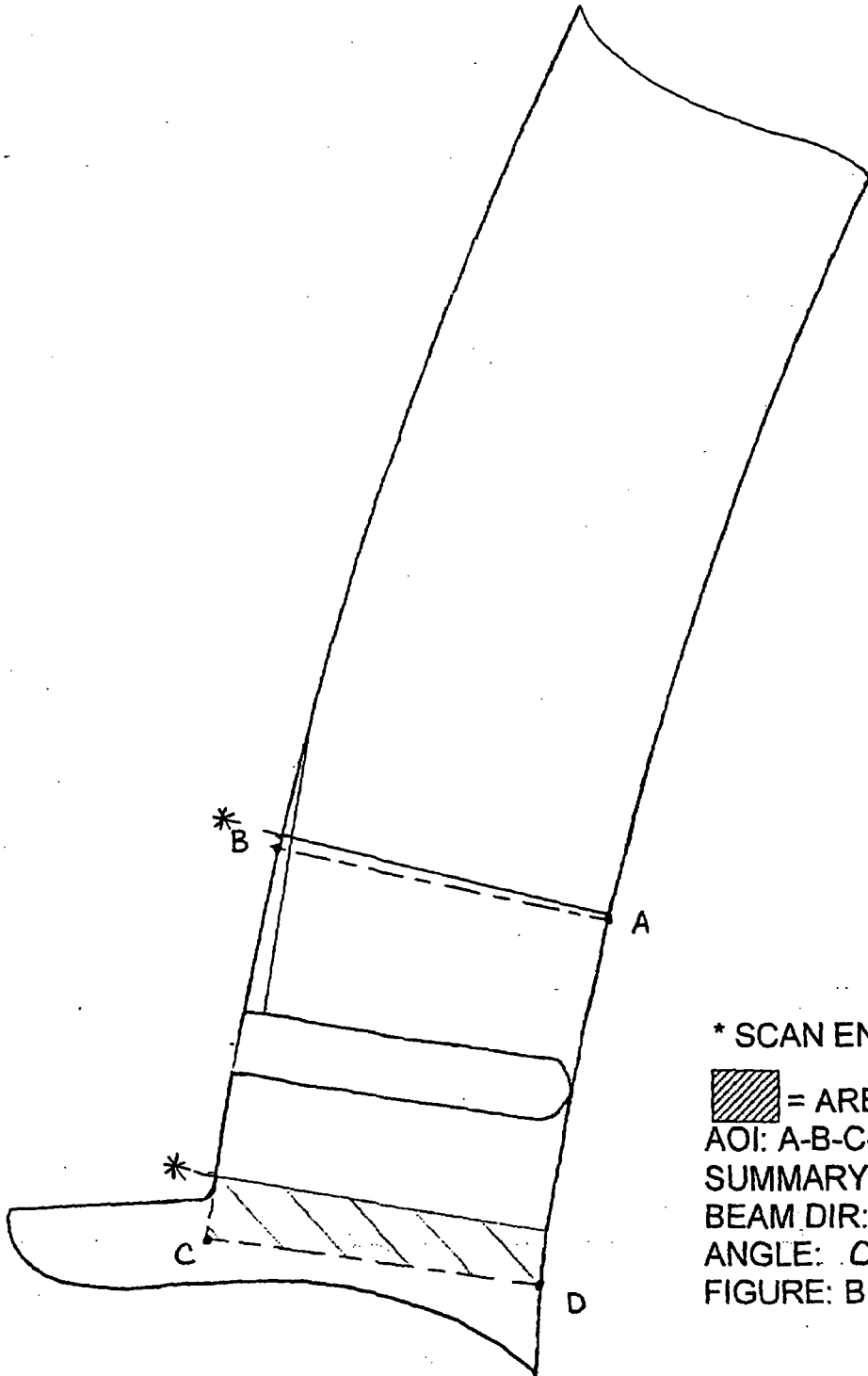
Level:

III

Date:  
04/17/02

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9/19



\* SCAN END POINT

 = AREA NOT EXAMINED

AOI: A-B-C-D

SUMMARY: 002800

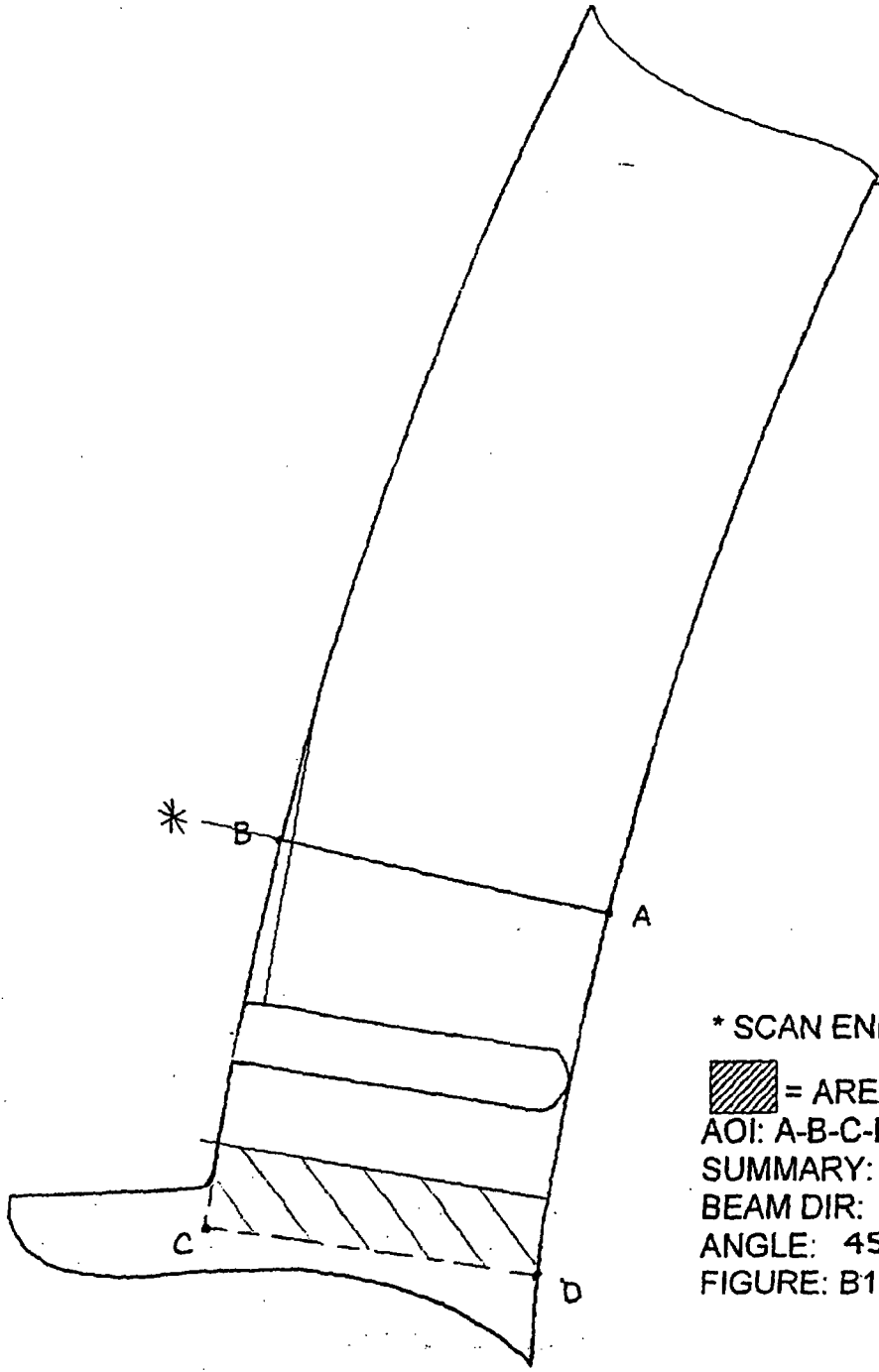
BEAM DIR:  $\odot$  to MAT'L

ANGLE:  $0^\circ$

FIGURE: B1.40

**HEAD TO FLANGE WELD**

270A



\* SCAN END POINT

 = AREA NOT EXAMINED

AOI: A-B-C-D

SUMMARY: 002800

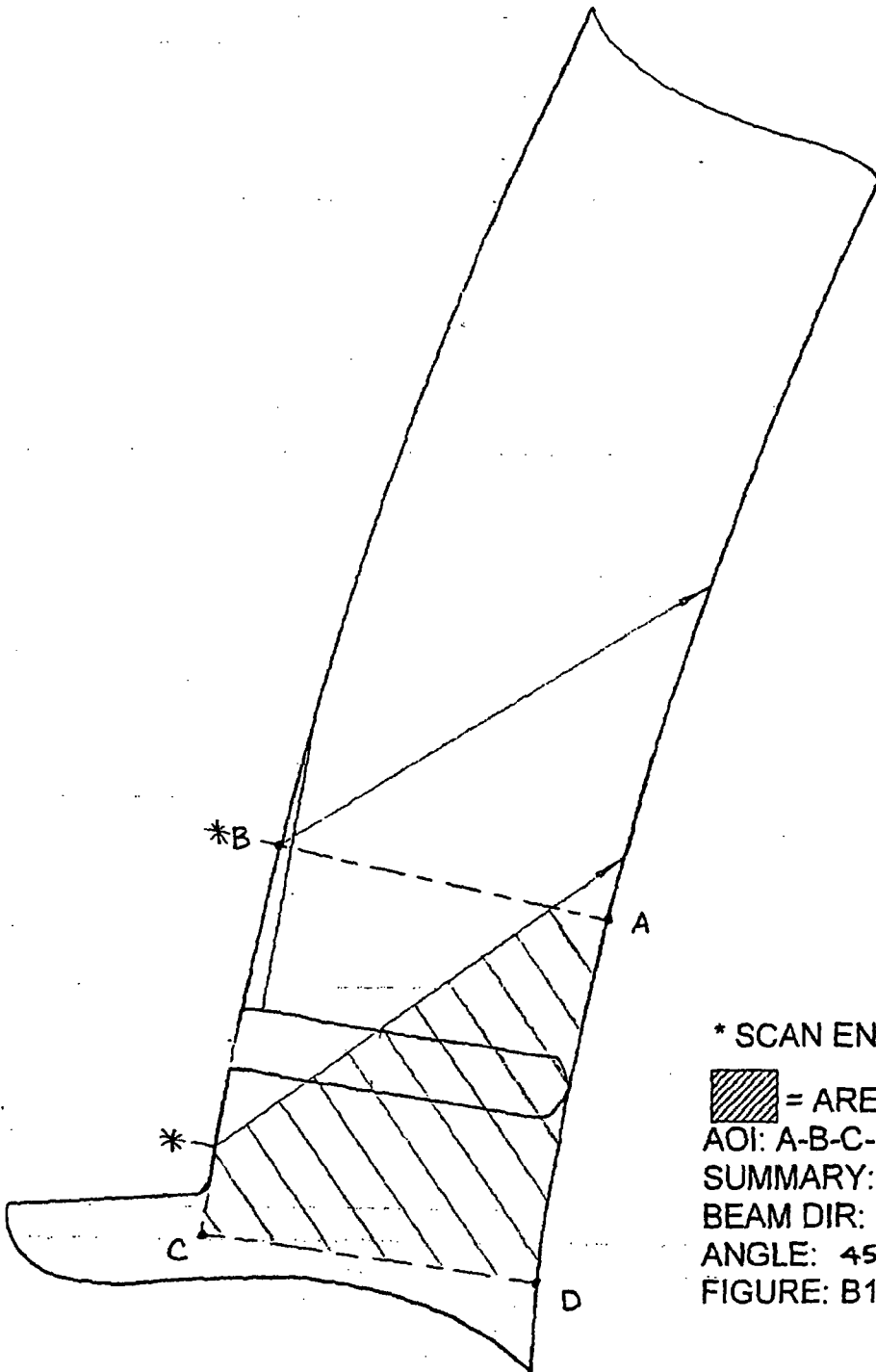
BEAM DIR: CW/CCW

ANGLE: 45°

FIGURE: B1.40

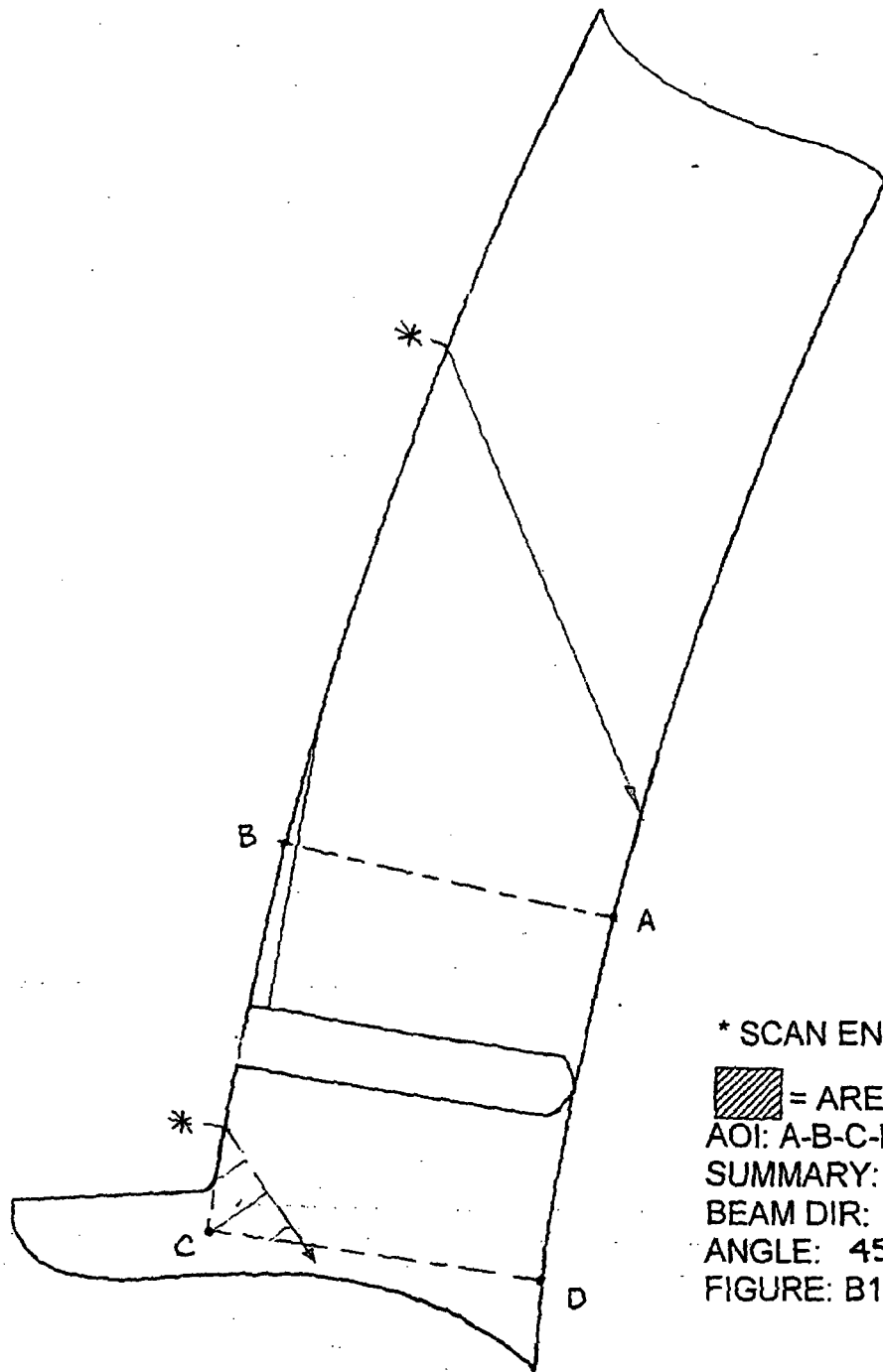
**HEAD TO FLANGE WELD**

2703




\* SCAN END POINT  
 [Hatched Box] = 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

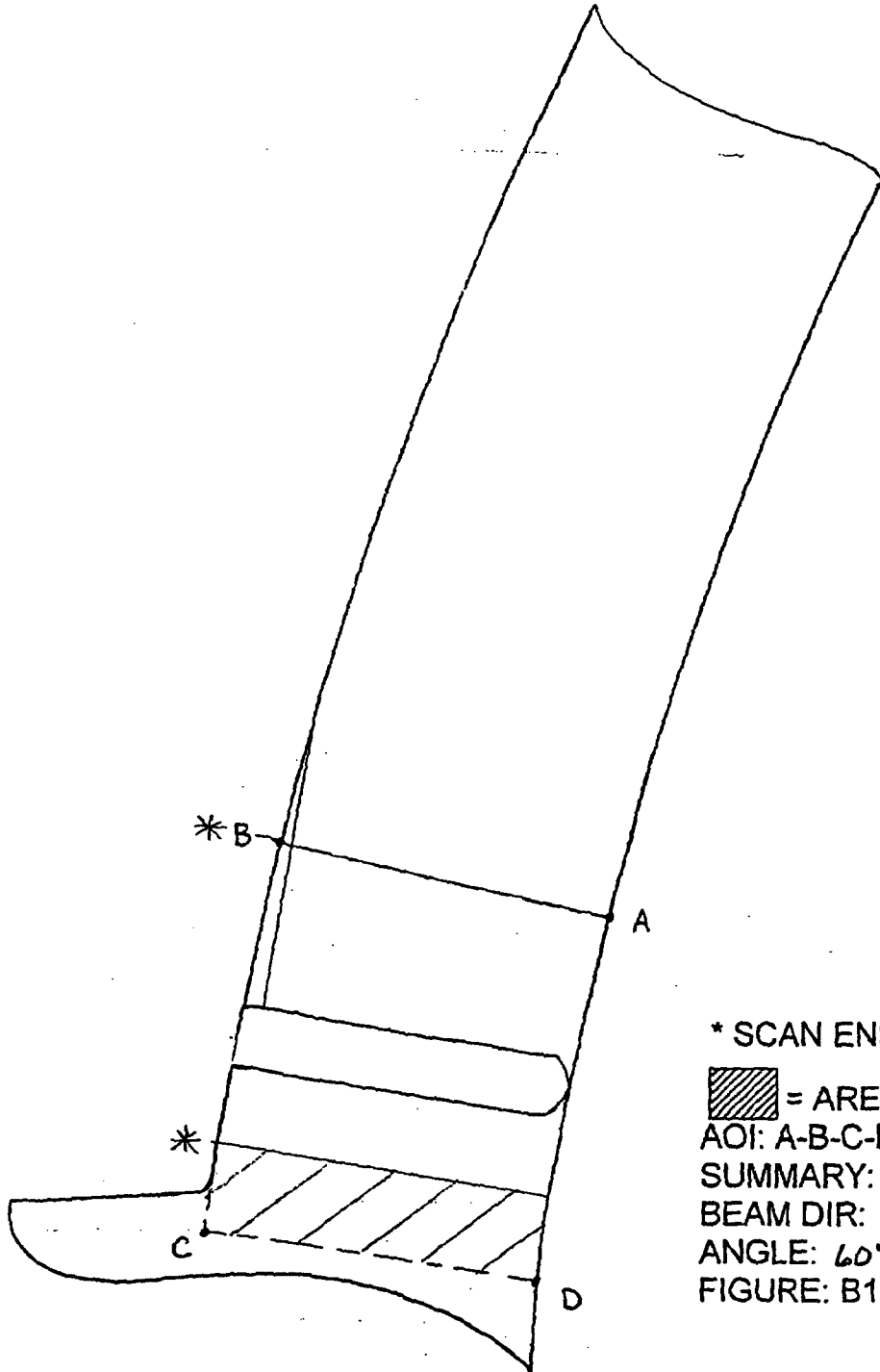
SUMMARY: 002800

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

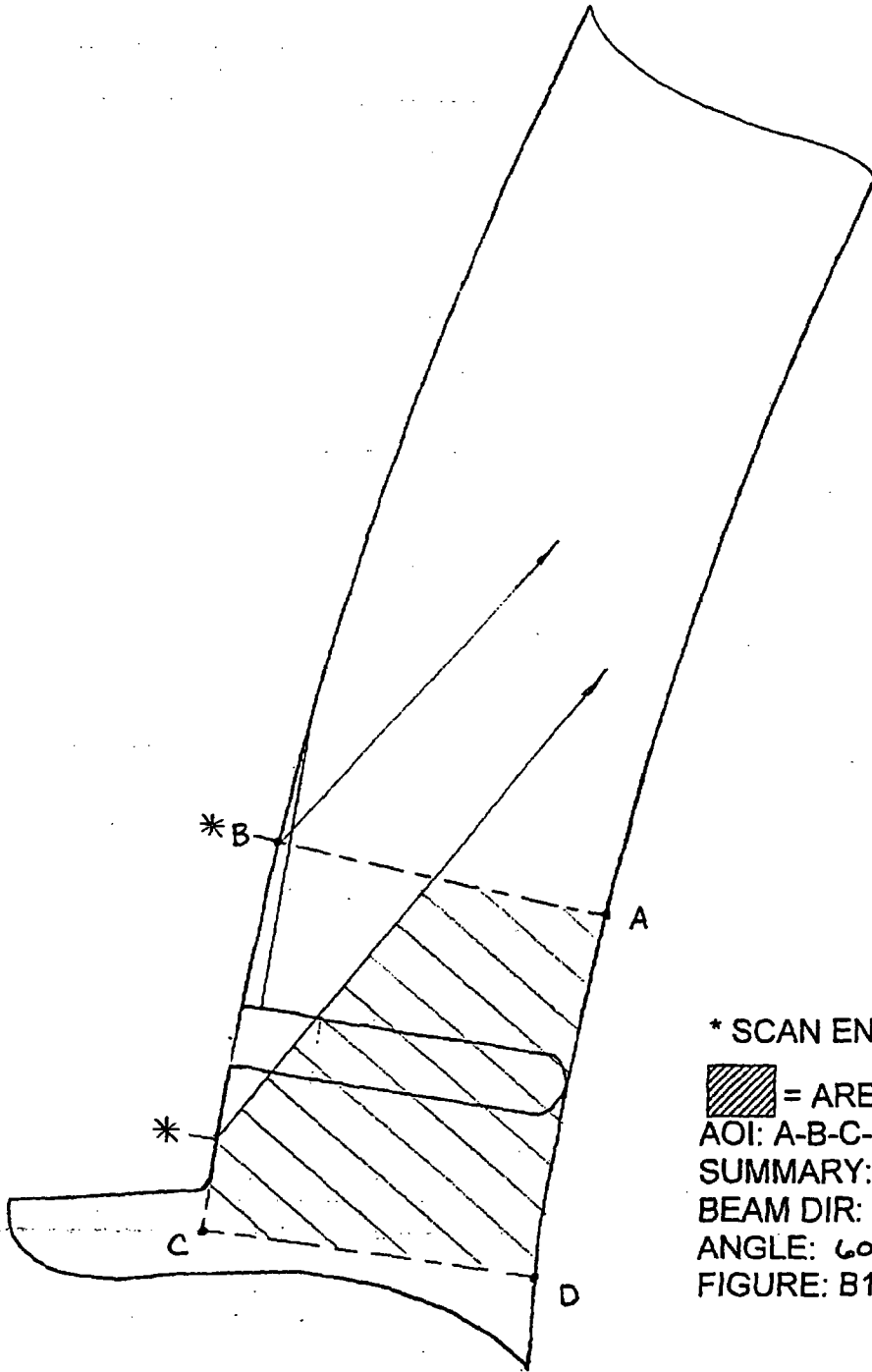
ANGLE: 60°

FIGURE: B1.40

HEAD TO FLANGE WELD

2708





\* SCAN END POINT

 = AREA NOT EXAMINED

AOI: A-B-C-D

SUMMARY: 002800

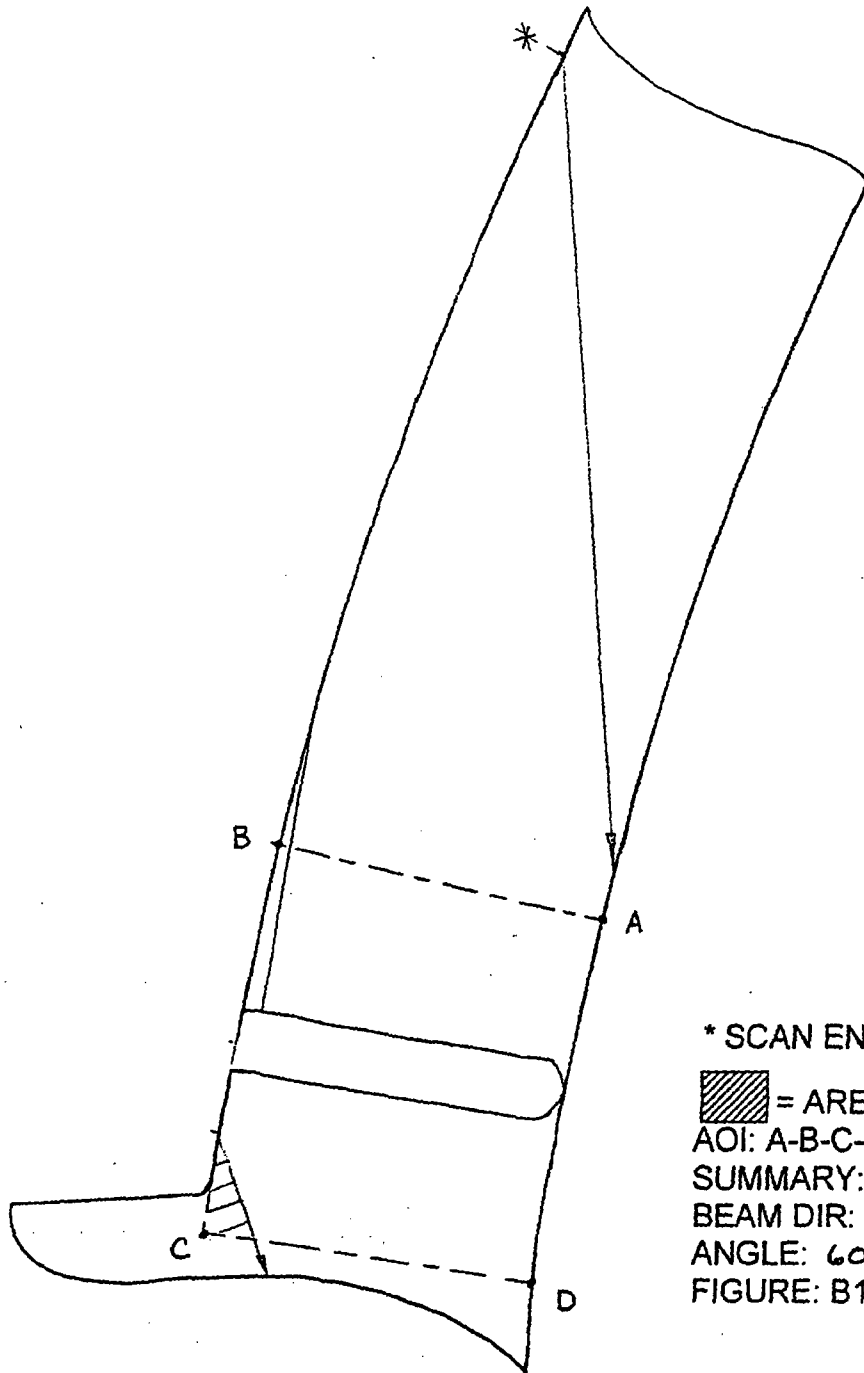
BEAM DIR: UP

ANGLE: 60°


FIGURE: B1.40

HEAD TO FLANGE WELD

270F



\* 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

2706

**R.V. COVERAGE ESTIMATE BREAKDOWNS**

PLANT NAME SALEM UNIT 2

**WesDyne**

COMPONENT NOZZLE TO SHELL WELD

**International**

WELD NO 29-RCN-1230

**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 (10 & 50 DEG.)	100.00	100.00						
AVERAGE	100.00		63.25		63.25		63.25	

Comments:

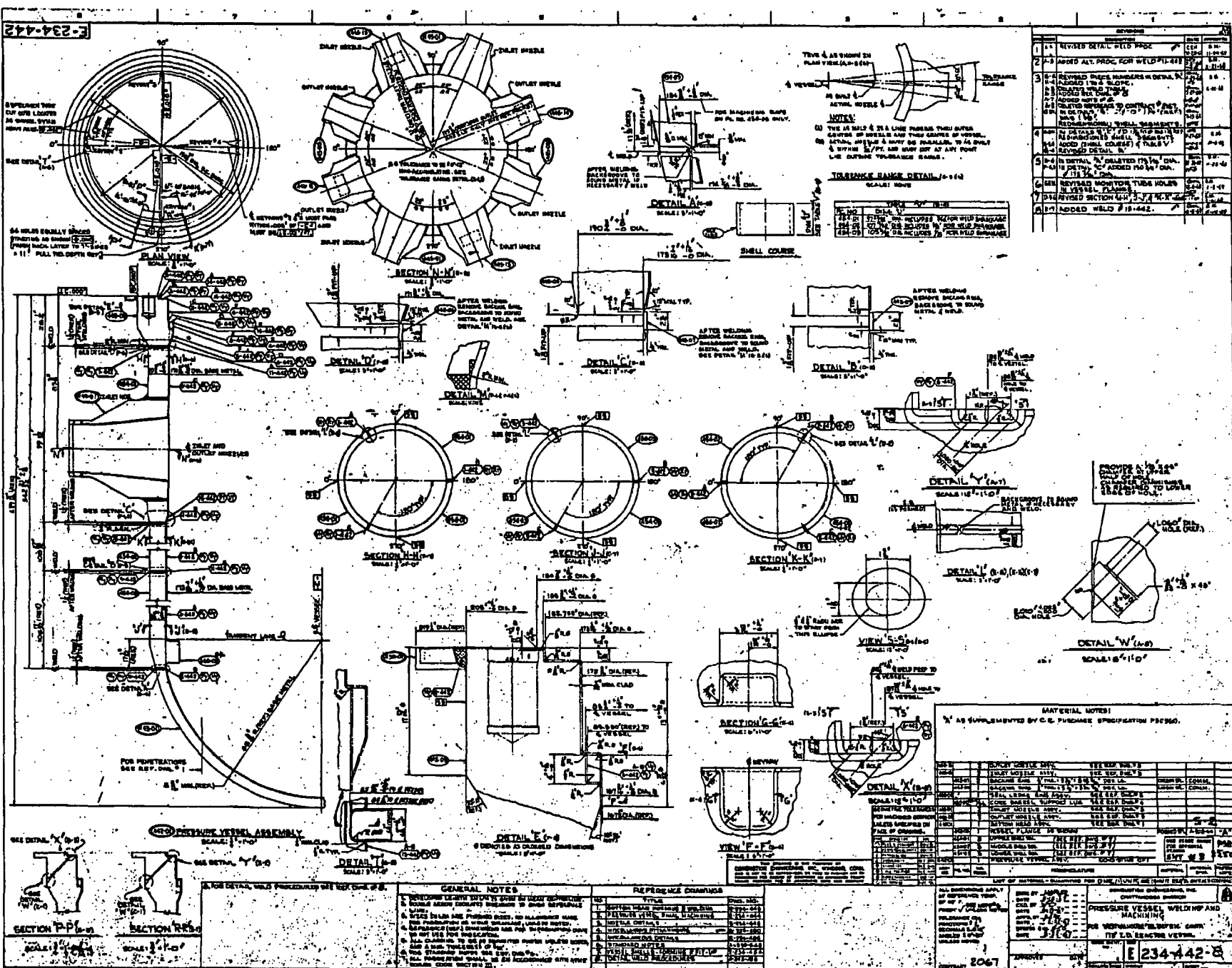
\_\_\_\_\_  
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COMBINED AVERAGE 72.44

Analyst James S

Date 12/19/02

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NO.	REVISION	DATE	BY	CHKD.
1	REVISED DETAIL WELD PROC	01-10-50	...	...
2	ADDED ALT. PROC. FOR WELD P1-41	01-10-50	...	...
3	REVISED THESE DIMENSIONS IN DETAIL N AS SHOWN IN PLAN VIEW (A-B-100)	01-10-50	...	...
4	REVISED DETAIL N	01-10-50	...	...
5	REVISED DETAIL W	01-10-50	...	...
6	ADDED WELD P1-44-2	01-10-50	...	...

MATERIAL NOTES:  
 \* AS SUPPLEMENTED BY C.E. PURCHASE SPECIFICATION P2360.

NO.	DESCRIPTION	QTY	UNIT	REMARKS
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GENERAL NOTES

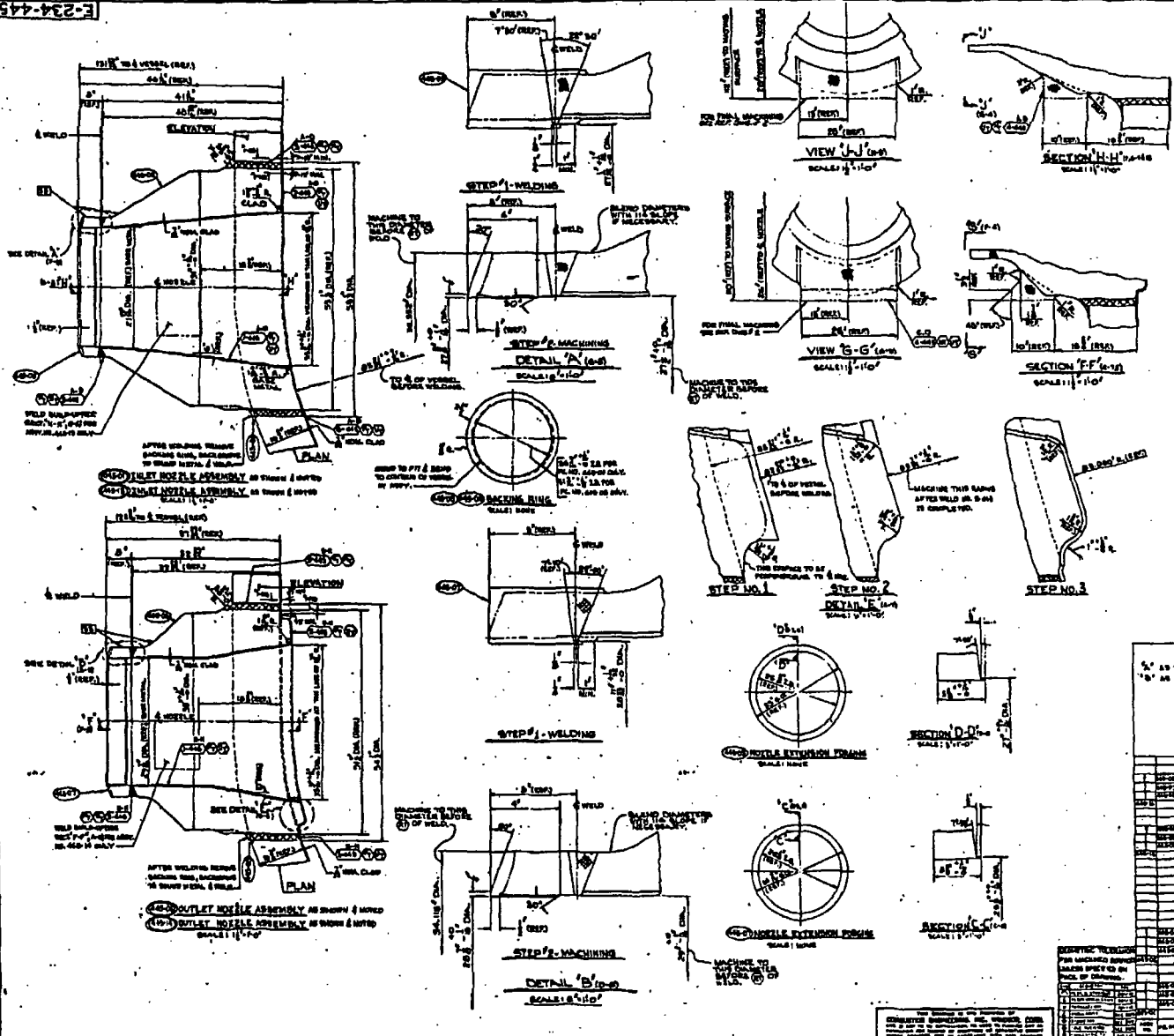
1. DIMENSIONS LISTED IN THIS DRAWING ARE TO BE MAINTAINED UNLESS OTHERWISE SPECIFIED.
2. ALL DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.
3. ALL DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.
4. ALL DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.
5. ALL DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.
6. ALL DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.
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8. ALL DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.
9. ALL DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.
10. ALL DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

REFERENCE DRAWINGS

NO.	TITLE	DATE
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271A

E-234-445



NO.	DESCRIPTION	DATE	BY	CHKD.
1	REVISED DRY WELD PROC			
2	ADDED POINT TO THE WELD			
3	REVISED DETAIL 'A'			
4	REVISED DETAIL 'B'			
5	REVISED DETAIL 'C'			
6	ADDED WELD SYMBOL			
7	ADDED WELD SYMBOL			
8	ADDED WELD SYMBOL			
9	ADDED WELD SYMBOL			

MATERIAL NOTES	
'A'	AS SUPPLIED BY C.E. PURCHASE SPECIFICATION PERIAL
'B'	AS SUPPLIED BY C.E. PURCHASE SPECIFICATION PERIAL

NO.	DESCRIPTION	DATE	BY	CHKD.
1	NOZZLE ASSEMBLY			
2	NOZZLE ASSEMBLY			
3	NOZZLE ASSEMBLY			
4	NOZZLE ASSEMBLY			
5	NOZZLE ASSEMBLY			
6	NOZZLE ASSEMBLY			
7	NOZZLE ASSEMBLY			
8	NOZZLE ASSEMBLY			
9	NOZZLE ASSEMBLY			

6. FOR DETAIL WELD PROCEDURES SEE REF. DWG. 24.

GENERAL NOTES	
1.	WELD SYMBOLS TO BE USED TO SHOW REFERENCE TO THE WELDING PROCEDURE SPECIFICATION (WPS) AND ALL WELDING MATERIALS TO BE USED TO WELD SHALL BE AS SPECIFIED IN THE WPS.
2.	WELDING SHALL BE DONE IN ACCORDANCE WITH THE WPS AND THE WELDING PROCEDURE SPECIFICATION (WPS) AND THE WELDING MATERIALS TO BE USED SHALL BE AS SPECIFIED IN THE WPS.
3.	WELDING SHALL BE DONE IN ACCORDANCE WITH THE WPS AND THE WELDING PROCEDURE SPECIFICATION (WPS) AND THE WELDING MATERIALS TO BE USED SHALL BE AS SPECIFIED IN THE WPS.
4.	WELDING SHALL BE DONE IN ACCORDANCE WITH THE WPS AND THE WELDING PROCEDURE SPECIFICATION (WPS) AND THE WELDING MATERIALS TO BE USED SHALL BE AS SPECIFIED IN THE WPS.
5.	WELDING SHALL BE DONE IN ACCORDANCE WITH THE WPS AND THE WELDING PROCEDURE SPECIFICATION (WPS) AND THE WELDING MATERIALS TO BE USED SHALL BE AS SPECIFIED IN THE WPS.

REFERENCE DRAWINGS				
NO.	DESCRIPTION	DATE	BY	CHKD.
1	NOZZLE ASSEMBLY			
2	NOZZLE ASSEMBLY			
3	NOZZLE ASSEMBLY			
4	NOZZLE ASSEMBLY			
5	NOZZLE ASSEMBLY			
6	NOZZLE ASSEMBLY			
7	NOZZLE ASSEMBLY			
8	NOZZLE ASSEMBLY			
9	NOZZLE ASSEMBLY			

NOZZLE DETAILS				
NO.	DESCRIPTION	DATE	BY	CHKD.
1	NOZZLE ASSEMBLY			
2	NOZZLE ASSEMBLY			
3	NOZZLE ASSEMBLY			
4	NOZZLE ASSEMBLY			
5	NOZZLE ASSEMBLY			
6	NOZZLE ASSEMBLY			
7	NOZZLE ASSEMBLY			
8	NOZZLE ASSEMBLY			
9	NOZZLE ASSEMBLY			

2718  
2719

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 [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 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 Boon DATE 4/18/02  
 UT Operator Signature Will Hill DATE 4/18/02

Comments \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

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## R.V. COVERAGE ESTIMATE BREAKDOWNS

PLANT NAME SALEM UNIT 2

# WesDyne

COMPONENT NOZZLE TO SHELL WELD

# International

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 (10 & 50 DEG.)	100.00	100.00						
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-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 Boone DATE 4/18/02  
 UT Operator Signature Will Little 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-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 Boone DATE 4/18/02  
 UT Operator Signature Will Little 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-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 (10 & 50 DEG.)	100.00	100.00						
AVERAGE	100.00		63.25		63.25		63.25	

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

COMBINED AVERAGE 72.44 Analyst *[Signature]* Date 4/19/58

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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 [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 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	<u>Paul Roan</u>	DATE <u>4/18/02</u>
UT Operator Signature	<u>Will Wilk</u>	DATE <u>4/18/02</u>

Comments \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

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## 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 (10 & 50 DEG.)	100.00	100.00						
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 W. H. Miller DATE 4/18/02

Comments \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



**FRAMATOME ANP**

**VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT**

<b>CUSTOMER:</b> SALEM 2R12	<b>SYSTEM:</b> PRESSURIZER
<b>SUMMARY NO:</b> 010900	<b>COMPONENT ID:</b> 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  $4.50 \times 6.80 \times 290.00 = 8,874.00 \text{ cu.in}$

**2.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT BEAM LAMINAR FLAWS**

2.1 Exam Height X Exam Width X Exam Length = Exam  $0.00 \times 0.00 \times 0.00 = 0.00 \text{ cu.in}$

**3.0 CALCULATE REQUIRED PARALLEL EXAM VOLUME FOR 45° AND 60°**

3.1 Exam Height X Exam Width X Exam Length = Exam  $4.50 \times 6.80 \times 580.00 = 17,748.00 \text{ cu.in}$

**4.0 CALCULATE REQUIRED TRANSVERSE EXAM VOLUME FOR 45° AND 60°**

4.1 Exam Height X Exam Width X Exam Length = Exam  $4.50 \times 6.80 \times 580.00 = 17,748.00 \text{ cu.in}$

**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
<u>4.50</u>	X <u>3.95</u>	X <u>290</u>	= <u>5,154.75</u>

5.2 Limited Below / CW exam volume

Height of Obstructed Volume	Width of Obstructed Area	Length of Obstructed Area	Volume with no Exam Coverage
<u>0.00</u>	X <u>0.00</u>	X <u>0.00</u>	= <u>0.00</u>

Total straight beam planar exam volume not examined = 5,154.75

5.3 Percent Volume Examined

Total Vol w/No Coverage	Total Vol Exam Volume	Percent Volume Examined
$100 - \{ [ 5,154.75 / 8,874.00 ] \times 100 \}$		= <u>41.91 %</u>

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INSURANCE COMPANY  
*Submittal Tillman 4/10/00*

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FTI

*Rev 4/10/00*





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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INSURANCE COMPANY  
Delton E. Tiller 4-19-01

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21.0



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 %

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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
10,307.25	17,748.00	41.92 %

$100 - \left\{ \left[ \frac{10,307.25}{17,748.00} \right] \times 100 \right\} = 41.92 \%$

**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.

Examiner: Mike Zipse

Level: II

Date: 04/11/02

Michael Zipse  
Sign: *Michael Zipse* FACTORY MUTUAL

Reviewer:

Sign: *Bob Keller*

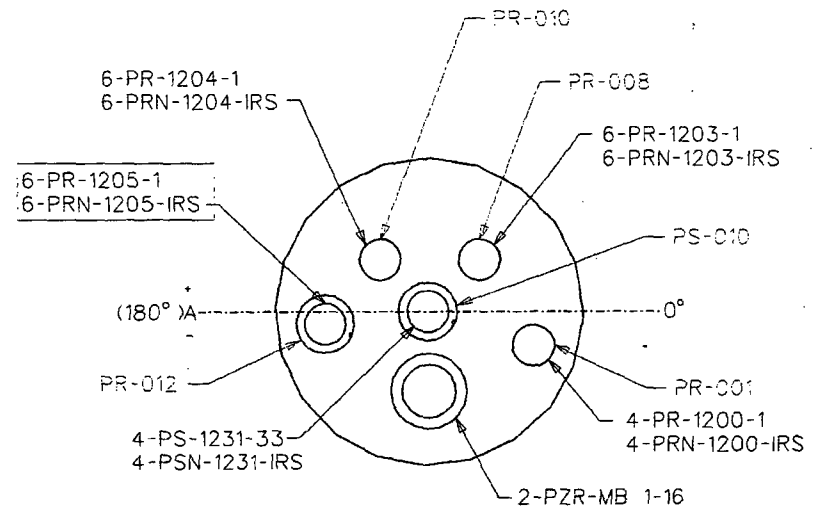
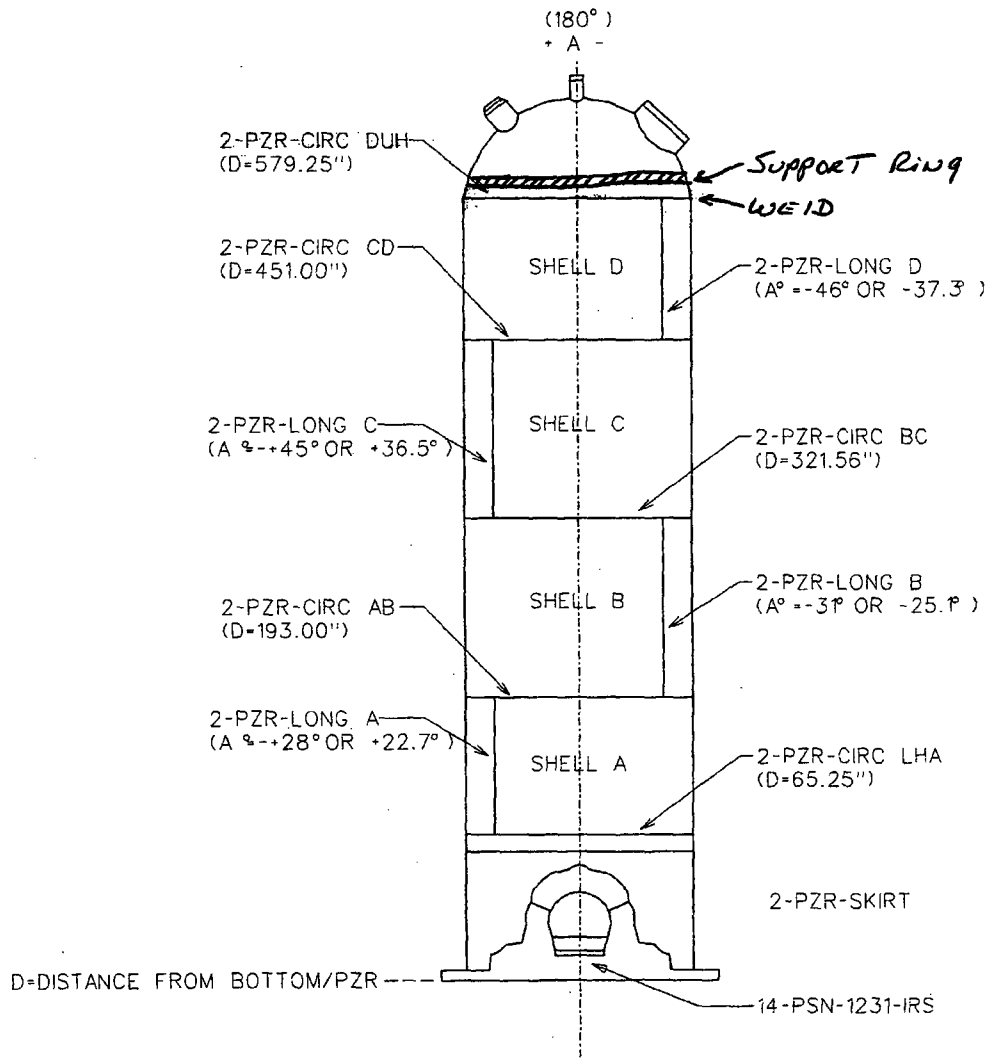
Level: III

Date: 04/11/02

Sign: *Bob Keller*

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D=DISTANCE FROM BOTTOM/PZR

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-5	REVISION: 1
					SYSTEM: REACTOR COOLANT SYSTEM PRESSURIZER	
1		REVISED PER ORDER No. 80038023.			LINE: N/A	THIRD 10 YEAR INSPECTION INTERVAL
REV.	DATE	DESCRIPTION				

# Supplemental Drawing

Summary # 10900

Component I.D. 2-PZR-CIRC-DUH

Description Shell "D" to Upper Head

Page of

## Comments

The exam completed was limited to 37% of code required coverage due to the Pressurizer support ring clamped to the upper head. A total of 140 degrees of the total circumference was accessible for exam.

## Sketch

2-PZR-CIRC-DUH

⊥

SHELL

← EXAM VOLUME →

~ LIMITATION

HEAD

≡≡≡ ONE DIRECTION 60°

||| ONE DIRECTION 45°

1" = 3"

010900

DE Tilly 4/26/02  
FACTORY MUTUAL  
INSURANCE COMPANY

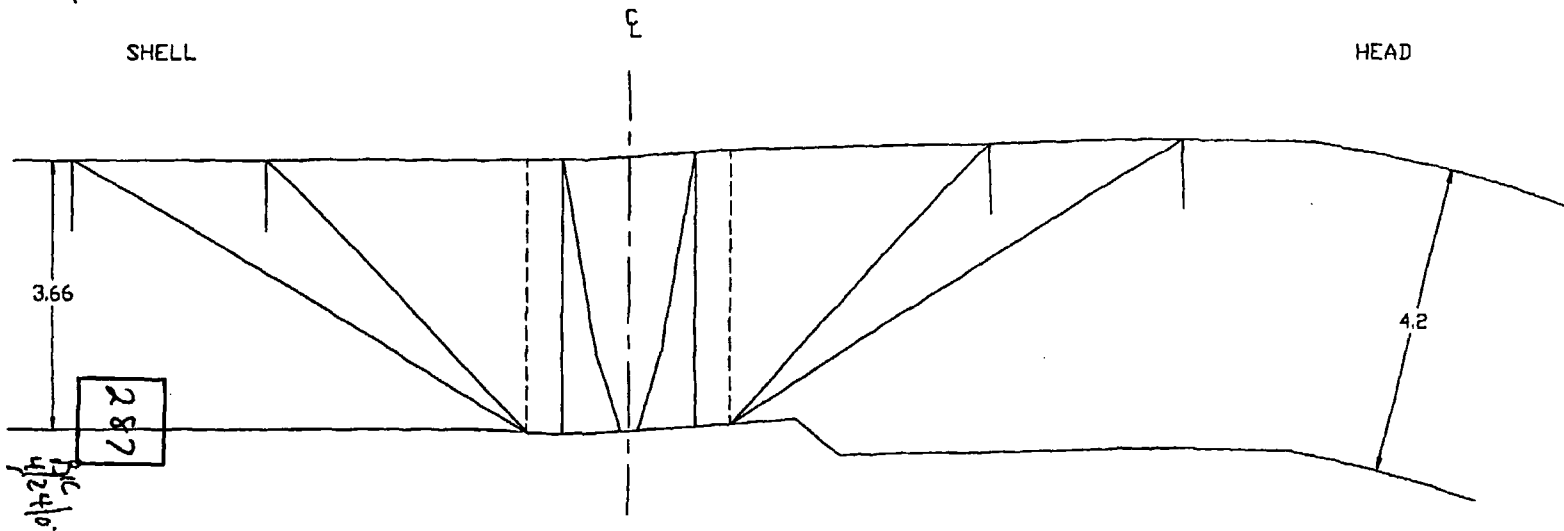
Plot illustrates the required exam volume  
as scanned from the head and shell sides

Salem unit 2

Scale 1"=2.5'

21-STG-SDUH

David Kleinjan Level II



DE Tolley 4-26-02  
FACTORY MUTUAL  
INSURANCE COMPANY

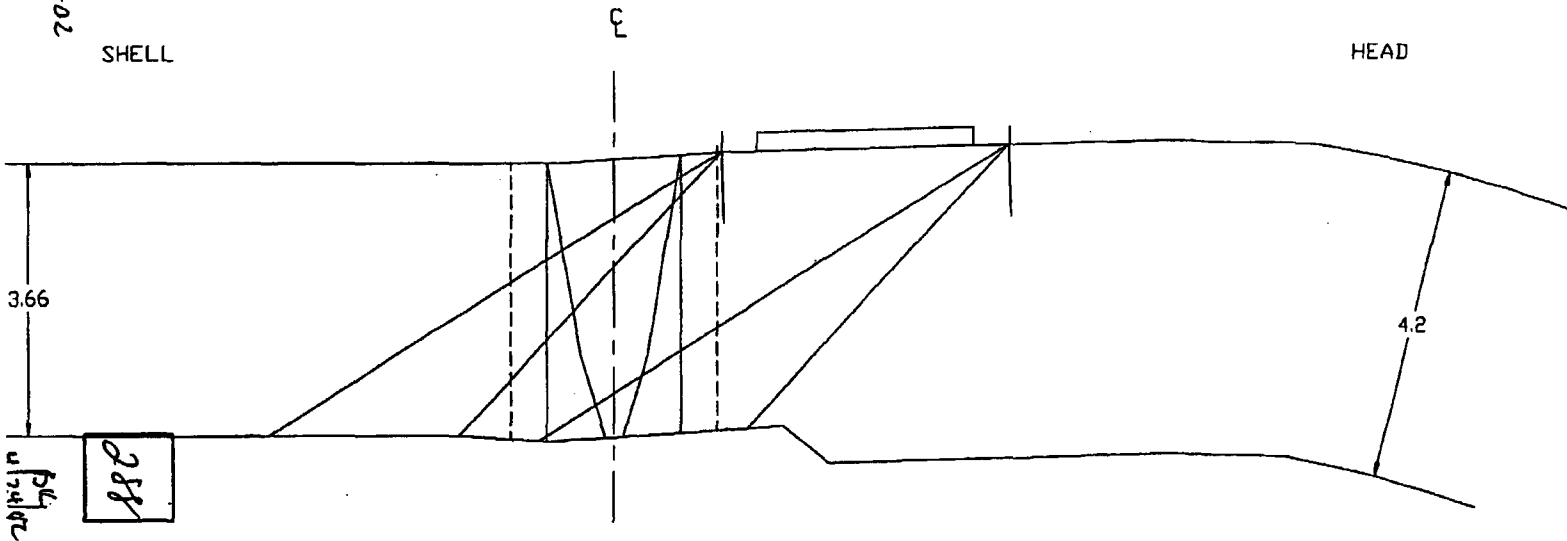
Plot illustrates the limitations  
of the weld pads as scanning  
from the head side

Salem unit 2

Scale 1"=25'

21-STG-SDUH

David Kleinjan Level II



SHELL

HEAD

3.66

4.2

3

P.L.  
1/2" dia

288





# 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

$$1.1 \quad \text{Exam Height} \times \text{Exam Width} \times \text{Exam Length} = \text{Exam} \quad \underline{3.72 \times 3.00 \times 553.00 = 6,171.48 \text{ cu.in}}$$

## 2.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT BEAM LAMINAR FLAWS

$$2.1 \quad \text{Exam Height} \times \text{Exam Width} \times \text{Exam Length} = \text{Exam} \quad \underline{0.00 \times 0.00 \times 0.00 = 0.00 \text{ cu.in}}$$

## 3.0 CALCULATE REQUIRED PARALLEL EXAM VOLUME FOR 45° AND 60°

$$3.1 \quad \text{Exam Height} \times \text{Exam Width} \times \text{Exam Length} = \text{Exam} \quad \underline{3.72 \times 3.00 \times 1,106.0 = 12,342.96 \text{ cu.in}}$$

## 4.0 CALCULATE REQUIRED TRANSVERSE EXAM VOLUME FOR 45° AND 60°

$$4.1 \quad \text{Exam Height} \times \text{Exam Width} \times \text{Exam Length} = \text{Exam} \quad \underline{3.72 \times 3.00 \times 1,106.0 = 12,342.96 \text{ cu.in}}$$

## 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
<u>3.72</u>	X	<u>1.45</u>	X
		<u>49.50</u>	=
			<u>267.00</u>

### 5.2 Limited Below / CW exam volume

Height of Obstructed Volume	Width of Obstructed Area	Length of Obstructed Area	Volume with no Exam Coverage
<u>3.72</u>	X	<u>1.45</u>	X
		<u>49.50</u>	=
			<u>267.00</u>

$$\text{Total straight beam planar exam volume not examined} = \underline{534.01}$$

### 5.3 Percent Volume Examined

Total 0 vol w/No Coverage	Total 0 Exam Volume	Percent Volume Examined
<u>100 - { [ 534.01 / 6,171.48 ] x 100 }</u>		= <u>91.35 %</u>

FACTORY MUTUAL  
INSURANCE COMPANY

D.F. Tillman 4-26-07

ALB 42402

10/15

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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			
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 %

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INSURANCE COMPANY  
NET LOSS 4-21-00

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## 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 %

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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

*DE Tilley* 4-26-02

Examiner: David Kleinjan

Level: II

Date:  
04/19/02

Reviewer:

Level:

Date:

Sign:

Sign:

*Bob Kelleher*

III

4/24/02

292

13/15



**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	<u>Length of Limitation</u>		<u>Width of Limitation</u>		<u>Area Not Examined</u>	
A.	<u>      *      </u>	X	<u>      *      </u>	=	<u>      *      </u>	sq.in.
B.	<u>      *      </u>	X	<u>      *      </u>	=	<u>      *      </u>	
C.	<u>      *      </u>	X	<u>      *      </u>	=	<u>      *      </u>	
D.	<u>      *      </u>	X	<u>      *      </u>	=	<u>      *      </u>	

**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 *Phillip Wright*

Date: 04/05/2002

REVIEWER: *Bob Voller* Date: *4/9/02* Page *3* of *3*  
*4/9/02* *4/9/02*

FACTORY MUTUAL  
 INSURANCE COMPANY  
*Delton E. Tillery 4-15-02*

**REQUEST FOR ADDITIONAL INFORMATION**  
**REQUEST FOR RELIEF REGARDING EXAMINATION COVERAGE**  
**SECOND TEN-YEAR IN-SERVICE INSPECTION INTERVAL**  
**SALEM NUCLEAR GENERATING STATION, UNIT NO. 2**  
**DOCKET NO. 50-311**

**QUESTION**      2.2(a)    For certain component attachments and support welds, information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers listed below.

Summary #      330645

Component I.D.    14-BF-2221-3PL-1 thru 8

Description      PIPE LUGS

		Comments
1	Weld X-Section	N/A
2	Material	Carbon Steel
3	Thickness / weld Crown	N/A
4	Obstruction	adjacent piping
5	Exam Area Highlighted on Drawing	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> X <input type="checkbox"/> No
6	Transducer ray exit point	N/A

**Comments**

MT exam was conducted on this component . The MT exam was limited to 79% because the box beam configuration and adjacent piping in the area of the welded attachment prevented sufficient access to examine some portions of the welds in two directions. A system pressure test was also completed with no inaccessible indications observed.

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\_\_\_\_\_

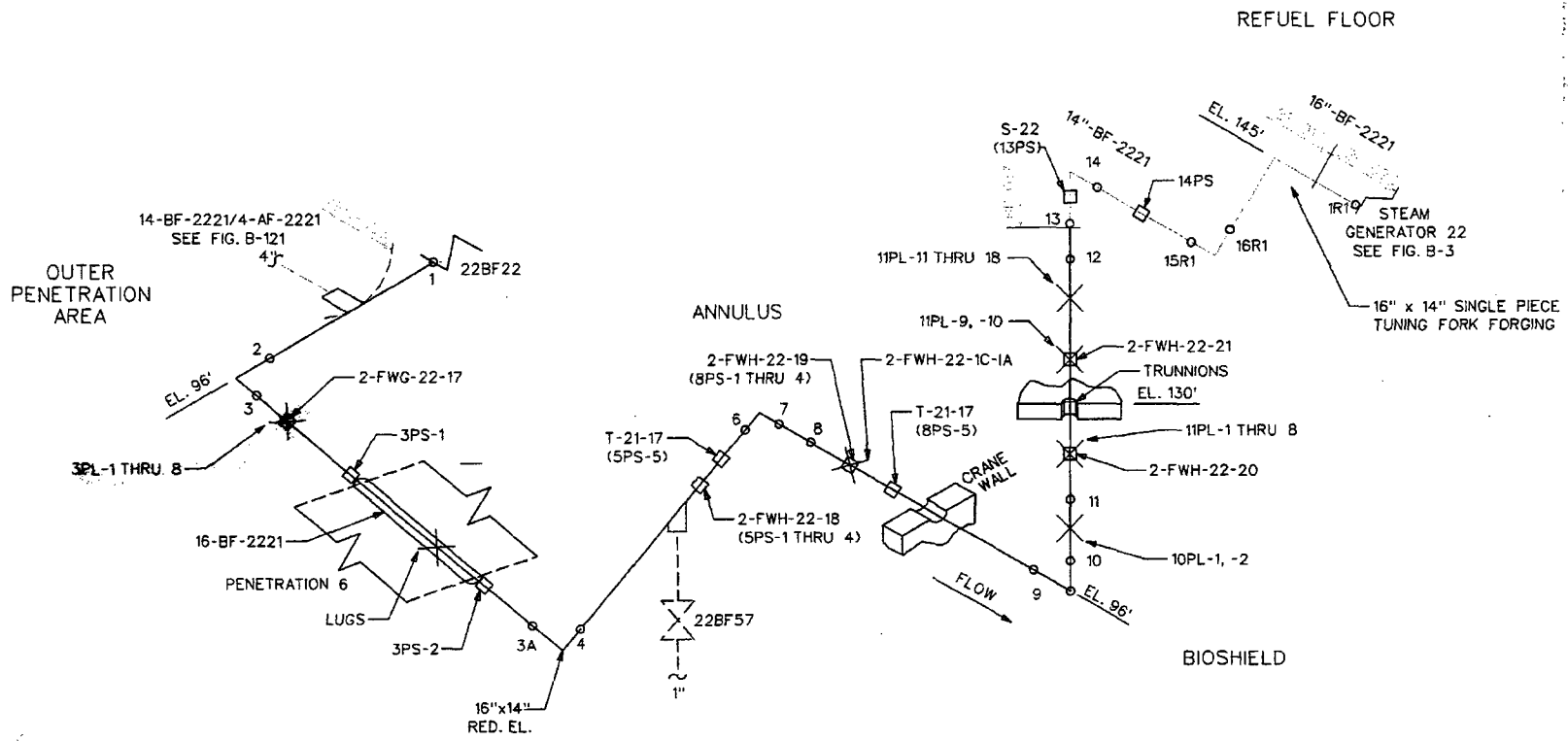
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BUILDING: CONTAINMENT OUTER PEN	LOCATION: REFUEL FLOOR BIOSHIELD ANNULUS OUTER PEN	ELEVATIONS: 96' to 145'
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PSEG ISO SGF23-05  
P & ID 205302-03

ATTENTION: ANY REVISION TO THIS DRAWING SHALL BE MADE ONLY BY CAED		
4		REVISED PER ORDER No. 80038023.
REV.	DATE	DESCRIPTION

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

FIGURE: B-16	REVISION: 4
SYSTEM: BOILER FEED SYSTEM STEAM GENERATOR FEED	
LINE: 16-BF-2221, 14-BF-2221	
THIRD 10 YEAR INSPECTION INTERVAL	

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- LV 1 = COMMON INFORMATION
- LV 2 = WELD INFORMATION
- LV 3 = HANGER INFORMATION

SECOND INTERVAL, THIRD PERIOD, FIRST OUTAGE

SUMMARY #: 330645 **02RF EXAMINATION SUMMARY RECORD**  
**SALEM NUCLEAR GENERATING STATION, UNIT 2**

SYSTEM: FEEDWATER SYSTEM CONFIG.: 2-FWG-22-17  
 LINE #: 14-BF-2221 RELIEF REQ.:  
 COMP. ID.: 14-BF-2221-3PL-1 THRU 8 CAL. BLOCK:  
 LTP FIG.: B-16 ASME CAT/ITEM: C-C / C3.20

LTP INSTRUCTIONS: REF. SUM# 330648 (IWF). MT EXAM LIMITED TO 78.5% OF CODE REQUIRED COVERAGE DUE TO INACCESSABILITY.

NDE METHOD IN LTP	PROCEDURE	REV.	RESULTS	EXAM RECORD	CALIBRATION RECORD	N O R	G E O	O T H	RESOLUTION RECORD	REMARKS
			FILE NDE EXAMS							
MT	54-ISI-270-37	37	MT	DPO05	-	X	-	-	-	02RF - FTI UNDER W/O# 50029032 TO PERFORM NDE. MT EXAM LIMITED TO 78.5% OF CODE REQUIRED COVERAGE DUE TO INACCESSABILITY.  FACTORY MUTUAL INSURANCE COMPANY <i>Delton E. Tilley</i> 4-15-02

Prepared by: *[Signature]*  
 Reviewed by: *[Signature]*

Date: 04/11/2002

Total dose received while performing the required NDE examinations Man Mrem

SUMMARY #: 330645





# EXAMINATION SUMMARY

NUMARY 330645	DATA PACKAGE S2R12DP005	DATE Apr 10 2002
SITE: SALEM 2, RFO-12	EXAMINATION METHOD: MT	
SYSTEM / COMPONENT ID: 14-BF-2221-3PL-1 THRU 8	EXAMINATION PROCEDURES:	
COMPONENT DESCRIPTION: 2-FWG-22-17	54-ISI-270-37	
EXAMINATION CATEGORY: C3.20		
ISO / DRAWING: B-16		
CALIBRATION SHEET NO(S): N/A		
	EXAMINATION RESULTS: <input checked="" type="checkbox"/> No Reportable Indications <input type="checkbox"/> Reportable Indications <input type="checkbox"/> Geometric	

A MT EXAMINATION WAS PERFORMED ON THE PIPE SUPPORT, 14-BF-2221-3PL-1 THRU 8.

THE EXAMINATION WAS PERFORMED WITH NO RECORDABLE INDICATIONS AND WAS LIMITED TO 78.5% COVERAGE DUE TO A INACCESSABILITY. AREAS NOT EXAMINED WERE DUE TO INABILITY TO PLACE YOKE IN CORRECT ORIENTATION.

EXAMINATION WAS COMPARED TO PREVIOUS EXAMINATION DATA WITH NO SIGNIFICANT CHANGE NOTED.

FACTORY MUTUAL  
INSURANCE COMPANY

*Delton E. Tilley* 4-15-02

Prepared By: <i>Bob Kellechall</i> Date: <i>4/10/02</i>	Reviewed By: <i>Bob Kellechall</i> Date: <i>4/10/02</i>	Utility Review By: <i>W. D. ...</i> Date: <i>4-13-02</i>	Page <i>1</i> of <i>3</i>
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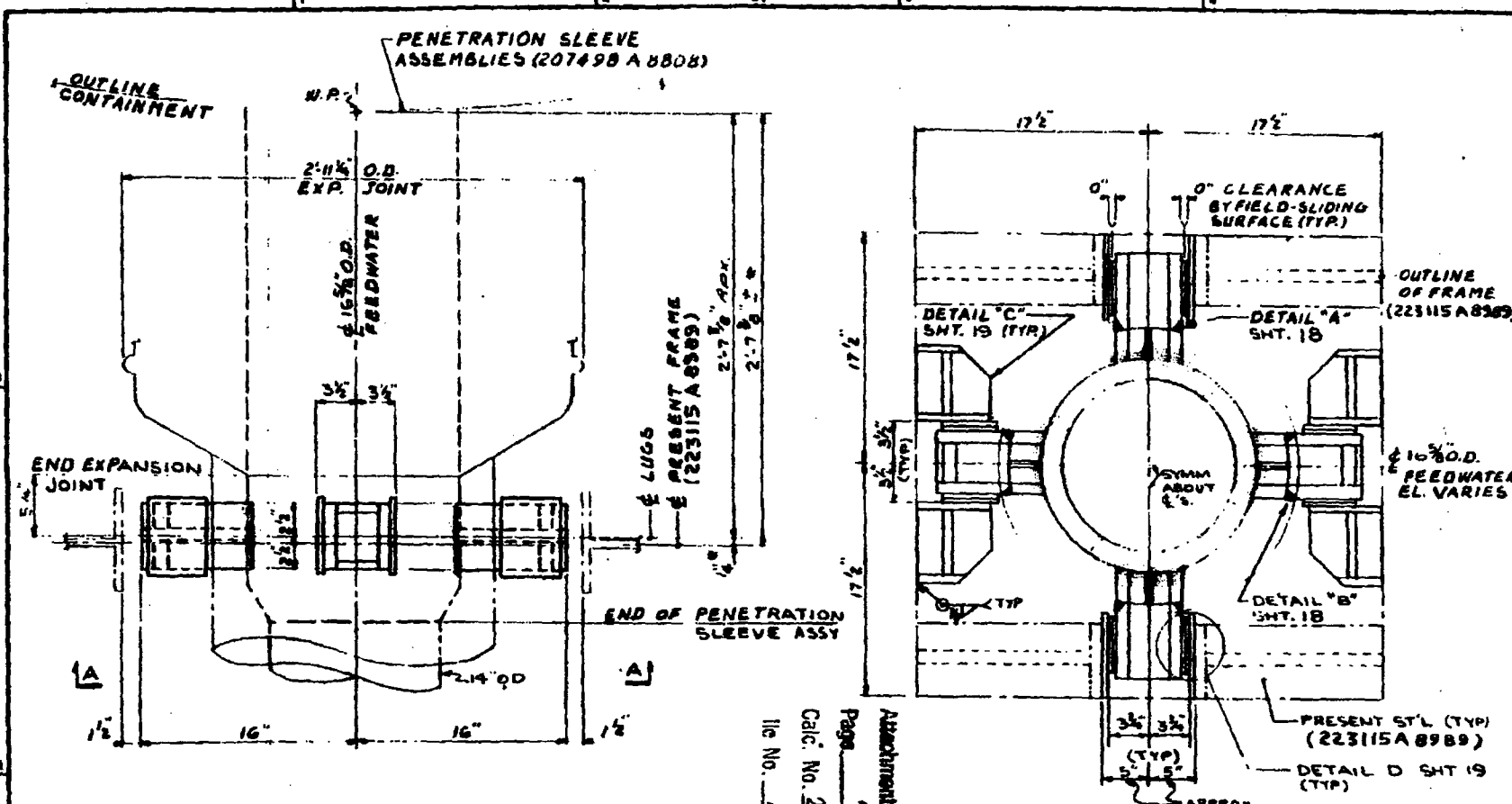
**FRAMATOME ANP** **MAGNETIC PARTICLE EXAMINATION DATA**

Customer : <b>SALEM 2, RFO-12</b>		Exam Date : <b>04/05/02</b>	Figure / Summary No. : <b>330645</b>
System/Component ID : <b>14-BF-2221-3PL-1 THRU 8</b>		Nominal Thickness : <b>N/A</b>	
Component Description : <b>2-FWG-22-17</b>			
Stage of Fabrication (End Prep, Repair, Root, In Process, Final) : <b>FINAL</b>		ISO/Drawing No : <b>B-16</b>	
Surface (ISI Prep, As Welded, Ground, Other) : <b>GROUND</b>		Procedure No. : <b>54-ISI-270-37</b>	
M&TE No. (Yoke) : <b>16032</b>	Calibration Due Date : <b>06/29/2002</b>	Exam Area / Figure : <b>IWC-2500-5(b)</b>	
M&TE No. (Black Light Meter) : <b>N/A</b>	Calibration Due Date : <b>N/A</b>	Black Light Intensity uW/CM <sup>2</sup> : <b>N/A</b>	
Particle Batch or Lot No. : <b>97G098</b>	Manufacturer : <b>MAGNAFLUX</b>	Visible / Fluorescent : <b>Visible</b>	
Wet / Dry : <b>Dry</b>	Particle Color : <b>YELLOW</b>	Temperature (F) : <b>72</b>	
M&TE No. (Thermometer) : <b>15048</b>	Calibration Due Date : <b>09/27/2002</b>	AC/DC : <b>AC</b>	

EXAMINATION DATA					TYPICAL
RESULTS: No Recordable Indication			LIMITATIONS: YES		
IND #	Ref Point Location	Size	Location L    W	Orientation to Weld	<p>L = Dist to reference point from Ind <math>\epsilon</math></p> <p>W = dist. to weld <math>\epsilon</math></p>

Remarks/Sketch (if necessary)  
**Examination limited to 78.5% due to accessibility. See attached Surface Examination Coverage Report for limitations.**

Examiner: <b>Phillip Wright</b> <i>Phillip Wright</i>	Level: <b>II</b>	Date: <b>4-6-02</b>	Examiner: <b>N/A</b>	Level: <b>N/A</b>	Date: <b> </b>
Reviewed: <b>Bob Vellechell</b> <i>Bob Vellechell</i>	Level: <b>II</b>	Date: <b>4/10/02</b>	ANII Review: <b>Delton E. Tillow</b> <i>Delton E. Tillow</i>	Date: <b>4-15-02</b>	
Customer: <b>Wayne Paulings</b> <i>Wayne Paulings</i>	Date: <b>4-13-02</b>	ER No.: <b>N/A</b>	Page <b>2</b> of <b>3</b>		



**PLAN**  
 FWG 21-15, 22-17, 22-21 ONE LINE REQD  
 FOR LOCATION PLAN SEE SHT. 13  
 (PAINT SRP)

NOTE: FRAME TO BE LOCATED IN PLACE  
 WHEN PIPE IS IN FINAL ERECTED  
 POSITION AND DETAILS "A" & "B"  
 ARE WELDED IN PLACE.

Attachment 2 of  
 Page 2 of  
 Calc. No. 2P-FWG-22-0017  
 Ite No. REF 1

**ELEVATION "A-A"**

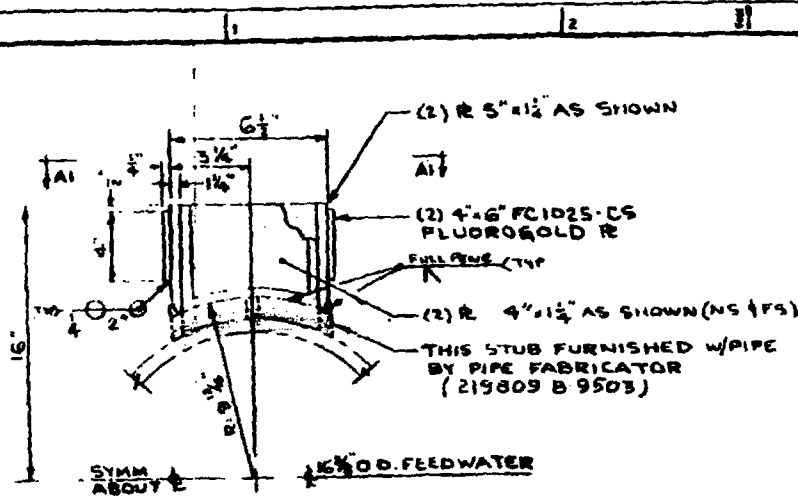
RE: 218395 A 8915

1	4
2	3
3	2
4	1

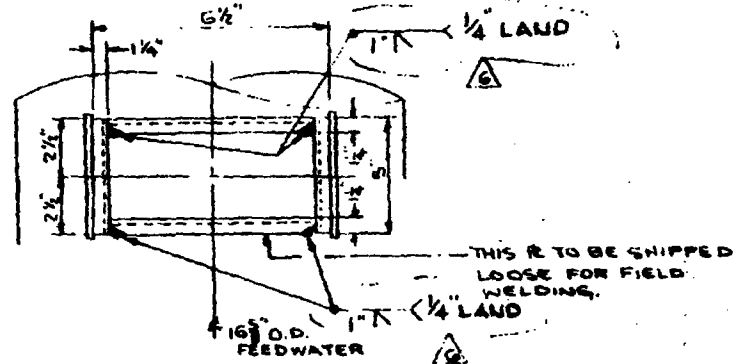
PUBLIC SERVICE ELECTRIC AND GAS COMPANY  
 ELECTRIC ENGINEERING DEPARTMENT  
 NEWARK, NEW JERSEY  
 DATE 12-24-60 BY E.S. CHICAGO 071 EXAMINED

Union Nuclear Generating Station  
 No. 2 Unit - Reactor Containment  
 Steam Generator Feedwater Piping  
 HANCOCK

218816 D 4136  
 SHEET 17 OF 40



ELEVATION

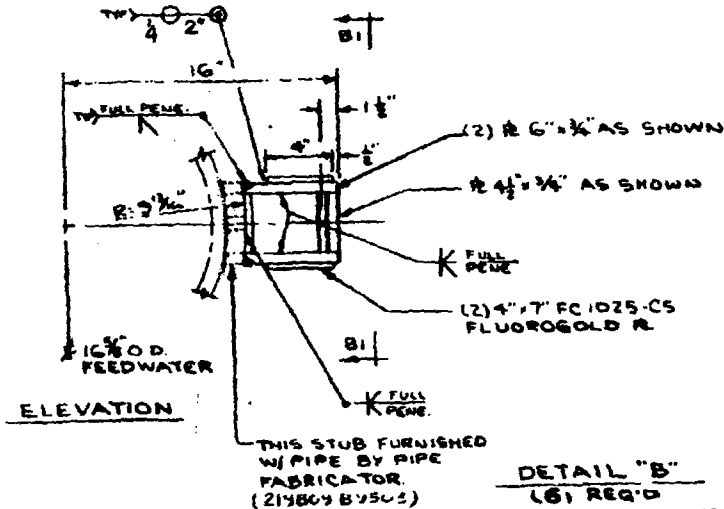


SECTION A1-A1

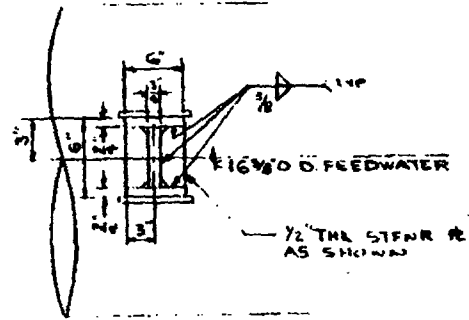
NOTE: ALL R MAT'L ON THIS SHEET TO BE ASTM A515 GR 70 UNLESS NOTED.

DETAIL "A"  
 (6) REQ'D

Attachment 3  
 Page 3 of 10  
 Calc. No. 2P-FW/G-22-0017  
 IIR No. REV. 1



ELEVATION



SECTION B1-B1

FOR LUG ASSEMBLY, SEE SHT. #17

RE. 219595 A 8915

PUBLIC SERVICE ELECTRIC AND GAS COMPANY ELECTRIC ENGINEERING DEPARTMENT NEWARK, NEW JERSEY DATE 0-2-74 DRAWN E. S. CHECKED [ ]		Salem Nuclear Generating Station No. 2 Unit - Reactor Containment Steam Generator Feedwater Piping Section 10.1		219816 D 413L-6 SHEET 18 OF 46
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**FRAMATOME ANP**

**VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT**

FTI VESS\_VOLFRP 07/16/00

5

<b>CUSTOMER:</b> SALEM 2, RFO 12	<b>SYSTEM:</b> BORON INJECTION TANK
<b>SUMMARY NO:</b> 715180	<b>COMPONENT ID:</b> 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  $2.75 \times 4.00 \times 110.00 = 1,210.00 \text{ cu.in}$

**2.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT BEAM LAMINAR FLAWS**

2.1 Exam Height X Exam Width X Exam Length = Exam  $0.00 \times 0.00 \times 0.00 = 0.00 \text{ cu.in}$

**3.0 CALCULATE REQUIRED PARALLEL EXAM VOLUME FOR 45° AND 60°**

3.1 Exam Height X Exam Width X Exam Length = Exam  $2.75 \times 4.00 \times 220.00 = 2,420.00 \text{ cu.in}$

**4.0 CALCULATE REQUIRED TRANSVERSE EXAM VOLUME FOR 45° AND 60°**

4.1 Exam Height X Exam Width X Exam Length = Exam  $2.75 \times 4.00 \times 220.00 = 2,420.00 \text{ cu.in}$

**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 %

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Rev 11/22/07



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
<u>0</u>	X	<u>          </u>	X
		<u>          </u>	= <u>0.00</u>

## 6.2 Limited Below / CW exam volume

Height of Obstructed Volume	Width of Obstructed Area	Length of Obstructed Area	Volume with no Exam Coverage
<u>          </u>	X	<u>          </u>	X
		<u>          </u>	= <u>          </u>

Total straight beam planar exam volume not examined	=	<u>0.00</u>
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## 6.3 Percent Volume Examined

Total 0° vol w/No Coverage	Total 0° Exam Volume	Percent Volume Examined
<u>100 - { [ 0.00 / 0.00 ] x 100 }</u>	=	<u>0.00 %</u>

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
<u>2.75</u>	X	<u>4.00</u>	X
		<u>32.00</u>	= <u>352.13</u>

## 7.2 Limited Below / CCW exam volume

Height of Obstructed Volume	Width of Obstructed Area	Length of Obstructed Area	Volume with no Exam Coverage
<u>1.10</u>	X	<u>2.00</u>	X
		<u>32.00</u>	= <u>70.40</u>

Total 45° parallel exam volume not examined	=	<u>422.53</u>
---	---	---------------

## 7.3 Percent Volume Examined

Total 45° parallel vol w/No Coverage	Total 45° parallel Exam Volume	Percent Volume Examined
<u>100 - { [ 422.53 / 2,420.00 ] x 100 }</u>	=	<u>82.54 %</u>

FACTORY MUTUAL  
INSURANCE COMPANY  
NET. DB... 4-25-02

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R/L 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
<u>2.75</u> X	<u>4.00</u> X	<u>32.00</u>	= <u>352.00</u>

## 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
<u>2.55</u> X	<u>4.00</u> X	<u>32.00</u>	= <u>326.40</u>

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
$100 - \left\{ \left[ \frac{678.40}{2,420.00} \right] \times 100 \right\}$		= <u>71.97 %</u>

## 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
<u>2.00</u> X	<u>2.75</u> X	<u>32.00</u>	= <u>176.00</u>

## 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
<u>2.00</u> X	<u>2.75</u> X	<u>32.00</u>	= <u>176.00</u>

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
$100 - \left\{ \left[ \frac{352.00}{2,420.00} \right] \times 100 \right\}$		= <u>85.45 %</u>

FACTORY MUTUAL  
INSURANCE COMPANY  
N.C. - MOBILE 4-25-02

296

DE 4/22/02



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
<u>2.00</u> X	<u>2.75</u> X	<u>32.00</u>	= <u>176.00</u>

## 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
<u>2.00</u> X	<u>2.75</u> X	<u>32.00</u>	= <u>176.00</u>

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
<u>100 - { [ <u>352.00</u> / <u>2,420.00</u> ] x 100 }</u>		= <u>85.45 %</u>

**11.0 CALCULATE PERCENT OF TOTAL VOLUME EXAMINED**

## 11.1 Sum of Exam Volumes %

Steps 5 Thur 10	No. Of Exams (6)	Examination Coverage
<u>[ 425.42 / 5.00 ]</u>		= <u>85.08 %</u>

SCANS LIMITED IN 4 AREAS BY TANK SUPPORT LEGS.

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FACTORY MUTUAL  
INSURANCE COMPANY

*DE Tilley* 4-25-02

297

Examiner: Mike Zelse

Level: JJ

Date: 04/19/02

Reviewer:

Level: UT

Date: 4/22/02

Sign: *Michael Zelse*Sign: *Bob Kelleher*

12/13





# PROFILE AND THICKNESS

Exam Date: 10/12/00

Summary No.: 011800

Site: Salem Unit 2, RFO 11

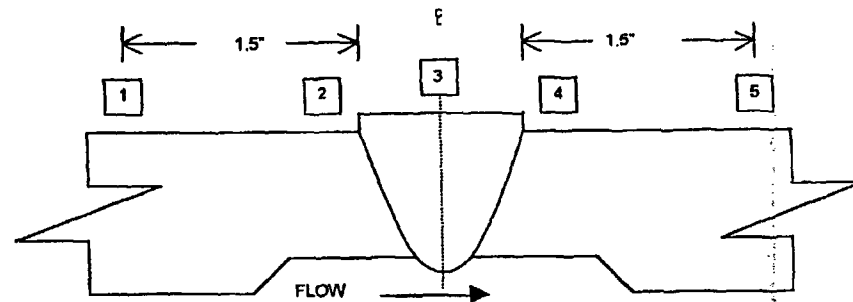
Examination Method: UT

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

852

*[Signature]* 10-12-2000  
 Prepared By Date

*[Signature]* 10/25/00  
 Reviewed By Date

*[Signature]* 10-26-00  
 Utility Review By Date

REQUEST FOR ADDITIONAL INFORMATION  
 REQUEST FOR RELIEF REGARDING EXAMINATION COVERAGE  
 SECOND TEN-YEAR IN-SERVICE INSPECTION INTERVAL  
 SALEM NUCLEAR GENERATING STATION, UNIT NO. 2  
 DOCKET NO. 50-311

**QUESTION**      1.3 (c) For certain piping welds, Information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers listed below.

**Summary #**      011800

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**Component I.D.**      6-PR-1205-1

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**Description**      Nozzle to Safe-End

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		Comments
1	Weld X-Section	In determinant
2	Material	Stainless Steel / Carbon Steel
3	Thickness / weld Crown	See Attached Sheet
4	Obstruction	Surface Contour
5	Exam Area Highlighted on Drawing	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
6	Transducer ray exit point	Point "A"

**Comments**

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 coverage 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, or 82/182 weld material. A liquid penetrant examination and system pressure test was also completed with no recordable indications observed.

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Supplemental Drawing

Summary # 011800

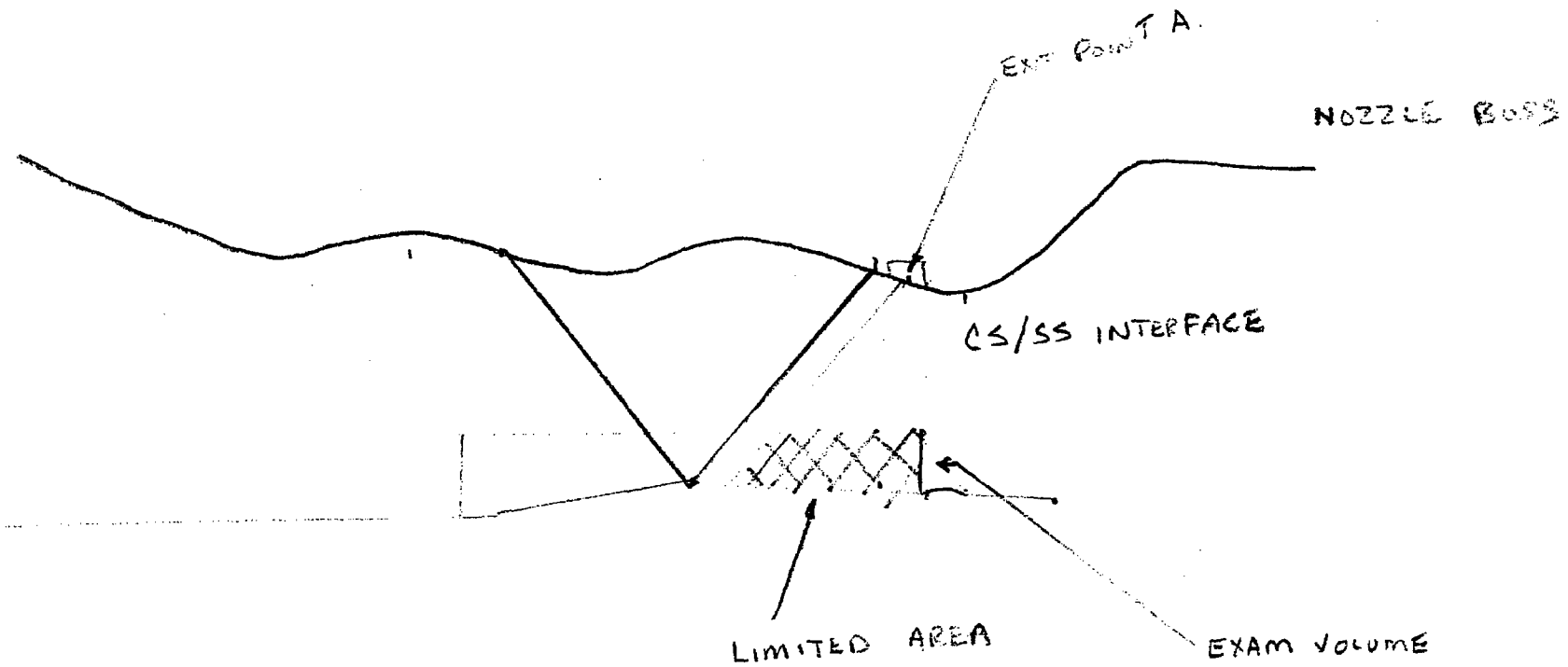
Component I.D. 6-PR-1205-1

Description Nozzle to safe-end

Page 2 of 4

Comments Exam limited from nozzle side. Additional limitations exist due to O.D. contour and associated lift off 360 degrees around.

Sketch



Supplemental Drawing

Summary # 011800

Component I.D. 6-PR-1205-1

Description Nozzle to safe-end

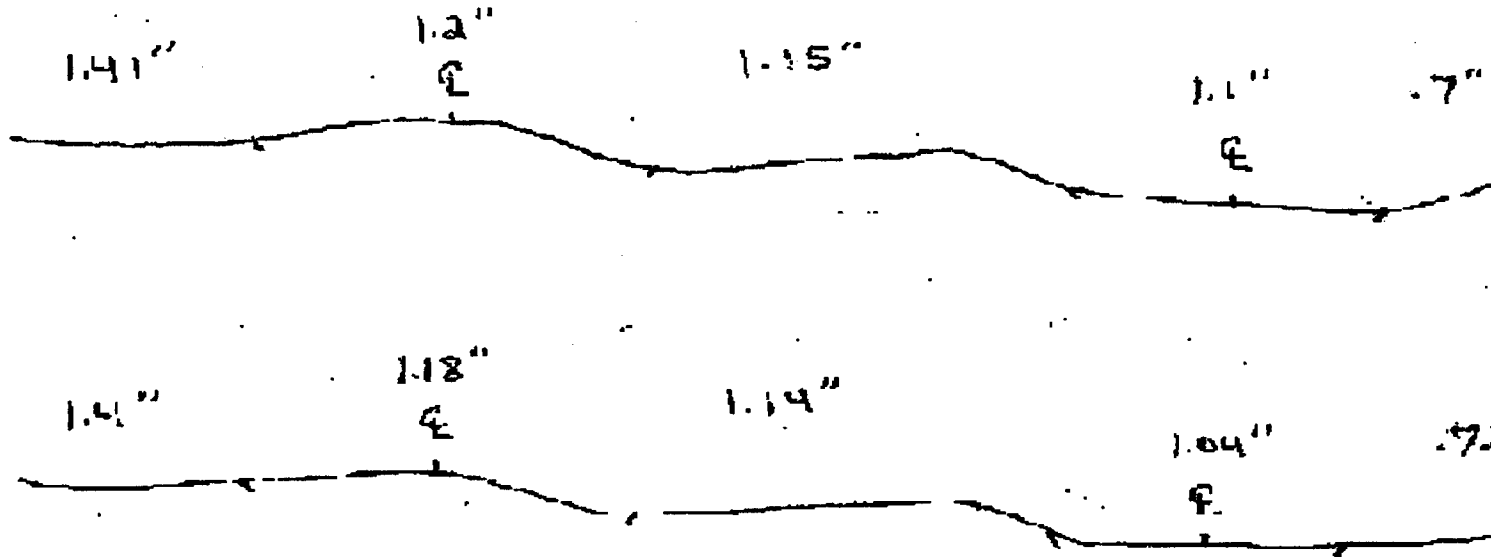
Page 3 of 4

Comments Exam limited from nozzle side. Additional limitations exist due to O.D. contour and associated lift off 360 degrees around

Sketch

WELD # 6-PR-1205-1 / SUMMARY # 011800

90° NOZZLE



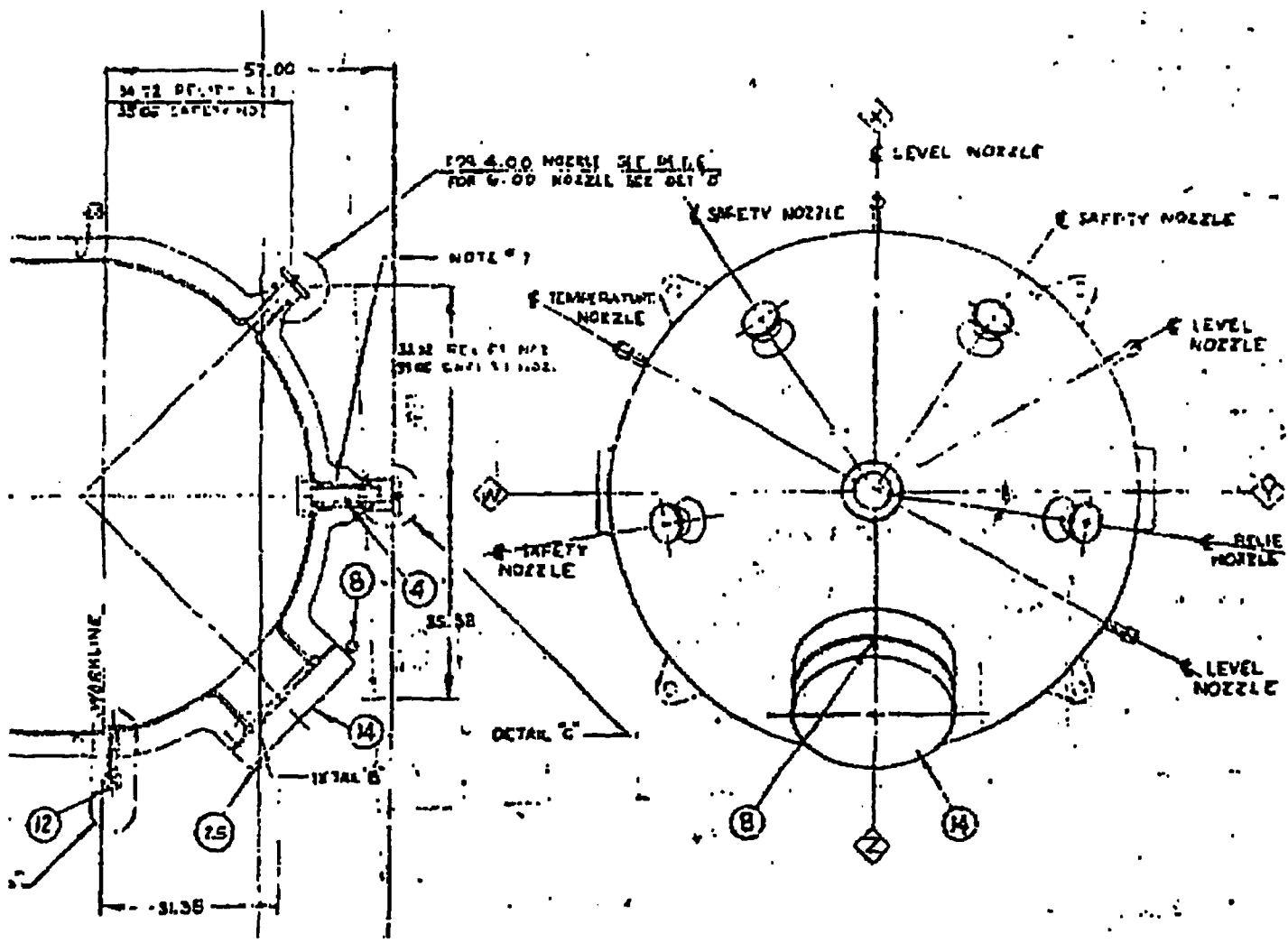
ELBOW

WELD LENGTH 23.7"  
WELD CROWN WIDTH 1.5"

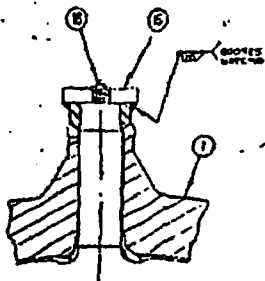


WELD # 6-PR-1205-1  
SUMMARY # 011800

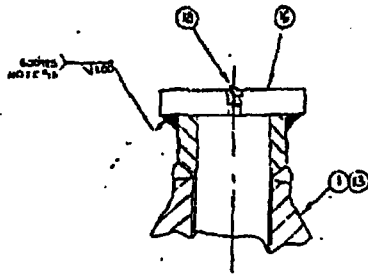
USER RESPONSIBLE FOR VERIFYING REVISION, STATUS AND CHANGES  
VTD 139846 000 1 PRINTED 20050111



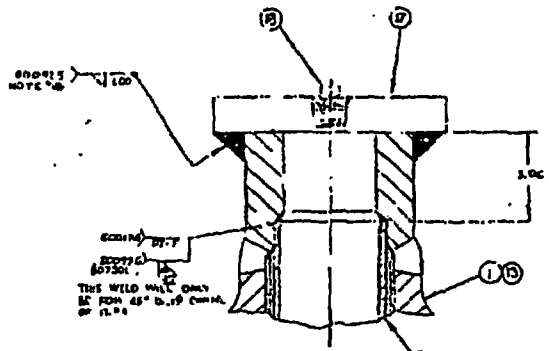
USER RESPONSIBLE FOR VERIFYING REVISION, STATUS AND CHANGES  
VTD 139846 000 1 PRINTED 20050111



**DETAIL "F"**  
ALL BRASS NOZZLE  
(FOR ASSY. - 801. 8814)



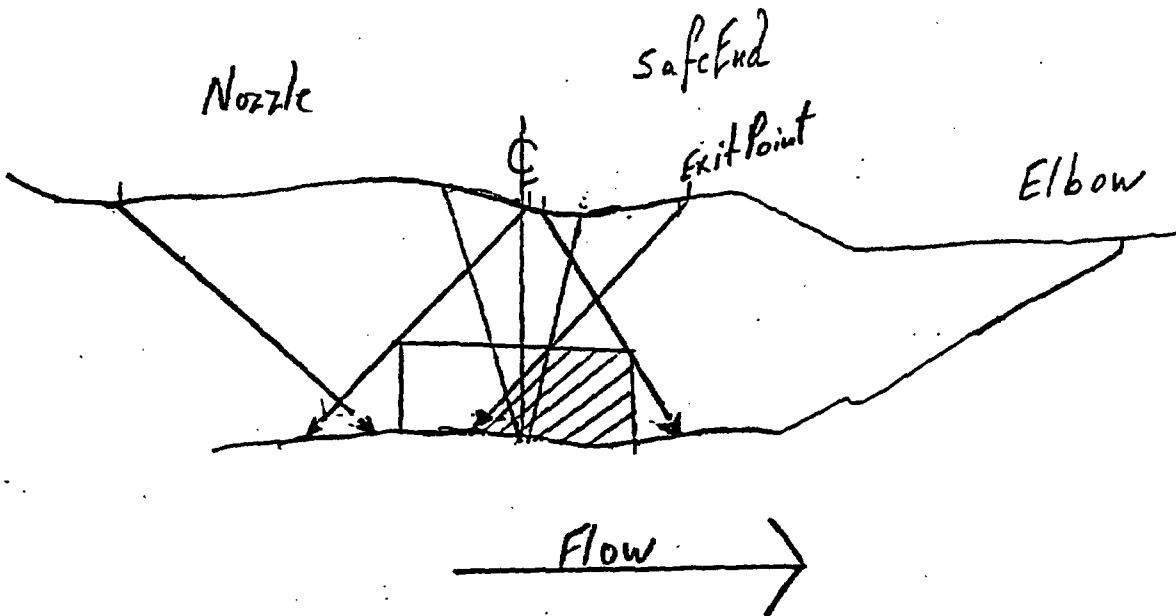
**DETAIL "D"**  
ALL BRASS NOZZLE



**DETAIL "C"**  
SPRAY NOZZLE

300

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





## VOLUMETRIC PIPING EXAMINATION COVERAGE REPORT

<b>CUSTOMER:</b> PSE&G SALEM UNIT-2, 10 RFO	<b>SYSTEM:</b> REACTOR COOLANT SYSTEM, PRESSURIZER RELIEF
<b>SUMMARY NO.:</b> 011820	<b>COMPONENT ID:</b> 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) = $Vt_1$	<u>0.50" x 1.25" x 14.5" = 9.10<sup>3</sup> inches</u>
1.2 Compute Volume Not Examined on Upstream Side of Weld = A	<u>0.00<sup>3</sup> inches</u>
1.3 Compute Upstream Limitation Percentage $(A + Vt_1) \times 100 = Z1$	<u>0.00 %</u>
1.4 Compute Volume Not Examined on Downstream Side of Weld = B	<u>5.1<sup>3</sup> inches</u>
1.5 Compute Downstream Limitation Percentage $(B + Vt_1) \times 100 = Z2$	<u>56.0 %</u>

#### 2.0 CIRCUMFERENTIAL ULTRASONIC EXAMINATIONS (Indications Perpendicular to the Weld)

2.1 Compute Examination Volume (Height x Width x Length) = $Vt_2$	<u>0.50" x 1.75" x 14.5" = 12.7<sup>3</sup> inches</u>
2.2 Compute Volume Not Examined in the Clock Wise Direction = C	<u>0.00<sup>3</sup> inches</u>
2.3 Compute Clock Wise Limitation Percentage $(C + Vt_2) \times 100 = Z3$	<u>0.00 %</u>
2.4 Compute Volume Not Examined in the Counter CW Direction = D	<u>0.00<sup>3</sup> inches</u>
2.5 Compute Counter CW Limitation Percentage $(D + Vt_2) \times 100 = Z4$	<u>0.00 %</u>

#### 3.0 TOTAL EXAMINATION COVERAGE OBTAINED

3.1 Compute Total Limitation Percentage $(Z1 + Z2 + Z3 + Z4) / 4 = L$	<u>14.0 %</u>
3.2 Compute Total Coverage $100 - L$	<u>86.0 %</u>

#### 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: <sup>3</sup> inches DENOTES CUBIC INCHES.

<b>PREPARED BY:</b> <i>M. Duvins</i>	<b>DATE:</b> 5/13/99	<b>REVIEWER:</b> <i>Danny J. Langenfeld</i>	<b>DATE:</b> 5-14-99
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**REQUEST FOR ADDITIONAL INFORMATION**  
**REQUEST FOR RELIEF REGARDING EXAMINATION COVERAGE**  
**SECOND TEN-YEAR IN-SERVICE INSPECTION INTERVAL**  
**SALEM NUCLEAR GENERATING STATION, UNIT NO. 2**  
**DOCKET NO. 50-311**

**QUESTION**      1.3 (c)    For certain piping welds, information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers listed below.

Summary #      011820

Component I.D.    6-PR-1203-1

Description      Nozzle to Safe-End

		Comments
1	Weld X-Section	See Attached
2	Material	Stainless Steel / Carbon Steel
3	Thickness / weld Crown	See Attached
4	Obstruction	Surface Contour
5	Exam Area Highlighted on Drawing	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
6	Transducer ray exit point	See Attached

Comments \_\_\_\_\_

Ut exam was performed of this component using 45 and 25 degree shear and refracted longitudinal wave transducer. The ultrasonic examination completed was limited to 86% of the code required coverage being achieved due to the OD configuration of the nozzle to safe-end. There were no unacceptable indications observed. This weld configuration does not contain alloy 600, or 82/182 weld material. A liquid penetrant examination and system pressure test was also completed with no recordable indications observed.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Supplemental Drawing

Summary # 011820

Component I.D. 6-PR-1203-1

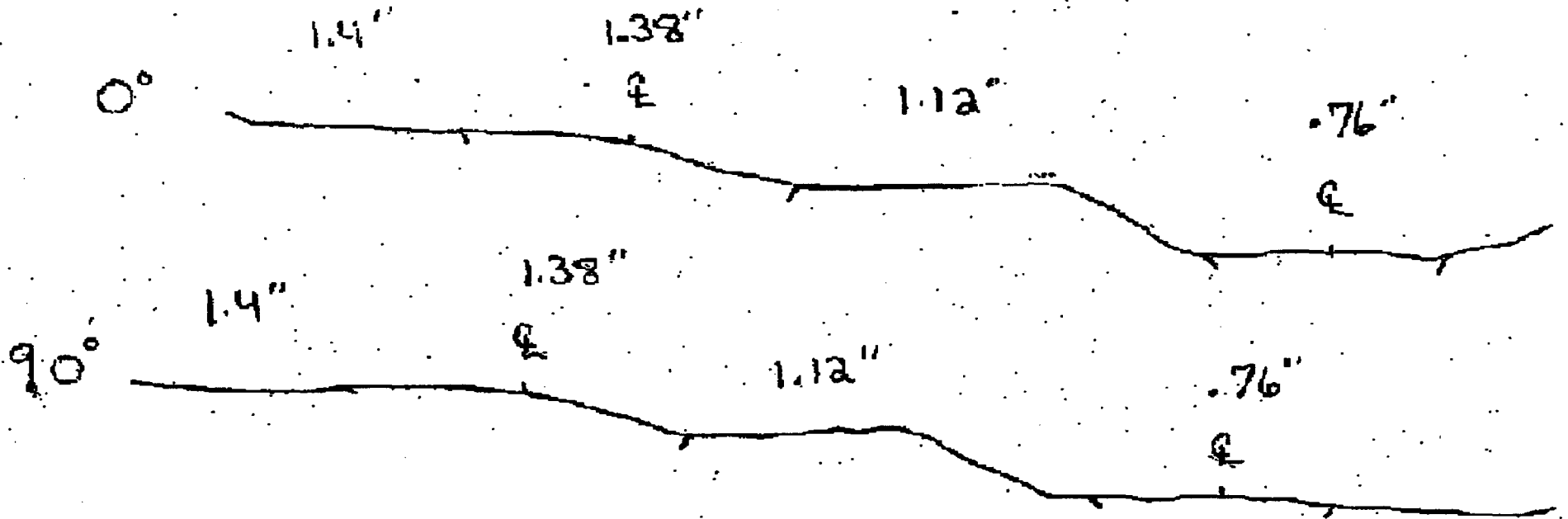
Description Nozzle to Safe-End

Page 2 of 5

Comments Thickness and Contours

Sketch

WELD # 6-PR-1203-1 / SUMMARY # 001820



WELD LENGTH 23.5"  
WELD CROWN WIDTH 1.5"

# Supplemental Drawing

Summary # 011820

Component I.D. 6-PR-1203-1

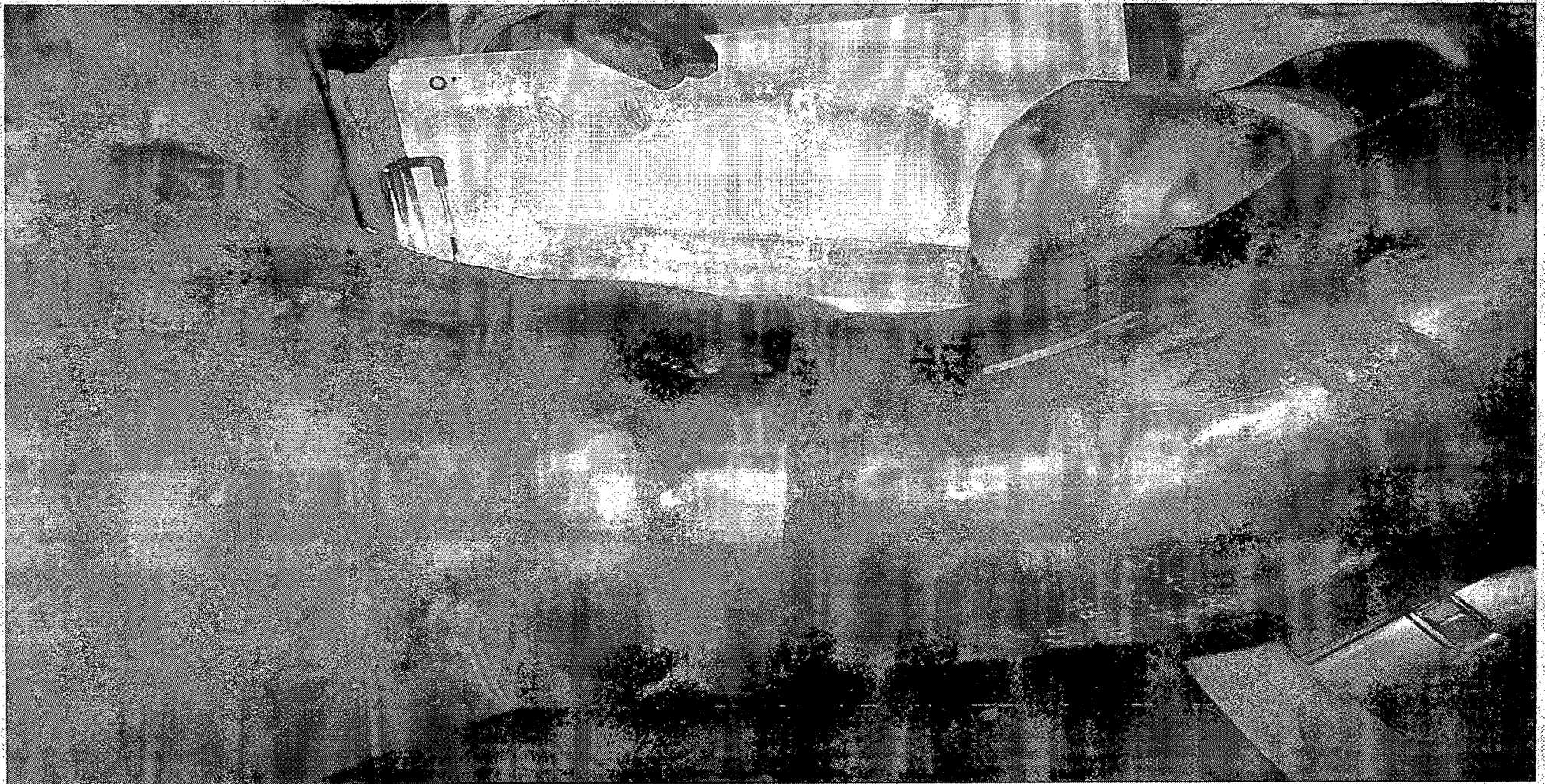
Description Nozzle to Safe-End

Page 5 of 5

Comments

Photo

Sketch





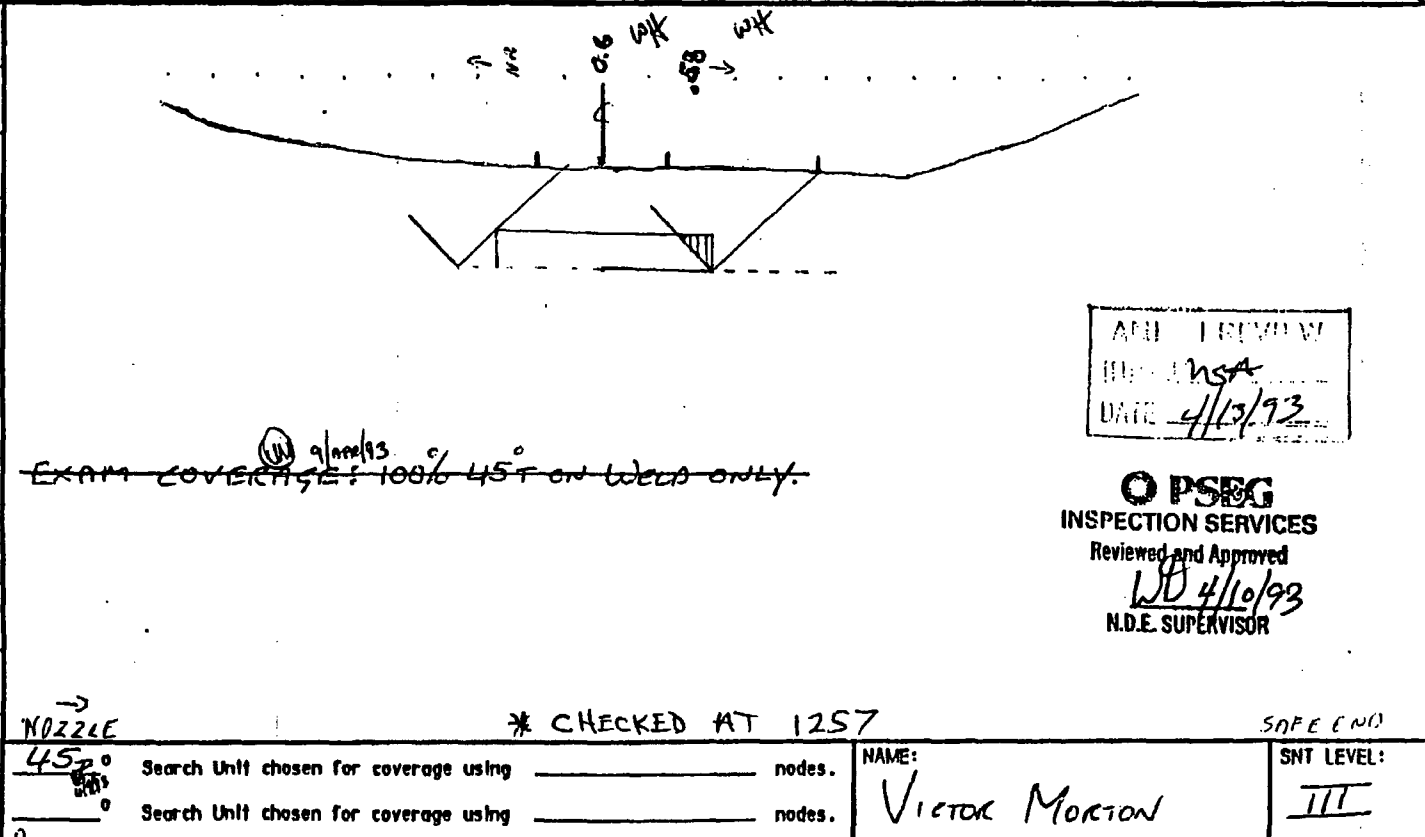
# SWRI PROFILE AND THICKNESS INFORMATION RECORD

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 <b>W. HAWKINS</b>	SNT LEVEL <b>II</b>	THK. MEAS. REC'D BY PROCEDURE No. <b>VS2,55-13,22-0002</b> <b>3Am2-UT3</b> REV 2	INSTRUMENT: SONIC MARK I <input type="checkbox"/> OTHER <b>136</b> <input checked="" type="checkbox"/>	SERIAL NO: <b>860K</b>	COMPONENT ID: <b>4-PR-1200-1</b>
EXAMINER <b>W. BYLER</b>	SNT LEVEL <b>I T</b>	CHGO <input checked="" type="checkbox"/> N/A	COUPLANT: GLYCERINE <input type="checkbox"/> WATER <input type="checkbox"/> OTHER (SPECIFY) <b>ULTRAGEL BATCH NO. 9082</b>	REFERENCE BLK NO: <b>55-113</b>	

SEARCH UNITS

BRAND	<b>AEROTECH</b>
SERIAL NO	<b>E-11977</b>
SIZE	<b>1/4</b>
FREQ. (MHz)	<b>5</b>
INSTRUMENT SETTINGS	
SCREEN SIZE	<b>5</b>
DELAY	<b>.164</b>
MATL. CAL. VELOCITY	<b>.205</b>
RANGE	<b>5</b>
REP. RATE	<b>4 KHZ</b>
JACK USED	<b>RCV/XMT</b>
TRANS MODE	<b>DUAL</b>



ADD REVIEW  
DATE **4/13/93**

**PSEG**  
INSPECTION SERVICES  
Reviewed and Approved  
**WD 4/10/93**  
N.D.E. SUPERVISOR

REVIEWED BY: **Vic Morton**      SNT LEVEL: **III**      NAME: **VICTOR MORTON**      SNT LEVEL: **III**  
DATE: **9 APR 93**

303

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 - AI)

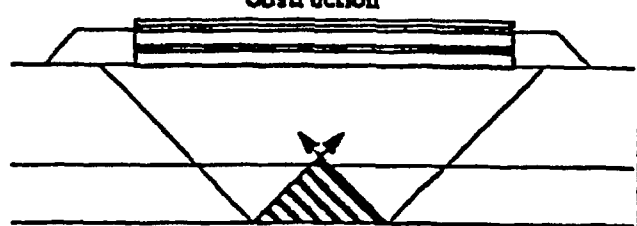
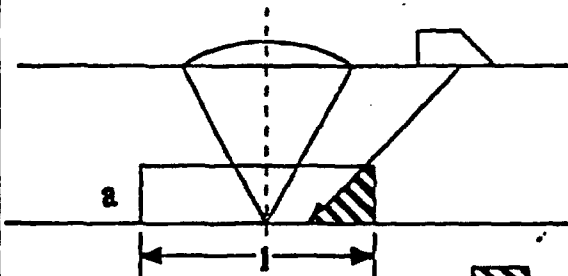
AI =         

Percentage of Coverage (A - AI/A)

=         

### VOLUMETRIC EXAMINATIONS

Parallel ← Example → Transverse  
Obstruction



- Area of no examination

1. Compute Area a x l	- Asq	<u>.25</u>
2. Multiply Asq by Weld Length	- Vt (Volume Total)	<u>5.87</u>
3. Compute Area Not Covered	- a	<u>.04</u>
4. Multiply "a" by Weld Length	- V1 (Volume Limited)	<u>.94</u>
5. Percentage of Coverage	- (Vt - V1/Vt)	<u>84.00</u>

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

Prepared by: VICTOR MORTON

Reviewed by: Vic Morton

Date: 9 APR 93 Level: III

Date: 9 APR 93 Level: III

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Page 1 of 1

**REQUEST FOR ADDITIONAL INFORMATION**  
**REQUEST FOR RELIEF REGARDING EXAMINATION COVERAGE**  
**SECOND TEN-YEAR IN-SERVICE INSPECTION INTERVAL**  
**SALEM NUCLEAR GENERATING STATION, UNIT NO. 2**  
**DOCKET NO. 50-311**

**QUESTION**      1.3 (c) For certain piping welds, Information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers listed below.

Summary #      011830

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Component I.D.      4-PR-1200-1

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Description      Nozzle to Safe-End

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		Comments
1	Weld X-Section	Marked
2	Material	Stainless Steel / Carbon Steel
3	Thickness / weld Crown	See Attached
4	Obstruction	Surface Contour
5	Exam Area Highlighted on Drawing	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
6	Transducer ray exit point	See Attached

**Comments**

On 4/29/99 a Ut exam was performed of this component using 45 degree shear wave transducer. The ultrasonic examination completed was limited to 84% of the code required coverage being achieved due to the OD configuration of the nozzle to safe-end. There were no unacceptable indications observed. This weld configuration does not contain alloy 600, or 82/182 weld material. A liquid penetrant examination and system pressure test was also completed with no recordable indications observed.

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Supplemental Drawing

Summary # 011830

Component I.D. 4-PR-1200-1

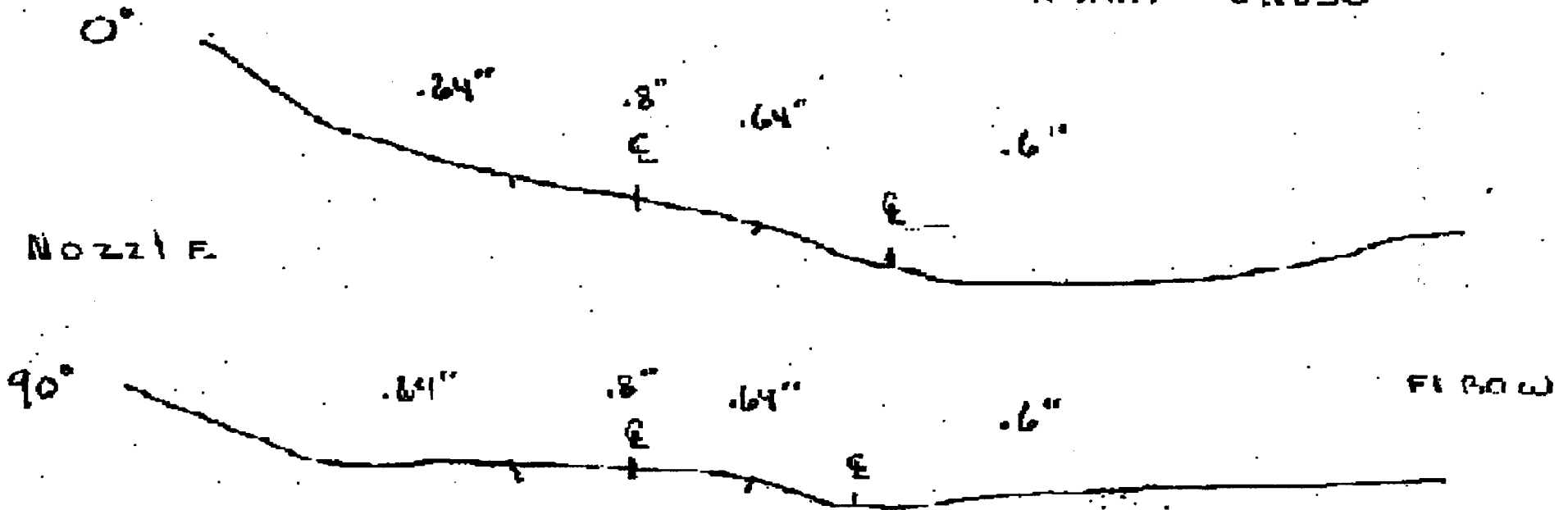
Description Nozzle to Safe-End

Page 5 of 6

Comments Thickness and Contour

Sketch

WELD #. 4-PR-1200-1 / SUMMARY # 011830



WELD LENGTH 15.5"  
WELD CROWN WIDTH 1.1"



Supplemental Drawing

Summary # 011830

Component I.D. 4-PR-1200-1

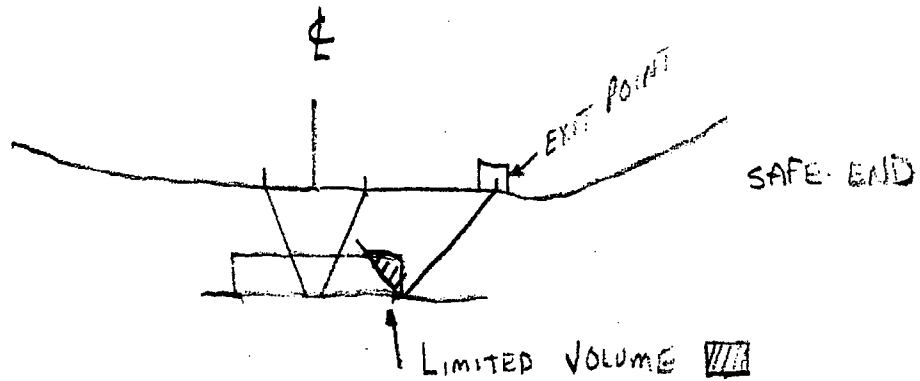
Description Nozzle to Safe-End

Page 4 of 6

Comments 16% not scanned due to safe-end contour

Sketch

Sketch



# Supplemental Drawing

Summary # 011830

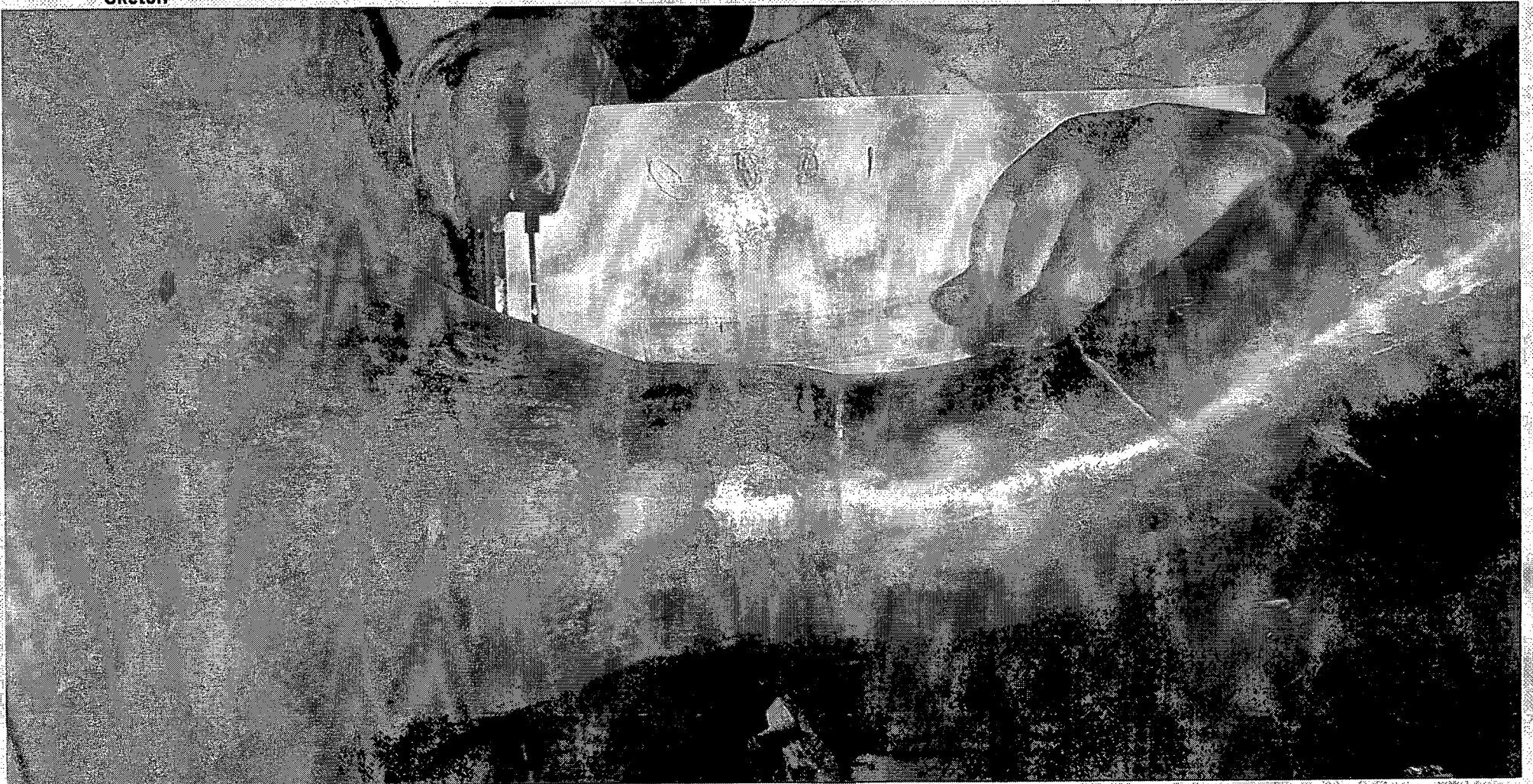
Component I.D. 4-PR-1200-1

Description Nozzle to Safe-End

Page 6 of 6

Comments Thickness and Contour

## Sketch





# 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. **0909** FINAL **1045**      SHEET NO: **135086**

EXAMINER **K. KURTZ**      SNT LEVEL **II**      THK. MEAS. REQ'D BY PROCEDURE \* No. **SAM 2-UT3**      INSTRUMENT: SONIC MARK I  OTHER **136**       SERIAL NO: **857K**      COMPONENT ID: **29-RC-1210-5**

EXAMINER **F. BRAUN**      SNT LEVEL **IT**      REV **2**      CHG **0**      ICN **ANTA**      COUPLANT: **ULTRAGEL**      Glycerine  WATER       OTHER (SPECIFY) **BATCH NO. 9092**      REFERENCE BLK NO: **37 SAM**

SEARCH UNITS

BRAND

SERIAL NO **E-105**

SIZE **1/2"**

FREQ. (MHz) **2.25**

INSTRUMENT SETTINGS

SCREEN SIZE **5"**

DELAY **.017**

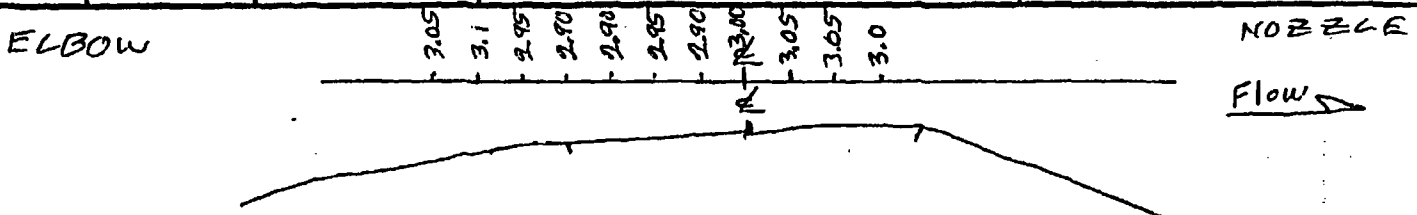
MATL. CAL. **.219**

RANGE **5"**

REP. RATE **4K HZ**

JACK USED **XMH**

TRANS MODE **N/A**



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

ANI I REVIEW  
 INITIAL **NSP**  
 DATE **4/12/93**

\* **US 2.53-15.32-00P2 NO EXACT UP/DOWN LIST ON WELD ONLY (M)**

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

° Search Unit chosen for coverage using \_\_\_\_\_ nodes.

REVIEWED BY: **Vic [Signature]**      SNT LEVEL: **III**      NAME: **VICTOR MORTON**      DATE: **6 APR 93**

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## 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

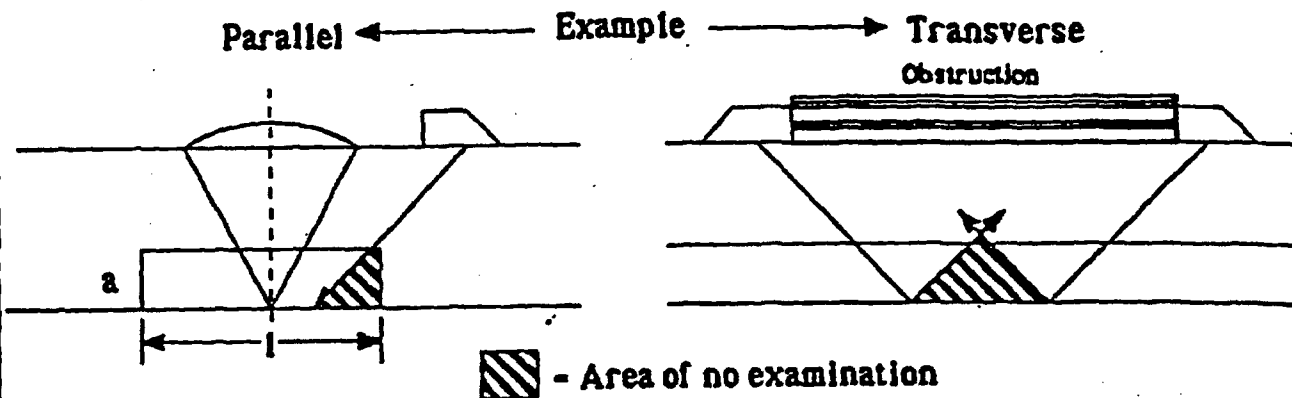
Area Of Limitation (Length x Width - A1)

A1 =   |  

Percentage of Coverage (A - A1/A)

=   |  

### VOLUMETRIC EXAMINATIONS



1. Compute Area a x l	- Asq	<u>3.0</u>
2. Multiply Asq by Weld Length	- Vt (Volume Total)	<u>351.0</u>
3. Compute Area Not Covered	- a	<u>① 117.0</u>
4. Multiply "a" by Weld Length	- V1 (Volume Limited)	<u>117.0</u>
5. Percentage of Coverage	- (Vt - V1/Vt) <sup>TRANSVERSE</sup> <sub>EXAM ONLY.</sub>	<u>66.6</u>

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

Prepared by: VICTOR MORTON

Reviewed by: Nic [Signature]

Date: \_\_\_\_\_

Level: \_\_\_\_\_

Date: \_\_\_\_\_

Level: III

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Page 1 of 1

**REQUEST FOR ADDITIONAL INFORMATION**  
**REQUEST FOR RELIEF REGARDING EXAMINATION COVERAGE**  
**SECOND TEN-YEAR IN-SERVICE INSPECTION INTERVAL**  
**SALEM NUCLEAR GENERATING STATION, UNIT NO. 2**  
**DOCKET NO. 50-311**

**QUESTION**      1.3 (c) For certain piping welds, Information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers listed below.

Summary #      083300

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Component I.D.      29-RC-1210-5

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Description      Elbow to Nozzle

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		Comments
1	Weld X-Section	See Attached
2	Material	ASTM 351-65 S/S Cast / C/S
3	Thickness / weld Crown	Thickness 3" / Weld Crown 4"
4	Obstruction	Material Type & OD Configuration
5	Exam Area Highlighted on Drawing	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
6	Transducer ray exit point	N/A

**Comments**

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Ut exam was performed of this component using 45 degree shear wave transducer. The ultrasonic examination completed was limited to 67% of the code required coverage being achieved 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. There were no unacceptable indications observed. A liquid penetrant examination and system pressure test was also completed with no recordable indications observed.

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**Note:**

Original submittal stated 67% code coverage was obtained. Actual coverage limited to 50%

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Supplemental Drawing

Summary # 083300

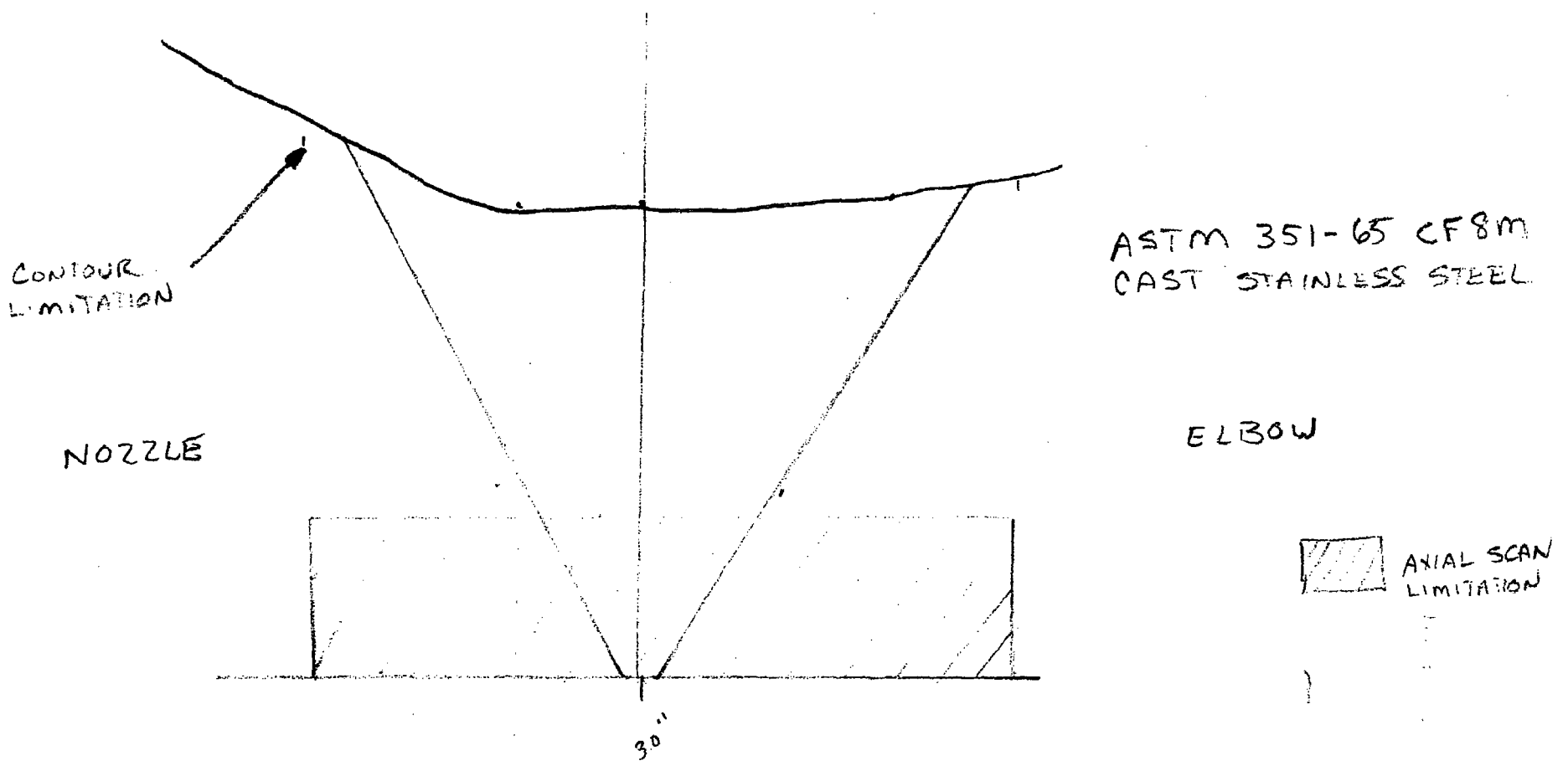
Component I.D. 29-RC-1210-5

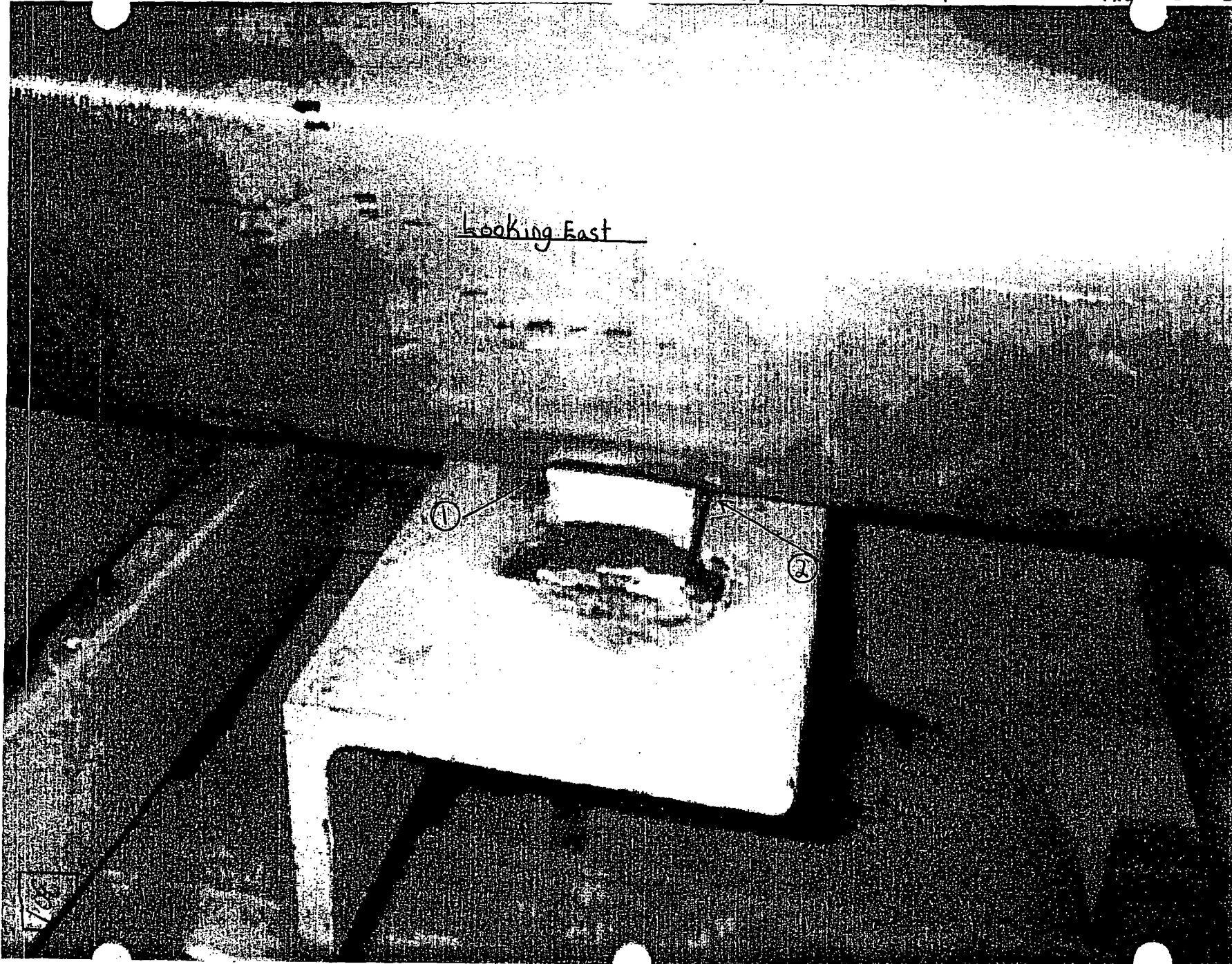
Description Elbow to Nozzle

Page 2 of 4

Comments No examination from upstream or downstream

Sketch

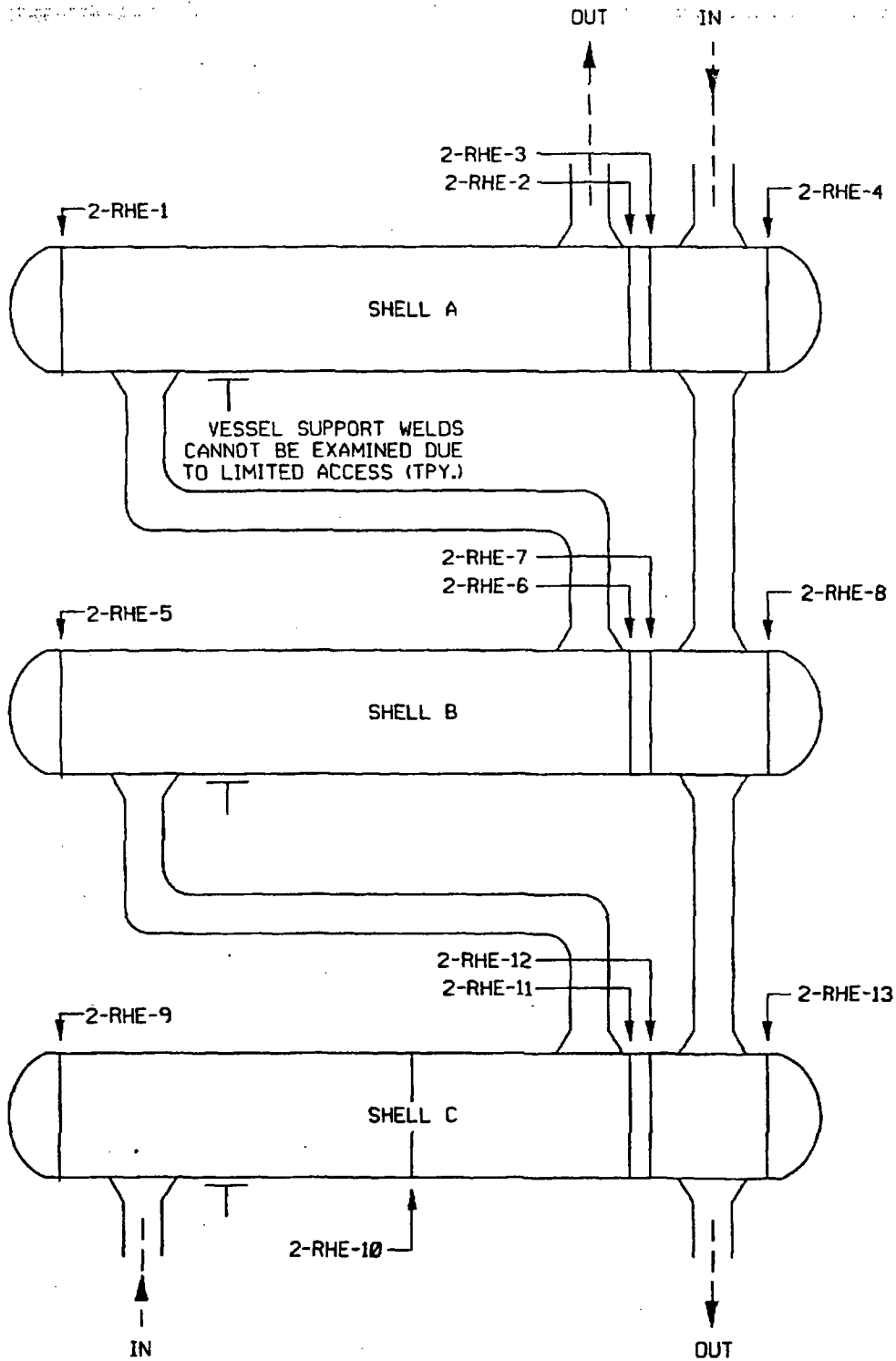




Looking East

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

REVISED PER ORDER No. 80038023.

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

PAID 205328

FIGURE: B-10 REVISION: 1

SYSTEM: REGENERATIVE HEAT EXCHANGER

LINE: N/A

THIRD 10 YEAR INSPECTION INTERVAL





**PROFILE AND THICKNESS (cont.)**

Exam Date: 10/3/03

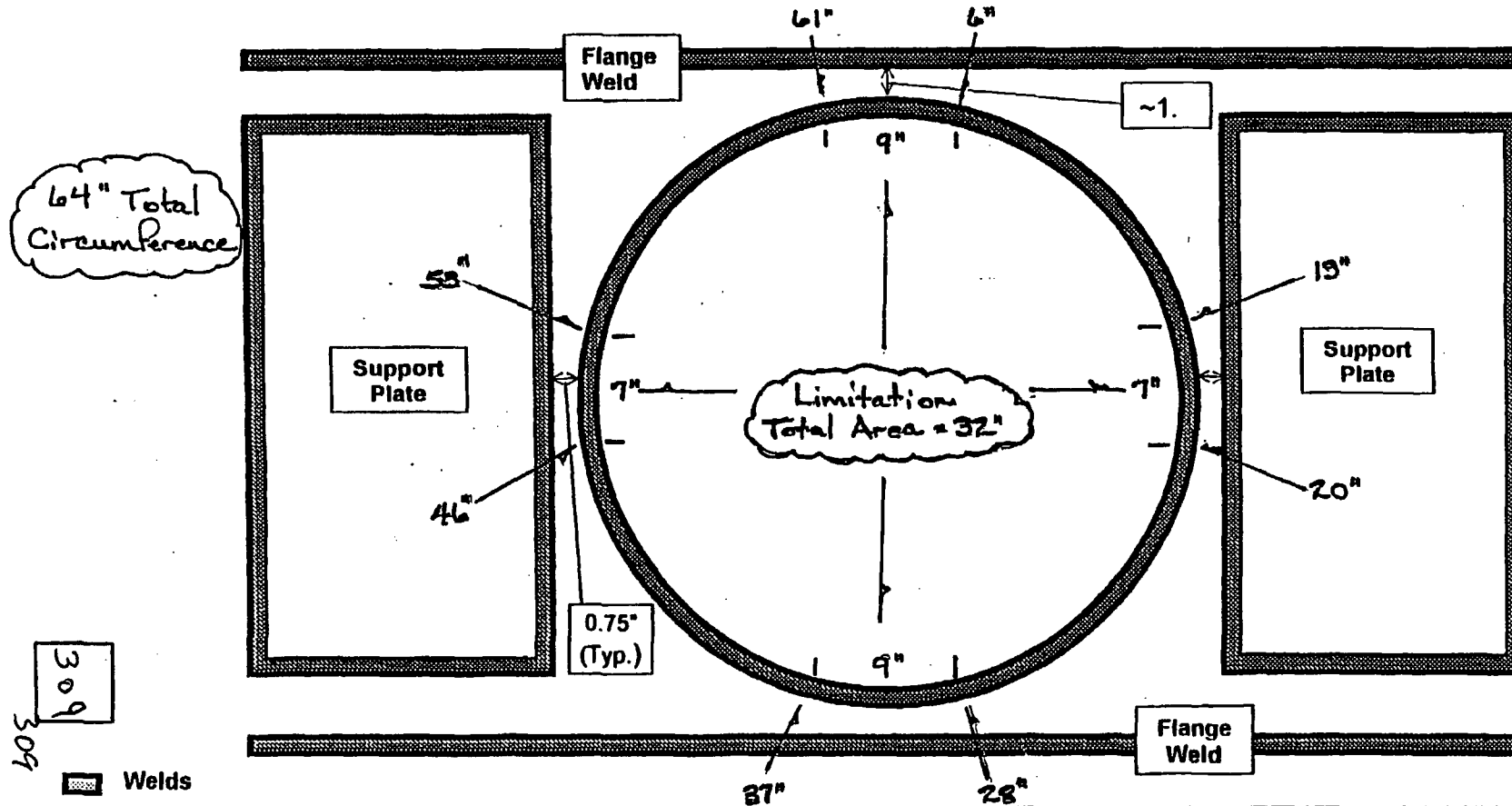
Summary No.: 275410

Site: Salem Unit 2

Examination Method: UT

System: Residual Heat Removal Exchangers

Identification: 21-RHRHEX-IN



309

309

Welds

*Wes Money*

*Edward P. Maynek*

*Wayne Seaburg 10-28-03*

Prepared By Date

Reviewed By Date

Utility Review By Date



Weld Profile & Thickness Record

Report No.: \_\_\_\_\_  
Page: \_\_\_\_\_ of \_\_\_\_\_

Summary No.: 275410  
Examiner: Wes Money  
Examiner: \_\_\_\_\_  
Other: \_\_\_\_\_

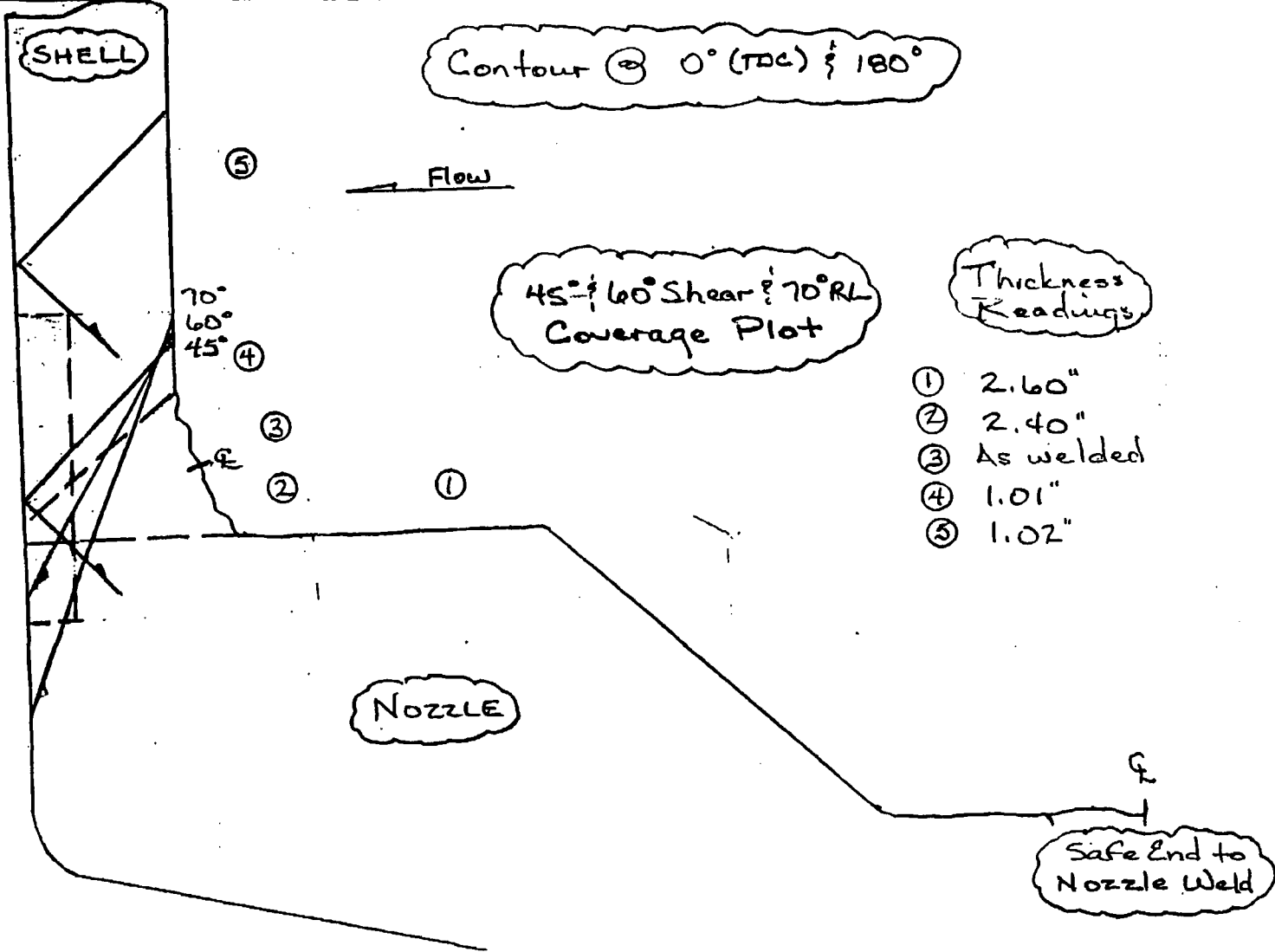
Level: III  
Level: \_\_\_\_\_  
Level: \_\_\_\_\_

Reviewer: Edward P. Morysek  
Site Review: William Demko  
ANR Review: My [Signature]

Date: 10/25/03  
Date: 10/28/03  
Date: 11/5/03

Comments:

Sketch or Photo:



Summary # 275410

Component # 21-RHRHEX-IN

64" Total Circumference

Weld Crown width varies from 1.4" to 1.0"  
3/10

Contour @ 0° (TDC) & 180°

45° & 60° Shear & 70° RL Coverage Plot

Thickness Readings

- ① 2.60"
- ② 2.40"
- ③ As welded
- ④ 1.01"
- ⑤ 1.02"

Safe End to Nozzle Weld



Weld Profile & Thickness Record

Report No.: \_\_\_\_\_

Page: \_\_\_\_\_ of \_\_\_\_\_

Summary No.: 275410

Examiner: Was Money

Examiner: Tim Brelje

Other: \_\_\_\_\_

Level: III

Level: I

Level: \_\_\_\_\_

Reviewer: Edward P. Mayph

Site Review: Wayne Brelje

ANI Review: ns Brelje

Date: 10/25/03

Date: 10/28/03

Date: 11/5/03

Comments:

See Limitation Drawing

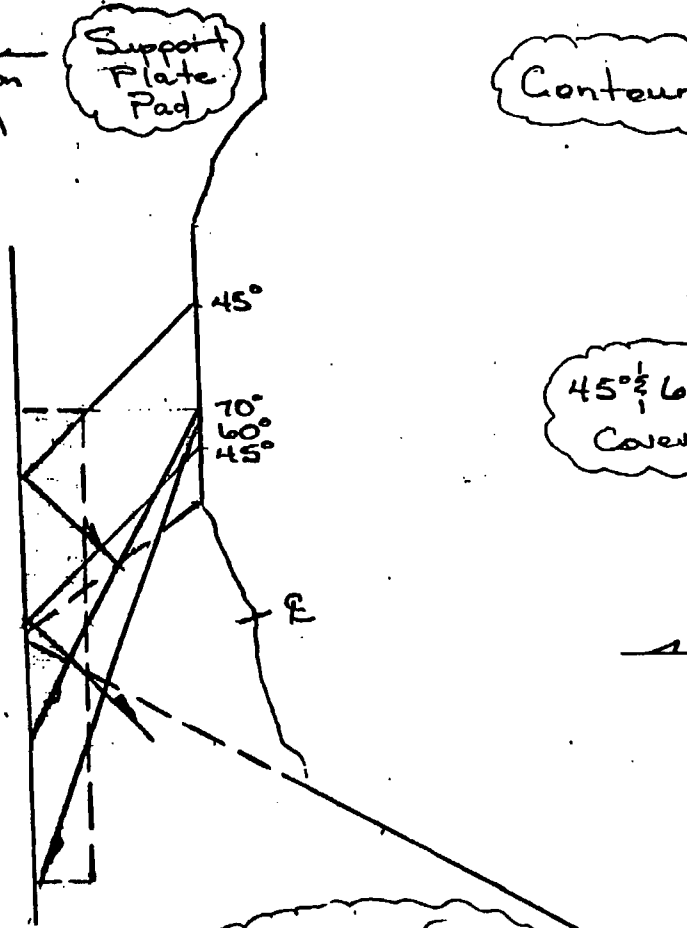
Support Plate Pad

Contour @ 90° & 270°

Sketch or Photo:

Summary # 275410

Component # 21-RHR14EX-IN



45° & 60° Shear & 70° RL Coverage Plot

Thickness Readings on other Coverage Plot

Contour from Single Side Exam Limitation Area

310A

FRAMATOME

## VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

CUSTOMER: PSEG

SYSTEM: RHR

SUMMARY NO: 275410

COMPONENT ID: 21-RHR HEX-IN

1.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT BEAM PLANAR FLAWS

$$1.1 \quad \text{Exam Height} \times \text{Exam Width} \times \text{Exam Length} = \text{Exam Volume} \quad \underline{\hspace{2cm}} \times \quad \underline{\hspace{2cm}} \quad = \quad \underline{N/A} \quad \text{cu.i}$$

2.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT BEAM LAMINAR FLAWS

$$2.1 \quad \text{Exam Height} \times \text{Exam Width} \times \text{Exam Length} = \text{Exam Volume} \quad \underline{\hspace{2cm}} \times \quad \underline{\hspace{2cm}} \quad = \quad \underline{N/A} \quad \text{cu.i}$$

3.0 CALCULATE REQUIRED PARALLEL EXAM VOLUME FOR 45° AND 60°

$$3.1 \quad \text{Exam Height} \times \text{Exam Width} \times \text{Exam Length} = \text{Exam Volume} \quad \overset{84.48}{.33} \times \overset{84.48}{2"} \times 256 = 168.96 \quad \text{cu.i}$$

4.0 CALCULATE REQUIRED TRANSVERSE EXAM VOLUME FOR 45° AND 60°

$$4.1 \quad \text{Exam Height} \times \text{Exam Width} \times \text{Exam Length} = \text{Exam Volume} \quad \overset{84.48}{.33} \times \overset{84.48}{2"} \times 256 = 168.96 \quad \text{cu.i}$$

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
<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>

$$\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

## 5.2 Limited Below / CW exam volume

Height of Obstructed Volume	Width of Obstructed Area	Length of Obstructed Area	Volume with no Exam Coverage
<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>

$$\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$\text{Total straight beam planar exam volume not examined} = \underline{N/A}$$

## 5.3 Percent Volume Examined

Total 0 vol w/No Coverage	Total 0 Exam Volume	Percent Volume Examined
<u>N/A</u>	<u>N/A</u>	<u>N/A</u>

$$100 - \left\{ \left[ \underline{N/A} / \underline{N/A} \right] \times 100 \right\} = \underline{N/A} \quad \%$$

3107

3106

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			
<u>N/A</u>	x	<u>N/A</u>	x	<u>N/A</u>	=	<u>N/A</u>

## 6.2 Limited Below / CW exam volume

Height of Obstructed Volume	Width of Obstructed Area	Length of Obstructed Area	Volume with no Exam Coverage			
<u>N/A</u>	x	<u>N/A</u>	x	<u>N/A</u>	=	<u>N/A</u>

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
<u>100 - [ ( <u>N/A</u> / <u>N/A</u> ) x 100 }</u>		= <u>N/A</u> %

7.0 CALCULATE PARALLEL 45° EXAM COVERAGE7.1 Limited above Upstream CCW exam volume

Height of Obstructed Volume	Width of Obstructed Area	Length of Obstructed Area	Volume with no Exam Coverage			
<u>.33"</u>	x	<u>1.00"</u>	x	<u>64"</u>	=	<u>21.12 cu in</u>

7.2 Limited Below Downstream CW exam volume

Height of Obstructed Volume	Width of Obstructed Area	Length of Obstructed Area	Volume with no Exam Coverage			
<u>.33"</u>	x	<u>1.00"</u>	x	<u>128"</u>	=	<u>42.24 cu in</u>

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
<u>100 - [ ( <u>63.36</u> / <u>84.48</u> ) x 100 }</u>		= <u>25</u> %

310C

310C

## FRAMATOME

## VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

## 6.0 CALCULATE PARALLEL 60° EXAM COVERAGE

8.1 Limited Above Upstream CCW exam volume

Height of Obstructed Volume	Width of Obstructed Area	Length of Obstructed Area	Above / CW exam Volume with no Exam Coverage
<u>.33"</u>	<u>x 1.00"</u>	<u>x 64"</u>	<u>= 21.12 cu in.</u>

8.2 Limited Below Downstream CW exam volume

Height of Obstructed Volume	Width of Obstructed Area	Length of Obstructed Area	Below / CCW exam Volume with no Exam Coverage
<u>.33"</u>	<u>x 1.00"</u>	<u>x 128"</u>	<u>= 42.24 cu in.</u>

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
<u>100 - { [ 63.36 / 84.48 ] x 100 }</u>	<u>=</u>	<u>25 %</u>

## 9.0 CALCULATE TRANSVERSE 45° EXAM COVERAGE

9.1 Limited Looking Downstream Clockwise exam volume

Height of Obstructed Volume	Width of Obstructed Area	Length of Obstructed Area	CW Exam Volume with no Exam Coverage
<u>.33"</u>	<u>x 1.00"</u>	<u>x 64"</u>	<u>= 21.12 cu in.</u>

9.2 Limited Looking Upstream Below Counter clockwise exam volume

Height of Obstructed Volume	Width of Obstructed Area	Length of Obstructed Area	CCW Exam Volume with no Exam Coverage
<u>.33"</u>	<u>x 1.00"</u>	<u>x 128"</u>	<u>= 42.24 cu in.</u>

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
<u>100 - { [ 63.36 cu / 84.48 cu ] x 100 }</u>	<u>=</u>	<u>25 %</u>

3100
3100



# FRAMATOME ANP VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

## 10.0 CALCULATE TRANSVERSE 60° EXAM COVERAGE

10.1 *Looking Downstream*  
 Limited ~~Clockwise~~ exam volume

Height of Obstructed Volume	Width of Obstructed Area	Length of Obstructed Area	CW exam Volume with no Exam Coverage
<u>.33"</u>	<u>1.00"</u>	<u>64"</u>	<u>21.12 cu.in.</u>

10.2 *Looking Upstream*  
 Limited ~~Counterclockwise~~ exam volume

Height of Obstructed Volume	Width of Obstructed Area	Length of Obstructed Area	CCW exam Volume with no Exam Coverage
<u>.33"</u>	<u>1.00</u>	<u>128"</u>	<u>42.24 cu.in.</u>

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
<u>21.12</u>	<u>84.48</u>	<u>25 %</u>

$100 - \left\{ \left[ \frac{21.12}{84.48} \right] \times 100 \right\} = 25 \%$

## 11.0 CALCULATE PERCENT OF TOTAL VOLUME EXAMINED

### 11.1 Sum of Exam Volumes %

Steps <sup>7</sup> / <sup>10</sup>	No. Of Exams <sup>4</sup> / <sup>(8)</sup>	Examination Coverage
<u>7</u> / <u>10</u>	<u>4</u> / <u>8</u>	<u>25 %</u>

$\left[ \frac{100\%}{1} \times \frac{4}{8} \right] = 25 \%$

No scan from nozzle side or on weld due to configuration.

Examiner:

Level:

Date:

Reviewer:

Level:

310E

Date:

310E

DATE	DESCRIPTION	APPROVED BY	REVISION
12-14-76	REMOVED PINS P.D.R.H.I.I.M. FOR REPLACEMENT PANELS. SEE PS&P # 322+35.	Johns Manville	1

FORM-1

VENDOR INFORMATION

PSE&G VTID NUMBER: 149440

- ACTIVE Approved Documentation
- APCP Approved, Pending Change Package (May only be used for Rev. 1)
- CAN Cancelled, Not Required
- VOID No longer applicable, superseded by: \_\_\_\_\_

Discipline Selection

- Electrical
- I&C
- Mechanical
- Other Specify: \_\_\_\_\_

Safety Related:  yes  no

Unit Applicability

- Salem 1
- Salem Common
- Hope Creek & Salem
- Salem 2
- Hope Creek
- Nuclear Business Unit
- Salem 3

System: STEAM GEN DRAIN & BLOWDOWN MMS Sys Code: 487

Vendor Name: JOHNS MANVILLE

Vendor Code: M508 Vendor No.: NR 21005

Vendor Category: 10 (Category Codes are listed in DCS)

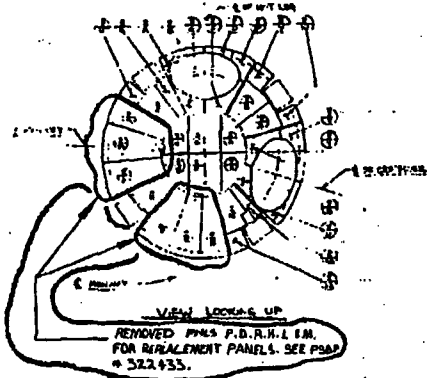
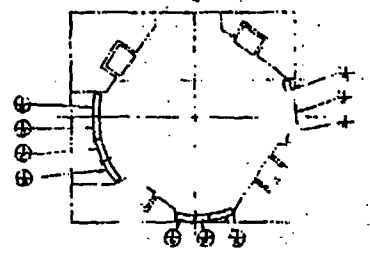
Purchase Order No.: \_\_\_\_\_

Folio Number: \_\_\_\_\_

Originator: WAMBER Dept: ENS Group: \_\_\_\_\_

Date: 12-14-76 Ext: \_\_\_\_\_

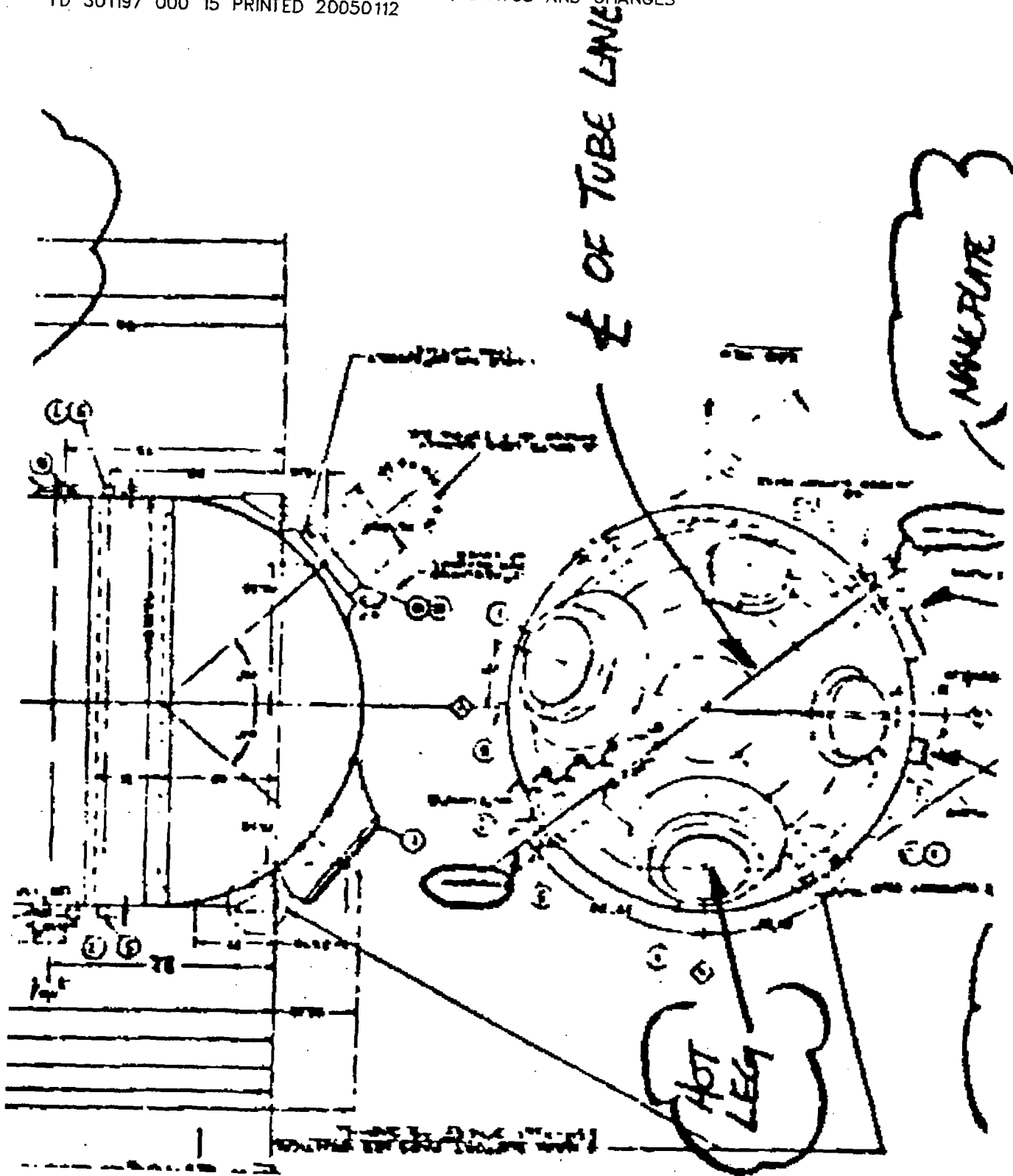
If changes are made to this form, initial and date the change and document in the revision



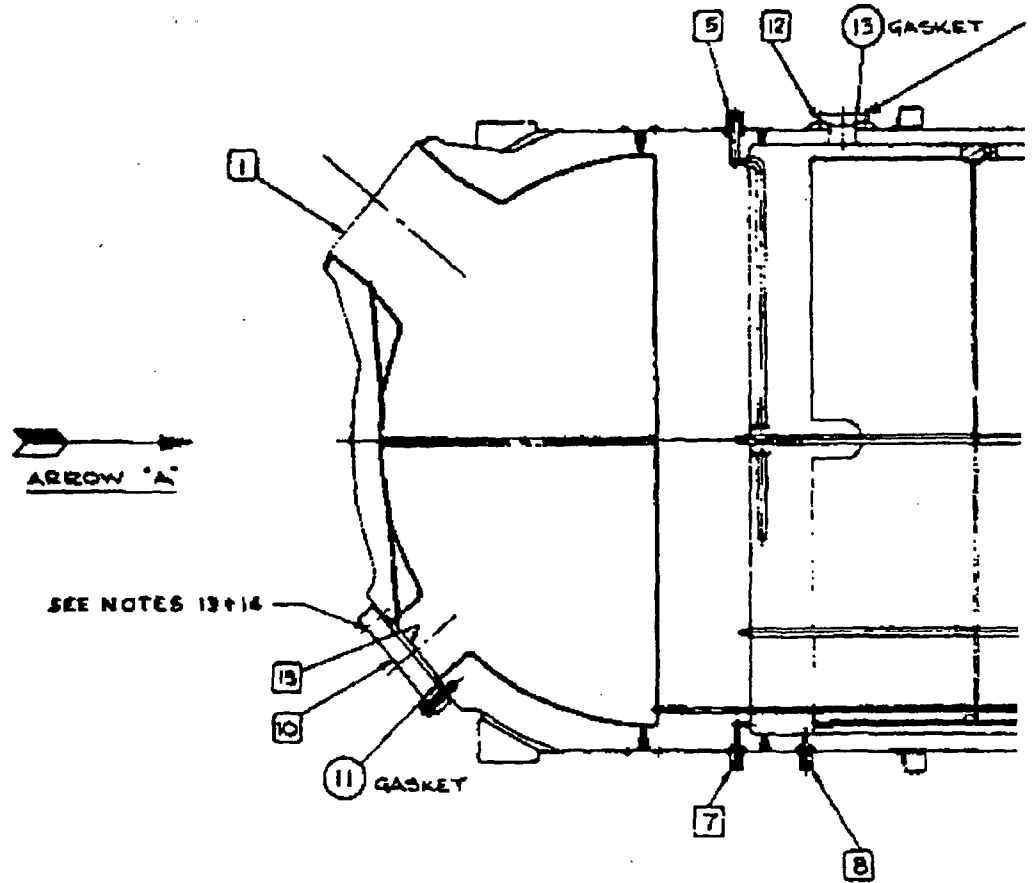
REV	DATE	DESCRIPTION
1	12-14-76	REMOVED PINS P.D.R.H.I.I.M. FOR REPLACEMENT PANELS. SEE PS&P # 322+35.

- NOTE: 1. IDENTIFY POSITION AND DIMENSION DATA IS WHEN TO NOT SUPPORTED FOR...
- 2. DIMENSIONS ARE TO BE PLACED TO FIT FEATURE A...
- 3. DIMENSIONS ARE TO BE PLACED TO FIT FEATURE B...
- 4. DIMENSIONS ARE TO BE PLACED TO FIT FEATURE C...
- 5. DIMENSIONS ARE TO BE PLACED TO FIT FEATURE D...
- 6. DIMENSIONS ARE TO BE PLACED TO FIT FEATURE E...
- 7. DIMENSIONS ARE TO BE PLACED TO FIT FEATURE F...
- 8. DIMENSIONS ARE TO BE PLACED TO FIT FEATURE G...
- 9. DIMENSIONS ARE TO BE PLACED TO FIT FEATURE H...
- 10. DIMENSIONS ARE TO BE PLACED TO FIT FEATURE I...
- 11. DIMENSIONS ARE TO BE PLACED TO FIT FEATURE J...
- 12. DIMENSIONS ARE TO BE PLACED TO FIT FEATURE K...
- 13. DIMENSIONS ARE TO BE PLACED TO FIT FEATURE L...
- 14. DIMENSIONS ARE TO BE PLACED TO FIT FEATURE M...
- 15. DIMENSIONS ARE TO BE PLACED TO FIT FEATURE N...
- 16. DIMENSIONS ARE TO BE PLACED TO FIT FEATURE O...
- 17. DIMENSIONS ARE TO BE PLACED TO FIT FEATURE P...
- 18. DIMENSIONS ARE TO BE PLACED TO FIT FEATURE Q...
- 19. DIMENSIONS ARE TO BE PLACED TO FIT FEATURE R...
- 20. DIMENSIONS ARE TO BE PLACED TO FIT FEATURE S...
- 21. DIMENSIONS ARE TO BE PLACED TO FIT FEATURE T...
- 22. DIMENSIONS ARE TO BE PLACED TO FIT FEATURE U...
- 23. DIMENSIONS ARE TO BE PLACED TO FIT FEATURE V...
- 24. DIMENSIONS ARE TO BE PLACED TO FIT FEATURE W...
- 25. DIMENSIONS ARE TO BE PLACED TO FIT FEATURE X...
- 26. DIMENSIONS ARE TO BE PLACED TO FIT FEATURE Y...
- 27. DIMENSIONS ARE TO BE PLACED TO FIT FEATURE Z...





312



ITEM	DESCRIPTION, MATL DIMS, ETC.	DEF. CODE	QTY OR STYLE NO.	MATERIAL		QTY
				SPEC.	FR IT	
001	BUFFER SHELL ASSY		717-364A32			0001
002	TUBE BUNDLE ASSY		717-363A32			0001
003	TRANS. WRAPPER SWIRL/VANE ASSY		R7-6633A01			0001
004	INSTALLATION OF FORMED VANE		4424055A0			0001
009	PLUG (P.PE) 1.85		270A365007			0001
010	PLUG (P.PE) 2.00		270A365009			0001
011	GASKET (PRIMARY HANDHOLE)		390A029A01			0002
012	GASKET (SECONDARY HANDHOLE)		390A029A02			0002
013	GASKET (SECONDARY HANDHOLE)		390A029A02			0002
014	SPARE PARTS (ERECTION)		717J36.301			0001
017	PLUG		2499606001			0001

SEK RESPONSIBLE FOR VERIFYING REVISION, STATUS AND CHANGES  
 ID 301197 000 15 PRINTED 20050112

**REQUEST FOR ADDITIONAL INFORMATION**  
**REQUEST FOR RELIEF REGARDING EXAMINATION COVERAGE**  
**SECOND TEN-YEAR IN-SERVICE INSPECTION INTERVAL**  
**SALEM NUCLEAR GENERATING STATION, UNIT NO. 2**  
**DOCKET NO. 50-311**

**QUESTION**      1.2 (a)    For certain nozzle welds, information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers

Summary #      021300

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Component I.D.    29-STG-1210-IRS

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Description      #21 Cold Leg Inner Radius

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		Comments			
1	Weld X-Section	N/A			
2	Material	Carbon Steel / Inconel Clad			
3	Thickness / weld Crown	N/A			
4	Obstruction	Generator Support Lug			
5	Exam Area Highlighted on Drawing	<table border="1" style="display: inline-table;"> <tr> <td style="text-align: center;">Yes</td> <td style="text-align: center;">X</td> <td style="text-align: center;">No</td> </tr> </table>	Yes	X	No
Yes	X	No			
6	Transducer ray exit point	N/A			

**Comments**

UT exam was conducted using 28 and 38 degree longitudinal wave transducers. The exams completed was limited to 82% code required coverage due to the insulation support brackets attached to the steam generators lower head that and permanent support lugs interfered with scanning. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

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# Supplemental Drawing

Summary # 021300

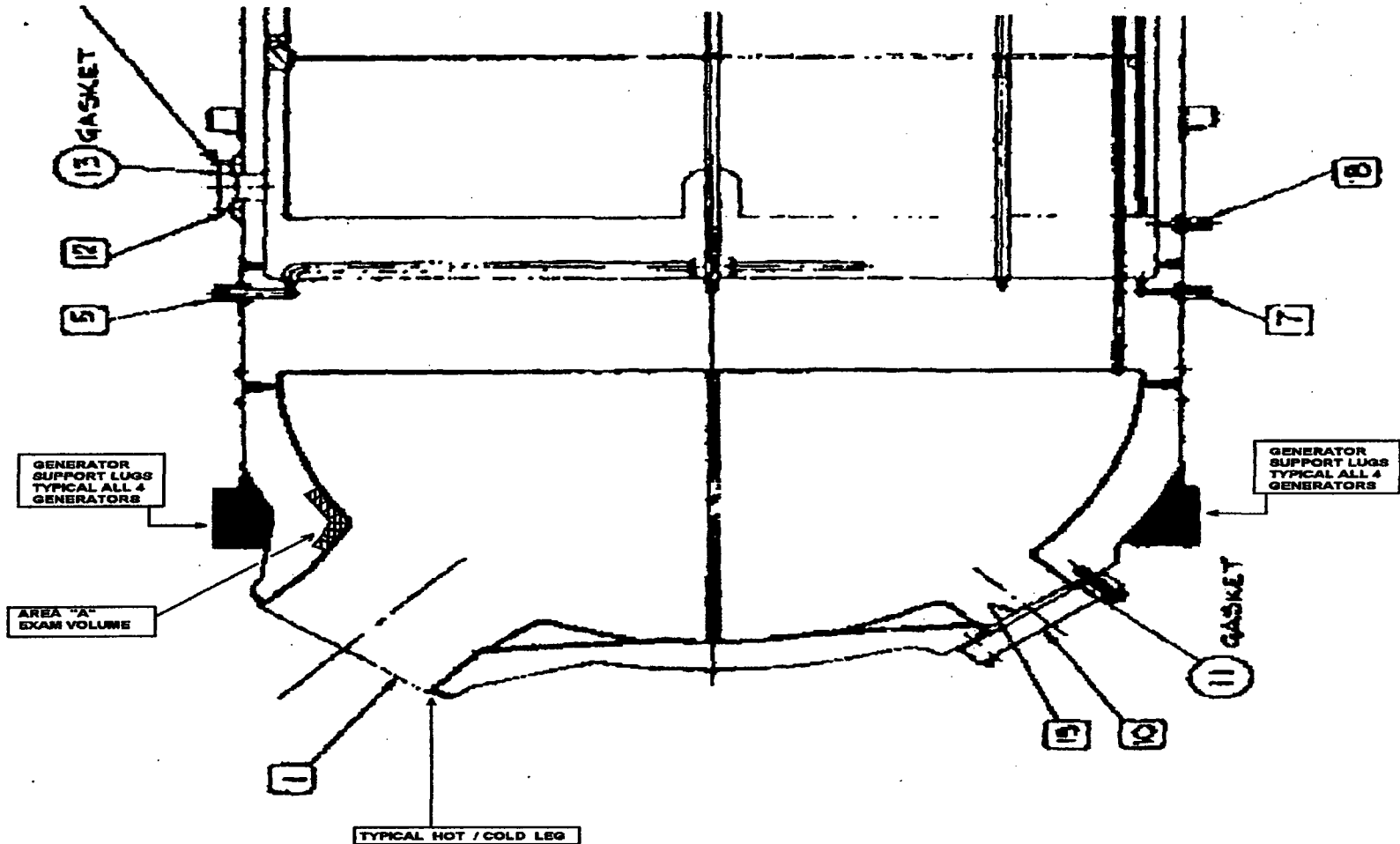
Component I.D. 29-STG-1210-IRS

Description #21 Cold Leg Inner Radius

Page 2 of 3

**Comments** Ultrasonic exam area limited to 82% of code required coverage due to permanent Steam Generator support lugs  
See Sketch below showing support lug interference with exam area  
Drawing was created in order to assist in the evaluation of the request for relief regarding examination coverage only.

## Sketch



# Supplemental Drawing

Summary # 021300

Component I.D. 29-STG-1210-IRS

Description #21 Cold Leg Inner Radius

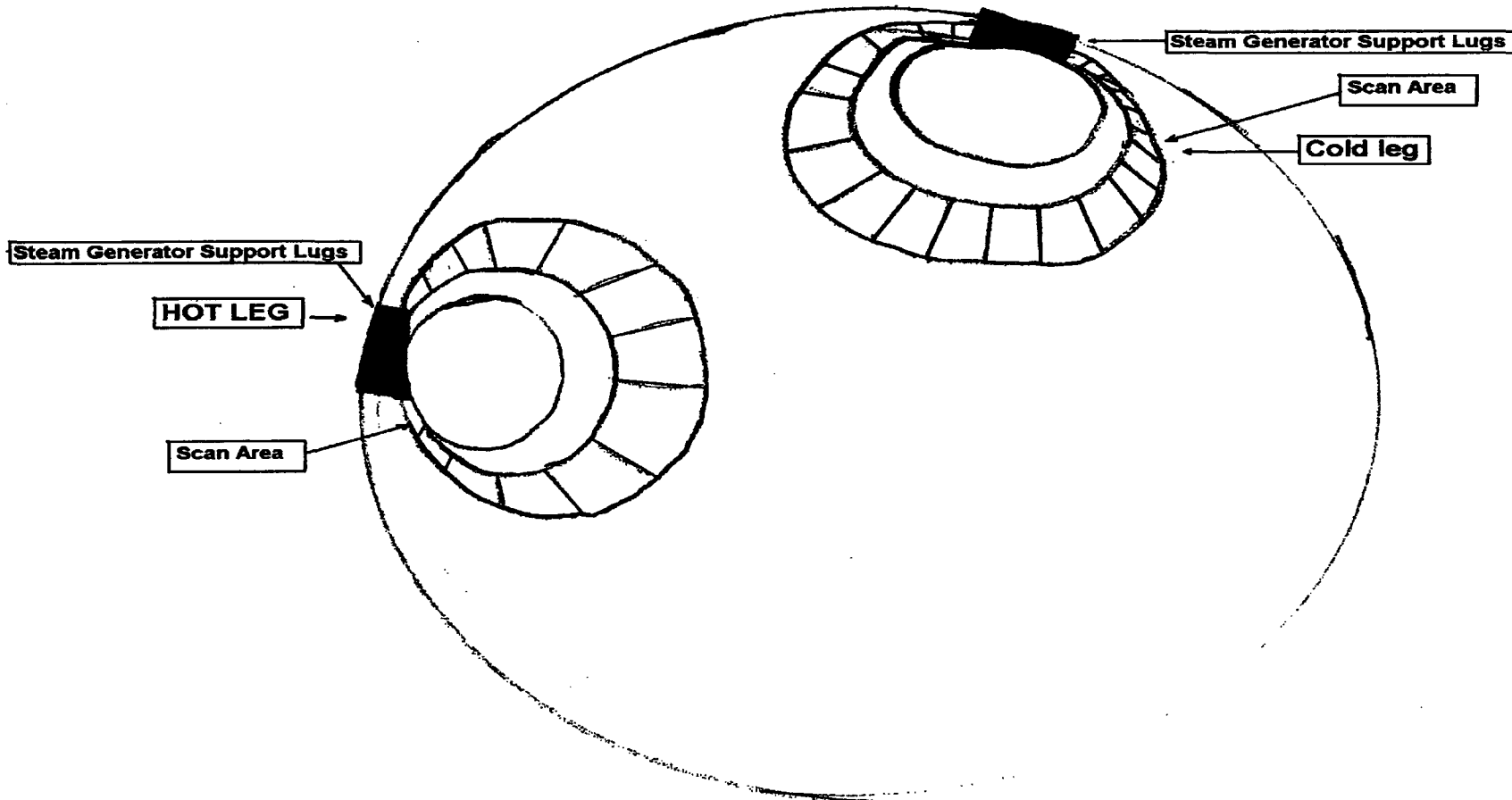
Page 3 of 3

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**Comment:** Ultrasonic exam area limited to 82% of code required coverage due to permanent Steam Generator support lugs  
See Sketch below showing support lug interference with exam area  
**Drawing was created in order to assist in the evaluation of the request for relief regarding examination coverage only.**

---

## Sketch



**REQUEST FOR ADDITIONAL INFORMATION**  
**REQUEST FOR RELIEF REGARDING EXAMINATION COVERAGE**  
**SECOND TEN-YEAR INSERVICE INSPECTION INTERVAL**  
**SALEM NUCLEAR GENERATING STATION, UNIT NO. 2**  
**DOCKET NO. 50-311**

**QUESTION**      1.2 (a) For certain nozzle welds, information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers

Summary #      021200

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Component I.D.    29-STG-1220-IRS

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Description      #22 Cold Leg Inner Radius

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		Comments
1	Weld X-Section	N/A
2	Material	Carbon Steel / Inconel Clad
3	Thickness / weld Crown	N/A
4	Obstruction	Generator Support Lug
5	Exam Area Highlighted on Drawing	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
6	Transducer ray exit point	N/A

**Comments**

UT exam was conducted using 28 and 38 degree longitudinal wave transducers. The exams completed was limited to 73% code required coverage due to the insulation support brackets attached to the steam generators lower head that and permanent support lugs interfered with scanning. The exam surface is approximately 154" with the length of the limitation being 73". No exam was able to be performed between 24" cow to 15" cow from datum zero support lug located 77" cow to 79" cow with 2" W measurement. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

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# Supplemental Drawing

Summary # 021200

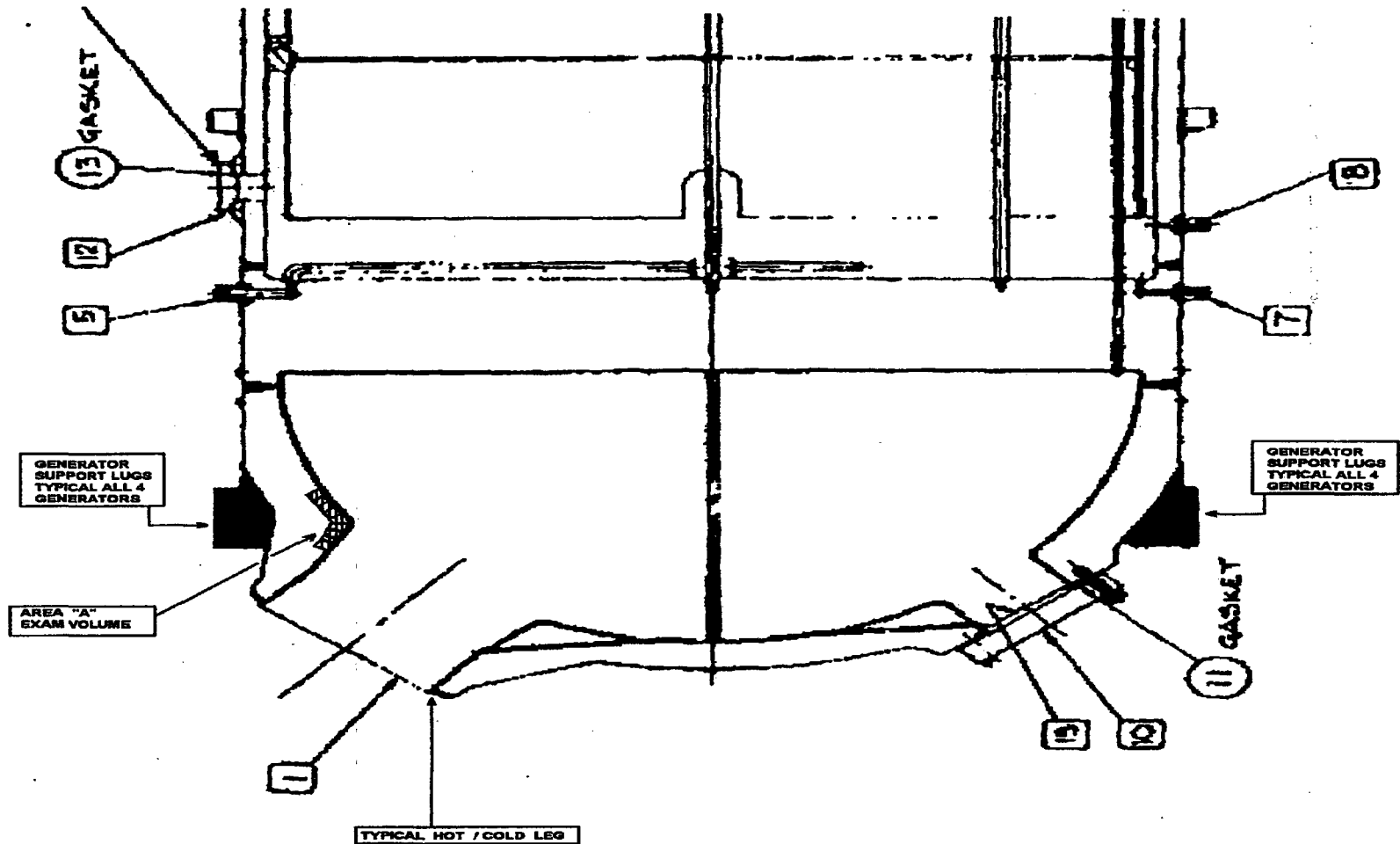
Component I.D. 29-STG-1220-IRS

Description #22 Cold Leg Inner Radius

Page 2 of 3

Comments Ultrasonic exam area limited to 73% of code required coverage due to permanent Steam Generator support lugs  
See Sketch below showing support lug interference with exam area  
Drawing was created in order to assist in the evaluation of the request for relief regarding examination coverage only.

## Sketch



# Supplemental Drawing

Summary # 021200

Component I.D. 29-STG-1220-IRS

Description #22 Cold Leg Inner Radius

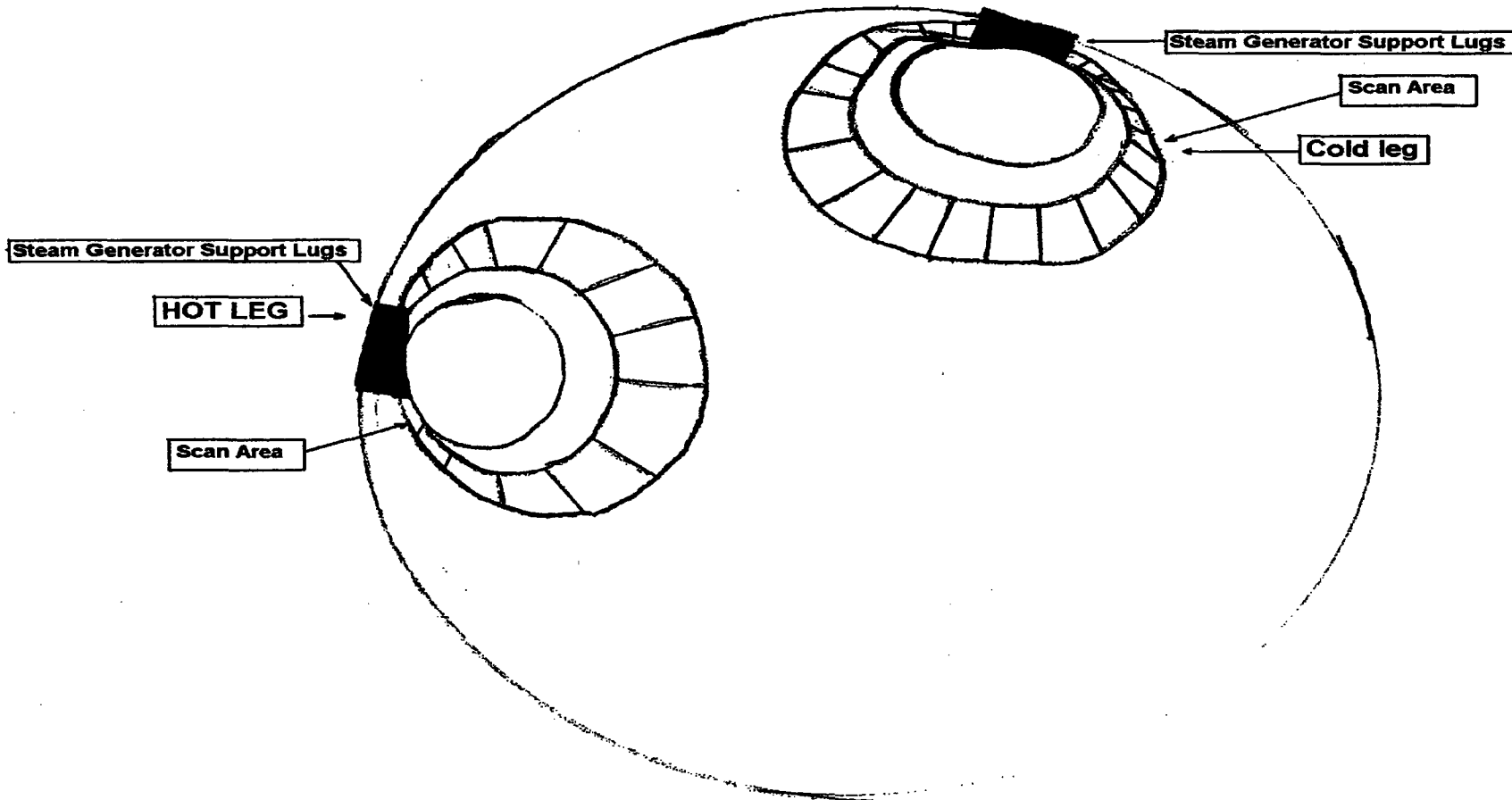
Page 3 of 3

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**Comment:** Ultrasonic exam area limited to 73% of code required coverage due to permanent Steam Generator support lugs  
See Sketch below showing support lug interference with exam area  
**Drawing was created in order to assist in the evaluation of the request for relief regarding examination coverage only.**

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## Sketch







# Supplemental Drawing

Summary # 021100

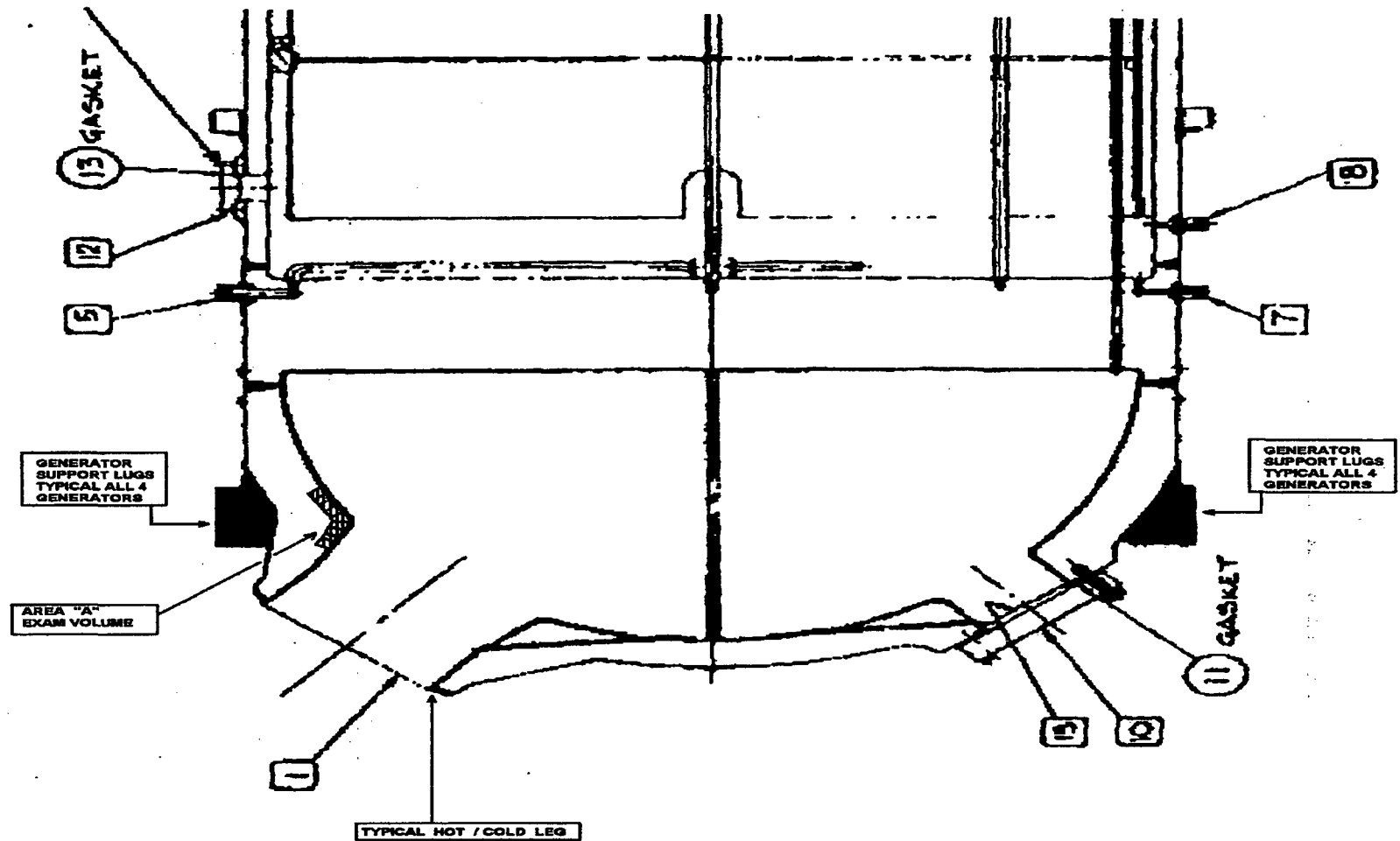
Component I.D. 29-STG-1230-IRS

Description #23 Cold Leg Inner Radius

Page 2 of 3

Comments Ultrasonic exam area limited to 75% of code required coverage due to permanent Steam Generator support lugs  
See Sketch below showing support lug interference with exam area  
Drawing was created in order to assist in the evaluation of the request for relief regarding examination coverage only.

## Sketch



# Supplemental Drawing

Summary # 021100

Component I.D. 29-STG-1230-IRS

Description #23 Cold Leg Inner Radius

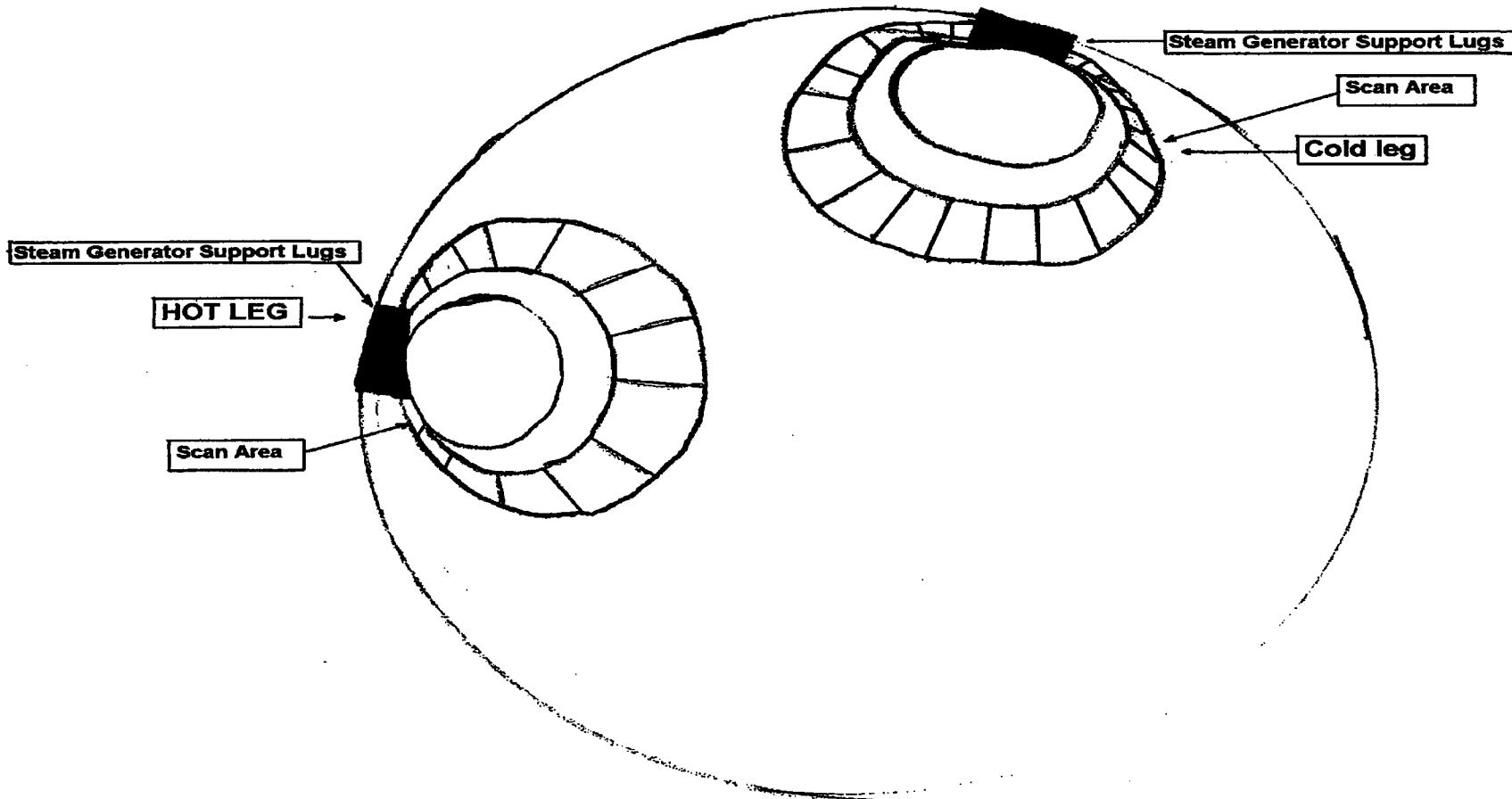
Page 3 of 3

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**Comment:** Ultrasonic exam area limited to 75% of code required coverage due to permanent Steam Generator support lugs  
See Sketch below showing support lug interference with exam area  
**Drawing was created in order to assist in the evaluation of the request for relief regarding examination coverage only.**

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## Sketch



**REQUEST FOR ADDITIONAL INFORMATION**  
**REQUEST FOR RELIEF REGARDING EXAMINATION COVERAGE**  
**SECOND TEN-YEAR IN-SERVICE INSPECTION INTERVAL**  
**SALEM NUCLEAR GENERATING STATION, UNIT NO. 2**  
**DOCKET NO. 50-311**

**QUESTION**      1.2 (a)    For certain nozzle welds, information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers

**Summary #**      021000  


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**Component I.D.**    29-STG-1240-IRS  


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**Description**      #24 Cold Leg Inner Radius  


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		Comments
1	Weld X-Section	N/A
2	Material	Carbon Steel / Inconel Clad
3	Thickness / weld Crown	N/A
4	Obstruction	Generator Support Lug
5	Exam Area Highlighted on Drawing	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
6	Transducer ray exit point	N/A

**Comments**

UT exam was conducted using 28 and 38 degree longitudinal wave transducers. The exams completed was limited to 86% code required coverage due to the insulation support brackets attached to the steam generators lower head that and permanent support lugs interfered with scanning. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

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# Supplemental Drawing

Summary # 021000

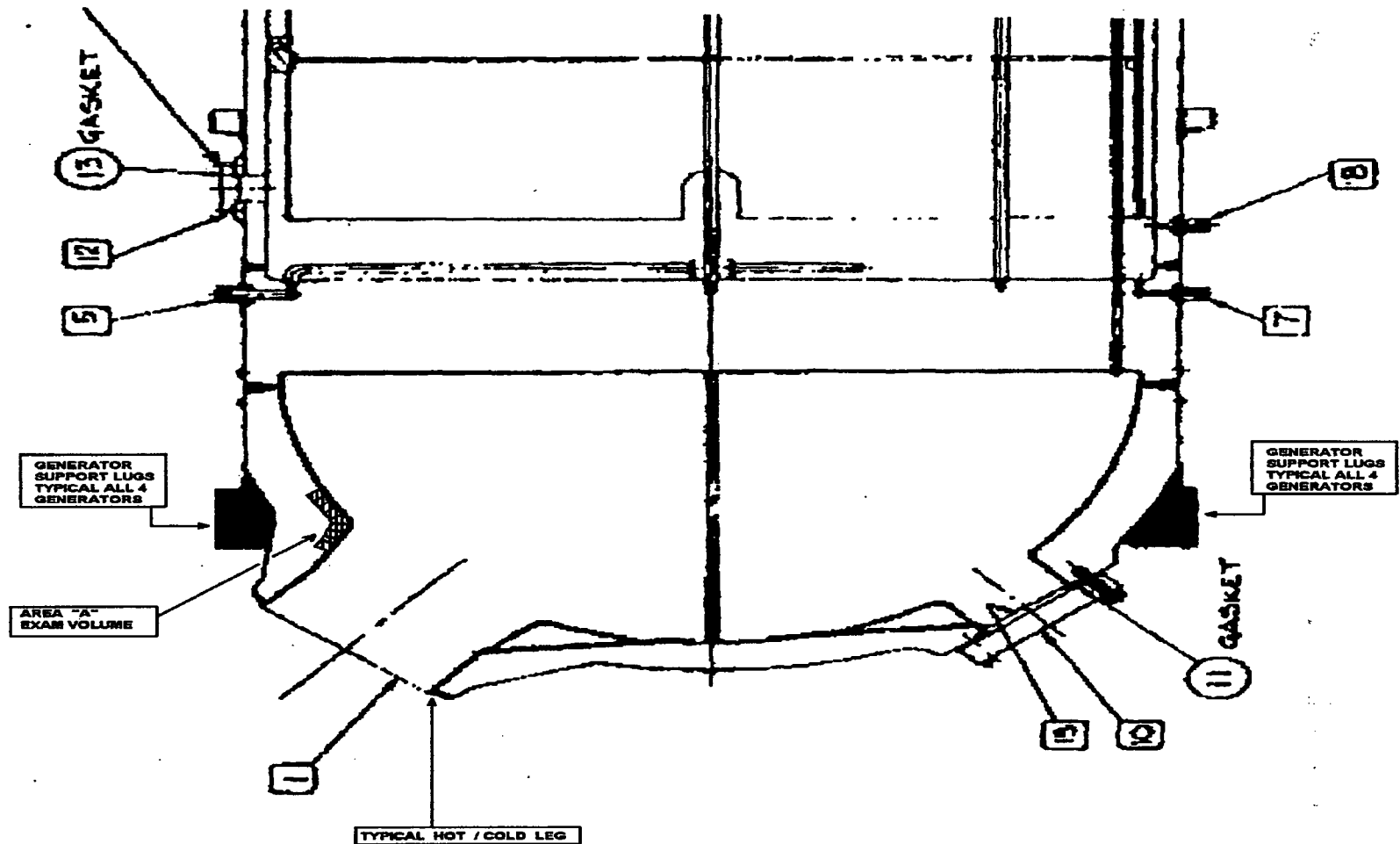
Component I.D. 29-STG-1240-IRS

Description #24 Cold Leg Inner Radius

Page 2 of 3

Comments Ultrasonic exam area limited to 86% of code required coverage due to permanent Steam Generator support lugs  
See Sketch below showing support lug interference with exam area  
Drawing was created in order to assist in the evaluation of the request for relief regarding examination coverage only.

## Sketch



# Supplemental Drawing

Summary # 021000

Component I.D. 29-STG-1240-IRS

Description #24 Cold Leg Inner Radius

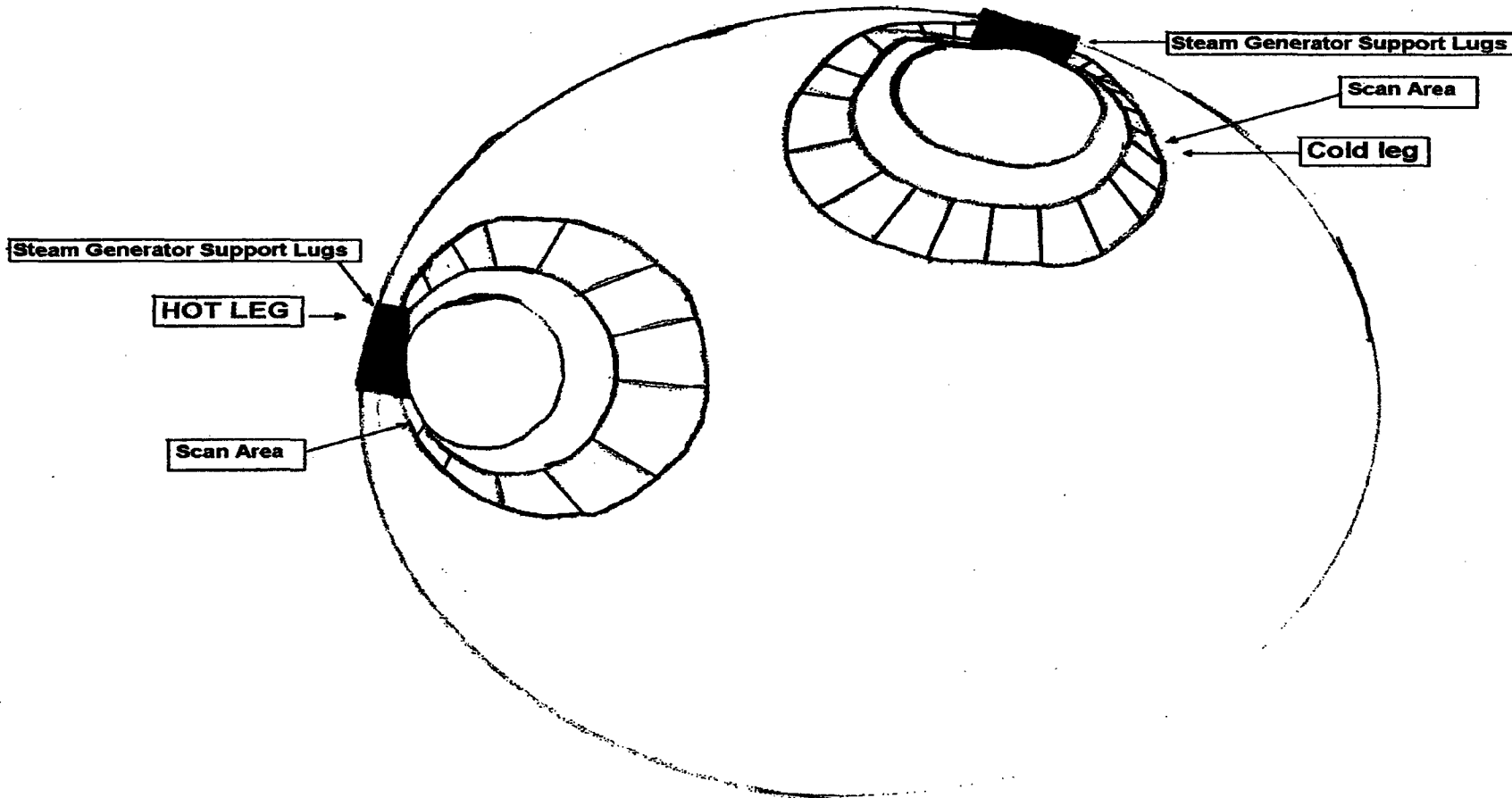
Page 3 of 3

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**Comment:** Ultrasonic exam area limited to 86% of code required coverage due to permanent Steam Generator support lugs  
See Sketch below showing support lug interference with exam area  
**Drawing was created in order to assist in the evaluation of the request for relief regarding examination coverage only.**

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## Sketch



**REQUEST FOR ADDITIONAL INFORMATION**  
**REQUEST FOR RELIEF REGARDING EXAMINATION COVERAGE**  
**SECOND TEN-YEAR IN-SERVICE INSPECTION INTERVAL**  
**SALEM NUCLEAR GENERATING STATION, UNIT NO. 2**  
**DOCKET NO. 50-311**

**QUESTION**      1.2 (a) For certain nozzle welds, information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers

**Summary #**      020900  


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**Component I.D.**    31-STG-1210-IRS  


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**Description**      #21 Hot Leg Inner Radius  


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		Comments
1	Weld X-Section	N/A
2	Material	Carbon Steel / Inconel Clad
3	Thickness / weld Crown	N/A
4	Obstruction	Generator Support Lug
5	Exam Area Highlighted on Drawing	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> X <input type="checkbox"/> No
6	Transducer ray exit point	N/A

**Comments**

UT exam was conducted using 28 and 38 degree longitudinal wave transducers. The exams completed was limited to 79% code required coverage due to the insulation support brackets attached to the steam generators lower head that and permanent support lugs interfered with scanning. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

# Supplemental Drawing

Summary # 020900

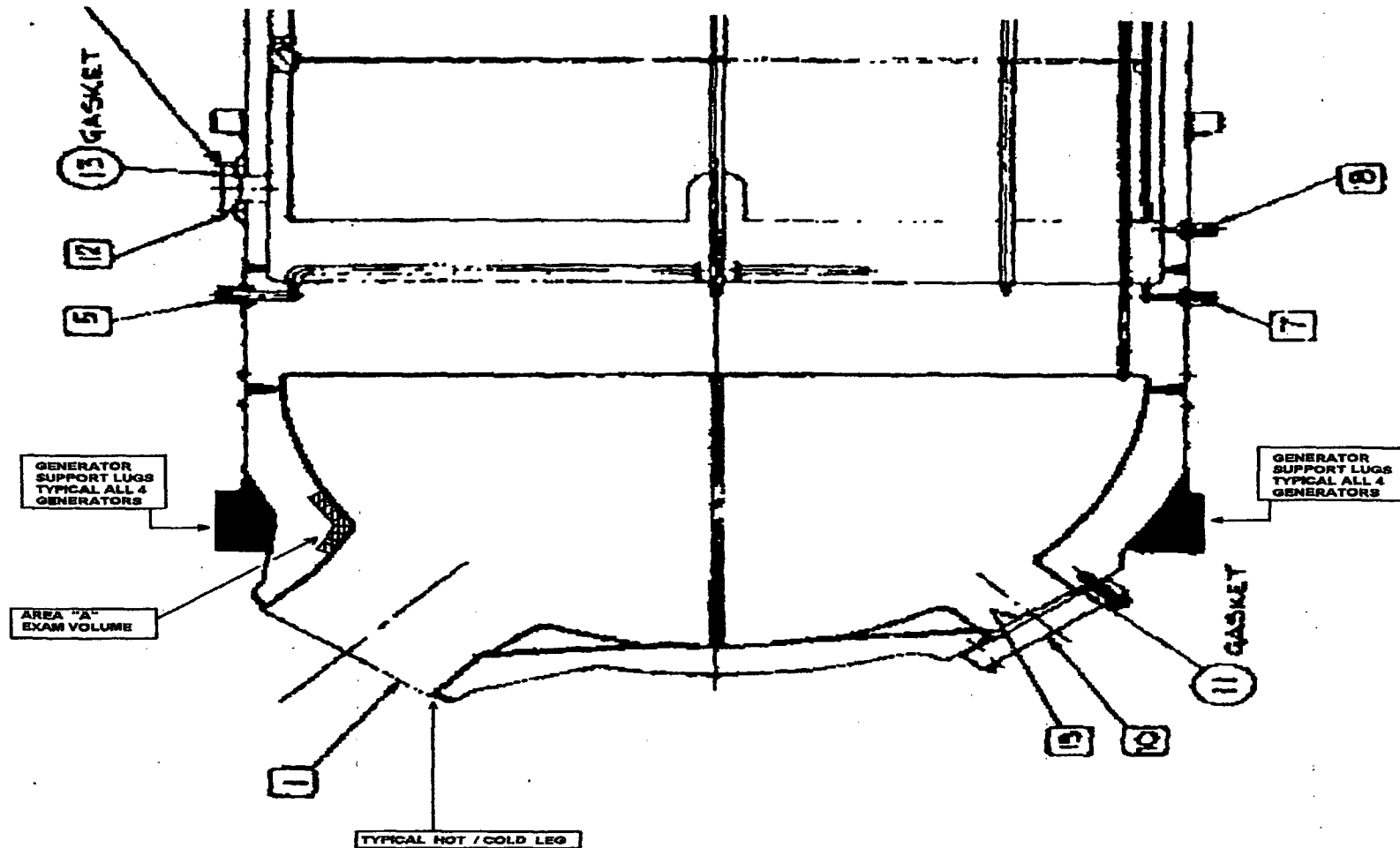
Component I.D. 31-STG-1210-IRS

Description #21 Hot Leg Inner Radius

Page 2 of 3

Comments Ultrasonic exam area limited to 79% of code required coverage due to permanent Steam Generator support lugs  
See Sketch below showing support lug interference with exam area  
Drawing was created in order to assist in the evaluation of the request for relief regarding examination coverage only.

## Sketch





# Supplemental Drawing

Summary # 020900

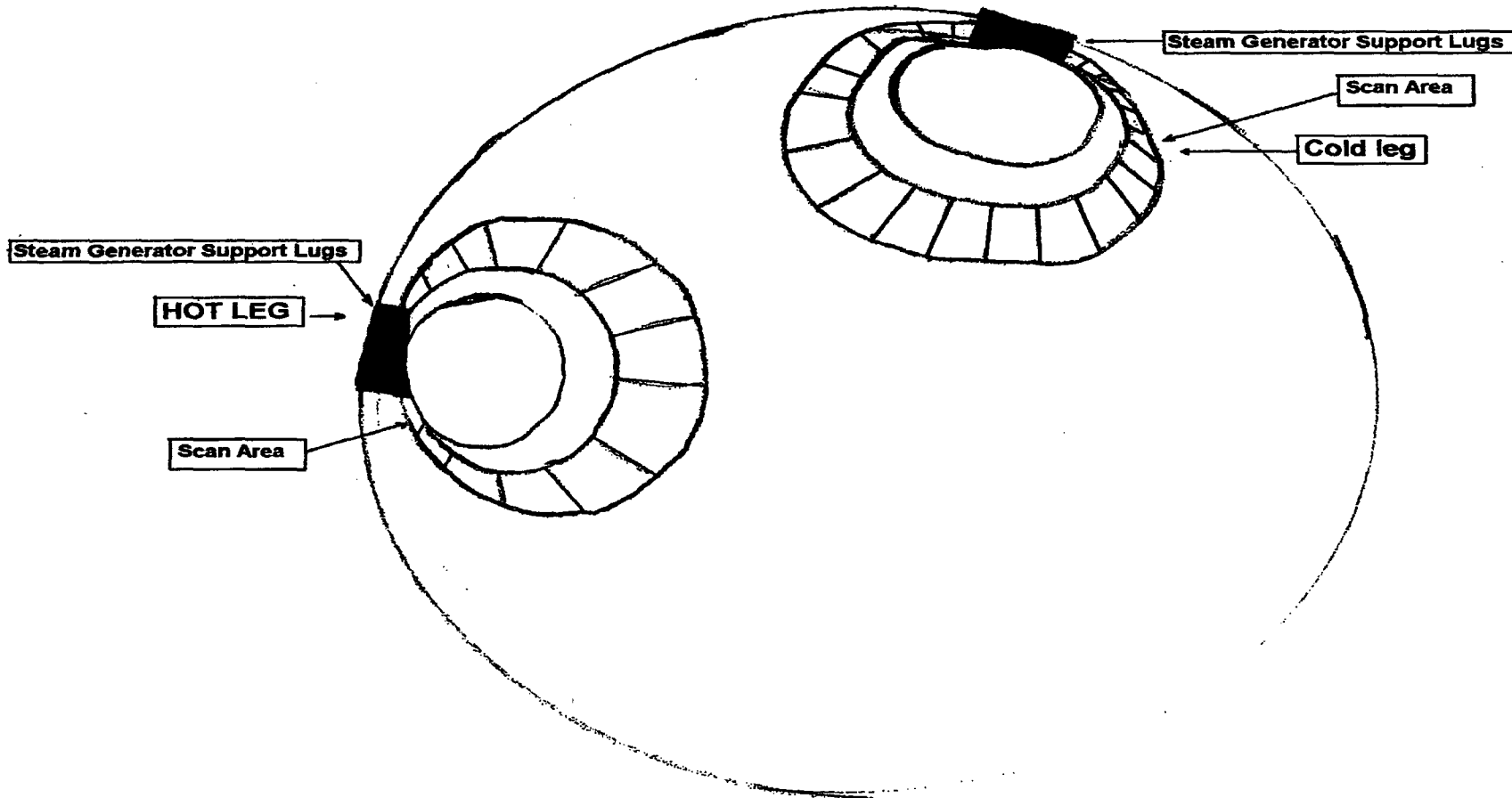
Component I.D. 31-STG-1210-IRS

Description #21 Hot Leg Inner Radius

Page 3 of 3

**Comment:** Ultrasonic exam area limited to 79% of code required coverage due to permanent Steam Generator support lugs  
See Sketch below showing support lug interference with exam area  
Drawing was created in order to assist in the evaluation of the request for relief regarding examination coverage only.

## Sketch





# Supplemental Drawing

Summary # 020800

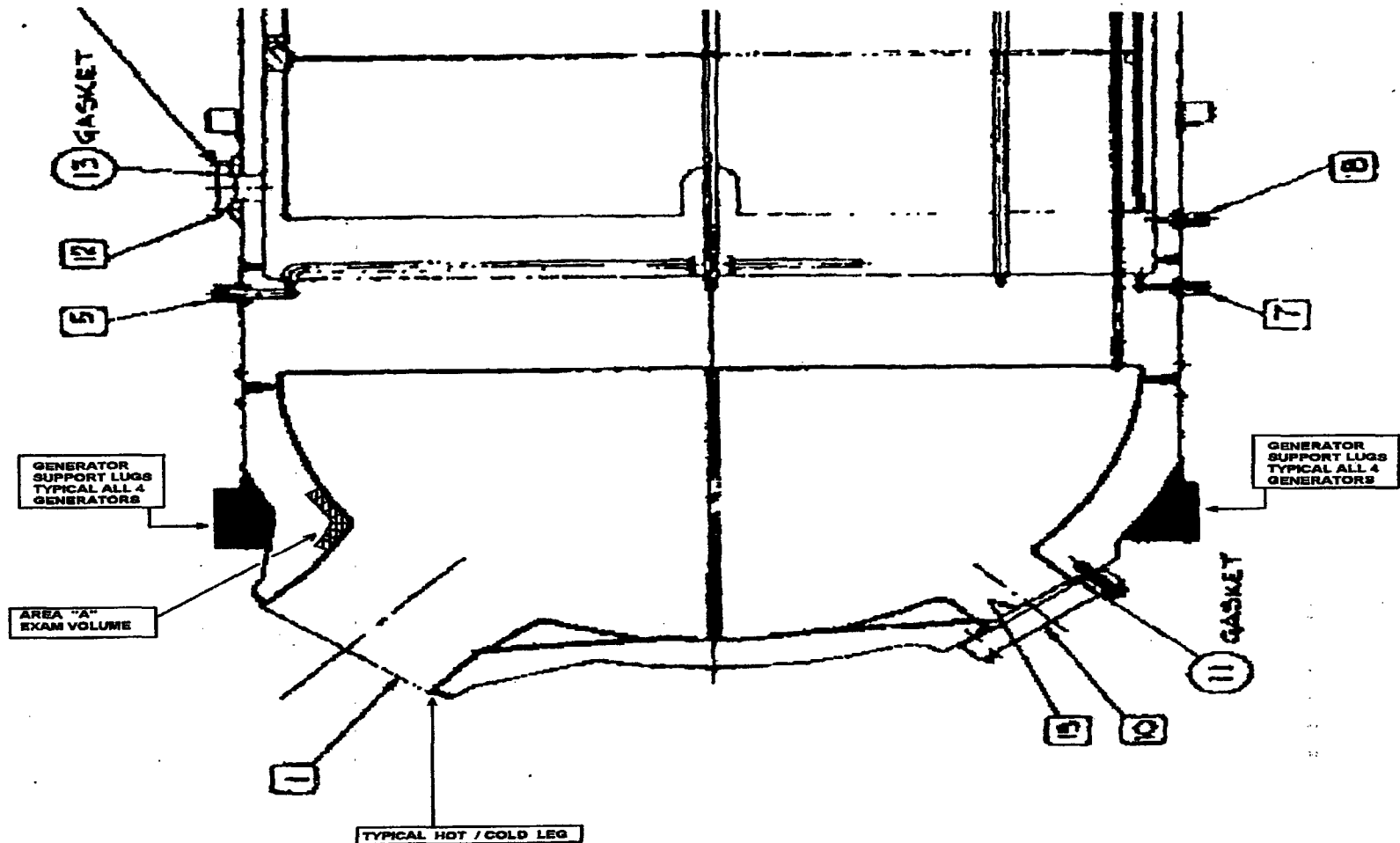
Component I.D. 31-STG-1220-IRS

Description #22 Hot Leg Inner Radius

Page 2 of 3

Comments Ultrasonic exam area limited to 80% of code required coverage due to permanent Steam Generator support lugs  
See Sketch below showing support lug interference with exam area  
Drawing was created in order to assist in the evaluation of the request for relief regarding examination coverage only.

## Sketch



# Supplemental Drawing

Summary # 020800

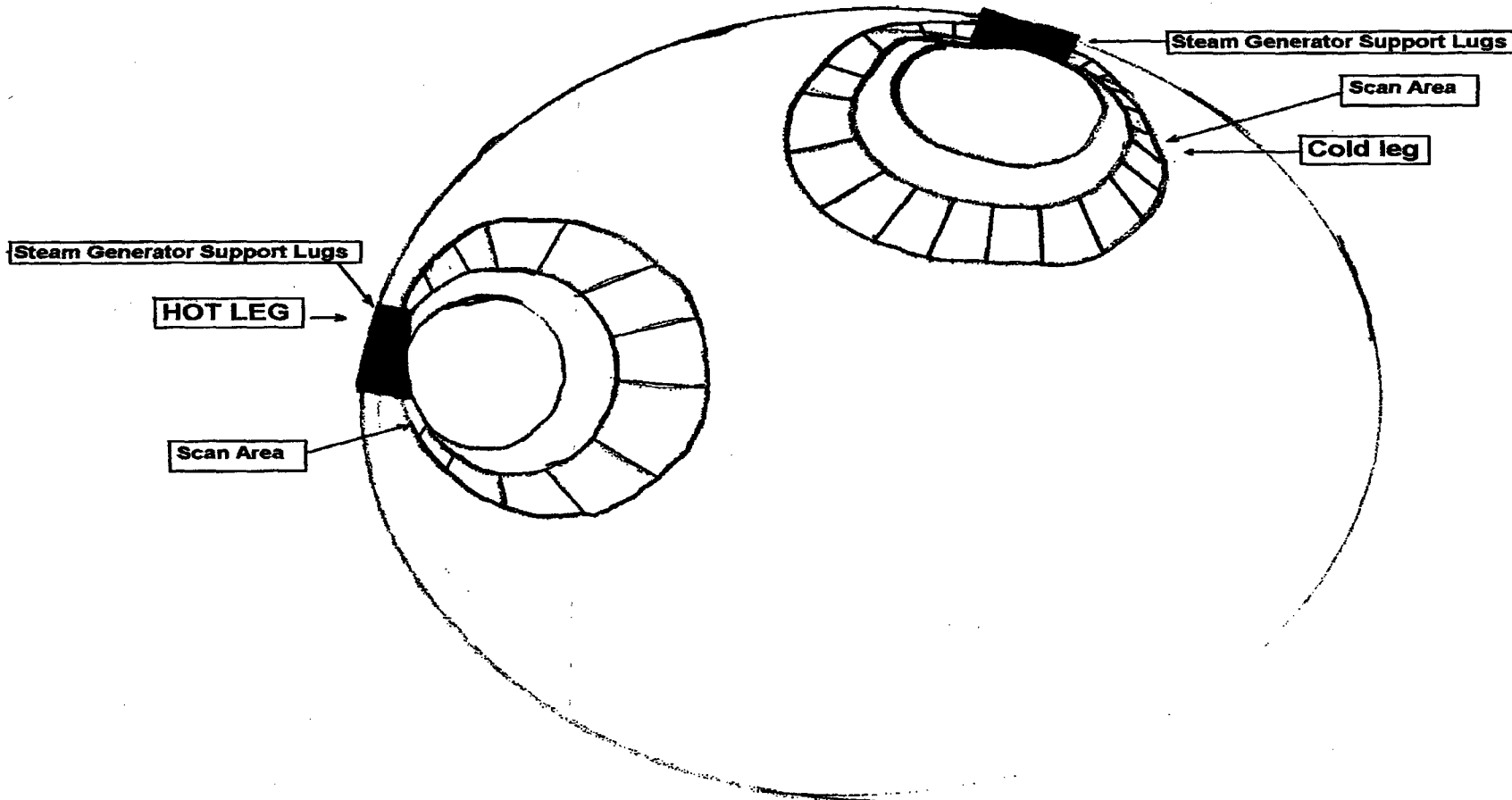
Component I.D. 31-STG-1220-IRS

Description #22 Hot Leg Inner Radius

Page 3 of 3

Comment: Ultrasonic exam area limited to 80% of code required coverage due to permanent Steam Generator support lugs  
See Sketch below showing support lug interference with exam area  
Drawing was created in order to assist in the evaluation of the request for relief regarding examination coverage only.

## Sketch



REQUEST FOR ADDITIONAL INFORMATION  
 REQUEST FOR RELIEF REGARDING EXAMINATION COVERAGE  
 SECOND TEN-YEAR IN-SERVICE INSPECTION INTERVAL  
 SALEM NUCLEAR GENERATING STATION, UNIT NO. 2  
 DOCKET NO. 50-311

**QUESTION**      1.2 (a)    For certain nozzle welds, information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers

Summary #      020700

Component I.D.    31-STG-1230-IRS

Description      #23 Hot Leg Inner Radius

		Comments
<input style="width: 40px;" type="text" value="1"/>	Weld X-Section	N/A
<input style="width: 40px;" type="text" value="2"/>	Material	Carbon Steel / Inconel Clad
<input style="width: 40px;" type="text" value="3"/>	Thickness / weld Crown	N/A
<input style="width: 40px;" type="text" value="4"/>	Obstruction	Generator Support Lug
<input style="width: 40px;" type="text" value="5"/>	Exam Area Highlighted on Drawing	<input style="width: 30px;" type="text" value="Yes"/> <input checked="checked" style="width: 30px;" type="text" value="X"/> <input style="width: 30px;" type="text" value="No"/>
<input style="width: 40px;" type="text" value="6"/>	Transducer ray exit point	N/A

**Comments**

UT exam was conducted using 28 and 38 degree longitudinal wave transducers. The exams completed was limited to 81% code required coverage due to the insulation support brackets attached to the steam generators lower head that and permanent support lugs interfered with scanning. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

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# Supplemental Drawing

Summary # 020700

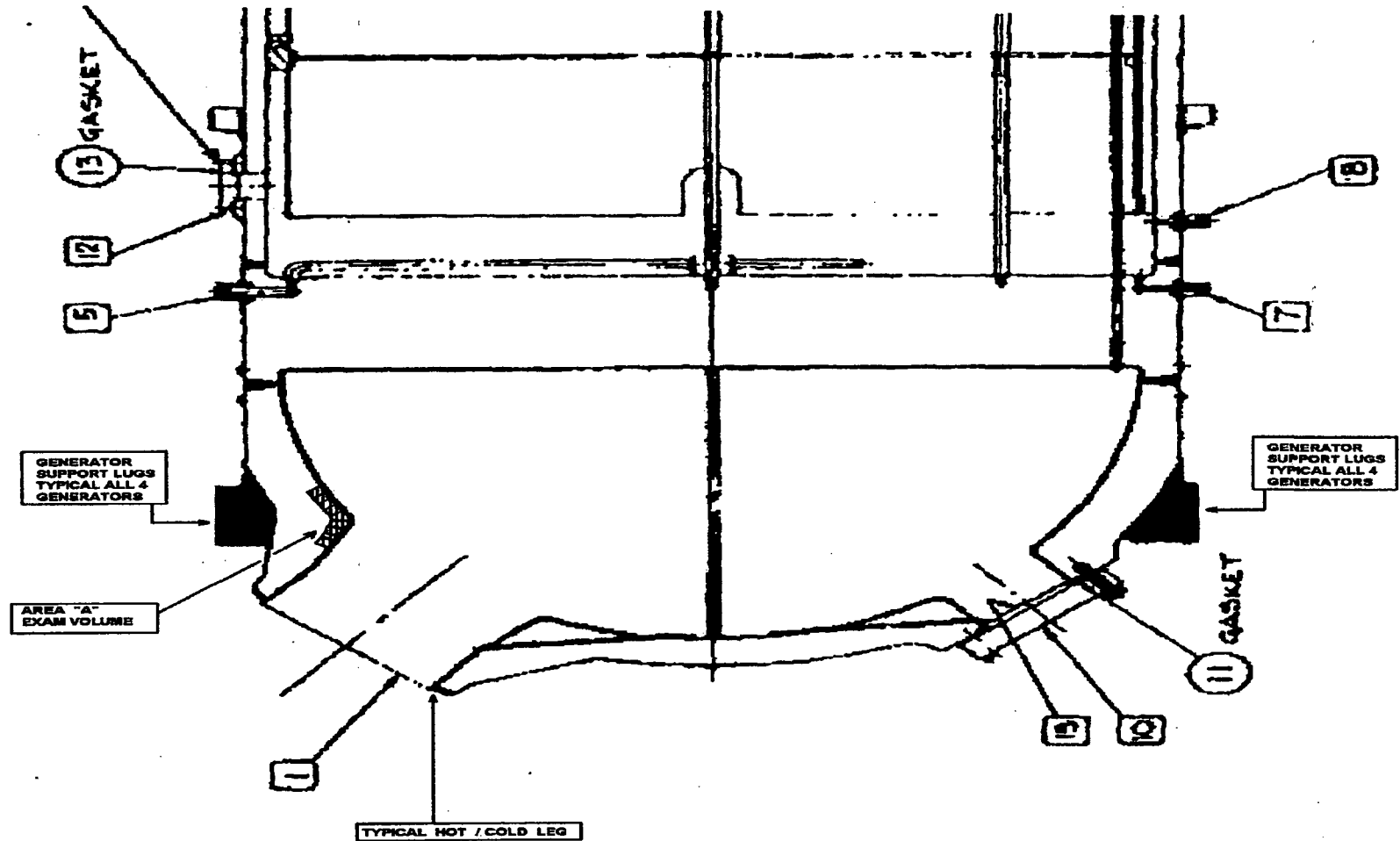
Component I.D. 31-STG-1230-IRS

Description #23 Hot Leg Inner Radius

Page 2 of 3

Comments Ultrasonic exam area limited to 81% of code required coverage due to permanent Steam Generator support lugs  
See Sketch below showing support lug interference with exam area  
Drawing was created in order to assist in the evaluation of the request for relief regarding examination coverage only.

## Sketch



### Supplemental Drawing

Summary # 020700

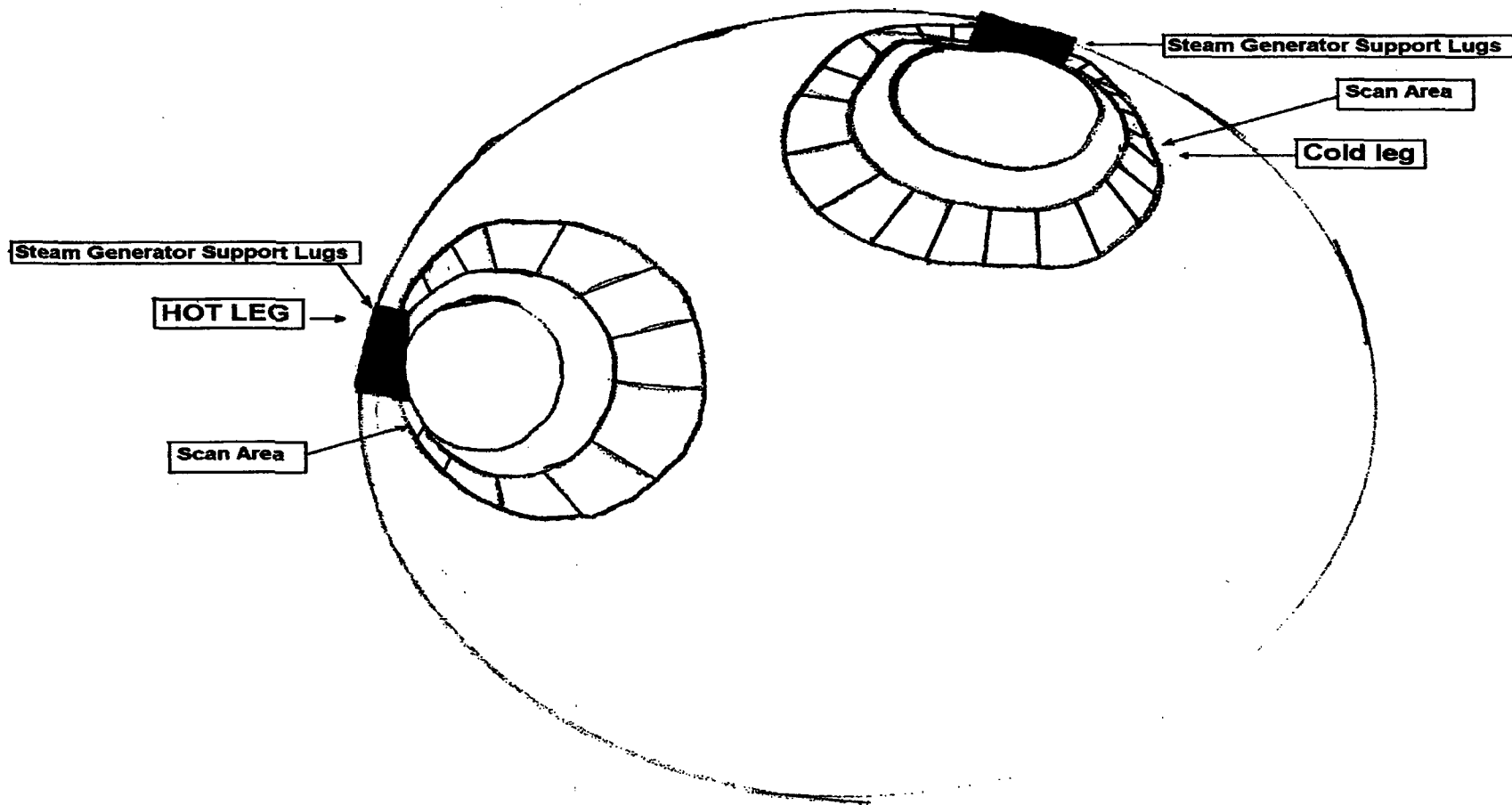
Component I.D. 31-STG-1230-IRS

Description #23 Hot Leg Inner Radius

Page 3 of 3

Comment: Ultrasonic exam area limited to 81% of code required coverage due to permanent Steam Generator support lugs  
See Sketch below showing support lug interference with exam area  
Drawing was created in order to assist in the evaluation of the request for relief regarding examination coverage only.

#### Sketch



**REQUEST FOR ADDITIONAL INFORMATION**  
**REQUEST FOR RELIEF REGARDING EXAMINATION COVERAGE**  
**SECOND TEN-YEAR IN-SERVICE INSPECTION INTERVAL**  
**SALEM NUCLEAR GENERATING STATION, UNIT NO. 2**  
**DOCKET NO. 50-311**

**QUESTION**      1.2 (a)    For certain nozzle welds, information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers

Summary #      020600

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Component I.D.    31-STG-1240-IRS

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Description      #24 Hot Leg Inner Radius

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		Comments
1	Weld X-Section	N/A
2	Material	Carbon Steel / Inconel Clad
3	Thickness / weld Crown	N/A
4	Obstruction	Generator Support Lug
5	Exam Area Highlighted on Drawing	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> X <input type="checkbox"/> No
6	Transducer ray exit point	N/A

**Comments**

UT exam was conducted using 28 and 38 degree longitudinal wave transducers. The exams completed was limited to 85% code required coverage due to the insulation support brackets attached to the steam generators lower head that and permanent support lugs interfered with scanning. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

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# Supplemental Drawing

Summary # 020600

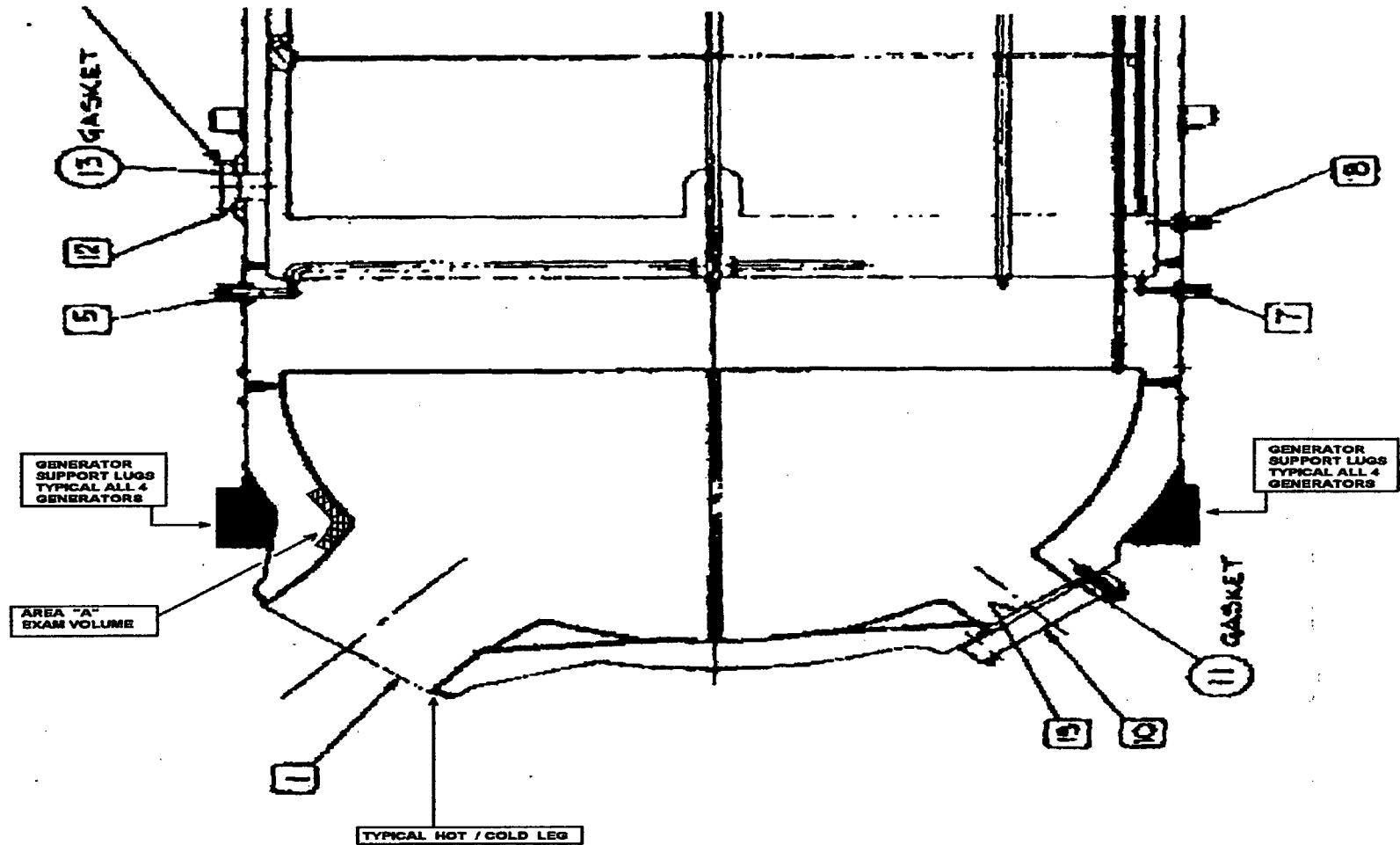
Component I.D. 31-STG-1240-IRS

Description #24Hot Leg Inner Radius

Page 2 of 3

Comments Ultrasonic exam area limited to 85% of code required coverage due to permanent Steam Generator support lugs  
See Sketch below showing support lug interference with exam area  
Drawing was created in order to assist in the evaluation of the request for relief regarding examination coverage only.

## Sketch



# Supplemental Drawing

Summary # 020600

Component I.D. 31-STG-1240-IRS

Description #24 Hot Leg Inner Radius

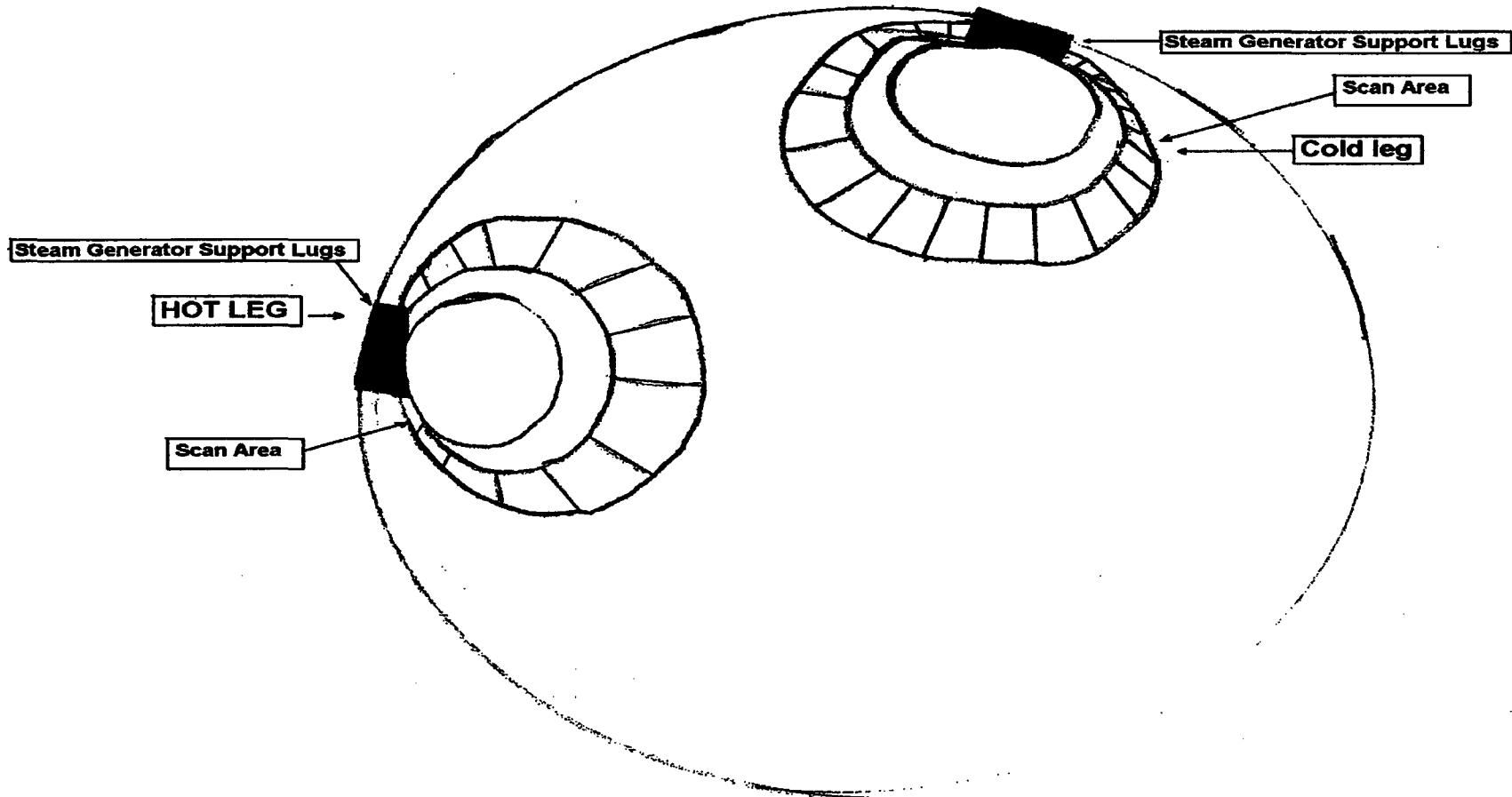
Page 3 of 3

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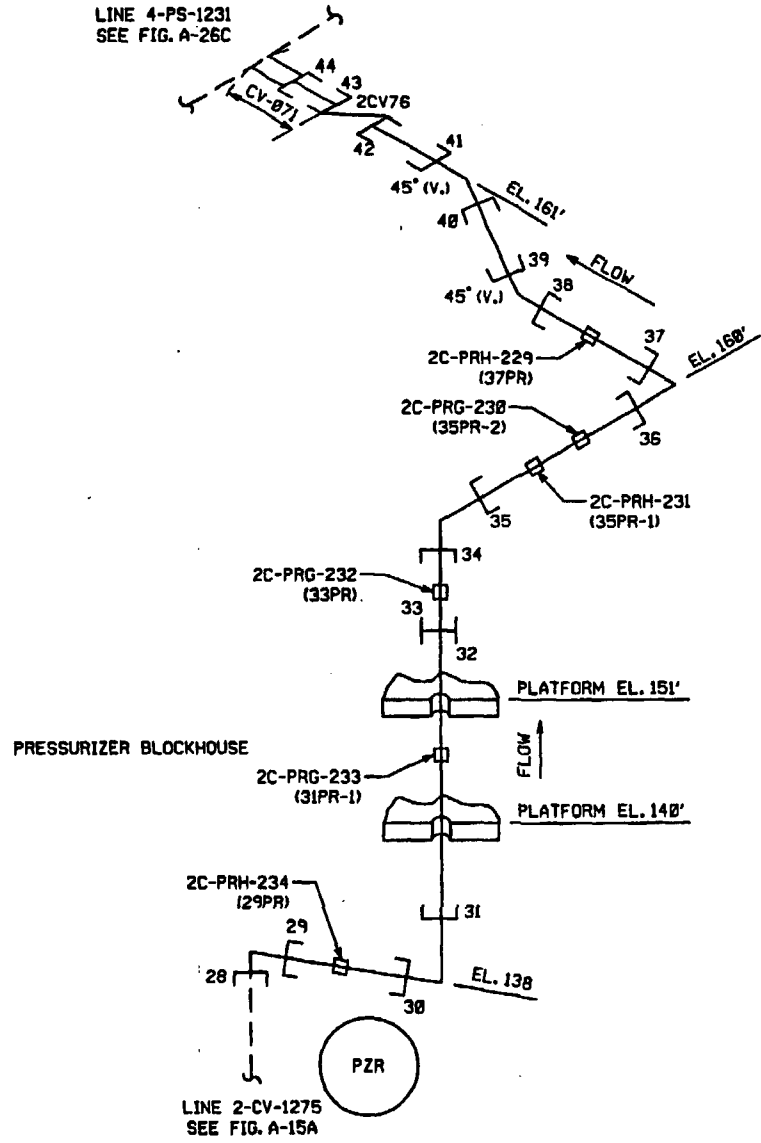
Comments: Ultrasonic exam area limited to 85% of code required coverage due to permanent Steam Generator support lugs  
See Sketch below showing support lug interference with exam area  
Drawing was created in order to assist in the evaluation of the request for relief regarding examination coverage only.

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## Sketch



LINE 4-PS-1231  
SEE FIG. A-26C



314  
31d

BUILDING: CONTAINMENT	LOCATION: PRZ BLOCKHOUSE	ELEVATIONS: 138' to 161'
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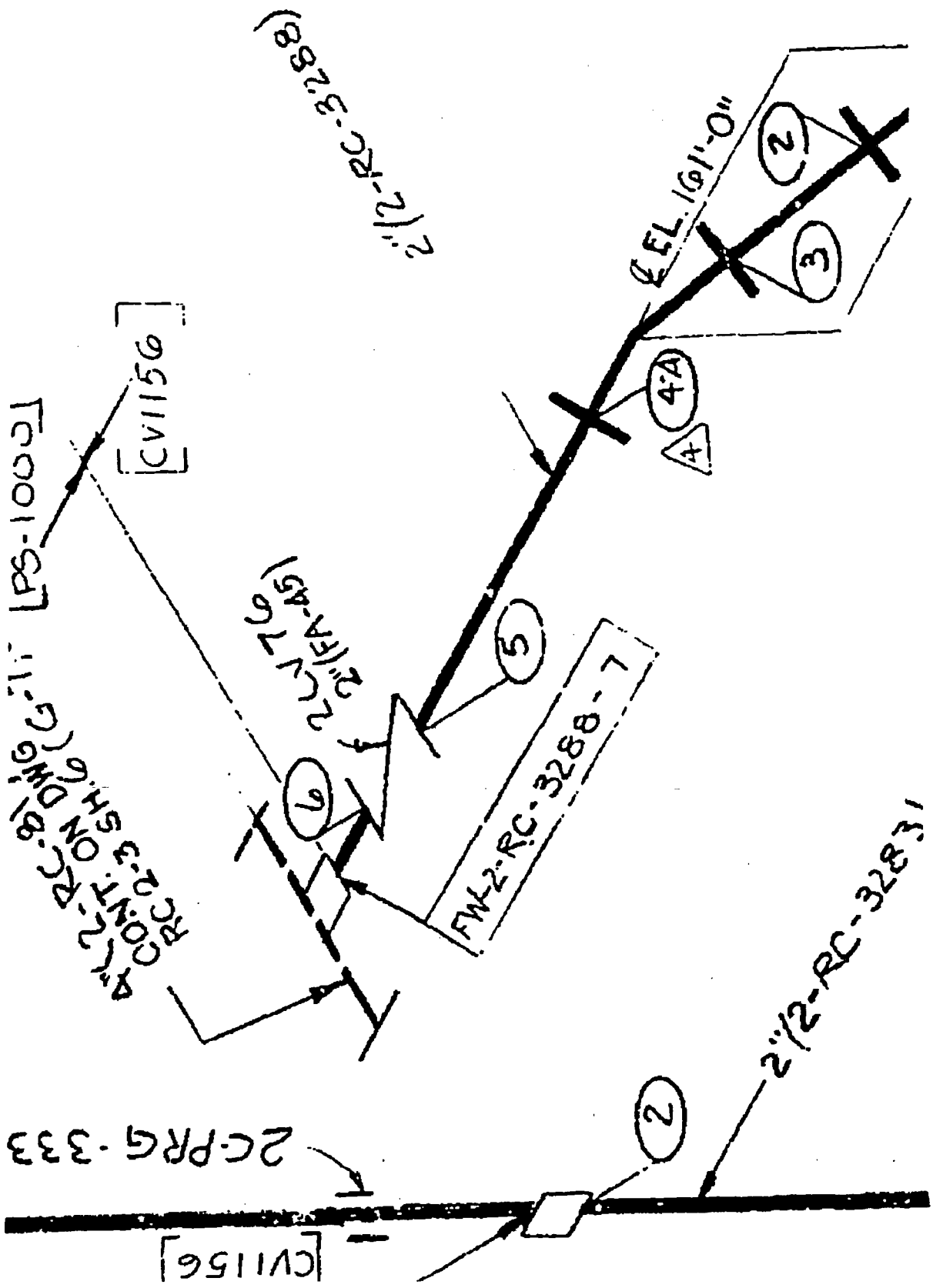
PSEG ISO RC23-13  
P & ID 205301, 205328

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-15B	REVISION: 1
SYSTEM: CHEMICAL AND VOLUME CONTROL AUXILIARY SPRAY	
LINE: 2-CV-1275	
THIRD 10 YEAR INSPECTION INTERVAL	

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



REQUEST FOR ADDITIONAL INFORMATION  
 REQUEST FOR RELIEF REGARDING EXAMINATION COVERAGE  
 SECOND TEN-YEAR IN-SERVICE INSPECTION INTERVAL  
 SALEM NUCLEAR GENERATING STATION, UNIT NO. 2  
 DOCKET NO. 50-311

**QUESTION**      1.3 (c) For certain piping welds, Information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers listed below.

Summary #      040900

Component I.D.      2-CV-1275-43

Description      Valve 2CV76 to Pipe

		Comments
1	Weld X-Section	See Attached
2	Material	Stainless Steel
3	Thickness / weld Crown	Thickness .35" / Weld Crown .5"
4	Obstruction	OD contour on valve side and weld 44
5	Exam Area Highlighted on Drawing	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
6	Transducer ray exit point	See Attached

**Comments** \_\_\_\_\_

UT exam was performed of this component using 45 degree shear wave transducer. The ultrasonic examination was limited to 50% of the code required coverage being limited 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 observed. A liquid penetrant examination and system pressure test was also completed with no recordable indications observed.

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Supplemental Drawing

Summary # 040900

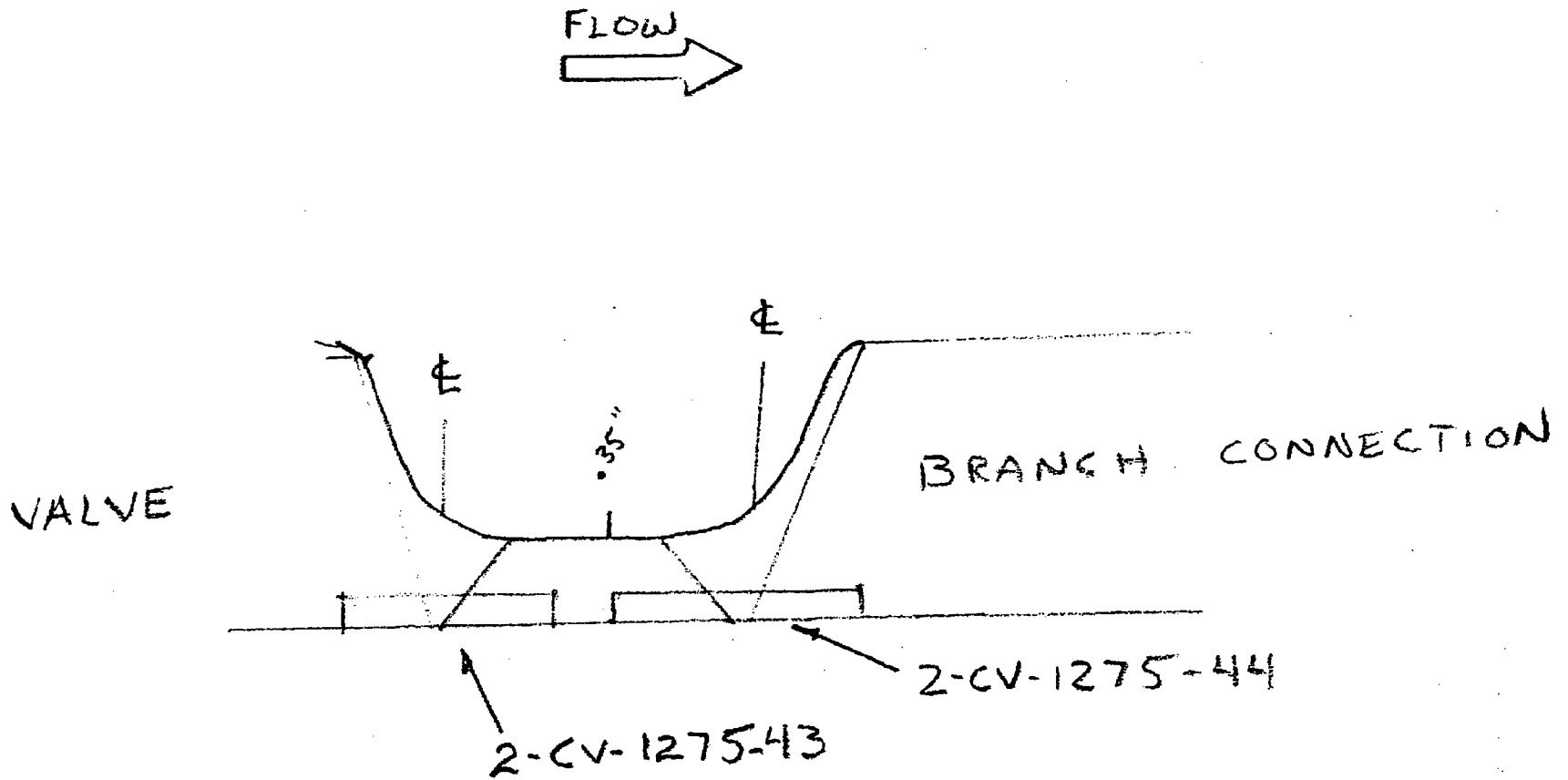
Component I.D. Valve 2-CV-76 to Pipe

Description 2-CV-1275-43

Page          of         

Comments The ultrasonic examination was limited to 50% of the code required coverage being limited due to exam being limited to 3/8" W due to the close proximity of the downstream socket weld # 44 being to close and interfering with scanning.

Sketch



REQUEST FOR ADDITIONAL INFORMATION  
REQUEST FOR RELIEF REGARDING EXAMINATION COVERAGE  
SECOND TEN-YEAR IN-SERVICE INSPECTION INTERVAL  
SALEM NUCLEAR GENERATING STATION, UNIT NO. 2  
DOCKET NO. 50-311

**QUESTION**      1.3 (c) For certain piping welds, information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers listed below.

**Summary #**      041000

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**Component I.D.**      2-CV-1275-44

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**Description**      Pipe to Branch Connection

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		Comments
1	Weld X-Section	See Attached
2	Material	Stainless Steel
3	Thickness / weld Crown	Thickness .35" / Weld Crown 1.5"
4	Obstruction	Joint Configuration
5	Exam Area Highlighted on Drawing	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
6	Transducer ray exit point	N/A

**Comments**

UT exam was performed of this component using 45 degree shear wave transducer. The ultrasonic examination was limited to 50% of the code required coverage being limited due to the exam limited to 3/8" W due to the close proximity of the downstream socket weld # 43 being too close that interfered with scanning. Component selected as an augmented 88-08 exam. No unacceptable indications were observed. A liquid penetrant examination and system pressure test was also completed with no recordable indications observed.

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### Supplemental Drawing

Summary # 041000

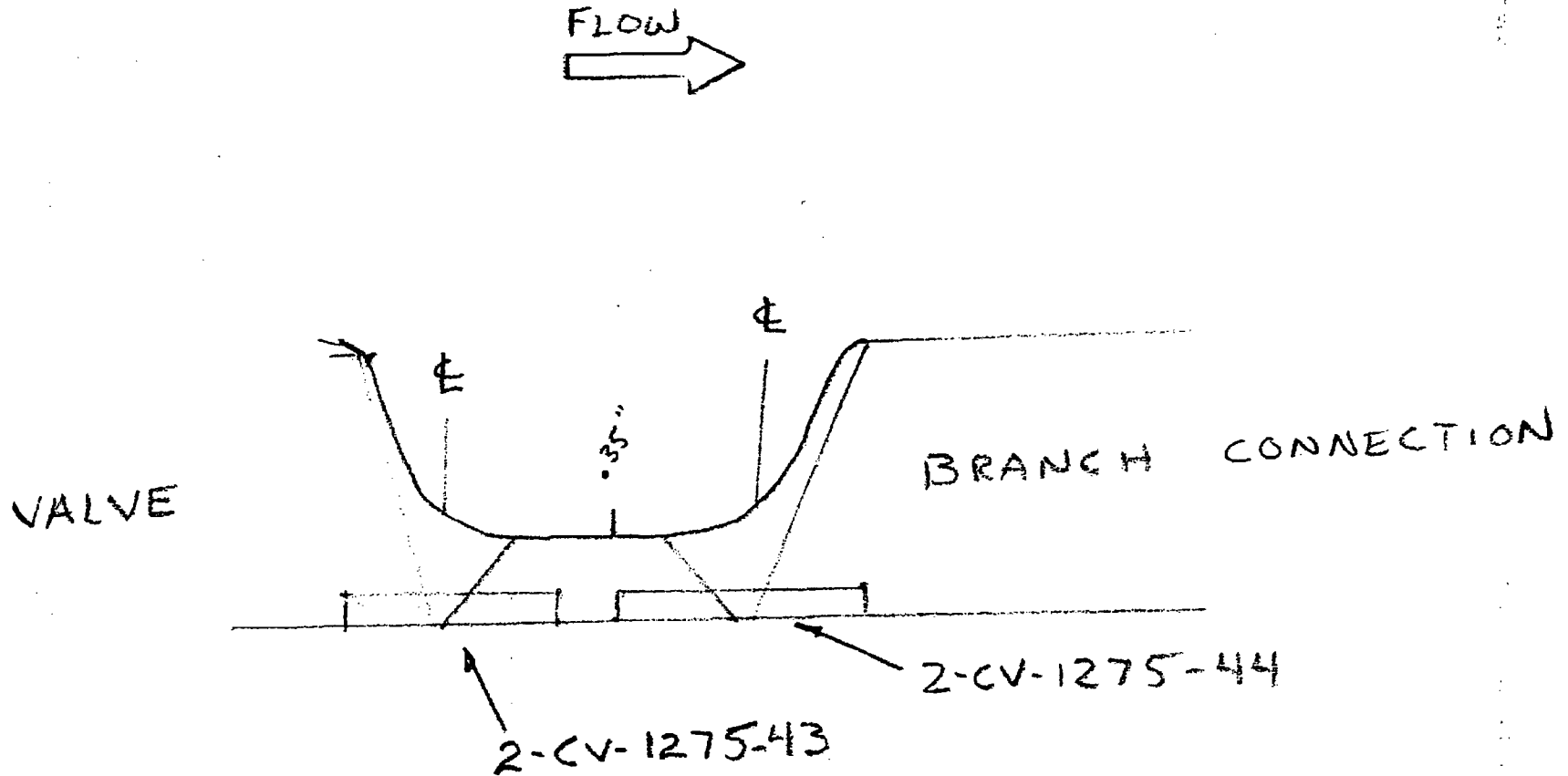
Component I.D. Pipe to Branch Connection

Description 2-CV-1275-44

Page          of         

Comments The ultrasonic examination was limited to 50% of the code required coverage being limited due to exam being limited to 3/8" W due to the close proximity of the downstream socket weld # 43 being to close and interfering with scanning.

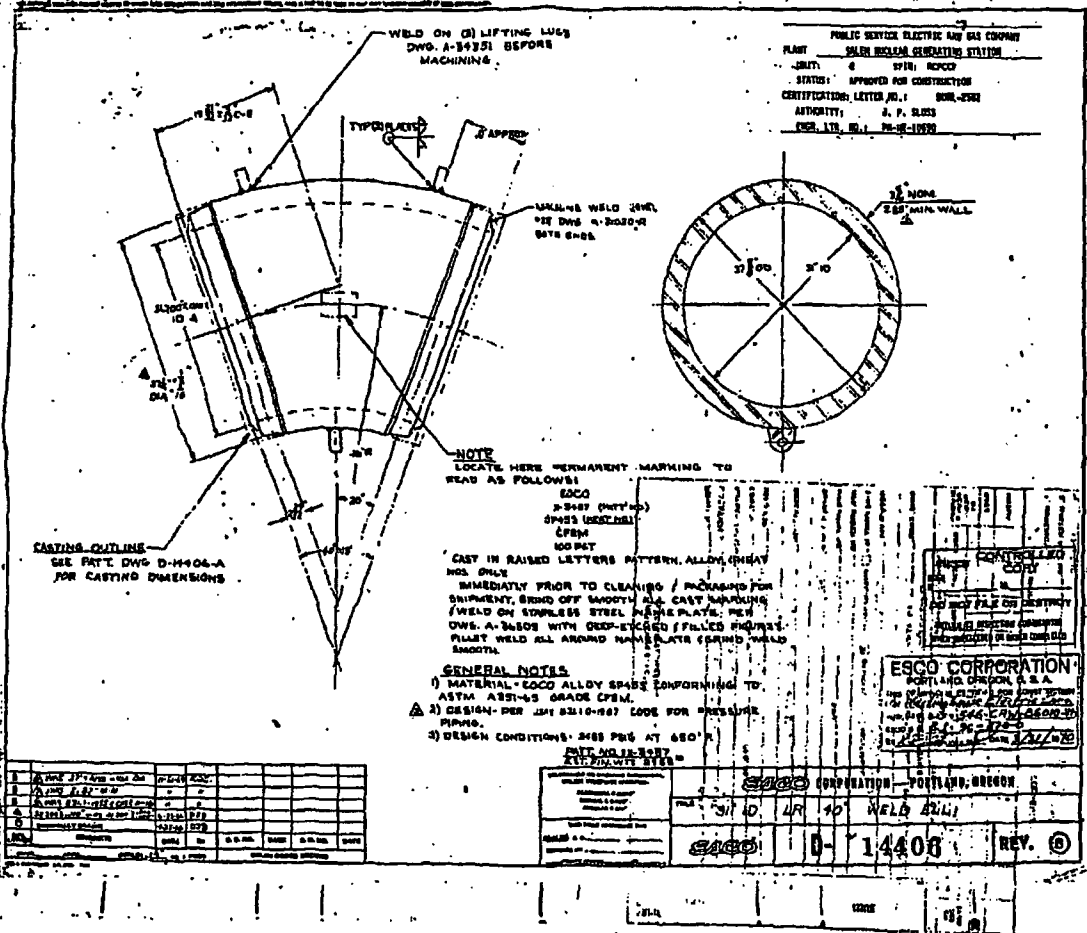
#### Sketch





515

USER RESPONSIBLE FOR VERIFYING REVISION, STATUS AND CHANGES  
 /TD 138383 000 1 PRINTED 20050113



PUBLIC SERVICE ELECTRIC AND GAS COMPANY  
 ELECTRIC ENGINEERING DEPARTMENT

PROJECT NO. 14404  
 LOCATION: ALLEN COAL-FIR GENERATING STATION UNIT 4  
 DRAWING NO. A-14404  
 DATE: 1/18/05  
 DESIGNED BY: [Name]  
 CHECKED BY: [Name]  
 APPROVED BY: [Name]  
 TITLE: [Title]  
 DEPARTMENT: [Department]  
 PROJECT NO.: [Project No.]  
 DRAWING NO.: [Drawing No.]  
 DATE: [Date]

NO.	DATE	DESCRIPTION
1	1/18/05	ISSUED FOR CONSTRUCTION

PLATE NO. 14404-A  
 DATE: 1/18/05

REV.	DATE	DESCRIPTION
1	1/18/05	ISSUED FOR CONSTRUCTION

315

#512

JSER RESPONSIBLE FOR VERIFYING REVISION, STATUS AND CHANGES  
DWG RC23 002 7 PRINTED 20050113

# STEAM GENERATOR

PSBP # 102274

[RCE-006]

[RC1007]

[RC1006]

FW-2-RC23-2-12A

31" I.D. PNJ LOOP 23-7  
(PSPB # 135323)

FW-2-RC23-1-9A

FW-2-RC23-2-13A

31" I.D. PNJ LOOP  
(PSEP 1454E & 307556)

R-40276-3  
(RESTRAINT)

CON...

3)

44A

(5)

(1)

5)

(7)

(6)

3-3118)

(2)

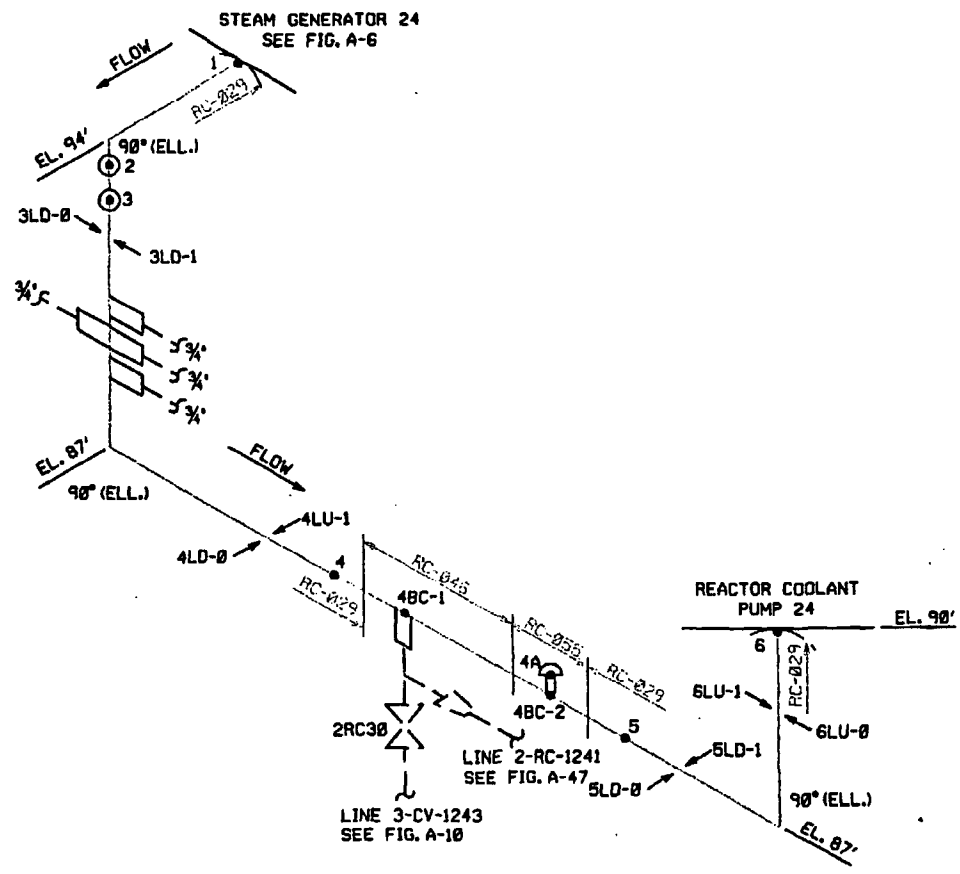
- FT-434
- FT-435
- FT-436

36" (2-RC-3097)  
 2" (2-RC-3097)  
 TO REACTOR COOL  
 DRAIN TR FOR CONTE  
 DWG # RC-2-5 SHIT #17

[087]

315A

315B



315B

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			PSEG Nuclear, LLC SALEM NUCLEAR GENERATING STATION UNIT 2 - WELD / HANGER IDENTIFICATION FIGURE INSERVICE INSPECTION DRAWING		FIGURE: A-29 SYSTEM: REACTOR COOLANT SYSTEM #24 CROSSOVER LEG
1	REV.	DATE	REVISD PER ORDER No. 80038023.	DESCRIPTION	REVISION: 1 LINE: 31-RC-1240 THIRD 10 YEAR INSPECTION INTERVAL

**REQUEST FOR ADDITIONAL INFORMATION  
REQUEST FOR RELIEF REGARDING EXAMINATION COVERAGE  
SECOND TEN-YEAR IN-SERVICE INSPECTION INTERVAL  
SALEM NUCLEAR GENERATING STATION, UNIT NO. 2  
DOCKET NO. 50-311**

**QUESTION**      1.3 (c) For certain piping welds, Information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers listed below.

Summary #      075800

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Component I.D.      31-RC-1220-4LU-1

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Description      Longitudinal Weld

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		Comments
1	Weld X-Section	See Attached
2	Material	Cast S/S ASTM 351-65 CF8M
3	Thickness / Weld Crown	Thickness 2.88 / Weld Crown Unknown
4	Obstruction	Cast Material
5	Exam Area Highlighted on Drawing	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
6	Transducer ray exit point	N/A

**Comments**

No Ut exam was able to be performed 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. There were no unacceptable indications observed.

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# Supplemental Drawing

Summary # 075800

Component I.D. 31-RC-1220-4LU-I

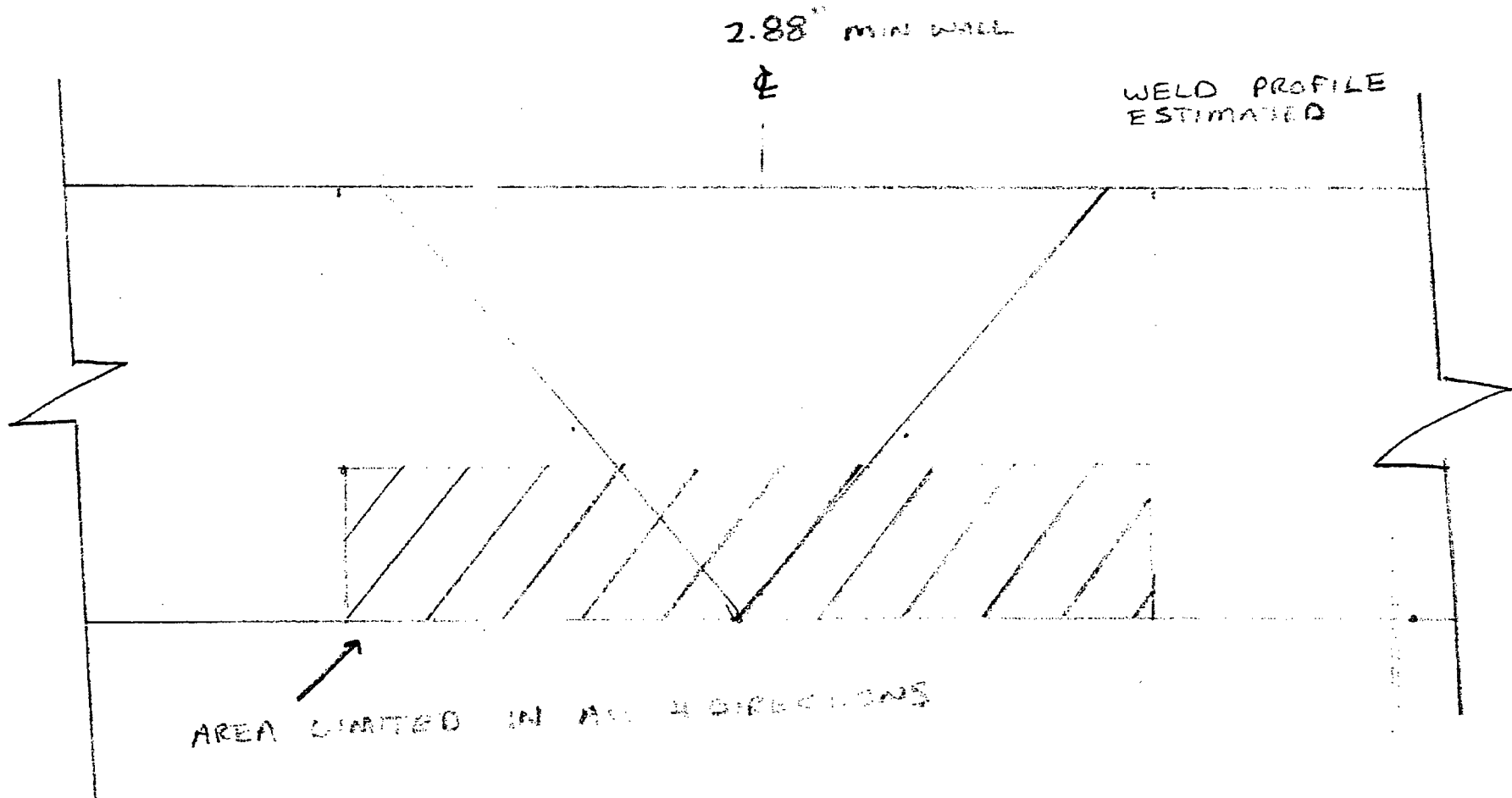
Description Longitudinal Weld

Page of

## Comments

No Ut exam was able to be performed 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.

## Sketch



**REQUEST FOR ADDITIONAL INFORMATION**  
**REQUEST FOR RELIEF REGARDING EXAMINATION COVERAGE**  
**SECOND TEN-YEAR IN-SERVICE INSPECTION INTERVAL**  
**SALEM NUCLEAR GENERATING STATION, UNIT NO. 2**  
**DOCKET NO. 50-311**

**QUESTION**      1.3 (c)    For certain piping welds, Information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers listed below.

Summary #      075900

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Component I.D.    31-RC-1220-4LU-O

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Description      Longitudinal Weld

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		Comments			
1	Weld X-Section	See Attached			
2	Material	Cast S/S ASTM 351-65 CF8M			
3	Thickness / Weld Crown	Thickness 2.88 /      Weld Crown Unknown			
4	Obstruction	Cast Material			
5	Exam Area Highlighted on Drawing	<table border="1" style="display: inline-table;"> <tr> <td style="text-align: center;">Yes</td> <td style="text-align: center;">X</td> <td style="text-align: center;">No</td> </tr> </table>	Yes	X	No
Yes	X	No			
6	Transducer ray exit point	N/A			

**Comments** \_\_\_\_\_

**No Ut exam was able to be performed 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. There were no unacceptable indications observed.**

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# Supplemental Drawing

Summary # 075900

Component I.D. 31-RC-1220-4LU-O

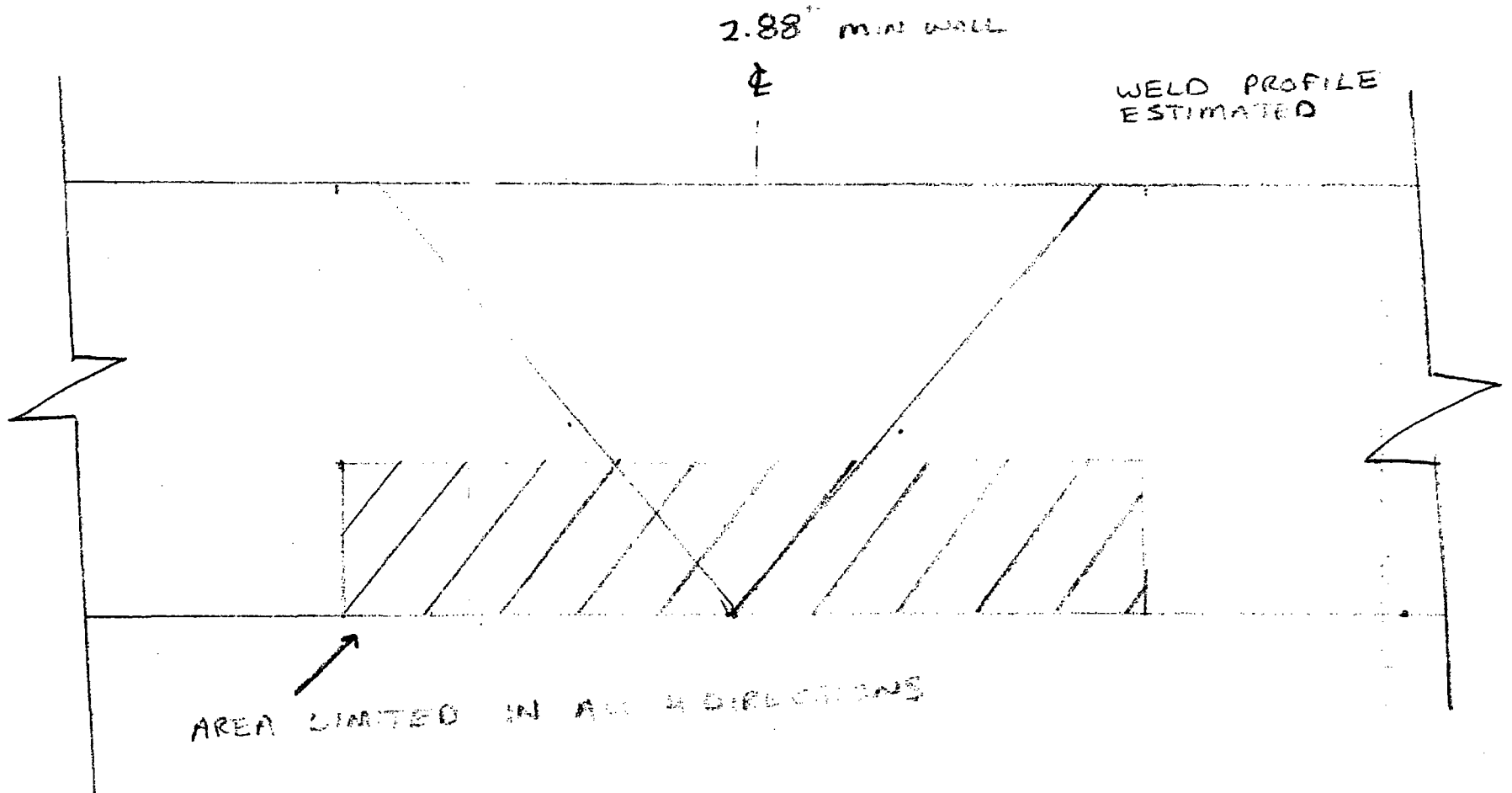
Description Longitudinal Weld

Page of

## Comments

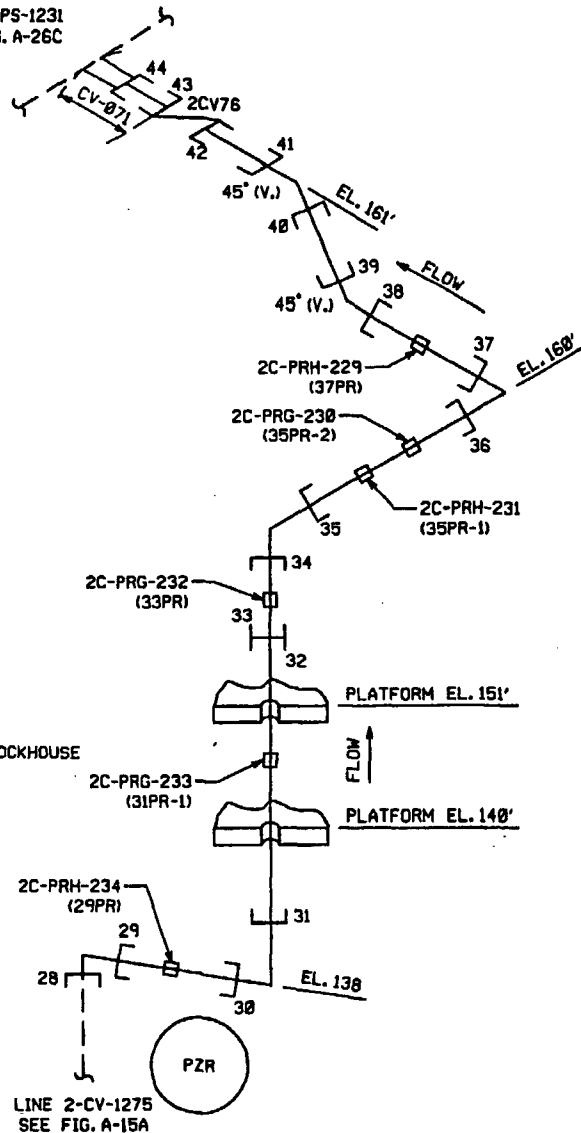
No Ut exam was able to be performed from the elbow side due to the elbow being fabricated from ASTM351-65 CF8M cast stainless steel whose acoustic properties is not conducive for ultrasonic examination.

## Sketch



316

LINE 4-PS-1231  
SEE FIG. A-26C



316

BUILDING: CONTAINMENT	LOCATION: PRZ BLOCKHOUSE	ELEVATIONS: 138' to 161'
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PSEG 150 RC23-13  
P & ID 205301, 205328

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

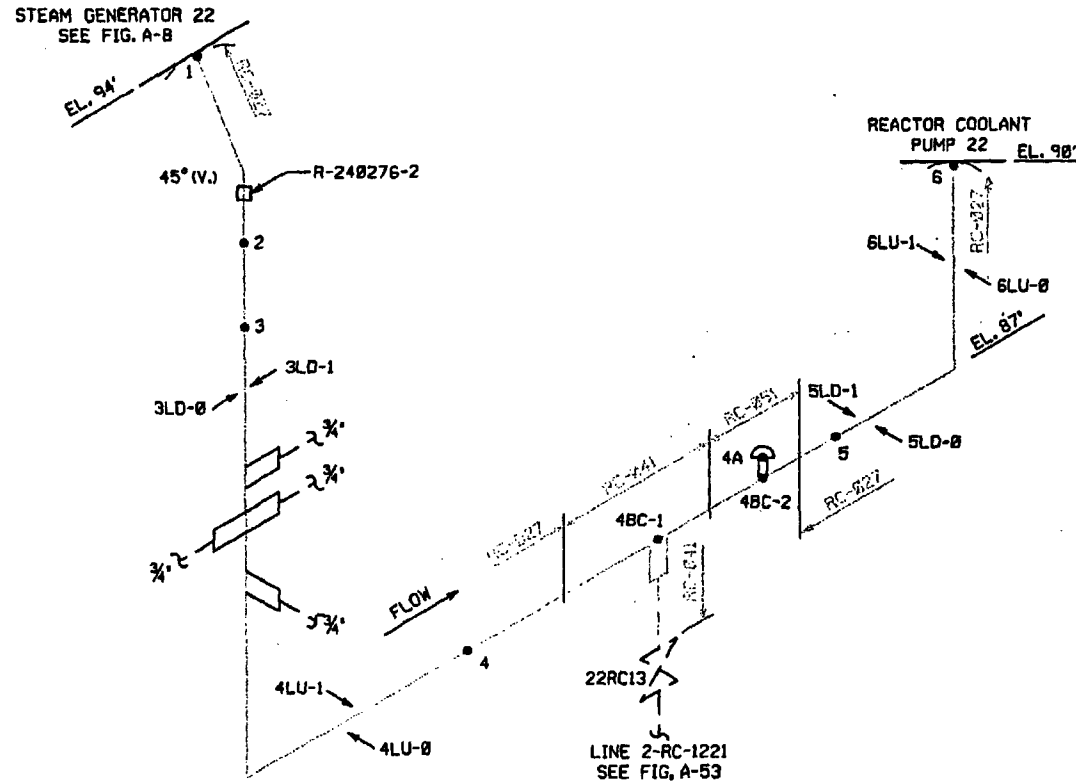
REV	DATE	DESCRIPTION
1		REVISED PER ORDER No. 80038023.

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: CONTAINMENT	LOCATION: BIOSHIELD	ELEVATIONS: 87' to 94'
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PSEG ISO RC23-01  
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-31	REVISION: 1
SYSTEM: REACTOR COOLANT SYSTEM CROSSOVER LEG	
LINE: 31-RC-1220	
THIRD 10 YEAR INSPECTION INTERVAL	

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

**REQUEST FOR ADDITIONAL INFORMATION**  
**REQUEST FOR RELIEF REGARDING EXAMINATION COVERAGE**  
**SECOND TEN-YEAR IN-SERVICE INSPECTION INTERVAL**  
**SALEM NUCLEAR GENERATING STATION, UNIT NO. 2**  
**DOCKET NO. 50-311**

**QUESTION**      1.3 (c)    For certain piping welds, Information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers listed below.

Summary #      074600

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Component I.D.    31-RC-1220-1

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Description      Nozzle to Elbow

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		Comments			
1	Weld X-Section	See Attached			
2	Material	ASTM 351-65 S/S Cast / C/S			
3	Thickness / weld Crown	Thickness 3" / Weld Crown 4"			
4	Obstruction	Material Type & OD Configuration			
5	Exam Area Highlighted on Drawing	<table border="1" style="display: inline-table;"> <tr> <td style="text-align: center;">Yes</td> <td style="text-align: center;">X</td> <td style="text-align: center;">No</td> </tr> </table>	Yes	X	No
Yes	X	No			
6	Transducer ray exit point	N/A			

**Comments**

---

Ut exam was performed of this component using 45 degree shear wave transducer. The ultrasonic examination completed was limited to 50% of the code required coverage being achieved 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. There were no unacceptable indications observed. A liquid penetrant examination and system pressure test was also completed with no recordable indications observed.

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Supplemental Drawing

Summary # 074600

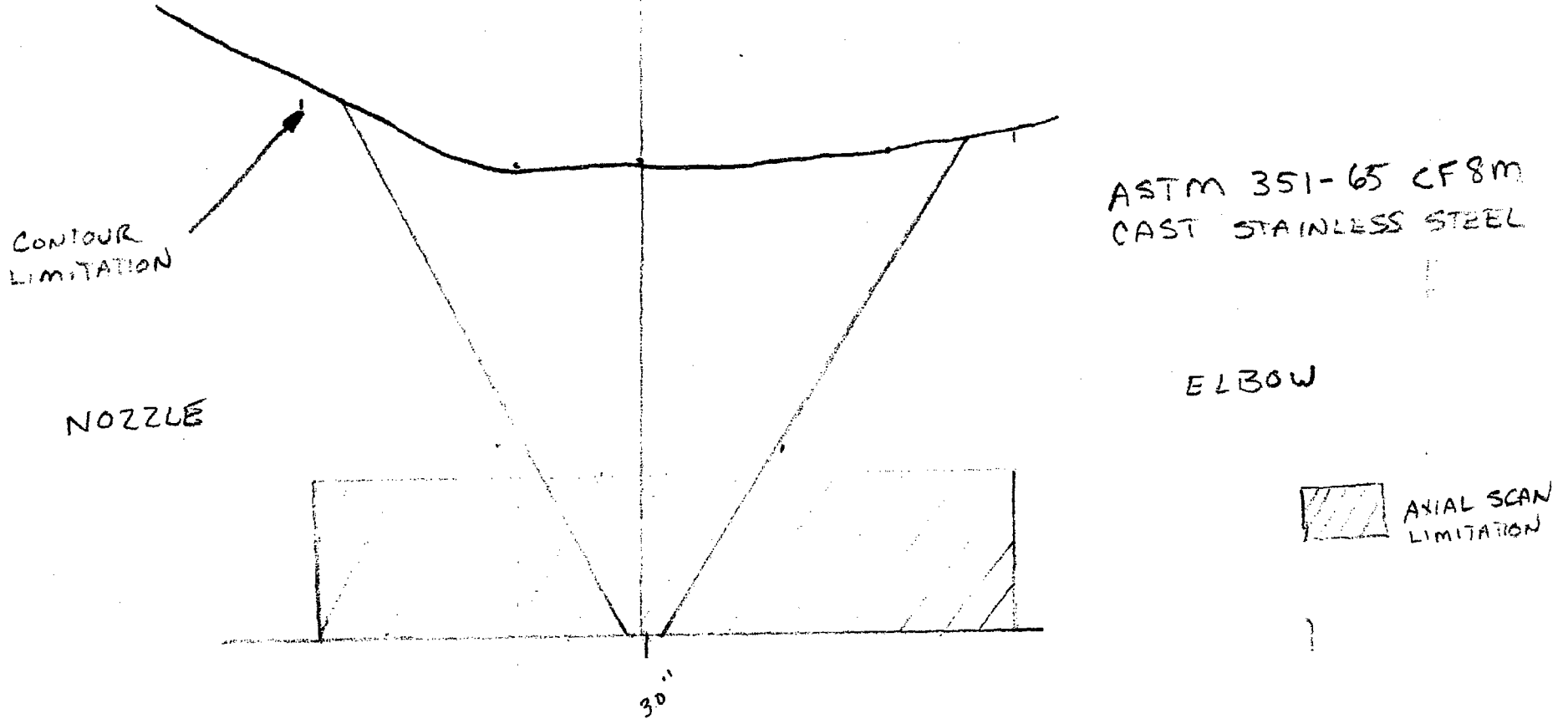
Component I.D. 31-RC-1220-1

Description Nozzle to Elbow

Page of

Comments No examination from upstream or downstream

Sketch





### UT CALIBRATION DATA SHEET

Customer: SALEM UNIT-2, 10 RFO      Exam Date: 04/14/99      Figure No.: B5.70.002

System/Component I.D.: 31-RC-1220-1 (Summary #074600)      Calibration No.: 99S2010

Component Description: Crossover Leg Nozzle to Elbow Weld

ISO/Drawing No: RC-2-3, A-31      Procedure No./Rev.: 54-ISI-121 REV. 01      Code/Accept. Criteria: ASME 1986, Sec. XI

Material: ~~CS~~ SS      Diameter: 31.0" OD      Thickness: 2.3" Nom.  
DTL 4-20-99

**INSTRUMENT SETTINGS      SEARCH UNIT      CALIBRATION STANDARD**

Mfg: STAVELEY      Model: SONIC-136      DB /Serial No.: 34199      Cal. Block No. 2.312-SS-37-SAM

Serial/MT&E#: DB# 12102      Size: (2) .5 X .75      Cal. Block Thickness (in): 2.31"

Mat. Cal./Velocity: 0.169 in/micro sec.      Freq. (MHz): 2.25      Cal. Block Dia. (in): FLAT

Delay: 0.480"      Zero Offset: N/A      Long/Shear/Single/Dual: LONG/DUAL      Temp (F) Block: 71      Comp.: 83

Each Major Screen Div.#: 0.5"      Nominal Angle: 45      Measured: 45      Therm. No.: DB# 15352

Channel#: 17      Fixture/Size: 1.25" x 1.25"      Couplant Type: ULTRAGEL II

Range: 5.00"      Freq (MHz): 2.25      Cable Type & Length: RG-174/12.0'      Couplant Batch No.: 95325

Damping: 500 Ohms      Reject: OFF      No. of Connectors: 0      **CALIBRATION STD. SIMULATOR**

Rep. Rate: 4 Khz      Pulse: 222 ns      Serial No.: N/A

Gate: OFF      Display: Filter 1      **DAC PLOT**      Sweep Position/Depth: N/A

Mode: Dual      Jack: XMT-RCV      Signal Amp. (%): N/A

Ref. Sensitivity: 57.2 dB      Gain DB (dB): N/A

Scan Sensitivity: 69.2 dB      **EXAM DATA**

(Amt. dB to bring Notch to DAC)      Scan Direction to Weld: CW/CCW

Notch dB (Piping): 57.2 db      (0 to Material, US, DS, CW, CCW, Vessel: UP/Down)

Notch dB (Vessels): N/A      Recordable Geometry (Yes/No): NO

**CALIBRATION CHECK**      Recordable Indications (Yes/No): NO

	Time	OK	Initials
Initial Cal:	1142	✓	⓪
Init. Sim. Cal:	N/A		
Intermediate:	N/A		
Intermediate:	N/A		
Intermediate:	N/A		
Intermediate:	N/A		
Intermediate:	N/A		
Final Cal.:	1733	✓	⓪

Limited Exam (Yes/No): Note-1      Percent Scan Completed: 100%

Percent Exam Completed: 50.0%

**0 DEG. WELD THICKNESS ONLY**

Comp.: SG Nozzle (Note-2)

BM: 2.9"      HAZ: N/A

C/L Weld: 2.4"

Comp.: Elbow (Note-2)

BM: N/A      HAZ: N/A

Scan Direction on Cal. Block      0 Deg.      Axial      Circ      Crown HT.: FLUSH

(Yes/No)      NO      NO      YES      Weld Width: ~2.0"

Reflector	1/4T SDH	3/4T SDH	ID Notch				
Sweep Pos./Depth in Inches	0.58"	1.70"	2.30"				
Amplitude in %	40	80	80				
Gain in dB	51.6	51.6	57.2				

Notes: Note-1: Circumferential examination performed on the weld. The total Examination volume obtained is 50.0%. The total examination volume is derived from previous data. The limitations for this weld are from the nozzle configuration and from the acoustic properties of the cast stainless steel elbow. The surface distance between the 45 degree transducer exit point and the ID notch is 2.3 inches.

Note-2: Ultrasonic thickness profiles performed with a zero degree, 4.0 megahertz, 0.50-inch, dual element transducer calibrated with a SS step wedge.

Examiner: M.W. Key      Level: III      Date: 04/14/99      Examiner: N/A      Level:      Date:

Sign: *M.W. Key*      Sign: *FACTORY MUTUAL*

Reviewed: D.J. Langenfeld      Level: II      Date:      ANII Review: *ENGINEERING ASSOCIATION*      Date:

Sign: *D.J. Langenfeld*      Sign: *Johns Key*      Date: 4-20-99      Date: 5-4-99

Customer: WAYNE DENLINGER      Date:      Page: 2 of 3

Sign: *Wayne Denlinger*      Date: 4-29-99

**REQUEST FOR ADDITIONAL INFORMATION**  
**REQUEST FOR RELIEF REGARDING EXAMINATION COVERAGE**  
**SECOND TEN-YEAR IN-SERVICE INSPECTION INTERVAL**  
**SALEM NUCLEAR GENERATING STATION, UNIT NO. 2**  
**DOCKET NO. 50-311**

**QUESTION**      1.3 (c) For certain piping welds, information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers listed below.

Summary #      072300

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Component I.D.      31-RC-1230-1

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Description      Nozzle to Elbow

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		Comments
1	Weld X-Section	See Attached
2	Material	ASTM 351-65 S/S Cast / C/S
3	Thickness / weld Crown	Thickness 3" / Weld Crown 4"
4	Obstruction	Material Type & OD Configuration
5	Exam Area Highlighted on Drawing	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> X <input type="checkbox"/> No
6	Transducer ray exit point	N/A

**Comments**

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Ut exam was performed of this component using 45 degree shear wave transducer. The ultrasonic examination completed was limited to 50% of the code required coverage being achieved 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. There were no unacceptable indications observed. A liquid penetrant examination and system pressure test was also completed with no recordable indications observed.

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Supplemental Drawing

Summary # 072300

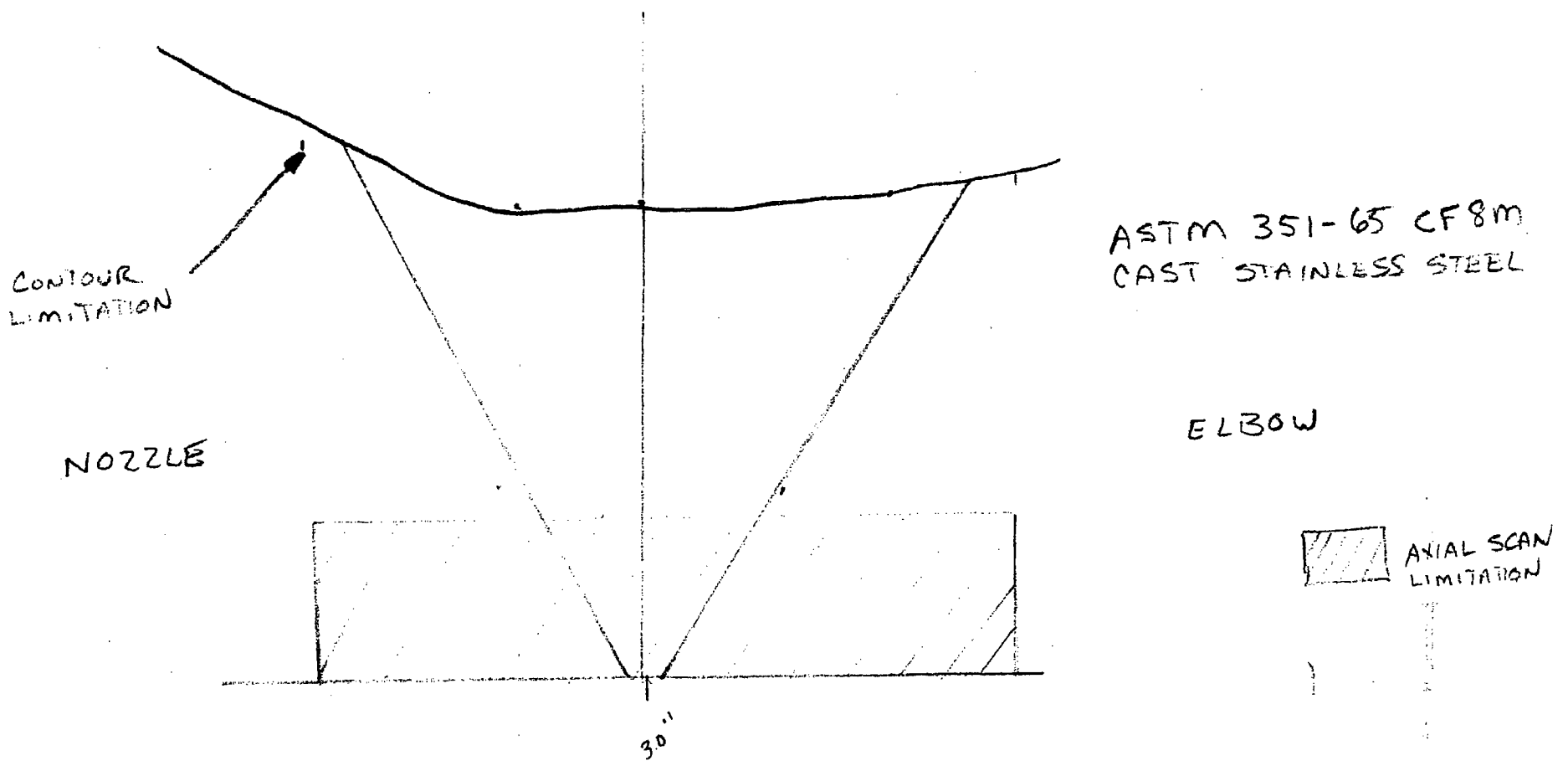
Component I.D. 31-RC-1230-1

Description Nozzle to Elbow

Page of

Comments No examination from upstream or downstream

Sketch



**UT CALIBRATION DATA SHEET**

Customer: SALEM UNIT-2, 10 RFO      Exam Date: 04/14/99      Figure No.: B5.70.001

System/Component I.D.: 31-RC-1230-1 (Summary #072300)      Calibration No.: 99S2009

Component Description: Crossover Leg Nozzle to Elbow Weld

ISO/Drawing No: RC-2-3, A-30      Procedure No./Rev.: 54-ISI-121 REV. 01      Code/Accept. Criteria: ASME 1986, Sec. XI

 Material: ~~CS~~ SS <sup>D3L</sup> 4-20-99      Diameter: 31.0" OD      Thickness: 2.3" Nom.

INSTRUMENT SETTINGS	SEARCH UNIT	CALIBRATION STANDARD
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Mfg: STAVELEY      Model: SONIC-136	DB /Serial No.: 34199	Cal. Block No. 2.312-SS-37-SAM
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Serial/MT&E#: DB# 12102	Size: (2) .5 X .75	Cal. Block Thickness (in): 2.31"
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Mat. Cal./Velocity: 0.169 in/micro sec.	Freq. (MHz): 2.25	Cal. Block Dia. (in): FLAT
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Delay: 0.480"      Zero Offset: N/A	Long/Shear/Single/Dual: LONG/DUAL	Temp (F) Block: 71      Comp.: 83
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Each Major Screen Div.#: 0.5"	Nominal Angle: 45      Measured: 45	Therm. No.: DB# 15352
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Channel#: 17	Fixture/Size: 1.25" x 1.25"	Couplant Type: ULTRAGEL II
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Range: 5.00"      Freq (MHz): 2.25	Cable Type & Length: RG-174/12.0'	Couplant Batch No.: 95325
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Damping: 500 Ohms      Reject: OFF	No. of Connectors: 0	<b>CALIBRATION STD. SIMULATOR</b>
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Rep. Rate: 4 KHz      Pulse: 222 ns		Serial No.: N/A
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Gate: OFF      Display: Filter I	<b>DAC PLOT</b>	Sweep Position/Depth: N/A
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Mode: Dual      Jack: XMT-RCV		Signal Amp. (%): N/A
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Ref. Sensitivity: 57.2 dB		Gain DB (dB): N/A
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Scan Sensitivity: 69.2 dB		<b>EXAM DATA</b>
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(Amt. dB to bring Notch to DAC)		Scan Direction to Weld: CW/CCW
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Notch dB (Piping): 57.2 db		(0 to Material, US, DS, CW, CCW, Vessel: UP/Down)
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Notch dB (Vessels): N/A		Recordable Geometry (Yes/No): NO
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		Recordable Indications (Yes/No): NO
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CALIBRATION CHECK		
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		Limited Exam (Yes/No): Note-1
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Time OK Initials		Percent Scan Completed: 100%
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Initial Cal: 1142 ✓ (M)		Percent Exam Completed: 50.0%
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Init. Sim. Cal: N/A		<b>0 DEG. WELD THICKNESS ONLY</b>
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Intermediate: N/A		Comp.: SG Nozzle (Note-2)
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Intermediate: N/A		BM: 3.0"      HAZ: N/A
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Intermediate: N/A		C/L Weld: 2.4"
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Intermediate: N/A		Comp.: Elbow (Note-2)
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Final Cal: 1733 ✓ (D)		BM: N/A      HAZ: N/A
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Scan Direction on Cal. Block	0 Deg.	Axial	Circ	
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(Yes/No)	NO	NO	YES	
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Reflector	1/4T SDH	3/4T SDH	ID Notch	
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Sweep Pos./Depth in Inches	0.58"	1.70"	2.30"	
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Amplitude in %	40	80	80	
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Gain in dB	51.6	51.6	57.2	
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**Notes:** Note-1: Circumferential examination performed on the weld. The total Examination volume obtained is 50.0%. The total examination volume is derived from previous data. The limitations for this weld are from the nozzle configuration and from the acoustic properties of the cast stainless steel elbow. The surface distance between the 45 degree transducer exit point and the ID notch is 2.3 inches.

Note-2: Ultrasonic thickness profiles performed with a zero degree, 4.0 megahertz, 0.50-inch, dual element transducer calibrated with a SS step wedge.

Examiner: M.W. Key      Level: III      Date: 04/14/99	Examiner: N/A      Level:      Date: <b>FACTORY MUTUAL</b>
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Reviewed: D.J. Langenfeld      Level: II      Date: 4-20-99	ANII Review: <i>[Signature]</i> Date: 5-3-99
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Customer: WAYNE DENLINGER      Date: 4-29-99	
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**REQUEST FOR ADDITIONAL INFORMATION**  
**REQUEST FOR RELIEF REGARDING EXAMINATION COVERAGE**  
**SECOND TEN-YEAR IN-SERVICE INSPECTION INTERVAL**  
**SALEM NUCLEAR GENERATING STATION, UNIT NO. 2**  
**DOCKET NO. 50-311**

**QUESTION**      1.3 (c)    For certain piping welds, information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers listed below.

Summary #      070000

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Component I.D.    31-RC-1240-1

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Description      Nozzle to Elbow

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		Comments			
1	Weld X-Section	See Attached			
2	Material	ASTM 351-65 S/S Cast / C/S			
3	Thickness / weld Crown	Thickness 3" / Weld Crown 4"			
4	Obstruction	Material Type & OD Configuration			
5	Exam Area Highlighted on Drawing	<table border="1" style="display: inline-table;"> <tr> <td style="text-align: center;">Yes</td> <td style="text-align: center;">X</td> <td style="text-align: center;">No</td> </tr> </table>	Yes	X	No
Yes	X	No			
6	Transducer ray exit point	N/A			

**Comments**

---

Ut exam was performed of this component using 45 degree shear wave transducer. The ultrasonic examination completed was limited to 50% of the code required coverage being achieved 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. There were no unacceptable indications observed. A liquid penetrant examination and system pressure test was also completed with no record able indications observed.

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Supplemental Drawing

Summary # 070000

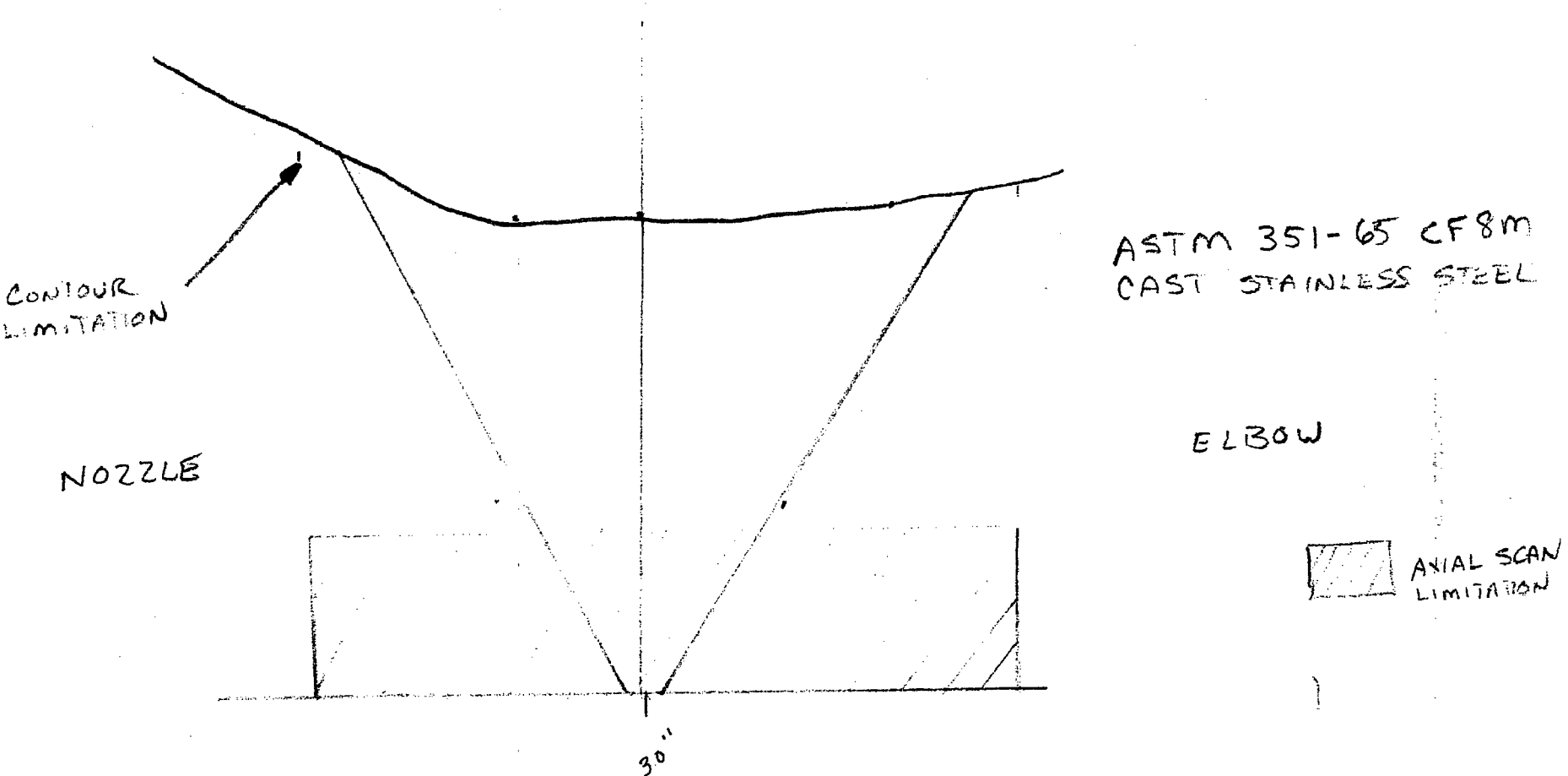
Component I.D. 31-RC-1240-1

Description Nozzle to Elbow

Page of

Comments No examination from upstream or downstream

Sketch



070000 **SwRI ULTRASONIC 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 1136** SHEET No **860004**  
**EXAM ENDED 1155**

EXAMINATION AREA (SYST/COMP) **REACTOR COOLANT** (LINE/SUBASSEMBLY) **31-RC-1240** (IDENTIFICATION) **1** L<sub>0</sub> LOCATION **1** W<sub>0</sub> LOCATION **WELD 2**

EXAMINER **B. ROBERTS** SNT LEVEL **II** PROCEDURE \* **No 9AM2-UT3** CALIBRATION SHEET(S) **147019** ANGLE USED **45** WELD TYPE **NOZZLE TO ELBOW** EXAM SURFACE TEMP °F **78**  
**T. JACKSON** SNT LEVEL **II** REV **3** CHG **30** SCANNING dB **71.8** WELD LENGTH **117 1/4** BEFORE **78** AFTER **78**

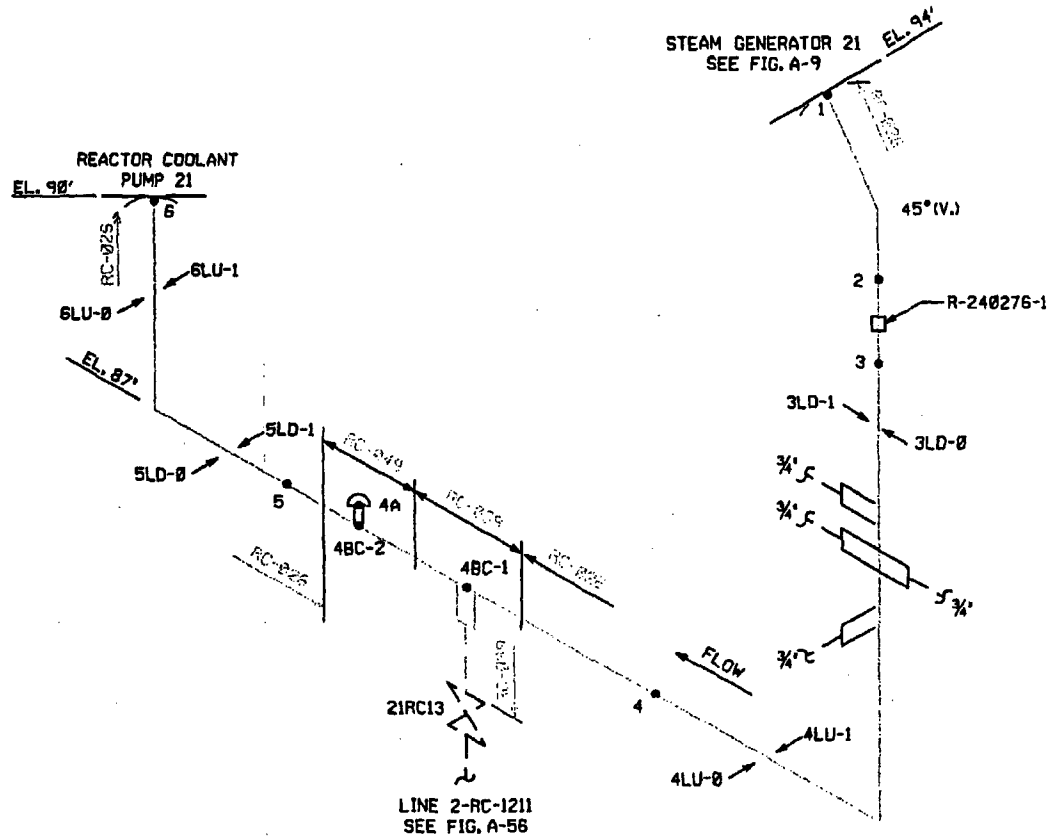
IND No	% OF DAC MAX	W MAX		L1				L MAX	L2				SEARCH UNIT LOC	SEARCH UNIT ANGLE	DAMPS (IF YES, EXPLAIN)	REMARKS	INITIAL		
		W	MP	20% DAC	50% DAC	100% DAC	1/2 MAX DAC		1/2 MAX DAC	100% DAC	50% DAC	20% DAC							
																<b>NO RECORDABLE INDICATIONS</b>	<b>ON WELD 45°</b>	<b>c.w/ccw</b>	<b>BRZ</b>

**REVIEWED & ACCEPTED**  
**FACTORY MUTUAL**  
**ENGINEERING ASSOCIATION**  
*William D. White* 11/9/94  
 NORTH NUCLEAR INSERVICE INSP. DATE

**PSEG**  
**INSPECTION SERVICES**  
 Reviewed and Approved  
*W.D. White* 11/9/94  
 N.D.E. SUPERVISOR

REMARKS / LIMITATIONS. IF NONE SO STATE: **NO EXAM DOWNSTREAM DUE TO NOZZLE CONFIGURATION AND NO EXAM DOWNSTREAM DUE TO DIFFERENT ACOUSTICAL PROPERTIES OF ELBOW. BRZ**  
**\* US2-RA-IS-22-0082 (Q) REV. 0**

REVIEWED BY: *William D. White* SNT LEVEL **II** DATE **28 OCT 94** CONTINUED ON SHEET **N/A** PAGE **1** OF **1**



317

317

BUILDING: CONTAINMENT	LOCATION: BIOSHIELD	ELEVATIONS: 87' to 94'
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PSEG ISO RC23-01  
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-32	REVISION: 1
SYSTEM: REACTOR COOLANT SYSTEM	
CROSSOVER LEG	
LINE: 31-RC-1210	
THIRD 10 YEAR INSPECTION INTERVAL	

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

**REQUEST FOR ADDITIONAL INFORMATION**  
**REQUEST FOR RELIEF REGARDING EXAMINATION COVERAGE**  
**SECOND TEN-YEAR IN-SERVICE INSPECTION INTERVAL**  
**SALEM NUCLEAR GENERATING STATION, UNIT NO. 2**  
**DOCKET NO. 50-311**

**QUESTION**      1.3 (c) For certain piping welds, Information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers listed below.

Summary #      076800

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Component I.D.      31-RC-1210-1

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Description      Nozzle to Elbow

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		Comments			
1	Weld X-Section	See Attached			
2	Material	ASTM 351-65 S/S Cast / C/S			
3	Thickness / weld Crown	Thickness 3" / Weld Crown 4"			
4	Obstruction	Material Type & OD Configuration			
5	Exam Area Highlighted on Drawing	<table border="1" style="display: inline-table;"> <tr> <td style="text-align: center;">Yes</td> <td style="text-align: center;">X</td> <td style="text-align: center;">No</td> </tr> </table>	Yes	X	No
Yes	X	No			
6	Transducer ray exit point	N/A			

**Comments**

---

Ut exam was performed of this component using 45 degree shear wave transducer. The ultrasonic examination completed was limited to 50% of the code required coverage being achieved 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. There were no unacceptable indications observed. A liquid penetrant examination and system pressure test was also completed with no recordable indications observed.

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Supplemental Drawing

Summary # 076800

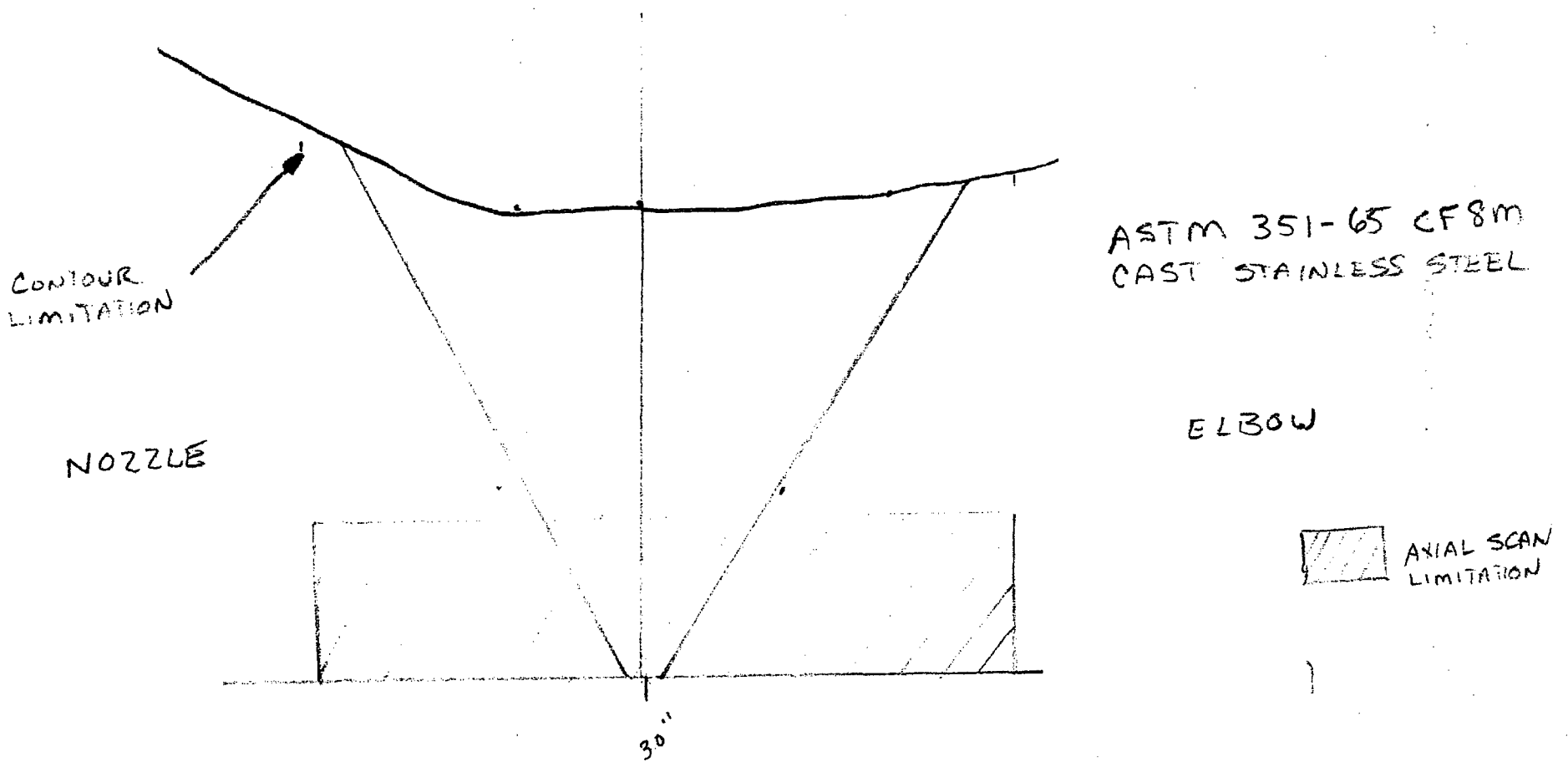
Component I.D. 31-RC-1210-1

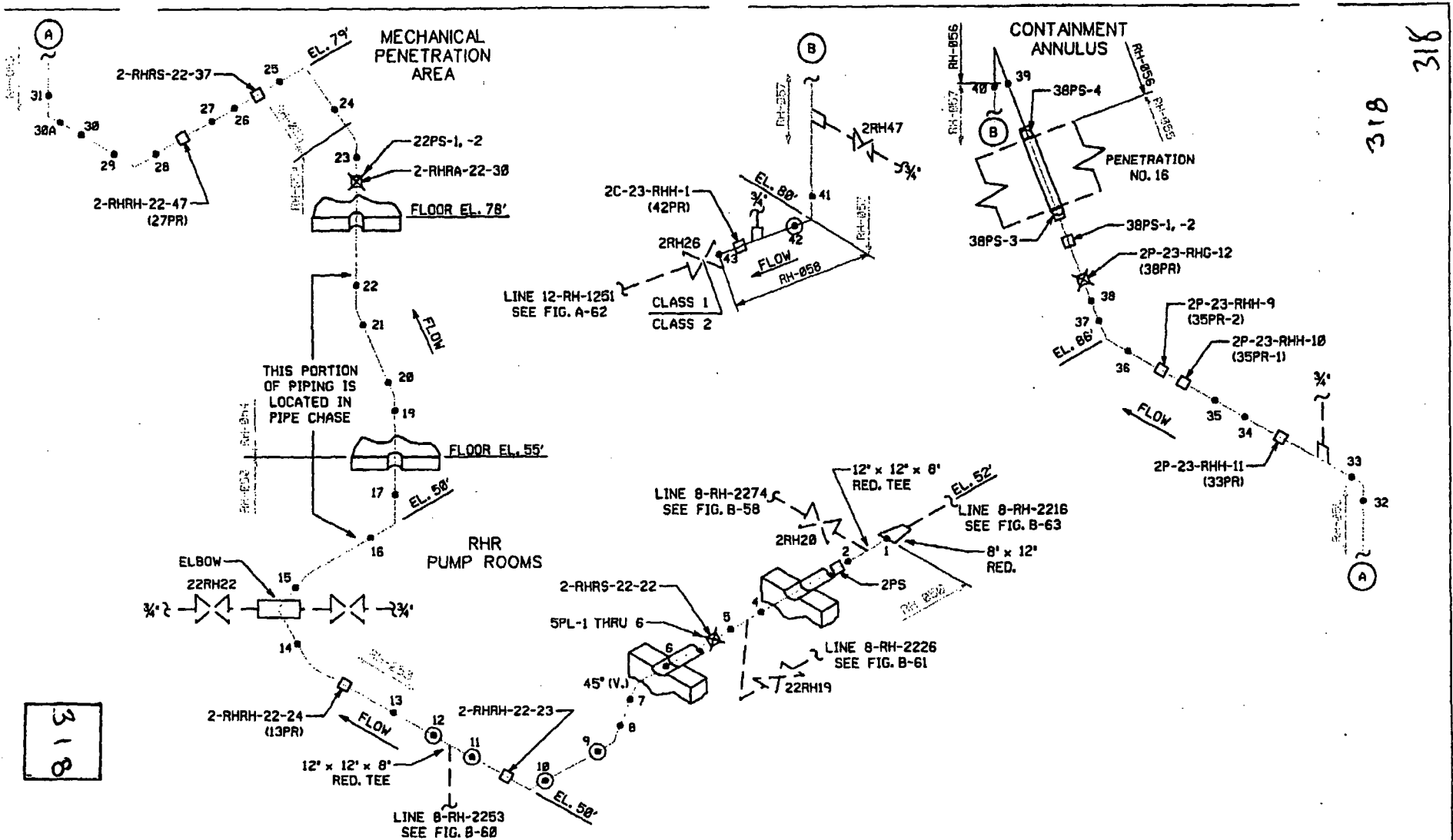
Description Nozzle to Elbow

Page of

Comments No examination from upstream or downstream

Sketch





BUILDING: AUXILIARY	LOCATION: 22 RHR PUMP ROOM MECHANICAL PENETRATION AREA	ELEVATIONS: 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	

REQUEST FOR ADDITIONAL INFORMATION  
 REQUEST FOR RELIEF REGARDING EXAMINATION COVERAGE  
 SECOND TEN-YEAR IN-SERVICE INSPECTION INTERVAL  
 SALEM NUCLEAR GENERATING STATION, UNIT NO. 2  
 DOCKET NO. 50-311

**QUESTION**      **2.2(a)**    For certain component attachments and support welds, information submitted by the licensee is not sufficient to demonstrate impracticality. Please submit further information in the form of drawings, sketches and/or descriptions to support this evaluation for the following components, as identified by licensee identification numbers listed below.

Summary #      573055

Component I.D.    12-RH-2252-5PL-1 thru 6

Description      PIPE LUG

		Comments
1	Weld X-Section	N/A
2	Material	Stainless Steel
3	Thickness / weld Crown	N/A
4	Obstruction	SYSTEM CONFIGURATION
5	Exam Area Highlighted on Drawing	Yes   X   No
6	Transducer ray exit point	N/A

**Comments**

PT exam was conducted of this component. The PT exam was limited to 33% because the lugs 2,3,4,5 due to accessibility. The inaccessible pipe lugs are located within a permanent piping penetration sleeve. A system pressure test was also completed with no unacceptable indications observed.

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SECOND INTERVAL, SECOND PERIOD, SECOND

**SUMMARY #:** 573055 **99RF EXAMINATION SUMMARY RECORD**  
**SALEM NUCLEAR GENERATING STATION, UNIT 2**

**SYSTEM:** RESIDUAL HEAT REMOVAL SYSTEM **CONFIG.:** PIPE LUG  
**LINE #:** 12-RH-2252 [PSE&G #12"-2RH1006] **RELIEF REQ.:** RR-C1  
**COMP. ID.:** 12-RH-2252-5PL-1 THRU 6 **CAL. BLOCK:**

**LTP INSTRUCTIONS:** LIMITATION: EXAMINED (PT) 33% OF THE CODE REQUIRED AREA, NO EXAM ON LUG NOS. 2, 3, 4, AND 5 DUE TO INACCESSIBILITY. THE LUGS ARE LOCATED INSIDE A PIPING PENETRATION SLEEVE. NOTE: NEXT SCHEDULED EXAM THE Lo NEEDS TO BE MARKED.

NDE METHOD IN LTP	PROCEDURE	RESULTS FILE NDE EXAMS	EXAM RECORD	CALIBRATION RECORD	NOR	GO	OTH	RESOLUTION RECORD	REMARKS
PT	54-ISI-240-36	PT	2DP093	-	X	-	-	-	99RF - FTI UNDER W.O.#990125024 TO PERFORM NDE. THE WELD Lo WAS FOUND NOT MARKED. LIMITATION: EXAMINED (PT) 33% OF THE CODE REQUIRED AREA, NO EXAM ON LUG NOS. 2, 3, 4, AND 5 DUE TO INACCESSIBILITY. THE LUGS ARE LOCATED INSIDE A PIPING PENETRATION SLE

REVIEWED & ACCEPTED  
 FACTORY MUTUAL  
 ENGINEERING ASSOCIATION  
 AUTH. NUCLEAR SERVICE INSP. DATE

Prepared by: *[Signature]* Date: 05/19/99  
 Reviewed by: *[Signature]* Total dose received while performing the required NDE examinations *MP* Man Mrem

SUMMARY #: 573055





## EXAMINATION SUMMARY

Summary No: 573055 Data Package No.: S2DP093

**Site:** Salem Unit 2 (U2R10)

**System:** Residual Heat Removal

**Identification:** 12-RH-2252-5PL  
-1 Through 6

**Description:** Pipe Lug

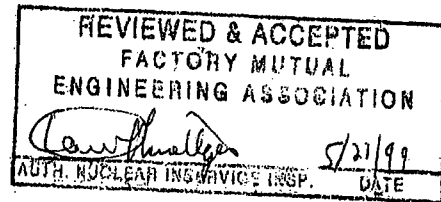
**ASME Section XI Category:** C-C

**ASME Section XI Item No.:** C3.20

<b>Examination Methods:</b> PT
<b>Examination Procedures:</b> 54-ISI-240-36 (PT)
<b>Cal. Sheet No(s):</b> N/A
<b>Figure No.:</b> C3.20.004
<b>Examination Results:</b>
<input checked="" type="checkbox"/> NRI <input type="checkbox"/> RI <input type="checkbox"/> Geometric

A PT Examination of the Pipe Lug was performed with no recordable indications noted. No PT examination performed on Lugs 2, 3, 4 and 5 due to inaccessibility. The inaccessible Pipe Lugs are located inside a Permanent Piping Penetration Sleeve, therefore 33.0% of the code required surface area was examined as denoted in previous data.

The PT examination results were compared to previous data.



NRI = No Recordable Indications  
RI = Recordable Indication

D.J. LANGENFELD  
 Prepared By D.J. Langenfeld Date 5-12-99 Reviewed By [Signature] Date 5-17-99 Utility Review By [Signature] Date 5-18-99

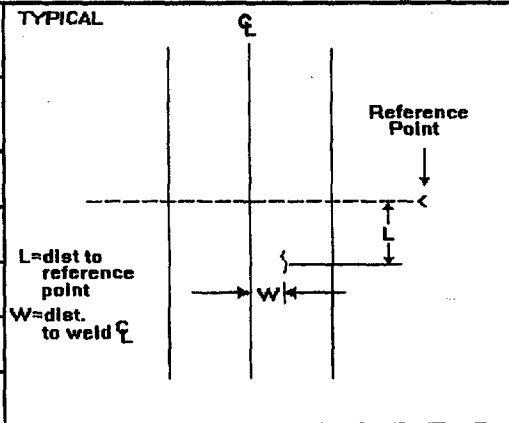


## LIQUID PENETRANT EXAMINATION

Customer: <b>SALEM UNIT-2, 10 RFO</b>	Exam Date: <b>05/06/99</b>	Figure No.: <b>C3.20.004</b>
System/Component I.D.: <b>12-RH-2252-5PL-1 to 6 (Summary #573055)</b>		Nominal Thickness: <b>N/A</b>
Component Description: <b>RHR Pipe Lug</b>		
Stage of Fabrication (End Prep, Repair, Root, In Process, Final): <b>FINAL</b>	ISO/Drawing No: <b>RH-2-2, B-68</b>	
Surface (ISI Prep, As Welded, Ground, Other): <b>ISI PREP</b>	Procedure No./Rev.: <b>54-ISI-240, Rev. 36</b>	Temperature (F): <b>72</b>
M&TE No. (Thermometer): <b>DB# 15352</b>	Calibration Due Date: <b>07/19/1999</b>	Acceptance Std (ASME/ANSI, etc): <b>ASME 1986, SECTION XI</b>
M&TE No. (Black Light Meter): <b>N/A</b>	Calibration Due Date: <b>N/A</b>	Measure Intensity uW/CM <sup>2</sup> : <b>N/A</b>

Penetrant Material: Cleaner: **98A11K** Penetrant: **95L03K** Developer: **98L03K**  
 Batch or Lot Numbers

INDICATION LOCATION					
IND #	Ref Point Location	Size	Location L W	Status A/U	Orientation to Weld
NRI					



Remarks/Sketch (if necessary)

**No recordable indications found.**

**Note-1: No PT examination on Lug No.'s 2, 3, 4 and 5 was performed due to inaccessibility. These Lugs are located inside a Piping Penetration Sleeve, therefore 33% of the code required surface area was examined.**

**Contract No. 1220721**

Examiner: <b>H.E. Poster</b> Level: II Date: <b>05/06/99</b> Sign: <i>H.E. Poster</i>	Examiner: <b>N/A</b> Level: <b>N/A</b> Date: _____ Sign: _____
Reviewed: <b>D.J. Langenfeld</b> Level: II Date: <b>05/07/99</b> Sign: <i>D.J. Langenfeld</i>	ANII Review: _____ Date: <b>5/11/99</b> Sign: <i>Carthage</i>
Customer: <b>WAYNE DENLINGER</b> Date: <b>5-18-99</b> Sign: <i>Wayne Denlinger</i>	NCR No.: <b>N/A</b>

## 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 = AI) AI= ↓  
 Percentage Of Coverage (A-AI)/A= ↓

### VOLUMETRIC EXAMINATIONS

#### A. Axial Exams (Indications Parallel To Weld)

1. Compute Exam Volume	(height x width x length) = Vt1	<u>3.40</u>
2. Compute Vol. Not Covered Upstream	= A	<u>.99</u>
3. Compute Upstream Limitation Percentage	(A / Vt1) x 100 = Z1	<u>29.12</u>
4. Compute Vol. Not Covered Downstream	= B	<u>.49</u>
5. Compute Downstream Limitation Percentage	(B / Vt1) x 100 = Z2	<u>14.41</u>

#### B. Circumferential Exams (Indications Perpendicular To Weld)

1. Compute Exam Volume	(height x width x length) = Vt2	<u>4.64</u>
2. Compute Vol. Not Covered CW	= C	<u>.77</u>
3. Compute CW Limitation Percentage	(C / Vt2) x 100 = Z3	<u>16.59</u>
4. Compute Vol. Not Covered CCW	= D	<u>.77</u>
5. Compute CCW Limitation Percentage	(D / Vt2) x 100 = Z4	<u>16.59</u>

#### C. Total Coverage

1. Compute Total Limitation Percentage	(Z1+Z2+Z3+Z4) / 4 = L	<u>19.18</u>
2. Compute Total Coverage	100 - L	<u>80.82</u>

REMARKS: \_\_\_\_\_

322

701730

322



707730

## SWRI PROFILE AND THICKNESS INFORMATION RECORD

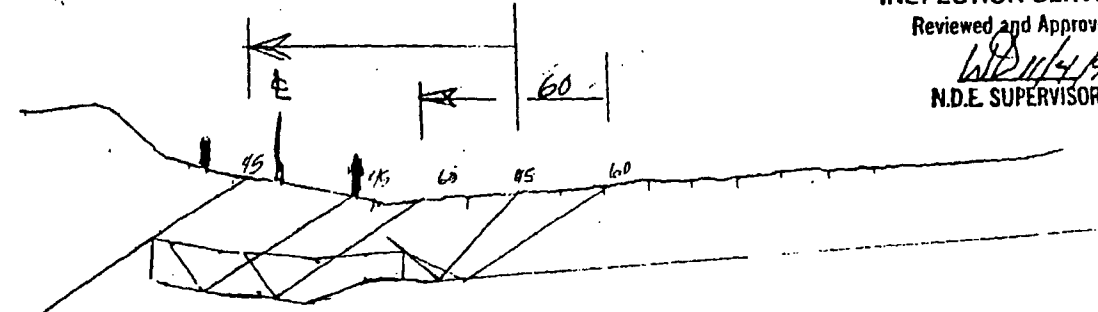
PROJECT NO: 17-6399		SITE: Salem Generating Station, Unit 2		DATE: DAY - MONTH - YEAR 25 OCT 94		TIME (24 HR. CLOCK) INT. 1538 FINAL 1612		SHEET NO: 135020		
EXAMINER B. ROBERDS		SNT LEVEL II	THK. MEAS. REQ'D BY PROCEDURE No SAM 2-UT49 REV 0 *		INSTRUMENT: SONIC MARK I <input type="checkbox"/> OTHER SONIC 136 <input type="checkbox"/>		SERIAL NO: 860K		COMPONENT ID: P-CV-2257-7	
EXAMINER M. COTTEN		SNT LEVEL IT	CHO 1 ICN <input checked="" type="checkbox"/> N/A		COUPLANT: GLYCERINE <input type="checkbox"/> WATER <input type="checkbox"/> OTHER (SPECIFY) SONATRAC 40 #94014				REFERENCE BLK NO: 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	4 KHZ
JACK USED	RCV/XMT
TRANS MODE	DUAL

VALVE

PIPE

80° - 39° - 29° - 44° - 54° - 54° - 54° - 54° →



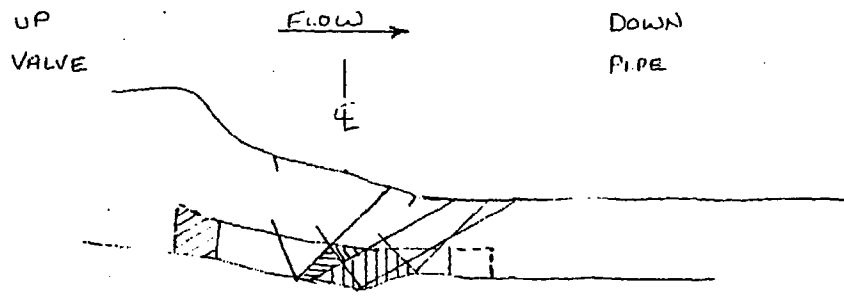
**PSEB**  
INSPECTION SERVICES  
Reviewed and Approved  
*[Signature]*  
N.D.E. SUPERVISOR

CROWN WIDTH = 7/8  
\*VSJ-RA-IS-ZZ-0088 REV 00

PROFILE AT 90°

REVIEWED BY: <i>[Signature]</i>		SNT LEVEL: II		DATE: 29 OCT 94		NAME: <i>[Signature]</i>		SNT LEVEL: II	
		45° Search Unit chosen for coverage using 2/8, 4/8, 10/8 nodes.							
		60° Search Unit chosen for coverage using 2/8, 4/8, 10/8 nodes.							

321



SALEM UNIT 2 17-6399  
 CHEMICAL VOLUME CONTROL  
 3-CV-2257-7  
 VICTOR MORTON III 31 OCT 94  
 FOR LIMITATION COVERAGE ONLY.

- = AREA NOT COVERED CW/CCW
- = AREA NOT COVERED UP/DOWN
- = AREA NOT COVERED UPSTREAM SIDE.
- = AREA NOT COVERED DOWNSTREAM SIDE
- = CIRCUMFERENTIAL AREA

323

707750



Weld Profile & Thickness Record

Report No.: \_\_\_\_\_

Page: \_\_\_\_\_ of \_\_\_\_\_

Summary No.: 734 111

Examiner: DREW PETERSON

Examiner: N/A

Other: \_\_\_\_\_

Level: II

Level: N/A

Level: \_\_\_\_\_

Reviewer: Wes Mauer

Site Review: Wayne DeLuca

ANII Review: [Signature]

Date: 10/27/03

Date: 10-29-03

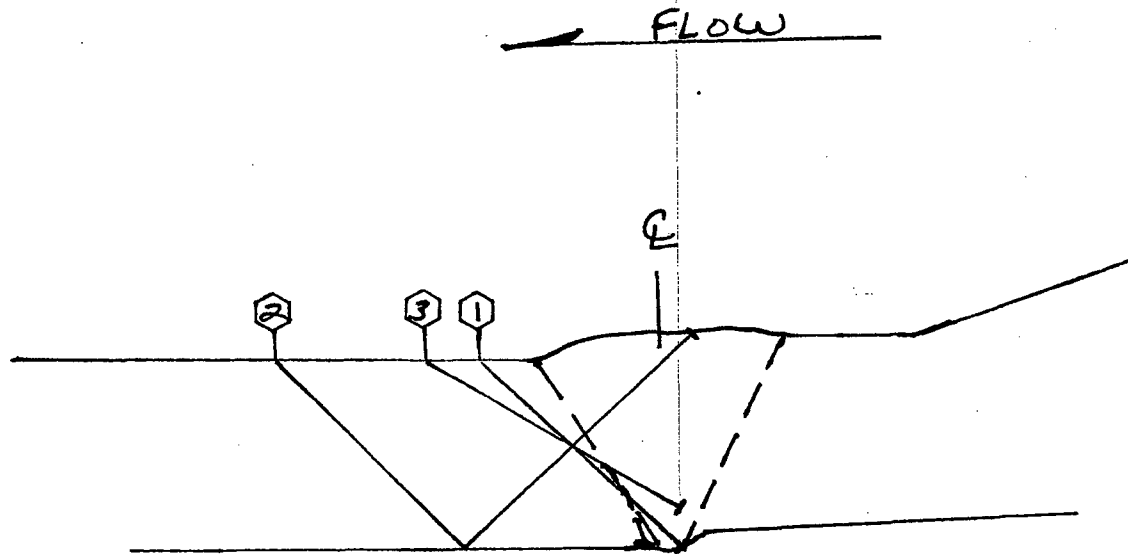
Date: NOV 11

Comments:

Sketch or Photo:

SHELL

FLANGE



45° & 60° Shear Indication Plots

SUMMARY #

734 111

COMPONENT #

2 CVE-18-SWIS-1

IND ① IS ROOT GEOMETRY

IND ② IS CROWN GEOMETRY

IND ③ IS BEAM REDIRECTION



Summary No.: 734 III

Examiner: DREW PETERSON

Examiner: N/A

Other: \_\_\_\_\_

Level: II

Level: N/A

Level: \_\_\_\_\_

Reviewer: Wes Money

Site Review: Wayne Denlinger

ANII Review: [Signature]

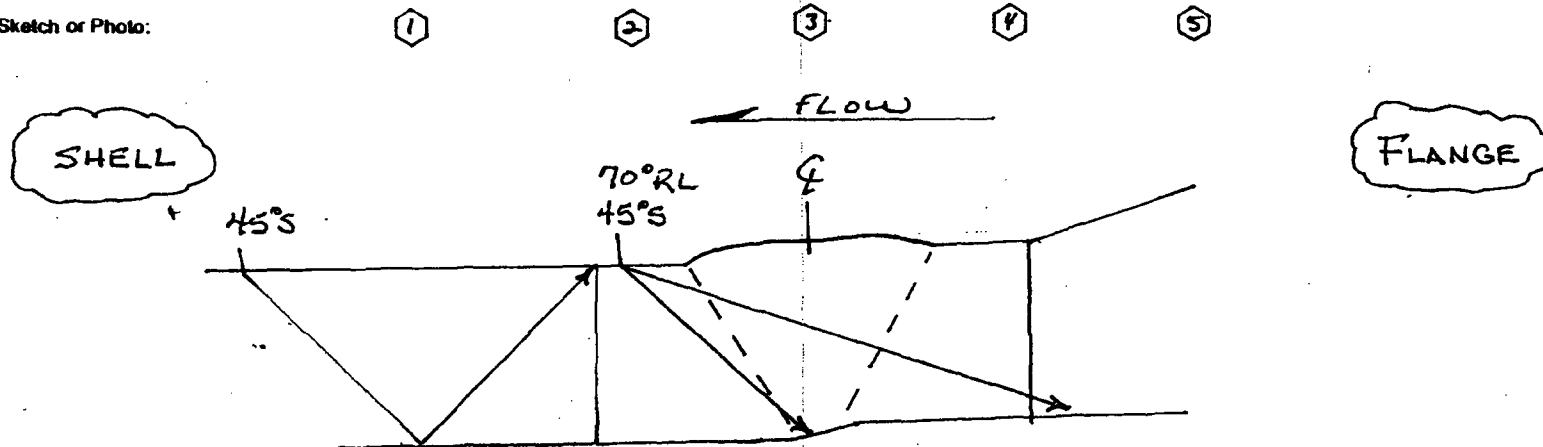
Date: 10/27/03

Date: 10-29-03

Date: NOV 11 3

Comments: Single Side examination due to flange configuration (For Axial Coverage)

Sketch or Photo:



SUMMARY #

734 III

COMPONENT #

2CVE-18-SWIT-1

45° Shear & 70° RL Coverage Plot

THICKNESS READINGS

① 1.0"

② 1.0"

③ 1.06"

④ 1.0"

⑤ None due to Flange Configuration



Weld Profile & Thickness Record

Report No.: \_\_\_\_\_

Page: \_\_\_\_\_ of \_\_\_\_\_

Summary No.: 734111

Examiner: DREW PETERSON

Examiner: N/A

Other: \_\_\_\_\_

Level: II

Level: N/A

Level: \_\_\_\_\_

Reviewer: Was Money

Site Review: William D. ...

ANII Review: [Signature]

Date: 10/28/03

Date: 10/29/03

Date: NOV 11 2003

Comments: COMPONENT #  
2CVE-18-SWIS-1

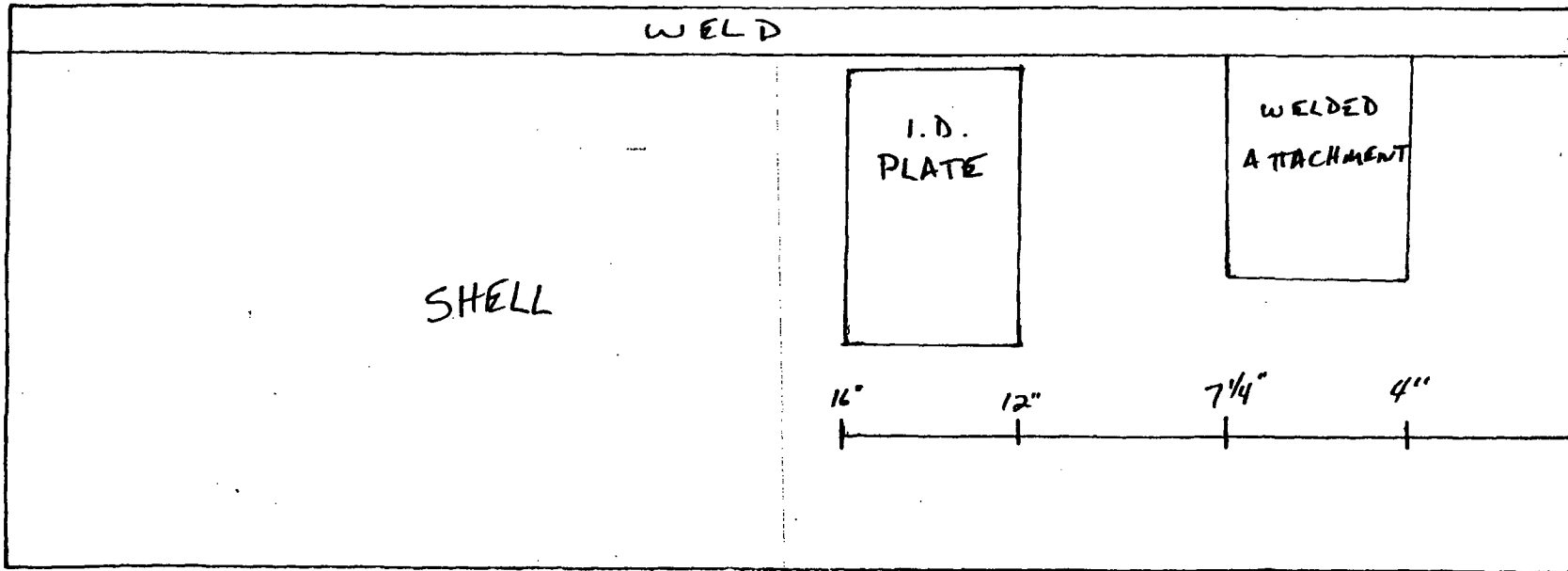
LIMITATION SKETCH

Sketch or Photo:

L<sub>0</sub>

FLANGE

L<sub>0</sub>



NO AXIAL SCANS WERE PERFORMED ON THE UPSTREAM SIDE OF THE WELD DUE TO THE FLANGE CONFIGURATION.  
NO SCANS WERE PERFORMED ON THE DOWNSTREAM (SHELL) SIDE OF THE WELD IN THE AREAS  
WHERE THE I.D. PLATE AND WELDED ATTACHMENT ARE LOCATED.





## VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

CUSTOMER: PSEG

SYSTEM: CVC

SUMMARY NO: 734111

COMPONENT ID: ZCVC-18-SWJT-1

1.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT BEAM PLANAR FLAWS

$$1.1 \quad \text{Exam Height} \times \text{Exam Width} \times \text{Exam Length} = \text{Exam Volume} \quad \underline{\quad \quad \quad} \times \quad \times \quad = \quad \underline{\quad \quad \quad} \text{ N/A cu.i}$$

2.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT BEAM LAMINAR FLAWS

$$2.1 \quad \text{Exam Height} \times \text{Exam Width} \times \text{Exam Length} = \text{Exam Volume} \quad \underline{1.0" \times 2.2" \times 34"} = \underline{74.8"} \text{ cu.i}$$

3.0 CALCULATE REQUIRED PARALLEL EXAM VOLUME FOR  $45^\circ$  AND  $60^\circ$ 

$$3.1 \quad \text{Exam Height} \times \text{Exam Width} \times \text{Exam Length} = \text{Exam Volume} \quad \underline{1.0" \times 2.2" \times 68"} = \underline{149.6"} \text{ cu.i}$$

$$\frac{149.6}{2} \quad \frac{149.6}{2}$$
CALCULATE REQUIRED TRANSVERSE EXAM VOLUME FOR  $45^\circ$  AND  $60^\circ$ 

$$4.1 \quad \text{Exam Height} \times \text{Exam Width} \times \text{Exam Length} = \text{Exam Volume} \quad \underline{1.0" \times 2.2" \times 136"} = \underline{299.2"} \text{ cu.i}$$

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
<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>

$$\underline{\quad \quad \quad} \times \underline{\quad \quad \quad} \times \underline{\quad \quad \quad} = \underline{\quad \quad \quad}$$

## 5.2 Limited Below / CW exam volume

Height of Obstructed Volume	Width of Obstructed Area	Length of Obstructed Area	Volume with no Exam Coverage
<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>

$$\underline{\quad \quad \quad} \times \underline{\quad \quad \quad} \times \underline{\quad \quad \quad} = \underline{\quad \quad \quad}$$

$$\text{Total straight beam planar exam volume not examined} = \underline{\quad \quad \quad} \text{ N/A}$$

## 5.3 Percent Volume Examined

Total 0 vol w/No Coverage	Total 0 Exam Volume	Percent Volume Examined
<u>N/A</u>	<u>N/A</u>	<u>N/A</u>

$$100 - \left\{ \left[ \frac{\underline{\quad \quad \quad}}{\underline{\quad \quad \quad}} \right] \times 100 \right\} = \underline{\quad \quad \quad} \%$$



## VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

6.0 CALCULATE STRAIGHT BEAM LAMINAR EXAM COVERAGE

6.1 Limited Upstream ~~above / CW~~ exam volume

Height of Obstructed Volume	Width of Obstructed Area	Length of Obstructed Area	Volume with no Exam Coverage
1.0"	.6"	34"	20.4 cu.in.

6.2 Limited Downstream ~~Below / CW~~ exam volume

Height of Obstructed Volume	Width of Obstructed Area	Length of Obstructed Area	Volume with no Exam Coverage
1.0"	.6"	26.75"	16.05" cu.in.

Total straight beam planar exam volume not examined = 36.45 cu.in.

## 6.3 Percent Volume Examined

Total 0° vol w/No Coverage	Total 0° Exam Volume	Percent Volume Examined
36.45 cu.in.	74.8 cu.in.	51.3 %

$100 - \left\{ \frac{36.45 \text{ cu.in.}}{74.8 \text{ cu.in.}} \times 100 \right\} = \underline{51.3 \%}$

7.0 CALCULATE PARALLEL 45° EXAM COVERAGE

7.1 Limited Upstream CCW ~~above / CW~~ exam volume

Height of Obstructed Volume	Width of Obstructed Area	Length of Obstructed Area	Volume with no Exam Coverage
1.0"	.6"	68"	40.8 cu.in.

7.2 Limited up/Dn cu ~~Below / CCW~~ exam volume

Height of Obstructed Volume	Width of Obstructed Area	Length of Obstructed Area	Volume with no Exam Coverage
1.0"	.6"	14.5"	8.7 cu.in.

Total 45° parallel exam volume not examined = 49.5 cu.in.

## 7.3 Percent Volume Examined

Total 45° parallel vol w/No Coverage	Total 45° parallel Exam Volume	Percent Volume Examined
49.5 cu.in.	149.6 cu.in.	66.9 %

$100 - \left\{ \frac{49.5 \text{ cu.in.}}{149.6 \text{ cu.in.}} \times 100 \right\} = \underline{66.9 \%}$



## 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
<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>

## 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
<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>

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

## 8.3 Percent Volume Examined

Total 60° parallel Vol w/No Coverage	Total 60° parallel Exam Volume	Percent Volume Examined
<u>N/A</u>	<u>N/A</u>	<u>N/A</u> %

## 9.0 CALCULATE TRANSVERSE 45° EXAM COVERAGE

9.1 Limited ~~Clockwise~~ <sup>Looking Downstream</sup> exam volume

Height of Obstructed Volume	Width of Obstructed Area	Length of Obstructed Area	CW Exam Volume with no Exam Coverage
<u>1.0"</u>	<u>1.1"</u>	<u>41.25"</u>	<u>45.375 cu.in.</u>

9.2 Limited ~~Below Counter-clockwise~~ <sup>Looking Upstream</sup> exam volume

Height of Obstructed Volume	Width of Obstructed Area	Length of Obstructed Area	CCW Exam Volume with no Exam Coverage
<u>1.0"</u>	<u>1.1"</u>	<u>7.25"</u>	<u>7.975 cu.in.</u>

Total 45° transverse exam volume not examined = 53.35 cu.in.

## 9.3 Percent Volume Examined

Total 45° parallel Vol w/No Coverage	Total 45° parallel Exam Volume	Percent Volume Examined
<u>53.35 cu.in.</u>	<u>149.6 cu.in.</u>	<u>64.33</u> %

# FRAMATOME ANP VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

## 10.0 CALCULATE TRANSVERSE 60° EXAM COVERAGE

10.1 *Looking Downstream*  
Limited ~~Clockwise~~ exam volume

Height of Obstructed Volume	Width of Obstructed Area	Length of Obstructed Area	CW exam Volume with no Exam Coverage
<u>1.0"</u>	X <u>1.1"</u>	X <u>41.25"</u>	= <u>45.975 cu.in.</u>

10.2 *Looking Upstream*  
Limited ~~Counterclockwise~~ exam volume

Height of Obstructed Volume	Width of Obstructed Area	Length of Obstructed Area	CCW exam Volume with no Exam Coverage
<u>1.0"</u>	X <u>1.1"</u>	X <u>7.25"</u>	= <u>7.975 cu.in.</u>

Total 60 transverse exam volume not examined = 53.35 cu.in.

### 10.3 Percent Volume Examined

Total 60° Trans Vol w/NoCoverage	Total 60° Trans Exam Volume	Percent Volume Examined
-------------------------------------	--------------------------------	----------------------------

$100 - \left\{ \frac{53.35 \text{ cu.in.}}{149.6 \text{ cu.in.}} \times 100 \right\} = \underline{64.33 \%}$

## 11.0 CALCULATE PERCENT OF TOTAL VOLUME EXAMINED

11.1 Sum of Exam Volumes %

*10/22/03* 6,7,9 & 10  
Steps 5 ~~Thru 10~~

*10/22/03* 4  
No. Of Exams (~~6~~)

Examination  
Coverage

$\left[ \frac{246.86\%}{4} \right] = \underline{61.72 \%}$

*Flange*  
No scan from ~~nozzle~~ side or on weld due to configuration.

Examiner:

Level:

II

Date:

10-25-03

Reviewer:

Level:

Date:

Sign:

Sign:



Weld Profile & Thickness Record

Report No.: \_\_\_\_\_

Page: \_\_\_\_\_ of \_\_\_\_\_

Summary No.: 734112

Examiner: Drew Peterson

Examiner: N/A

Other: \_\_\_\_\_

Level: II

Level: N/A

Level: \_\_\_\_\_

Reviewer: Wes Money

Site Review: Wayne DeLuca

ANII Review: [Signature]

Date: 10/27/03

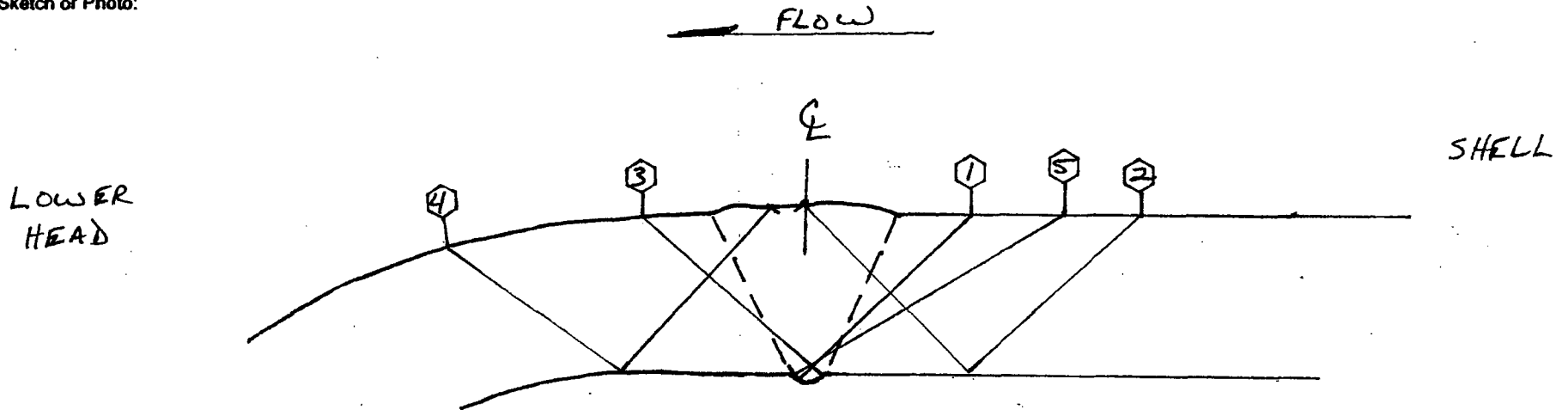
Date: 10-29-03

Date: NOV 11

3

Comments:

Sketch or Photo:



45° & 60° Shear Indication Plots

SUMMARY #

734112

COMPONENT #

RCVE-18-SWIS-2

IND'S ①, ③, & ⑤ ARE ROOT GEOMETRY

IND'S ② & ④ ARE CROWN GEOMETRY



Summary No.: 734112  
 Examiner: DREW PETERSON  
 Examiner: N/A  
 Other: \_\_\_\_\_

Level: II  
 Level: N/A  
 Level: \_\_\_\_\_

Reviewer: Wes Money  
 Site Review: Wes Money  
 ANII Review: Wes Money

Date: 10/29/03  
 Date: 10-29-03  
 Date: NOV 11 2003

Comments: COMPONENT # 2 CVR-18-SWIS-2

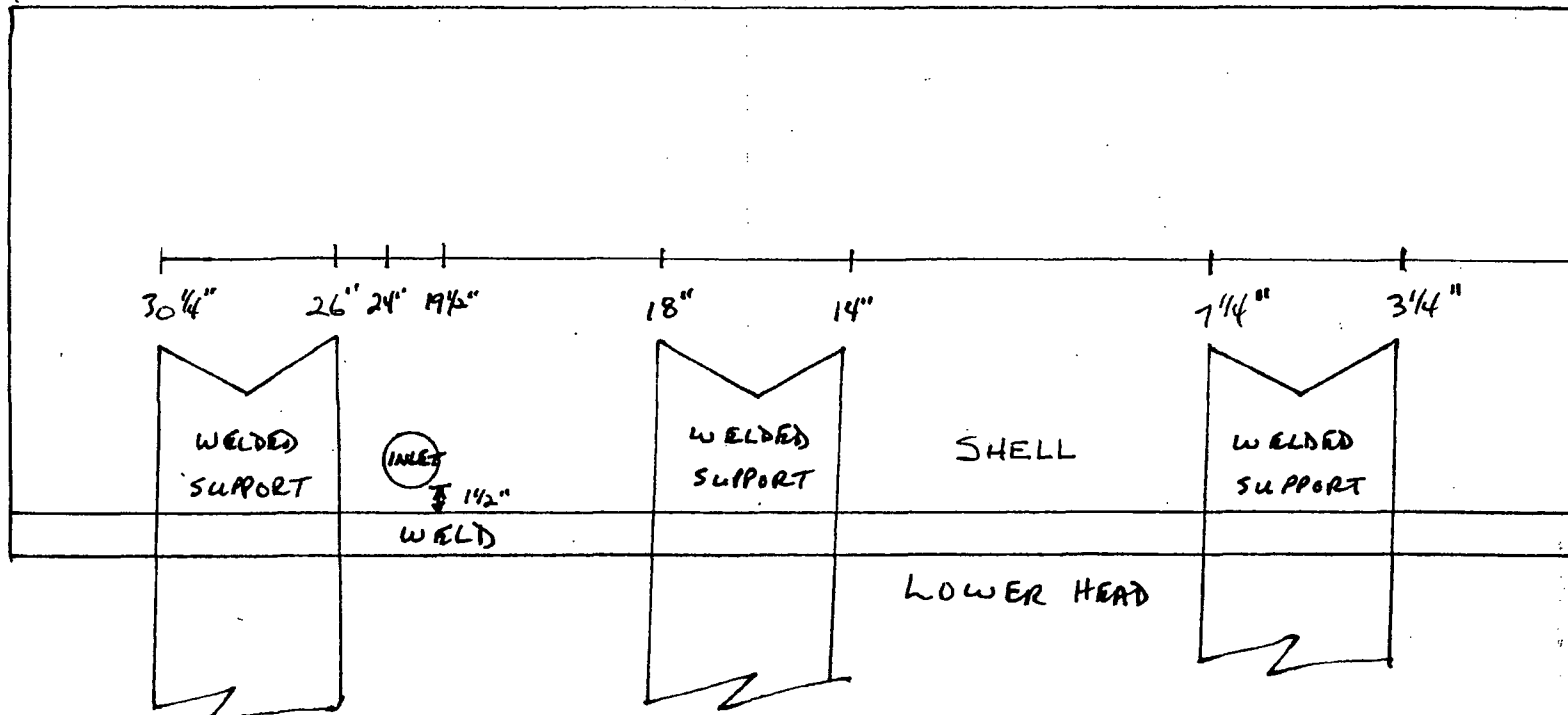
LIMITATION SKETCH.

Sketch or Photo:

L<sub>0</sub>

FLANGE

L<sub>0</sub>



NO SCANS WERE PERFORMED ON EITHER SIDE OF THE WELD IN THE AREAS OF THE WELDED SUPPORTS AND ON THE UPSTREAM (SHELL) SIDE DUE TO THE INLET NOZZLE. NO SCANS ON THE WELD DUE TO THE AS WELDED CONDITION.



Weld Profile & Thickness Record

Report No.: \_\_\_\_\_

Page: \_\_\_\_\_ of \_\_\_\_\_

Summary No.: 734112

Examiner: DREW PETERSON

Examiner: N/A

Other: \_\_\_\_\_

Level: II

Level: N/A

Level: \_\_\_\_\_

Reviewer: Was Money

Site Review: Wesley DeLuca

ANII Review: [Signature]

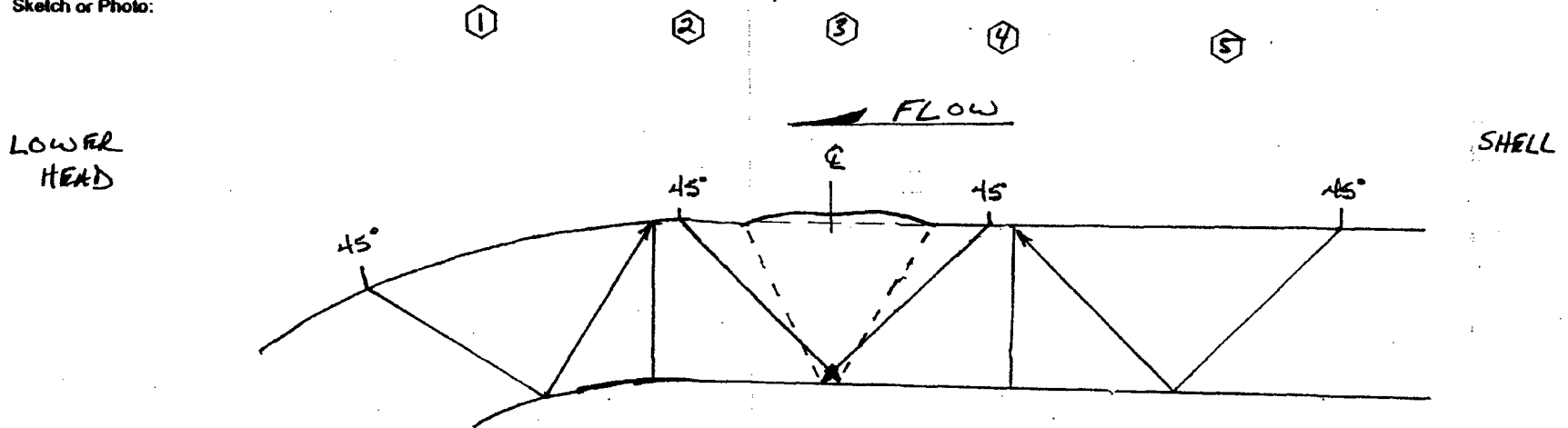
Date: 10/27/03

Date: 10-29-03

Date: NOV 11 2003

Comments:

Sketch or Photo:



SUMMARY #  
734112

COMPONENT #  
2CVE-18-SWIS-2

45° Shear  
Coverage Plot

THICKNESS  
MEASUREMENTS

① .96"

② 1.0"

③ 1.1"

④ 1.0"

⑤ 1.0"

# FRAMATOME VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

CUSTOMER: PSEG

SYSTEM: CVC

SUMMARY NO: 734112

COMPONENT ID: 2CVC-18-SWIJ-2

## 1.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT BEAM PLANAR FLAWS

1.1 Exam Height X Exam Width X Exam Length = Exam Volume  $\frac{N/A}{\text{cu.i}} \times \frac{N/A}{\text{cu.i}} \times \frac{N/A}{\text{cu.i}} = \frac{N/A}{\text{cu.i}}$

## 2.0 CALCULATE REQUIRED EXAM VOLUME FOR STRAIGHT BEAM LAMINAR FLAWS

2.1 Exam Height X Exam Width X Exam Length = Exam Volume  $1.0" \times 2.2" \times 34" = 74.8" \text{ cu.i}$

## 3.0 CALCULATE REQUIRED PARALLEL EXAM VOLUME FOR 45° AND 60°

3.1 Exam Height X Exam Width X Exam Length = Exam Volume  $1.0" \times 2.2" \times 68" = 149.6 \text{ cu.i}$

## CALCULATE REQUIRED TRANSVERSE EXAM VOLUME FOR 45° AND 60°

4.1 Exam Height X Exam Width X Exam Length = Exam Volume  $1.0 \times 2.2 \times 136 = 299.2 \text{ cu.i}$

## 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
$\frac{N/A}{\text{cu.i}}$	$\frac{N/A}{\text{cu.i}}$	$\frac{N/A}{\text{cu.i}}$	$\frac{N/A}{\text{cu.i}}$

### 5.2 Limited Below / CW exam volume

Height of Obstructed Volume	Width of Obstructed Area	Length of Obstructed Area	Volume with no Exam Coverage
$\frac{N/A}{\text{cu.i}}$	$\frac{N/A}{\text{cu.i}}$	$\frac{N/A}{\text{cu.i}}$	$\frac{N/A}{\text{cu.i}}$

Total straight beam planar exam volume not examined =  $\frac{N/A}{\text{cu.i}}$

### 5.3 Percent Volume Examined

Total 0 vol w/No Coverage	Total 0 Exam Volume	Percent Volume Examined
$100 - \left[ \frac{N/A}{\text{cu.i}} / \frac{N/A}{\text{cu.i}} \right] \times 100$		$\frac{N/A}{\text{cu.i}} \%$





## VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

6.0 CALCULATE STRAIGHT BEAM LAMINAR EXAM COVERAGE

6.1 On Weld  
Limited above / CW exam volume

Height of Obstructed Volume	Width of Obstructed Area	Length of Obstructed Area	Volume with no Exam Coverage
--------------------------------	-----------------------------	------------------------------	---------------------------------

$$\underline{1.0"} \times \underline{1.2"} \times \underline{34"} = \underline{40.8 \text{ cu.in.}}$$

6.2 @ Welded Supports (both sides) & Upstream Inlet nozzle  
Limited Below / CW exam volume

Height of Obstructed Volume	Width of Obstructed Area	Length of Obstructed Area	Volume with no Exam Coverage
--------------------------------	-----------------------------	------------------------------	---------------------------------

$$\underline{1.0"} \times \underline{1.0"} \times \underline{114.5"} = \underline{14.5 \text{ cu.in.}}$$

Total straight beam <sup>laminar</sup> exam volume not examined = 45.3 cu.in.

6.3 Percent Volume Examined

Total 0° vol w/No Coverage	Total 0° Exam Volume	Percent Volume Examined
-------------------------------	-------------------------	----------------------------

$$100 - \{ [45.3 \text{ cu.in.} / 74.8 \text{ cu.in.}] \times 100 \} = \underline{39.44 \%}$$

7.0 CALCULATE PARALLEL 45° EXAM COVERAGE

7.1 Upstream CCW  
Limited above / CW exam volume

Height of Obstructed Volume	Width of Obstructed Area	Length of Obstructed Area	Volume with no Exam Coverage
--------------------------------	-----------------------------	------------------------------	---------------------------------

$$\underline{1.0"} \times \underline{1.1"} \times \underline{16.75"} = \underline{18.43 \text{ cu.in.}}$$

7.2 Downstream CW  
Limited Below / CCW exam volume

Height of Obstructed Volume	Width of Obstructed Area	Length of Obstructed Area	Volume with no Exam Coverage
--------------------------------	-----------------------------	------------------------------	---------------------------------

$$\underline{1.0"} \times \underline{1.1"} \times \underline{12.25"} = \underline{13.48 \text{ cu.in.}}$$

Total 45° parallel exam volume not examined = 31.91 cu.in.

7.3 Percent Volume Examined

Total 45° parallel vol w/No Coverage	Total 45° parallel Exam Volume	Percent Volume Examined
---	-----------------------------------	----------------------------

$$100 - \{ [31.91 \text{ cu.in.} / 149.6 \text{ cu.in.}] \times 100 \} = \underline{78.67 \%}$$



## VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

## 6.0 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
<u>N/A</u>	x <u>N/A</u>	x <u>N/A</u>	= <u>N/A</u>

## 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
<u>N/A</u>	x <u>N/A</u>	x <u>N/A</u>	= <u>N/A</u>

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

## 8.3 Percent Volume Examined

Total 60° parallel Vol w/No Coverage	Total 60° parallel Exam Volume	Percent Volume Examined
<u>100 - { [ <u>N/A</u> / <u>N/A</u> ] x 100 }</u>	=	<u>N/A %</u>

## 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
<u>1.0"</u>	x <u>1.1"</u>	x <u>16.75</u>	= <u>18.43 cu. in</u>

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
<u>1.0"</u>	x <u>1.1"</u>	x <u>12.25</u>	= <u>13.48 cu. in</u>

Total 45° transverse exam volume not examined = 31.91

## 9.3 Percent Volume Examined

Total 45° parallel Vol w/No Coverage	Total 45° parallel Exam Volume	Percent Volume Examined
<u>100 - { [ <u>31.91 cu. in.</u> / <u>149.6 cu. in.</u> ] x 100 }</u>	=	<u>78.67 %</u>

# FRAMATOME AND VESSEL VOLUMETRIC EXAMINATION COVERAGE REPORT

## 10.0 CALCULATE TRANSVERSE 60° EXAM COVERAGE

10.1 Limited ~~Clockwise~~ <sup>Looking Downstream</sup> exam volume

Height of Obstructed Volume	Width of Obstructed Area	Length of Obstructed Area	CW exam Volume with no Exam Coverage
<u>1.0"</u>	x <u>1.1"</u>	x <u>16.75"</u>	= <u>18.43 cu in</u>

10.2 Limited ~~Counterclockwise~~ <sup>Looking Upstream</sup> exam volume

Height of Obstructed Volume	Width of Obstructed Area	Length of Obstructed Area	CCW exam Volume with no Exam Coverage
<u>1.0"</u>	x <u>1.1"</u>	x <u>12.25</u>	= <u>13.48"</u>

Total 60 transverse exam volume not examined = 31.91"

### 10.3 Percent Volume Examined

Total 60° Trans Vol w/NoCoverage	Total 60° Trans Exam Volume	Percent Volume Examined
<u>31.91 cu in</u>	<u>149.6 cu in</u>	<u>78.67 %</u>

## 11.0 CALCULATE PERCENT OF TOTAL VOLUME EXAMINED

### 11.1 Sum of Exam Volumes %

<u>67.9510</u>	No. Of Exams <u>(4)</u>	Examination Coverage
<u>275.45%</u>	<u>4</u>	= <u>68.86 %</u>

No scan from nozzle side or on weld due to configuration.

*Ami Karen Phillips* NOV 11 3

Examiner: 

Level: II

Date: 10-25-03

Reviewer:

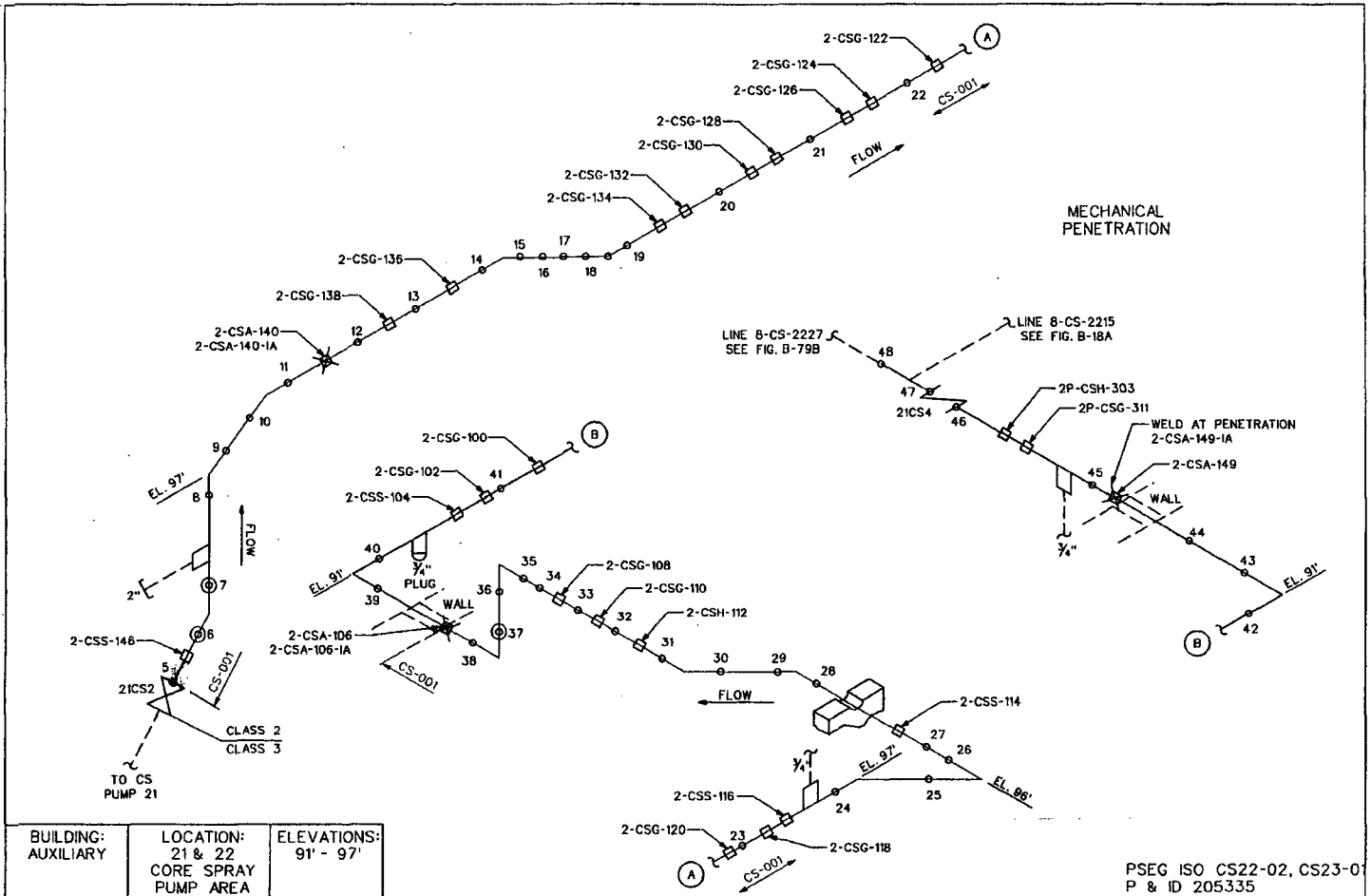
Level:

Date:

Sign:

Sign:





BUILDING: AUXILIARY	LOCATION: 21 & 22 CORE SPRAY PUMP AREA	ELEVATIONS: 91' - 97'
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ATTENTION: ANY REVISION TO THIS DRAWING SHALL BE MADE ONLY BY CAED		
1		REVISED PER ORDER No. 80038023.
REV.	DATE	DESCRIPTION

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

FIGURE: B-79A	REVISION: 1
SYSTEM: CONTAINMENT SPRAY	
LINE: 8-CS-2227	
THIRD 10 YEAR INSPECTION INTERVAL	

- LV 1 = COMMON INFORMATION
- LV 2 = WELD INFORMATION
- LV 3 = HANGER INFORMATION



## VOLUMETRIC PIPING EXAMINATION COVERAGE REPORT

<b>CUSTOMER:</b> PSE&G SALEM UNIT-2, 10 RFO	<b>SYSTEM:</b> CONTAINMENT SPRAY
<b>SUMMARY NO.:</b> 700000	<b>COMPONENT ID:</b> 8-CS-2227-5 VALVE 21CS2 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) = $Vt_1$	<u><math>0.046" \times 0.80" \times 26.21" = 0.96 \text{ cu. in.}</math></u>
1.2 Compute Volume Not Examined on Upstream Side of Weld = A	<u><math>0.046" \times 0.475" \times 26.21" = 0.57 \text{ cu. in.}</math></u>
1.3 Compute Upstream Limitation Percentage $(A + Vt_1) \times 100 = Z1$	<u><math>0.57 \text{ in.}^3 + 0.96 \text{ in.}^3 \times 100 = 59.4\%</math></u>
1.4 Compute Volume Not Examined on Downstream Side of Weld = B	<u><math>0.046" \times 0.475" \times 26.21" = 0.57 \text{ cu. in.}</math></u>
1.5 Compute Downstream Limitation Percentage $(B + Vt_1) \times 100 = Z2$	<u><math>0.57 \text{ in.}^3 + 0.96 \text{ in.}^3 \times 100 = 59.4\%</math> <u>(Beam Direction-DS)</u></u>

#### 2.0 CIRCUMFERENTIAL ULTRASONIC EXAMINATIONS (Indications Perpendicular to the Weld)

2.1 Compute Examination Volume (Height x Width x Length) = $Vt_2$	<u><math>0.046" \times 1.30" \times 26.21" = 1.57 \text{ cu. in.}</math></u>
2.2 Compute Volume Not Examined in the Clock Wise Direction = C	<u><math>0.046" \times 0.80" \times 26.21" = 0.96 \text{ cu. in.}</math></u>
2.3 Compute Clock Wise Limitation Percentage $(C + Vt_2) \times 100 = Z3$	<u><math>0.96 \text{ in.}^3 + 1.57 \text{ in.}^3 \times 100 = 61.1\%</math></u>
2.4 Compute Volume Not Examined in the Counter CW Direction = D	<u><math>0.046" \times 0.80" \times 26.21" = 0.96 \text{ cu. in.}</math></u>
2.5 Compute Counter CW Limitation Percentage $(D + Vt_2) \times 100 = Z4$	<u><math>0.96 \text{ in.}^3 + 1.57 \text{ in.}^3 \times 100 = 61.1\%</math></u>

#### 3.0 TOTAL EXAMINATION COVERAGE OBTAINED

3.1 Compute Total Limitation Percentage $(Z1 + Z2 + Z3 + Z4) / 4 = L$	<u>60.3 %</u>
3.2 Compute Total Coverage $100 - L$	<u>39.8 %</u>

#### 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 40.6 percent coverage was obtained in the upstream axial direction. The coverage obtained from the downstream axial examination was 40.6 percent (derived from the 1-1/2 V-Path technique) 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.

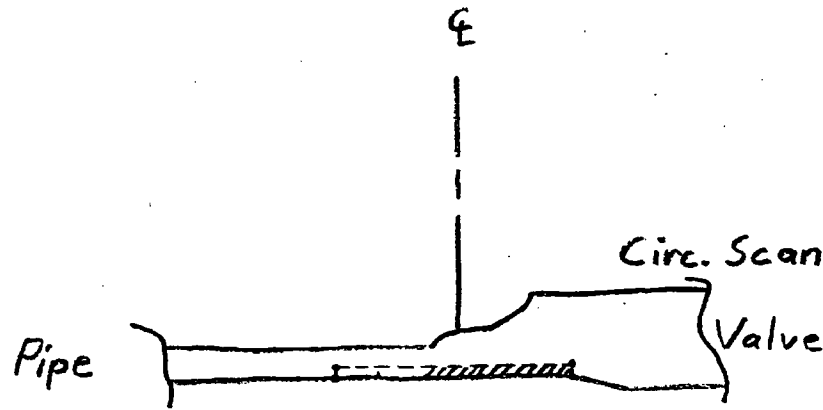
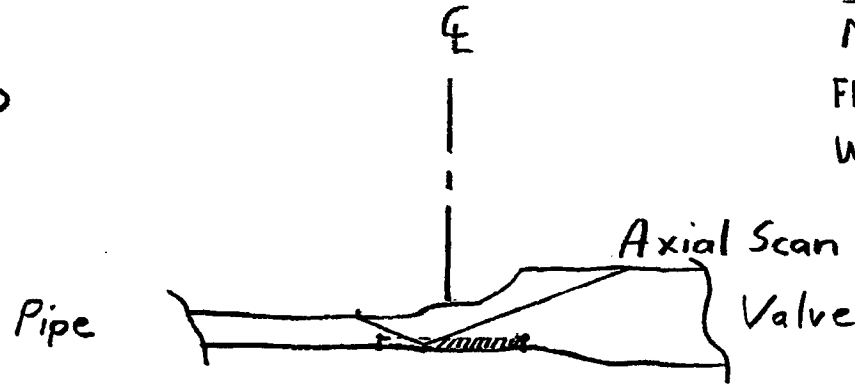
<b>PREPARED BY:</b> D.J. Langanfeld	<b>DATE:</b> 05/17/99	<b>REVIEWER:</b> <i>[Signature]</i>	<b>DATE:</b> 5/20/99
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*[Signature]*  
5-27-99

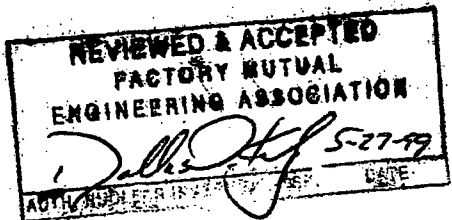
# UT COVERAGE PLOT

68° Shear Wave  
|||| = Not Covered  
Profile Taken at 3:00

Summary #700000  
Nominal OD = 8.0"  
FIGURE No.: A-E<3/8.03  
WELD: 8-CS-2227-5



45° SHEAR WAVE  
|||| = NOT COVERED



← Flow



### UT CALIBRATION DATA SHEET

Customer: SALEM UNIT-2, 10 RFO      Exam Date: 05/07/99      Figure No.: A-E-3/8.03

System/Component I.D.: 8-CS-2227-5 (Summary #700000)      Calibration No.: 99S2108

Component Description: Valve 21CS2 To Pipe Weld

ISO/Drawing No: CS-2-2, B-79      Procedure No./Rev.: 54-ISI-121 REV. 01      Code/Accept. Criteria: ASME 1986, Sec. XI

Material: SS      Diameter: 8.0" OD      Thickness: 0.14"

**INSTRUMENT SETTINGS      SEARCH UNIT      CALIBRATION STANDARD**

Mfg: STAVELEY      Model: SONIC-136      DB /Serial No.: 34636      Cal. Block No. 8-SS-10-140-24-SAM

Serial/MT&E#: DB# 12105      Size: 0.25" DIA.      Cal. Block Thickness (in): 0.140"

Mat. Cal./Velocity: 0.284 in/us      Freq. (MHz): 2.25      Cal. Block Dia. (in): 8.0"

Delay: 0.513"      Zero Offset: N/A      Long/Shear/Single/Dual: Shear/Single      Temp (F) Block: 73      Comp.: 78

Each Major Screen Div.#: .046"      Nominal Angle: 70      Measured: 68      Therm. No.: DB# 15352

Channel#: 15      Fixture/Size: 0.95" x 0.45"      Couplant Type: ULTRAGEL II

Range: 5.07"      Freq (MHz): 2.25      Cable Type & Length: RG-174/12.0'      Couplant Batch No.: 95325

Damping: 500 Ohms      Reject: Off      No. of Connectors: 0      **CALIBRATION STD. SIMULATOR**

Rep. Rate: 4.0 KHz      Pulse: 100 ns      Serial No.: N/A

Gate: Off      Display: Filter 1      **DAC PLOT**      Sweep Position/Depth: N/A

Mode: Pulse Echo      Jack: XMT      Signal Amp. (%): N/A

Ref. Sensitivity: 55.8 db      Gain DB (dB): N/A

Scan Sensitivity: 61.8 db

(Amt. dB to bring Notch to DAC)

Notch dB (Piping): 55.8 db

Notch dB (Vessels): N/A

**CALIBRATION CHECK**

	Time	OK	Initials
Initial Cal:	0900	✓	<i>MS</i>
Init. Sim. Cal:	N/A		
Intermediate:	N/A		
Intermediate:	N/A		
Intermediate:	N/A		
Intermediate:	N/A		
Final Cal.:	1235	✓	<i>MS</i>

Amplitude vs. Range

Signal to Noise Ratio: ~2:1

**EXAM DATA**

Scan Direction to Weld: US (One Sided)

(0 to Material, US, DS, CW, CCW, Vessel: UP/Down)

Recordable Geometry (Yes/No): NO

Recordable Indications (Yes/No): NO

Limited Exam (Yes/No): Note-1

Percent Scan Completed: 40.6%

Percent Exam Completed: 39.8%

**0 DEG. WELD THICKNESS ONLY**

Comp.: Valve (Note-3)

BM: 0.53"      HAZ: 0.43"

C/L Weld: 0.23"

Comp.: Pipe (Note-3)

BM: 0.14"      HAZ: 0.14"

Crown HT.: ~1/32"

Weld Width: ~0.3"

Scan Direction on Cal. Block	0 Deg.	Axial	Circ
(Yes/No)	NO	YES	NO

Reflector	ID Notch	OD Notch	ID Notch
Sweep Pos./Depth in Inches	0.14"	0.28"	0.42"
Amplitude in %	80	55	20
Gain in dB	55.8	55.8	55.8

Notes: Note-1: The 70 degree shear wave axial examination was performed from one side of the weld due to the Valve configuration. The total examination coverage is 39.8%. See attached Examination Coverage Report.

No recordable indications were found.

Note-2: Change Authorization SU2-99-005 was used with 54-ISI-121-01.

Note-3: Ultrasonic thickness profiles performed with a zero degree, 5.0 megahertz, 0.25-inch, dual element transducer calibrated with a SS step wedge.

Examiner: D.G. Garcia      Level: II      Date: 05/07/99      Examiner: N/A      Level:      Date:

Reviewed: D.J. Langenfeld      Level: II      Date:      ANII Review: *Association*      Date: 5-27-99

Customer: WAYNE DENLINGER      Date:      Sign: *Wayne Denlinger*      5-20-99      Page: 2 of 6



## UT CALIBRATION DATA SHEET

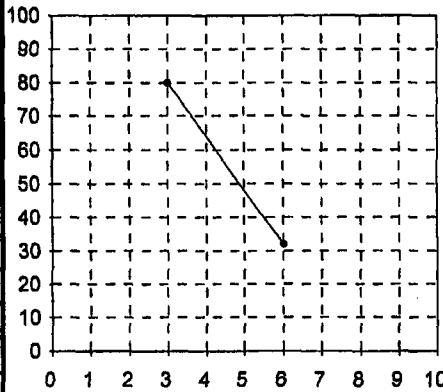
Customer: <b>SALEM UNIT-2, 10 RFO</b>	Exam Date: <b>05/07/99</b>	Figure No.: <b>A-E&lt;3/8.03</b>
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System/Component I.D.: <b>8-CS-2227-5 (Summary #700000)</b>	Callibration No.: <b>99S2109</b>
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Component Description: **Valve 21CS2 To Pipe Weld**

ISO/Drawing No: <b>CS-2-2, B-79</b>	Procedure No./Rev.: <b>54-ISI-121 REV. 01</b>	Code/Accept. Criteria: <b>ASME 1986, Sec. XI</b>
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Material: <b>SS</b>	Diameter: <b>8.0" OD</b>	Thickness: <b>0.14"</b>
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INSTRUMENT SETTINGS	SEARCH UNIT	CALIBRATION STANDARD
Mfg: <b>STAVELEY</b> Model: <b>SONIC-136</b>	DB /Serial No.: <b>00C81D</b>	Cal. Block No. <b>8-SS-10-140-24-SAM</b>
Serial/MT&E#.: <b>DB# 12102</b>	Size: <b>0.25" DIA.</b>	Cal. Block Thickness (In): <b>0.140"</b>
Mat. Cal./Velocity: <b>0.397 in/us</b>	Freq. (MHz): <b>5.0</b>	Cal. Block Dia. (in): <b>8.0"</b>
Delay: <b>0.037"</b> Zero Offset: <b>N/A</b>	Long/Shear/Single/Dual: <b>Shear/Single</b>	Temp (F) Block: <b>73</b> Comp.: <b>78</b>
Each Major Screen Div.#: <b>.046"</b>	Nominal Angle: <b>45</b> Measured: <b>45</b>	Therm. No.: <b>DB# 15352</b>
Channel#: <b>10</b>	Fixture/Size: <b>0.75" x 0.45"</b>	Couplant Type: <b>ULTRAGEL II</b>
Range: <b>3.67"</b> Freq (MHz): <b>5.0</b>	Cable Type & Length: <b>RG-174/12.0'</b>	Couplant Batch No.: <b>95325</b>
Damping: <b>500 Ohms</b> Reject: <b>Off</b>	No. of Connectors: <b>0</b>	<b>CALIBRATION STD. SIMULATOR</b>
Rep. Rate: <b>4.0 Khz</b> Pulse: <b>100 ns</b>		Serial No.: <b>N/A</b>
Gate: <b>Off</b> Display: <b>Filter 1</b>	<b>DAG PLOT</b>	Sweep Position/Depth: <b>N/A</b>
Mode: <b>Pulse Echo</b> Jack: <b>XMT</b>		Signal Amp. (%): <b>N/A</b>
Ref. Sensitivity: <b>51.0 db</b>		Gain DB (dB): <b>N/A</b>
Scan Sensitivity: <b>57.0 db</b>		<b>EXAM DATA</b>
(Amt. dB to bring Notch to DAC)		Scan Direction to Weld: <b>CW/CCW</b>
Notch dB (Piping): <b>51.0 db</b>		(0 to Material, US, DS, CW, CCW, Vessel: <b>UP/Down</b> )
Notch dB (Vessels): <b>N/A</b>	Recordable Geometry (Yes/No): <b>NO</b>	
	Recordable Indications (Yes/No): <b>NO</b>	
	Limited Exam (Yes/No): <b>Note-1</b>	
	Percent Scan Completed: <b>38.9%</b>	
	Percent Exam Completed: <b>39.8%</b>	

Mode: <b>Pulse Echo</b> Jack: <b>XMT</b>		Serial No.: <b>N/A</b>
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Ref. Sensitivity: <b>51.0 db</b>		Signal Amp. (%): <b>N/A</b>
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Scan Sensitivity: <b>57.0 db</b>		Gain DB (dB): <b>N/A</b>
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(Amt. dB to bring Notch to DAC)		
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Notch dB (Piping): <b>51.0 db</b>		
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Notch dB (Vessels): <b>N/A</b>		
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Notes: Note-1: The 45 degree shear wave circumferential examination was limited due to the weld and Valve configuration. The total examination coverage is 39.8%. See attached Examination Coverage Report.  
 No recordable indications were found. Change Authorization SU2-99-005 was used with 54-ISI-121-01.

Note-2: A zero degree lamination examination was performed and no recordable indications were found.

Note-3: The surface distance between the 45 degree transducer exit point and the ID notch is -0.15 inches.

Examiner: <b>D. G. Garcia</b> Level: <b>II</b> Date: <b>05/07/99</b> Sign: <i>D. Garcia</i>	Examiner: <b>N/A</b> Level: <b></b> Date: <b></b> Sign: <b>FACTORY MUTUAL</b>
--	--

Reviewed: <b>D.J. Langenfeld</b> Level: <b>II</b> Date: <b></b> Sign: <i>D.J. Langenfeld</i> <b>05/10/99</b>	ANII Review: <b>Boiler Inspection Association</b> Date: <b></b> Sign: <i>James</i> <b>5-27-99</b>
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Customer: <b>WAYNE DENLINGER</b> Date: <b></b> Sign: <i>Wayne Denlinger</i> <b>5-20-99</b>	Page: <b>3</b> of <b>6</b>
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