

10 CFR 50.55a

September 8, 2008

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

Limerick Generating Station, Units 1 and 2
Facility Operating License Nos. NPF-39 and NPF-85
NRC Docket Nos. 50-352 and 50-353

Subject: Response to Request for Additional Information Concerning Relief
Requests Associated with the Second Inservice Inspection (ISI) Interval

- References:
- 1) Letter from P. B. Cowan (Exelon Generation Company, LLC) to U. S. Nuclear Regulatory Commission, "Submittal of Relief Requests Associated with the Second Inservice Inspection (ISI) Interval," dated January 28, 2008
 - 2) Letter from P. J. Bamford (U. S. Nuclear Regulatory Commission) to C. G. Pardee (Exelon Generation Company, LLC), "Limerick Generating Station, Unit Nos. 1 and 2 – Request for Additional Information Regarding Relief Requests Associated with the Second Inservice Inspection Interval," dated August 8, 2008

In the Reference 1 letter, in accordance with 10 CFR 50.55a, "Codes and standards," Exelon Generation Company, LLC (EGC), requested relief from the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components." These reliefs apply to the second 10-year interval inservice inspection program, which concluded on January 31, 2007.

AD47
NRR

Response to Request for Additional Information
Submittal of Relief Requests Associated with
the Second Inservice Inspection (ISI) Interval
Page 2

In the Reference 2 letter, the U. S. Nuclear Regulatory Commission requested additional information. Attached is our response to this request.

No commitments are contained in this letter.

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

Sincerely,

9/6/11 Pamela B. Cowan

Pamela B. Cowan
Director – Licensing & Regulatory Affairs
Exelon Generation Company, LLC

- Attachments:
- 1) Response to Request for Additional Information Regarding Relief Requests Associated With the Second Inservice Inspection Interval - Limerick Generating Station, Units 1 and 2
 - 2) Revised Request for Relief RR-35
 - 3) Relief Request 34 – LGS, Unit 1 Second Ten-Year Inservice Inspection Interval Component NDE Exam Limitations
 - 4) Relief Request 34 – LGS, Unit 2 Second Ten-Year Inservice Inspection Interval Component NDE Exam Limitations
 - 5) Relief Request 35 – LGS, Unit 1 Second Ten-Year Inservice Inspection Interval Component NDE Exam Limitations
 - 6) Relief Request 35 – LGS, Unit 2 Second Ten-Year Inservice Inspection Interval Component NDE Exam Limitations

cc: S. J. Collins, Regional Administrator, Region I, USNRC
E. M. DiPaolo, USNRC Senior Resident Inspector, LGS
P. Bamford, Project Manager [LGS] USNRC

Attachment 1

**Response to Request for Additional Information
Regarding Relief Requests Associated With the
Second Inservice Inspection Interval**

Limerick Generating Station, Units 1 and 2

Question:

RR-34

- 1) Provide further detailed information to support the basis for each limited examination in RR-34, and therefore, demonstrate impracticality. This information should include detailed descriptions (with sufficient explanation, and lay-out or cross-sectional drawings/sketches) to enable the staff to fully understand the causes of ultrasonic scan limitations and their impact on examination volume coverage.

Response:

The basis for each limited examination in RR-34, including detailed descriptions and drawings/sketches to enable the staff to fully understand the causes of ultrasonic scan limitations and their impact on examination volume coverage is contained in Attachment 3 "Relief Request 34 – LGS, Unit 1 Second Ten-Year Inservice Inspection Interval Component NDE Exam Limitations," and Attachment 4, "Relief Request 34 – LGS, Unit 2 Second Ten-Year Inservice Inspection Interval Component NDE Exam Limitations."

Question:

Background for RR-34, RAI number 2:

The submittal states the following regarding the scheduling and completion of examinations for LGS, Unit 2, RPV shell welds and nozzle-to-vessel welds:

The Unit 2 inspection interval was reduced to three outages to align the start of the Unit 2 interval with the Unit 1 interval. The remainder of the second interval inspections for Unit 2 will be completed during the first period of the third interval, per Relief Request I3R-01, Request for Relief for Alternative Requirements for the Synchronization of Ten-Year ISI Intervals Between Units 1 and 2 for [ASME Code] Class 1, 2, 3, MC [metal containment vessel], and CC [concrete containment] Components, which was approved in accordance with 10 CFR 50.55a(a)(3)(i).

- 2) Considering this realignment of the LGS Unit 2 schedule, confirm that all ASME Code-required RPV shell and nozzle weld examinations will be completed within 10 code years of the time when the exams were previously performed.

For example, the Unit 2 inspections, which were performed in the first period of the second ISI interval, should be performed again no later than the second period of the third ISI interval. Likewise, inspections which they performed in the second period of the second ISI interval should be performed no later than the third period of the third ISI interval.

Response:

The ASME Code-required RPV shell and nozzle weld examinations will be completed within 10 code years from the time when the exams were previously performed to the extent practical in accordance with code rules, but not necessarily within the corresponding period of the third interval.

Question:

- 3) State whether the methods used for the RPV shell weld and nozzle-to-vessel weld inspections in RR-34 have been qualified in accordance with performance demonstration requirements per ASME Code, Section XI, Appendix VIII.

Response:

The examination methods used for the various vessel welds in RR-34 (i.e., ASME Section XI, Appendix VIII qualification or other method) are identified for each weld in Attachments 3 and 4. We note that many of these welds were performed prior to the requirements of Appendix VIII.

Question:

- 4) Provide descriptions of the ultrasonic techniques deployed for each weld examination volume (near surface, inner 15%, and full volume), and the amount of coverage obtained for each of these techniques. Also, please provide cross-sectional drawings showing scanning angle coverage. List the materials for the base metal and welds.

Response:

The ultrasonic techniques deployed for each weld examination volume, the amount of coverage obtained for each of these techniques, cross-sectional drawings showing scanning angle coverage, and the materials for the base metal and welds are contained in Attachments 3 and 4.

Question:

- 5) As applicable, describe nondestructive examination (NDE) equipment, show accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

The limited examinations listed in Relief Request 34 were completed using automated and/or manual techniques. The responses to questions 3 and 4 have shown the limitations of these examinations. As new ultrasonic techniques and tooling are qualified to ASME Section XI, Appendix VIII the station reviews the new tooling and techniques to maximize the inspection coverage.

An example is the use of the phased array technology. Phased array search units are longer than those used in conventional examination techniques. In certain configurations, the search unit length actually reduces exam coverage. In those situations, the station continued to perform examinations using conventional examination techniques.

Several examinations are limited because there is no approved qualified method to perform the examination. Once a technique is qualified for this type of examination the station will implement this technology.

Question:

RR-35

RR-35 actually contains two requests, based on impracticality. Part 1 of the submittal states:

Pursuant to 10 CFR 50.55a(g)(5)(iii), relief is requested from the new examination coverage requirements for austenitic piping welds with single side access as required in 10 CFR 50.55a(b)(2)(xv)(A)(2), on the basis that conformance with these Code requirements is impractical due to the fact that procedures were not available at the time of the examination of the welds to perform a single-sided Appendix VIII demonstration using flaws on the opposite side of the weld.

Part 1 refers to the 10 CFR 50.55a requirement that, when applying ASME Section XI, Appendix VIII, Supplement 2, for ultrasonic procedures qualified by performance demonstration, full coverage credit on austenitic welds may only be claimed after a successful single-side demonstration has been performed with flaws located on the opposite side of the weld. However, 10 CFR 50.55a(g)(5)(iii) only pertains to when ASME Code inservice inspection requirements are found to be impractical, not 10 CFR 50.55a rules. Based on this discussion the NRC staff has the following RAI:

- 1) Please either withdraw part 1 of RR-35, or re-submit it so that it reflects an ASME code requirement for which relief is being sought.

Response:

RR-35 has been revised (see Attachment 2) to delete reference to 10 CFR 50.55a(b)(2)(xv)(A)(2). The relief request has also been revised to correct minor typographical errors.

Question:

Part 2 of the RR-35 submittal states:

Pursuant to 10 CFR 50.55a(g)(5)(iii), relief is also requested from the 100% volumetric examination requirements of Class 1 and 2 piping welds as defined by Table IWB-2500-1, Table IWC-2500-1, and the Limerick Risk Informed Inservice Inspection Program, on the basis that conformance with these [ASME] Code requirements is impractical due to component configuration and access restrictions.

Part 2 summarizes limited examinations performed during the second 10-year interval, and provides estimated coverage for each component. Some specific limitations, or causes, for less than ASME Code-required (100%) coverage are briefly listed in Tables RR-35-01 and RR-35-02, but these are insufficient to demonstrate impracticality.

Other diagrams are included in RR-35 to show typical pipe-to-valve and valve-to-flued head weld configurations, however, these also do not provide sufficient information to enable the staff to evaluate the welds under a basis of impracticality.

For RR-35, Part 2, the NRC staff requests the following (RAIs 2-5):

- 2) Provide further detailed information to support the basis for each limited examination in RR-35, and therefore, demonstrate impracticality. This information should include detailed descriptions (with sufficient explanation, and lay-out or cross-sectional drawings/sketches) to enable the staff to fully understand the causes of ultrasonic scan limitations and their impact on examination volume coverage.

Response:

The basis for each limited examination in RR-35, including detailed descriptions and drawings/sketches to enable the staff to fully understand the causes of ultrasonic scan limitations and their impact on examination volume coverage is contained in Attachment 5, "Relief Request 35 – LGS, Unit 1 Second Ten-Year Inservice Inspection Interval Component NDE Exam Limitations," and Attachment 6, "Relief Request 35 – LGS, Unit 2 Second Ten-Year Inservice Inspection Interval Component NDE Exam Limitations."

Question:

- 3) Provide descriptions of the ultrasonic techniques deployed for each weld examination volume, and the amount of coverage obtained for each of these techniques. Also, please provide cross-sectional drawings showing scanning angle coverage. List the materials for the base metal and welds.

Response:

The ultrasonic techniques deployed for each weld examination volume, the amount of coverage obtained for each of these techniques, cross-sectional drawings, the scanning angles, and the materials for the base metal and welds are contained in Attachments 5 and 6.

Question:

- 4) As applicable, describe NDE equipment, show accessibility limitations, and discuss whether alternative methods or advanced technologies could be employed to maximize ASME Code coverage.

Response:

The limited examinations listed in Relief Request 35 were completed using manual techniques. The responses to questions 2 and 3 have shown the limitations of these examinations. As new ultrasonic techniques and tooling are qualified to ASME Section XI, Appendix VIII the station reviews the new tooling and techniques to maximize the inspection coverage.

An example is the use of the phased array technology. Phased array search units are longer than those used in conventional examination techniques. In certain configurations, the search unit length actually reduces exam coverage. In those situations, the station continued to perform examinations using conventional examination techniques.

Several examinations are limited because there is no approved qualified method to perform the examination. A number of examinations were limited at Limerick because there is no qualified technique to perform a single sided examination of cast stainless steel. Once a technique is qualified for this type of examination the station will implement this technology.

Question:

- 5) State whether the methods used for the various piping welds in RR-35 have been qualified in accordance with performance demonstration requirements per ASME Section XI, Appendix VIII.

Response:

The examination methods used for the various piping welds in RR-35 (i.e., ASME Section XI, Appendix VIII qualification or other method) are identified for each weld in Attachments 5 and 6. We note that many of these welds were performed prior to the requirements of Appendix VIII.

Attachment 2

Revised Request for Relief RR-35

**Request for Relief (RR-35) for Limited Code Coverage on
Piping Weld Examinations In Accordance with 10CFR50.55a(g)(5)(iii)
(Page 1 of 5)**

1.0 ASME CODE COMPONENTS AFFECTED:

Code Class:	1 and 2
Reference:	Table IWB-2500-1 Table IWC-2500-1 Risk Informed ISI Program
Examination Category:	B-J, C-F-1, C-F-2, and R-A
Item Number:	B9.11, C5.11, C5.51, R1.11, R1.18, and R1.20
Description:	Limited Code Coverage on Piping Weld Examinations
Component Number:	Various
Drawing Number:	Various

2.0 APPLICABLE CODE EDITION AND ADDENDA:

The Second Interval Inservice Inspection program was based on the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Code, Section XI, 1989 Edition, no Addenda.

3.0 APPLICABLE CODE REQUIREMENT:

ASME Section XI, 1989 Edition, required 100% volumetric examination of Class 1 and 2 piping welds as defined by Table IWB-2500-1, Table IWC-2500-1, and the Limerick Risk Informed Inservice Inspection Program.

4.0 IMPRACTICALITY OF COMPLIANCE:

**Request for Relief (RR-35) for Limited Code Coverage on
Piping Weld Examinations In Accordance with 10CFR50.55a(g)(5)(iii)
(Page 2 of 5)**

Pursuant to 10 CFR 50.55a(g)(5)(iii), relief is requested from the 100% volumetric examination requirements of Class 1 and 2 piping welds as defined by Table IWB-2500-1, Table IWC-2500-1, and the Limerick Risk Informed Inservice Inspection Program, on the basis that conformance with these Code requirements is impractical due to component configuration and access restrictions.

Table RR-35-01 Unit 1 Limited Code Coverage on Piping Weld Examinations

Welds	Name	Class	Coverage	Item	Notes
CSB 015	12" Flued Head X-16B to Valve HV-52-108	1	50%	R1.20	Austenitic material – Single sided exam due to valve to pipe flued head configuration.
DCA-101-1 SW2402	6" Pup Piece to Valve HV-44-1F001	1	50%	R1.20	Austenitic material - Baseline examination 100% PT and 50% UT single sided examination due to valve to pipe configuration
DCA-101-1 SW2403	6" Valve HV-44-1F001 to 6" Pup Piece	1	50%	R1.20	Austenitic material - Baseline examination 100% PT and 50% UT single sided examination due to valve to pipe configuration
DCA-101-1 SW2406	6" Pup Piece to Valve HV-44-1F004	1	50%	R1.20	Austenitic material - Baseline examination 100% PT and 50% UT single sided examination due to valve to pipe configuration.
DCA-104-2 SW501	12" Pipe to Valve HV-51-1F050A	1	50%	R1.11	Austenitic material – Baseline exam - Single sided exam due to valve to pipe configuration.
DCA-104-4 SW1702 C1	12" Valve HV-51-1F050A to Pipe	1	50%	R1.11	Austenitic material – Baseline exam - Single sided exam due to valve to pipe configuration.
GBB-105-2 FW 5	16" Valve HV-51-1F016B to Pipe	2	69.5%	R1.20	Carbon Steel - Baseline examination limited due to the valve configuration.
RH 004	20" Pipe to Valve 51-1F077	1	50%	B9.11	Austenitic material – Single sided exam due to valve to pipe configuration.
RH 007	20" Pipe to Valve HV-51-1F009	1	50%	B9.11	Austenitic material – Single sided exam due to valve to pipe configuration.
RH 008	20" Valve HV-51-1F009 to Pipe	1	50%	B9.11	Austenitic material – Single sided exam due to valve to pipe configuration.
RH 015	20" Flued Head X-12 to Valve HV-51-1F008	1	50%	R1.20	Austenitic material – Single sided exam due to valve to pipe flued head configuration.
RHA 002	12" Elbow to Valve 51-1F065A	1	50%	B9.11	Austenitic material – Single sided exam due to valve to pipe configuration.
RHA 003	12" Pipe to Valve 51-1F065A	1	50%	B9.11	Austenitic material – Single sided exam due to valve to pipe configuration.
RHB 002	12" Elbow to Valve 51-1F065B	1	50%	B9.11	Austenitic material – Single sided exam due to valve to pipe configuration.
RHB 003	12" Valve 51-1F065B to Pipe	1	50%	B9.11	Austenitic material – Single sided exam due to valve to pipe configuration.
RRB 004	28"X28"X20" Tee to 28" Pipe	1	50%	B9.11	Austenitic material – Single sided exam due to pipe to pipe tee configuration.
RRB 013	28" Pump 1BP201 to Pipe	1	50%	B9.11	Austenitic material – Single sided exam due to pump to pipe configuration.
RRB 016	28" Pipe to Valve HV-43-1F031B	1	50%	B9.11	Austenitic material – Single sided exam due to valve to pipe configuration.

**Request for Relief (RR-35) for Limited Code Coverage on
Piping Weld Examinations In Accordance with 10CFR50.55a(g)(5)(iii)
(Page 3 of 5)**

Table RR-35-01 Unit 1 Limited Code Coverage on Piping Weld Examinations

Welds	Name	Class	Coverage	Item	Notes
RW 020	6" Valve HV-44-1F004 to 6" Pipe	2	50%	C5.11	Austenitic material – Single sided exam due to valve to pipe configuration.

Table RR-35-02 Unit 2 Limited Code Coverage on Piping Weld Examinations

Welds	Name	Class	Coverage	Item	Notes
DBB-203-1 FW2	Valve HV-41-2F032A to 24"x24"x16" Reducing Tee	2	81.5%	R1.11 R1.18	Carbon Steel - Limited examination due to angle between the valve and the reducing tee.
DBB-204-1-1A SW7	24" Pipe to 24"x 6" Sweepolet	2	89%	R1.11 R1.18	Carbon Steel - Limited examination due to weld geometry due to the severe angle between the 24-inch pipe and the 6-inch sweepolet.
DCA-201-1 FW10	6" Pipe to Valve HV-44-2F105	1	50%	B9.11	Austenitic material – Single sided exam due to valve to pipe configuration.
DCA-201-1 SW1402	6" Pipe to Valve HV-044-2F001	1	50%	B9.11	Austenitic material – Baseline exam - Single sided exam due to valve to pipe configuration.
DCA-201-1 SW1403	Valve HV-044-2F001 to 6" Pipe	1	50%	B9.11	Austenitic material – Baseline exam - Single sided exam due to valve to pipe configuration.
DCA-201-2 SW702	6" Pipe to HV-044-2F004	1	50%	B9.11	Austenitic material – Baseline exam - Single sided exam due to valve to pipe configuration.
DCA-204-2 FW1101	12" Pipe to Valve HV-051-2F050A	1	50%	B9.11	Austenitic material – Baseline exam - Single sided exam due to valve to pipe configuration.
DCA-204-4 FW701	Valve HV-051-2F050A to 12" Pipe	1	50%	B9.11	Austenitic material – Baseline exam - Single sided exam due to valve to pipe configuration.
DCA-205-1 FW9	Flued Head (X-12) to Valve HV-51-2F008	1	75%	R1.20	Austenitic material - Limited examination due to weld geometry
DCB-202-1 FW1002	6" Pipe to Pipe	2	50%	C5.51	Austenitic material – Baseline exam – Single sided exam due to location of the weld. This weld is located very close to DCB-202-1 FW1003. The welds are so close that the area between the two welds cannot be examined.
DCB-202-1 FW1003	6" Pipe to Pipe	2	50%	C5.51	Austenitic material – Baseline exam – Single sided exam due to location of the weld. This weld is located very close to DCB-202-1 FW1002. The welds are so close that the area between the two welds cannot be examined.
DCB-202-1 SW1001	HV-044-2F004 to 6" Pipe	2	50%	C5.11	Austenitic material – Baseline exam – Single sided exam due to valve to pipe configuration.
DLA-210-1 FW1	Valve HV-52-208 to Flued Head X-16B	1	71%	R1.20	Austenitic material - Limited examination due to weld geometry
GBB-220-1 FW2	12" Pipe to Valve HV-51-2F015A	2	50%	C5.11	Austenitic material – Single sided exam due to valve to pipe configuration.
GBB-220-2 FW2	12" Pipe to Valve HV-51-2F015B	2	50%	C5.11	Austenitic material – Single sided exam due to valve to pipe configuration.
HBB-218-1 FW7	Valve HV-51-2F008 to 20" Pipe	2	50%	C5.11	Austenitic material – Single sided exam due to valve to pipe configuration.

**Request for Relief (RR-35) for Limited Code Coverage on
Piping Weld Examinations In Accordance with 10CFR50.55a(g)(5)(iii)
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5.0 BURDEN CAUSED BY COMPLIANCE

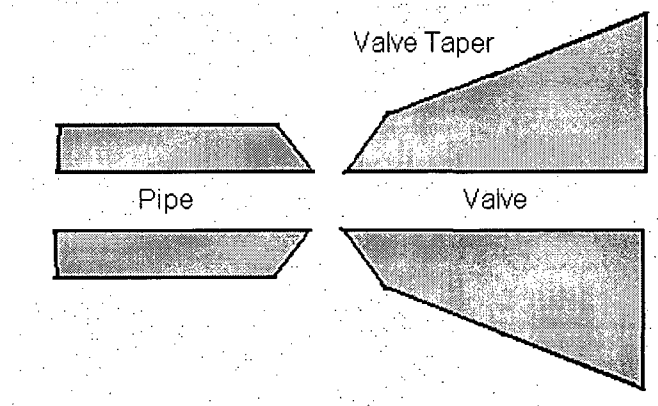
The required ASME Code coverage is impractical for the subject welds since the components would require design modifications that would impose a significant burden to Exelon.

If access is available, the weld shall be ultrasonically scanned in both directions parallel to the weld and both directions perpendicular to the weld, where required. Full credit for examination coverage may be claimed for single side exams on ferritic piping welds. However, for austenitic piping welds, an ultrasonic examination procedure must be qualified with flaws located in the inaccessible side of the weld.

There were no known qualified PDI ultrasonic examination procedures available for single side coverage that demonstrates equivalency to ultrasonic examination two-sided coverage on austenitic piping welds at the time of the examinations for the welds above. At Limerick, qualified PDI ultrasonic examination techniques have been used since 2000. However, qualified PDI procedures were not available at the time of the examination of the welds above to perform a single-sided Appendix VIII demonstration using flaws on the opposite side of the weld.

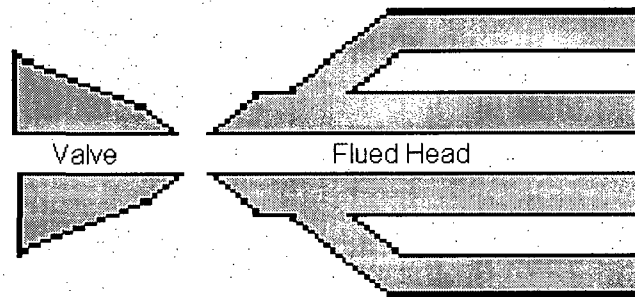
The table above provides the weld, the code required volume achieved, and the basis for not achieving full coverage. Figure 1 shows a typical configuration of a pipe to valve weld. Due to the valve taper, the examination is only acceptable from the piping side for austenitic piping welds. Figure 2 shows a typical configuration of a valve to flued head. Due to the taper of the valve and flued head, only a limited examination can be performed.

Figure 1 Typical Pipe to Valve Weld Configuration



**Request for Relief (RR-35) for Limited Code Coverage on
Piping Weld Examinations In Accordance with 10CFR50.55a(g)(5)(iii)
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Figure 2 Typical Flued Head to Valve



The inspection results for the limited weld examinations listed in tables RR-35-01 and RR-35-02 did not identify any reportable indications.

6.0 PROPOSED ALTERNATIVE AND BASIS FOR USE

No alternate provisions are practical for the subject welds. Examinations were performed to the maximum extent practical.

7.0 DURATION OF PROPOSED ALTERNATIVE

End of Interval relief is requested for the Second Ten-Year Inspection Interval for Limerick Generating Station Units 1 and 2, which ended on January 31, 2007.

8.0 PRECEDENTS:

Similar relief requests have been approved for:

1. Oyster Creek Nuclear Generating Station (OCNGS) third inspection interval Relief Request OC-35 was approved in an NRC Safety Evaluation Report dated February 2, 2005. OCGNS Relief Request OC-35 also concerns compliance with Supplement 2 of Appendix VIII.
2. Browns Ferry Nuclear Plant, Unit 3 second inspection interval Relief Request 3-ISI-12 was approved in an NRC Safety Evaluation Report dated August 3, 2006. The Browns Ferry Nuclear Plant, Unit 3 Relief Request 3-ISI-12 also concerns compliance with Appendix VIII for risk-informed welds examinations.

Attachment 3

**Relief Request 34 – LGS, Unit 1 Second
Ten-Year Inservice Inspection Interval
Component NDE Exam Limitations**

Weld: N1A

Summary Number: 600640

Unit: 1

Item Number: B3.90

Outage: 1R10 (Spring 2004)

Coverage: 75.6%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Automated UT Examination 0°L, 45°S, 60°RL, and 70°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was in accordance with ASME Section XI Appendix VIII as modified by the PDI program.

Limitation Description:

The completed examination was limited to 75.6% Code required coverage due to the design of the reactor vessel nozzle. The following coverage calculation sheet and the drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

Limerick Unit-1
Weld N1A
Spring 2004

		CODE CROSS-SECTIONAL AREA		TOTAL CODE COVERAGE		
Weld Length = 360. Exam Volume = 58.7		Required Exam Area Sq. In.	Area Scanned Auto	Percent of Area Auto	Weld Length Auto	Percent Auto
70° T-Scan	A	11.1	6	10.2%	360	5.1%
45° T-Scan	A	39.2	34.4	58.6%	360	29.3%
60° T-Scan	A	8.4	8.4	14.3%	360	7.2%
70° P-Scan	A	11.1	4.8	8.2%	360	4.1%
45° P-Scan	A	39.2	28	47.7%	360	23.9%
IRS P-Scan	A	8.4	7.2	12.3%	360	6.1%
70° T-Scan						
45° T-Scan						
60° T-Scan						
70° P-Scan						
45° P-Scan						
IRS P-Scan						
70° T-Scan						
45° T-Scan						
60° T-Scan						
70° P-Scan						
45° P-Scan						
IRS P-Scan						

% Total Composite Coverage = 75.6%

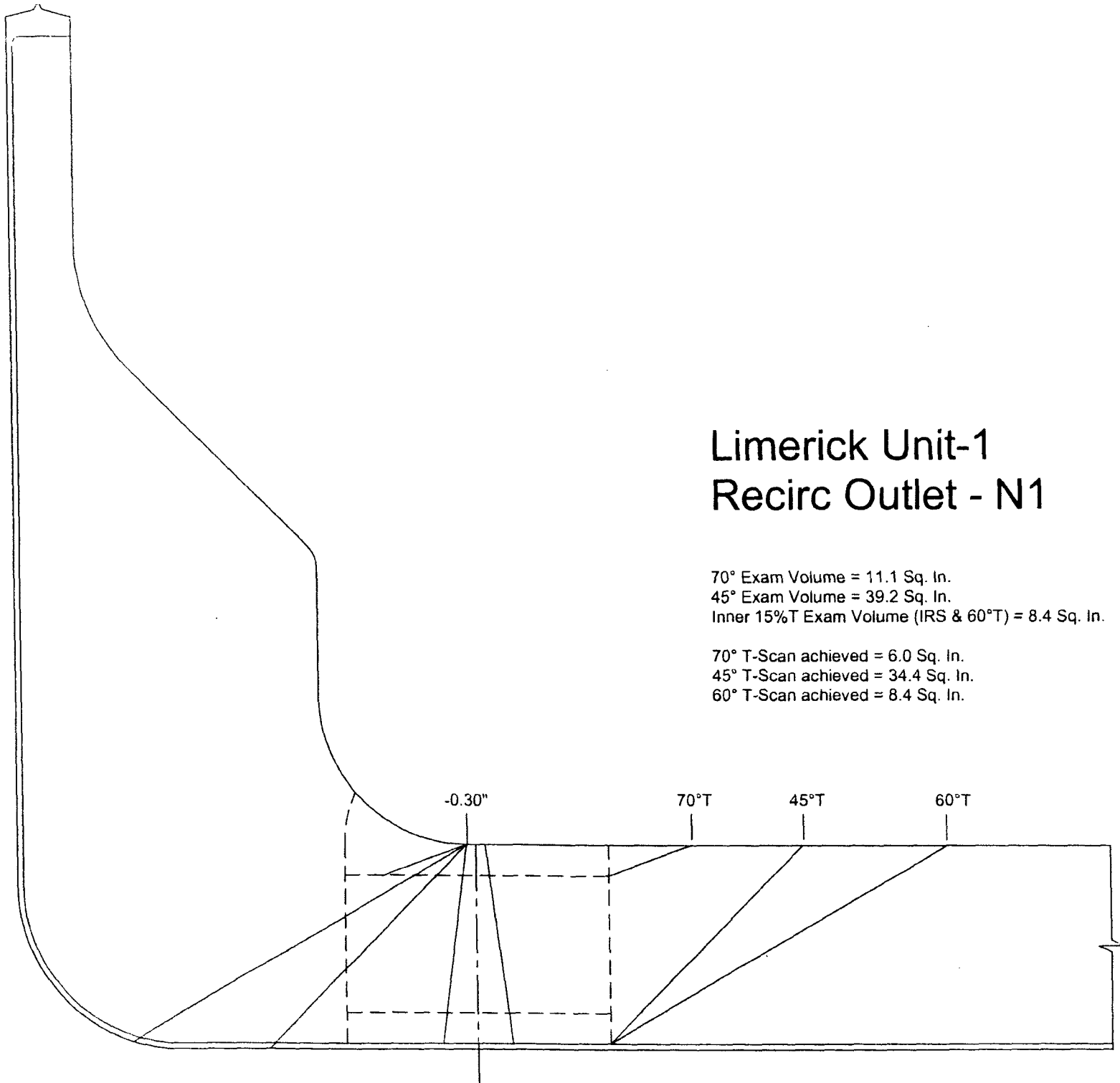
Comments: A - Scanned 360 deg., Scanning limited due to nozzle configuration.

Note - Rounding methods may affect calculated values.

Limerick Unit-1 Recirc Outlet - N1

70° Exam Volume = 11.1 Sq. In.
45° Exam Volume = 39.2 Sq. In.
Inner 15%T Exam Volume (IRS & 60°T) = 8.4 Sq. In.

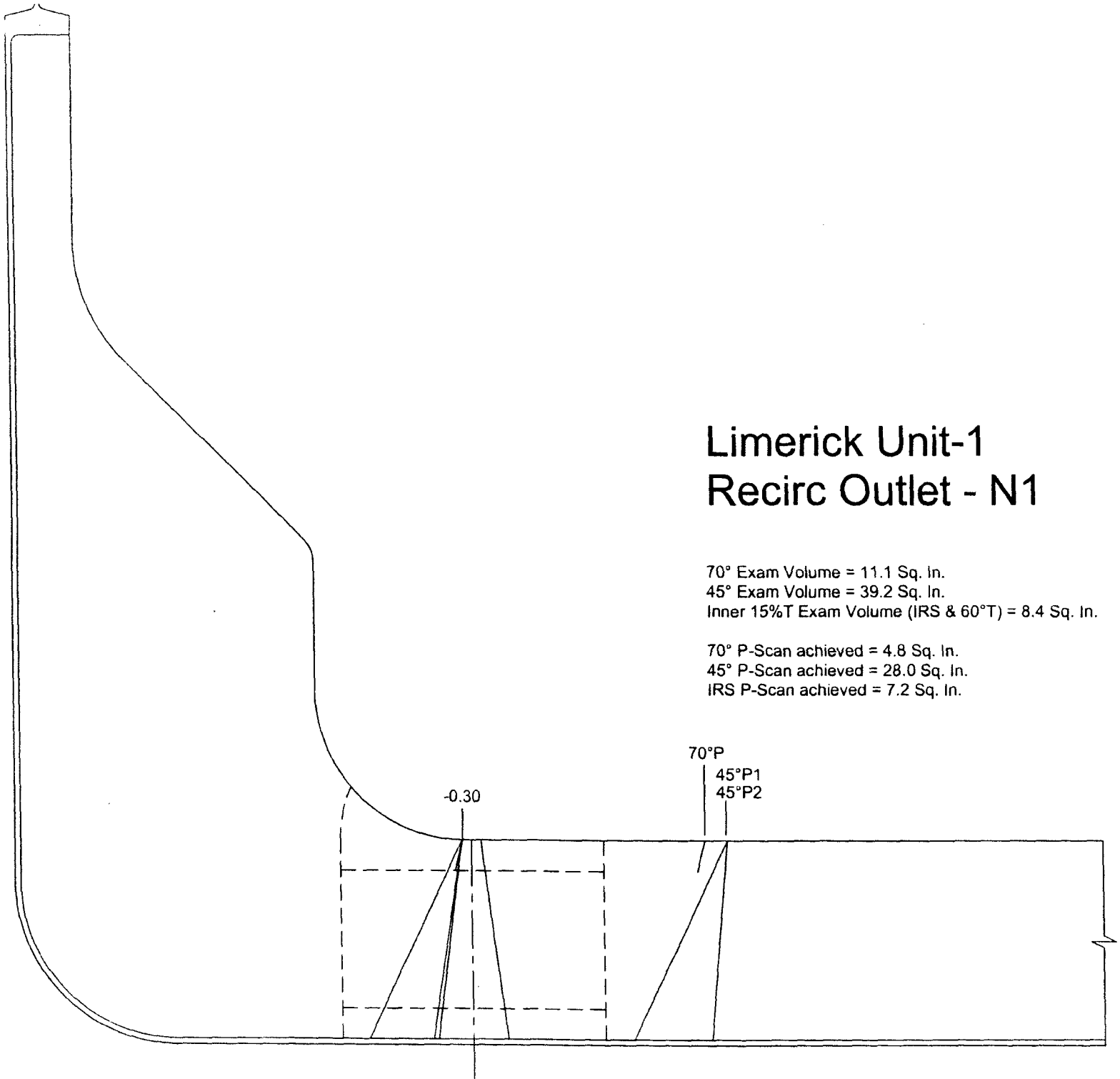
70° T-Scan achieved = 6.0 Sq. In.
45° T-Scan achieved = 34.4 Sq. In.
60° T-Scan achieved = 8.4 Sq. In.



Limerick Unit-1 Recirc Outlet - N1

70° Exam Volume = 11.1 Sq. In.
45° Exam Volume = 39.2 Sq. In.
Inner 15%T Exam Volume (IRS & 60°T) = 8.4 Sq. In.

70° P-Scan achieved = 4.8 Sq. In.
45° P-Scan achieved = 28.0 Sq. In.
IRS P-Scan achieved = 7.2 Sq. In.



Weld: N1B

Summary Number: 600670

Unit: 1

Item Number: B3.90

Outage: 1R07 (Spring 1998)

Coverage: 60%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Automated UT Examination 0°L, 45°S, and 60°S

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

No, the examination was performed to requirements contained in ASME Section XI, Section V, and Reg Guide 1.150. This was the approved technical guidance at the time of the examination.

Limitation Description:

The completed examination was limited to 60% Code required coverage due to the design of the reactor vessel nozzle. The following coverage calculation sheet and the drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

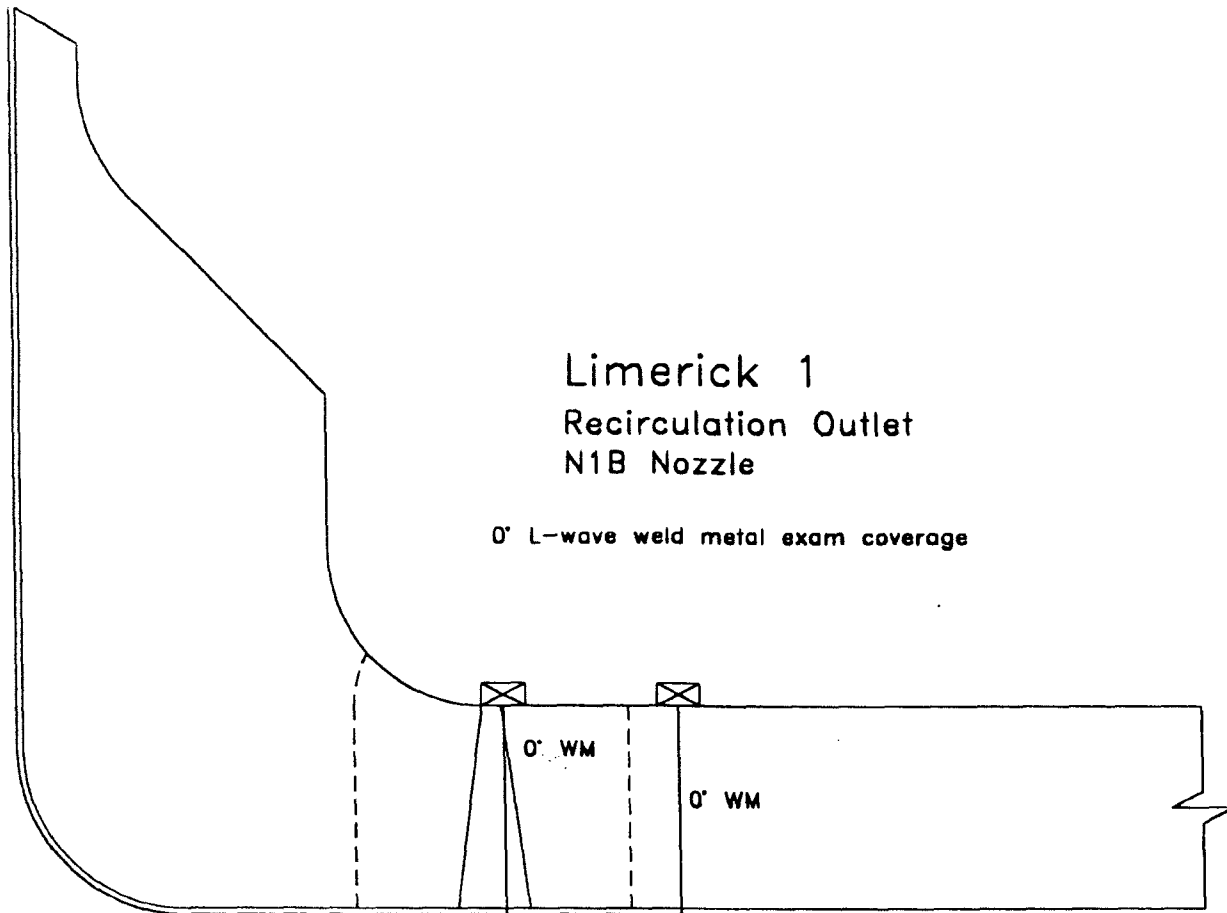
N1B Nozzle

Automated scans were not restricted
No credit taken for initial 1/4" of material in Code coverage calculations due to near field effects.

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Limerick 1
Recirculation Outlet
N1B Nozzle

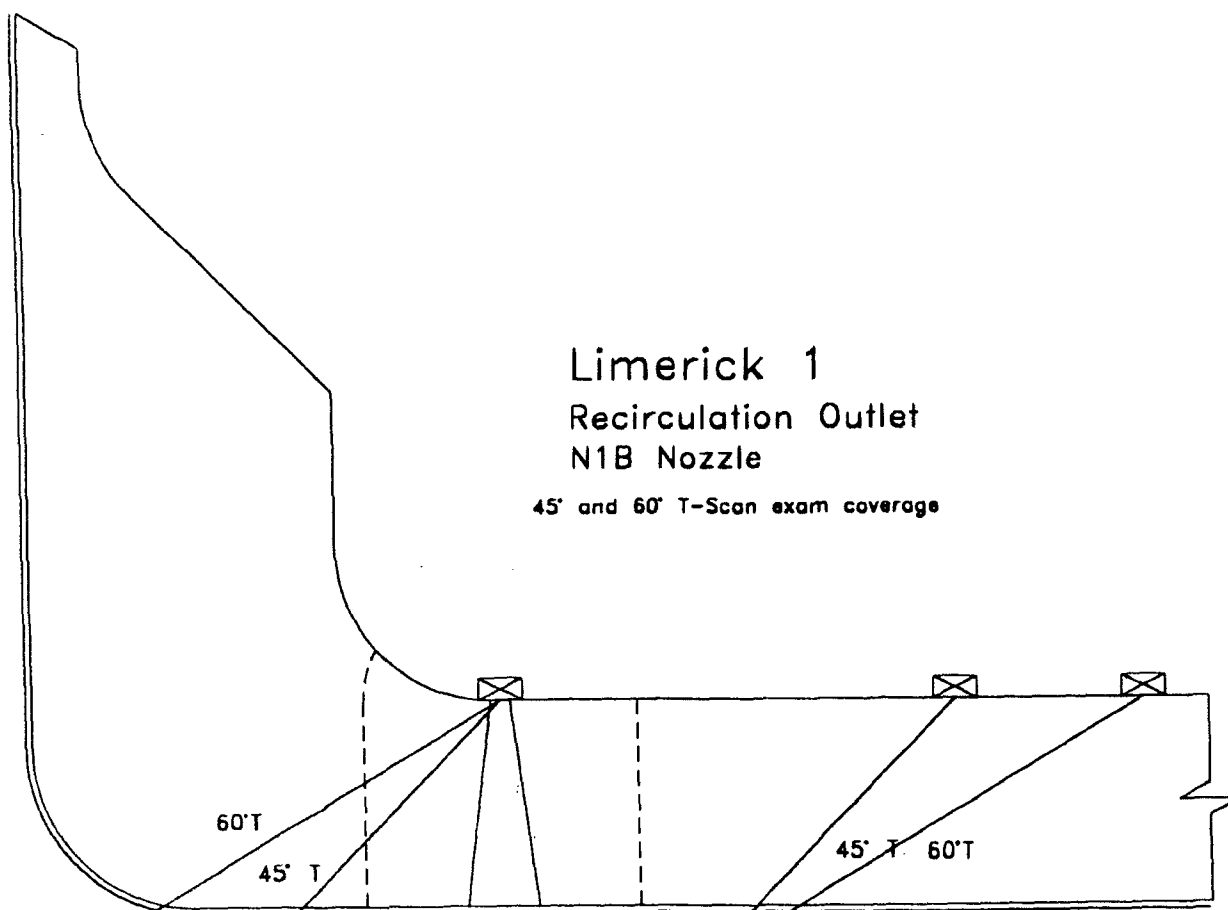
0' L-wave weld metal exam coverage



11/10/2011

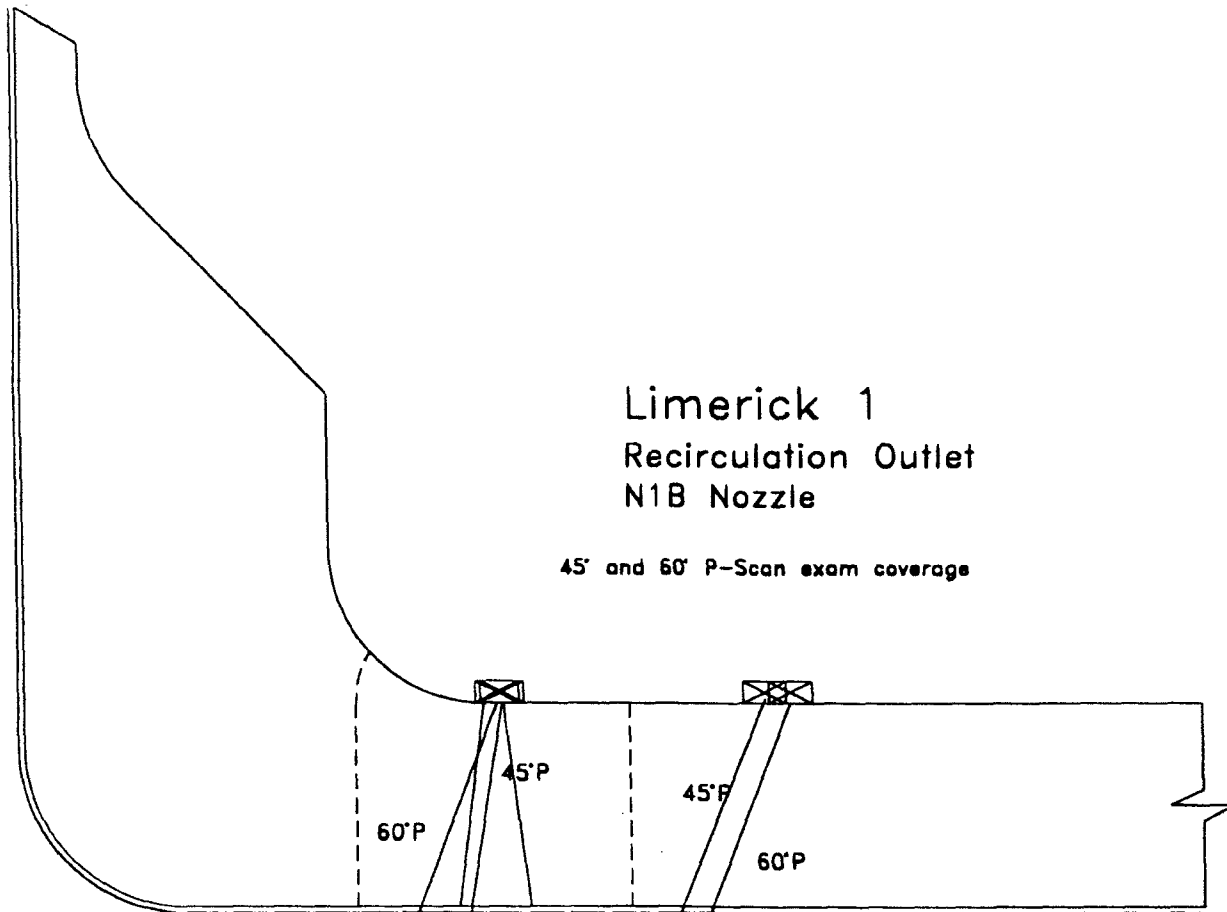
Limerick 1
Recirculation Outlet
N1B Nozzle

45° and 60° T-Scan exam coverage



Limerick 1
Recirculation Outlet
N1B Nozzle

45° and 60° P-Scan exam coverage



Weld: N2A

Summary Number: 600700

Unit: 1

Item Number: B3.90

Outage: 1R07 (Spring 1998)

Coverage: 61.9%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Automated UT Examination 0°L, 45°S, and 60°S

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

No, the examination was performed to requirements contained in ASME Section XI, Section V and Reg Guide 1.150. This was the approved technical guidance at the time of the examination.

Limitation Description:

The completed examination was limited to 61.9% Code required coverage due to the design of the reactor vessel nozzle. The following coverage calculation sheet and the drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

Limerick Unit 1

N2A Nozzle

	CROSS SECTIONAL AREA (per slice)					TOTAL CODE COVERAGE			
	code cross sectional area	area scanned automated	area scanned manually	% of code area scanned automated	% of code area scanned manually	degrees scanned automated	degrees scanned manually	percent scanned automated	percent scanned manually
0 wm	59.43	27.33	0	45.99	0.00	360	0.0	46.0	0.0
45 T-scan	59.43	45.87	0	77.18	0.00	360	0.0	77.2	0.0
60 T-scan	59.43	49.82	0	83.83	0.00	360	0.0	83.8	0.0
45 P-scan CW	59.43	32.84	0	55.26	0.00	360	0.0	55.3	0.0
60 P-scan CW	59.43	34.36	0	57.82	0.00	360	0.0	57.8	0.0
45 P-scan CCW	59.43	32.84	0	55.26	0.00	360	0.0	55.3	0.0
60 P-scan CCW	59.43	34.36	0	57.82	0.00	360	0.0	57.8	0.0
Coverages								61.9	0.0
Total coverage								61.9	

Automated scans were not restricted

No credit taken for initial 1/4" of material in Code coverage calculations due to near field effects.

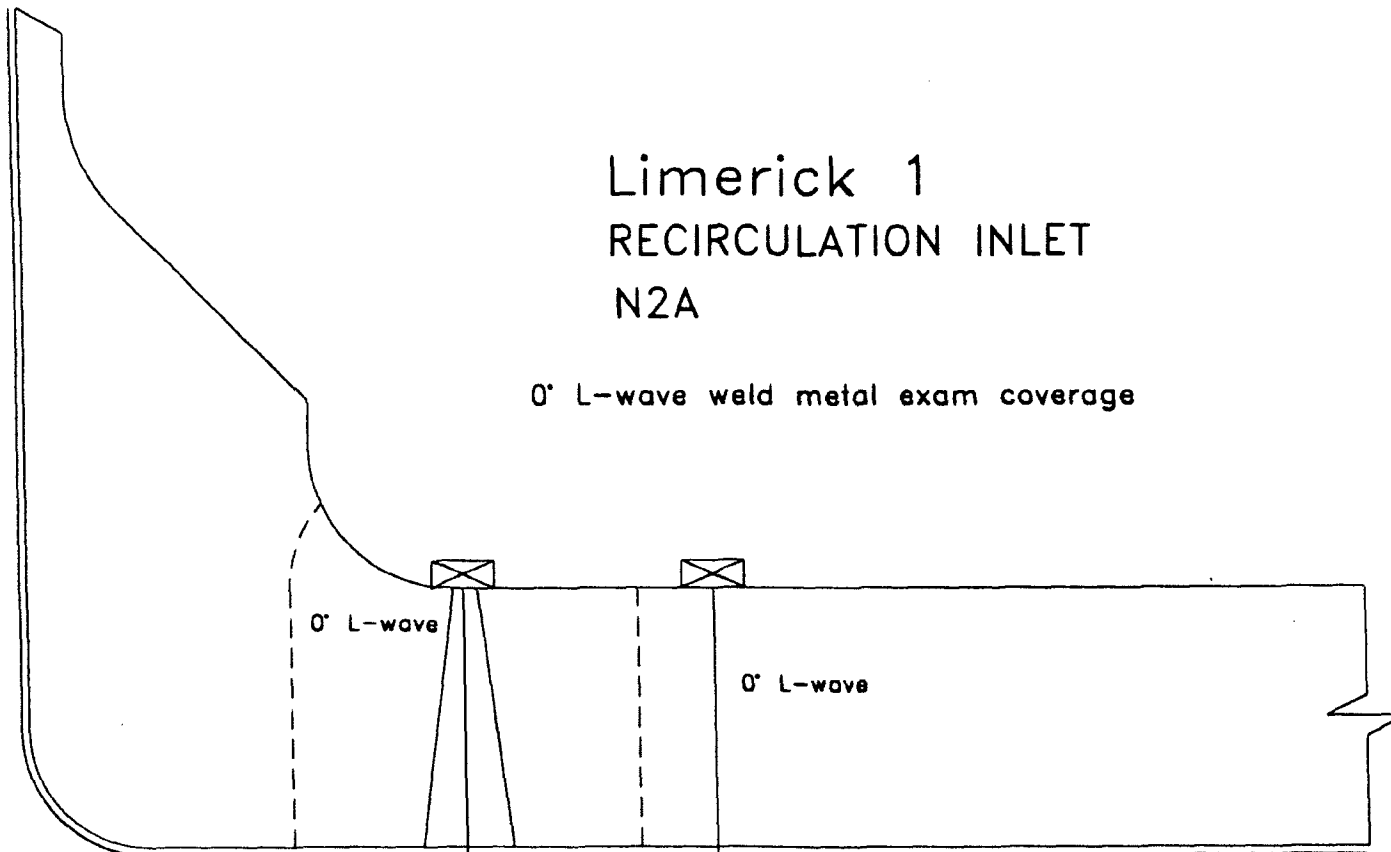
REVIEWED PECO Energy Co.
NDE SUPPORT GROUP

APR 20 '93

MSB 4/21/98
AUII

Limerick 1
RECIRCULATION INLET
N2A

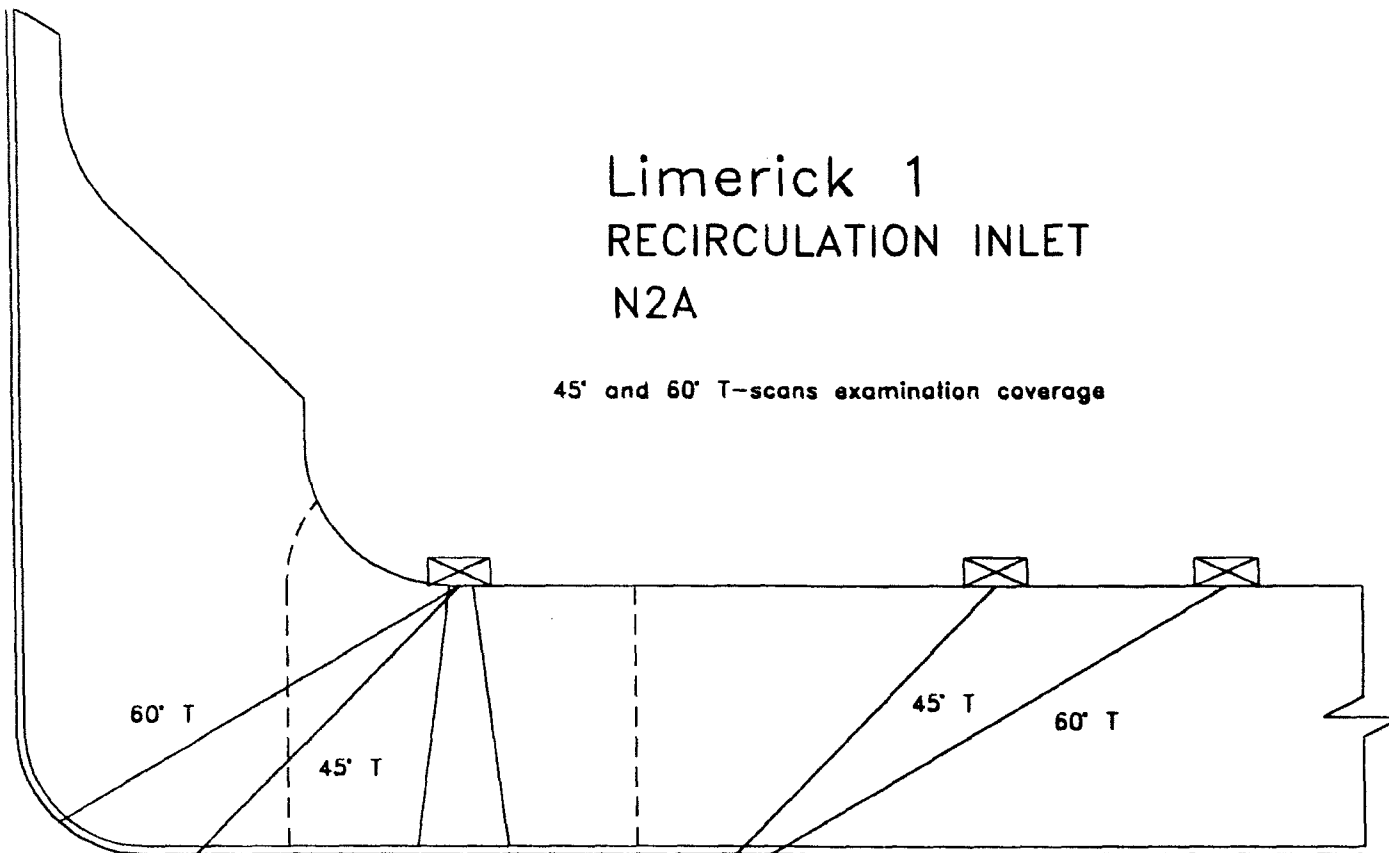
0' L-wave weld metal exam coverage



REVIEWED PECO Energy Co. *J. L. Anderson* APR 20 '83
NDE SUPPORT GROUP

Limerick 1
RECIRCULATION INLET
N2A

45' and 60' T-scans examination coverage

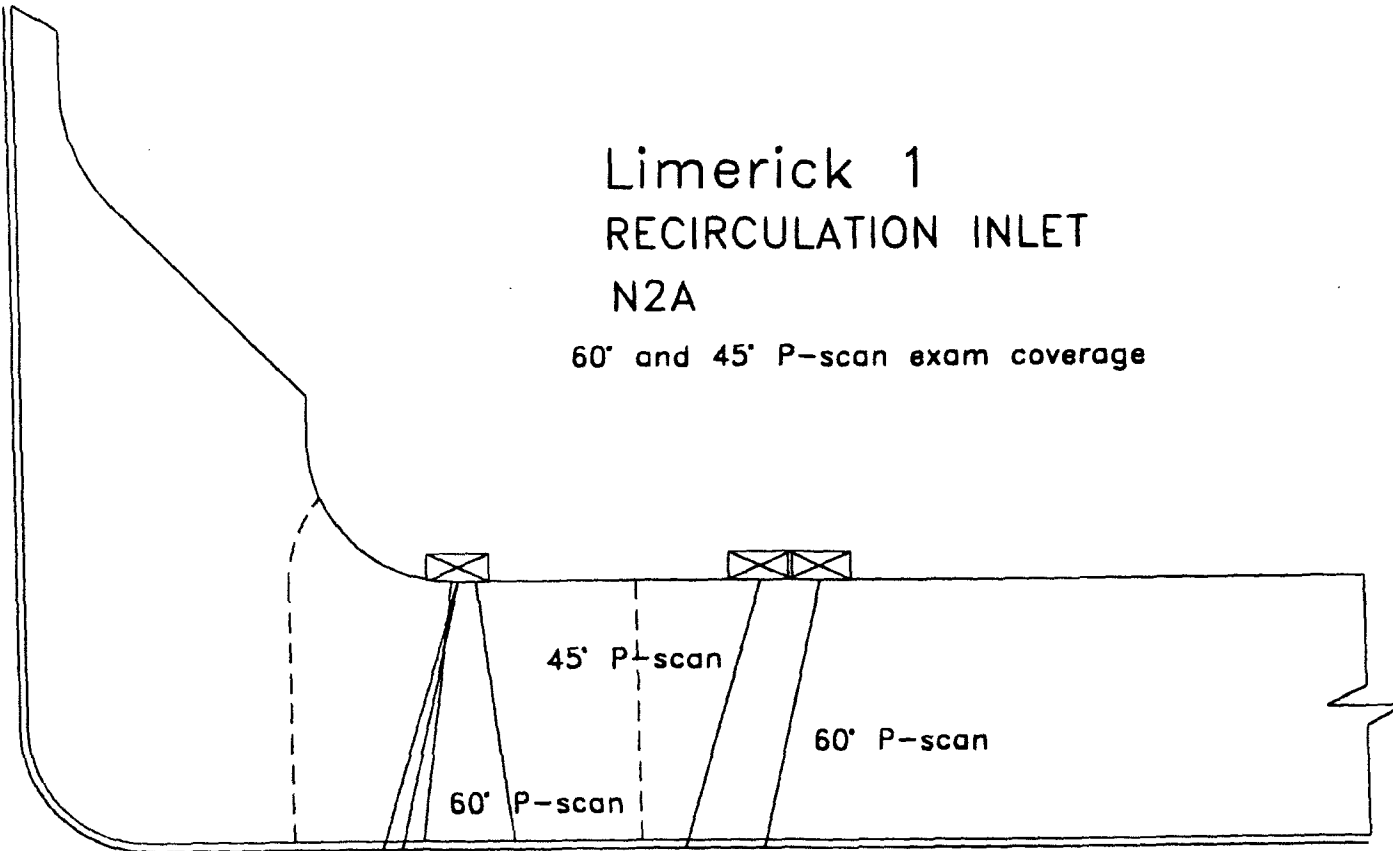


MSB 4/21/98
LIMERICK
1907
PAGE 25 OF 36

J. C. Adersell
APR 20 '03

Limerick 1 RECIRCULATION INLET N2A

60° and 45° P-scan exam coverage



MSB 4/21/98
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Weld: N2B

Summary Number: 600730

Unit: 1

Item Number: B3.90

Outage: 1R09 (Spring 2002)

Coverage: 59.3%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Automated UT Examination 0°L, 45°S, 60°S and 70°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

No, the examination was performed to requirements contained in ASME Section XI, Section V and Reg Guide 1.150. This was the approved technical guidance at the time of the examination.

Limitation Description:

The completed examination was limited to 59.3% Code required coverage due to the design of the reactor vessel nozzle. The following coverage calculation sheet and the drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

**Limerick Unit 1
N2B
Spring 2002**

Obstructed	CODE CROSS-SECTIONAL AREA					TOTAL CODE COVERAGE				
	Area Inch ²	Area Scanned		% of Area Scanned		Degrees Scanned		% Scanned		
		Auto	Manual	Auto	Manual	Auto	Manual	Auto	Manual	
0° WELD METAL	N	63.21	27.33	0.0	43.2	0.0	360.0	0.0	43.2	0.0
45° T-SCAN	N	63.21	45.87	0.0	72.6	0.0	360.0	0.0	72.6	0.0
60° T-SCAN	Y	63.21	49.84	0.0	78.8	0.0	360.0	0.0	78.8	0.0
45° P-SCAN CW	N	63.21	32.76	0.0	51.8	0.0	360.0	0.0	51.8	0.0
60° P-SCAN CW	N	63.21	36.97	0.0	58.5	0.0	360.0	0.0	58.5	0.0
45° P-SCAN CCW	N	63.21	32.76	0.0	51.8	0.0	360.0	0.0	51.8	0.0
60° P-SCAN CCW	N	63.21	36.97	0.0	58.5	0.0	360.0	0.0	58.5	0.0
									59.3	0.0

Total 0°, 45° and 60° Coverage = 59.3

70° T-SCAN	N	22.67	10.53	0.0	46.4	0.0	360.0	0.0	46.4	0.0
70° P-SCAN CW	N	22.67	7.82	0.0	34.5	0.0	360.0	0.0	34.5	0.0
70° P-SCAN CCW	N	22.67	7.82	0.0	34.5	0.0	360.0	0.0	34.5	0.0
									38.5	0.0

Total 70° Coverage = 38.5

COMMENTS:

Automated UT scans were limited due to the nozzle radius.
Credit for the initial 1/4" of material in code coverage taken with the 70°

02/29/01

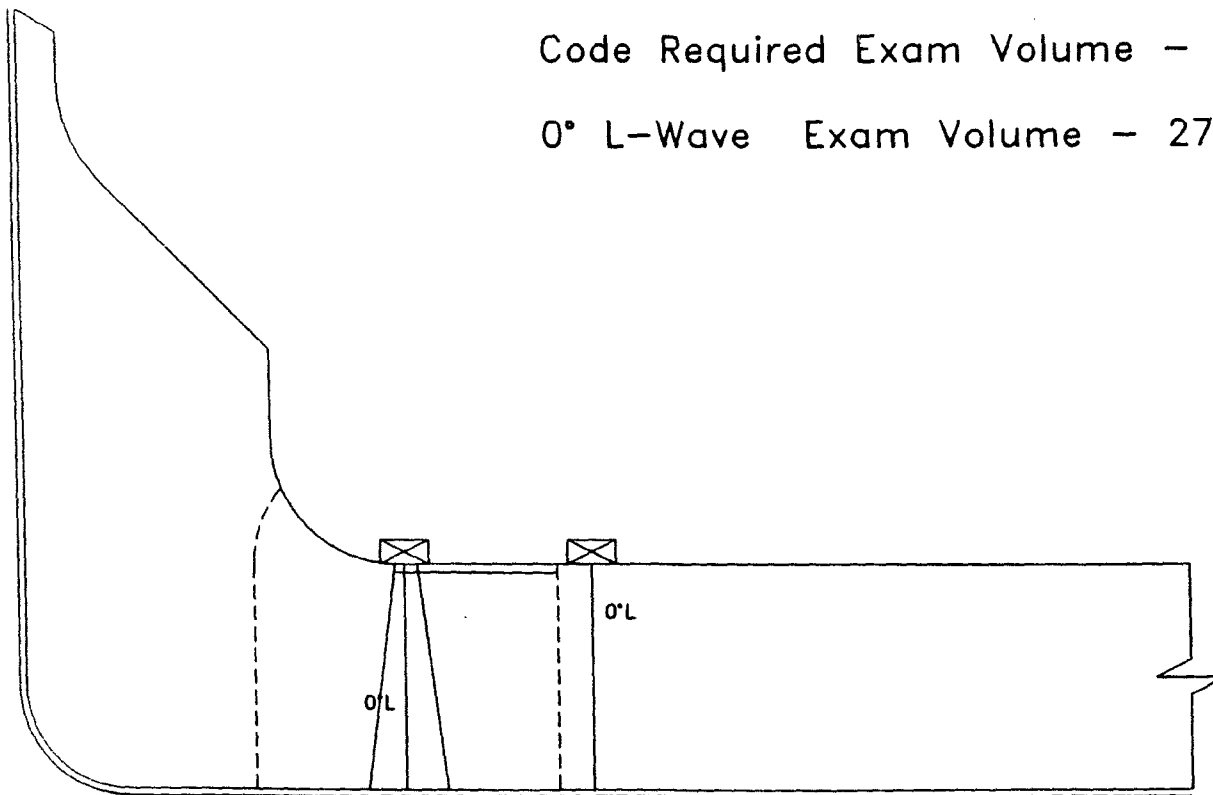
1 RC9
PLOT
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Limerick 1

Recirculation Inlet

Code Required Exam Volume – 63.21 Sq. In.

0° L-Wave Exam Volume – 27.33 Sq. In.



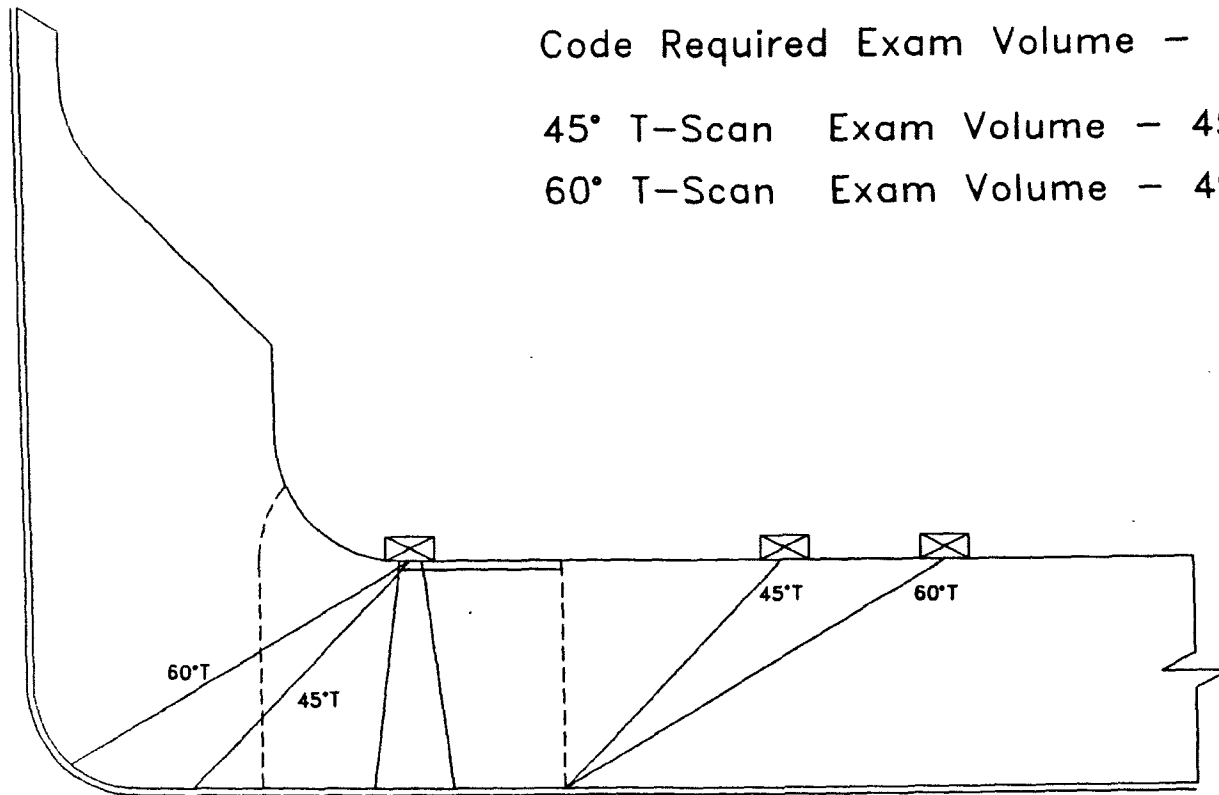
Limerick 1

Recirculation Inlet

Code Required Exam Volume - 63.21 Sq. In.

45° T-Scan Exam Volume - 45.87 Sq. In.

60° T-Scan Exam Volume - 49.84 Sq. In.



1809
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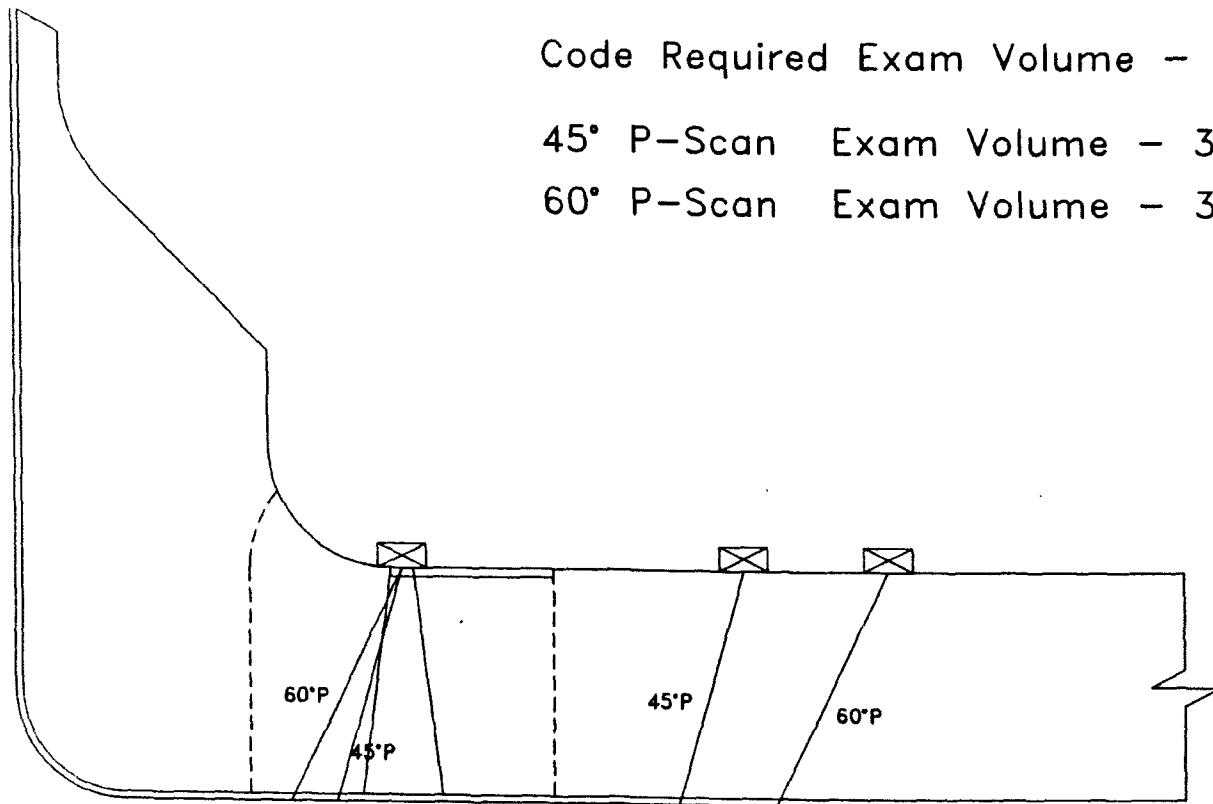
Limerick 1

Recirculation Inlet

Code Required Exam Volume - 63.21 Sq. In.

45° P-Scan Exam Volume - 32.76 Sq. In.

60° P-Scan Exam Volume - 36.97 Sq. In.



Limerick
109
22
29

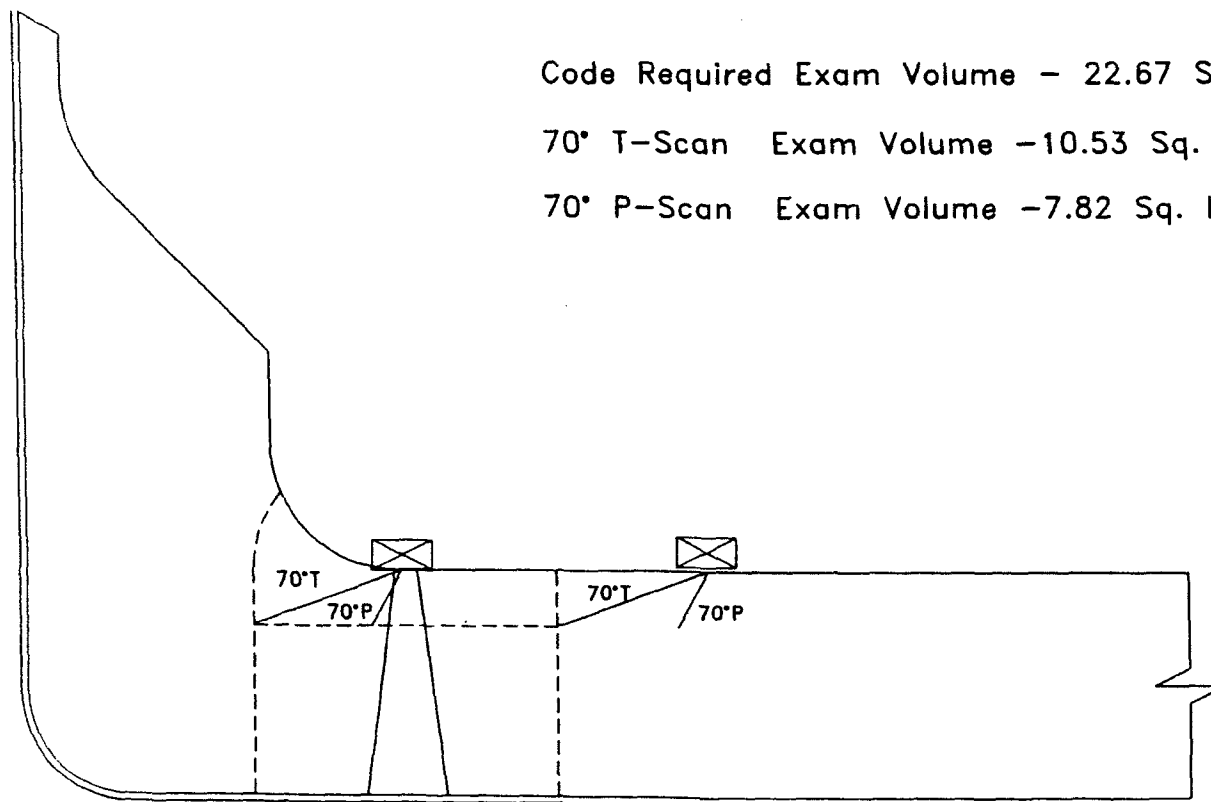
Limerick 1

Recirculation Inlet

Code Required Exam Volume - 22.67 Sq. In.

70° T-Scan Exam Volume - 10.53 Sq. In.

70° P-Scan Exam Volume - 7.82 Sq. In.



Weld: N2C

Summary Number: 600760

Unit: 1

Item Number: B3.90

Outage: 1R09 (Spring 2002)

Coverage: 51.9%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Automated UT Examination 0°L, 45°S, 60°S and 70°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

No, the examination was performed to requirements contained in ASME Section XI, Section V and Reg Guide 1.150. This was the approved technical guidance at the time of the examination.

Limitation Description:

The completed examination was limited to 51.9% Code required coverage due to the design of the reactor vessel nozzle and the location of the N8A nozzle. The following coverage calculation sheet and the drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

**Limerick Unit 1
N2C
Spring 2002**

Obstructed	CODE CROSS-SECTIONAL AREA					TOTAL CODE COVERAGE				
	Area Inch ²	Area Scanned		% of Area Scanned		Degrees Scanned		% Scanned		
		Auto	Manual	Auto	Manual	Auto	Manual	Auto	Manual	
0° WELD METAL	N	63.21	27.33	0.0	43.2	0.0	360.0	0.0	43.2	0.0
45° T-SCAN	N	63.21	45.87	0.0	72.6	0.0	360.0	0.0	72.6	0.0
60° T-SCAN	Y	63.21	49.84	0.0	78.8	0.0	321.0	0.0	70.3	0.0
60° T-SCAN	Y	63.21	48.18	0.0	76.2	0.0	39.0	0.0	8.3	0.0
45° P-SCAN CW	N	63.21	32.76	0.0	51.8	0.0	360.0	0.0	51.8	0.0
60° P-SCAN CW	N	63.21	36.97	0.0	58.5	0.0	360.0	0.0	58.5	0.0
45° P-SCAN CCW	N	63.21	32.76	0.0	51.8	0.0	360.0	0.0	51.8	0.0
60° P-SCAN CCW	N	63.21	36.97	0.0	58.5	0.0	360.0	0.0	58.5	0.0
									51.9	0.0

Total 0°, 45° and 60° Coverage = 51.9

70° T-SCAN	N	22.67	10.53	0.0	46.4	0.0	360.0	0.0	46.4	0.0
70° P-SCAN CW	N	22.67	7.82	0.0	34.5	0.0	360.0	0.0	34.5	0.0
70° P-SCAN CCW	N	22.67	7.82	0.0	34.5	0.0	360.0	0.0	34.5	0.0
									38.5	0.0

Total 70° Coverage = 38.5

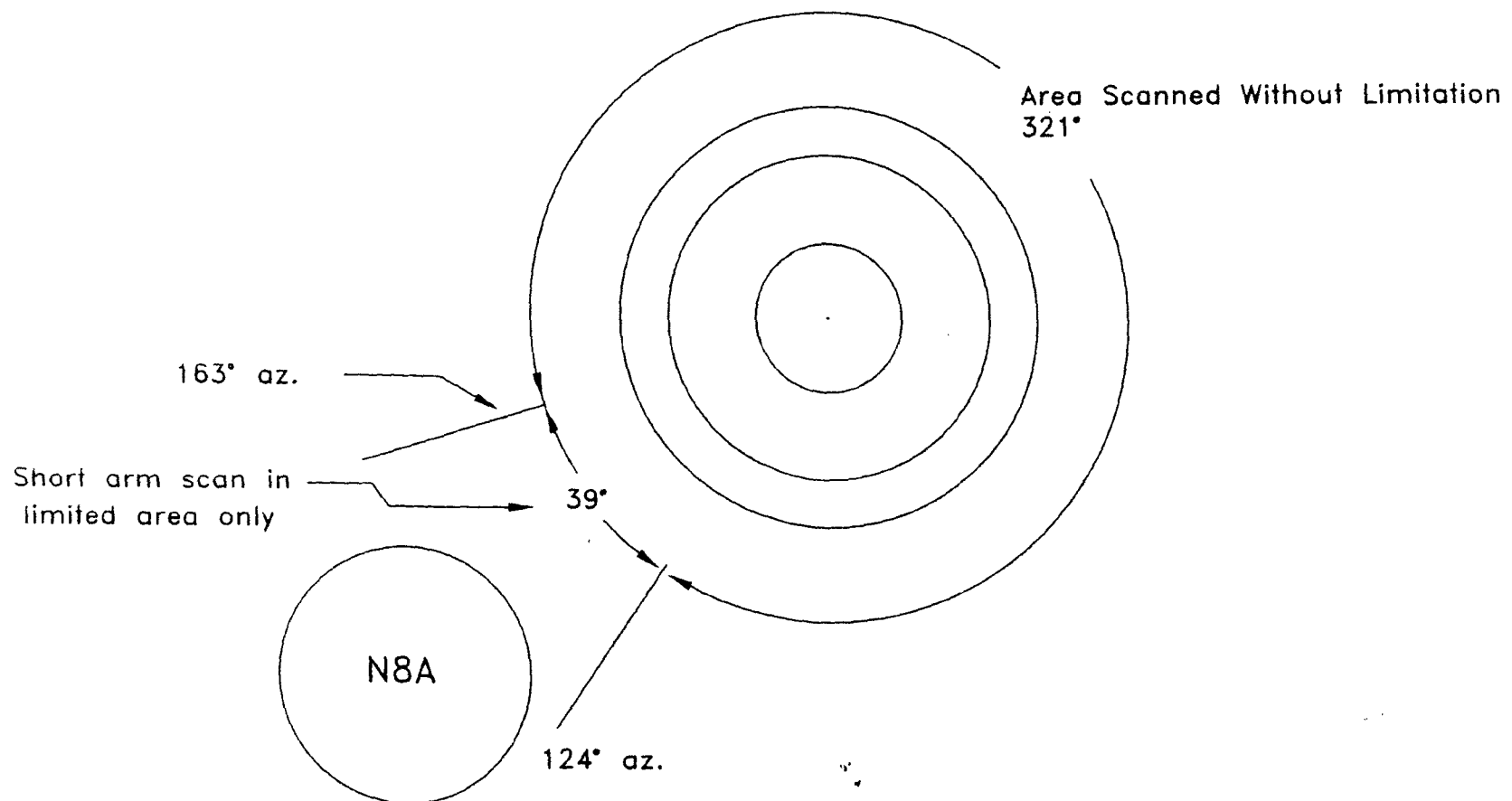
COMMENTS:

Automated UT scans were limited due to the nozzle radius.
Credit for the initial 1/4" of material in code coverage taken with the 70°

02/29/01

N2C Exam Limited Due to N8A Nozzle

45°/60° Transverse Scan



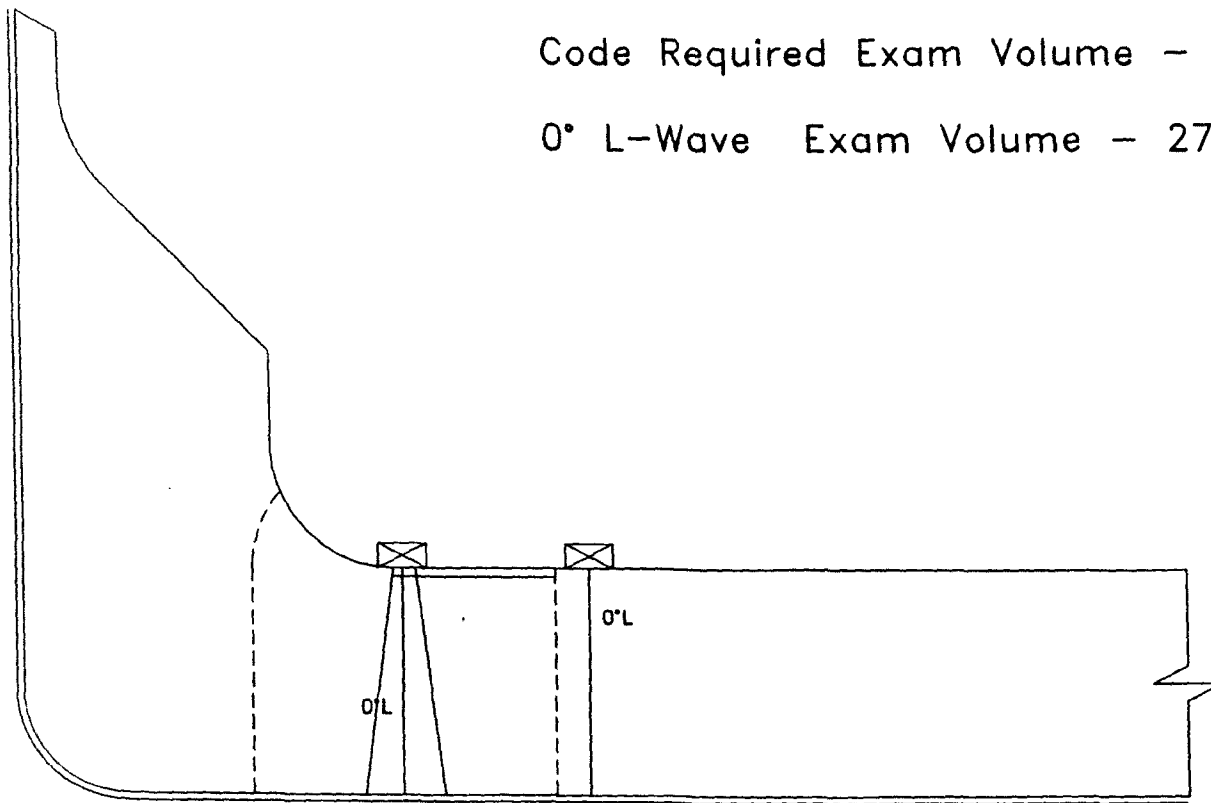
12 1" 60.1

Limerick 1

Recirculation Inlet

Code Required Exam Volume – 63.21 Sq. In.

0° L-Wave Exam Volume – 27.33 Sq. In.



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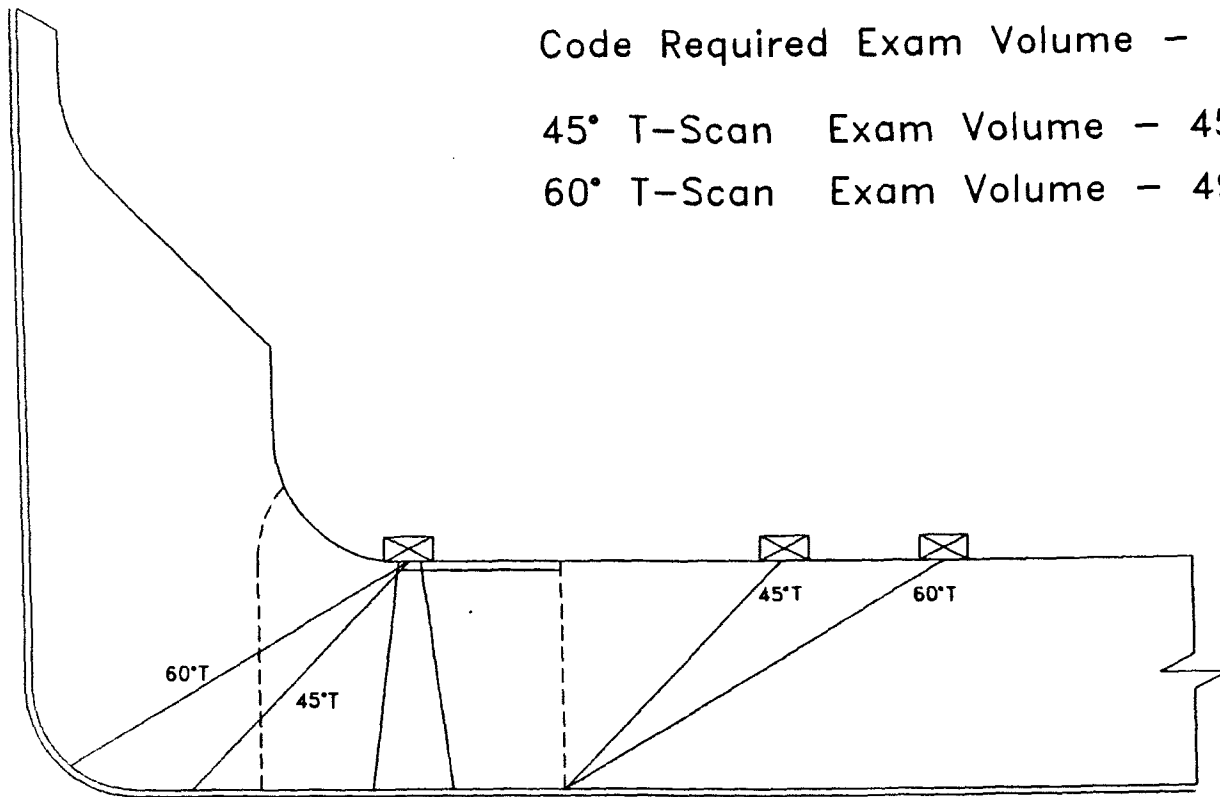
Limerick 1

Recirculation Inlet

Code Required Exam Volume - 63.21 Sq. In.

45° T-Scan Exam Volume - 45.87 Sq. In.

60° T-Scan Exam Volume - 49.84 Sq. In.



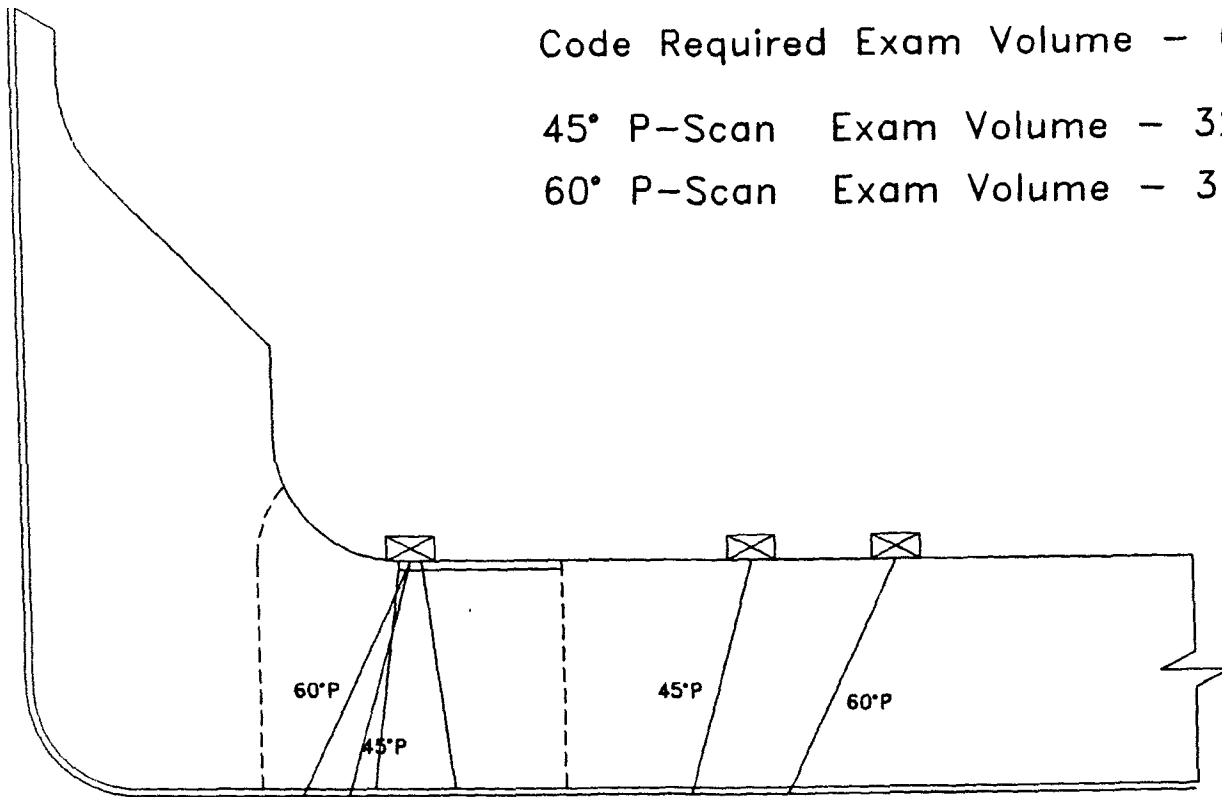
Limerick 1

Recirculation Inlet

Code Required Exam Volume - 63.21 Sq. In.

45° P-Scan Exam Volume - 32.76 Sq. In.

60° P-Scan Exam Volume - 36.97 Sq. In.



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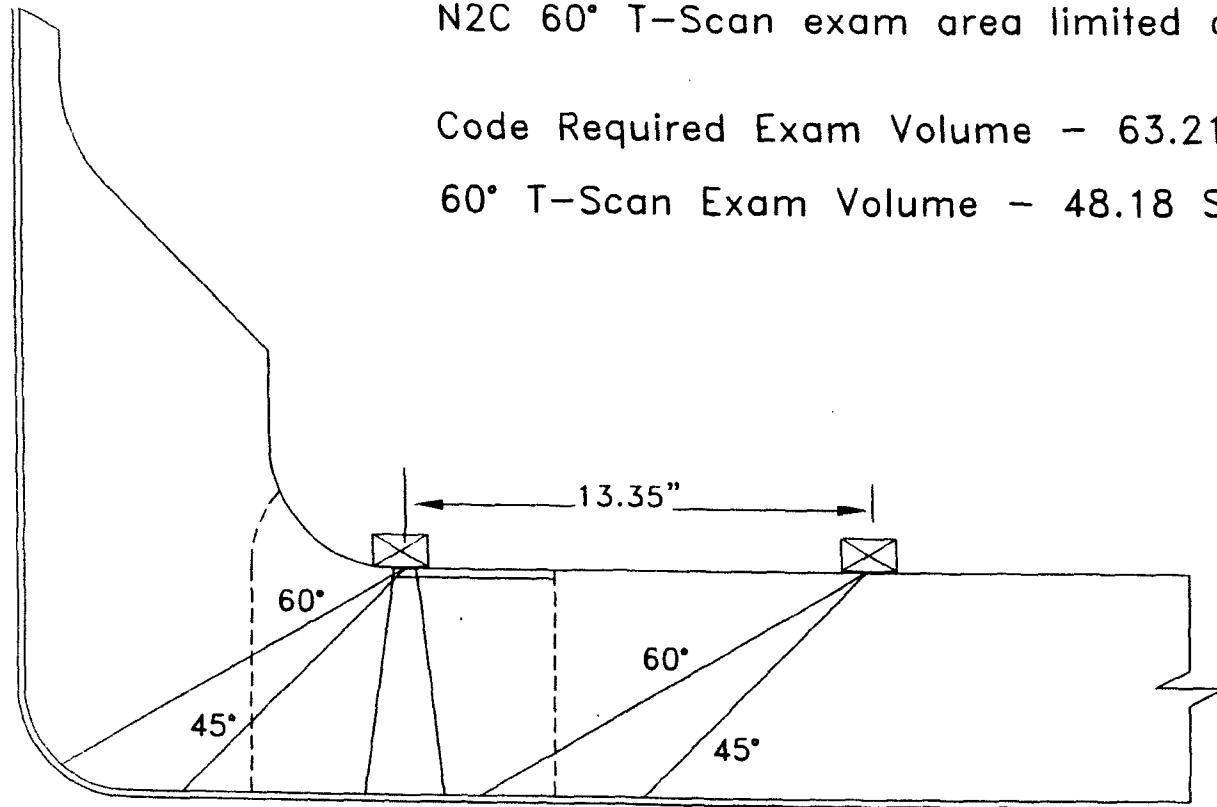
Limerick 1

Recirculation Inlet

N2C 60° T-Scan exam area limited due to N8A nozzle

Code Required Exam Volume - 63.21 Sq. In.

60° T-Scan Exam Volume - 48.18 Sq. In.



101
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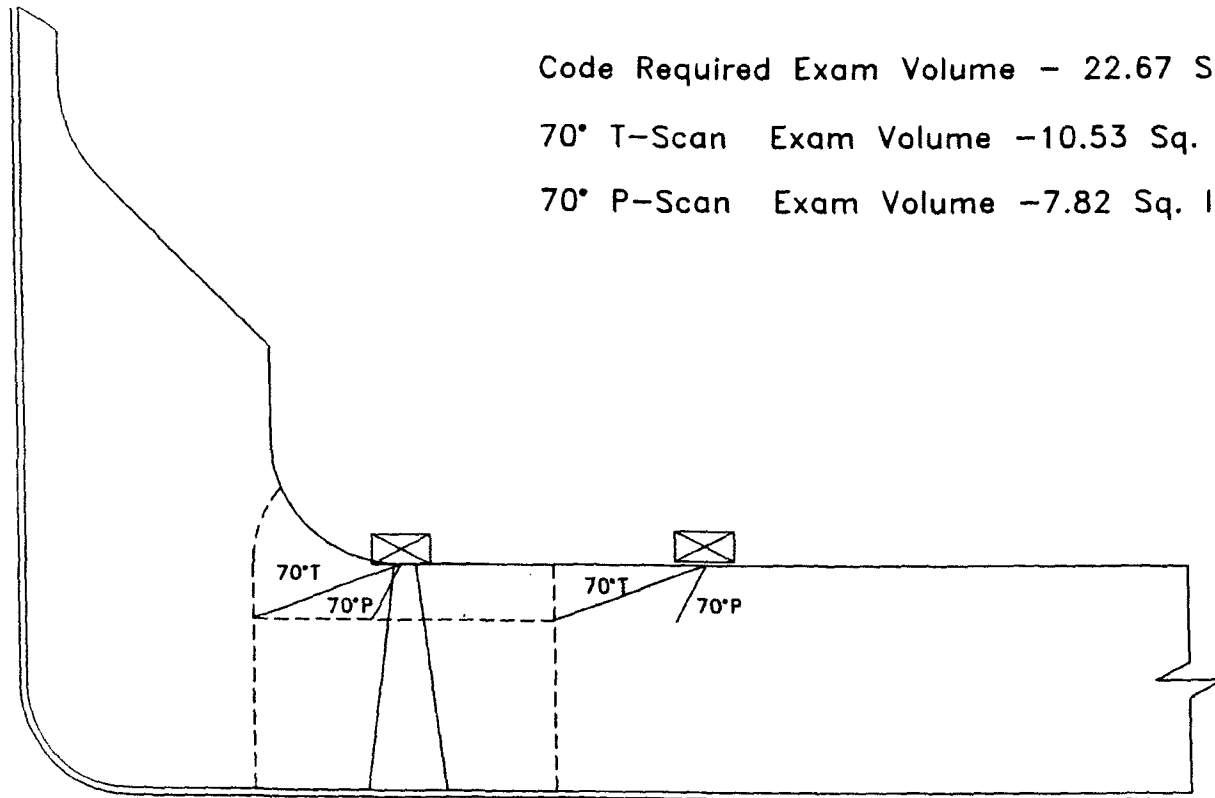
Limerick 1

Recirculation Inlet

Code Required Exam Volume - 22.67 Sq. In.

70° T-Scan Exam Volume - 10.53 Sq. In.

70° P-Scan Exam Volume - 7.82 Sq. In.



Weld: N2D

Summary Number: 600790

Unit: 1

Item Number: B3.90

Outage: 1R07 (Spring 1998)

Coverage: 61.9%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Automated UT Examination 0°L, 45°S, and 60°S

Manual UT Examination was performed in area obstructed by the N8A nozzle.

This was performed to increase code coverage.

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

No, the examination was performed to requirements contained in ASME Section XI, Section V, and Reg Guide 1.150. This was the approved technical guidance at the time of the examination.

Limitation Description:

The completed examination was limited to 61.9% Code required coverage due to the design of the reactor vessel nozzle and the location of the N8A nozzle. The following coverage calculation sheet and the drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

Limerick Unit 1

N2D Nozzle

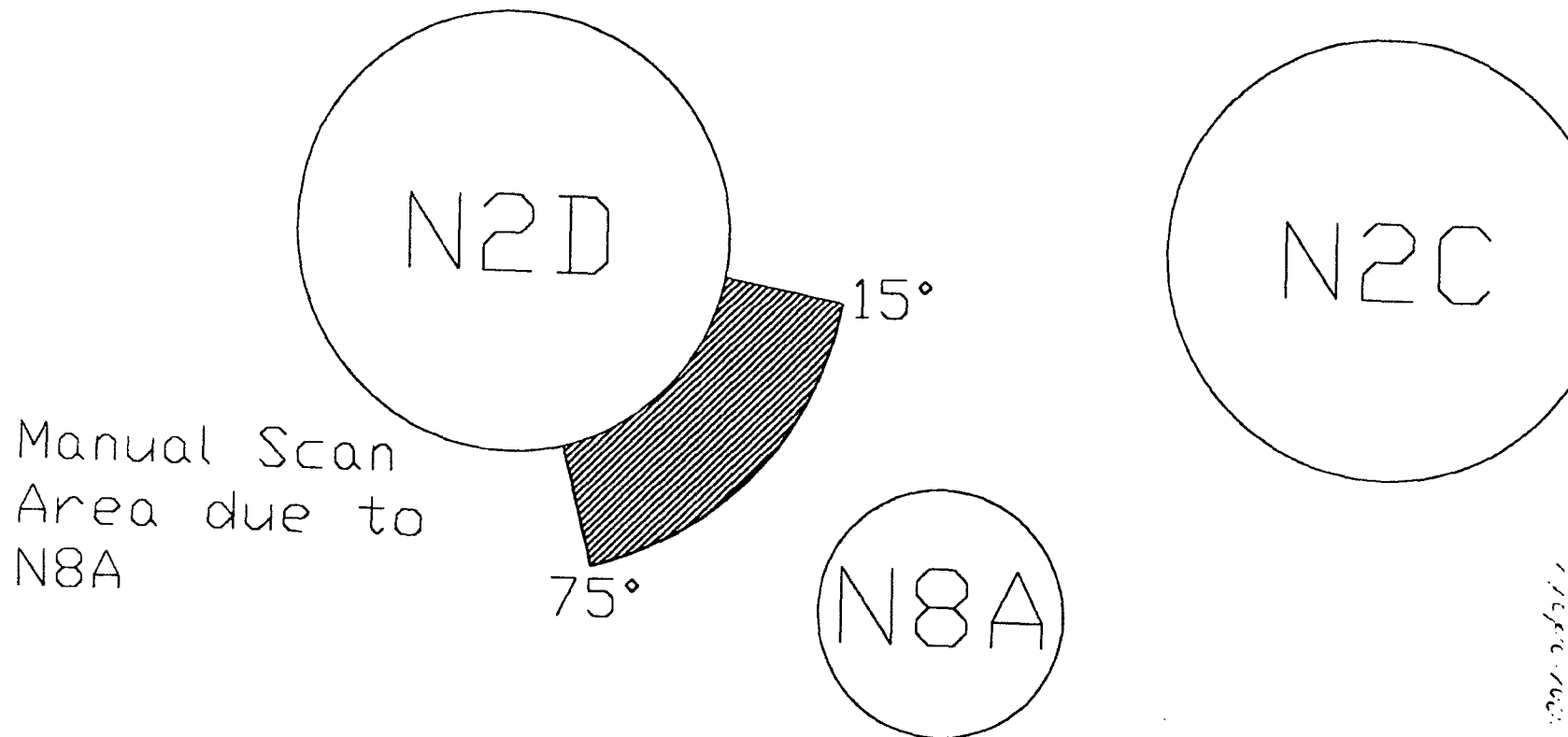
	CROSS SECTIONAL AREA (per slice)					TOTAL CODE COVERAGE			
	code cross sectional area	area scanned automated	area scanned manually	% of code area scanned automated	% of code area scanned manually	degrees scanned automated	degrees scanned manually	percent scanned automated	percent scanned manually
0 wm	59.43	27.33	0	45.99	0.00	360	0.0	46.0	0.0
45 T-scan	59.43	45.87	0	77.18	0.00	360	0.0	77.2	0.0
60 T-scan	59.43	49.82	49.82	83.83	83.83	300	60.0	69.9	14.0
45 P-scan CW	59.43	32.84	0	55.26	0.00	360	0.0	55.3	0.0
60 P-scan CW	59.43	34.36	0	57.82	0.00	360	0.0	57.8	0.0
45 P-scan CCW	59.43	32.84	0	55.26	0.00	360	0.0	55.3	0.0
60 P-scan CCW	59.43	34.36	0	57.82	0.00	360	0.0	57.8	0.0
						Coverages		59.9	2.0
						Total coverage		61.9	

No credit taken for initial 1/4" of material in Code coverage calculations due to near field effects.

REVIEWED PECO Energy Co.
PORT GROUP

APR 27 '98

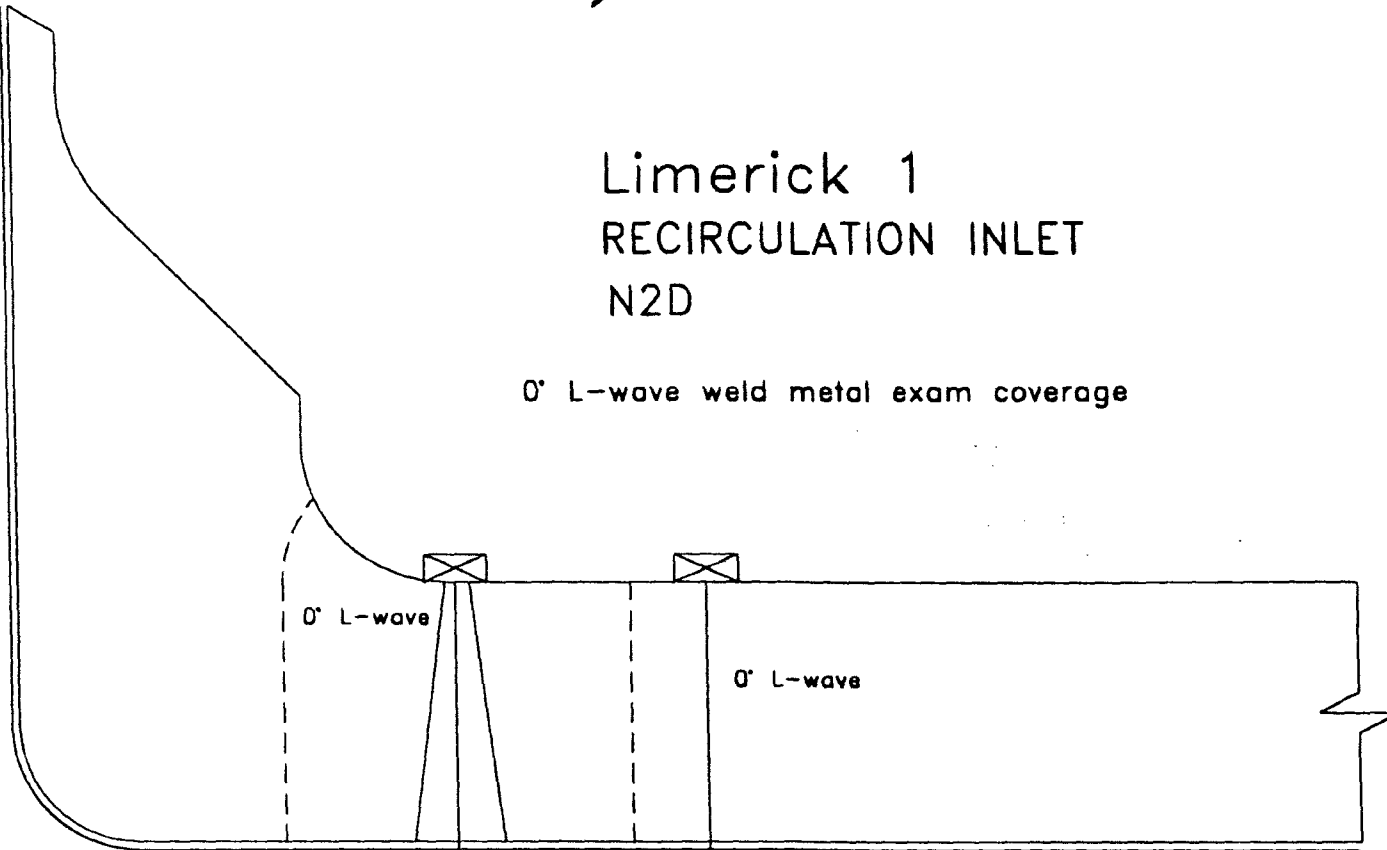
REVIEWED PECO Energy Co. J.P. Anderson APR 27 '98
NDE SUPPORT GROUP



J. E. Adair APR 27 '98

Limerick 1 RECIRCULATION INLET N2D

0° L-wave weld metal exam coverage

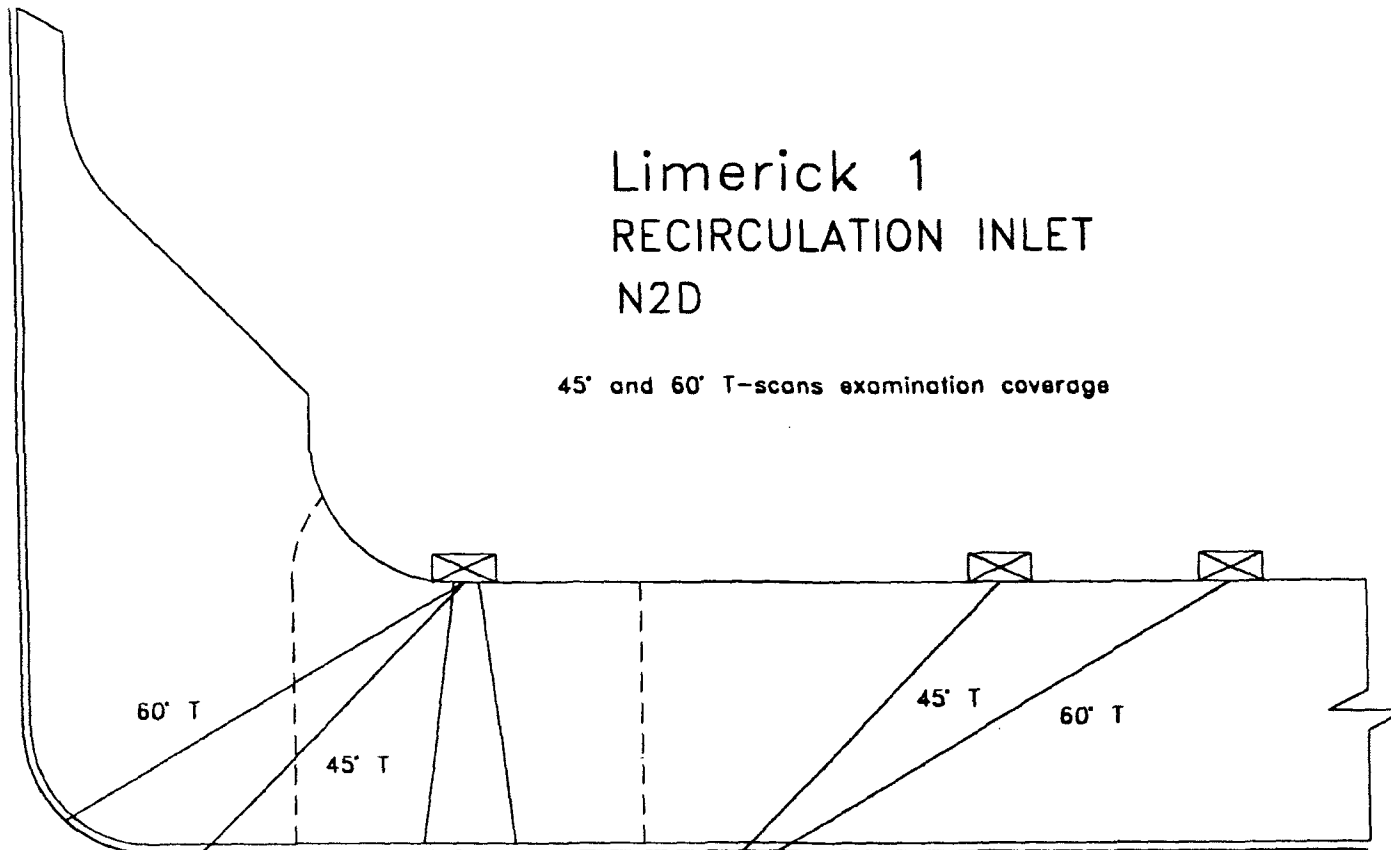


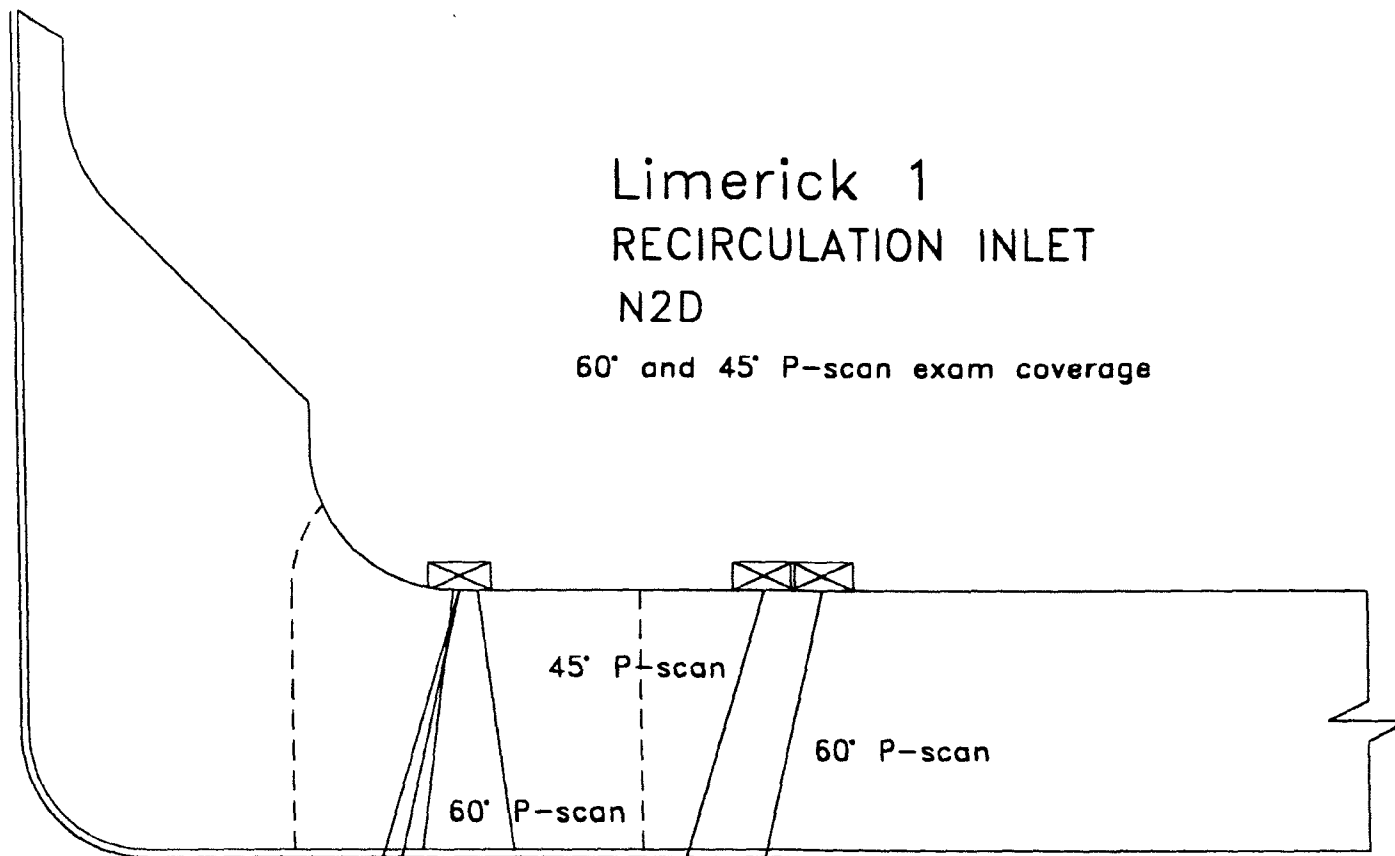
J. Carley

APR 27 '98

Limerick 1 RECIRCULATION INLET N2D

45° and 60° T-scans examination coverage





Weld: N2E

Summary Number: 600820

Unit: 1

Item Number: B3.90

Outage: 1R09 (Spring 2002)

Coverage: 59.3%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Automated UT Examination 0°L, 45°S, 60°S and 70°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

No, the examination was performed to requirements contained in ASME Section XI, Section V and Reg Guide 1.150. This was the approved technical guidance at the time of the examination.

Limitation Description:

The completed examination was limited to 59.3% Code required coverage due to the design of the reactor vessel nozzle. The following coverage calculation sheet and the drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

Limerick Unit 1
N2E
Spring 2002

Obstructed	CODE CROSS-SECTIONAL AREA					TOTAL CODE COVERAGE				
	Area Inch ²	Area Scanned		% of Area Scanned		Degrees Scanned		% Scanned		
		Auto	Manual	Auto	Manual	Auto	Manual	Auto	Manual	
0° WELD METAL	N	63.21	27.33	0.0	43.2	0.0	360.0	0.0	43.2	0.0
45° T-SCAN	N	63.21	45.87	0.0	72.6	0.0	360.0	0.0	72.6	0.0
60° T-SCAN	Y	63.21	49.84	0.0	78.8	0.0	360.0	0.0	78.8	0.0
	Y									0.0
45° P-SCAN CW	N	63.21	32.76	0.0	51.8	0.0	360.0	0.0	51.8	0.0
60° P-SCAN CW	N	63.21	36.97	0.0	58.5	0.0	360.0	0.0	58.5	0.0
45° P-SCAN CCW	N	63.21	32.76	0.0	51.8	0.0	360.0	0.0	51.8	0.0
60° P-SCAN CCW	N	63.21	36.97	0.0	58.5	0.0	360.0	0.0	58.5	0.0
									59.3	0.0

Total 0°, 45° and 60° Coverage = 59.3

70° T-SCAN	N	22.67	10.53	0.0	46.4	0.0	360.0	0.0	46.4	0.0
70° P-SCAN CW	N	22.67	7.82	0.0	34.5	0.0	360.0	0.0	34.5	0.0
70° P-SCAN CCW	N	22.67	7.82	0.0	34.5	0.0	360.0	0.0	34.5	0.0
									38.5	0.0

Total 70° Coverage = 38.5

COMMENTS:

Automated UT scans were limited due to the nozzle radius.
Credit for the initial 1/4" of material in code coverage taken with the 70°

02/29/01

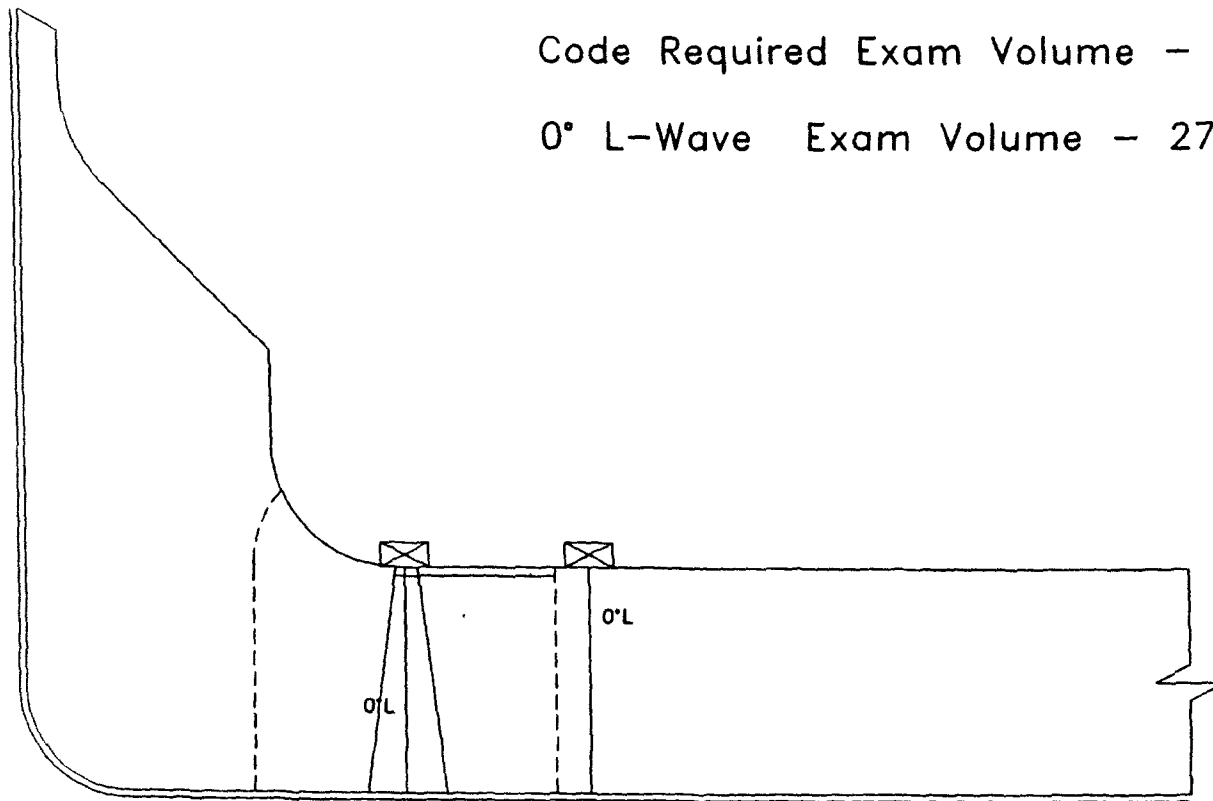
LIMERICK
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23

Limerick 1

Recirculation Inlet

Code Required Exam Volume - 63.21 Sq. In.

0° L-Wave Exam Volume - 27.33 Sq. In.



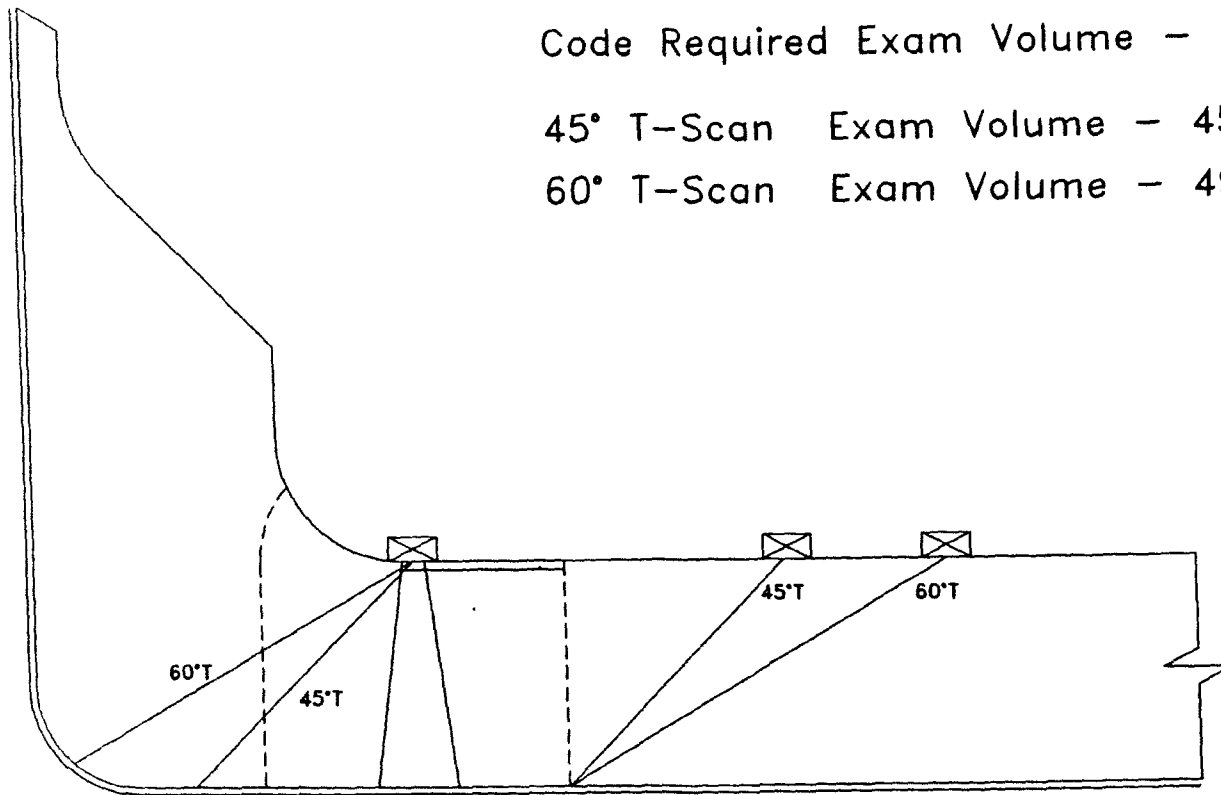
Limerick 1

Recirculation Inlet

Code Required Exam Volume - 63.21 Sq. In.

45° T-Scan Exam Volume - 45.87 Sq. In.

60° T-Scan Exam Volume - 49.84 Sq. In.



LIMERICK
1809
16

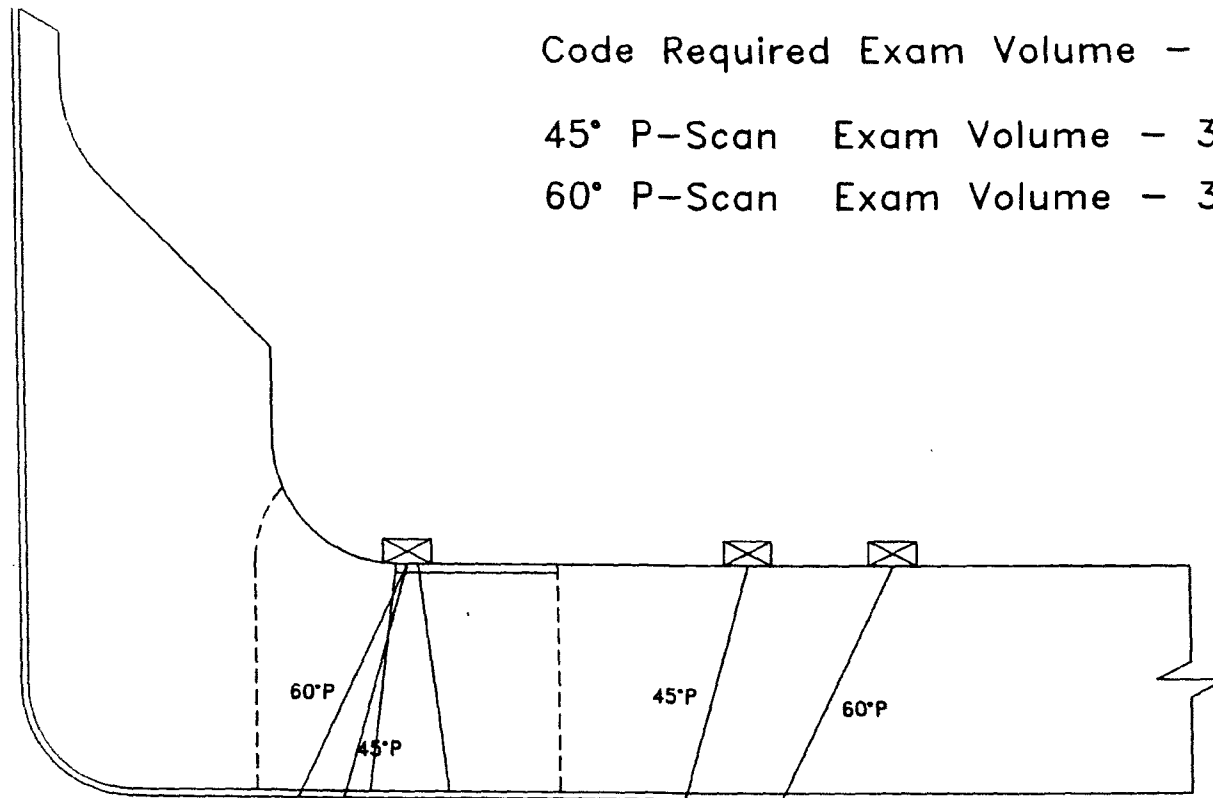
Limerick 1

Recirculation Inlet

Code Required Exam Volume - 63.21 Sq. In.

45° P-Scan Exam Volume - 32.76 Sq. In.

60° P-Scan Exam Volume - 36.97 Sq. In.



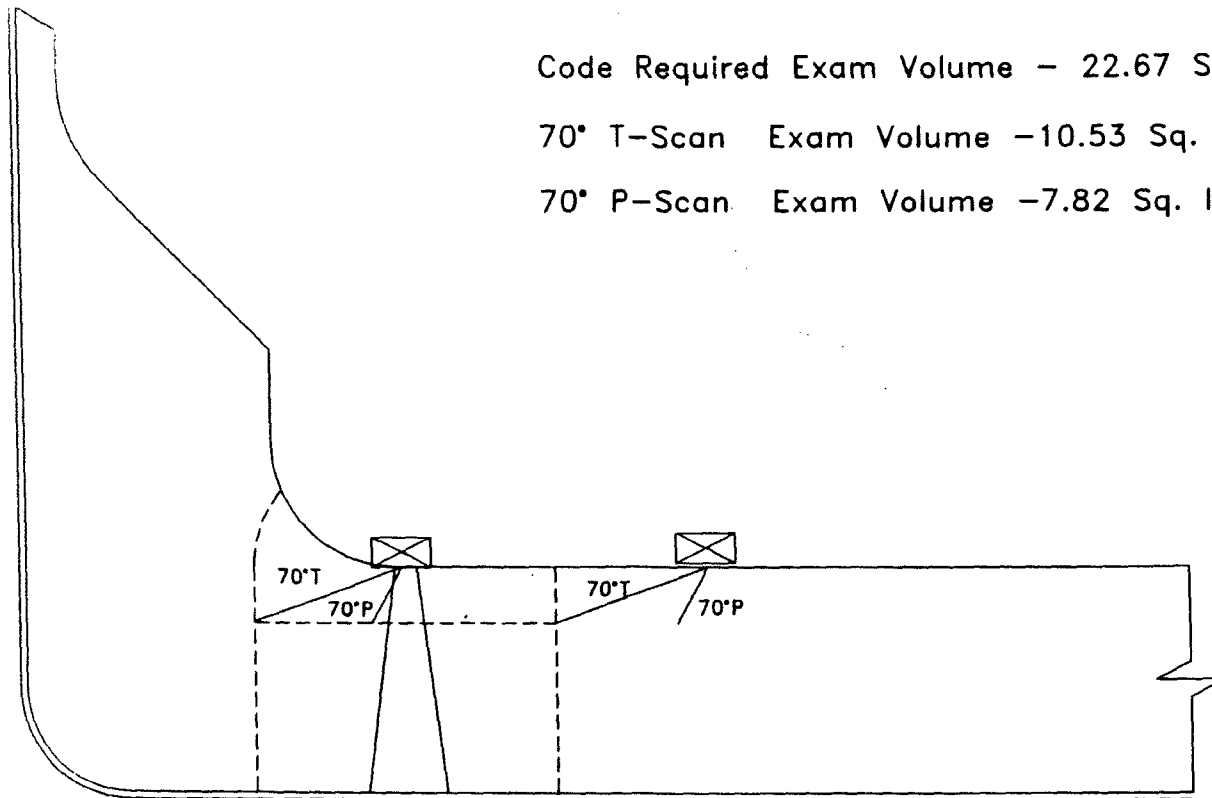
Limerick 1

Recirculation Inlet

Code Required Exam Volume - 22.67 Sq. In.

70° T-Scan Exam Volume - 10.53 Sq. In.

70° P-Scan Exam Volume - 7.82 Sq. In.



Weld: N2F

Summary Number: 600850

Unit: 1

Item Number: B3.90

Outage: 1R07 (Spring 1998)

Coverage: 61.9%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Automated UT Examination 0°L, 45°S, and 60°S

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

No, the examination was performed to requirements contained in ASME Section XI, Section V, and Reg Guide 1.150. This was the approved technical guidance at the time of the examination.

Limitation Description:

The completed examination was limited to 61.9% Code required coverage due to the design of the reactor vessel nozzle. The following coverage calculation sheet and the drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

Limerick Unit 1

N2F Nozzle

	CROSS SECTIONAL AREA (per slice)					TOTAL CODE COVERAGE			
	code cross sectional area	area scanned automated	area scanned manually	% of code area scanned automated	% of code area scanned manually	degrees scanned automated	degrees scanned manually	percent scanned automated	percent scanned manually
0 wm	59.43	27.33	0	45.99	0.00	360	0.0	46.0	0.0
45 T-scan	59.43	45.87	0	77.18	0.00	360	0.0	77.2	0.0
60 T-scan	59.43	49.82	0	83.83	0.00	360	0.0	83.8	0.0
45 P-scan CW	59.43	32.84	0	55.26	0.00	360	0.0	55.3	0.0
60 P-scan CW	59.43	34.36	0	57.82	0.00	360	0.0	57.8	0.0
45 P-scan CCW	59.43	32.84	0	55.26	0.00	360	0.0	55.3	0.0
60 P-scan CCW	59.43	34.36	0	57.82	0.00	360	0.0	57.8	0.0
Coverages								61.9	0.0
Total coverage								61.9	

Automated scans were not restricted

No credit taken for initial 1/4" of material in Code coverage calculations due to near field effects.

REVIEWED PECO Energy Co.
NDE SUPPORT GROUP

J. P. Chidsey

APR 27 '98

ANZI 4/30/98

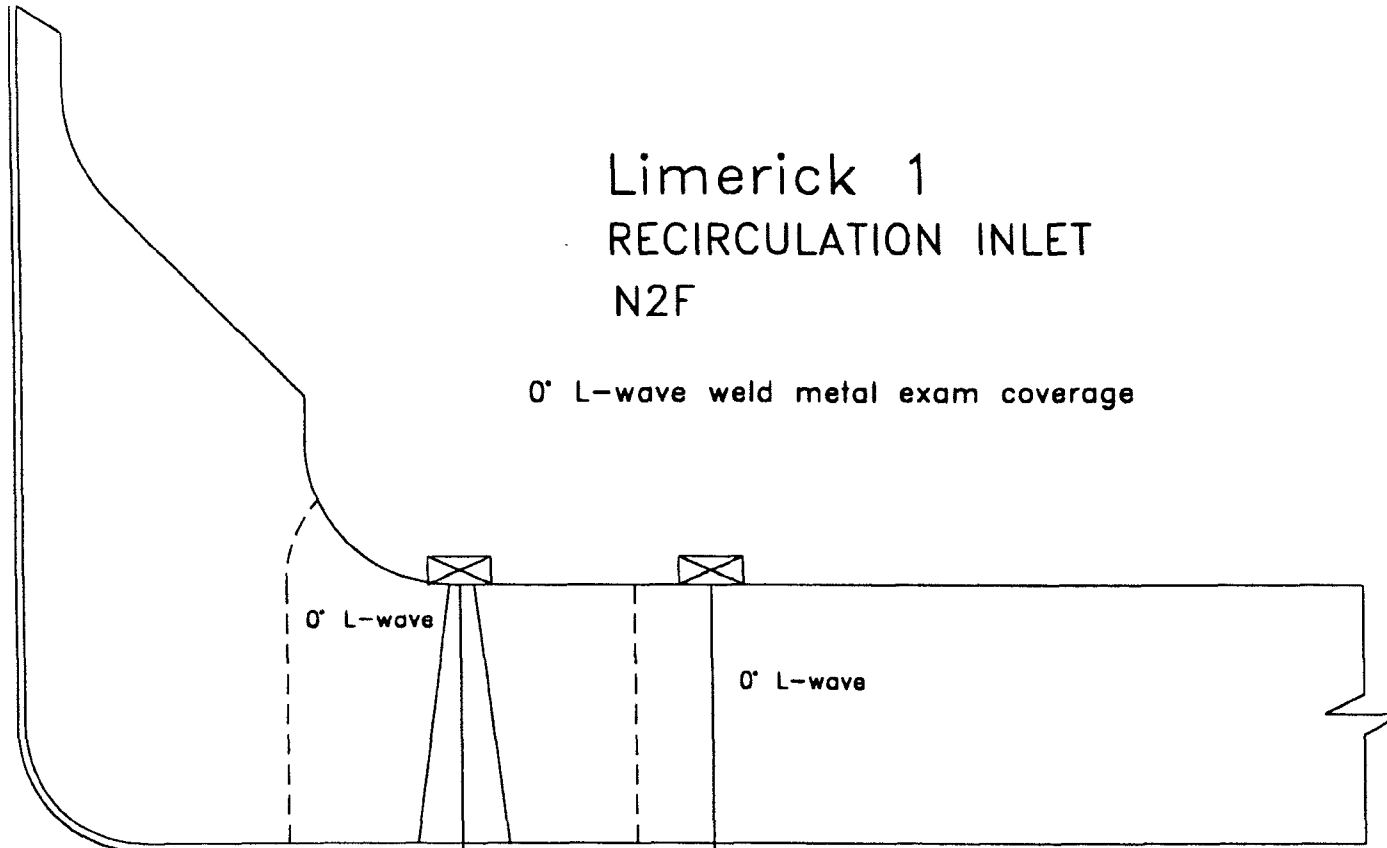
11492. NO WELDING

REVIEWED PECO Energy Co.
NDE SUPPORT GROUP

J. L. Anderson APR 27 '98

Limerick 1 RECIRCULATION INLET N2F

0° L-wave weld metal exam coverage



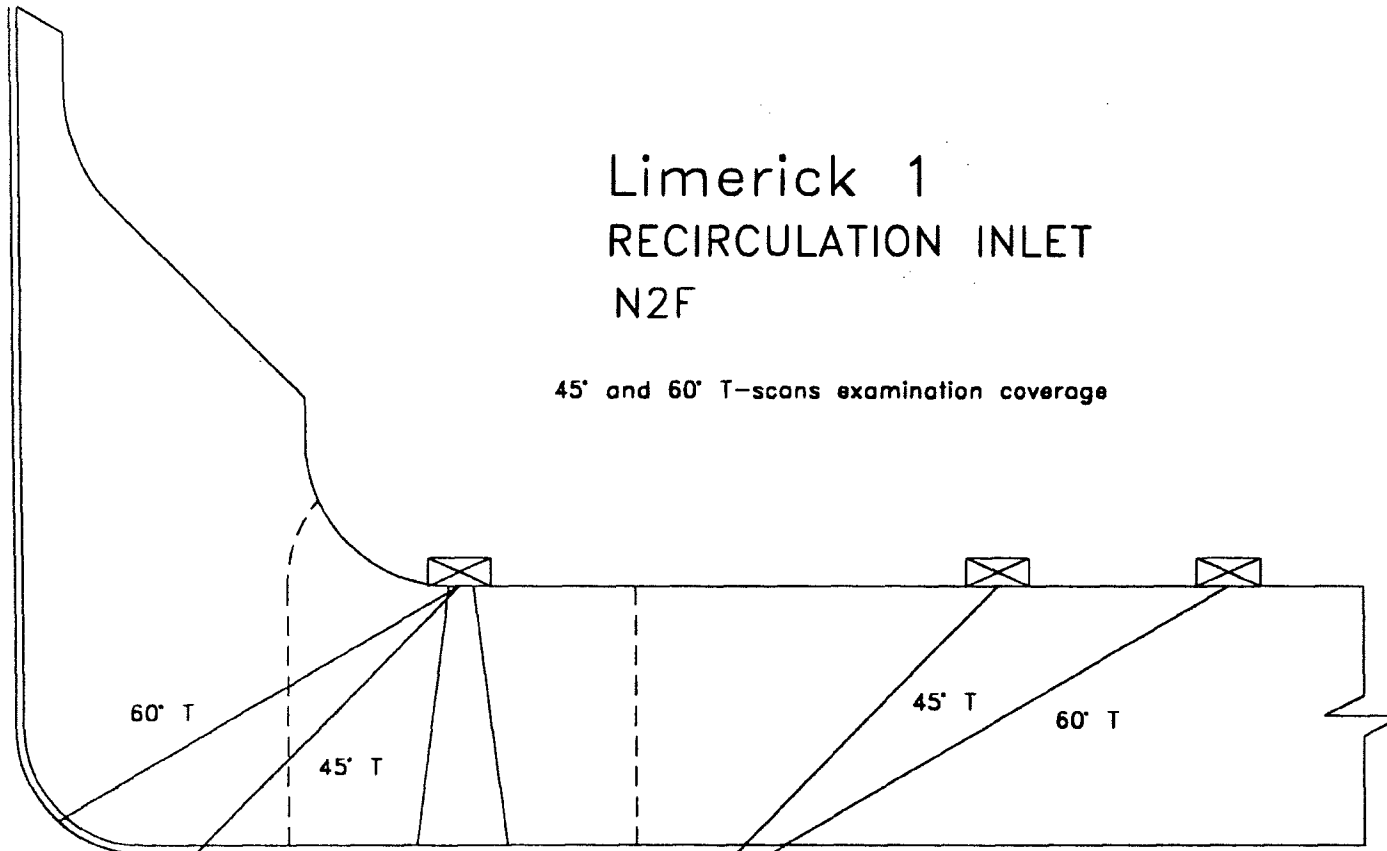
REVERED PECO Energy Co.
NRC SUPPORT GROUP

J. L. Anderson

APR 27 '98

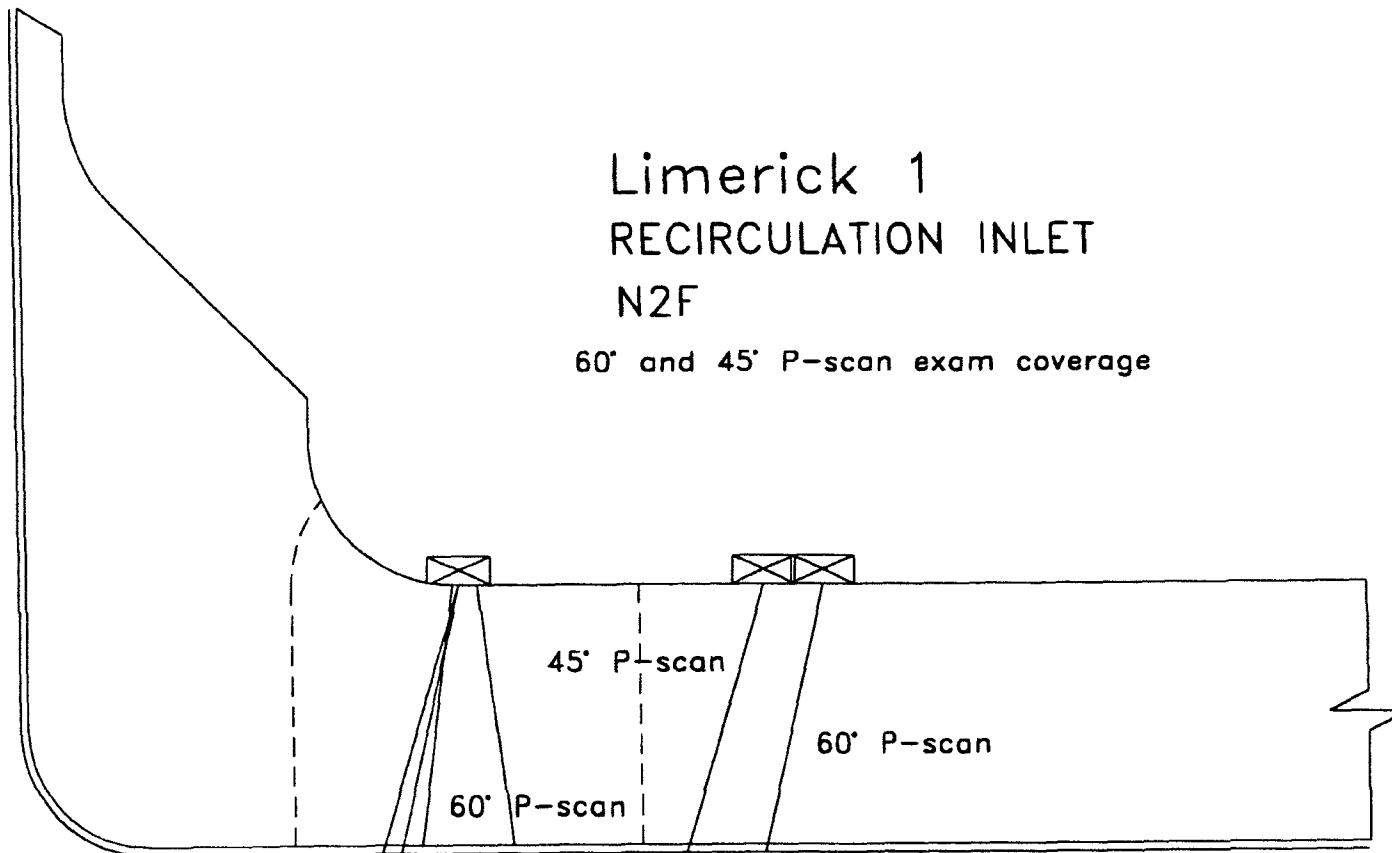
Limerick 1 RECIRCULATION INLET N2F

45' and 60' T-scans examination coverage



Limerick 1
RECIRCULATION INLET
N2F

60° and 45° P-scan exam coverage



Weld: N2J

Summary Number: 600940

Unit: 1

Item Number: B3.90

Outage: 1R10 (Spring 2004)

Coverage: 77.0%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Automated UT Examination 0°L, 45°S, 60°RL, and 70°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was in accordance with ASME Section XI Appendix VIII as modified by the PDI program.

Limitation Description:

The completed examination was limited to 77.0% Code required coverage due to the design of the reactor vessel nozzle and the location of the N8B nozzle. The following coverage calculation sheet and the drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

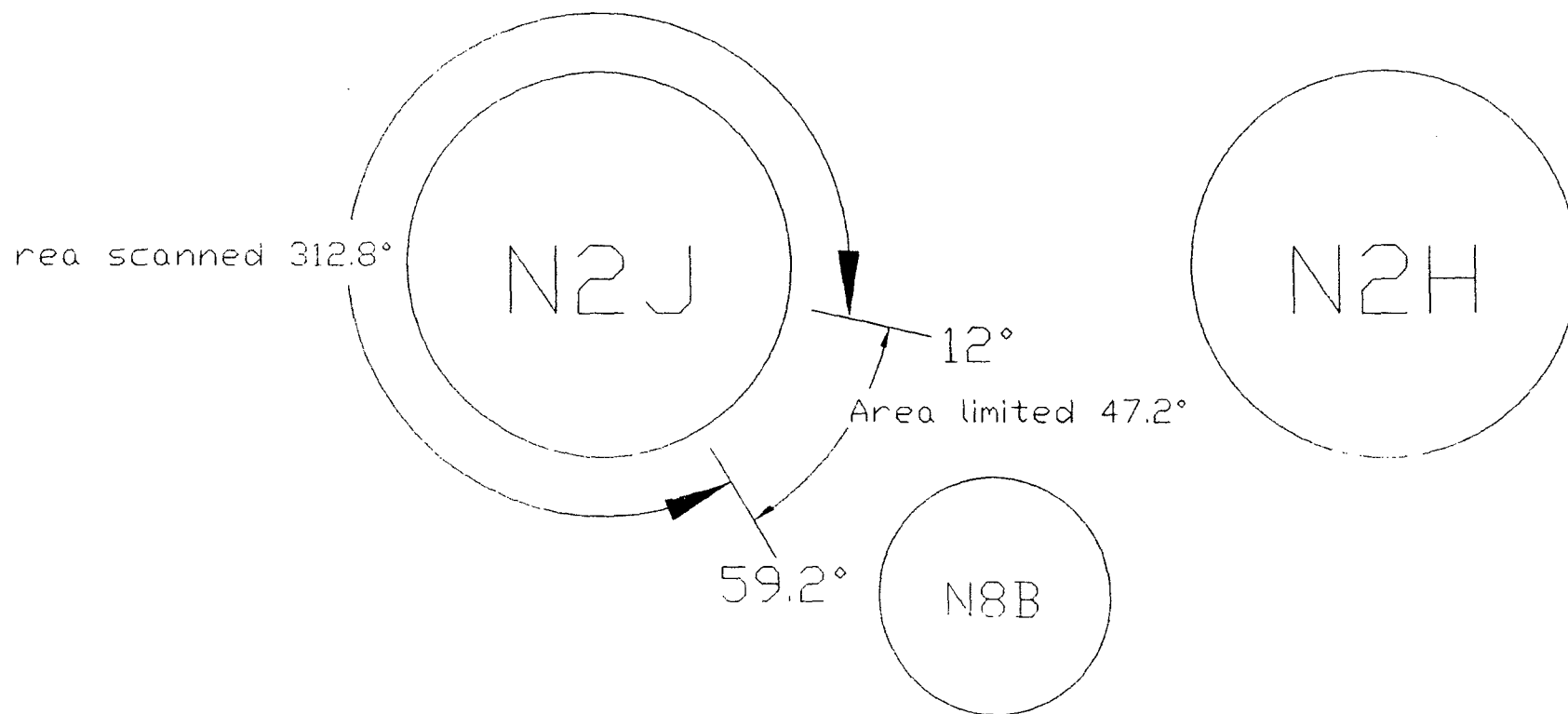
Limerick Unit-1
Weld N2J
Spring 2004

Weld Length = 360. Exam Volume = 59.7		CODE CROSS-SECTIONAL AREA		TOTAL CODE COVERAGE		
		Required Exam Area Sq. In.	Area Scanned Auto	Percent of Area Auto	Weld Length Auto	Percent Auto
70° T-Scan	A	12	5.8	9.7%	360	4.9%
45° T-Scan	A	39.2	33.5	56.1%	360	28.1%
60° T-Scan	B	8.5	8.5	14.2%	312.8	6.2%
70° P-Scan	A	12	4.5	7.5%	360	3.8%
45° P-Scan	A	39.2	31.3	52.4%	360	26.2%
IRS P-Scan	A	8.5	8.5	14.2%	360	7.1%
70° T-Scan						
45° T-Scan						
60° T-Scan	B	8.5	7.2	12.1%	47.2	0.8%
70° P-Scan						
45° P-Scan						
IRS P-Scan						
70° T-Scan						
45° T-Scan						
60° T-Scan						
70° P-Scan						
45° P-Scan						
IRS P-Scan						

% Total Composite Coverage = 77.0%

Comments: A - Scanned 360 deg., Scanning limited due to nozzle configuration.
B - 60°RL limited due to the proximity of the N8B nozzle.

Note - Rounding methods may affect calculated values.

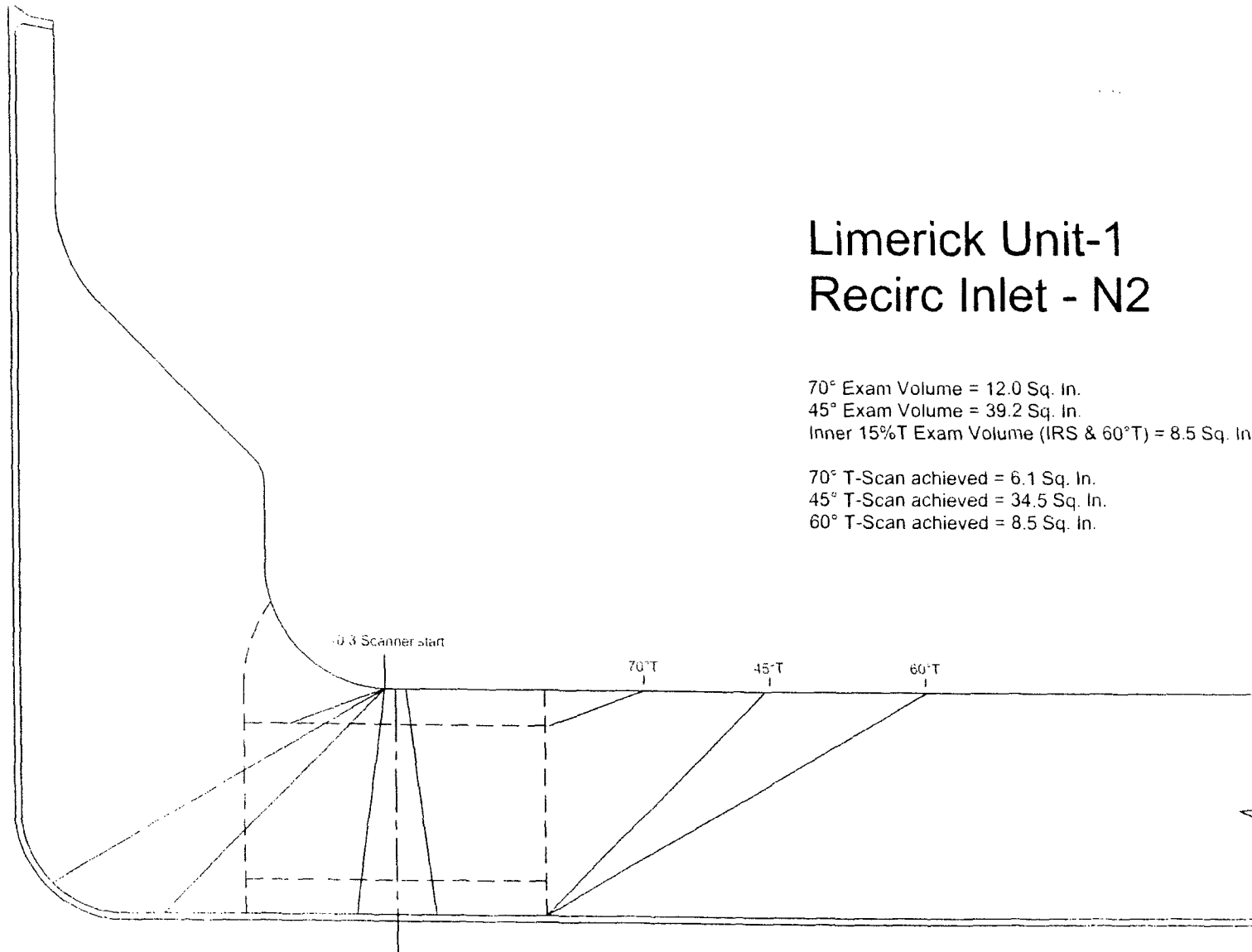


60° RL limited due to proximity of N8B nozzle

Limerick Unit-1 Recirc Inlet - N2

70° Exam Volume = 12.0 Sq. In.
45° Exam Volume = 39.2 Sq. In.
Inner 15%T Exam Volume (IRS & 60°T) = 8.5 Sq. In.

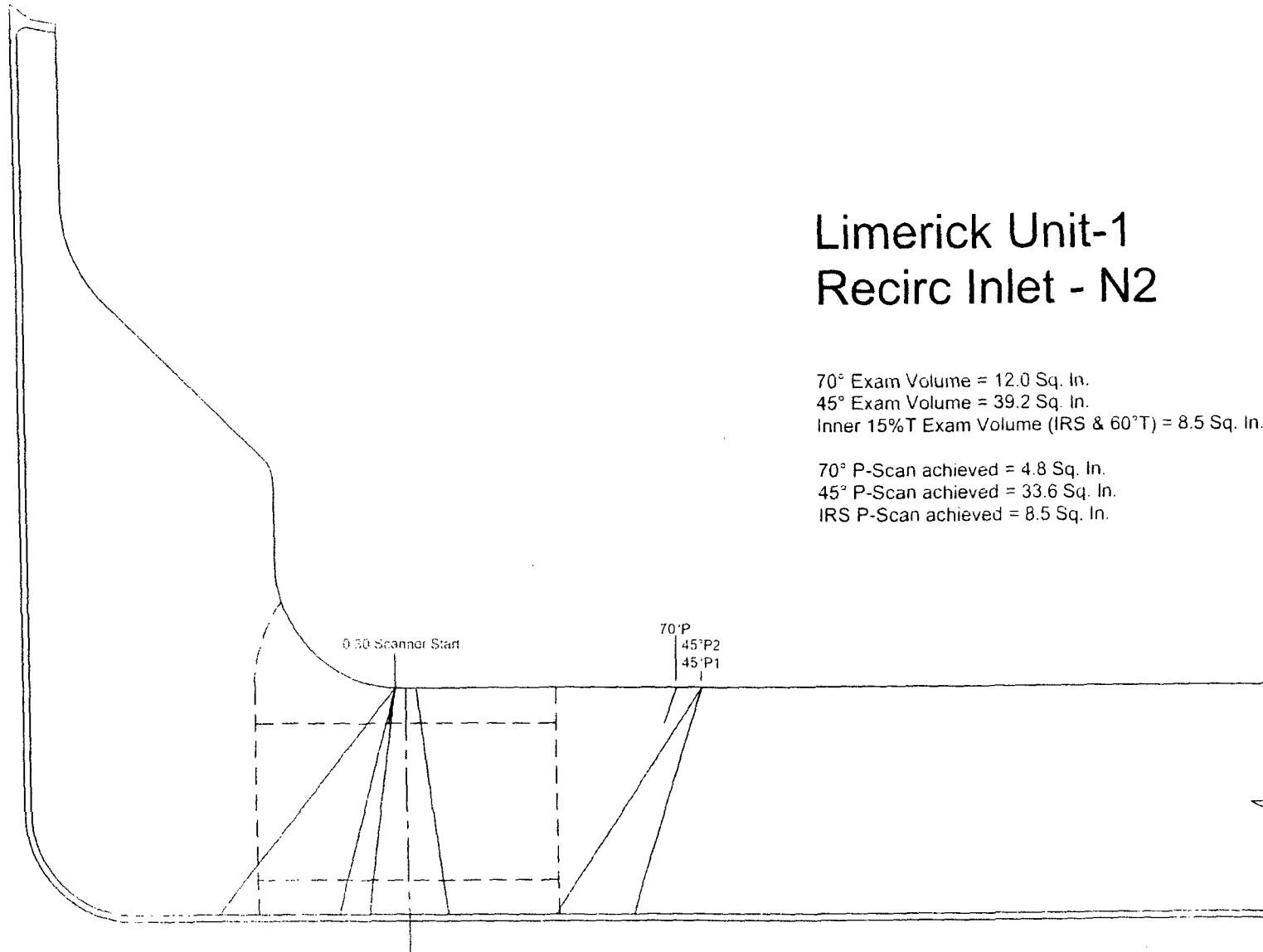
70° T-Scan achieved = 6.1 Sq. In.
45° T-Scan achieved = 34.5 Sq. In.
60° T-Scan achieved = 8.5 Sq. In.



Limerick Unit-1 Recirc Inlet - N2

70° Exam Volume = 12.0 Sq. In.
45° Exam Volume = 39.2 Sq. In.
Inner 15%T Exam Volume (IRS & 60°T) = 8.5 Sq. In.

70° P-Scan achieved = 4.8 Sq. In.
45° P-Scan achieved = 33.6 Sq. In.
IRS P-Scan achieved = 8.5 Sq. In.

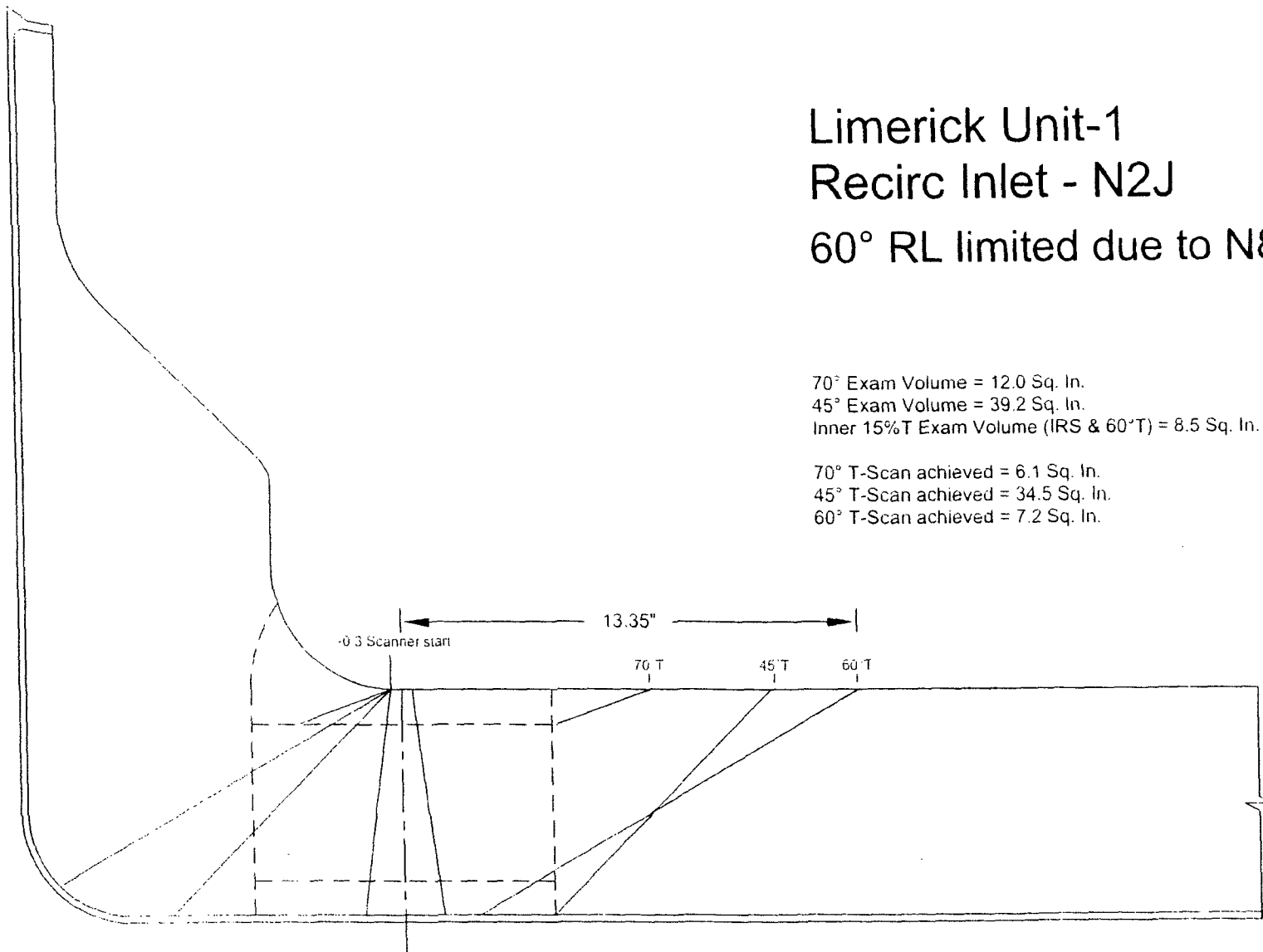


Limerick Unit-1 Recirc Inlet - N2J

60° RL limited due to N8B nozzle

70° Exam Volume = 12.0 Sq. In.
45° Exam Volume = 39.2 Sq. In.
Inner 15%T Exam Volume (IRS & 60°T) = 8.5 Sq. In.

70° T-Scan achieved = 6.1 Sq. In.
45° T-Scan achieved = 34.5 Sq. In.
60° T-Scan achieved = 7.2 Sq. In.



Weld: N2K

Summary Number: 600970

Unit: 1

Item Number: B3.90

Outage: 1R10 (Spring 2004)

Coverage: 80.4%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Automated UT Examination 0°L, 45°S, 60°RL, and 70°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was in accordance with ASME Section XI Appendix VIII as modified by the PDI program.

Limitation Description:

The completed examination was limited to 80.4% Code required coverage due to the design of the reactor vessel nozzle. The following coverage calculation sheet and the drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

Limerick Unit-1
Weld N2K
Spring 2004

Weld Length = 360. Exam Volume = 59.7		CODE CROSS-SECTIONAL AREA		TOTAL CODE COVERAGE		
		Required Exam Area Sq. In.	Area Scanned Auto	Percent of Area Auto	Weld Length Auto	Percent Auto
70° T-Scan	A	12	6.1	10.2%	360	5.1%
45° T-Scan	A	39.2	34.5	57.8%	360	28.9%
60° T-Scan	A	8.5	8.5	14.2%	360	7.1%
70° P-Scan	A	12	4.8	8.0%	360	4.0%
45° P-Scan	A	39.2	33.6	56.3%	360	28.1%
IRS P-Scan	A	8.5	8.5	14.2%	360	7.1%
70° T-Scan						
45° T-Scan						
60° T-Scan						
70° P-Scan						
45° P-Scan						
IRS P-Scan						
70° T-Scan						
45° T-Scan						
60° T-Scan						
70° P-Scan						
45° P-Scan						
IRS P-Scan						

% Total Composite Coverage = 80.4%

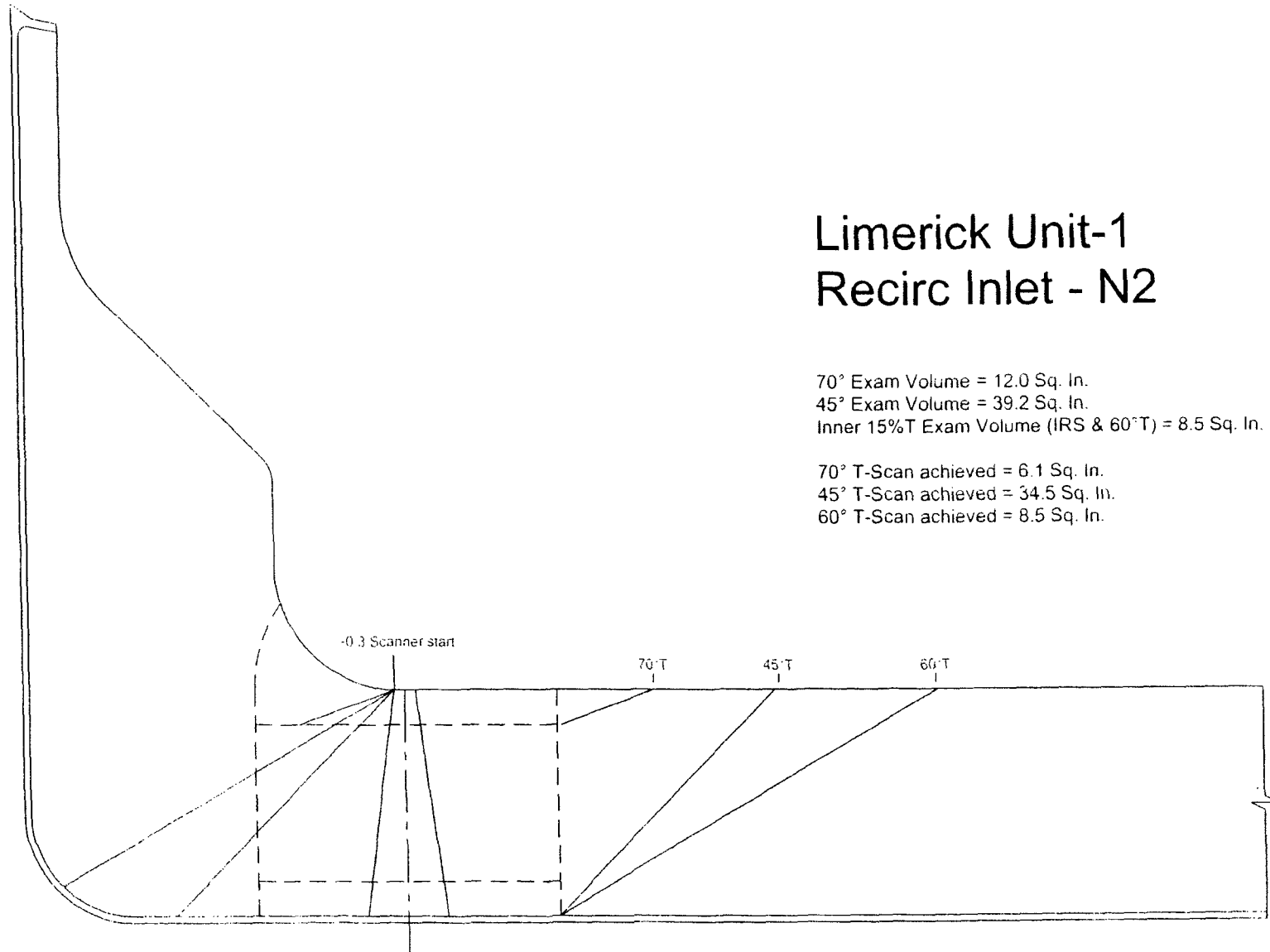
Comments: A - Scanned 360 deg., Scanning limited due to nozzle configuration.

Note - Rounding methods may affect calculated values.

Limerick Unit-1 Recirc Inlet - N2

70° Exam Volume = 12.0 Sq. In.
45° Exam Volume = 39.2 Sq. In.
Inner 15%T Exam Volume (IRS & 60°T) = 8.5 Sq. In.

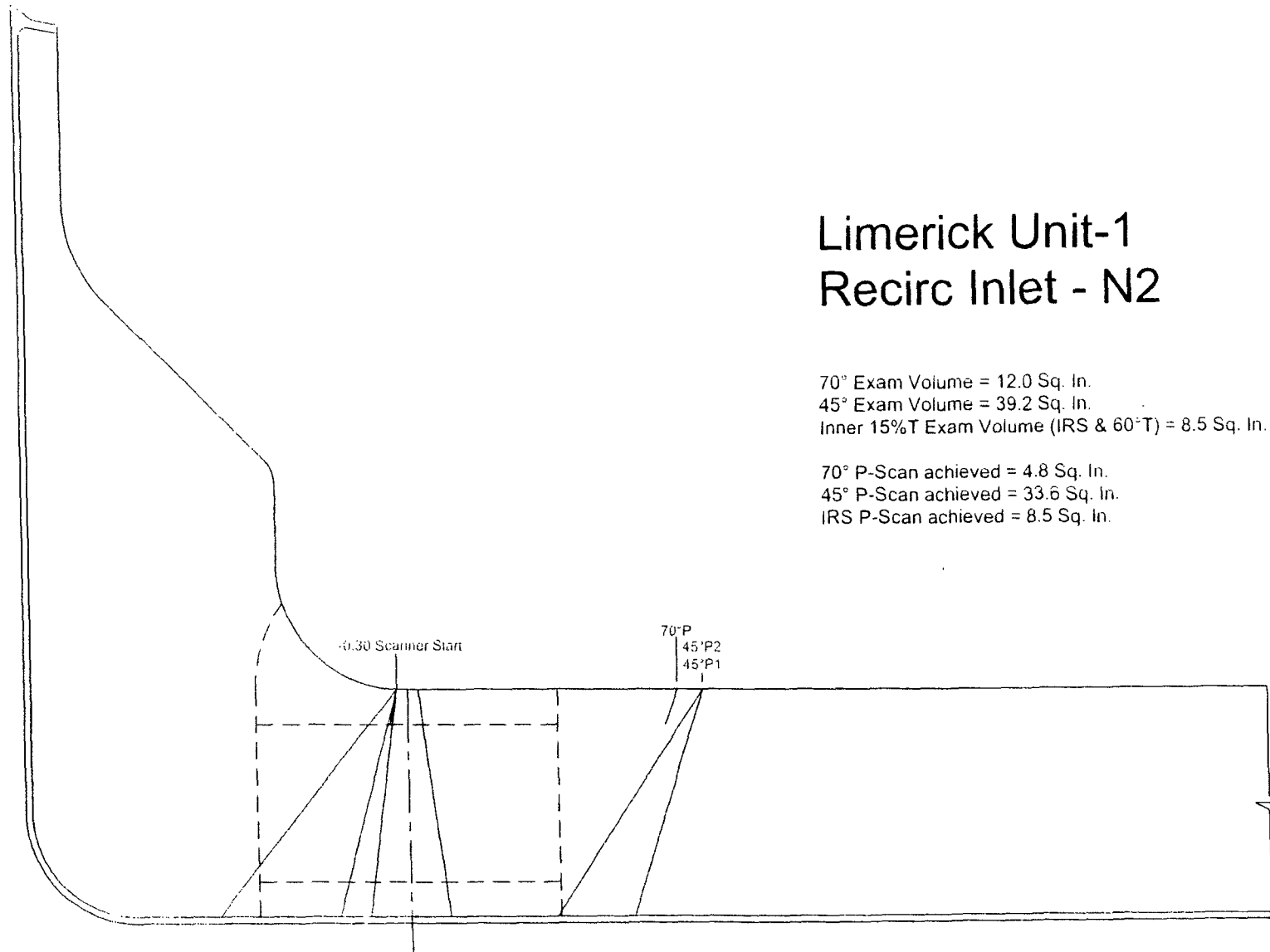
70° T-Scan achieved = 6.1 Sq. In.
45° T-Scan achieved = 34.5 Sq. In.
60° T-Scan achieved = 8.5 Sq. In.



Limerick Unit-1 Recirc Inlet - N2

70° Exam Volume = 12.0 Sq. In.
45° Exam Volume = 39.2 Sq. In.
Inner 15°T Exam Volume (IRS & 60°T) = 8.5 Sq. In.

70° P-Scan achieved = 4.8 Sq. In.
45° P-Scan achieved = 33.6 Sq. In.
IRS P-Scan achieved = 8.5 Sq. In.



Weld: N3A

Summary Number: 601000

Unit: 1

Item Number: B3.90

Outage: 1R09 (Spring 2002)

Coverage: 58.2%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Automated UT Examination 0°L, 45°S, 60°S and 70°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

No, the examination was performed to requirements contained in ASME Section XI, Section V, and Reg Guide 1.150. This was the approved technical guidance at the time of the examination.

Limitation Description:

The completed examination was limited to 58.2% Code required coverage due to the design of the reactor vessel nozzle. The following coverage calculation sheet and the drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

**Limerick Unit 1
N3A
Spring 2002**

Obstructed	CODE CROSS-SECTIONAL AREA					TOTAL CODE COVERAGE				
	Area Inch ²	Area Scanned		% of Area Scanned		Degrees Scanned		% Scanned		
		Auto	Manual	Auto	Manual	Auto	Manual	Auto	Manual	
0° WELD METAL	N	75.6	34.03	0.0	45.0	0.0	360.0	0.0	45.0	0.0
45° T-SCAN	N	75.6	57.36	0.0	75.9	0.0	360.0	0.0	75.9	0.0
60° T-SCAN	Y	75.6	63.37	0.0	83.8	0.0	360.0	0.0	83.8	0.0
45° P-SCAN CW	N	75.6	35.56	0.0	47.0	0.0	360.0	0.0	47.0	0.0
60° P-SCAN CW	N	75.6	41.16	0.0	54.4	0.0	360.0	0.0	54.4	0.0
45° P-SCAN CCW	N	75.6	35.56	0.0	47.0	0.0	360.0	0.0	47.0	0.0
60° P-SCAN CCW	N	75.6	41.16	0.0	54.4	0.0	360.0	0.0	54.4	0.0
									58.2	0.0

Total 0°, 45° and 60° Coverage = 58.2

70° T-SCAN	N	27.47	13.19	0.0	48.0	0.0	360.0	0.0	48.0	0.0
70° P-SCAN CW	N	27.47	9.84	0.0	35.8	0.0	360.0	0.0	35.8	0.0
70° P-SCAN CCW	N	27.47	9.84	0.0	35.8	0.0	360.0	0.0	35.8	0.0
									39.9	0.0

Total 70° Coverage = 39.9

COMMENTS:

Automated UT scans were limited due to the nozzle OD blend radius.
Credit for the initial 1/4" of material in code coverage taken with the 70°

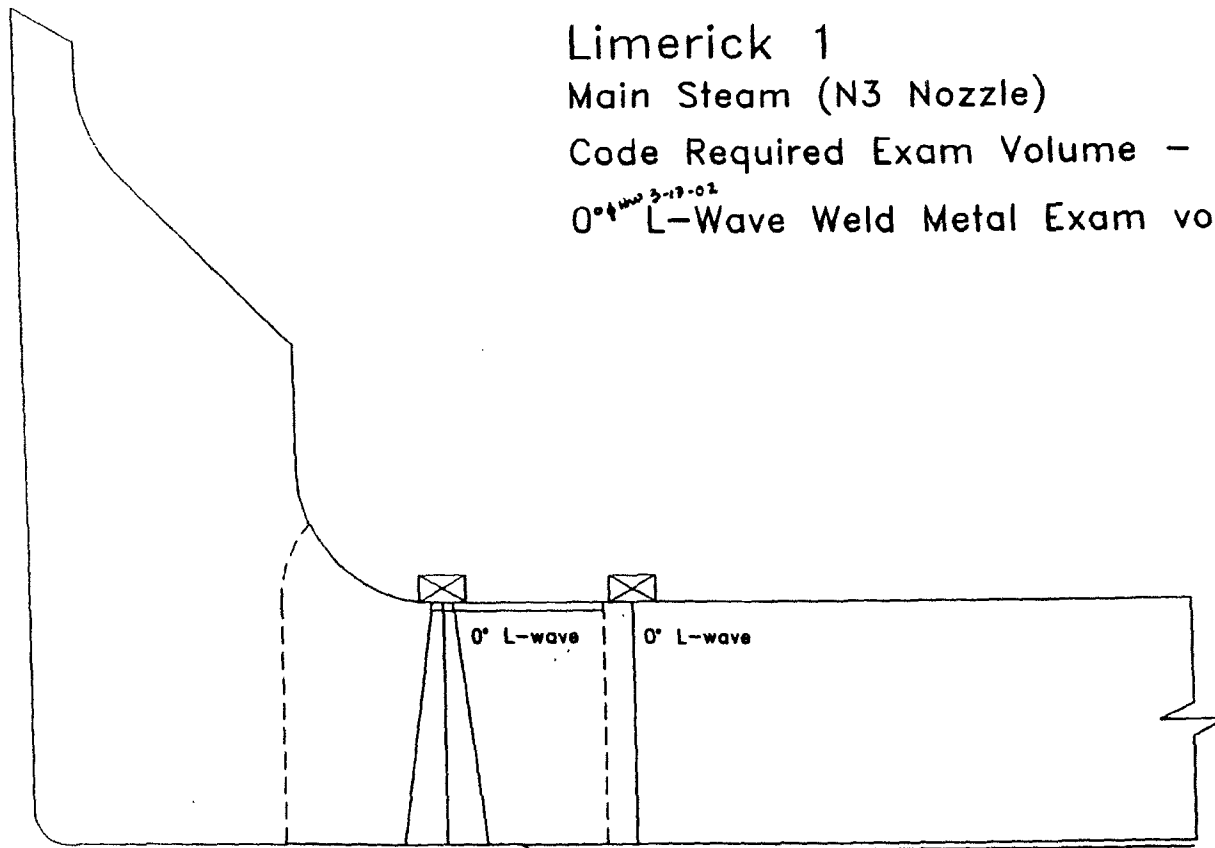
02/29/01

Limerick 1

Main Steam (N3 Nozzle)

Code Required Exam Volume - 75.60 Sq. In.

0° ³⁻¹⁷⁻⁰² L-Wave Weld Metal Exam volume - 34.03 Sq. In.



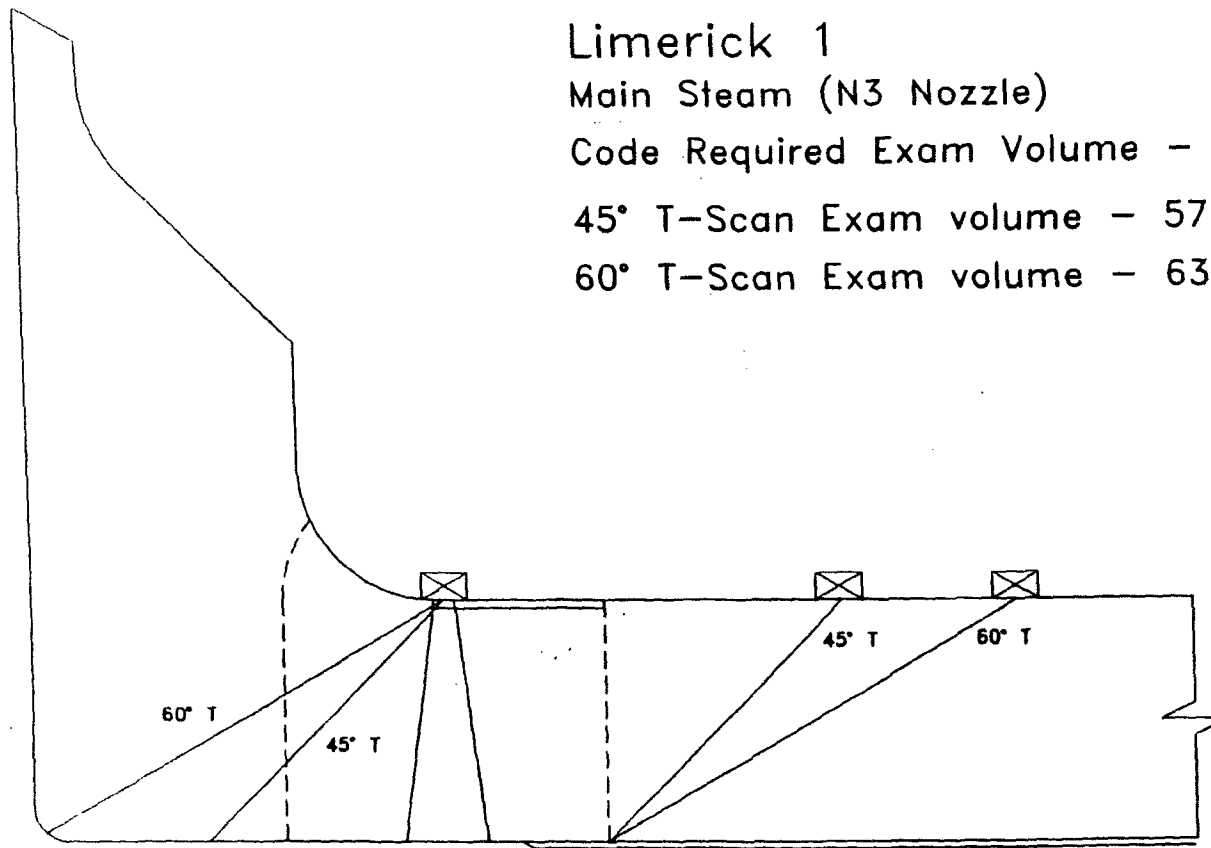
Limerick 1

Main Steam (N3 Nozzle)

Code Required Exam Volume - 75.60 Sq. In.

45° T-Scan Exam volume - 57.36 Sq. In.

60° T-Scan Exam volume - 63.37 Sq. In.



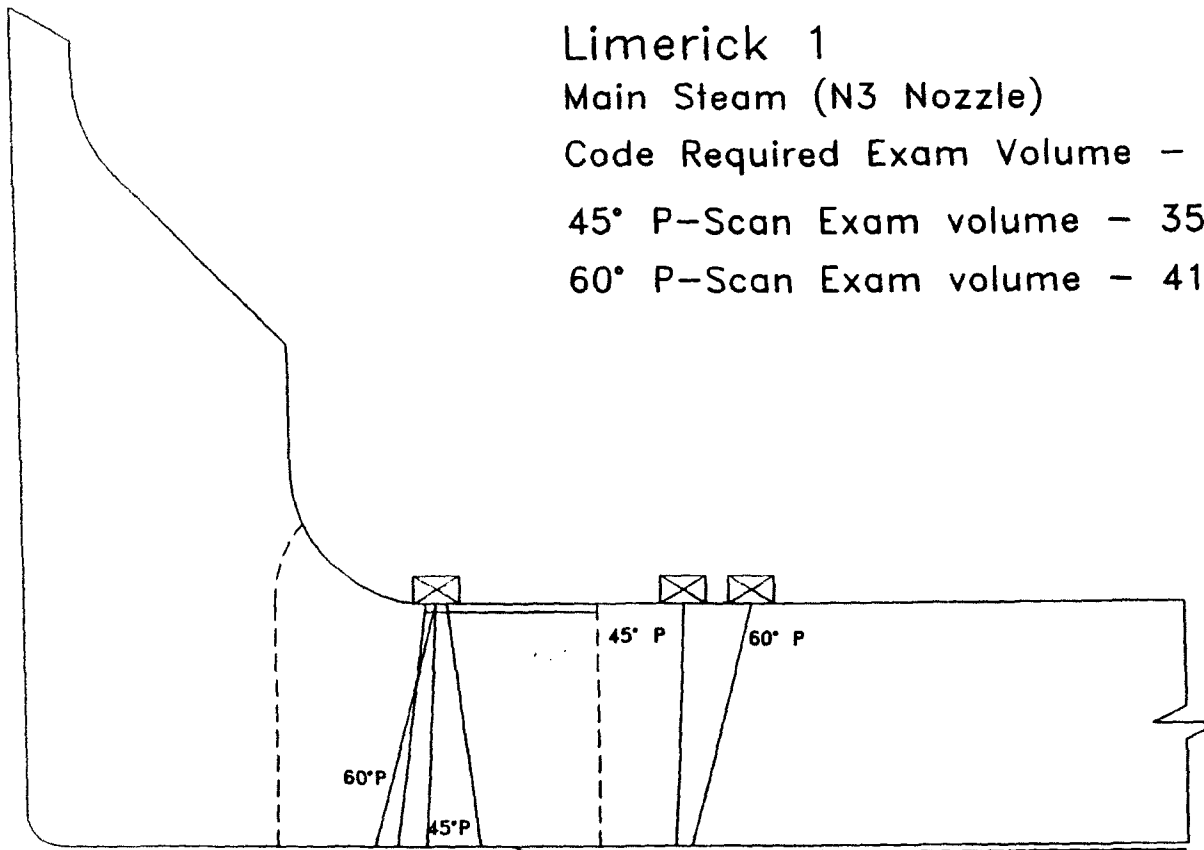
Limerick 1

Main Steam (N3 Nozzle)

Code Required Exam Volume - 75.60 Sq. In.

45° P-Scan Exam volume - 35.56 Sq. In.

60° P-Scan Exam volume - 41.16 Sq. In.



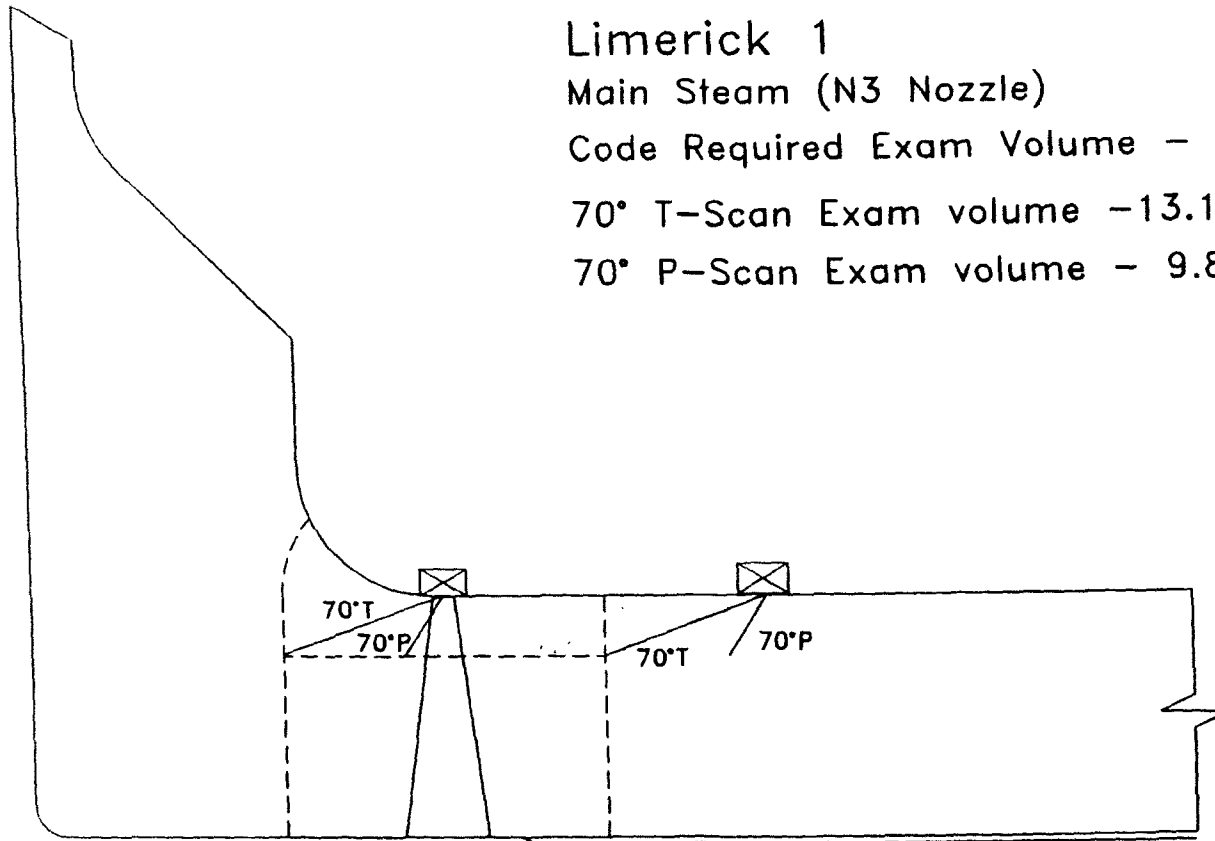
Limerick 1

Main Steam (N3 Nozzle)

Code Required Exam Volume - 27.47 Sq. In.

70° T-Scan Exam volume - 13.19 Sq. In.

70° P-Scan Exam volume - 9.84 Sq. In.



Weld: N3B

Summary Number: 601030

Unit: 1

Item Number: B3.90

Outage: 1R09 (Spring 2002)

Coverage: 58.2%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Automated UT Examination 0°L, 45°S, 60°S and 70°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

No, the examination was performed to requirements contained in ASME Section XI, Section V, and Reg Guide 1.150. This was the approved technical guidance at the time of the examination.

Limitation Description:

The completed examination was limited to 58.2% Code required coverage due to the design of the reactor vessel nozzle. The following coverage calculation sheet and the drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

**Limerick Unit 1
N3B
Spring 2002**

Obstructed	CODE CROSS-SECTIONAL AREA					TOTAL CODE COVERAGE				
	Area Inch ²	Area Scanned		% of Area Scanned		Degrees Scanned		% Scanned		
		Auto	Manual	Auto	Manual	Auto	Manual	Auto	Manual	
0° WELD METAL	N	75.6	34.03	0.0	45.0	0.0	360.0	0.0	45.0	0.0
45° T-SCAN	N	75.6	57.36	0.0	75.9	0.0	360.0	0.0	75.9	0.0
60° T-SCAN	Y	75.6	63.37	0.0	83.8	0.0	360.0	0.0	83.8	0.0
45° P-SCAN CW	N	75.6	35.56	0.0	47.0	0.0	360.0	0.0	47.0	0.0
60° P-SCAN CW	N	75.6	41.16	0.0	54.4	0.0	360.0	0.0	54.4	0.0
45° P-SCAN CCW	N	75.6	35.56	0.0	47.0	0.0	360.0	0.0	47.0	0.0
60° P-SCAN CCW	N	75.6	41.16	0.0	54.4	0.0	360.0	0.0	54.4	0.0
									58.2	0.0

Total 0°, 45° and 60° Coverage = 58.2

70° T-SCAN	N	27.47	13.19	0.0	48.0	0.0	360.0	0.0	48.0	0.0
70° P-SCAN CW	N	27.47	9.84	0.0	35.8	0.0	360.0	0.0	35.8	0.0
70° P-SCAN CCW	N	27.47	9.84	0.0	35.8	0.0	360.0	0.0	35.8	0.0
									39.9	0.0

Total 70° Coverage = 39.9

COMMENTS:

Automated UT scans were limited due to the nozzle OD blend radius.
Credit for the initial 1/4" of material in code coverage taken with the 70°

02/29/01

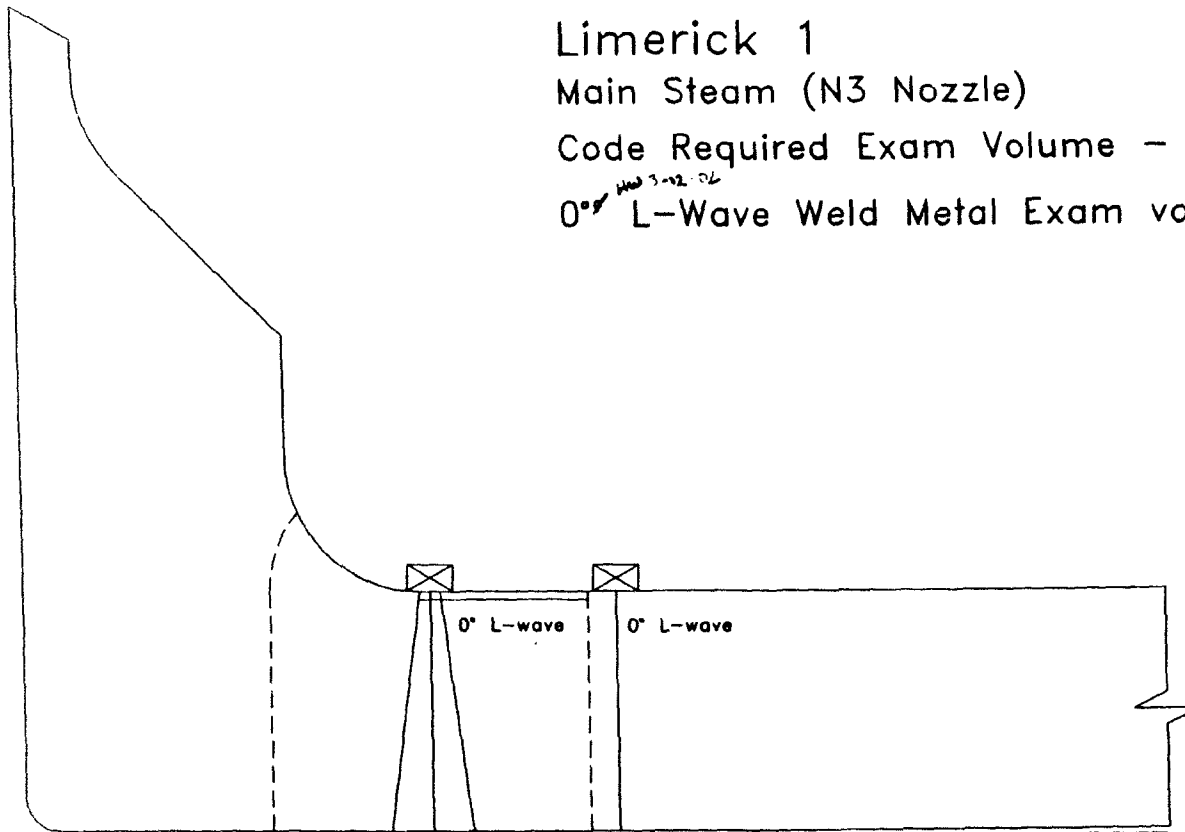
10 601

Limerick 1

Main Steam (N3 Nozzle)

Code Required Exam Volume - 75.60 Sq. In.

0° ^{Hand 3-12-06} L-Wave Weld Metal Exam volume - 34.03 Sq. In.



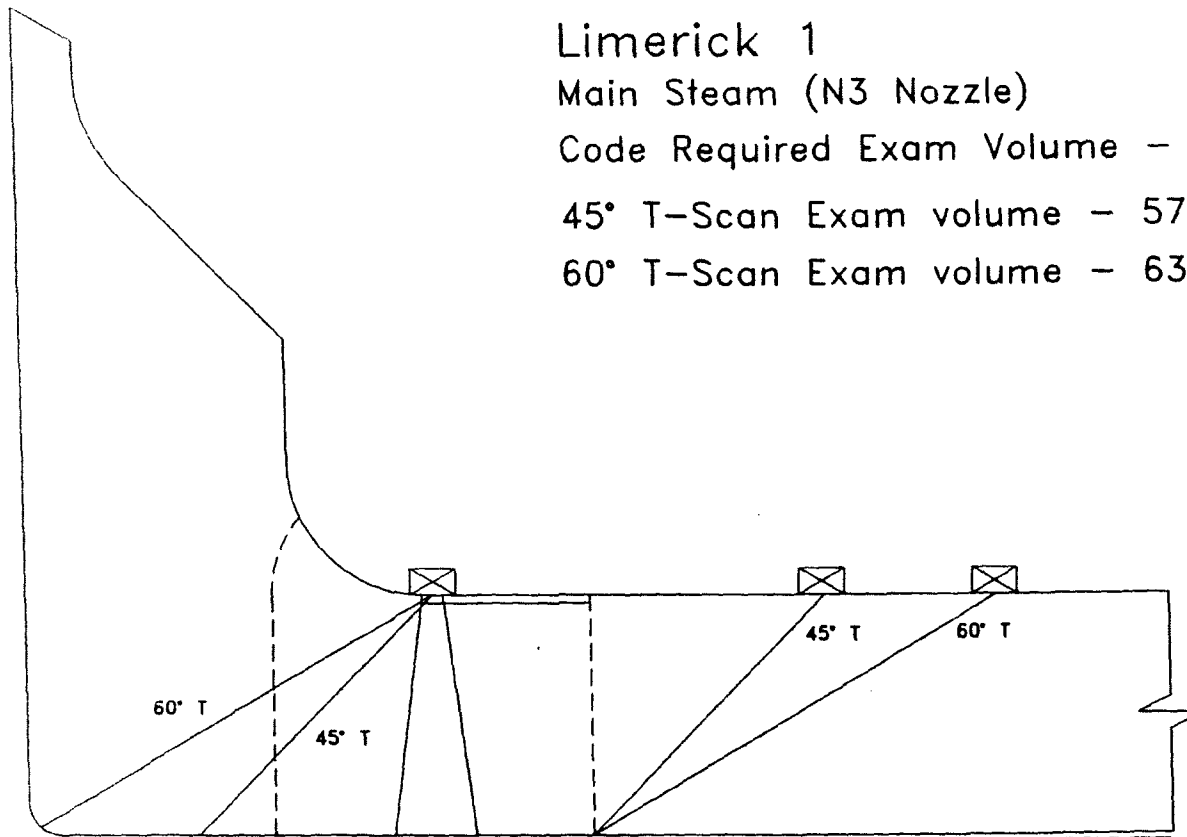
Limerick 1

Main Steam (N3 Nozzle)

Code Required Exam Volume - 75.60 Sq. In.

45° T-Scan Exam volume - 57.36 Sq. In.

60° T-Scan Exam volume - 63.37 Sq. In.



1.09
23
31

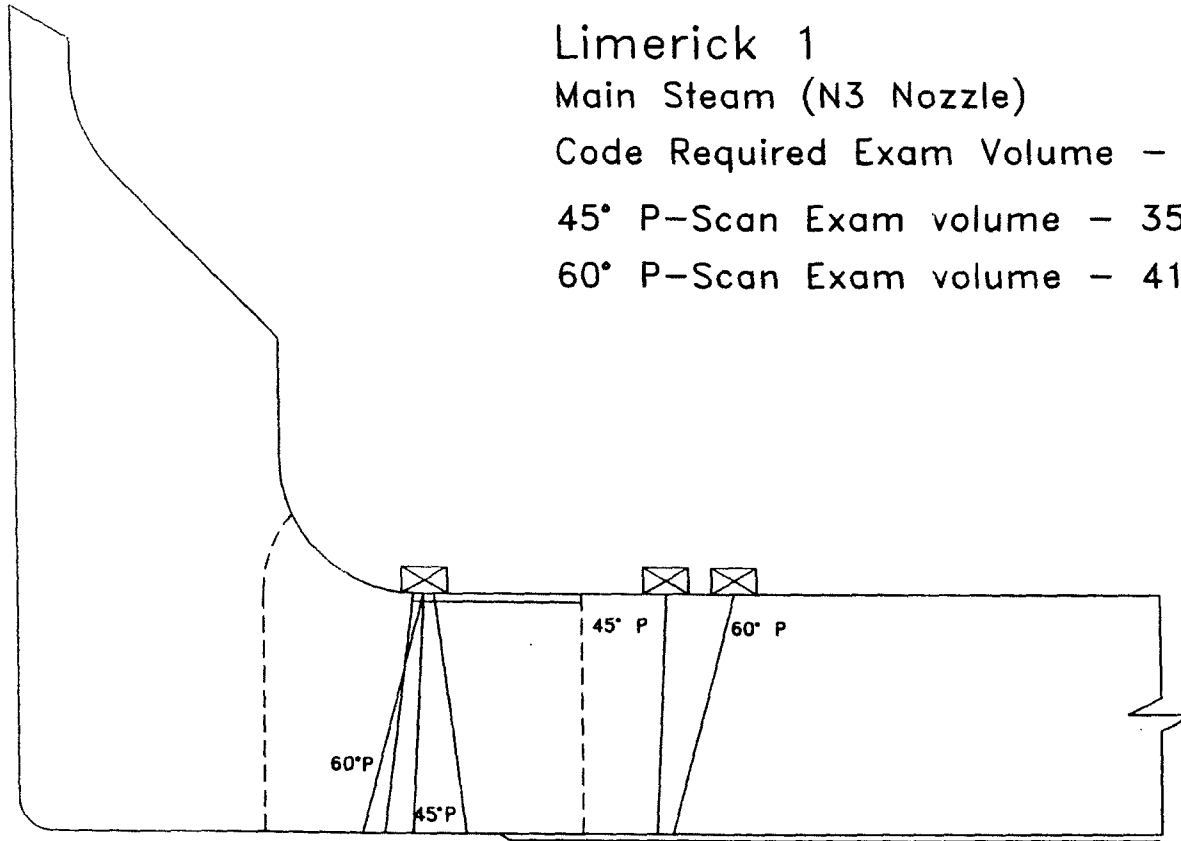
Limerick 1

Main Steam (N3 Nozzle)

Code Required Exam Volume - 75.60 Sq. In.

45° P-Scan Exam volume - 35.56 Sq. In.

60° P-Scan Exam volume - 41.16 Sq. In.



1.09
2.11

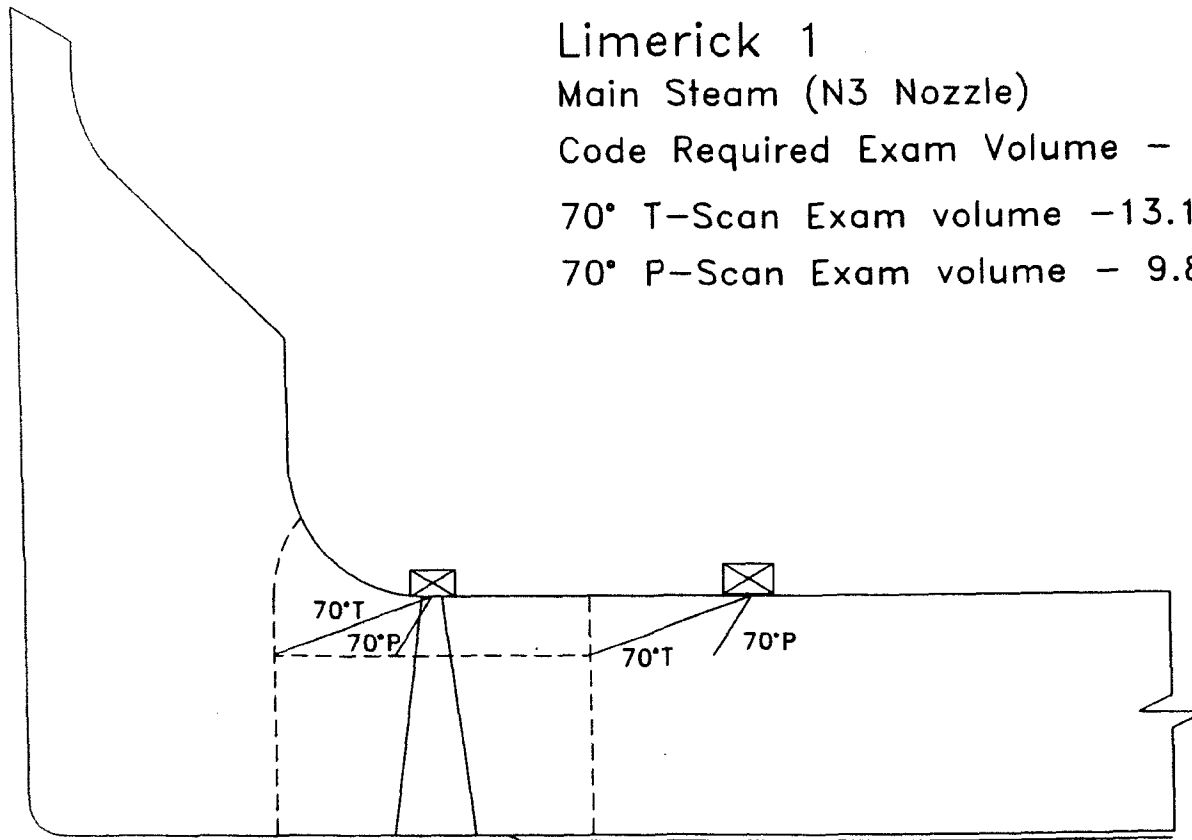
Limerick 1

Main Steam (N3 Nozzle)

Code Required Exam Volume - 27.47 Sq. In.

70° T-Scan Exam volume - 13.19 Sq. In.

70° P-Scan Exam volume - 9.84 Sq. In.



Weld: N3C

Summary Number: 601060

Unit: 1

Item Number: B3.90

Outage: 1R07 (Spring 1998)

Coverage: 58.4%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Automated UT Examination 0°L, 45°S, and 60°S

Manual UT Examination was performed in area obstructed due to a drain line and I-beam. This was performed to increase code coverage.

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

No, the examination was performed to requirements contained in ASME Section XI, Section V, and Reg Guide 1.150. This was the approved technical guidance at the time of the examination.

Limitation Description:

The completed examination was limited to 58.4% Code required coverage due to the design of the reactor vessel nozzle and interference from a nearby drain line and I-beam. The following coverage calculation sheet and the drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

Limerick Unit 1

N3C Nozzle

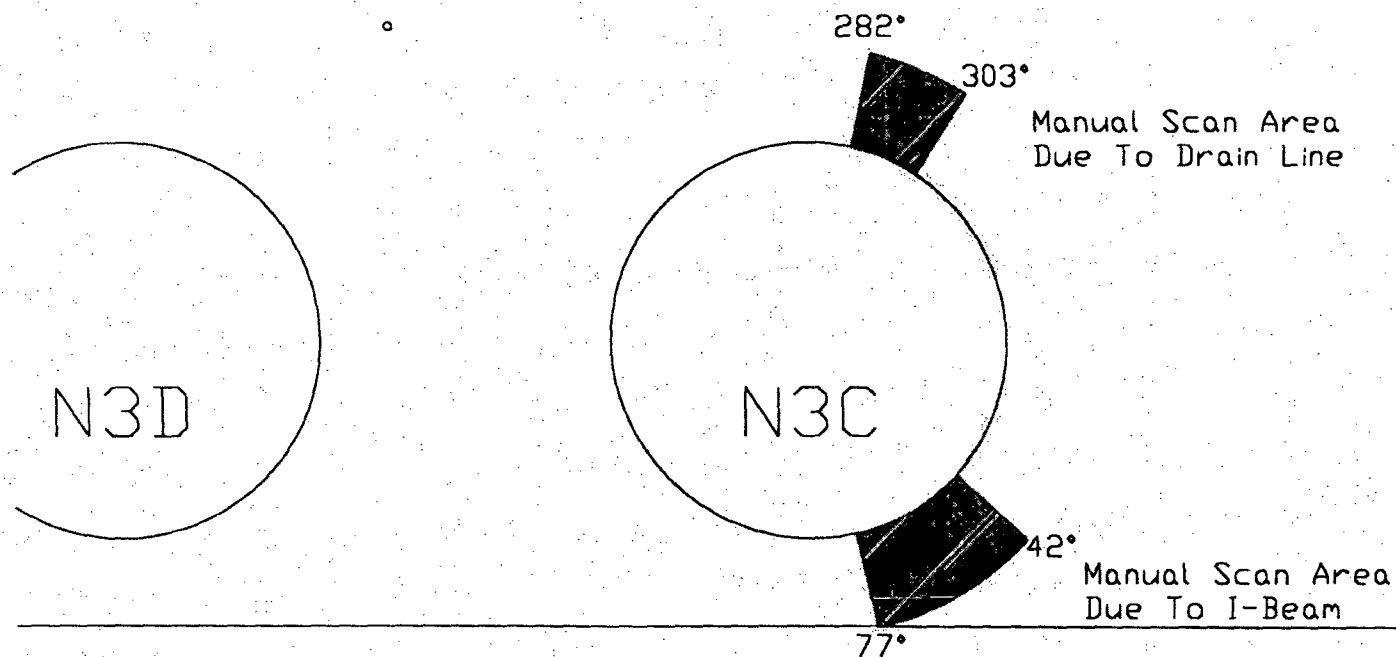
	CROSS SECTIONAL AREA (per slice)					TOTAL CODE COVERAGE			
	code cross sectional area	area scanned automated	area scanned manually	% of code area scanned automated	% of code area scanned manually	degrees scanned automated	degrees scanned manually	percent scanned automated	percent scanned manually
0 wm	74.76	32.88	32.88	43.98	43.98	304	56.0	37.1	6.8
45 T-scan	74.76	56.79	56.79	75.96	75.96	304	56.0	64.1	11.8
60 T-scan	74.76	62.39	62.39	83.45	83.45	304	56.0	70.5	13.0
45 P-scan CW	74.76	37.19	37.19	49.75	49.75	304	56.0	42.0	7.7
60 P-scan CW	74.76	39.55	39.55	52.90	52.90	304	56.0	44.7	8.2
45 P-scan CCW	74.76	37.19	37.19	49.75	49.75	304	56.0	42.0	7.7
60 P-scan CCW	74.76	39.55	39.55	52.90	52.90	304	56.0	44.7	8.2
						Coverages		49.3	9.1
						Total coverage		58.4	

No credit taken for initial 1/4" of material in Code coverage calculations due to near field effects.

MSB 4/1
ANIL 1/30/98
LIMERICK
1 R07
PAGE 16 OF 43

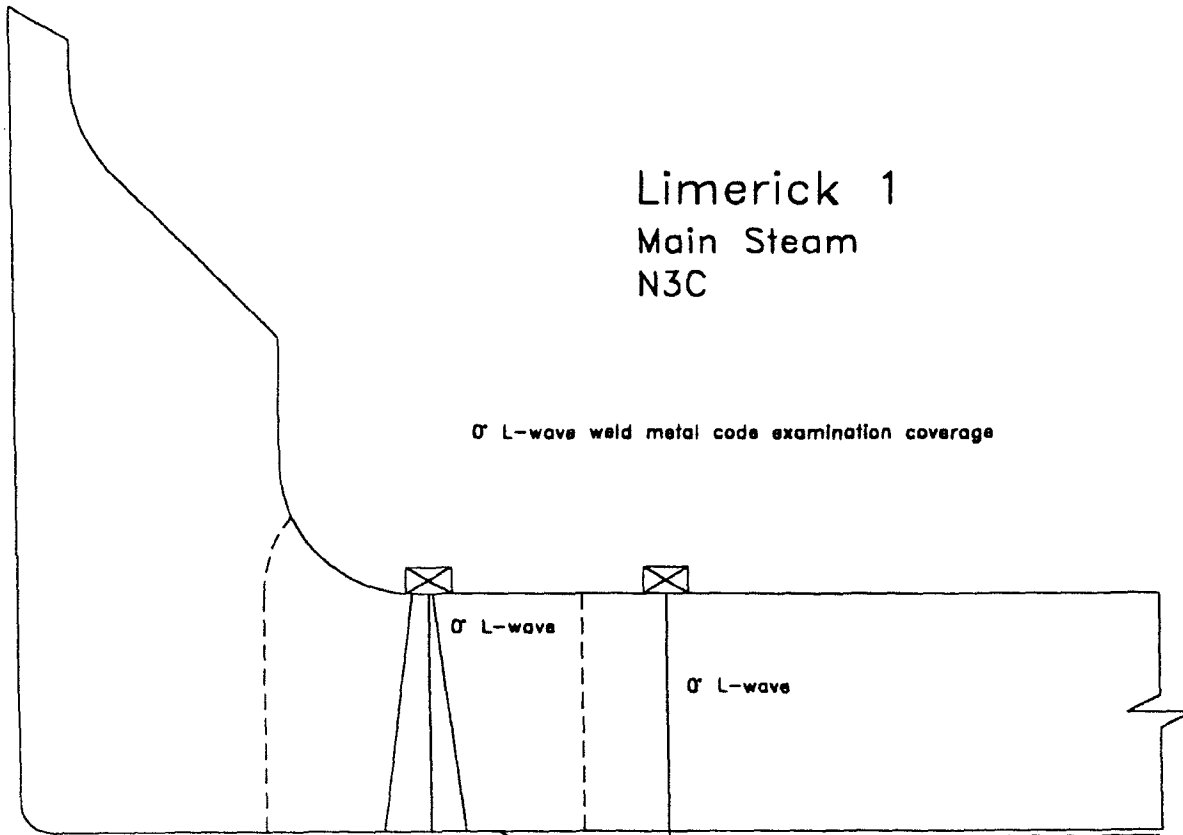
Kept no 601060

Thermocouple Pad



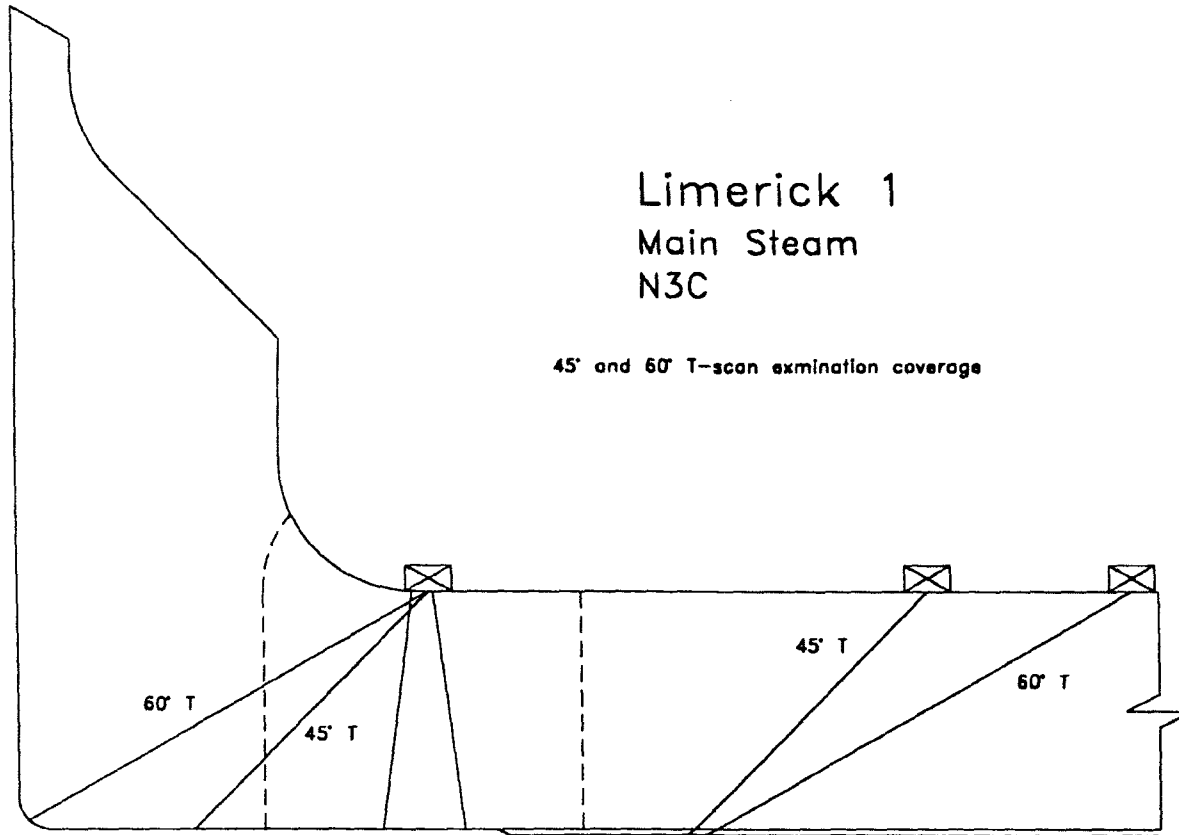
Limerick 1
Main Steam
N3C

0° L-wave weld metal code examination coverage



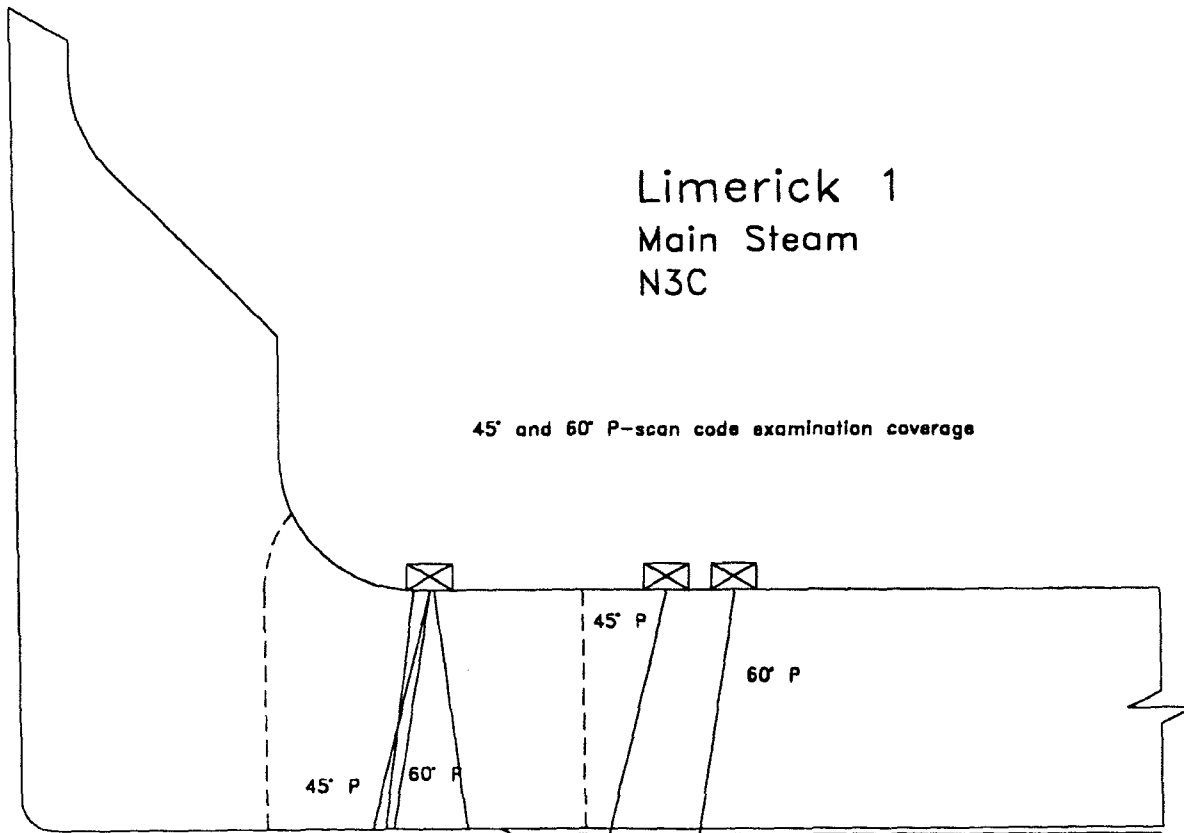
Limerick 1 Main Steam N3C

45° and 60° T-scan examination coverage



Limerick 1
Main Steam
N3C

45° and 60° P-scan code examination coverage



Weld: N3D

Summary Number: 601090

Unit: 1

Item Number: B3.90

Outage: 1R07 (Spring 1998)

Coverage: 58.4%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Automated UT Examination 0°L, 45°S, and 60°S

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

No, the examination was performed to requirements contained in ASME Section XI, Section V, and Reg Guide 1.150. This was the approved technical guidance at the time of the examination.

Limitation Description:

The completed examination was limited to 58.4% Code required coverage due to the design of the reactor vessel nozzle. The following coverage calculation sheet and the drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

Limerick Unit 1

N3D Nozzle

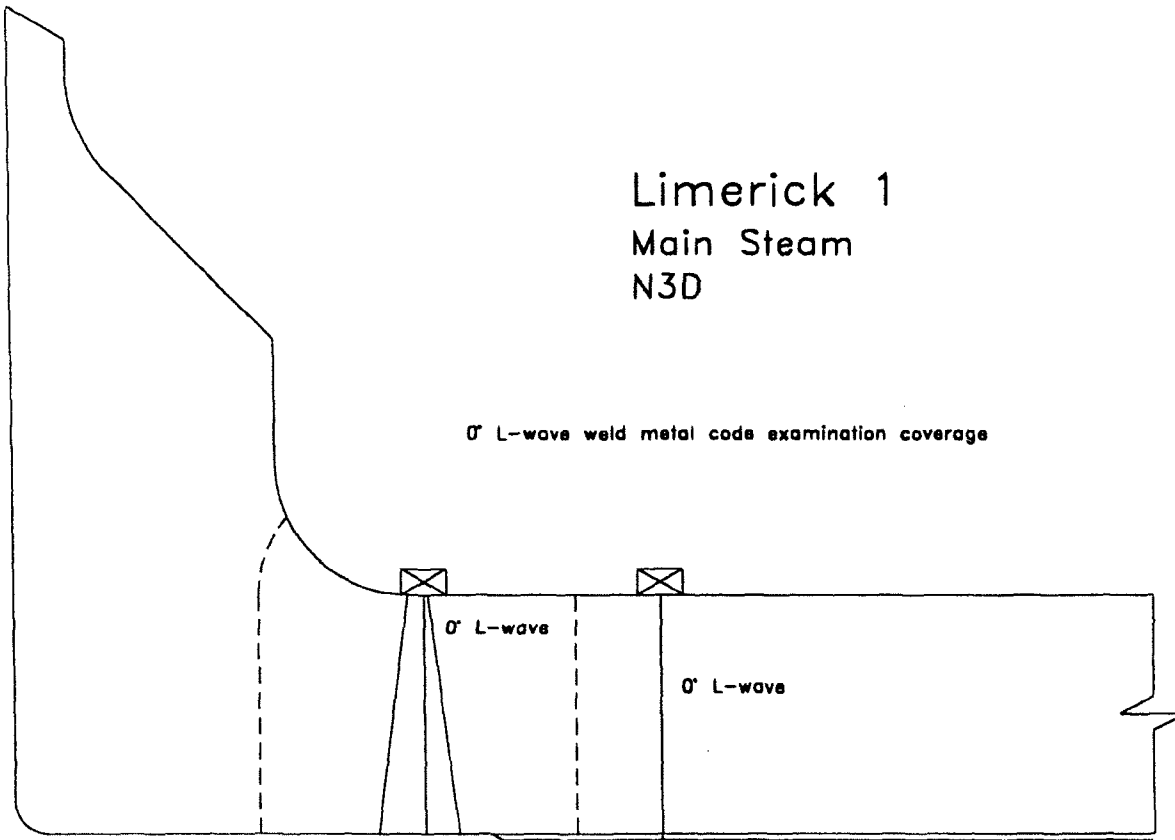
	CROSS SECTIONAL AREA (per slice)					TOTAL CODE COVERAGE			
	code cross sectional area	area scanned automated	area scanned manually	% of code area scanned automated	% of code area scanned manually	degrees scanned automated	degrees scanned manually	percent scanned automated	percent scanned manually
0 w/m	74.76	32.88	0	43.98	0.00	360	0.0	44.0	0.0
45 T-scan	74.76	56.79	0	75.96	0.00	360	0.0	76.0	0.0
60 T-scan	74.76	62.39	0	83.45	0.00	360	0.0	83.5	0.0
45 P-scan CW	74.76	37.19	0	49.75	0.00	360	0.0	49.7	0.0
60 P-scan CW	74.76	39.55	0	52.90	0.00	360	0.0	52.9	0.0
45 P-scan CCW	74.76	37.19	0	49.75	0.00	360	0.0	49.7	0.0
60 P-scan CCW	74.76	39.55	0	52.90	0.00	360	0.0	52.9	0.0
						Coverages		58.4	0.0
						Total coverage		58.4	

Automated scans were not restricted
No credit taken for initial 1/4" of material in Code coverage calculations due to near field effects.

11/15/98
11/15/98
11/15/98

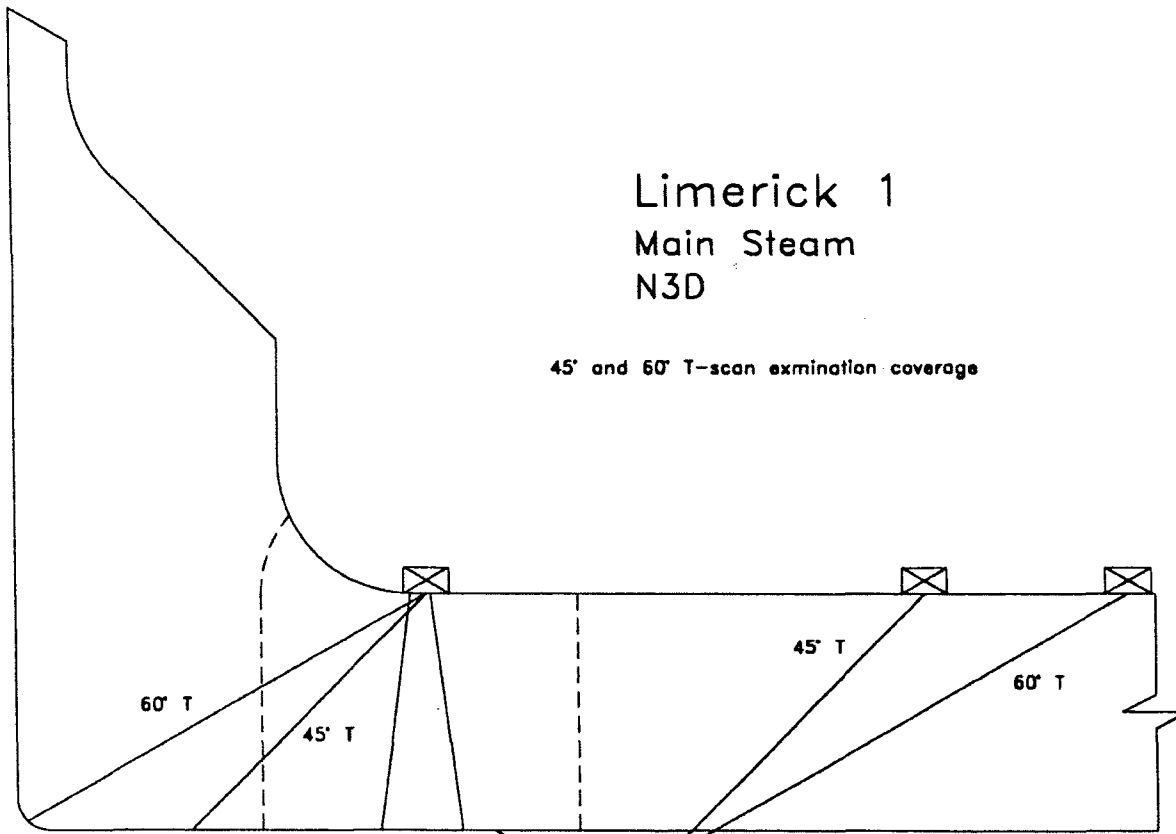
Limerick 1
Main Steam
N3D

0' L-wave weld metal code examination coverage



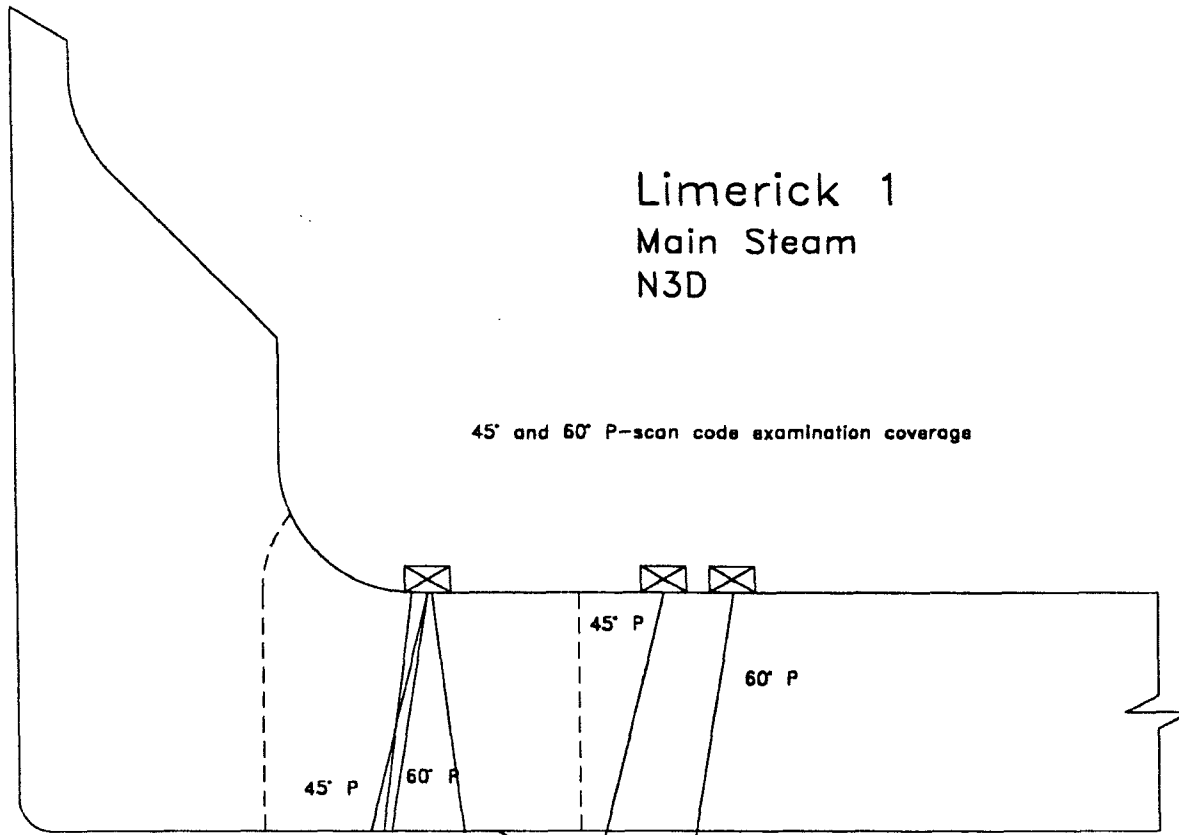
Limerick 1
Main Steam
N3D

45° and 60° T-scan examination coverage



Limerick 1
Main Steam
N3D

45° and 60° P-scan code examination coverage



Weld: N4A

Summary Number: 601120

Unit: 1

Item Number: B3.90

Outage: 1R09 (Spring 2002)

Coverage: 68.8%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Automated UT Examination 0°L, 45°S, 60°S and 70°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

No, the examination was performed to requirements contained in ASME Section XI, Section V, and Reg Guide 1.150. This was the approved technical guidance at the time of the examination.

Limitation Description:

The completed examination was limited to 68.8% Code required coverage due to the design of the reactor vessel nozzle. The following coverage calculation sheet and the drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

**Limerick Unit 1
N4A
Spring 2002**

Obstructed	CODE CROSS-SECTIONAL AREA					TOTAL CODE COVERAGE				
	Area Inch ²	Area Scanned		% of Area Scanned		Degrees Scanned		% Scanned		
		Auto	Manual	Auto	Manual	Auto	Manual	Auto	Manual	
0° WELD METAL	N	56.88	27.91	0.0	49.1	0.0	360.0	0.0	49.1	0.0
45° T-SCAN	N	56.88	46.24	0.0	81.3	0.0	360.0	0.0	81.3	0.0
60° T-SCAN	N	56.88	50.04	0.0	88.0	0.0	360.0	0.0	88.0	0.0
	N	56.88		0.0	0.0	0.0	0.0	0.0	0.0	0.0
45° P-SCAN CW	N	56.88	34.41	0.0	60.5	0.0	360.0	0.0	60.5	0.0
60° P-SCAN CW	N	56.88	40.51	0.0	71.2	0.0	360.0	0.0	71.2	0.0
45° P-SCAN CCW	N	56.88	34.41	0.0	60.5	0.0	360.0	0.0	60.5	0.0
60° P-SCAN CCW	N	56.88	40.51	0.0	71.2	0.0	360.0	0.0	71.2	0.0
									68.8	0.0

Total 0°, 45° and 60° Coverage = 68.8

70° T-SCAN	N	22.41	10.99	0.0	49.0	0.0	360.0	0.0	49.0	0.0
70° P-SCAN CW	N	22.41	7.64	0.0	34.1	0.0	360.0	0.0	34.1	0.0
70° P-SCAN CCW	N	22.41	7.64	0.0	34.1	0.0	360.0	0.0	34.1	0.0
									39.1	0.0

Total 70° Coverage = 39.1

COMMENTS:

Automated UT scans were limited due to the nozzle OD blend radius.
Credit for the initial 1/4" of material in code coverage taken with the 70°

02/29/01

Limerick 1

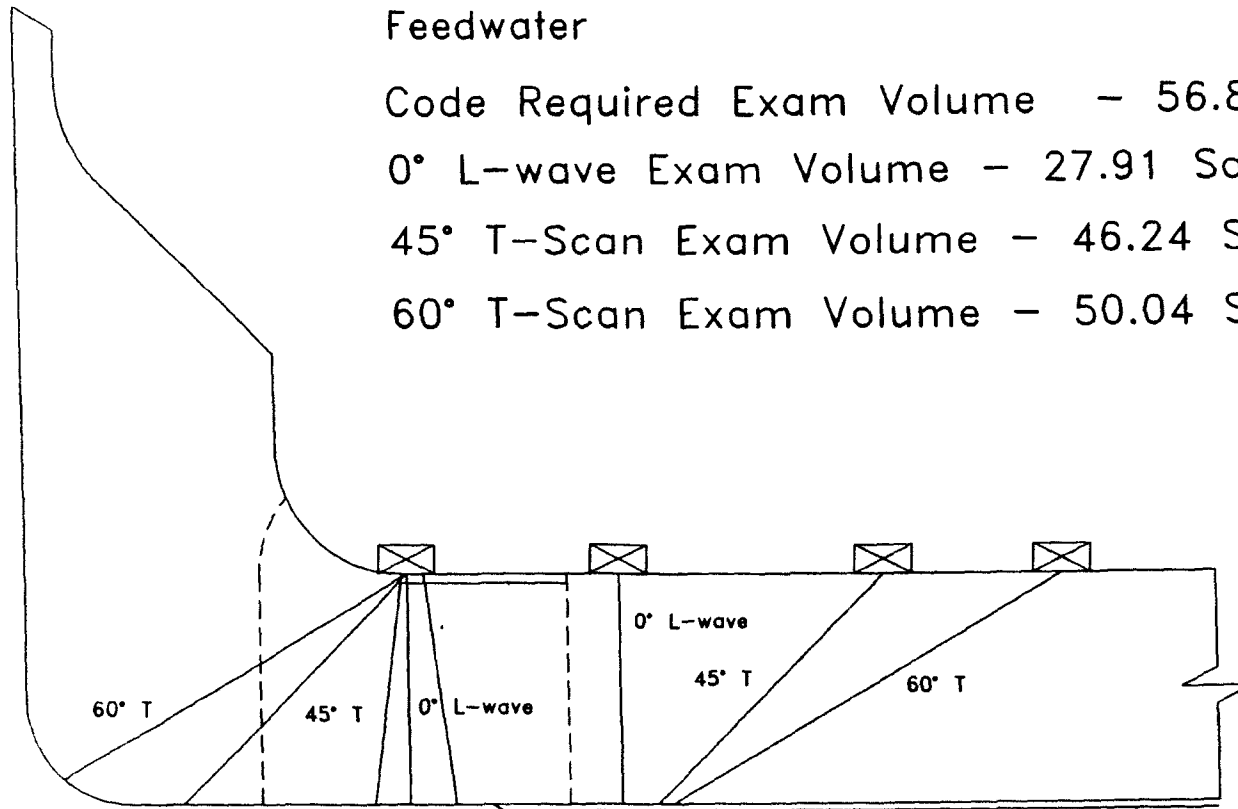
Feedwater

Code Required Exam Volume - 56.88 Sq. In.

0° L-wave Exam Volume - 27.91 Sq. In.

45° T-Scan Exam Volume - 46.24 Sq. In.

60° T-Scan Exam Volume - 50.04 Sq. In.



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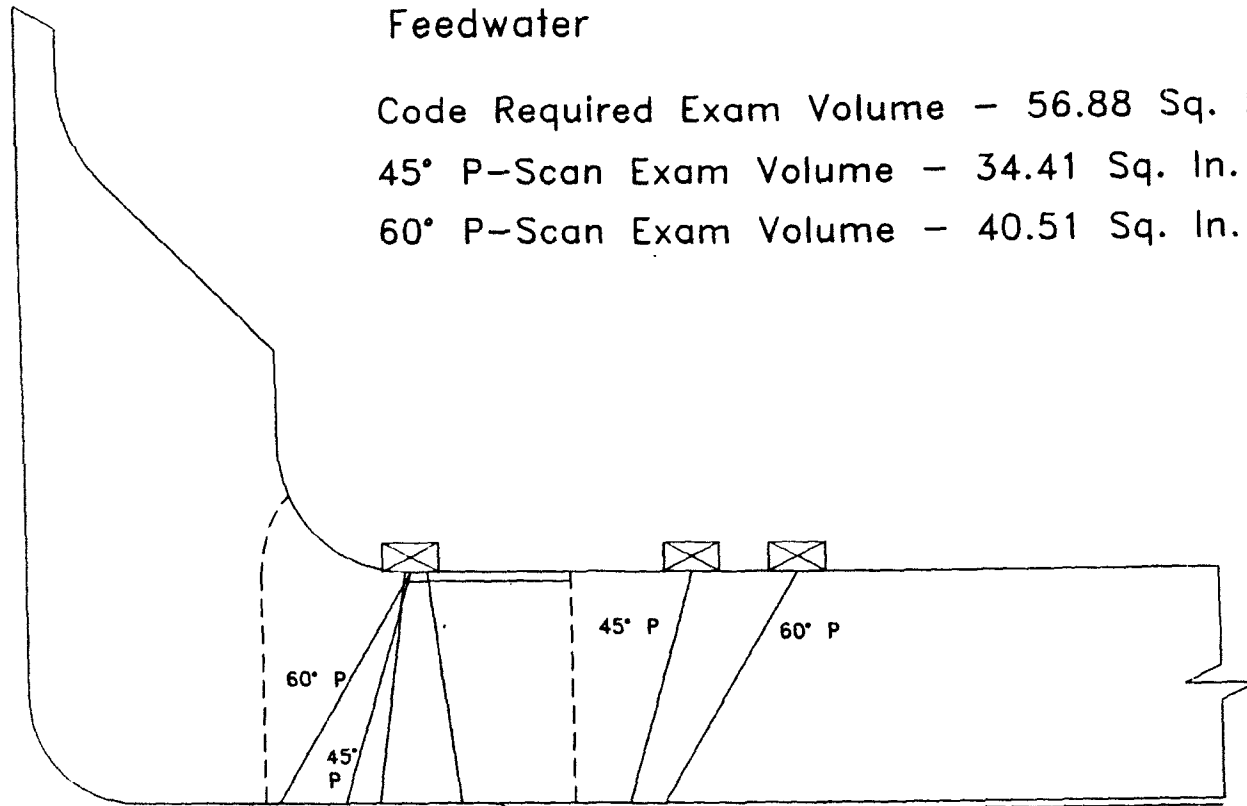
Limerick 1

Feedwater

Code Required Exam Volume - 56.88 Sq. In.

45° P-Scan Exam Volume - 34.41 Sq. In.

60° P-Scan Exam Volume - 40.51 Sq. In.



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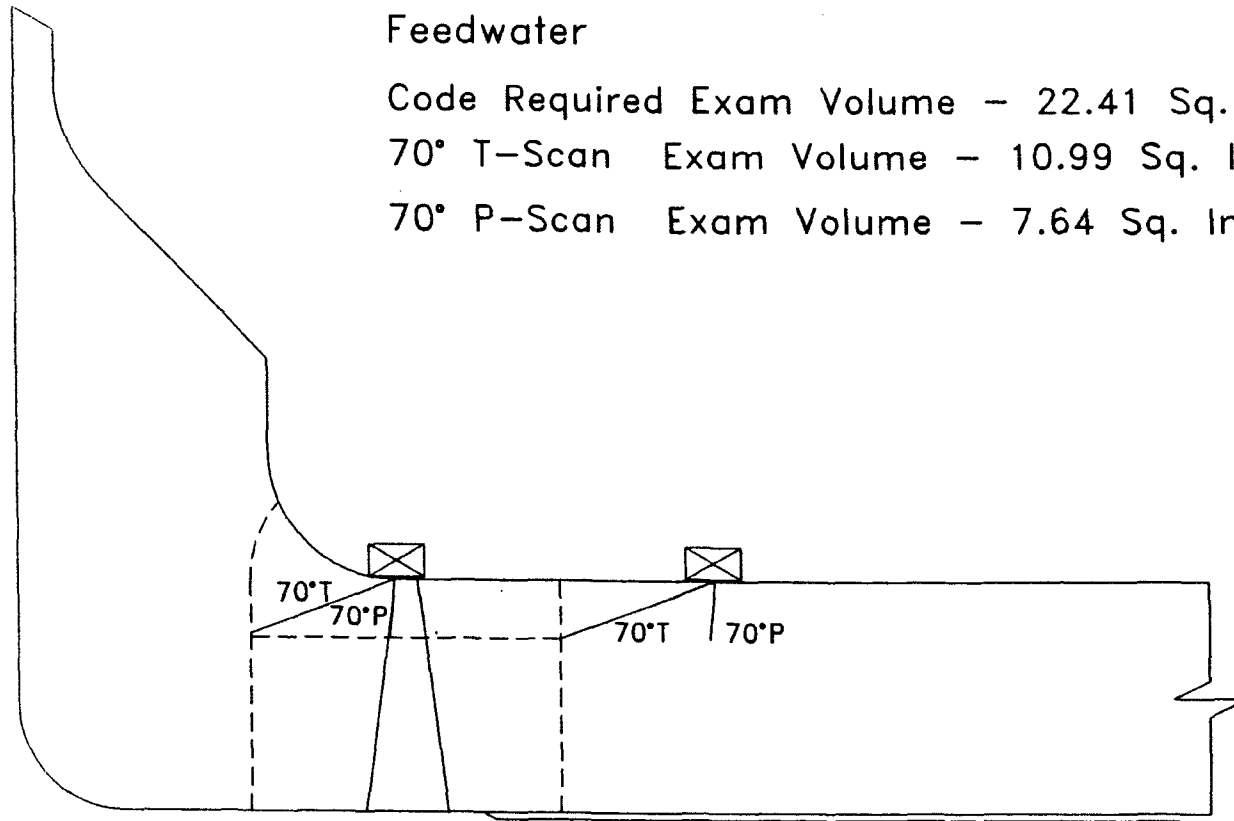
Limerick 1

Feedwater

Code Required Exam Volume - 22.41 Sq. In.

70° T-Scan Exam Volume - 10.99 Sq. In.

70° P-Scan Exam Volume - 7.64 Sq. In.



Weld: N4B

Summary Number: 601150

Unit: 1

Item Number: B3.90

Outage: 1R08 (Spring 2000)

Coverage: 64.6%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Automated UT Examination 0°L, 45°S, 60°S, and 70°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

No, the examination was performed to requirements contained in ASME Section XI, Section V, and Reg Guide 1.150. This was the approved technical guidance at the time of the examination.

Limitation Description:

The completed examination was limited to 64.6% Code required coverage due to the design of the reactor vessel nozzle. The following coverage calculation sheet and the drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

Limerick Unit 1

N4B

	CROSS SECTIONAL AREA (per slice)					TOTAL CODE COVERAGE			
	code cross sectional area	area scanned automated	area scanned manually	% of code area scanned automated	% of code area scanned manually	degrees scanned automated	degrees scanned manually	percent scanned automated	percent scanned manually
0° wm	59.70	27.1	0.0	45.4	0.0	360.0	0.0	45.4	0.0
45° T-scan	59.70	45.7	0.0	76.5	0.0	360.0	0.0	76.5	0.0
60° T-scan	59.70	49.8	0.0	83.4	0.0	360.0	0.0	83.4	0.0
45° P-scan CW	59.70	32.8	0.0	54.9	0.0	360.0	0.0	54.9	0.0
60° P-scan CW	59.70	39.2	0.0	65.7	0.0	360.0	0.0	65.7	0.0
45° P-scan CCW	59.70	32.8	0.0	54.9	0.0	360.0	0.0	54.9	0.0
60° P-scan CCW	59.70	39.2	0.0	65.7	0.0	360.0	0.0	65.7	0.0
								63.8	0.0

Automated scans were not restricted.

No credit taken for initial 1/4" of material in Code coverage calculations due to near field effects.

Composite Coverage = 63.8

	CROSS SECTIONAL AREA (per slice)					TOTAL CODE COVERAGE			
	code cross sectional area	area scanned automated	area scanned manually	% of code area scanned automated	% of code area scanned manually	degrees scanned automated	degrees scanned manually	percent scanned automated	percent scanned manually
70° T-scan	58.84	1.2	0.0	2.0	0.0	360.0	0.0	2.0	0.0
70° P-scan CW	58.84	1.1	0.0	1.9	0.0	360.0	0.0	1.9	0.0
70° P-scan CCW	58.84	1.1	0.0	1.9	0.0	360.0	0.0	1.9	0.0
								0.8	0.0

Examination coverage 70° RL calculations.

Composite Coverage = 0.8

Total Composite Coverage = 64.6

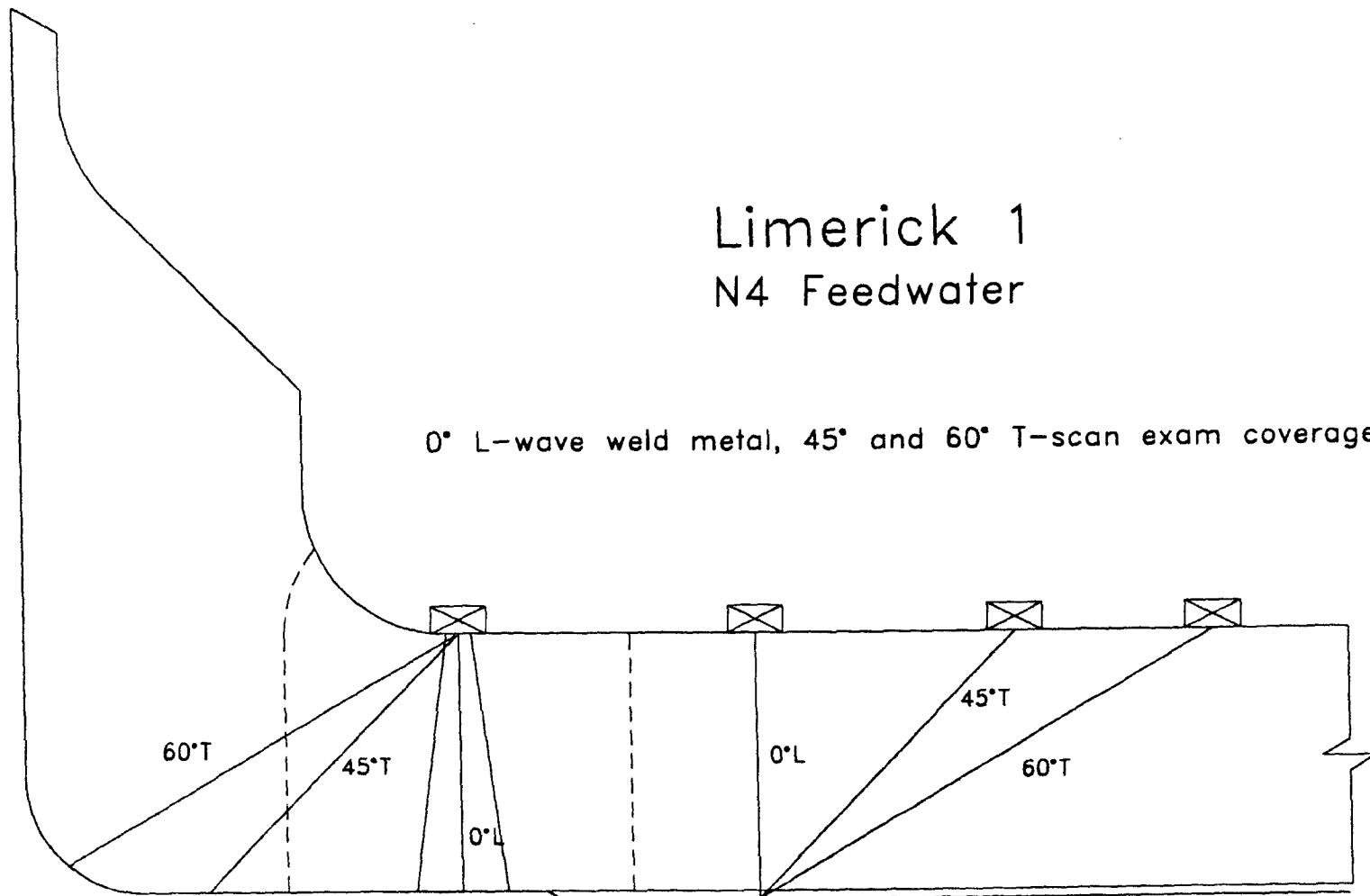
LIMERICK
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kept in 1001150

Limerick 1

N4 Feedwater

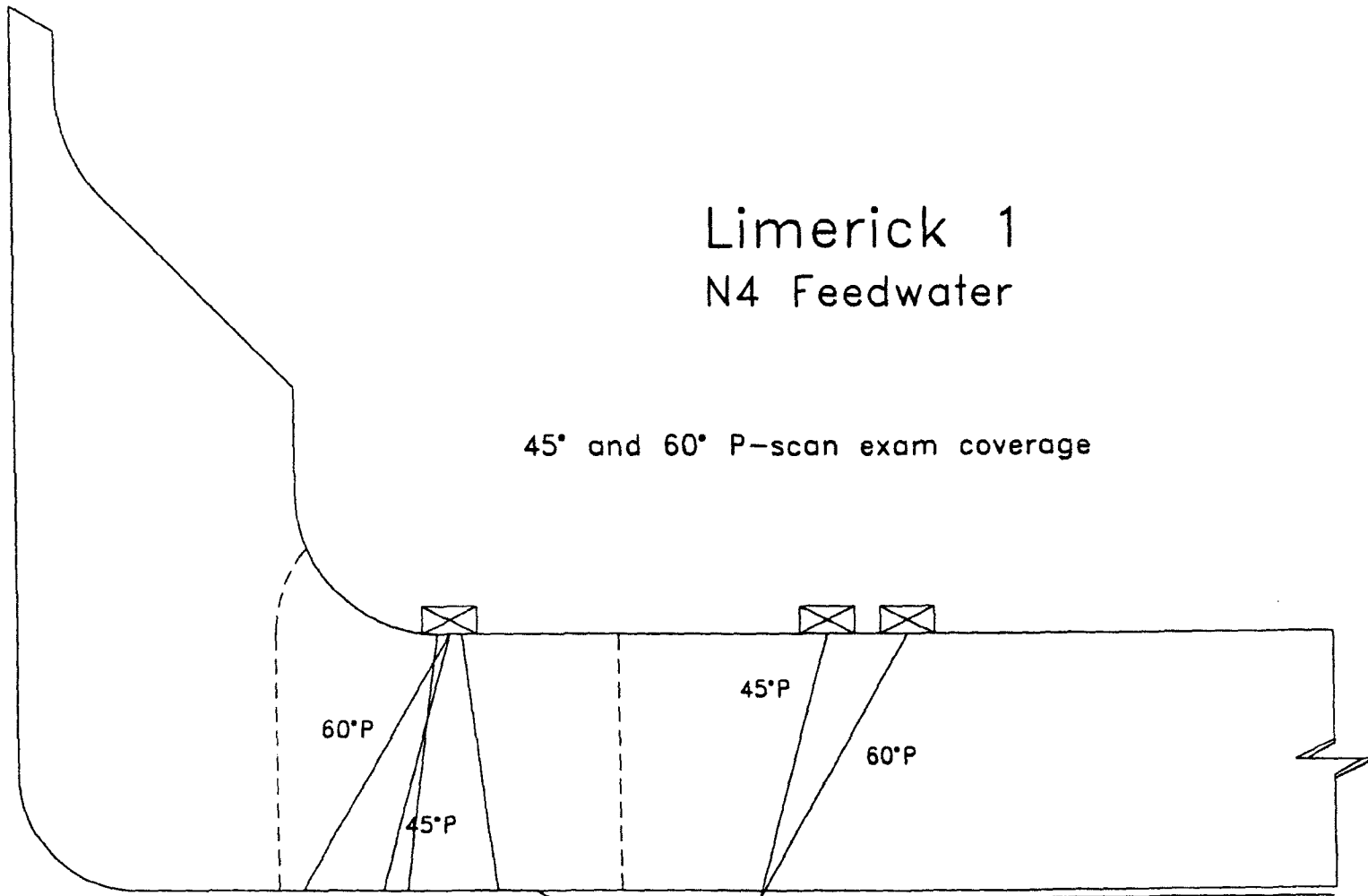
0° L-wave weld metal, 45° and 60° T-scan exam coverage



Limerick 1

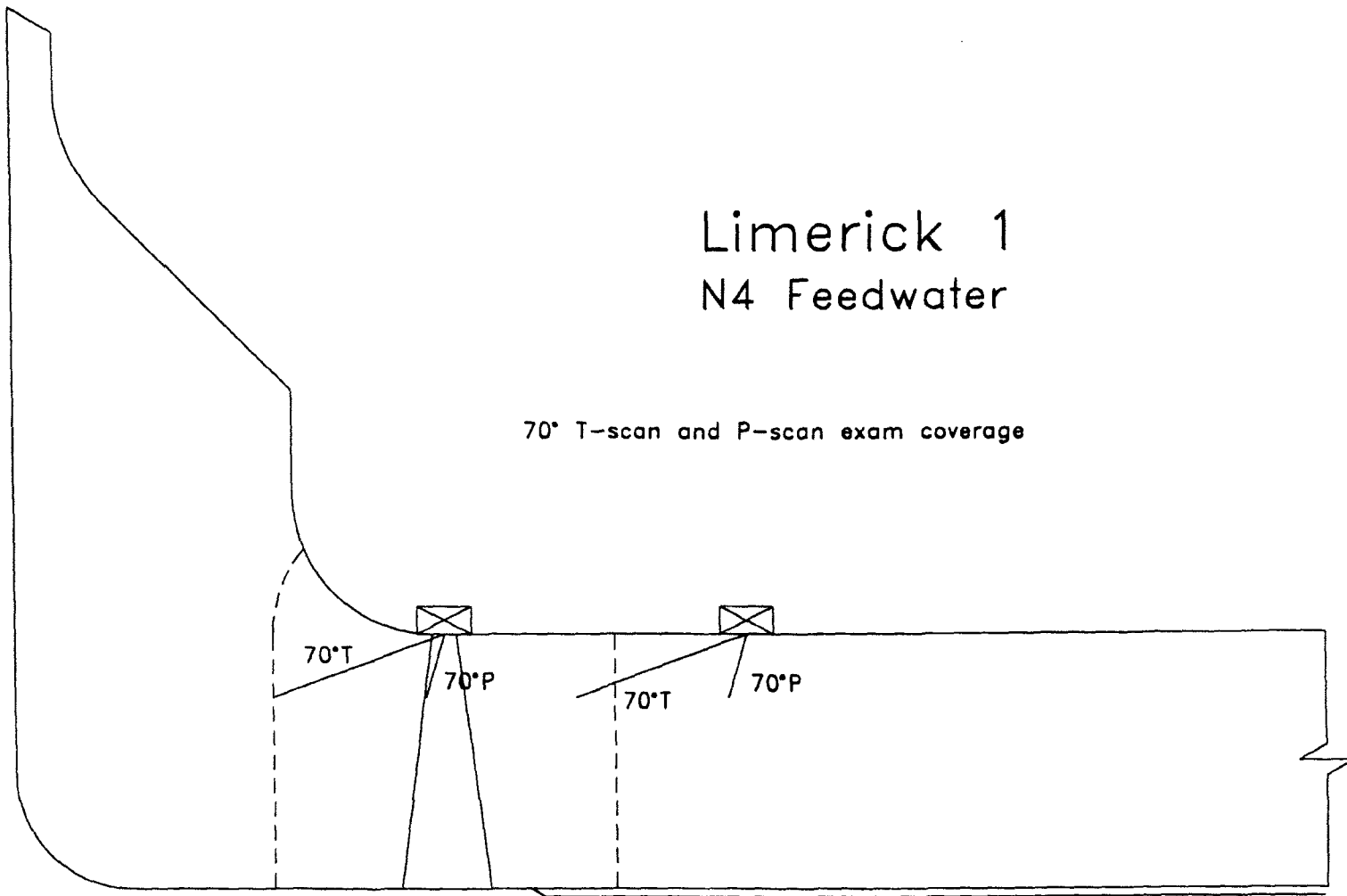
N4 Feedwater

45° and 60° P-scan exam coverage



Limerick 1 N4 Feedwater

70° T-scan and P-scan exam coverage



8/1/08
1008
1008
1008

Kept. 1/2. 60150

Weld: N4C

Summary Number: 601180

Unit: 1

Item Number: B3.90

Outage: 1R08 (Spring 2000)

Coverage: 64.6%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Automated UT Examination 0°L, 45°S, 60°S, and 70°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

No, the examination was performed to requirements contained in ASME Section XI, Section V, and Reg Guide 1.150. This was the approved technical guidance at the time of the examination.

Limitation Description:

The completed examination was limited to 64.6% Code required coverage due to the design of the reactor vessel nozzle. The following coverage calculation sheet and the drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

Limerick Unit 1

N4C

	CROSS SECTIONAL AREA (per slice)					TOTAL CODE COVERAGE			
	code cross sectional area	area scanned automated	area scanned manually	% of code area scanned automated	% of code area scanned manually	degrees scanned automated	degrees scanned manually	percent scanned automated	percent scanned manually
0° w/m	59.70	27.1	0.0	45.4	0.0	360.0	0.0	45.4	0.0
45° T-scan	59.70	45.7	0.0	76.5	0.0	360.0	0.0	76.5	0.0
60° T-scan	59.70	49.8	0.0	83.4	0.0	360.0	0.0	83.4	0.0
45° P-scan CW	59.70	32.8	0.0	54.9	0.0	360.0	0.0	54.9	0.0
60° P-scan CW	59.70	39.2	0.0	65.7	0.0	360.0	0.0	65.7	0.0
45° P-scan CCW	59.70	32.8	0.0	54.9	0.0	360.0	0.0	54.9	0.0
60° P-scan CCW	59.70	39.2	0.0	65.7	0.0	360.0	0.0	65.7	0.0
								63.8	0.0

Automated scans were not restricted.

No credit taken for initial 1/4" of material in Code coverage calculations due to near field effects.

Composite Coverage = 63.8

	CROSS SECTIONAL AREA (per slice)					TOTAL CODE COVERAGE			
	code cross sectional area	area scanned automated	area scanned manually	% of code area scanned automated	% of code area scanned manually	degrees scanned automated	degrees scanned manually	percent scanned automated	percent scanned manually
70° T-scan	58.84	1.2	0.0	2.0	0.0	360.0	0.0	2.0	0.0
70° P-scan CW	58.84	1.1	0.0	1.9	0.0	360.0	0.0	1.9	0.0
70° P-scan CCW	58.84	1.1	0.0	1.9	0.0	360.0	0.0	1.9	0.0
								0.8	0.0

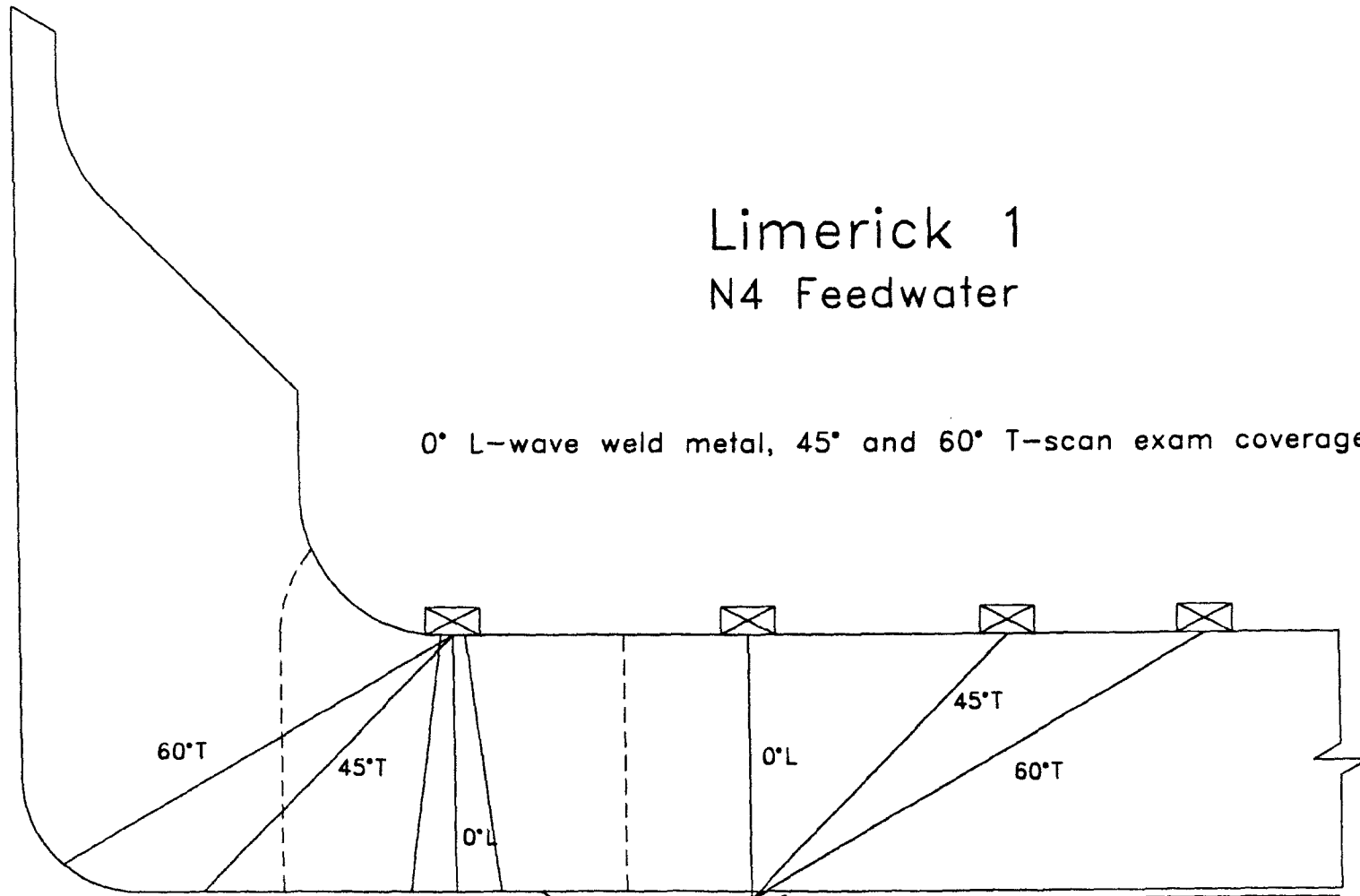
Examination coverage 70° RL calculations

Composite Coverage = 0.8

Total Composite Coverage = 64.6

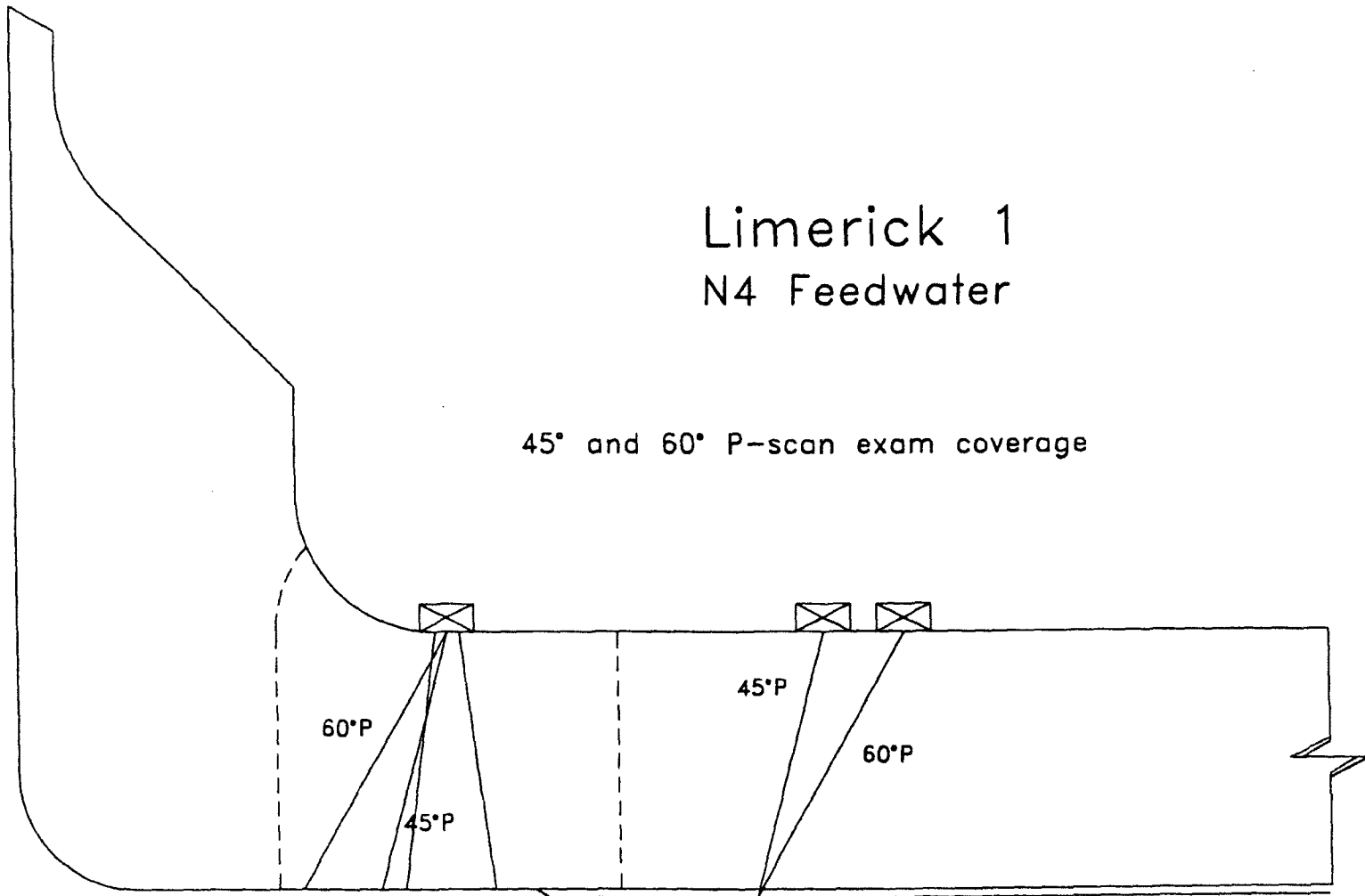
Limerick 1 N4 Feedwater

0° L-wave weld metal, 45° and 60° T-scan exam coverage



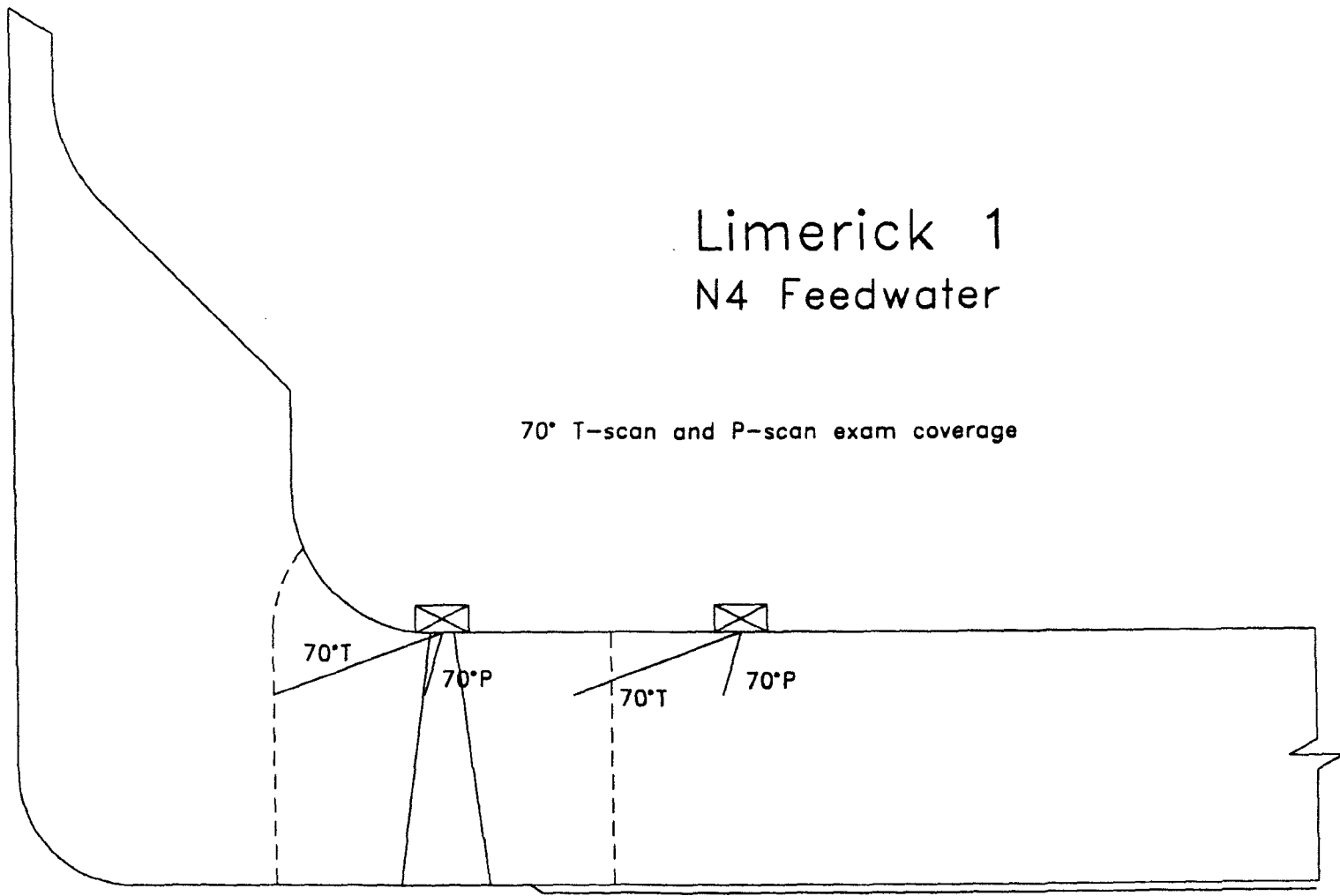
Limerick 1 N4 Feedwater

45° and 60° P-scan exam coverage



Limerick 1 N4 Feedwater

70° T-scan and P-scan exam coverage



Weld: N4D

Summary Number: 601210

Unit: 1

Item Number: B3.90

Outage: 1R08 (Spring 2000)

Coverage: 55.9%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Automated UT Examination 0°L, 45°S, 60°S, and 70°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

No, the examination was performed to requirements contained in ASME Section XI, Section V, and Reg Guide 1.150. This was the approved technical guidance at the time of the examination.

Limitation Description:

The completed examination was limited to 55.9% Code required coverage due to the design of the reactor vessel nozzle and the location of the N11B nozzle. The following coverage calculation sheet and the drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

Limerick Unit 1

N4D

	CROSS SECTIONAL AREA (per slice)					TOTAL CODE COVERAGE			
	code cross sectional area	area scanned automated	area scanned manually	% of code area scanned automated	% of code area scanned manually	degrees scanned automated	degrees scanned manually	percent scanned automated	percent scanned manually
0° wm	59.70	27.1	0.0	45.4	0.0	311.2	0.0	39.2	0.0
45° T-scan	59.70	45.7	0.0	76.5	0.0	311.2	0.0	66.2	0.0
60° T-scan	59.70	49.8	0.0	83.4	0.0	311.2	0.0	72.1	0.0
45° P-scan CW	59.70	32.8	0.0	54.9	0.0	311.2	0.0	47.5	0.0
60° P-scan CW	59.70	39.2	0.0	65.7	0.0	311.2	0.0	56.8	0.0
45° P-scan CCW	59.70	32.8	0.0	54.9	0.0	311.2	0.0	47.5	0.0
60° P-scan CCW	59.70	39.2	0.0	65.7	0.0	311.2	0.0	56.8	0.0
								55.1	0.0

Automated scans were restricted, due to the proximity of N11B nozzle.

No credit taken for initial 1/4" of material in Code coverage calculations due to near field effects.

Composite Coverage = 55.1

	CROSS SECTIONAL AREA (per slice)					TOTAL CODE COVERAGE			
	code cross sectional area	area scanned automated	area scanned manually	% of code area scanned automated	% of code area scanned manually	degrees scanned automated	degrees scanned manually	percent scanned automated	percent scanned manually
70° T-scan	58.84	1.2	0.0	2.0	0.0	311.2	0.0	1.7	0.0
70° P-scan CW	58.84	1.1	0.0	1.9	0.0	311.2	0.0	1.6	0.0
70° P-scan CW	58.84	1.1	0.0	1.9	0.0	311.2	0.0	1.6	0.0
								0.7	0.0

Examination coverage 70° RL calculations.

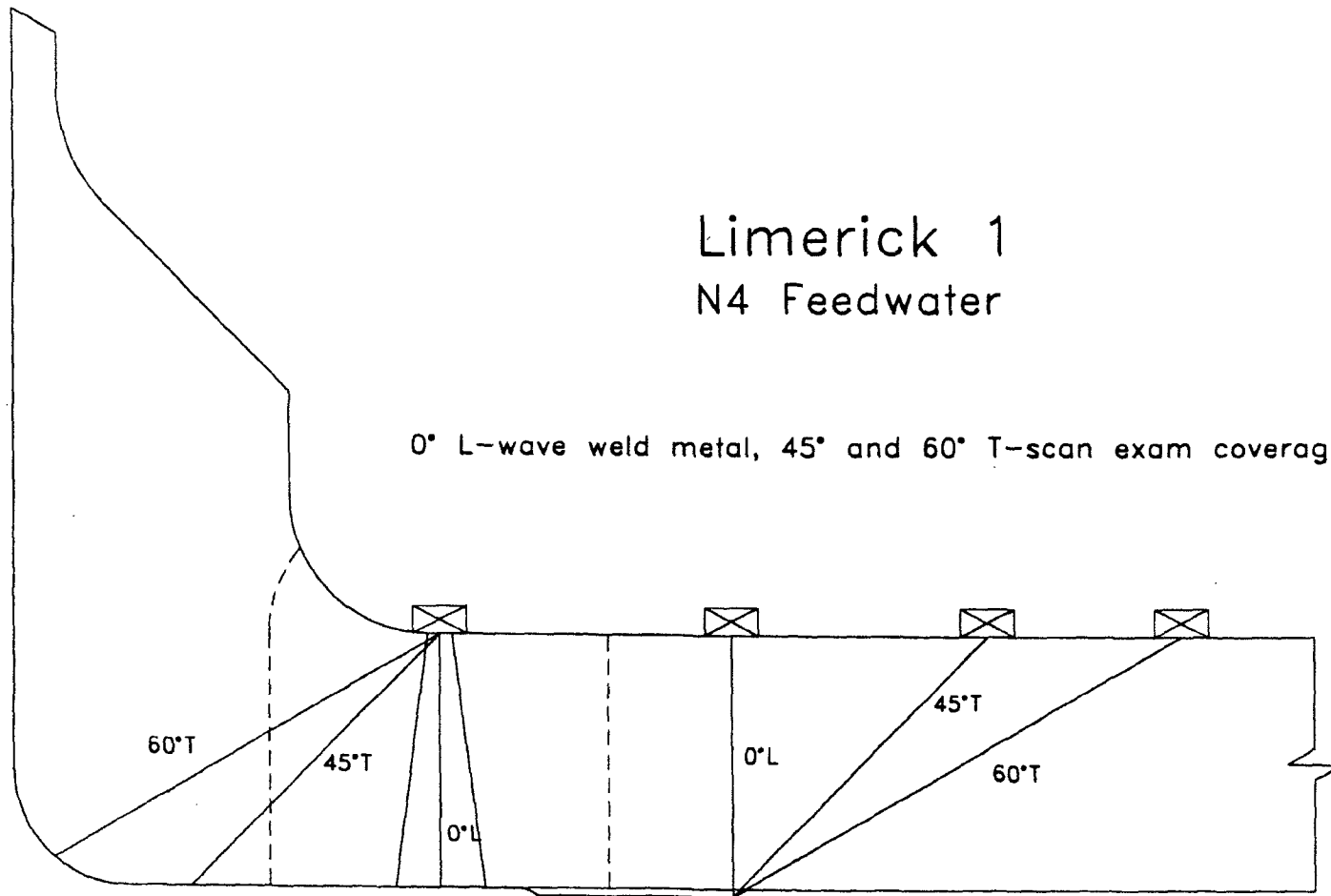
Composite Coverage = 0.7

Total Composite Coverage = 55.9

Limerick 1

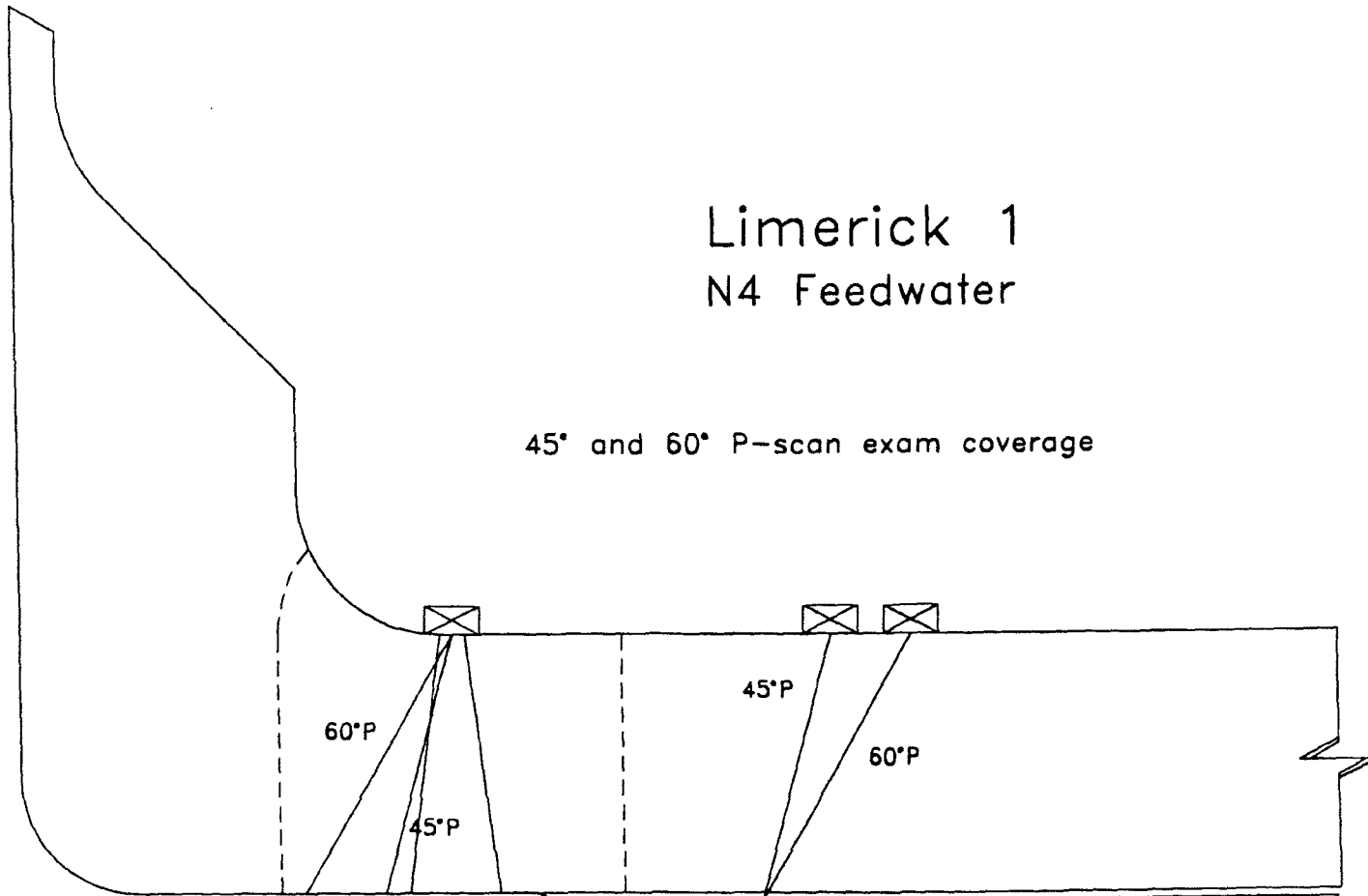
N4 Feedwater

0° L-wave weld metal, 45° and 60° T-scan exam coverage



Limerick 1 N4 Feedwater

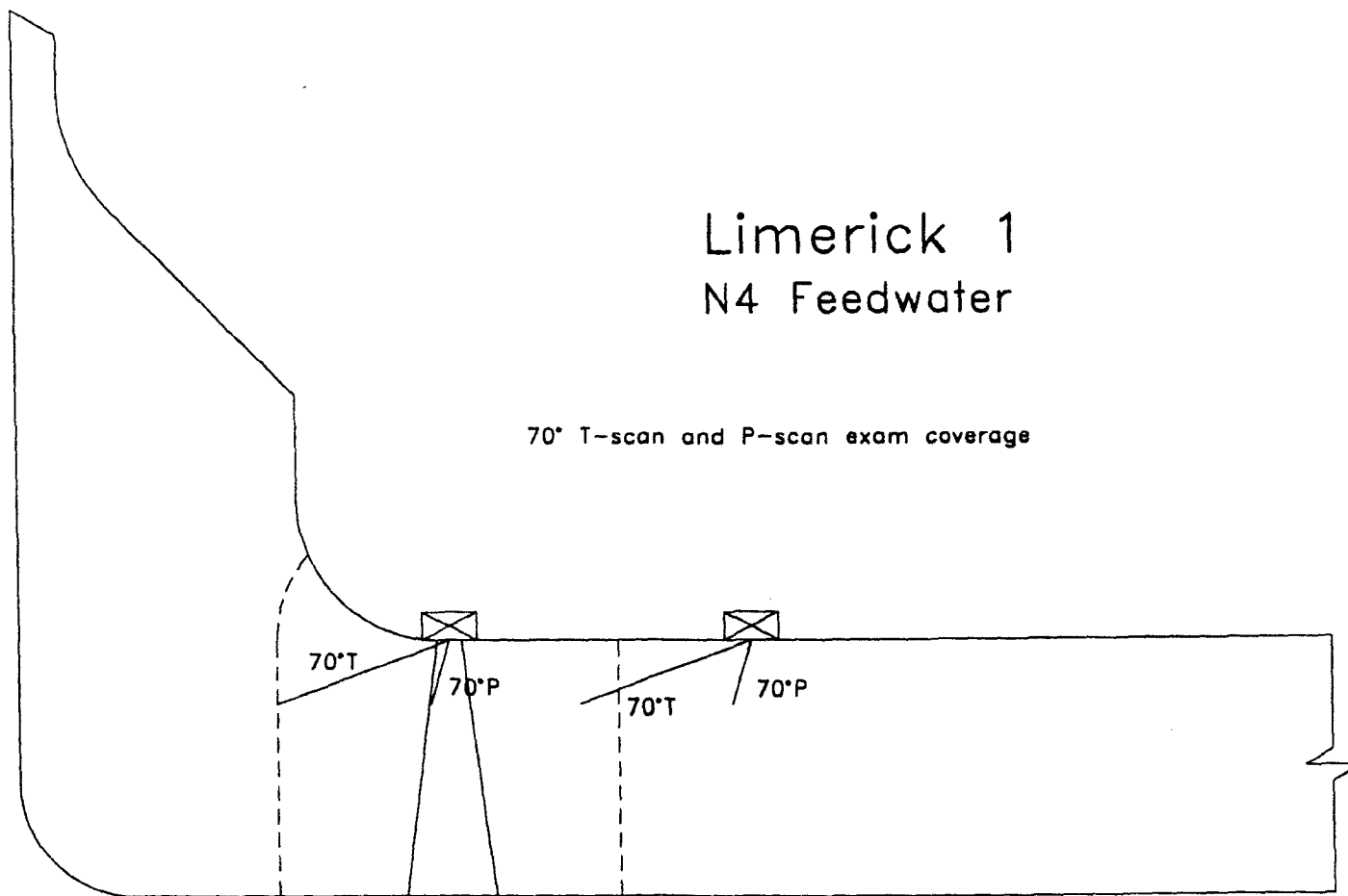
45° and 60° P-scan exam coverage

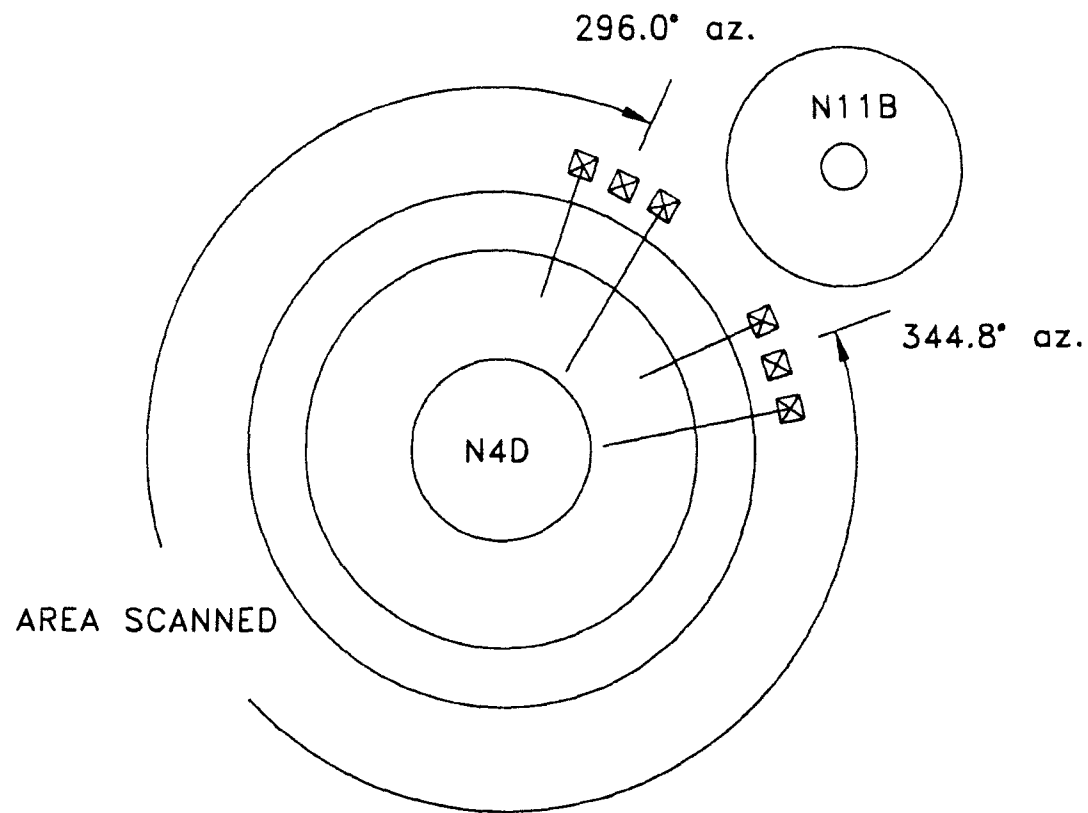


Limerick 1

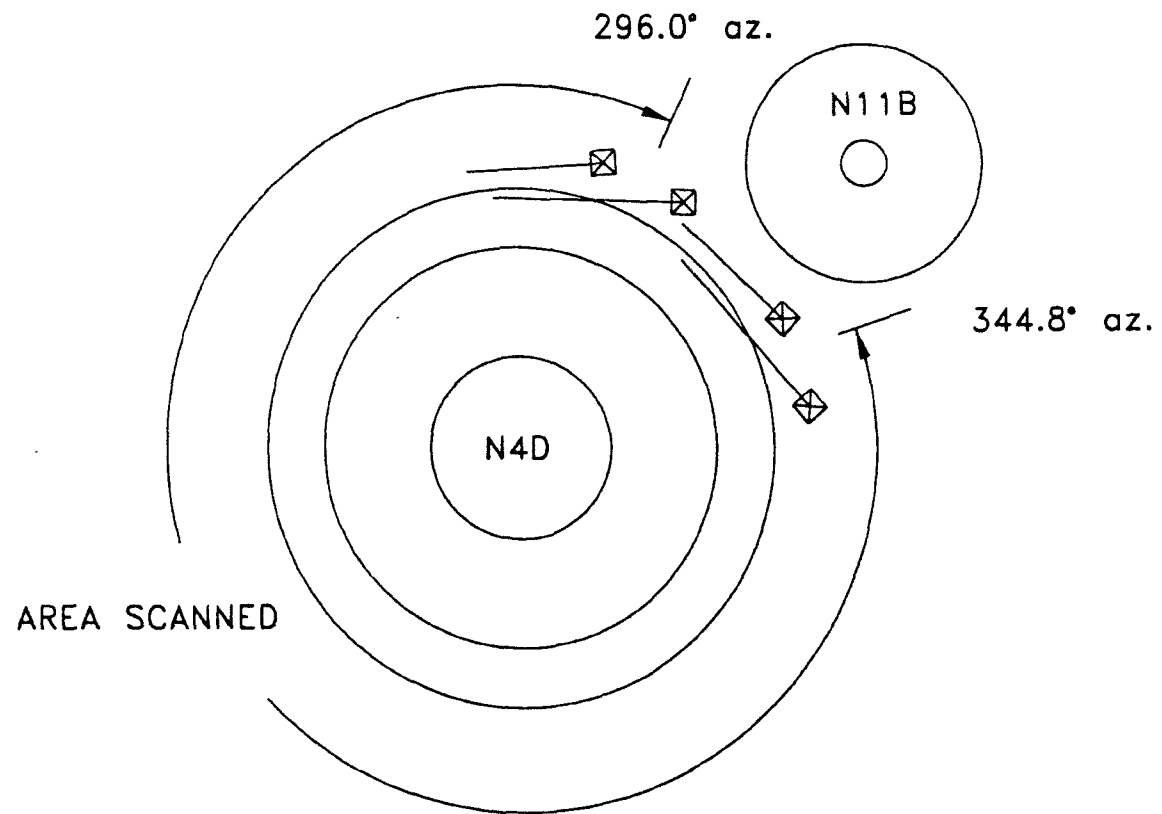
N4 Feedwater

70° T-scan and P-scan exam coverage



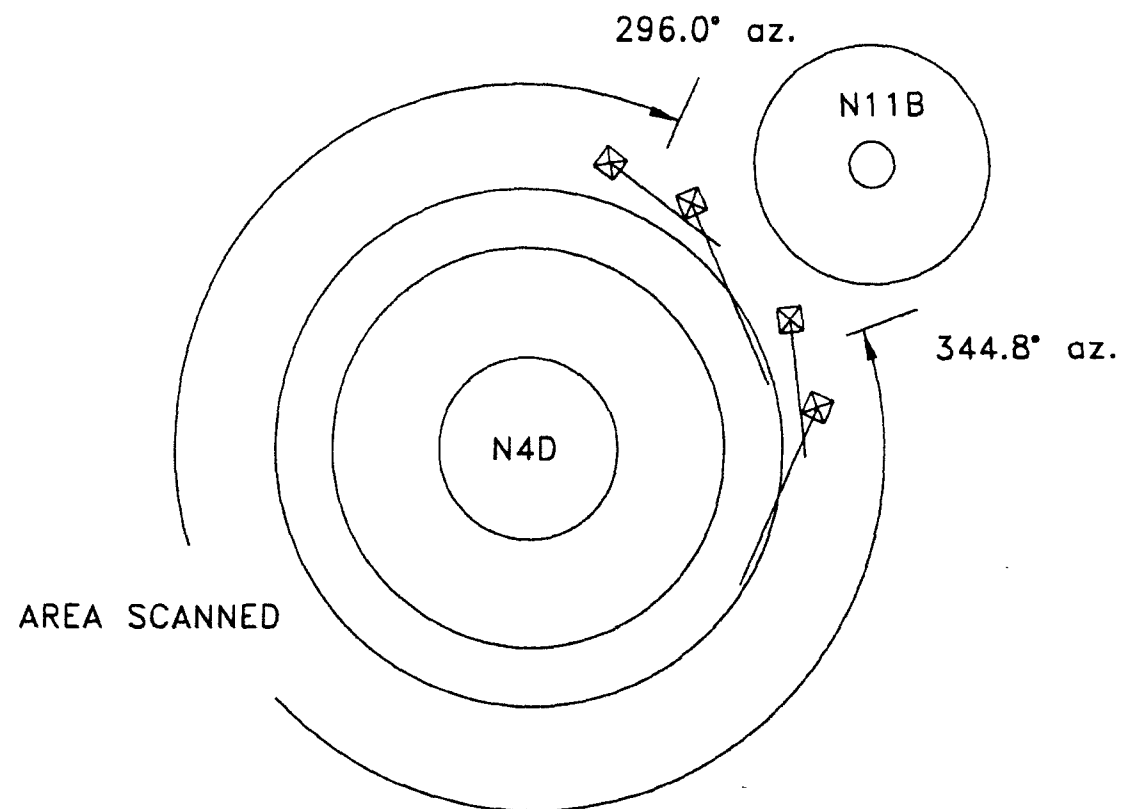


N4D 45°, 60° T-SCANS AND 0° L-WAVE
 AUTOMATED EXAMS RESTRICTED DUE TO N11B

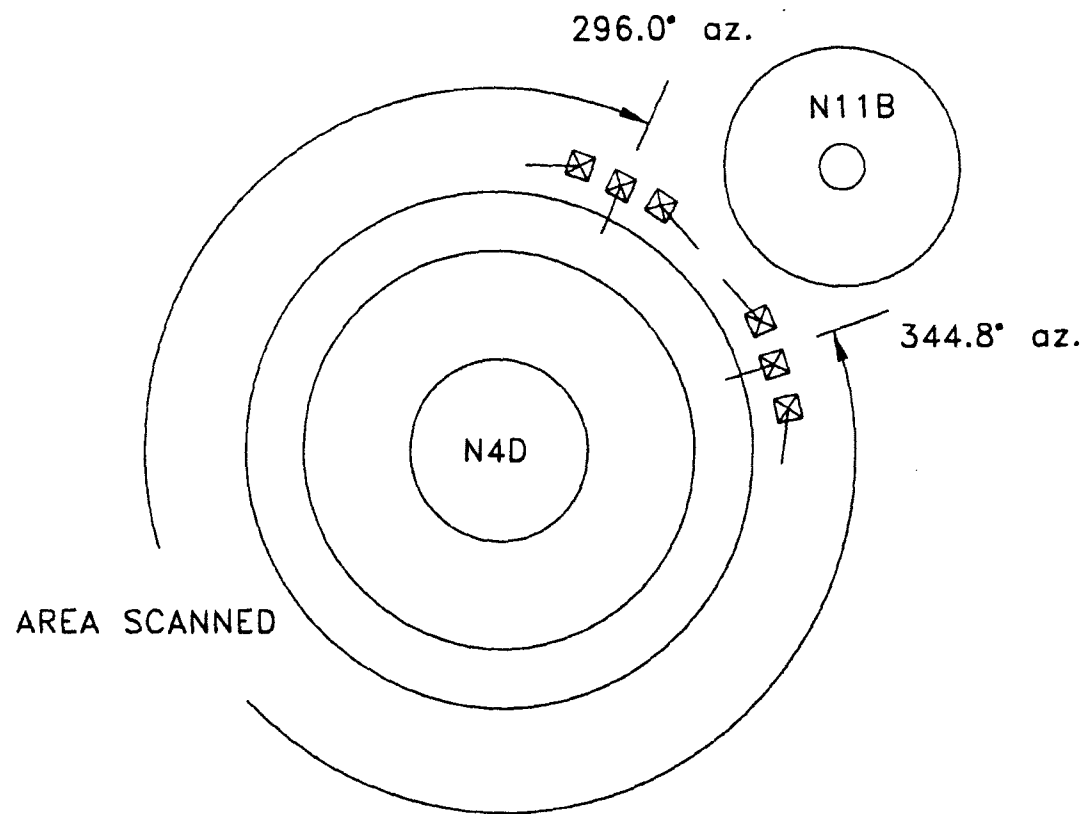


N4D 45°/60° PARALLEL SCAN (P1)
 AUTOMATED EXAMS RESTRICTED DUE TO N11B

re-examine



N4D 45°/60° PARALLEL SCAN (P2)
 AUTOMATED EXAMS RESTRICTED DUE TO N11B



N4D 70° T-SCAN AND P-SCANS
 AUTOMATED EXAMS RESTRICTED DUE TO N11B

Weld: N4E

Summary Number: 601240

Unit: 1

Item Number: B3.90

Outage: 1R10 (Spring 2004)

Coverage: 79.1%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Automated UT Examination 0°L, 45°S, 60°RL, and 70°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was in accordance with ASME Section XI Appendix VIII as modified by the PDI program.

Limitation Description:

The completed examination was limited to 79.1% Code required coverage due to the design of the reactor vessel nozzle. The following coverage calculation sheet and the drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

Limerick Unit-1
Weld N4E
Spring 2004

Weld Length = 360. Exam Volume = 59.7		CODE CROSS-SECTIONAL AREA		TOTAL CODE COVERAGE		
		Required Exam Area Sq. In.	Area Scanned Auto	Percent of Area Auto	Weld Length Auto	Percent Auto
70° T-Scan	A	12	6.1	10.2%	360	5.1%
45° T-Scan	A	39.2	34.5	57.8%	360	28.9%
60° T-Scan	A	8.5	8.5	14.2%	360	7.1%
70° P-Scan	A	12	4.9	8.2%	360	4.1%
45° P-Scan	A	39.2	31.9	53.4%	360	26.7%
IRS P-Scan	A	8.5	8.5	14.2%	360	7.1%
70° T-Scan						
45° T-Scan						
60° T-Scan						
70° P-Scan						
45° P-Scan						
IRS P-Scan						
70° T-Scan						
45° T-Scan						
60° T-Scan						
70° P-Scan						
45° P-Scan						
IRS P-Scan						

% Total Composite Coverage = 79.1%

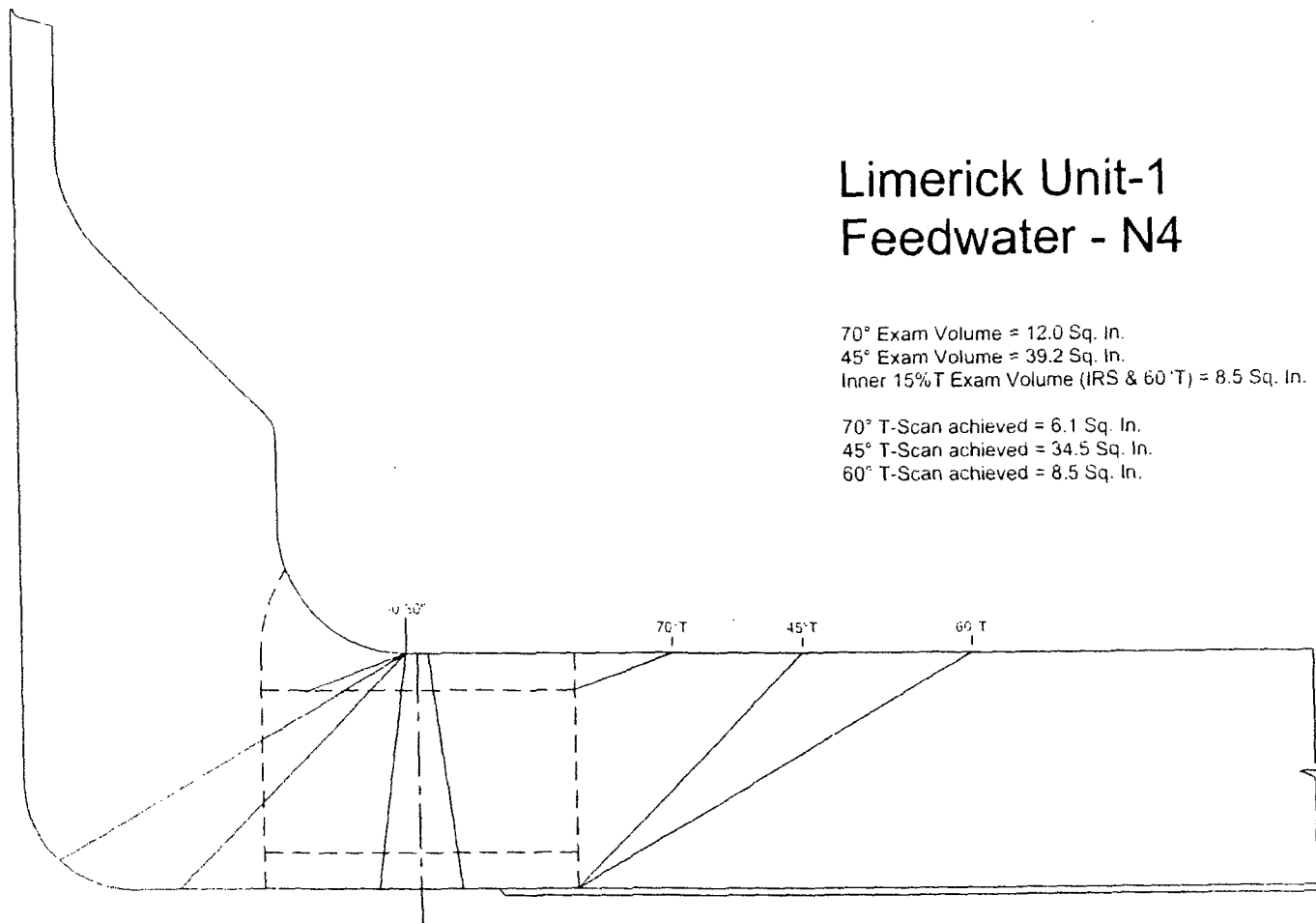
Comments: A - Scanned 360 deg., Scanning limited due to nozzle configuration.

Note - Rounding methods may affect calculated values.

Limerick Unit-1 Feedwater - N4

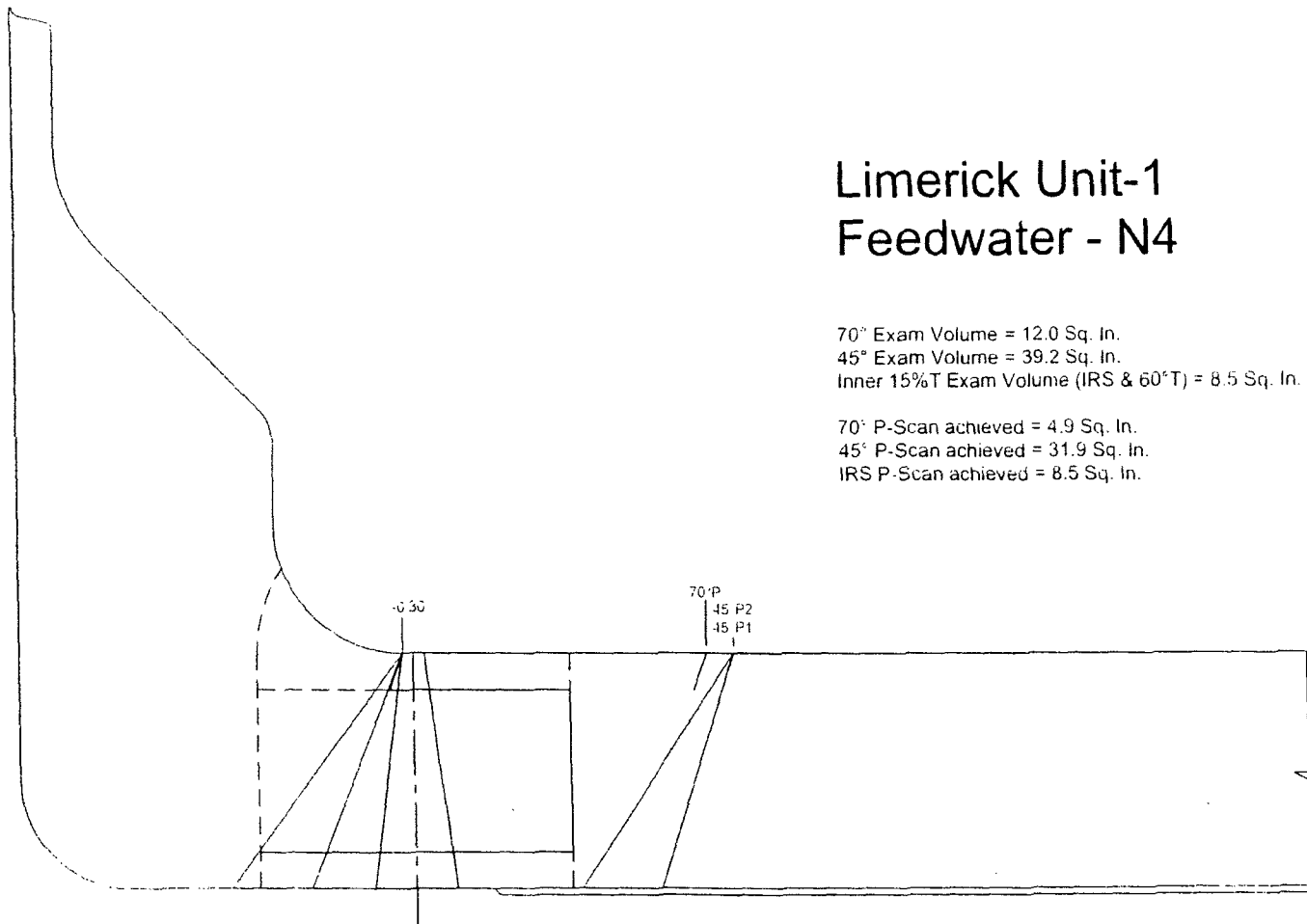
70° Exam Volume = 12.0 Sq. In.
 45° Exam Volume = 39.2 Sq. In.
 Inner 15%T Exam Volume (IRS & 60°T) = 8.5 Sq. In.

70° T-Scan achieved = 6.1 Sq. In.
 45° T-Scan achieved = 34.5 Sq. In.
 60° T-Scan achieved = 8.5 Sq. In.



70° Exam Volume = 12.0 Sq. In.
45° Exam Volume = 39.2 Sq. In.
Inner 15°T Exam Volume (IRS & 60°T) = 8.5 Sq. In.

70° P-Scan achieved = 4.9 Sq. In.
45° P-Scan achieved = 31.9 Sq. In.
IRS P-Scan achieved = 8.5 Sq. In.



Weld: N4F

Summary Number: 601270

Unit: 1

Item Number: B3.90

Outage: 1R10 (Spring 2004)

Coverage: 77.1%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Automated UT Examination 0°L, 45°S, 60°RL, and 70°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was in accordance with ASME Section XI Appendix VIII as modified by the PDI program.

Limitation Description:

The completed examination was limited to 77.1% Code required coverage due to the design of the reactor vessel nozzle. The following coverage calculation sheet and the drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

Limerick Unit-1
Weld N4F
Spring 2004

Weld Length = 360. Exam Volume = 59.7		CODE CROSS-SECTIONAL AREA		TOTAL CODE COVERAGE		
		Required Exam Area Sq. In.	Area Scanned Auto	Percent of Area Auto	Weld Length Auto	Percent Auto
70° T-Scan	A	12	5.8	9.7%	360	4.9%
45° T-Scan	A	39.2	33.5	56.1%	360	28.1%
60° T-Scan	A	8.5	8.5	14.2%	360	7.1%
70° P-Scan	A	12	4.5	7.5%	360	3.8%
45° P-Scan	A	39.2	31.3	52.4%	360	26.2%
IRS P-Scan	A	8.5	8.5	14.2%	360	7.1%
70° T-Scan						
45° T-Scan						
60° T-Scan						
70° P-Scan						
45° P-Scan						
IRS P-Scan						
70° T-Scan						
45° T-Scan						
60° T-Scan						
70° P-Scan						
45° P-Scan						
IRS P-Scan						

% Total Composite Coverage = 77.1%

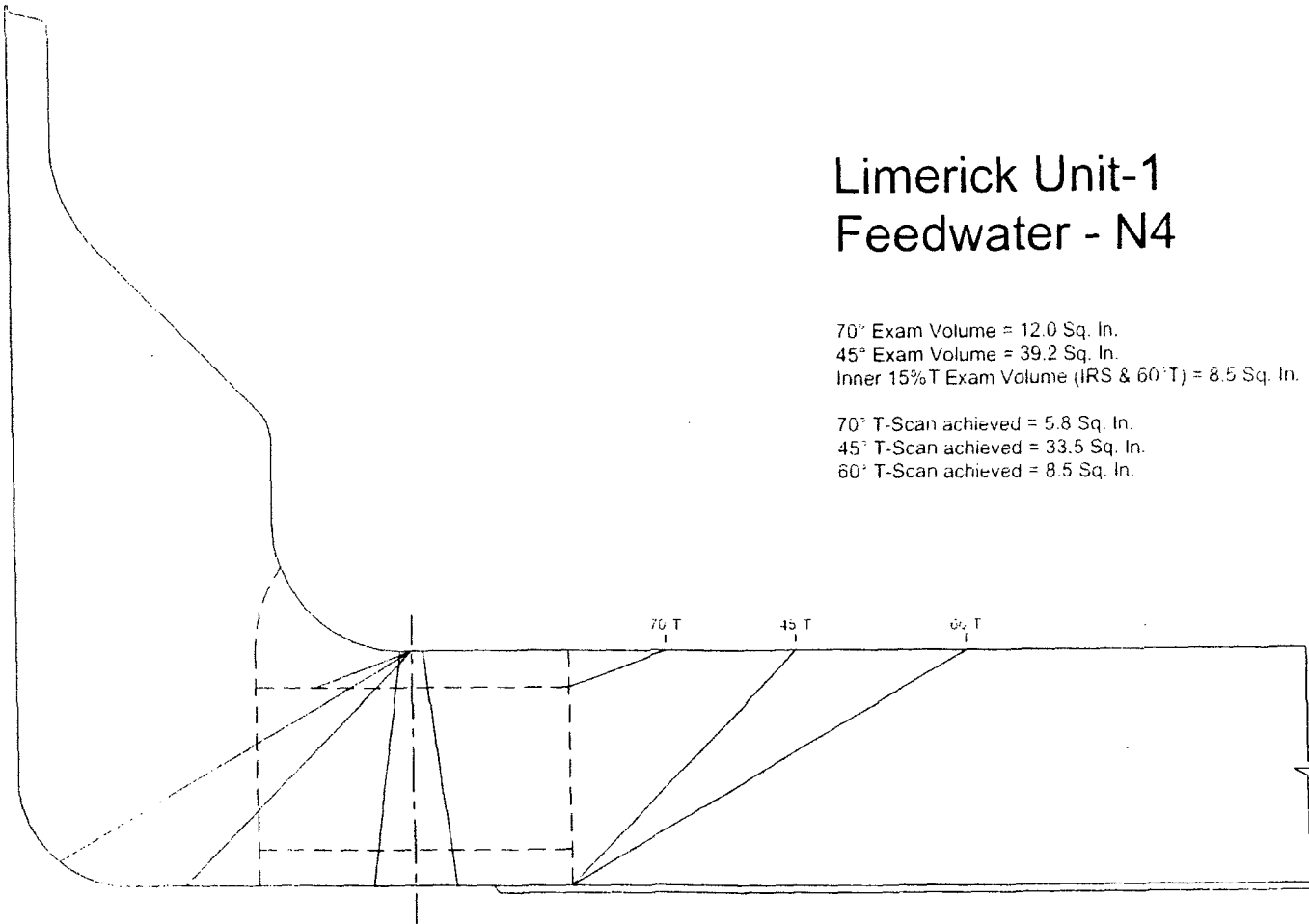
Comments: A - Scanned 360 deg., Scanning limited due to nozzle configuration.

Note - Rounding methods may affect calculated values.

Limerick Unit-1 Feedwater - N4

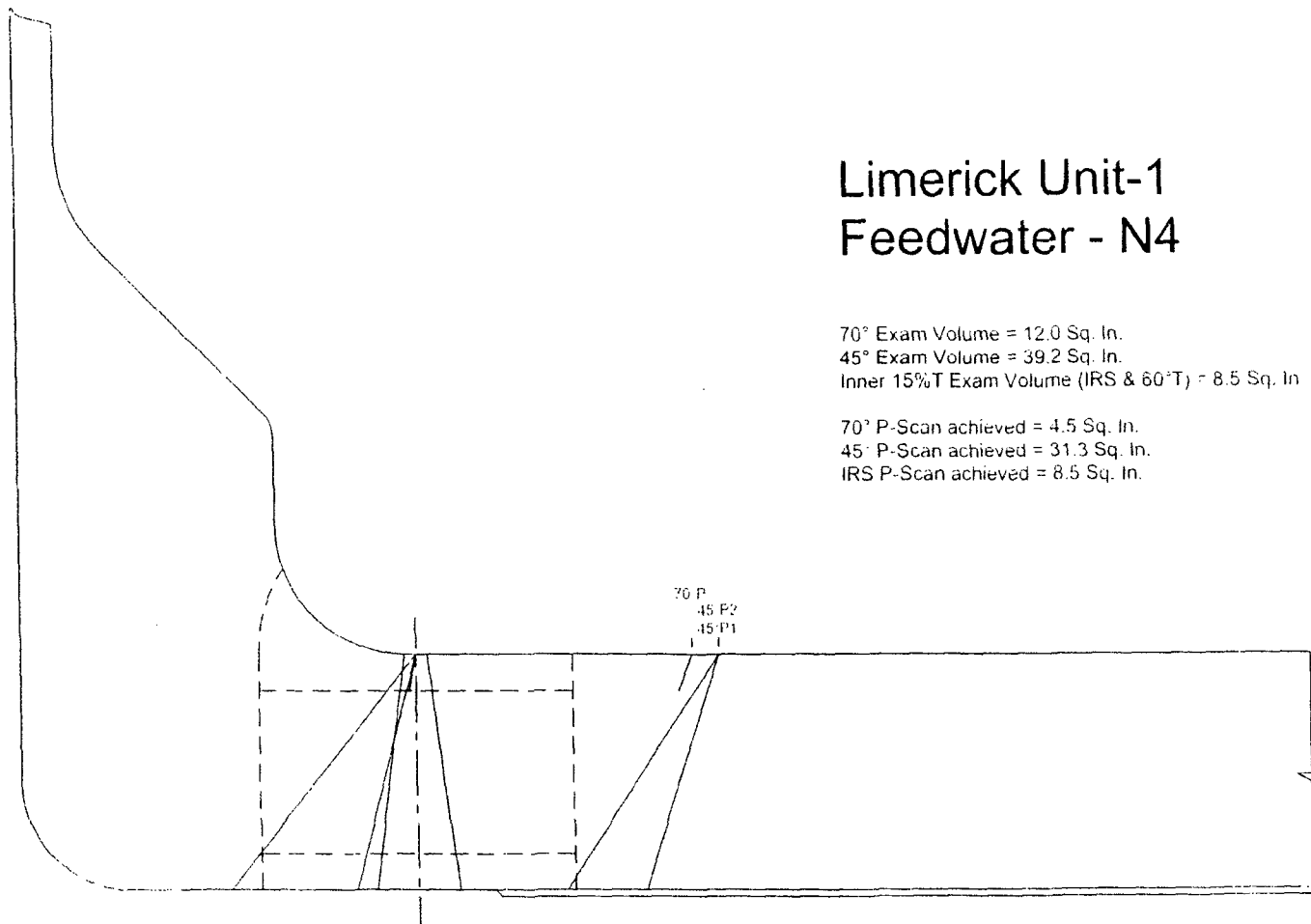
70° Exam Volume = 12.0 Sq. In.
 45° Exam Volume = 39.2 Sq. In.
 Inner 15% T Exam Volume (IRS & 60° T) = 8.5 Sq. In.

70° T-Scan achieved = 5.8 Sq. In.
 45° T-Scan achieved = 33.5 Sq. In.
 60° T-Scan achieved = 8.5 Sq. In.



Limerick Unit-1 Feedwater - N4

70° Exam Volume = 12.0 Sq. In.
 45° Exam Volume = 39.2 Sq. In.
 Inner 15%T Exam Volume (IRS & 60°T) = 8.5 Sq. In.
 70° P-Scan achieved = 4.5 Sq. In.
 45° P-Scan achieved = 31.3 Sq. In.
 IRS P-Scan achieved = 8.5 Sq. In.



Weld: N5A

Summary Number: 601300

Unit: 1

Item Number: B3.90

Outage: 1R07 (Spring 1998)

Coverage: 61.9%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Automated UT Examination 0°L, 45°S, and 60°S

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

No, the examination was performed to requirements contained in ASME Section XI, Section V, and Reg Guide 1.150. This was the approved technical guidance at the time of the examination.

Limitation Description:

The completed examination was limited to 61.9% Code required coverage due to the design of the reactor vessel nozzle. The following coverage calculation sheet and the drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.


Limerick Unit 1

N5A Nozzle

	CROSS SECTIONAL AREA (per slice)					TOTAL CODE COVERAGE			
	code cross sectional area	area scanned automated	area scanned manually	% of code area scanned automated	% of code area scanned manually	degrees scanned automated	degrees scanned manually	percent scanned automated	percent scanned manually
0 wm	59.43	27.33	0	45.99	0.00	360	0.0	46.0	0.0
45 T-scan	59.43	45.87	0	77.18	0.00	360	0.0	77.2	0.0
60 T-scan	59.43	49.82	0	83.83	0.00	360	0.0	83.8	0.0
45 P-scan CW	59.43	32.84	0	55.26	0.00	360	0.0	55.3	0.0
60 P-scan CW	59.43	34.36	0	57.82	0.00	360	0.0	57.8	0.0
45 P-scan CCW	59.43	32.84	0	55.26	0.00	360	0.0	55.3	0.0
60 P-scan CCW	59.43	34.36	0	57.82	0.00	360	0.0	57.8	0.0
						Coverages		61.9	0.0
								Total coverage	61.9

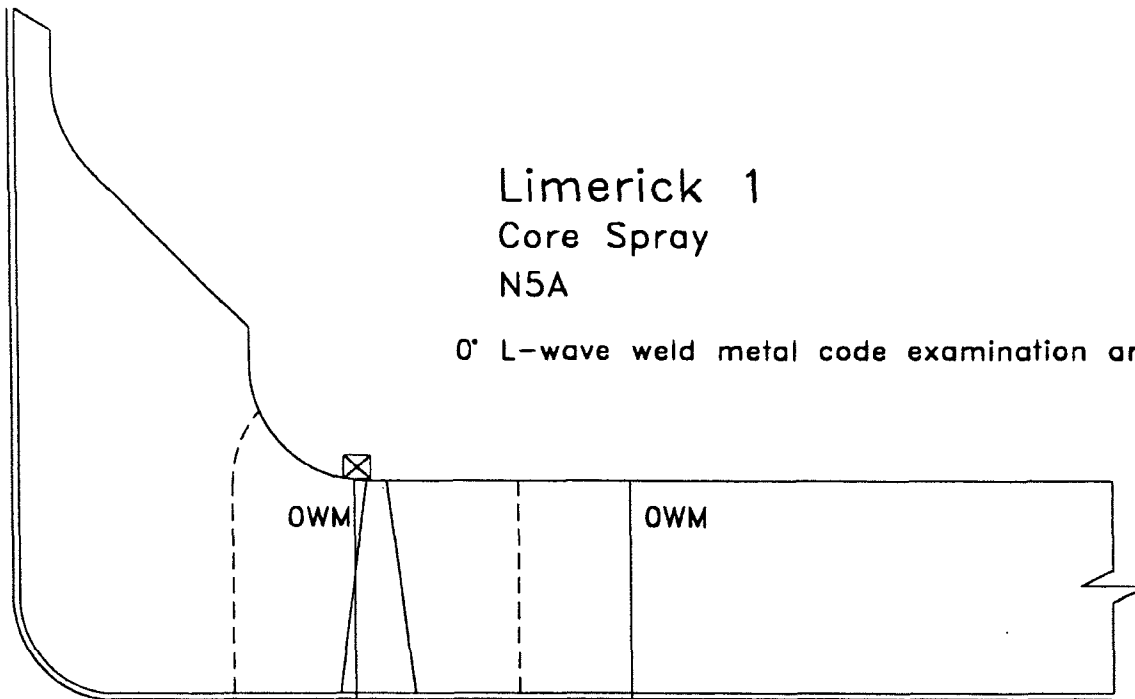
Automated scans were not restricted

No credit taken for initial 1/4" of material in Code coverage calculations due to near field effects.


 11/15/98
 LIMERICK
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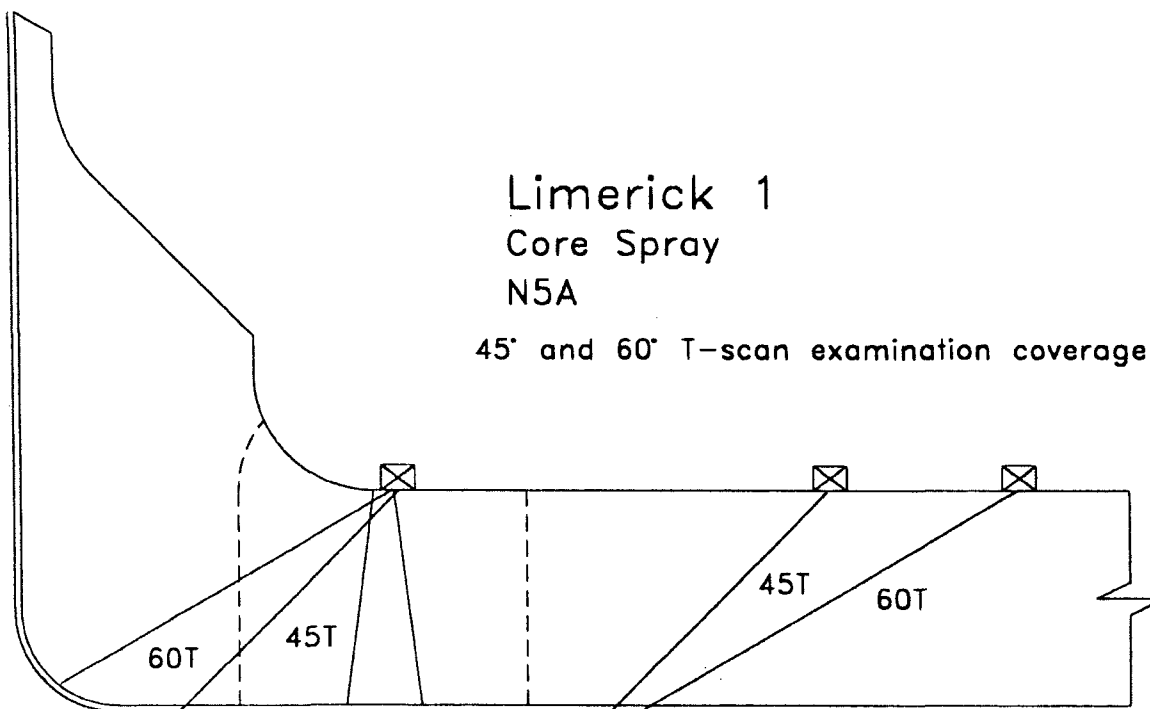
Limerick 1
Core Spray
N5A

0° L-wave weld metal code examination area



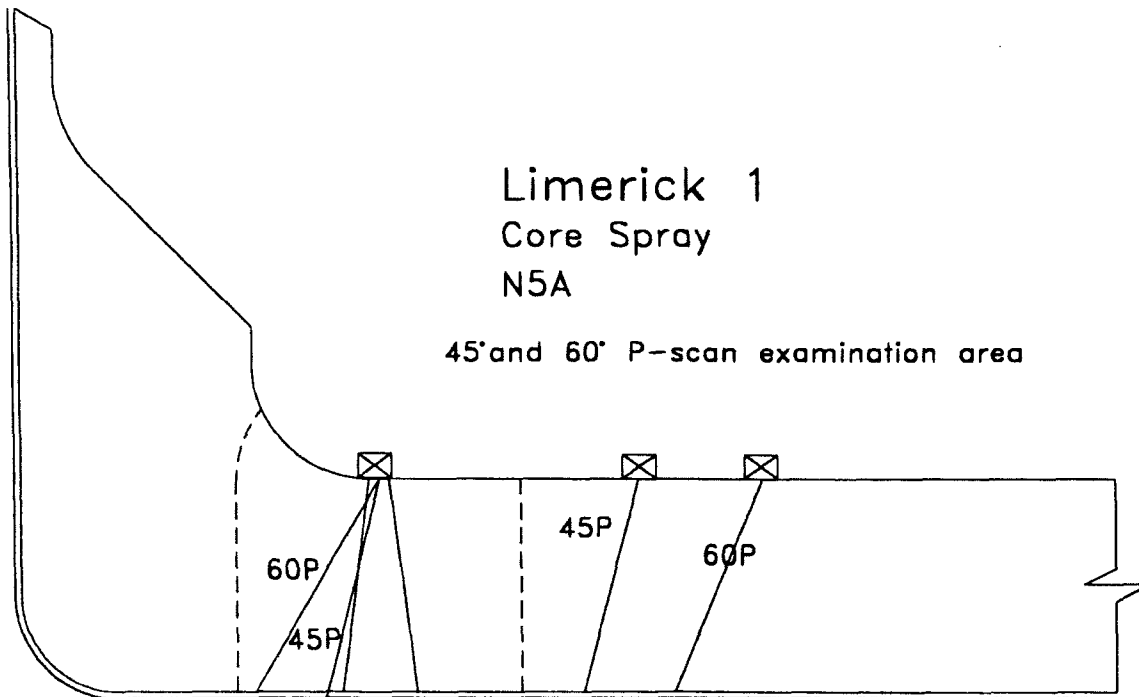
Limerick 1
Core Spray
N5A

45° and 60° T-scan examination coverage



Limerick 1
Core Spray
N5A

45' and 60' P-scan examination area



Weld: N5B

Summary Number: 601330

Unit: 1

Item Number: B3.90

Outage: 1R07 (Spring 1998)

Coverage: 61.9%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Automated UT Examination 0°L, 45°S, and 60°S

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

No, the examination was performed to requirements contained in ASME Section XI, Section V, and Reg Guide 1.150. This was the approved technical guidance at the time of the examination.

Limitation Description:

The completed examination was limited to 61.9% Code required coverage due to the design of the reactor vessel nozzle. The following coverage calculation sheet and the drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

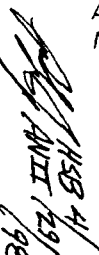
Limerick Unit 1

N5B Nozzle

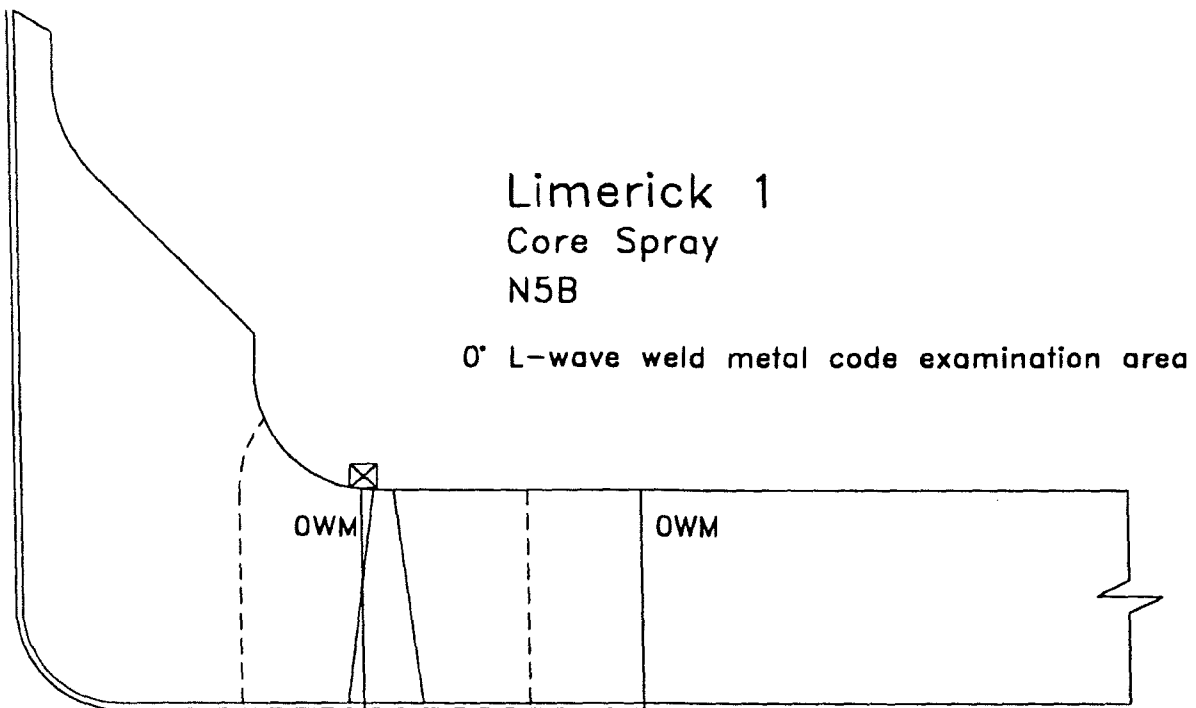
	CROSS SECTIONAL AREA (per slice)					TOTAL CODE COVERAGE			
	code cross sectional area	area scanned automated	area scanned manually	% of code area scanned automated	% of code area scanned manually	degrees scanned automated	degrees scanned manually	percent scanned automated	percent scanned manually
0 wm	59.43	27.33	0	45.99	0.00	360	0.0	46.0	0.0
45 T-scan	59.43	45.87	0	77.18	0.00	360	0.0	77.2	0.0
60 T-scan	59.43	49.82	0	83.83	0.00	360	0.0	83.8	0.0
45 P-scan CW	59.43	32.84	0	55.26	0.00	360	0.0	55.3	0.0
60 P-scan CW	59.43	34.36	0	57.82	0.00	360	0.0	57.8	0.0
45 P-scan CCW	59.43	32.84	0	55.26	0.00	360	0.0	55.3	0.0
60 P-scan CCW	59.43	34.36	0	57.82	0.00	360	0.0	57.8	0.0
Coverages								61.9	0.0
Total coverage								61.9	

Automated scans were not restricted

No credit taken for initial 1/4" of material in Code coverage calculations due to near field effects.

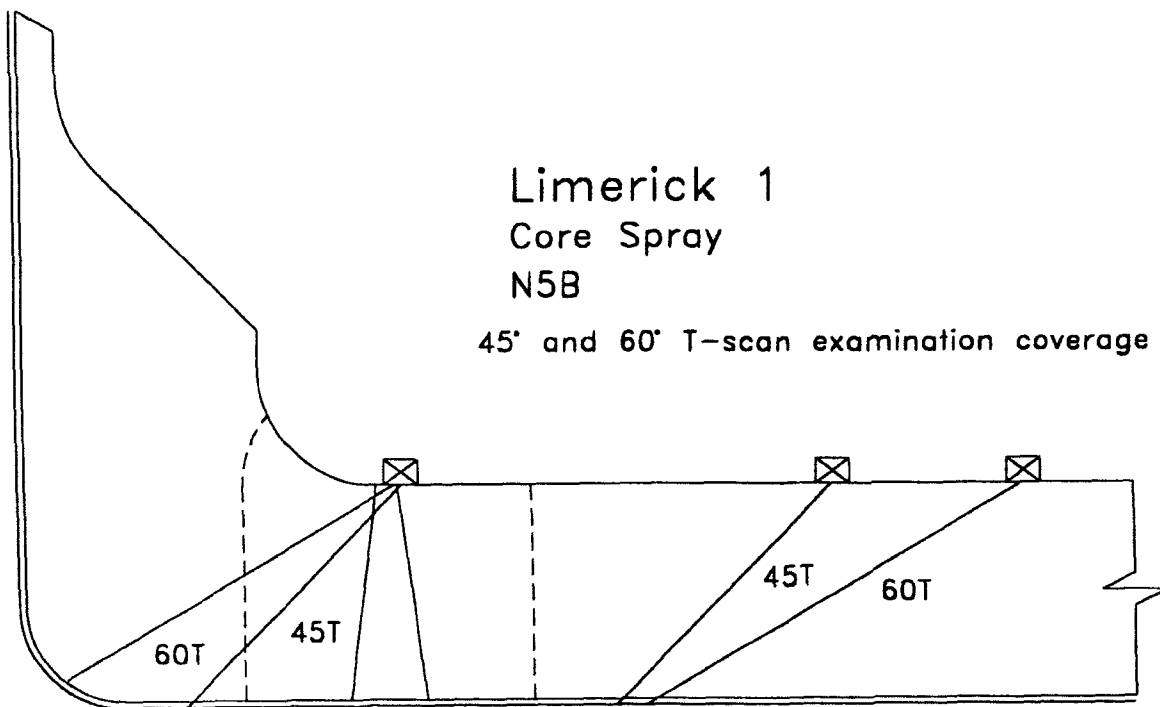

 N5B 41/
 1/29/
 1998
 LIMERICK
 1807
 PAGE 19 of 40

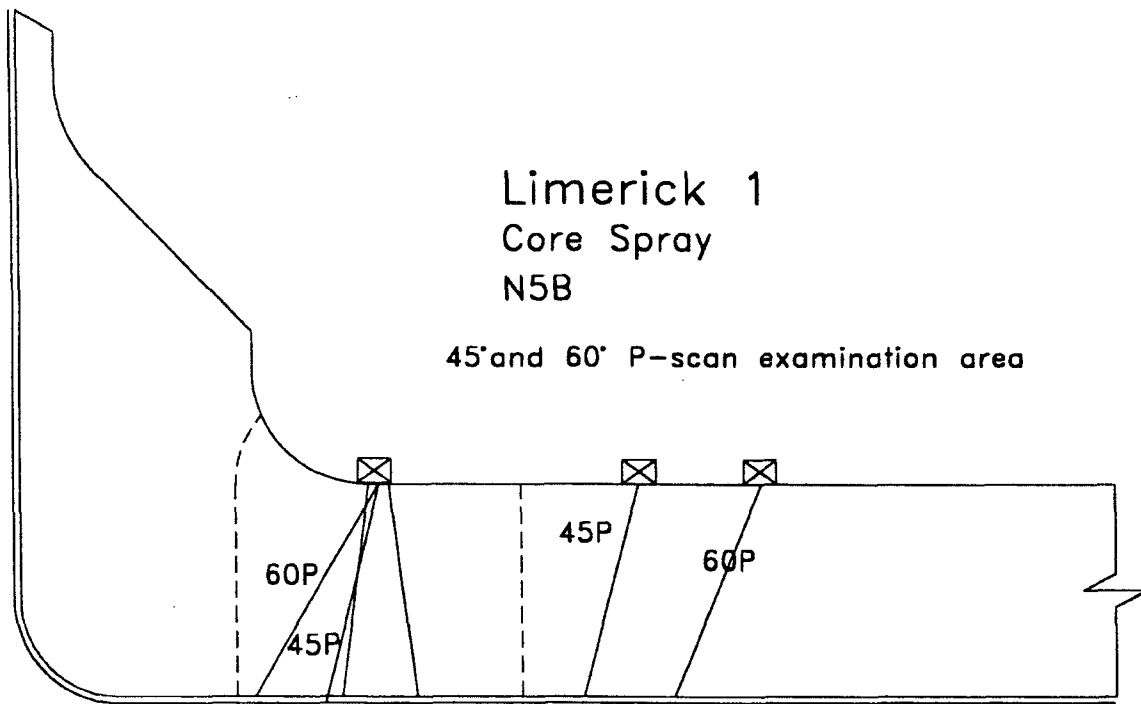
nepe.wi. 601000



Limerick 1
Core Spray
N5B

45° and 60° T-scan examination coverage





Weld: N6A

Summary Number: 601360

Unit: 1

Item Number: B3.90

Outage: 1R10 (Spring 2004)

Coverage: 58.0%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Manual UT Examination 60°L and 60°S

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was in accordance with ASME Section XI Appendix VIII as modified by the PDI program.

Limitation Description:

The completed examination was limited to 58.0% Code required coverage due to the design of the reactor vessel nozzle. The following drawing contains the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

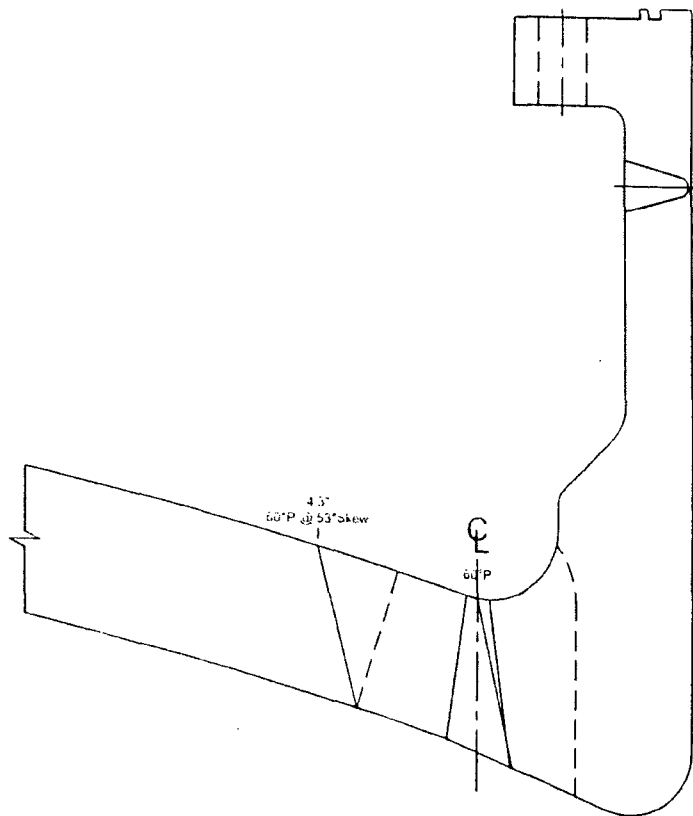
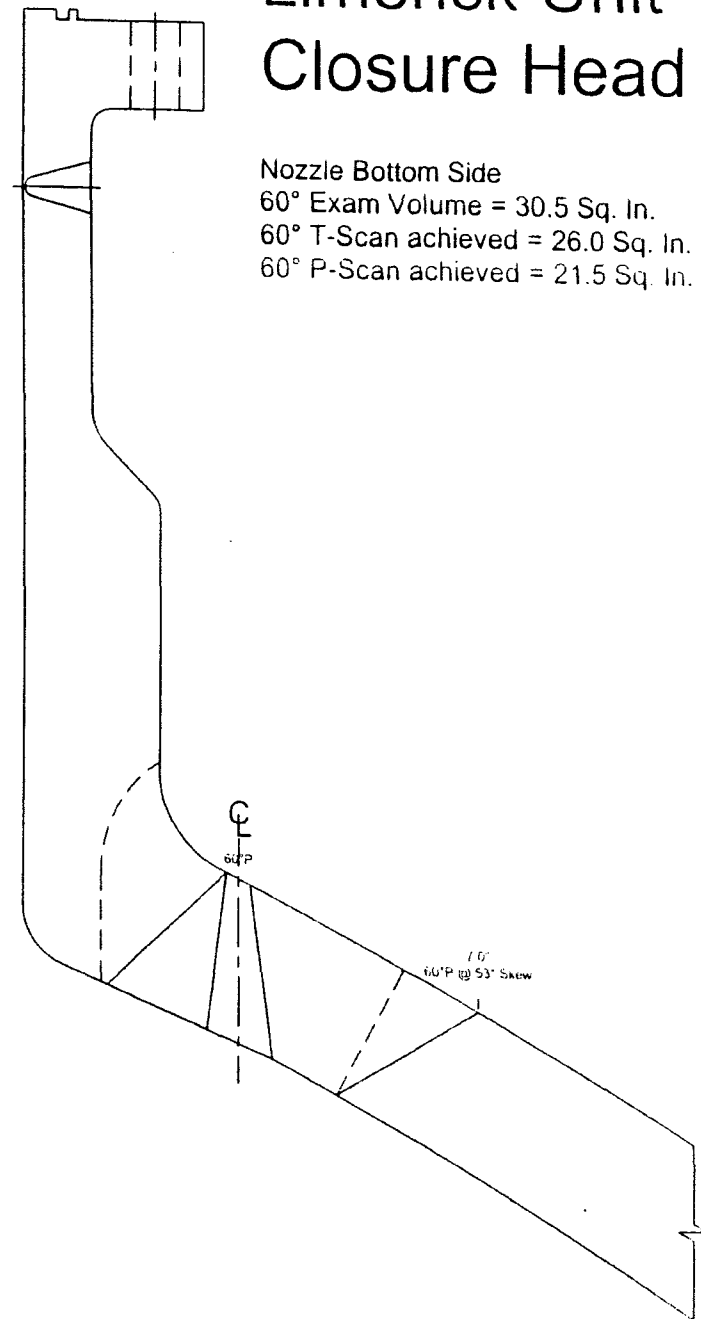
Limerick Unit-1 Closure Head N6

Nozzle Bottom Side

60° Exam Volume = 30.5 Sq. In.

60° T-Scan achieved = 26.0 Sq. In.

60° P-Scan achieved = 21.5 Sq. In.



Nozzle Top Side

60° Exam Volume = 22.0 Sq. In.

60° T-Scan achieved = 17.4 Sq. In.

60° P-Scan achieved = 11.6 Sq. In.

Weld: N6B

Summary Number: 601380

Unit: 1

Item Number: B3.90

Outage: 1R10 (Spring 2004)

Coverage: 58.0%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Manual UT Examination 60°L and 60°S

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

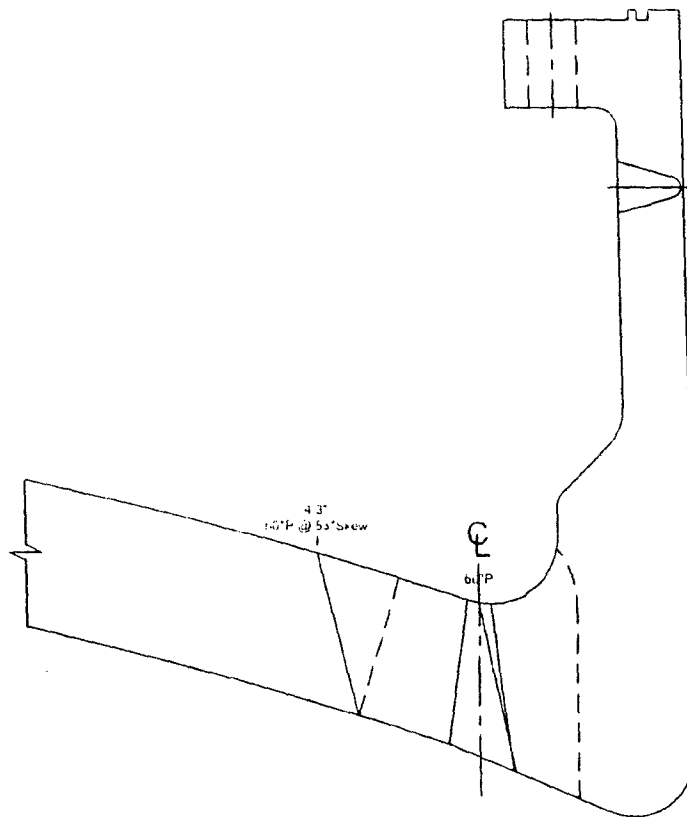
Yes, the examination was in accordance with ASME Section XI Appendix VIII as modified by the PDI program.

Limitation Description:

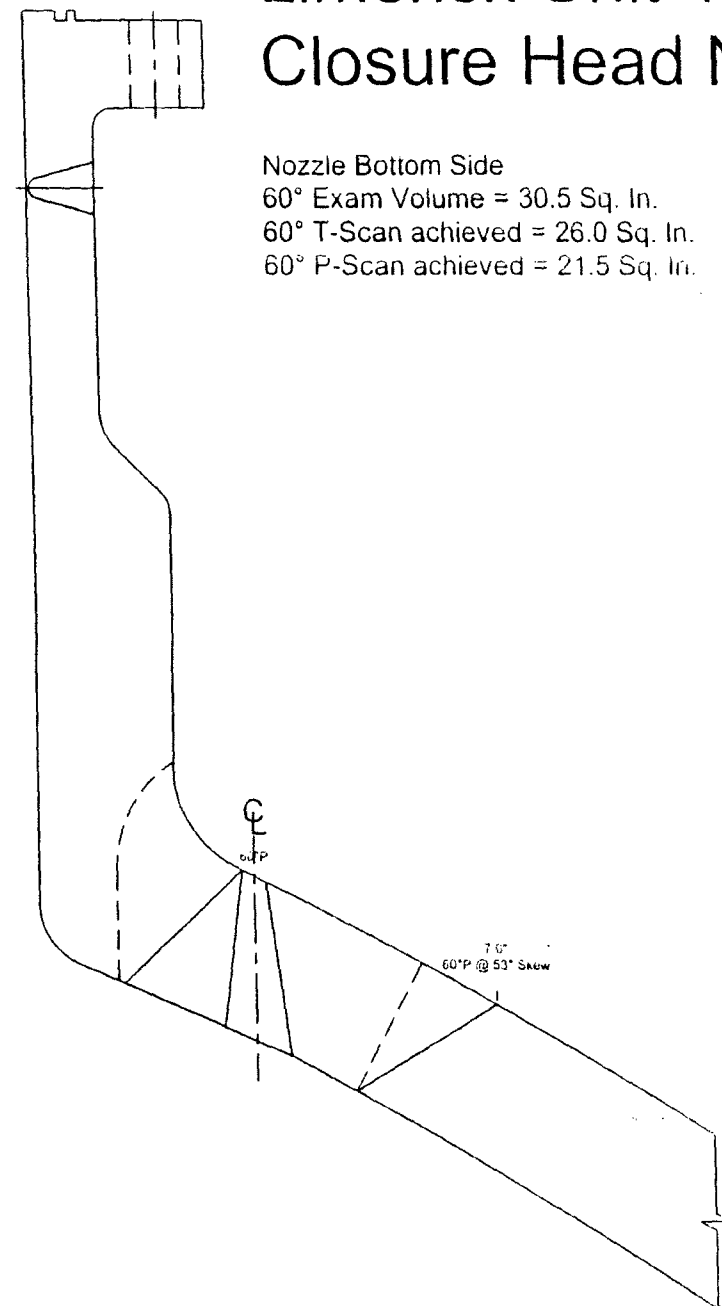
The completed examination was limited to 58.0% Code required coverage due to the design of the reactor vessel nozzle. The following drawing contains the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

Limerick Unit-1 Closure Head N6

Nozzle Bottom Side
 60° Exam Volume = 30.5 Sq. In.
 60° T-Scan achieved = 26.0 Sq. In.
 60° P-Scan achieved = 21.5 Sq. In.



Nozzle Top Side
 60° Exam Volume = 22.0 Sq. In.
 60° T-Scan achieved = 17.4 Sq. In.
 60° P-Scan achieved = 11.6 Sq. In.



Weld: N7

Summary Number: 601400

Unit: 1

Item Number: B3.90

Outage: 1R10 (Spring 2004)

Coverage: 79.4%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Manual UT Examination 60°L and 60°S

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

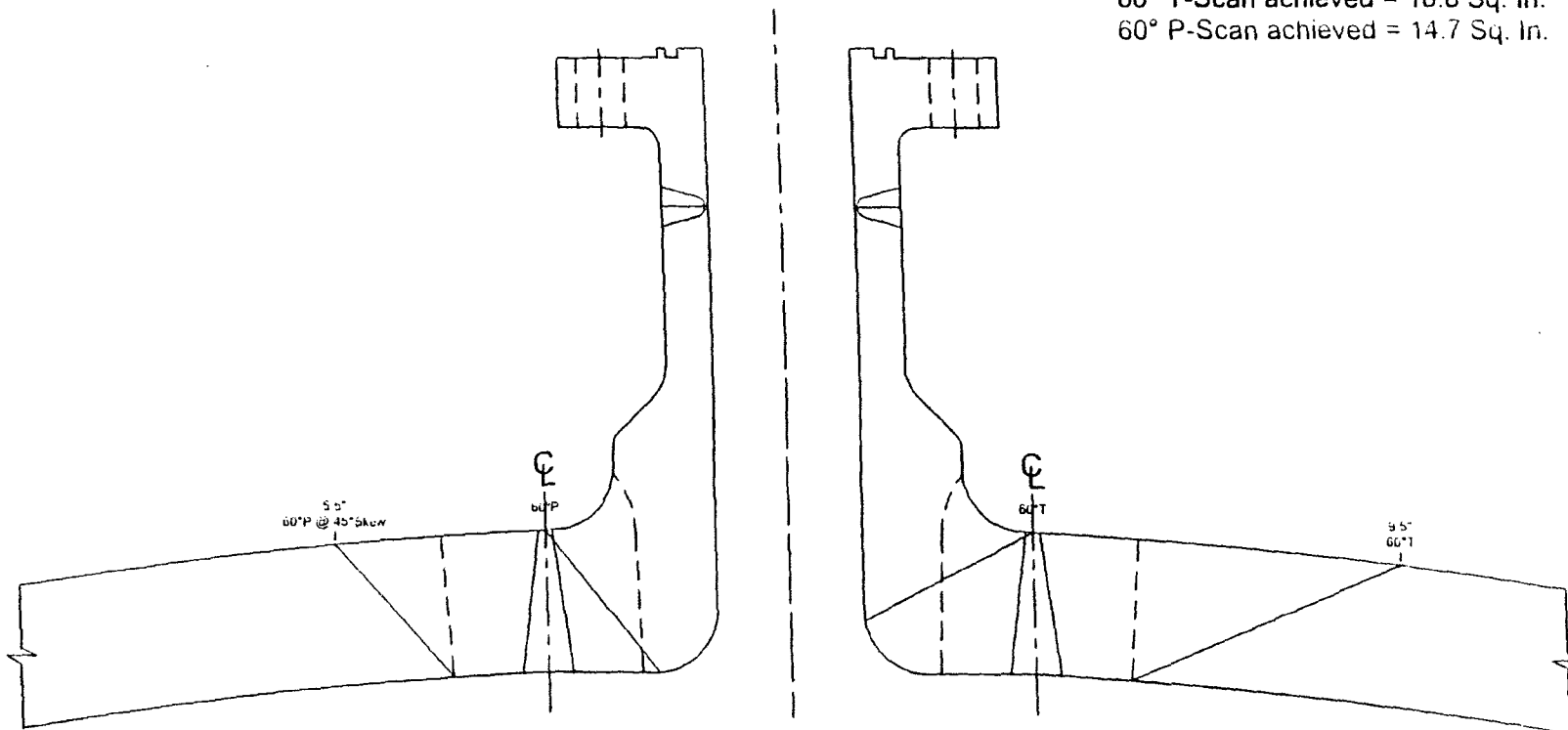
Yes, the examination was in accordance with ASME Section XI Appendix VIII as modified by the PDI program.

Limitation Description:

The completed examination was limited to 79.4% Code required coverage due to the design of the reactor vessel nozzle. The following drawing contains the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

Limerick Unit-1 Closure Head N7

60° Exam Volume = 19.4 Sq. In.
60° T-Scan achieved = 16.8 Sq. In.
60° P-Scan achieved = 14.7 Sq. In.



Weld: N8A

Summary Number: 601420

Unit: 1

Item Number: B3.90

Outage: 1R07 (Spring 1998)

Coverage: 60.1%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Manual UT Examination 0°L, 45°S, and 60°S

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

No, the examination was performed to requirements contained in ASME Section XI, Section V, and Reg Guide 1.150. This was the approved technical guidance at the time of the examination.

Limitation Description:

The completed examination was limited to 60.1% Code required coverage due to the design of the reactor vessel nozzle. The following coverage calculation sheet and the drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.


Limerick Unit 1

N8A Nozzle

	CROSS SECTIONAL AREA (per slice)					TOTAL CODE COVERAGE			
	code cross sectional area	area scanned automated	area scanned manually	% of code area scanned automated	% of code area scanned manually	degrees scanned automated	degrees scanned manually	percent scanned automated	percent scanned manually
0 wm	59.8	0.0	27.0	0.00	45.15	0	360	0.0	45.2
45 T-scan	59.8	0.0	45.5	0.00	76.09	0	360	0.0	76.1
60 T-scan	59.8	0.0	49.6	0.00	82.94	0	360	0.0	82.9
45 P-scan CW	59.8	0.0	29.4	0.00	49.16	0	360	0.0	49.2
60 P-scan CW	59.8	0.0	35.3	0.00	59.03	0	360	0.0	59.0
45 P-scan CCW	59.8	0.0	29.4	0.00	49.16	0	360	0.0	49.2
60 P-scan CCW	59.8	0.0	35.3	0.00	59.03	0	360	0.0	59.0
						Coverages		0.0	60.1
						Total coverage			60.1


Manual scans were not restricted

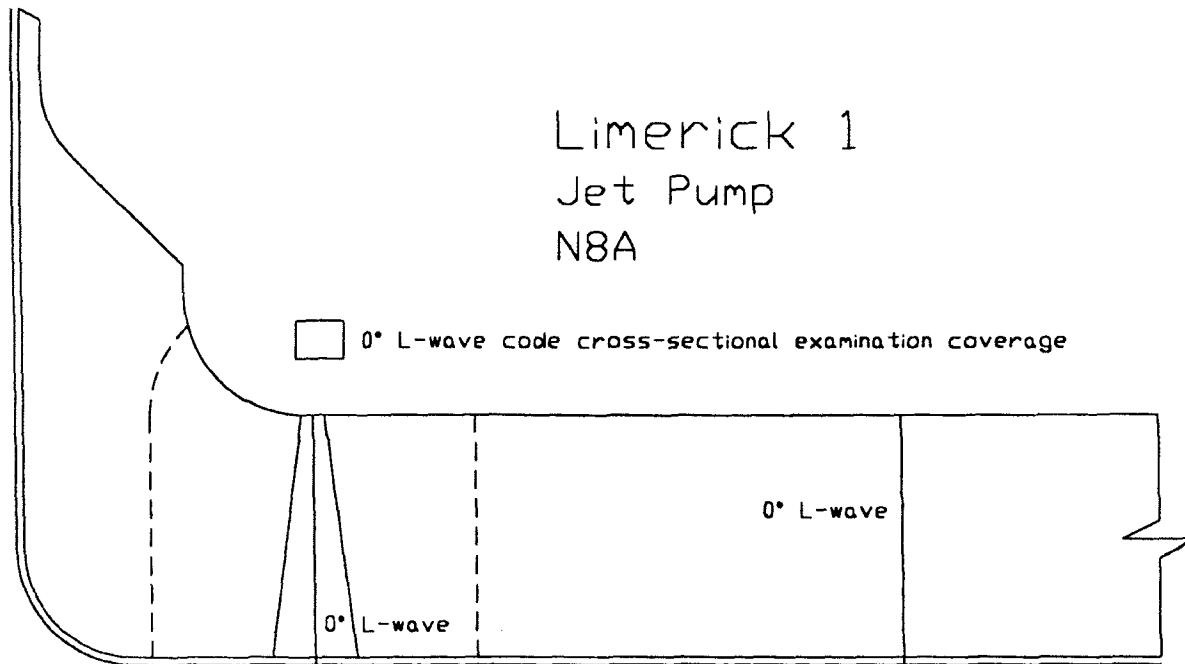
No credit taken for initial 1/4" of material in Code coverage calculations due to near field effects.


 HSB 4/30/98
 LIMERICK
 PAGE 6 OF 9

rept. no. 0017

Limerick 1
Jet Pump
N8A

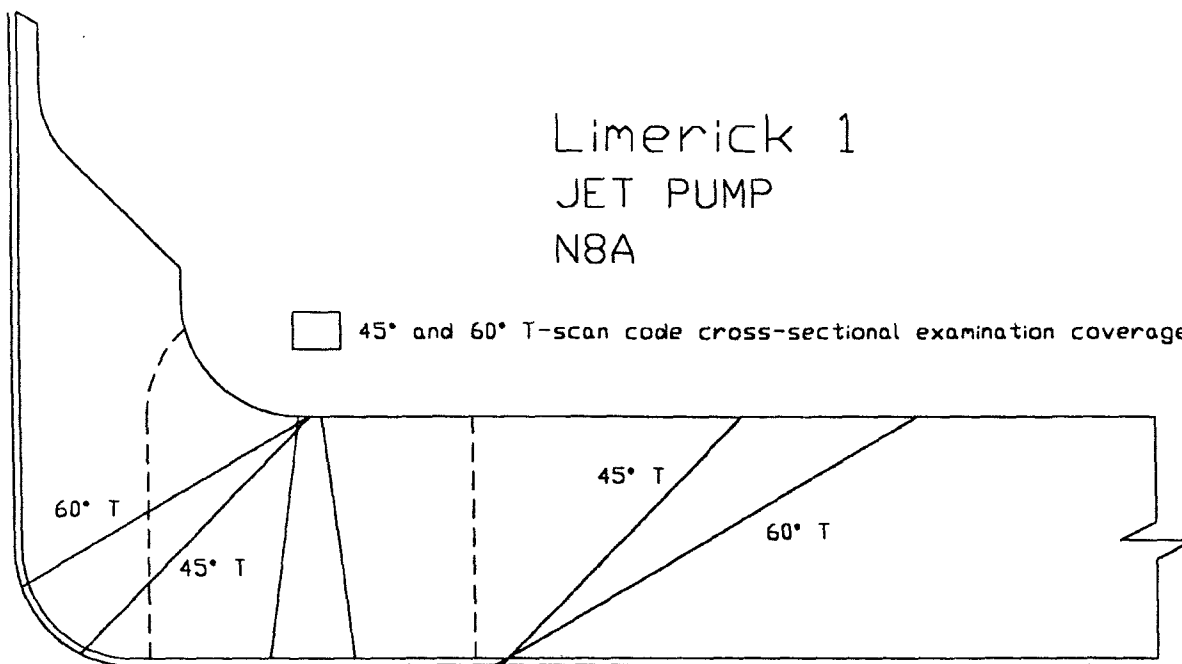
 0° L-wave code cross-sectional examination coverage



Approved for release

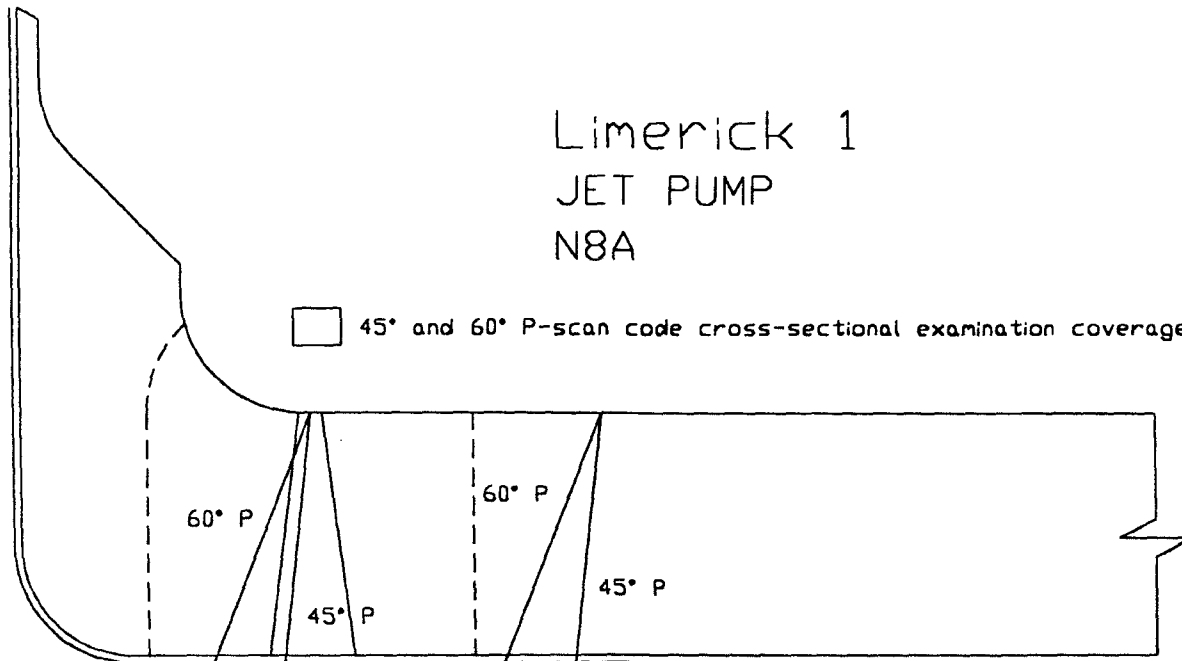
Limerick 1
JET PUMP
N8A

 45° and 60° T-scan code cross-sectional examination coverage



Limerick 1 JET PUMP N8A

 45° and 60° P-scan code cross-sectional examination coverage



Weld: N8B

Summary Number: 601440

Unit: 1

Item Number: B3.90

Outage: 1R07 (Spring 1998)

Coverage: 60.1%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Manual UT Examination 0°L, 45°S, and 60°S

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

No, the examination was performed to requirements contained in ASME Section XI, Section V, and Reg Guide 1.150. This was the approved technical guidance at the time of the examination.

Limitation Description:

The completed examination was limited to 60.1% Code required coverage due to the design of the reactor vessel nozzle. The following coverage calculation sheet and the drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

Limerick Unit 1

N8B Nozzle


	CROSS SECTIONAL AREA (per slice)					TOTAL CODE COVERAGE			
	code cross sectional area	area scanned automated	area scanned manually	% of code area scanned automated	% of code area scanned manually	degrees scanned automated	degrees scanned manually	percent scanned automated	percent scanned manually
0 wm	59.8	0.0	27.0	0.00	45.15	0	360	0.0	45.2
45 T-scan	59.8	0.0	45.5	0.00	76.09	0	360	0.0	76.1
60 T-scan	59.8	0.0	49.6	0.00	82.94	0	360	0.0	82.9
45 P-scan CW	59.8	0.0	29.4	0.00	49.16	0	360	0.0	49.2
60 P-scan CW	59.8	0.0	35.3	0.00	59.03	0	360	0.0	59.0
45 P-scan CCW	59.8	0.0	29.4	0.00	49.16	0	360	0.0	49.2
60 P-scan CCW	59.8	0.0	35.3	0.00	59.03	0	360	0.0	59.0
Coverages								0.0	60.1
Total coverage									60.1

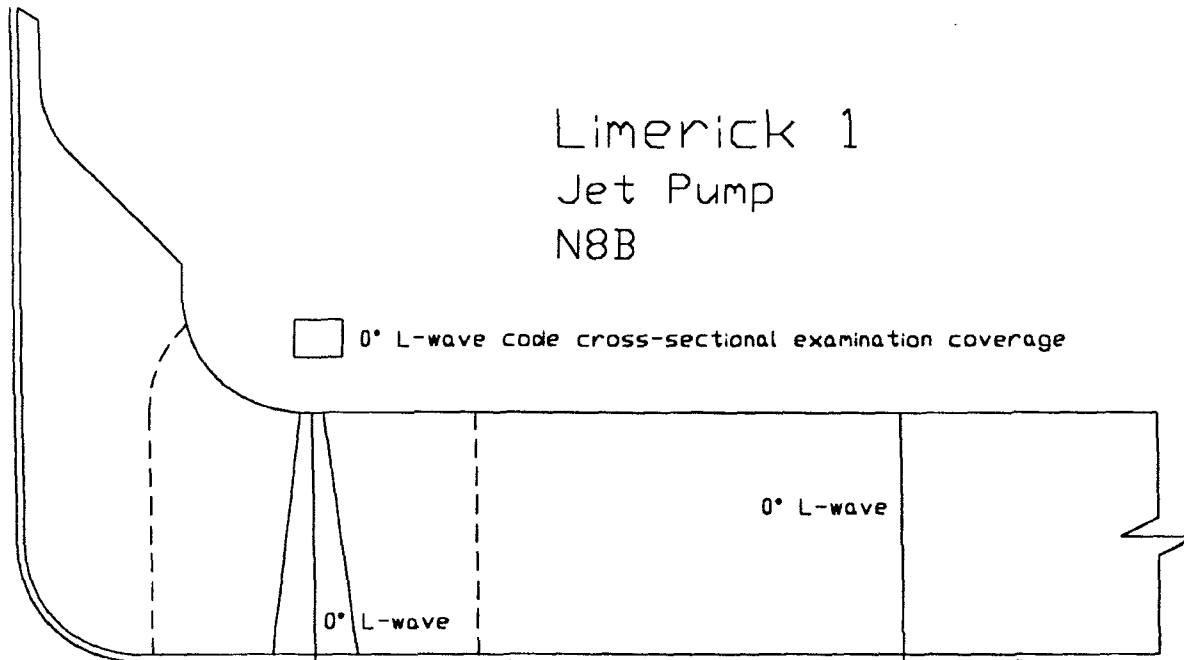
Manual scans were not restricted

No credit taken for initial 1/4" of material in Code coverage calculations due to near field effects.

11/11/98
4/30/98
AVIL

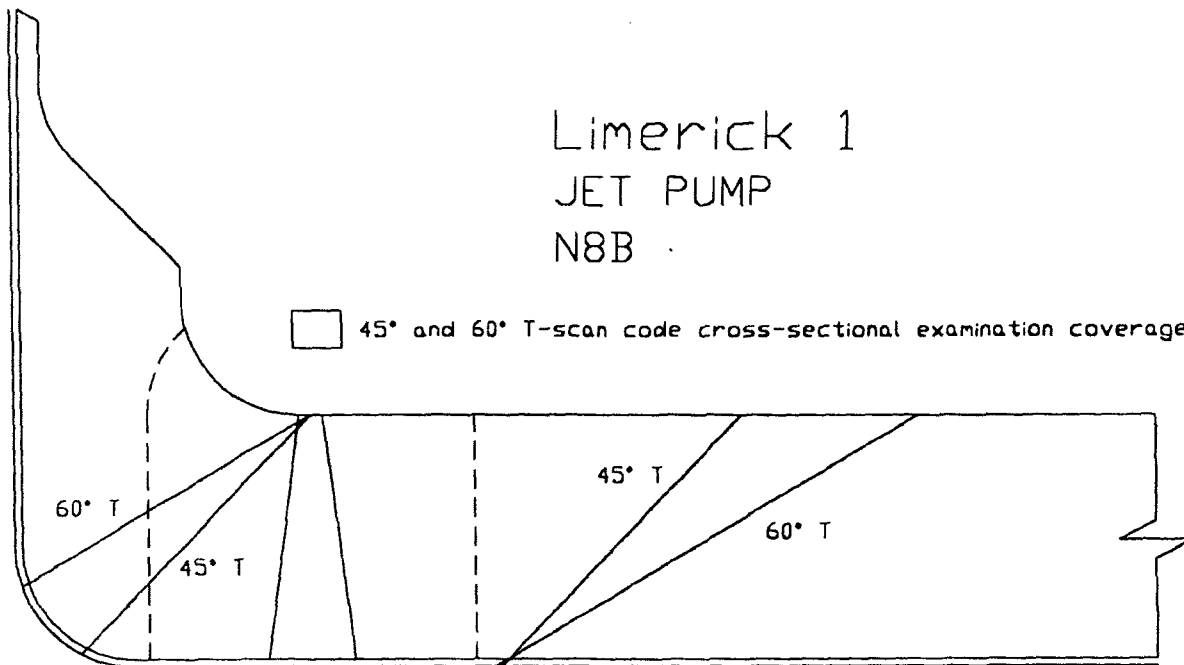
Limerick 1
Jet Pump
N8B

 0° L-wave code cross-sectional examination coverage



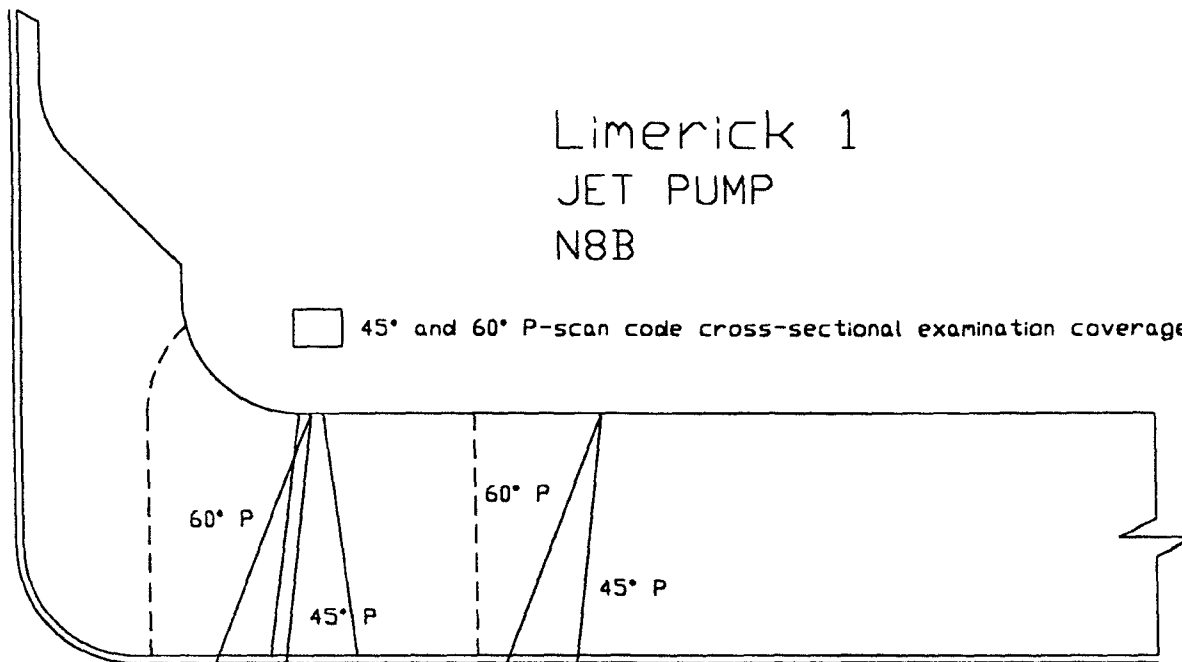
Limerick 1
JET PUMP
N8B

 45° and 60° T-scan code cross-sectional examination coverage



Limerick 1 JET PUMP N8B

 45° and 60° P-scan code cross-sectional examination coverage



Weld: N9

Summary Number: 601460

Unit: 1

Item Number: B3.90

Outage: 1R07 (Spring 1998)

Coverage: 60.1%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Manual UT Examination 0°L, 45°S, and 60°S

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

No, the examination was performed to requirements contained in ASME Section XI, Section V, and Reg Guide 1.150. This was the approved technical guidance at the time of the examination.

Limitation Description:

The completed examination was limited to 60.1% Code required coverage due to the design of the reactor vessel nozzle. The following coverage calculation sheet and the drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

Limerick Unit 1

N9 Nozzle


	CROSS SECTIONAL AREA (per slice)					TOTAL CODE COVERAGE			
	code cross sectional area	area scanned automated	area scanned manually	% of code area scanned automated	% of code area scanned manually	degrees scanned automated	degrees scanned manually	percent scanned automated	percent scanned manually
0 w/m	59.8	0.0	27.0	0.00	45.15	0	360	0.0	45.2
45 T-scan	59.8	0.0	45.5	0.00	76.09	0	360	0.0	76.1
60 T-scan	59.8	0.0	49.6	0.00	82.94	0	360	0.0	82.9
45 P-scan CW	59.8	0.0	29.4	0.00	49.16	0	360	0.0	49.2
60 P-scan CW	59.8	0.0	35.3	0.00	59.03	0	360	0.0	59.0
45 P-scan CCW	59.8	0.0	29.4	0.00	49.16	0	360	0.0	49.2
60 P-scan CCW	59.8	0.0	35.3	0.00	59.03	0	360	0.0	59.0
						Coverages		0.0	60.1
						Total coverage			60.1

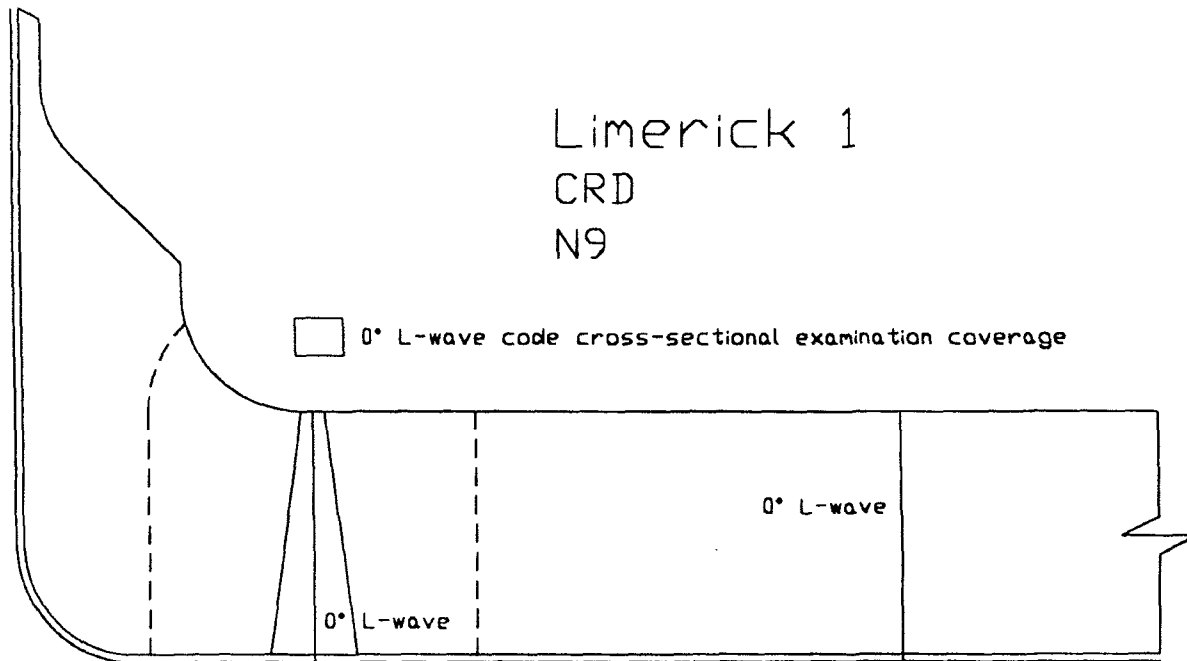
Manual scans were not restricted

No credit taken for initial 1/4" of material in Code coverage calculations due to near field effects.

2/15/98
4/30/98
1/98

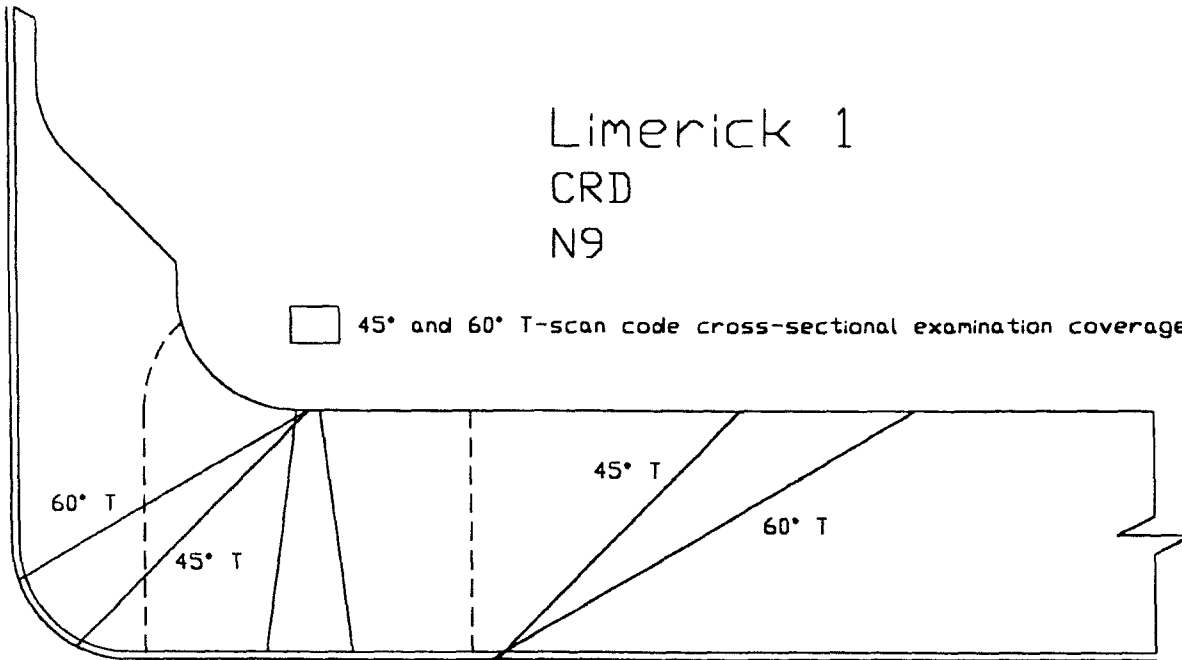
Limerick 1
CRD
N9

 0° L-wave code cross-sectional examination coverage



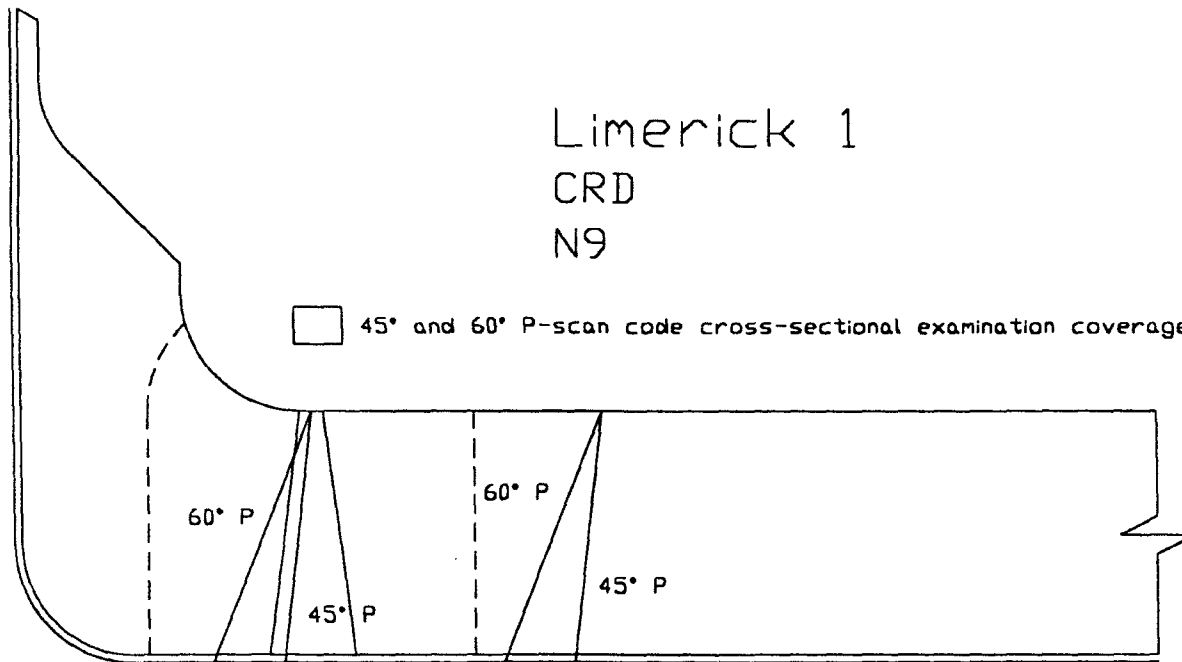
Limerick 1
CRD
N9

 45° and 60° T-scan code cross-sectional examination coverage



Limerick 1
CRD
N9

 45° and 60° P-scan code cross-sectional examination coverage



Weld: N17A

Summary Number: 601490

Unit: 1

Item Number: B3.90

Outage: 1R07 (Spring 1998)

Coverage: 61.9%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Automated UT Examination 0°L, 45°S, and 60°S

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

No, the examination was performed to requirements contained in ASME Section XI, Section V, and Reg Guide 1.150. This was the approved technical guidance at the time of the examination.

Limitation Description:

The completed examination was limited to 61.9% Code required coverage due to the design of the reactor vessel nozzle. The following coverage calculation sheet and the drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

Limerick Unit 1

N17A Nozzle

	CROSS SECTIONAL AREA (per slice)					TOTAL CODE COVERAGE			
	code cross sectional area	area scanned automated	area scanned manually	% of code area scanned automated	% of code area scanned manually	degrees scanned automated	degrees scanned manually	percent scanned automated	percent scanned manually
0 wm	59.43	27.9	0	46.95	0.00	360	0.0	46.9	0.0
45 T-scan	59.43	45.8	0	77.07	0.00	360	0.0	77.1	0.0
60 T-scan	59.43	49.8	0	83.80	0.00	360	0.0	83.8	0.0
45 P-scan CW	59.43	32.7	0	55.02	0.00	360	0.0	55.0	0.0
60 P-scan CW	59.43	34.3	0	57.71	0.00	360	0.0	57.7	0.0
45 P-scan CCW	59.43	32.7	0	55.02	0.00	360	0.0	55.0	0.0
60 P-scan CCW	59.43	34.3	0	57.71	0.00	360	0.0	57.7	0.0
Coverages								61.9	0.0
Total coverage								61.9	

Automated scans were not restricted

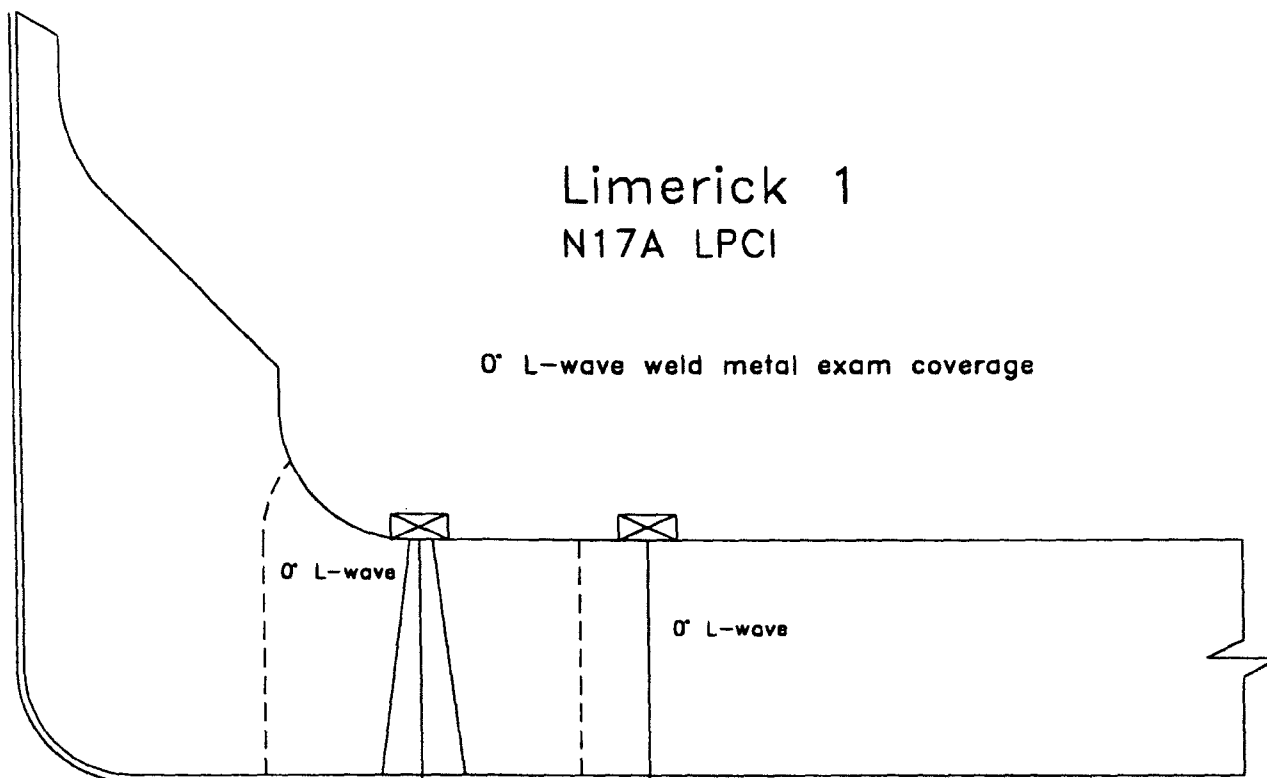
No credit taken for initial 1/4" of material in Code coverage calculations due to near field effects.

6/21/98
 LIMERICK
 1 R07
 PAGE 11 OF 36

REP. NO. 601490

Limerick 1
N17A LPCI

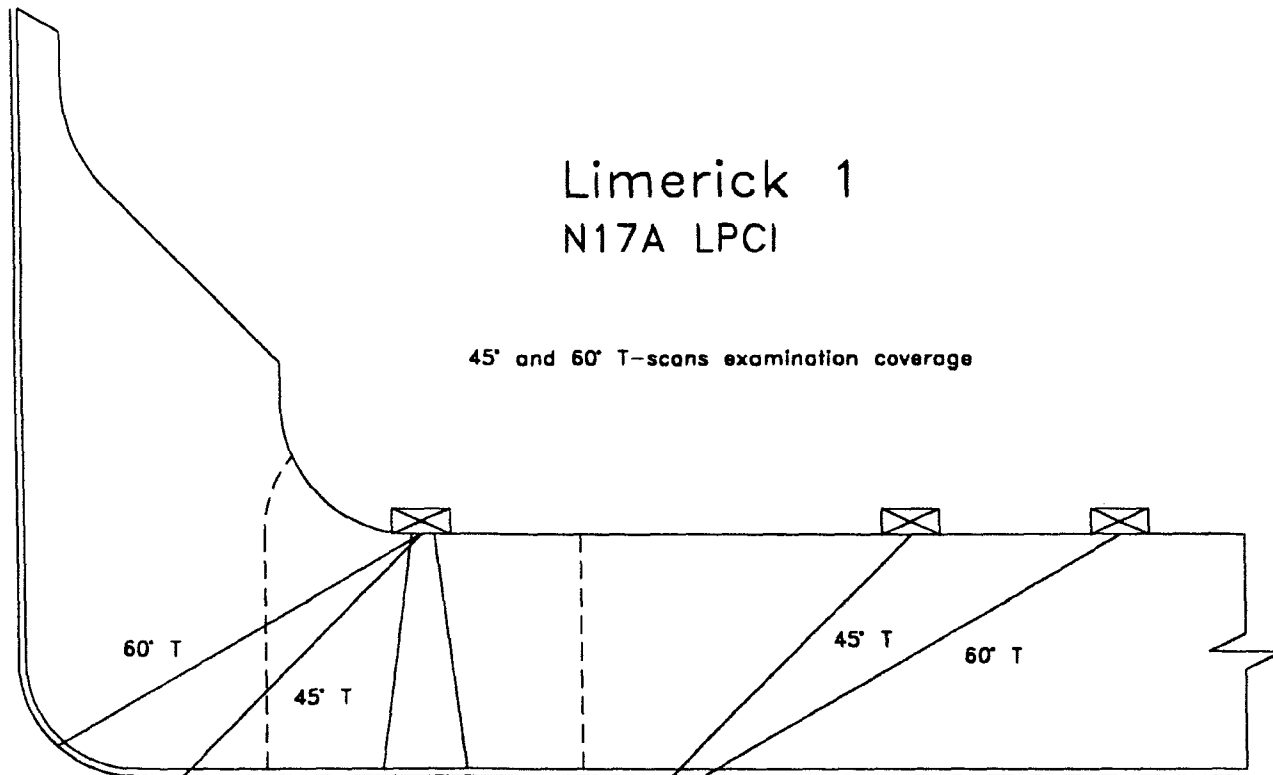
0° L-wave weld metal exam coverage



1158 4/21/98
AMT

Limerick 1
N17A LPCI

45' and 60' T-scans examination coverage

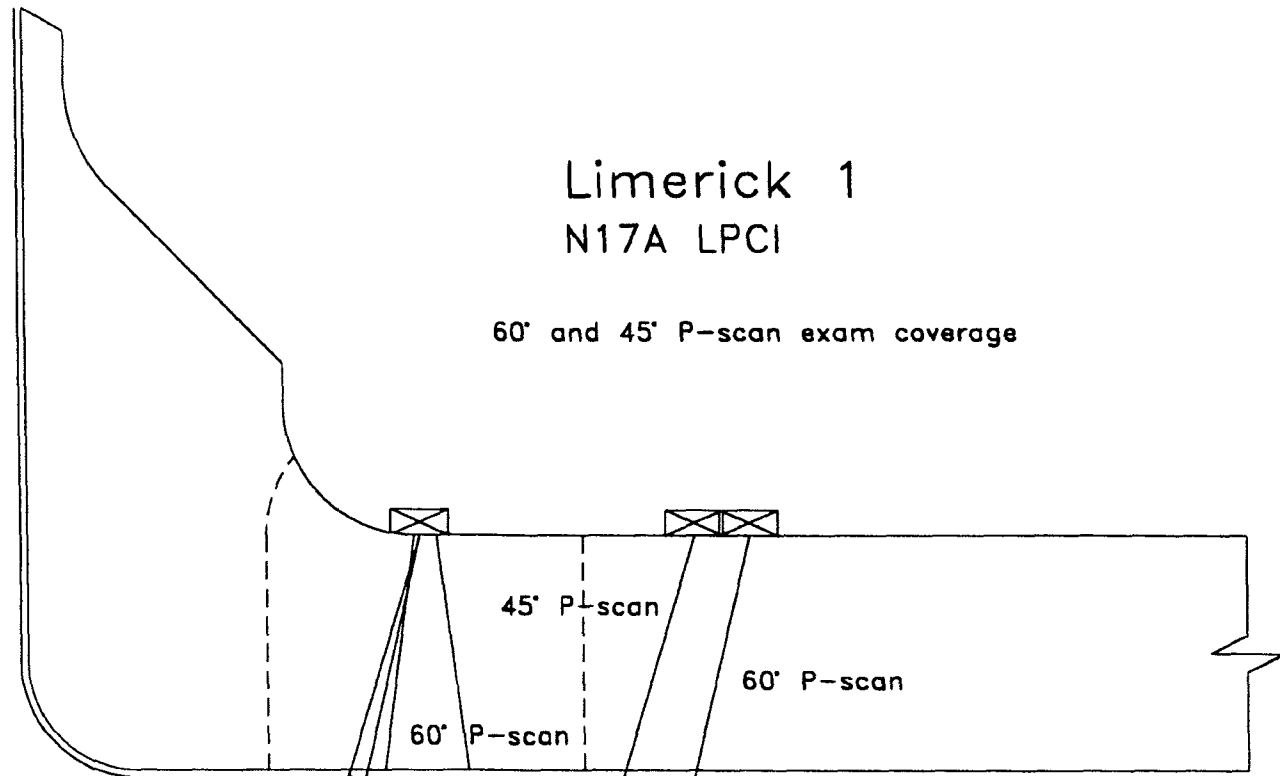


[Signature]
ANZI 4/12/198

Limerick 1

N17A LPCI

60° and 45° P-scan exam coverage



HSB 4/12/98
AND II

Weld: N17B

Summary Number: 601520

Unit: 1

Item Number: B3.90

Outage: 1R07 (Spring 1998)

Coverage: 61.9%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Automated UT Examination 0°L, 45°S, and 60°S

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

No, the examination was performed to requirements contained in ASME Section XI, Section V, and Reg Guide 1.150. This was the approved technical guidance at the time of the examination.

Limitation Description:

The completed examination was limited to 61.9% Code required coverage due to the design of the reactor vessel nozzle. The following coverage calculation sheet and the drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

Limerick Unit 1

N17B Nozzle

	CROSS SECTIONAL AREA (per slice)					TOTAL CODE COVERAGE			
	code cross sectional area	area scanned automated	limited area scanned automated	% of code area scanned automated	% of code area limited area scanned	degrees scanned automated	degrees limited scan area	percent scanned automated	percent limited scan area
0 wm	59.43	27.9	0.00	46.95	0.00	360	0.0	46.9	0.0
45 T-scan	59.43	45.8	0.00	77.07	0.00	360	0.0	77.1	0.0
60 T-scan	59.43	49.8	0.00	83.80	0.00	360	0.0	83.8	0.0
45 P-scan CW	59.43	32.7	0.00	55.02	0.00	360	0.0	55.0	0.0
60 P-scan CW	59.43	34.3	0.00	57.71	0.00	360	0.0	57.7	0.0
45 P-scan CCW	59.43	32.7	0.00	55.02	0.00	360	0.0	55.0	0.0
60 P-scan CCW	59.43	34.3	0.00	57.71	0.00	360	0.0	57.7	0.0
Coverages								61.9	0.0
Total coverage									61.9

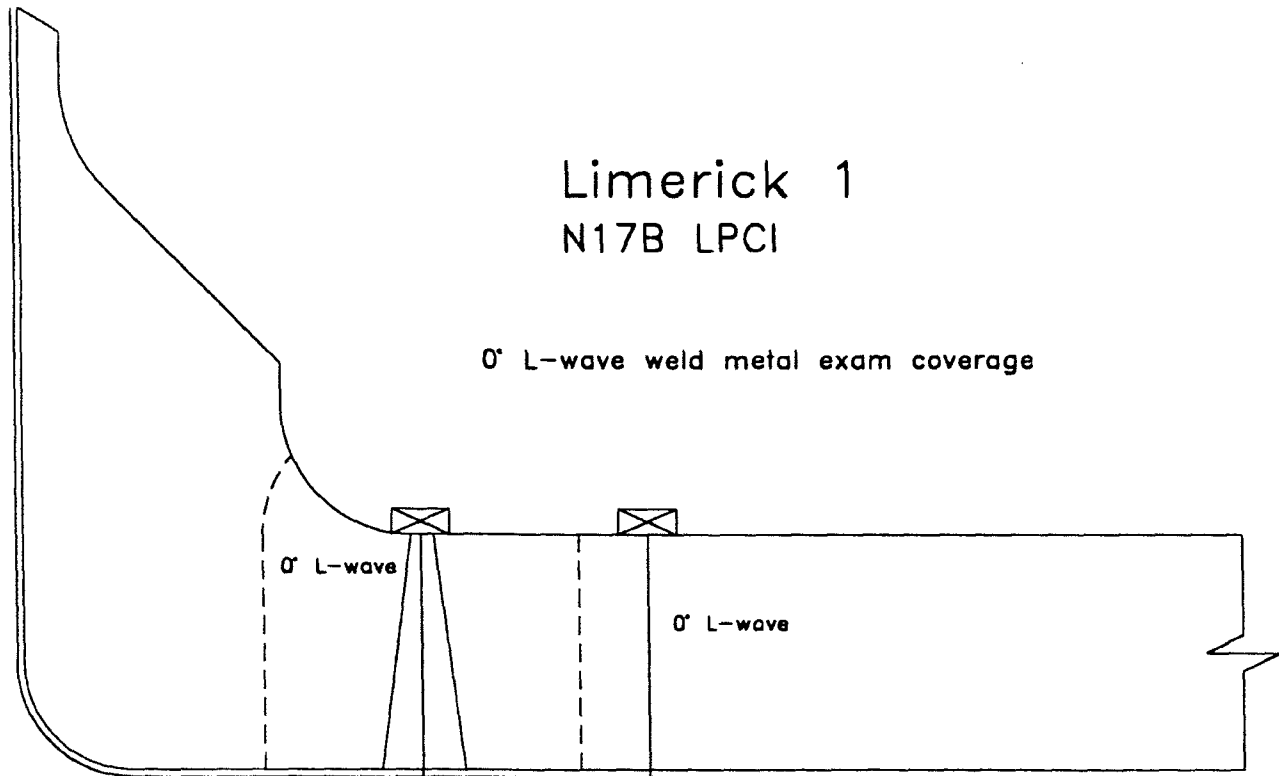
Automated scans were not restricted

No credit taken for initial 1/4" of material in Code coverage calculations due to near field effects.

HSB 4/28/98
ANT

Limerick 1
N17B LPCI

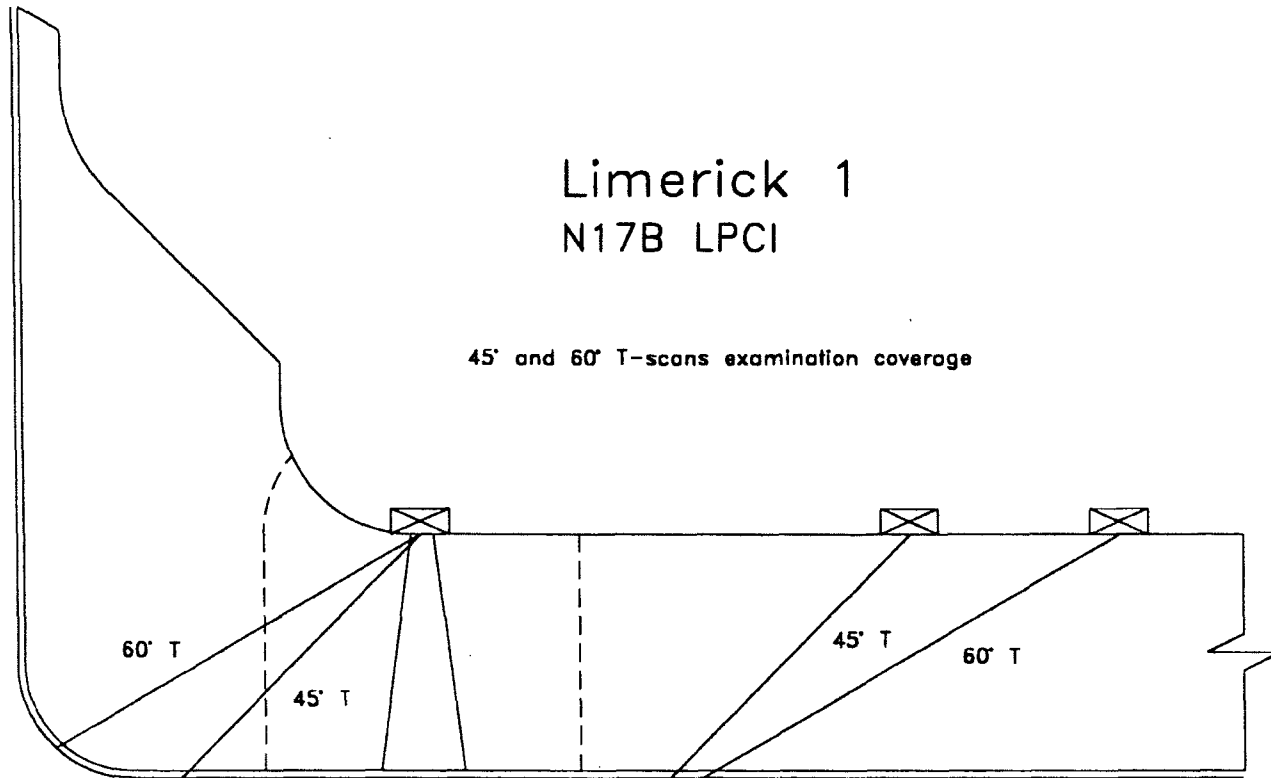
0° L-wave weld metal exam coverage



Limerick 1

N17B LPCI

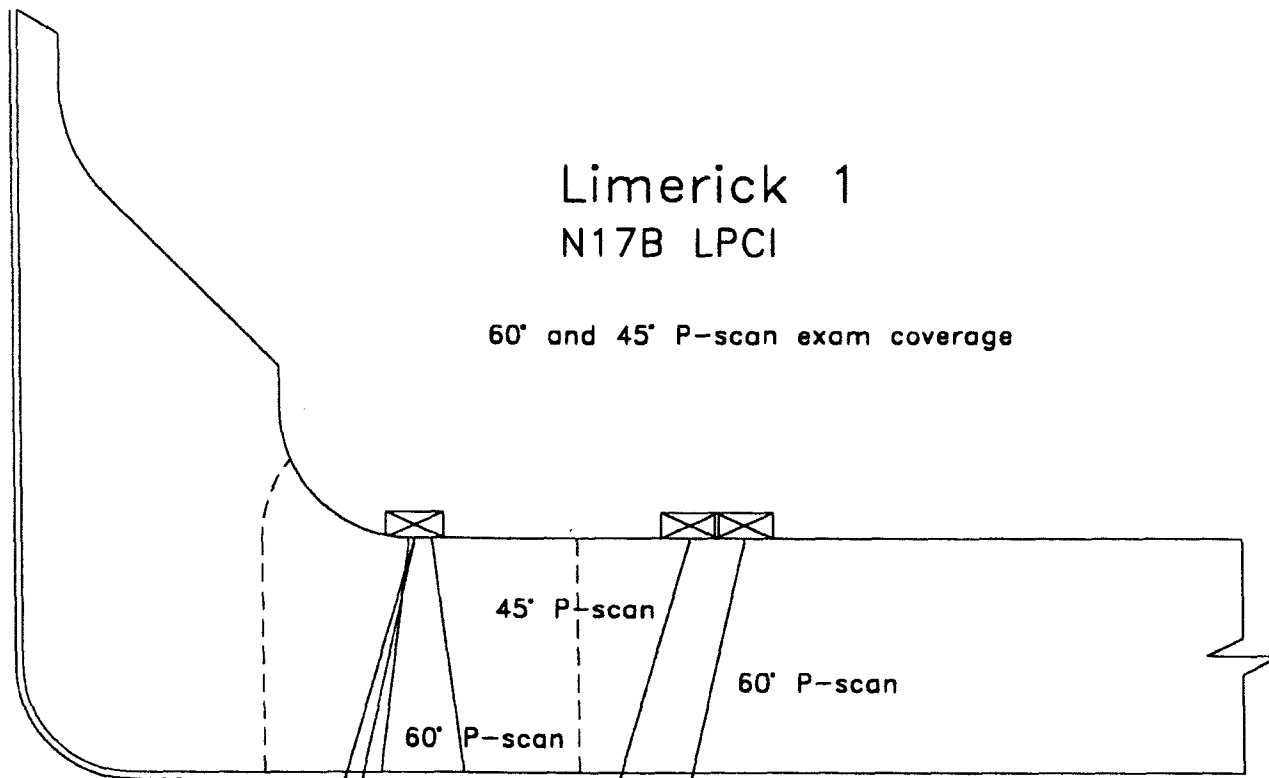
45° and 60° T-scans examination coverage



Limerick 1

N17B LPCI

60° and 45° P-scan exam coverage



Weld: N17D

Summary Number: 601580

Unit: 1

Item Number: B3.90

Outage: 1R07 (Spring 1998)

Coverage: 61.9%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Automated UT Examination 0°L, 45°S, and 60°S

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

No, the examination was performed to requirements contained in ASME Section XI, Section V, and Reg Guide 1.150. This was the approved technical guidance at the time of the examination.

Limitation Description:

The completed examination was limited to 60.1% Code required coverage due to the design of the reactor vessel nozzle. The following coverage calculation sheet and the drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

REVIEWED PECO Energy Co.
NDE SUPPORT GROUP

Thomas L. Adams APR 20 '98

Limerick Unit 1

N17D Nozzle

	CROSS SECTIONAL AREA (per slice)					TOTAL CODE COVERAGE			
	code cross sectional area	area scanned automated	limited area scanned automated	% of code area scanned automated	% of code area limited area scanned	degrees scanned automated	degrees limited scan area	percent scanned automated	percent limited scan area
0 wm	59.43	27.9	0.00	46.95	0.00	360	0.0	46.9	0.0
45 T-scan	59.43	45.8	0.00	77.07	0.00	360	0.0	77.1	0.0
60 T-scan	59.43	49.8	0.00	83.80	0.00	360	0.0	83.8	0.0
45 P-scan CW	59.43	32.7	0.00	55.02	0.00	360	0.0	55.0	0.0
60 P-scan CW	59.43	34.3	0.00	57.71	0.00	360	0.0	57.7	0.0
45 P-scan CCW	59.43	32.7	0.00	55.02	0.00	360	0.0	55.0	0.0
60 P-scan CCW	59.43	34.3	0.00	57.71	0.00	360	0.0	57.7	0.0
						Coverages		61.9	0.0
						Total coverage		61.9	

Automated scans were not restricted

No credit taken for initial 1/4" of material in Code coverage calculations due to near field effects.

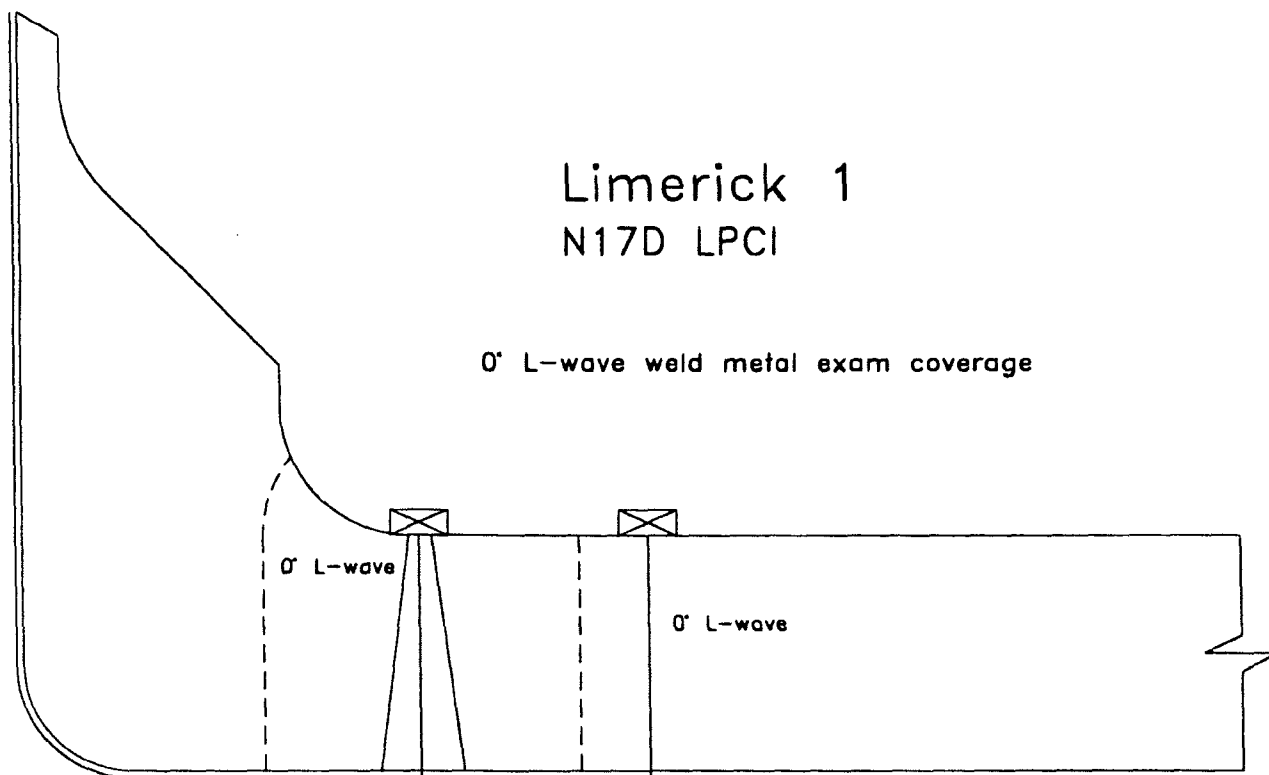
THS
4/20/98

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1 ROT
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REVIEWED PECO Energy Co. *Thomas L. Chelley* APR 20 '98
RDE SUPPORT GROUP

Limerick 1
N17D LPCI

0° L-wave weld metal exam coverage

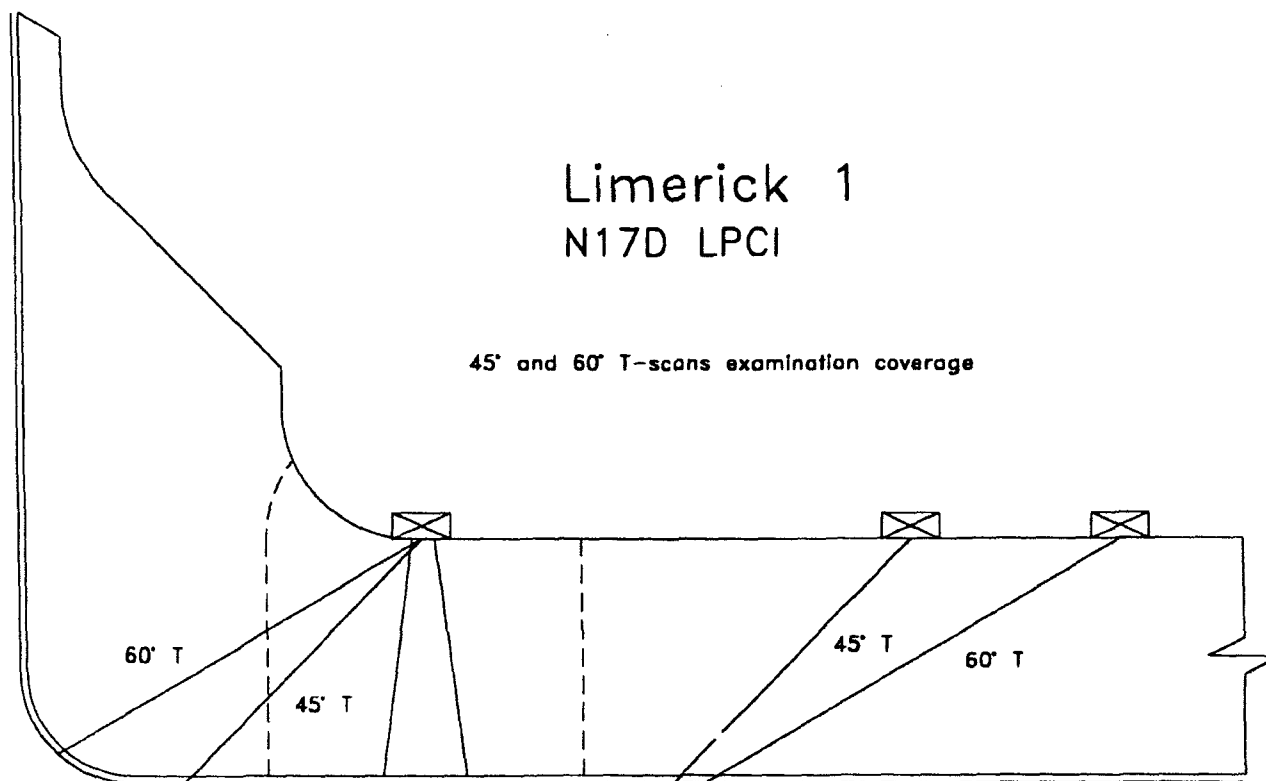


ASB
HSB 4/20/98
ANII

REVIEWED PECO Energy Co. *Thomas L. Anderson* APR 20 '98
NDE SUPPORT GROUP

Limerick 1
N17D LPCI

45° and 60° T-scans examination coverage



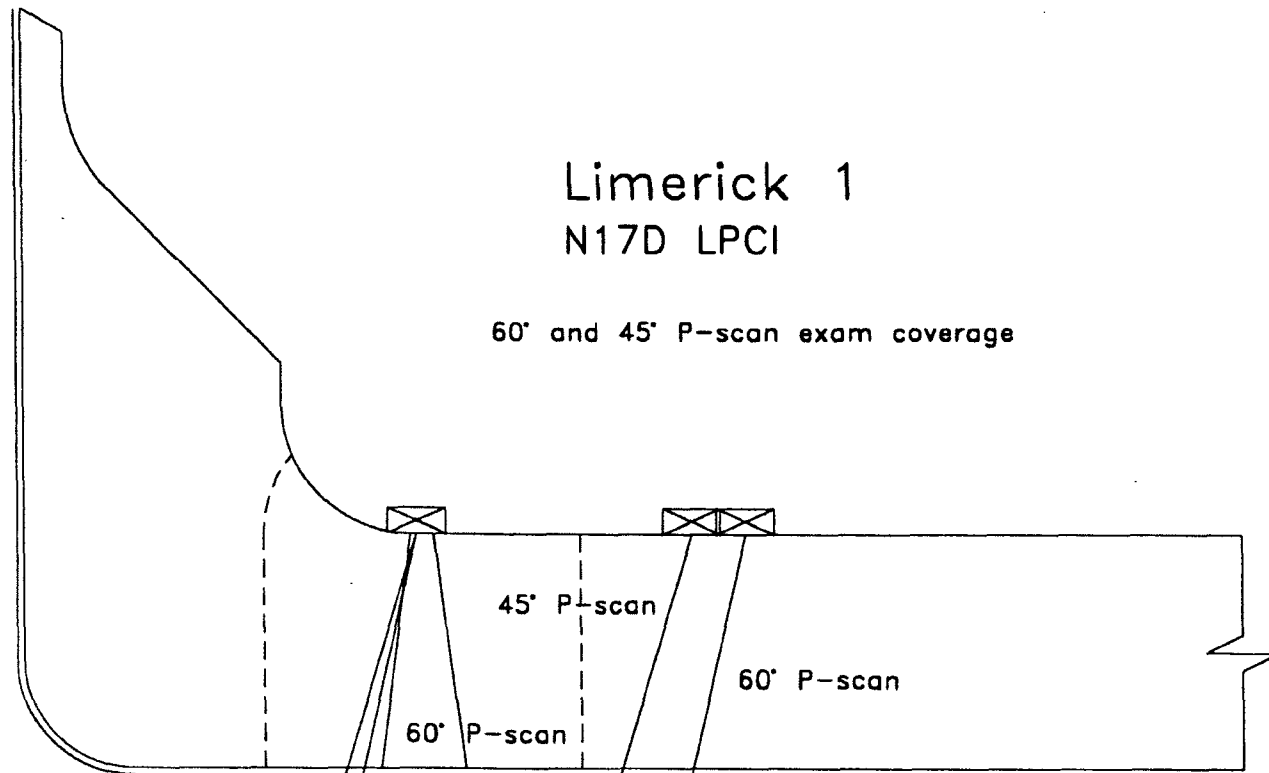
14558 4/20/98
ANIL
LIMERICK
1 R07
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Thomas L. Kelly

APR 20 '98

Limerick 1 N17D LPCI

60° and 45° P-scan exam coverage



John H. B. 4/20/98
ANTI

Weld: BF

Summary Number: 600300 (right side) and 600290 (left side)

Unit: 1

Item Number: B1.12

Outage: 1R09 (Spring 2002)

Coverage: 85.9%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-2 "Vessel Shell Longitudinal Weld Joints"

UT Exam Type: Automated UT Examination 0°L, 45°S, 60°L, and 70°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was in accordance with ASME Section XI Appendix VIII as modified by the PDI program.

Limitation Description:

The completed examination was limited to 85.9% Code required coverage due to the N17B nozzle being located in the center of the vertical weld. The following coverage calculation sheet and the drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

Limerick Unit-1
Weld BF
Spring 2002

Weld Length 103.00	Obstructed	CODE CROSS-SECTIONAL AREA				TOTAL CODE COVERAGE				
		Area Inch ²	Area Scanned		% of Area Scanned		Weld Length Scanned		% Scanned	
			Auto	Manual	Auto	Manual	Auto	Manual	Auto	Manual
Unrestricted Scans										
RIGHT SIDE 70° T-SCAN	N	8.05	8.05	0.00	100.0	0.0	92.50	0.0	13.7	0.0
RIGHT SIDE 45° T-SCAN	N	36.78	36.78	0.00	100.0	0.0	92.50	0.0	62.5	0.0
RIGHT SIDE 60° T-SCAN	N	8.05	8.05	0.00	100.0	0.0	92.50	0.0	13.7	0.0
70° P-SCAN UP	N	8.05	8.05	0.00	100.0	0.0	92.50	0.0	13.7	0.0
45° P-SCAN UP	N	36.78	36.78	0.00	100.0	0.0	92.50	0.0	62.5	0.0
60° P-SCAN UP	N	8.05	8.05	0.00	100.0	0.0	92.50	0.0	13.7	0.0
Unrestricted Scans										
LEFT SIDE 70° T-SCAN	N	8.05	8.05	0.00	100.0	0.0	84.50	0.0	12.5	0.0
LEFT SIDE 45° T-SCAN	N	36.78	36.78	0.00	100.0	0.0	84.50	0.0	57.1	0.0
LEFT SIDE 60° T-SCAN	N	8.05	8.05	0.00	100.0	0.0	84.50	0.0	12.5	0.0
70° P-SCAN DOWN	N	8.05	8.05	0.00	100.0	0.0	84.50	0.0	12.5	0.0
45° P-SCAN DOWN	N	36.78	36.78	0.00	100.0	0.0	84.50	0.0	57.1	0.0
60° P-SCAN DOWN	N	8.05	8.05	0.00	100.0	0.0	84.50	0.0	12.5	0.0
Coverages									85.9	0.0

Total Composite Coverage = 85.9

Comments:

Weld length reduced due to N17B nozzle being in center of vertical weld BF, total reduced area = 24.00"

CovCalc.xls 1/22/2002

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PAGE

Limerick 1

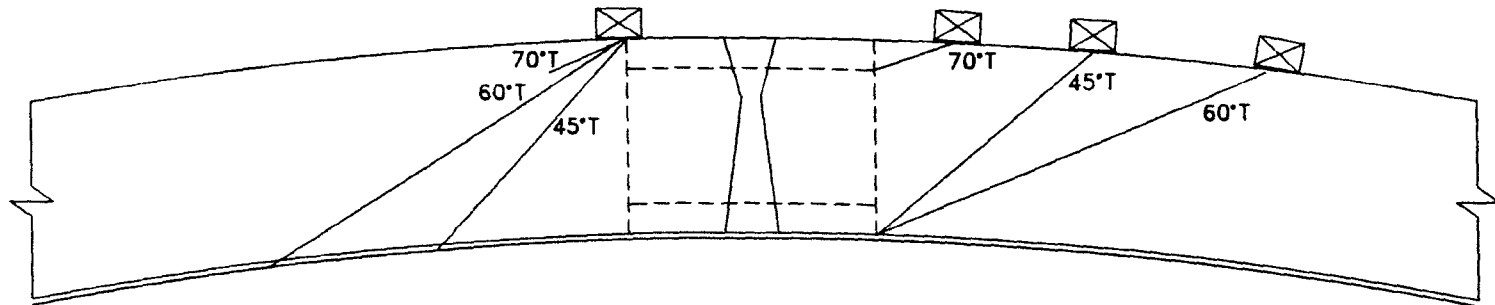
Shell Course 2

Weld BF Right Side Coverage

Required 45° T-Scan Exam Volume - 36.78 Sq. In.

Required 60° T-Scan Exam Volume - 8.05 Sq. In.

Required 70° T-Scan Exam Volume - 8.05 Sq. In.



Limerick 1

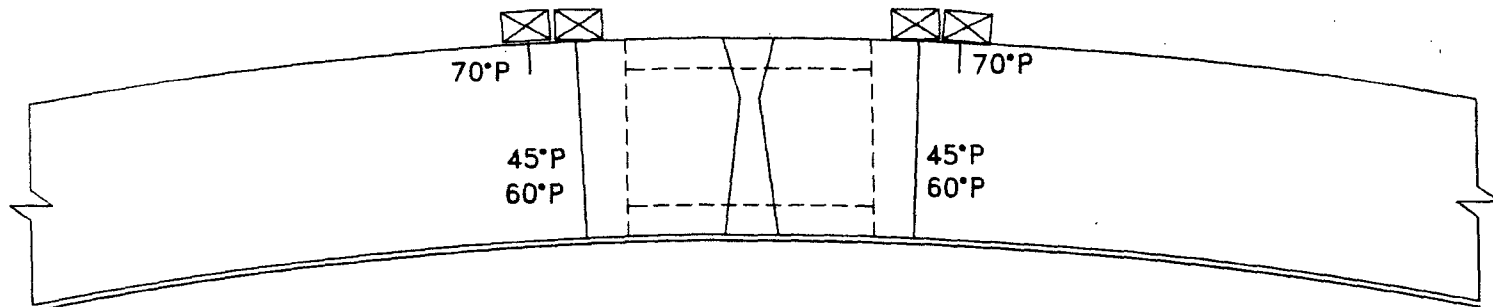
Shell Course 2

Weld BF Right Side Coverage

Required 45° P-Scan Exam Volume - 36.78 Sq. In.

Required 60° P-Scan Exam Volume - 8.05 Sq. In.

Required 70° P-Scan Exam Volume - 8.05 Sq. In.



Limerick 1

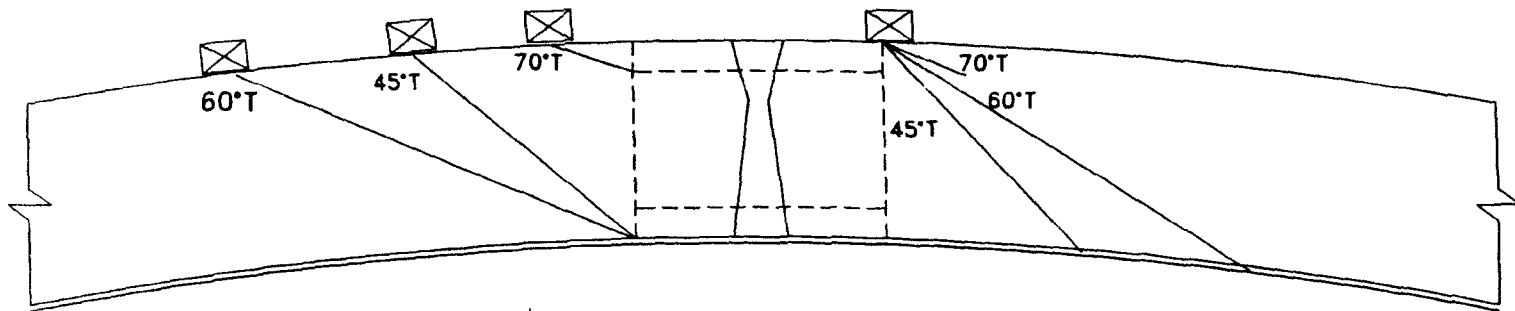
Shell Course 1

Weld BB Left Side Coverage

Required 45° T-Scan Exam Volume - 36.78 Sq. In.

Required 60° T-Scan Exam Volume - 8.05 Sq. In.

Required 70° T-Scan Exam Volume - 8.05 Sq. In.



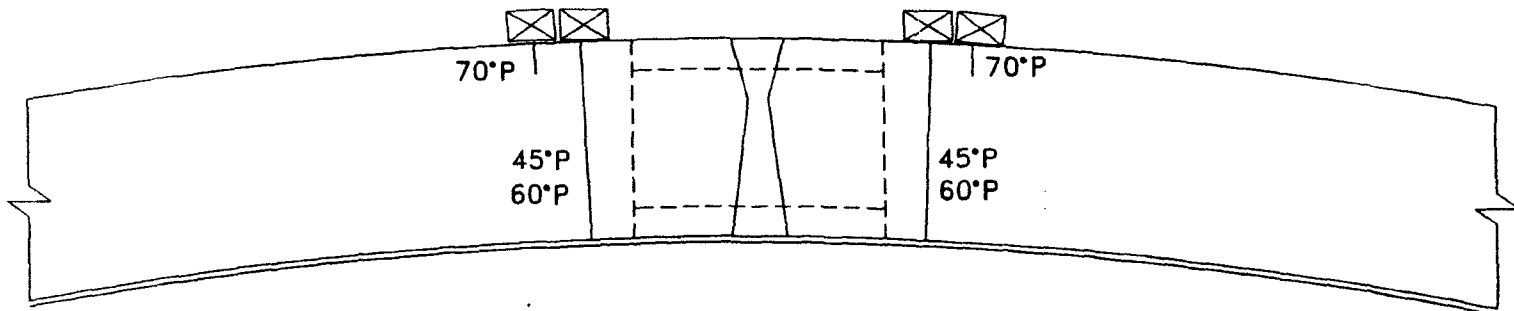
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Limerick 1
Shell Course 1
Weld BB Left Side Coverage

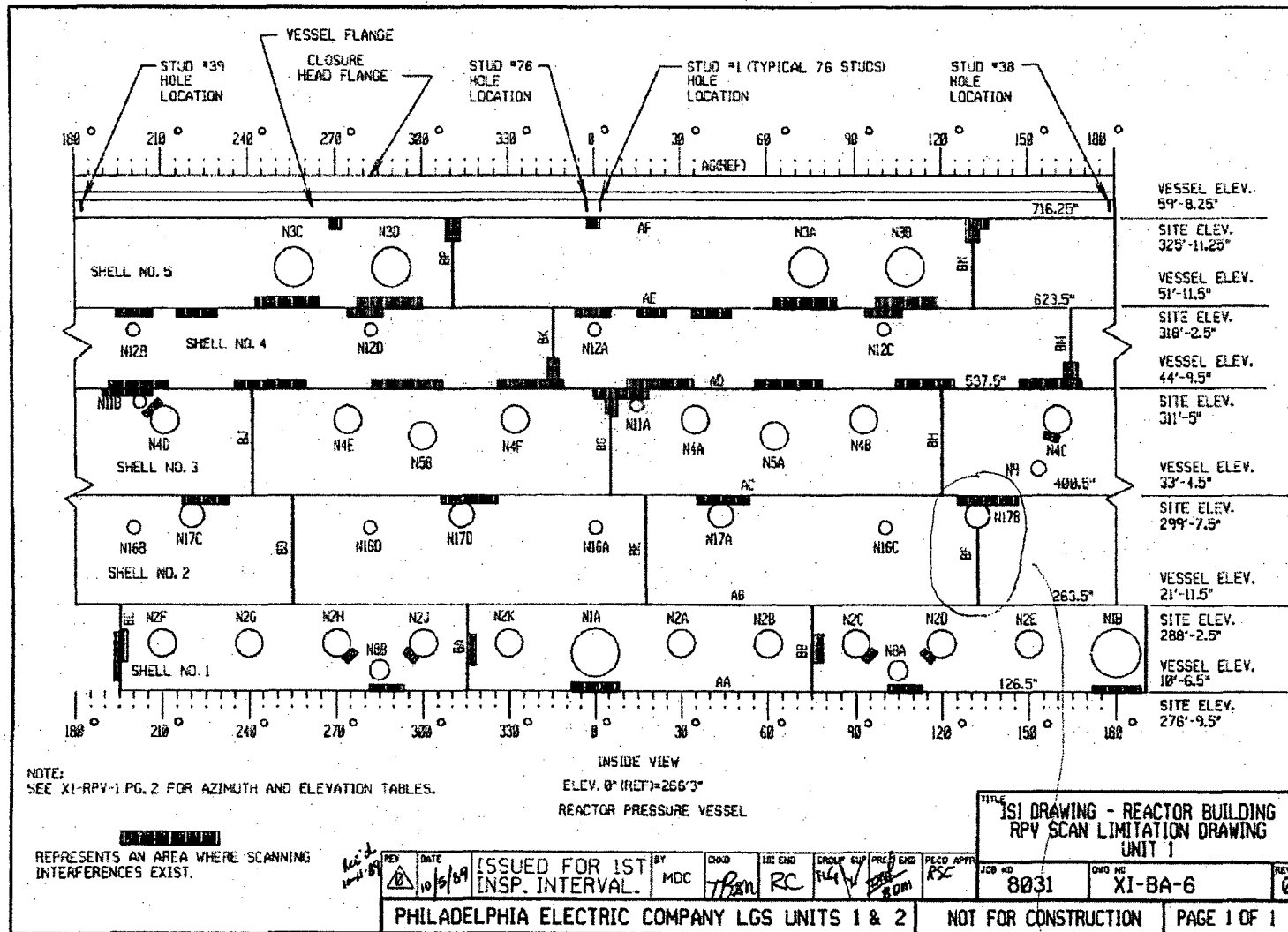
Required 45° P-Scan Exam Volume – 36.78 Sq. In.

Required 60° P-Scan Exam Volume – 8.05 Sq. In.

Required 70° P-Scan Exam Volume – 8.05 Sq. In.



Unit 1 Vessel Nozzle and Weld Locations



BF weld is limited
due to N17B nozzle

Weld: BM

Summary Number: 600400 (right side) and 600390 (left side)

Unit: 1

Item Number: B1.12

Outage: 1R09 (Spring 2002)

Coverage: 83.1%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-2 "Vessel Shell Longitudinal Weld Joints"

UT Exam Type: Automated UT Examination 0°L, 45°S, 60°L, and 70°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was in accordance with ASME Section XI Appendix VIII as modified by the PDI program.

Limitation Description:

The completed examination was limited to 83.1% Code required coverage due to insulation interference. The following coverage calculation sheet and the drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

Limerick Unit-1
Weld BM
Spring 2002

Weld Length 85.75	Obstructed	CODE CROSS-SECTIONAL AREA				TOTAL CODE COVERAGE				
		Area inch ²	Area Scanned		% of Area Scanned		Weld Length Scanned		% Scanned	
			Auto	Manual	Auto	Manual	Auto	Manual	Auto	Manual
Unrestricted Scans										
RIGHT SIDE 70° T-SCAN	Y	8.05	8.05	0.00	100.0	0.0	68.00	0.0	12.1	0.0
RIGHT SIDE 45° T-SCAN	Y	36.78	36.78	0.00	100.0	0.0	68.00	0.0	55.2	0.0
RIGHT SIDE 60° T-SCAN	Y	8.05	8.05	0.00	100.0	0.0	68.00	0.0	12.1	0.0
70° P-SCAN UP	Y	8.05	8.05	0.00	100.0	0.0	68.00	0.0	12.1	0.0
45° P-SCAN UP	Y	36.78	36.78	0.00	100.0	0.0	68.00	0.0	55.2	0.0
60° P-SCAN UP	Y	8.05	8.05	0.00	100.0	0.0	68.00	0.0	12.1	0.0
Unrestricted Scans										
LEFT SIDE 70° T-SCAN	Y	8.05	8.05	0.00	100.0	0.0	74.50	0.0	13.2	0.0
LEFT SIDE 45° T-SCAN	Y	36.78	36.78	0.00	100.0	0.0	74.50	0.0	60.4	0.0
LEFT SIDE 60° T-SCAN	Y	8.05	8.05	0.00	100.0	0.0	74.50	0.0	13.2	0.0
70° P-SCAN DOWN	Y	8.05	8.05	0.00	100.0	0.0	74.50	0.0	13.2	0.0
45° P-SCAN DOWN	Y	36.78	36.78	0.00	100.0	0.0	74.50	0.0	60.4	0.0
60° P-SCAN DOWN	Y	8.05	8.05	0.00	100.0	0.0	74.50	0.0	13.2	0.0
Coverages									83.1	0.0

Total Composite Coverage = 83.1

Comments:
Automated Scanning restricted on both sides of BM due to insulation interference

Limerick 1

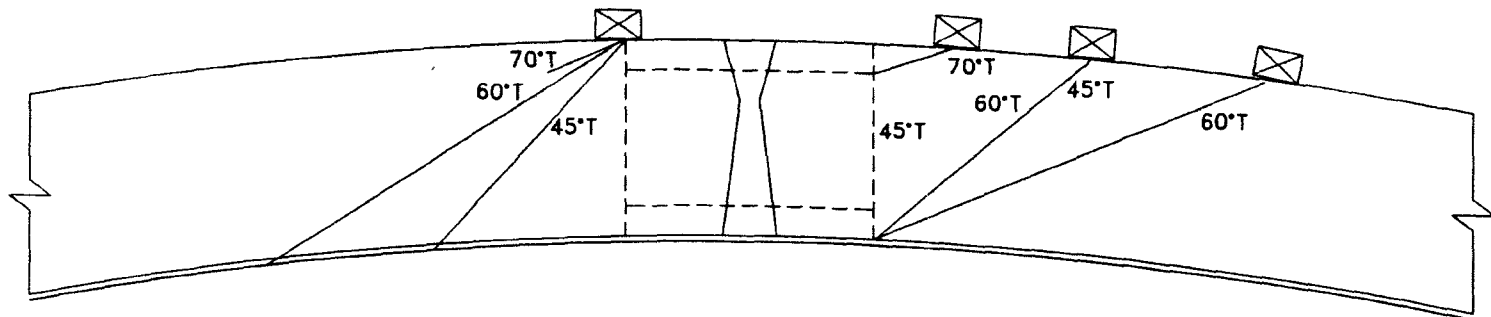
Shell Course 4

Weld BM Right Side Coverage

Required 45° T-Scan Exam Volume - 36.78 Sq. In.

Required 60° T-Scan Exam Volume - 8.05 Sq. In.

Required 70° T-Scan Exam Volume - 8.05 Sq. In.



Limerick 1

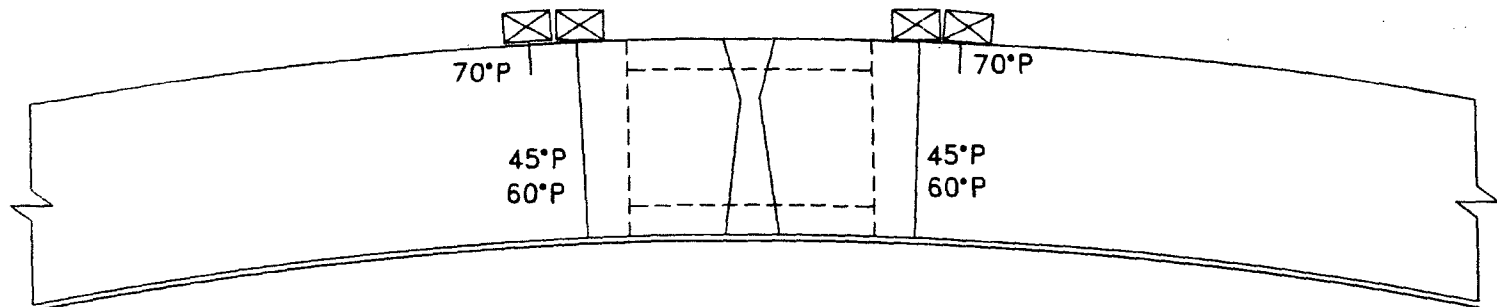
Shell Course 4

Weld BM Right Side Coverage

Required 45° P-Scan Exam Volume - 36.78 Sq. In.

Required 60° P-Scan Exam Volume - 8.05 Sq. In.

Required 70° P-Scan Exam Volume - 8.05 Sq. In.



Limerick 1

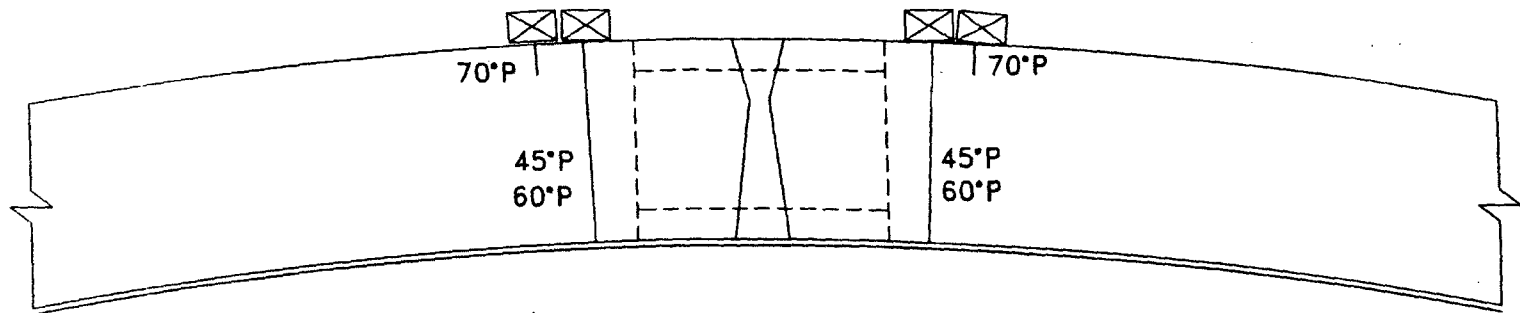
Shell Course 4

Weld BM Left Side Coverage

Required 45° P-Scan Exam Volume – 36.78 Sq. In.

Required 60° P-Scan Exam Volume – 8.05 Sq. In.

Required 70° P-Scan Exam Volume – 8.05 Sq. In.



Limerick 1

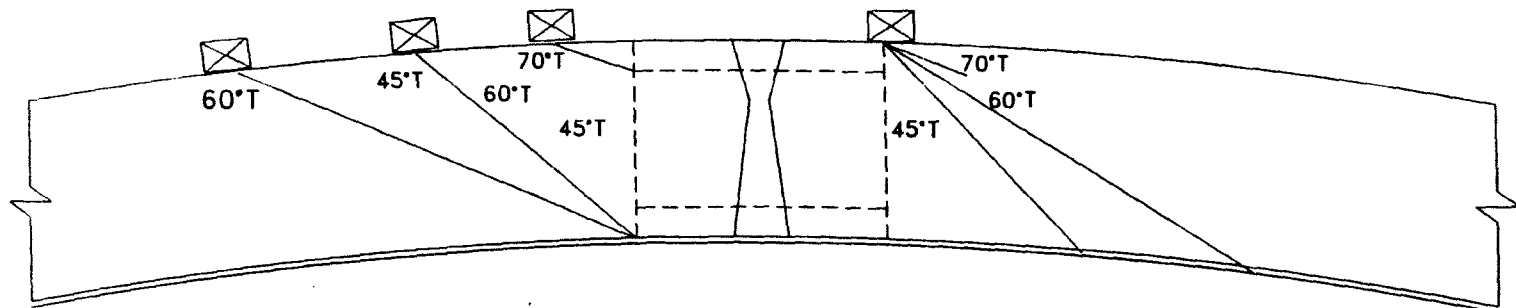
Shell Course 4

Weld BM Left Side Coverage

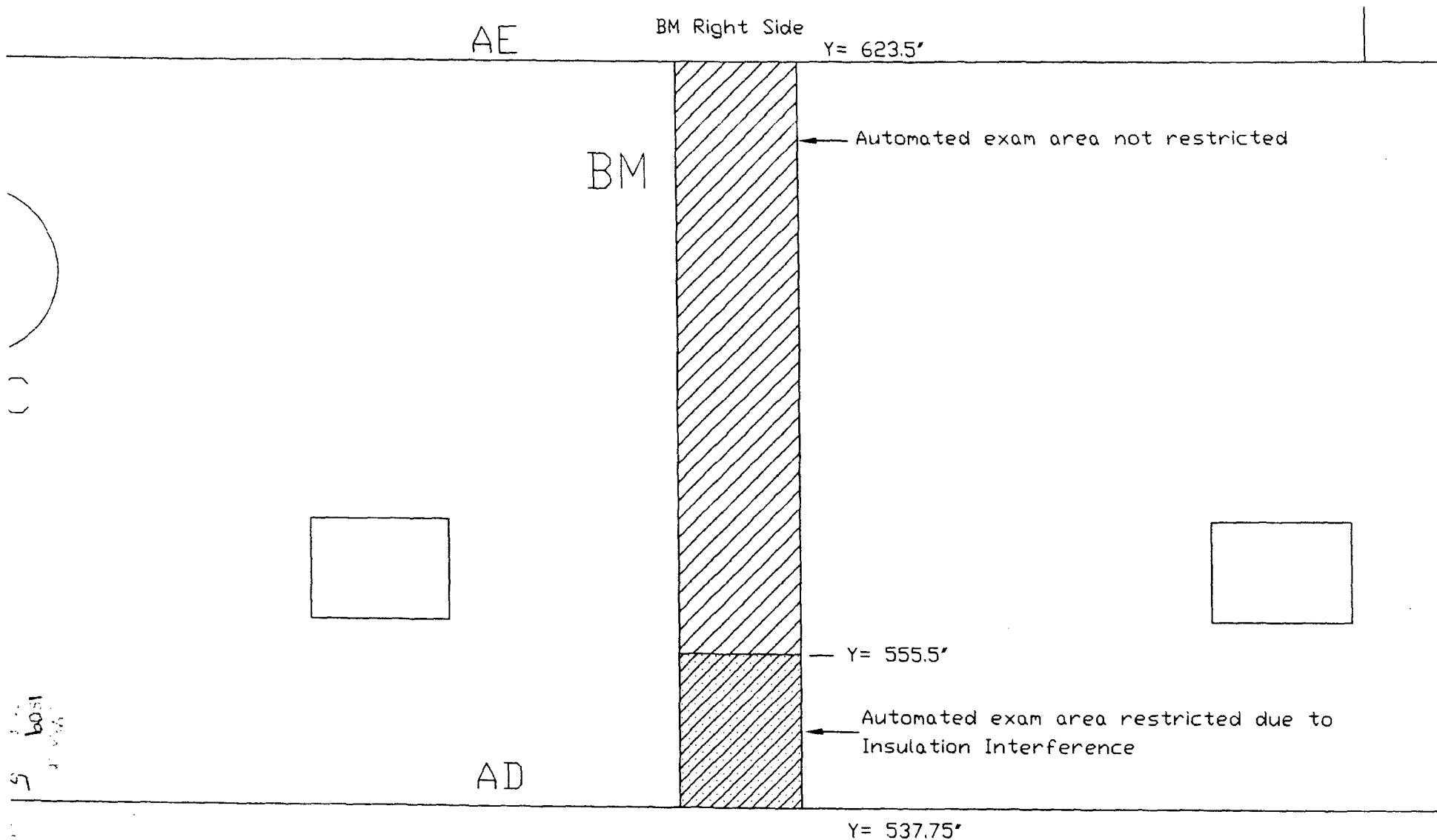
Required 45° T-Scan Exam Volume - 36.78 Sq. In.

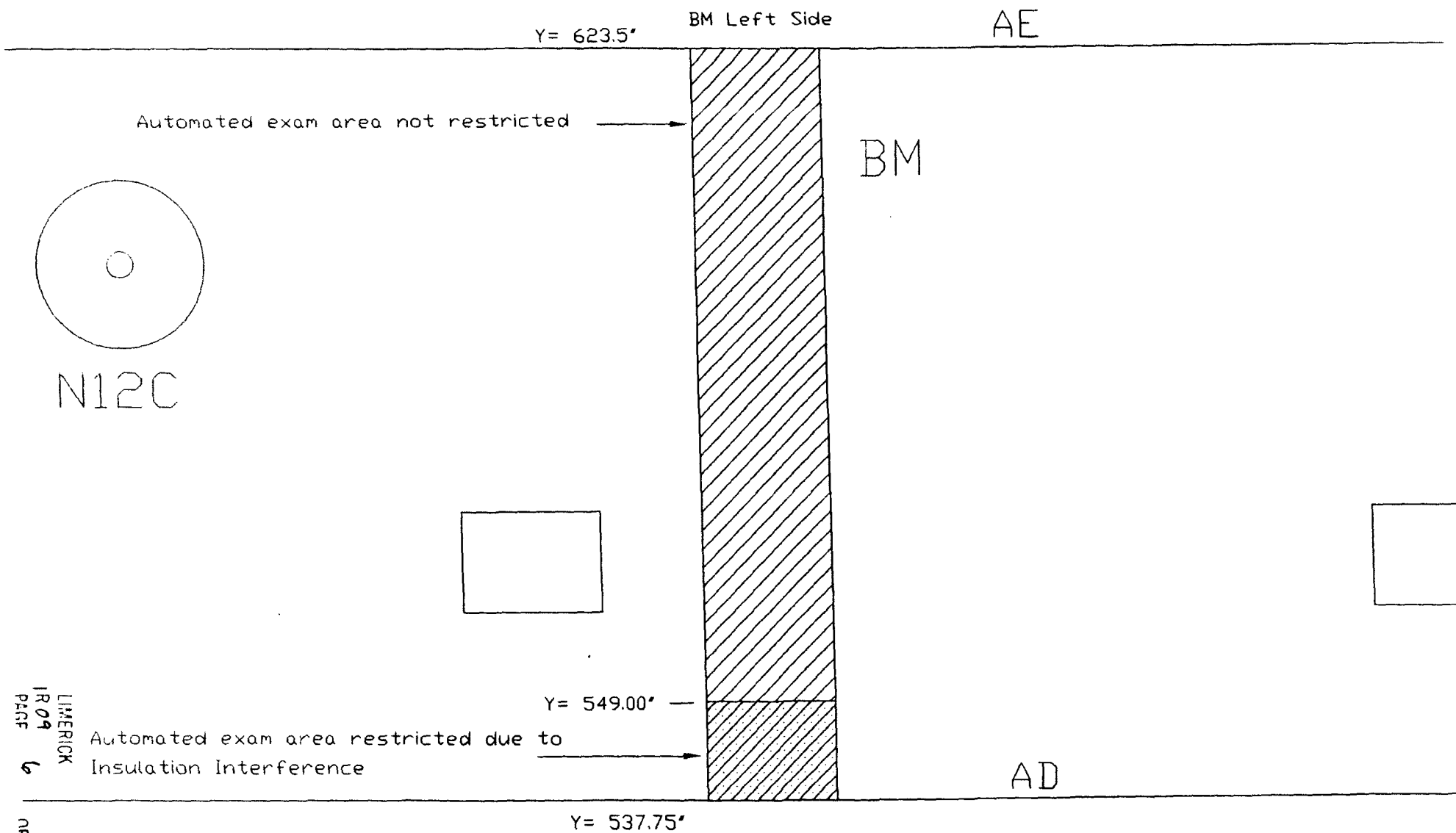
Required 60° T-Scan Exam Volume - 8.05 Sq. In.

Required 70° T-Scan Exam Volume - 8.05 Sq. In.



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Weld: AG

Summary Number: 600570

Unit: 1

Item Number: B1.40

Outage: 1R10 (50%) (Spring 2004) and 1R08 (50%) (Spring 2000)

Coverage: 85.1%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration and surface per figure IWB-2500-5 "Head to Flange Weld Joint"

UT Exam Type: 1R08 Manual UT Examination 0°L, 45°S, 60°S, and 70°RL

1R10 Manual UT Examination 60°L

Magnetic Particle Examination (MT)

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

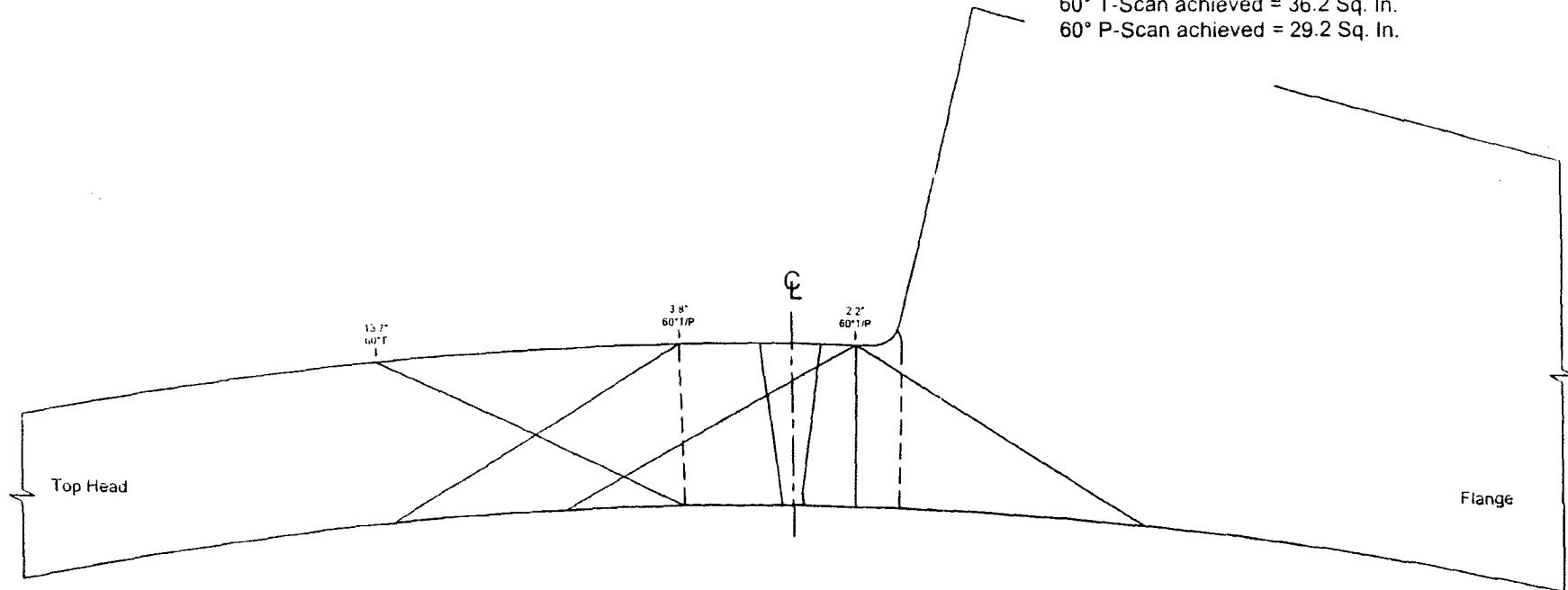
The portion of the examination completed during 1R08 was not in accordance with ASME Section XI Appendix VIII. This was the approved technical guidance at the time of the examination. The portion of the examination completed during 1R10 was completed in accordance with ASME Section XI Appendix VIII.

Limitation Description:

The completed examination was limited to 85.1% Code required coverage due to the design of the reactor vessel head. The following drawing contains the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

Limerick Unit-1 Closure Head Flange Weld

60° Exam Volume = 37.0 Sq. In.
60° T-Scan achieved = 36.2 Sq. In.
60° P-Scan achieved = 29.2 Sq. In.



Attachment 4

**Relief Request 34 – LGS, Unit 2 Second
Ten-Year Inservice Inspection Interval
Component NDE Exam Limitations**

Weld: N1B

Summary Number: 704200

Unit: 2

Item Number: B3.90

Outage: 2R07 (Spring 2003)

Coverage: 71%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Automated UT Examination 0°L, 45°S, 60°RL, and 70°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was in accordance with ASME Section XI Appendix VIII as modified by PDI program.

Limitation Description:

The completed examination was limited to 71% Code required coverage due to the design of the reactor vessel nozzle. The following coverage calculation sheet and the drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

Limerick Unit 2, L2R07
Weld Li2-N1B
Spring 2003

		CODE CROSS-SECTIONAL AREA		TOTAL CODE COVERAGE		
Weld Length = 360° Exam Volume = 58.7		Required Exam Area Sq. In.	Area Scanned Auto	Percent of Area Auto	Weld Length Auto	Percent Auto
70° T-Scan	A	11.1	5.6	9.5%	360°	4.8%
45° T-Scan	A	39.2	33.6	57.2%	360°	28.6%
60° T-Scan	A	8.4	8.4	14.3%	360°	7.2%
70° P-Scan	A	11.1	4.5	7.7%	360°	3.8%
45° P-Scan	A	39.2	26.7	45.5%	360°	22.7%
IRS P-Scan	A	8.4	5.1	8.7%	360°	4.3%
70° T-Scan						
45° T-Scan						
60° T-Scan						
70° P-Scan						
45° P-Scan						
IRS P-Scan						
70° T-Scan						
45° T-Scan						
60° T-Scan						
70° P-Scan						
45° P-Scan						
IRS P-Scan						

% Total Composite Coverage = 71%

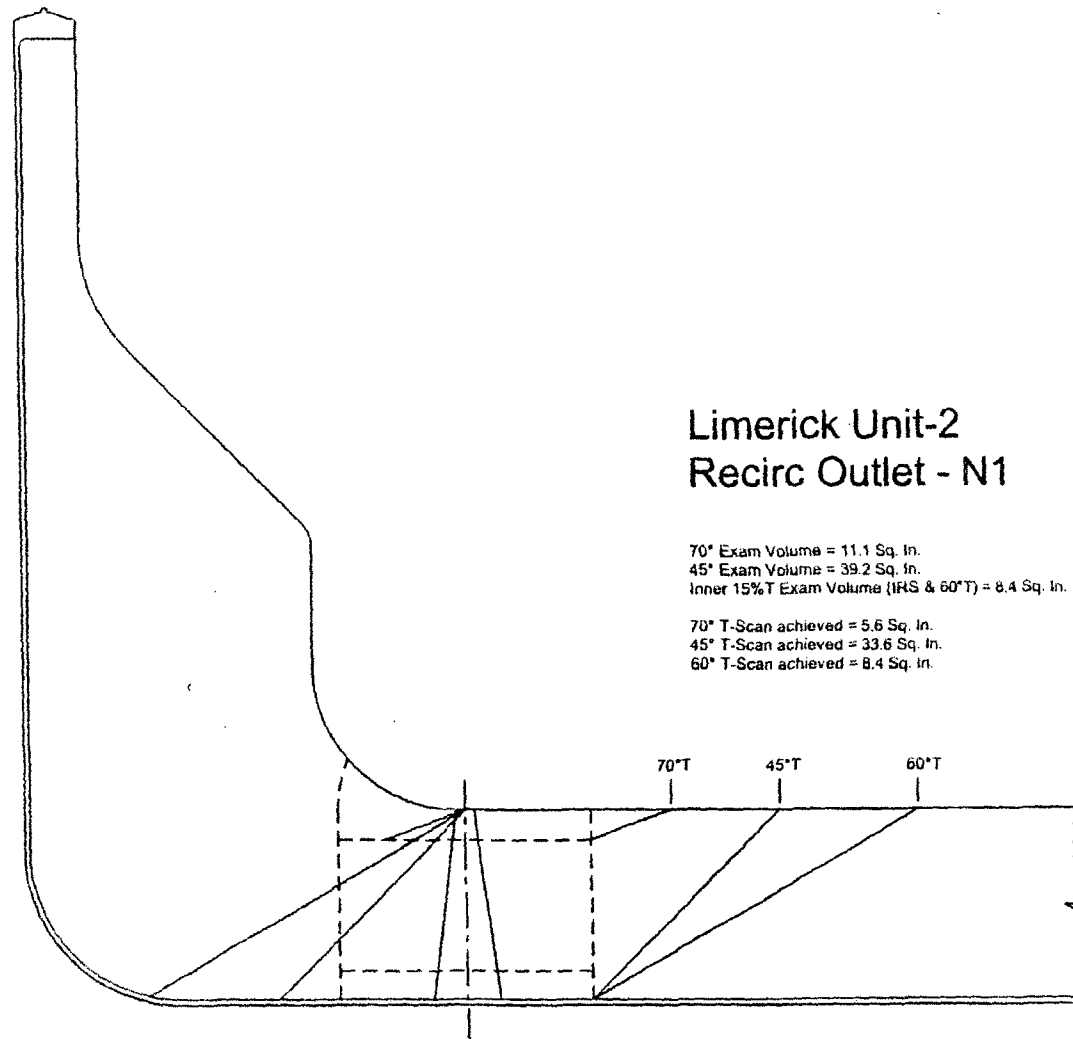
Comments: A - Examined 360°. Scanning limited due to nozzle configuration.

Note - Rounding methods may affect calculated values.

Limerick Unit-2 Recirc Outlet - N1

70° Exam Volume = 11.1 Sq. In.
45° Exam Volume = 39.2 Sq. In.
Inner 15°T Exam Volume (IRS & 60°T) = 8.4 Sq. In.

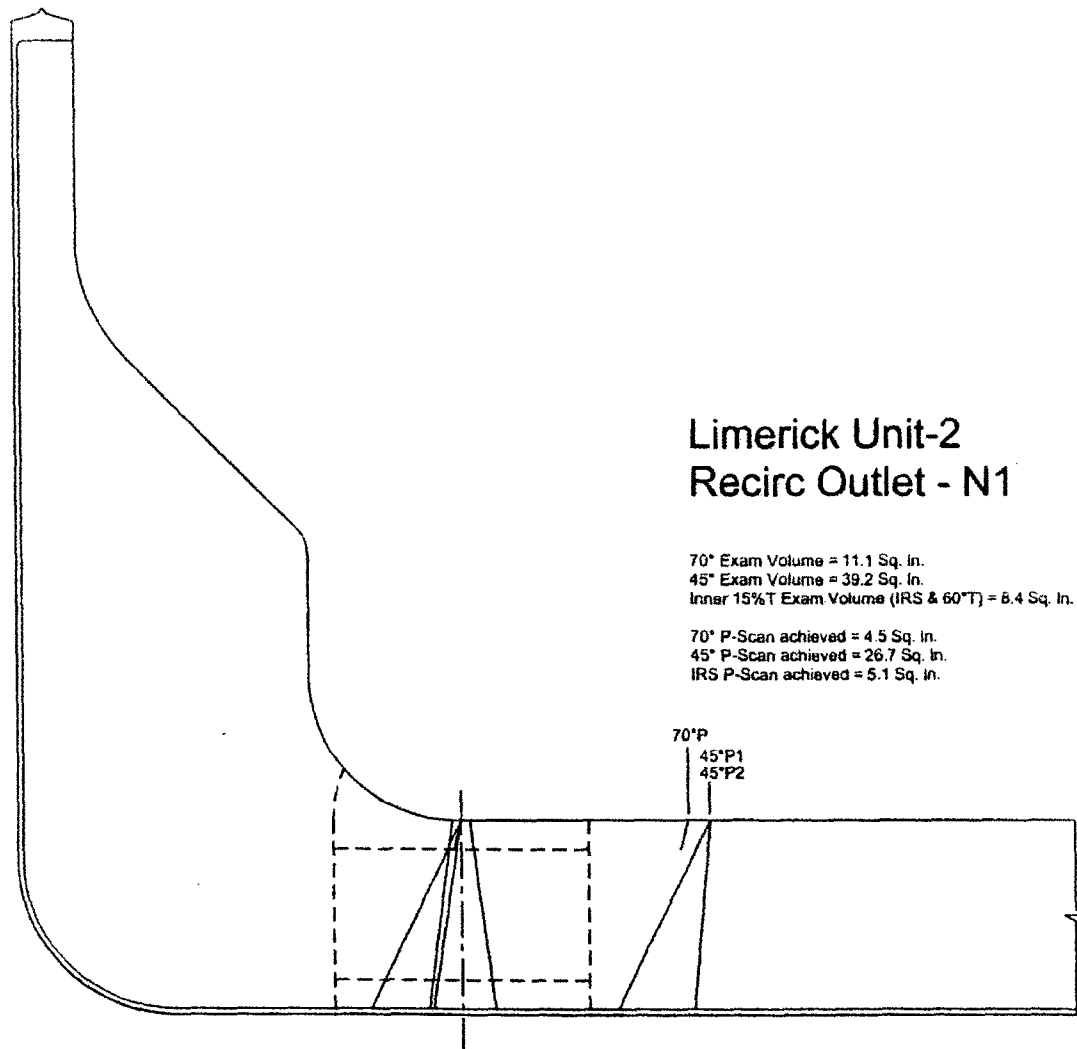
70° T-Scan achieved = 5.6 Sq. In.
45° T-Scan achieved = 33.6 Sq. In.
60° T-Scan achieved = 8.4 Sq. In.



Limerick Unit-2 Recirc Outlet - N1

70° Exam Volume = 11.1 Sq. In.
45° Exam Volume = 39.2 Sq. In.
Inner 15°T Exam Volume (IRS & 60°T) = 8.4 Sq. In.

70° P-Scan achieved = 4.5 Sq. In.
45° P-Scan achieved = 26.7 Sq. In.
IRS P-Scan achieved = 5.1 Sq. In.



Weld: N2B

Summary Number: 704800

Unit: 2

Item Number: B3.90

Outage: 2R07 (Spring 2003)

Coverage: 77%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Automated UT Examination 0°L, 45°S, 60°RL, and 70°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was in accordance with ASME Section XI Appendix VIII as modified by PDI program.

Limitation Description:

The completed examination was limited to 77% Code required coverage due to the design of the reactor vessel nozzle. The following coverage calculation sheet and the drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

Limerick Unit 2
Li2 / N2B
Spring 2003

Weld Length = 360° Exam Volume = 59.7		CODE CROSS-SECTIONAL AREA		TOTAL CODE COVERAGE		
		Required Exam Area Sq. In.	Area Scanned Auto	Percent of Area Auto	Weld Length Auto	Percent Auto
70° T-Scan	A	12	5.8	9.7%	360°	4.9%
45° T-Scan	A	39.2	33.5	56.1%	360°	28.1%
60° T-Scan	A	8.5	8.5	14.2%	360°	7.1%
70° P-Scan	A	12	4.5	7.5%	360°	3.8%
45° P-Scan	A	39.2	31.3	52.4%	360°	26.2%
IRS P-Scan	A	8.5	8.5	14.2%	360°	7.1%
70° T-Scan						
45° T-Scan						
60° T-Scan						
70° P-Scan						
45° P-Scan						
IRS P-Scan						
70° T-Scan						
45° T-Scan						
60° T-Scan						
70° P-Scan						
45° P-Scan						
IRS P-Scan						

% Total Composite Coverage = 77%

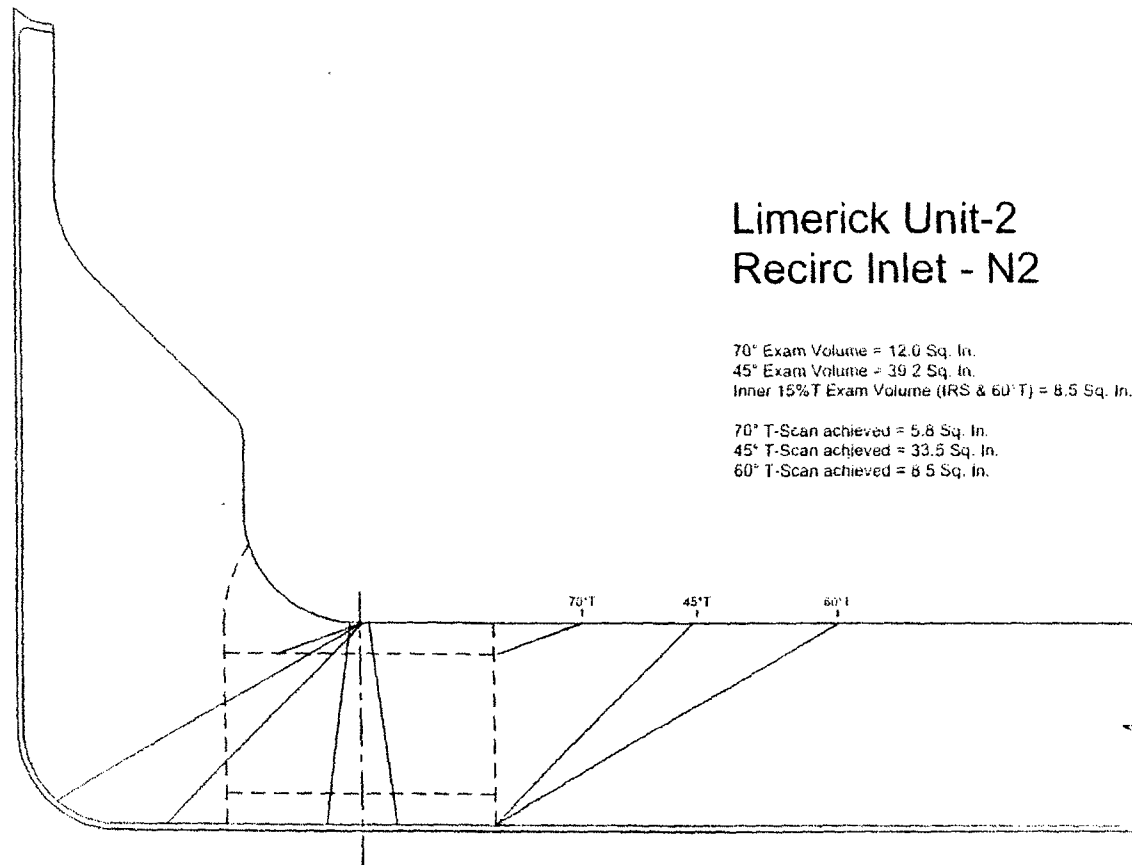
Comments: A - Examined 360°. Scanning limited due to nozzle configuration.

Note - Rounding methods may affect calculated values.

Limerick Unit-2 Recirc Inlet - N2

70° Exam Volume = 12.0 Sq. In.
45° Exam Volume = 39.2 Sq. In.
Inner 15° T Exam Volume (IRS & 60° T) = 8.5 Sq. In.

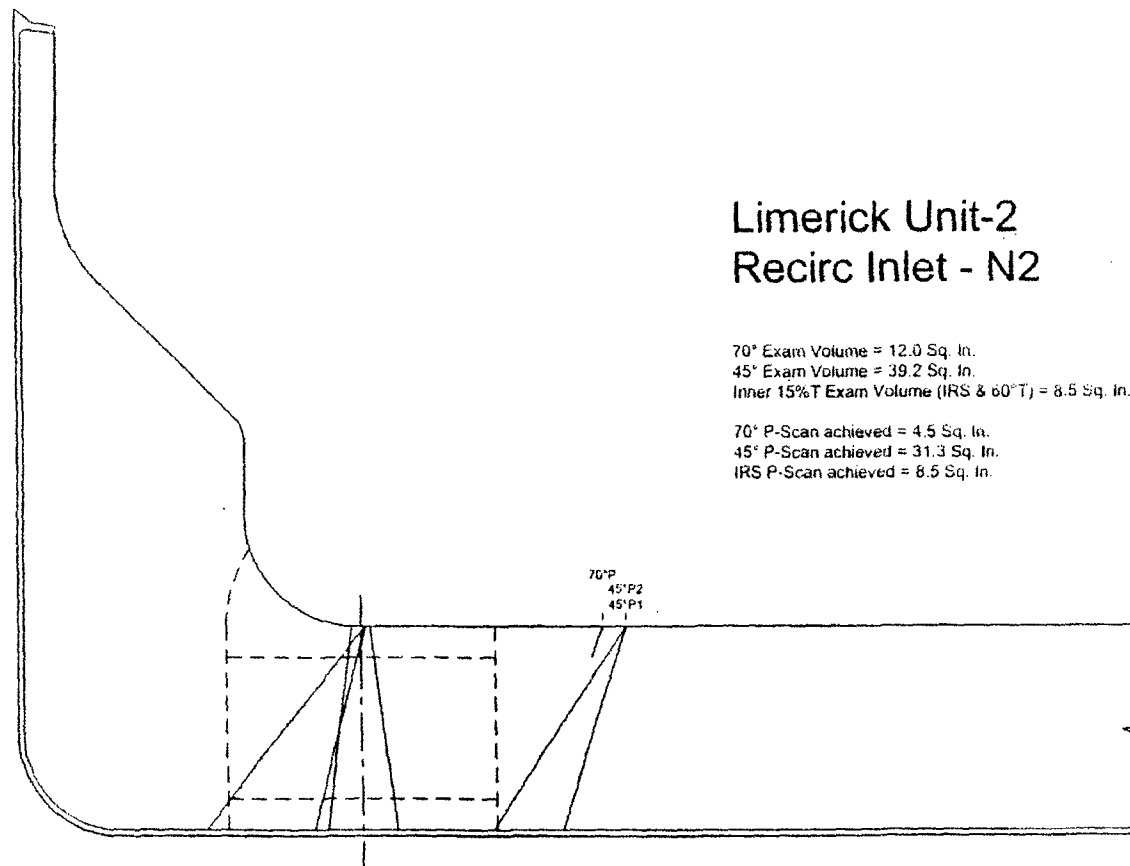
70° T-Scan achieved = 5.8 Sq. In.
45° T-Scan achieved = 33.5 Sq. In.
60° T-Scan achieved = 8.5 Sq. In.



Limerick Unit-2 Recirc Inlet - N2

70° Exam Volume = 12.0 Sq. In.
45° Exam Volume = 39.2 Sq. In.
Inner 15%T Exam Volume (IRS & 60°T) = 8.5 Sq. In.

70° P-Scan achieved = 4.5 Sq. In.
45° P-Scan achieved = 31.3 Sq. In.
IRS P-Scan achieved = 8.5 Sq. In.



Weld: N2C

Summary Number: 705100

Unit: 2

Item Number: B3.90

Outage: 2R07 (Spring 2003)

Coverage: 77%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Automated UT Examination 0°L, 45°S, 60°RL, and 70°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was in accordance with ASME Section XI Appendix VIII as modified by PDI program.

Limitation Description:

The completed examination was limited to 77% Code required coverage due to the design of the reactor vessel nozzle and interference with the N8A nozzle. The following coverage calculation sheet and the drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

Limerick Unit 2 L2RO7

Li2 / N2C

Spring 2003

Weld Length = 360° Exam Volume = 59.7		CODE CROSS-SECTIONAL AREA		TOTAL CODE COVERAGE		
		Required Exam Area Sq. In.	Area Scanned Auto	Percent of Area Auto	Weld Length Auto	Percent Auto
70° T-Scan	A	12	5.8	9.7%	360°	4.9%
45° T-Scan	A	39.2	33.5	56.1%	360°	28.1%
60° T-Scan	A	8.5	8.5	14.2%	299°	5.9%
70° P-Scan	A	12	4.5	7.5%	360°	3.8%
45° P-Scan	A	39.2	31.3	52.4%	360°	26.2%
IRS P-Scan	A	8.5	8.5	14.2%	360°	7.1%
70° T-Scan						
45° T-Scan						
60° T-Scan	B	8.5	6.6	11.1%	61°	0.9%
70° P-Scan						
45° P-Scan						
IRS P-Scan						
70° T-Scan						
45° T-Scan						
60° T-Scan						
70° P-Scan						
45° P-Scan						
IRS P-Scan						

% Total Composite Coverage = 77%

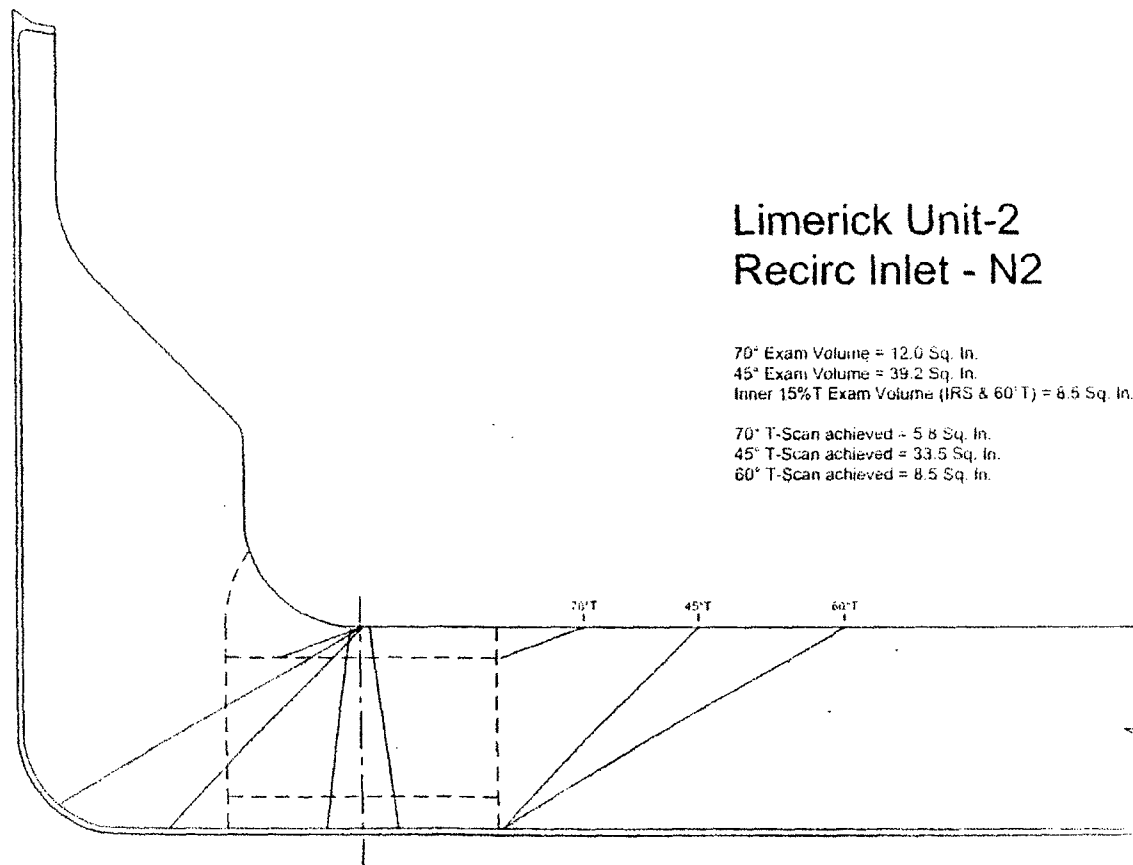
Comments: A - Scanning limited due to nozzle configuration.
B - 60° RL scan limited due to N8A nozzle

Note - Rounding methods may affect calculated values.

Limerick Unit-2 Recirc Inlet - N2

70° Exam Volume = 12.0 Sq. In.
45° Exam Volume = 39.2 Sq. In.
Inner 15°T Exam Volume (IRS & 60°T) = 8.5 Sq. In.

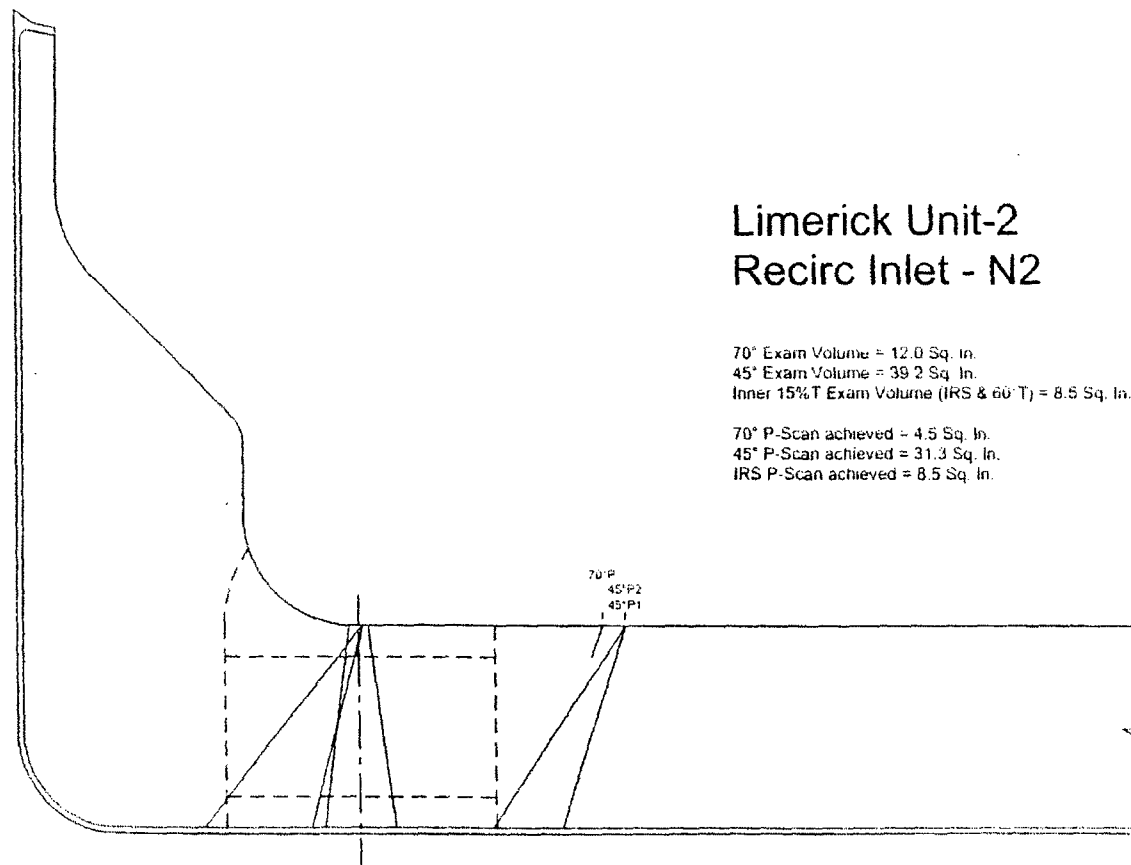
70° T-Scan achieved = 5.8 Sq. In.
45° T-Scan achieved = 33.5 Sq. In.
60° T-Scan achieved = 8.5 Sq. In.



Limerick Unit-2 Recirc Inlet - N2

70° Exam Volume = 12.0 Sq. In.
45° Exam Volume = 39.2 Sq. In.
Inner 15%T Exam Volume (IRS & 60° T) = 8.5 Sq. In.

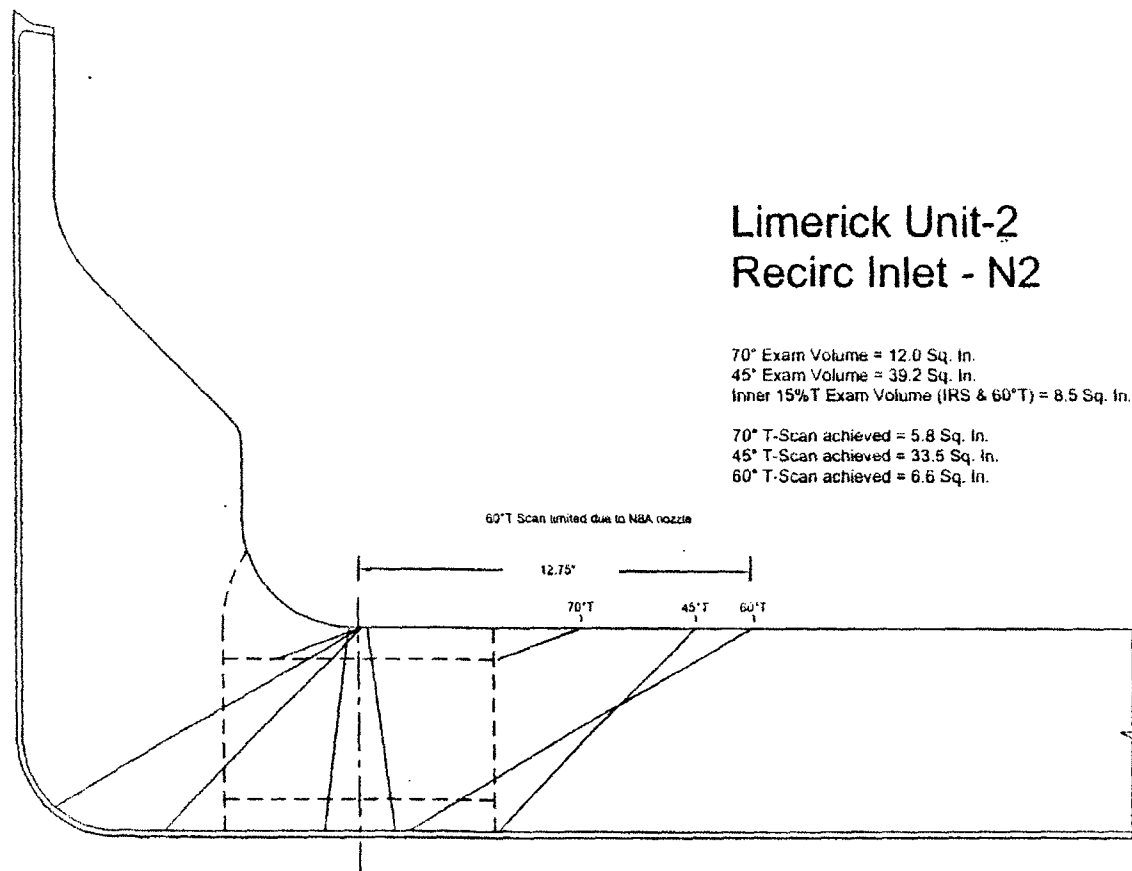
70° P-Scan achieved = 4.5 Sq. In.
45° P-Scan achieved = 31.3 Sq. In.
IRS P-Scan achieved = 8.5 Sq. In.



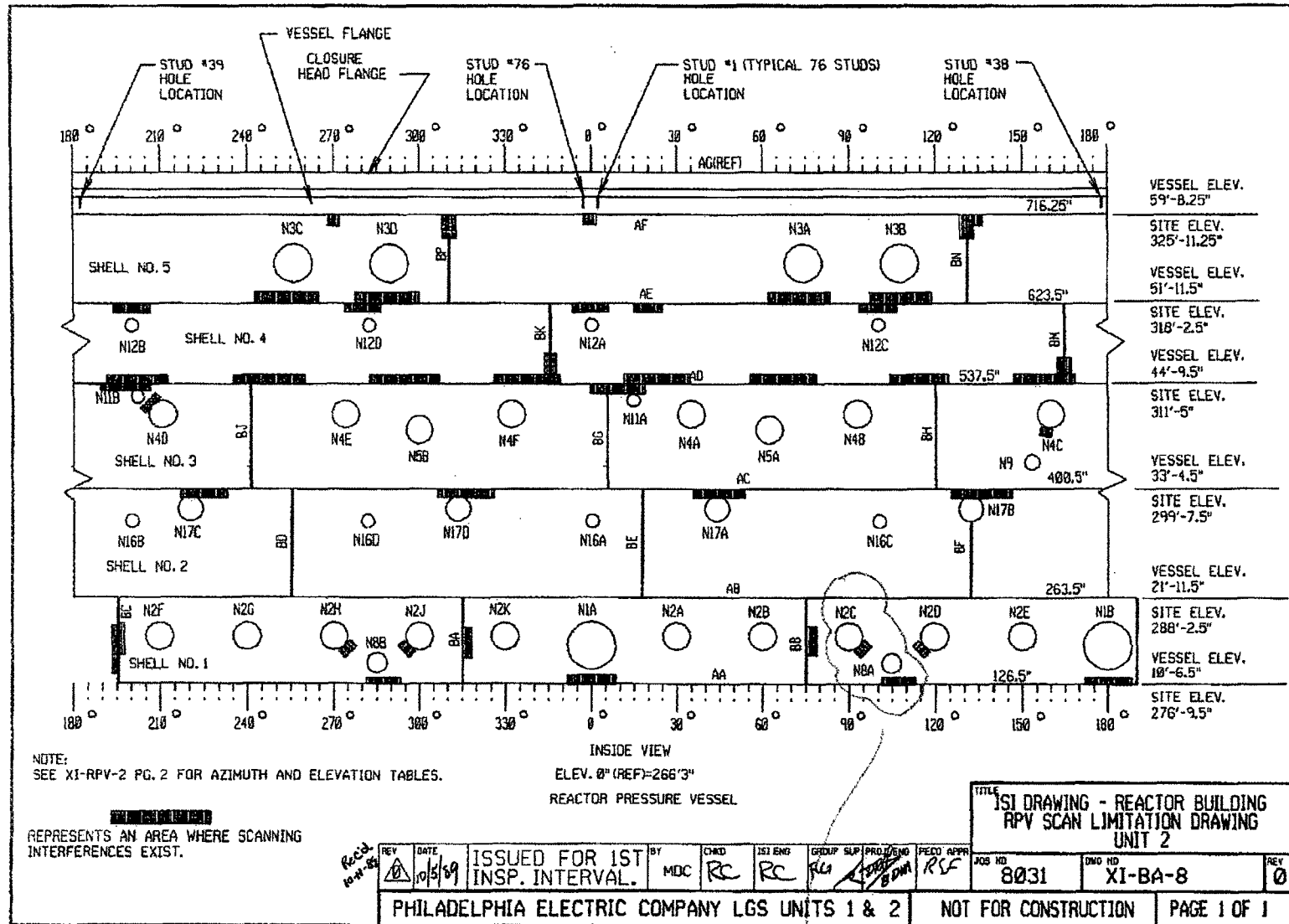
Limerick Unit-2 Recirc Inlet - N2

70° Exam Volume = 12.0 Sq. In.
45° Exam Volume = 39.2 Sq. In.
Inner 15°T Exam Volume (IRS & 60°T) = 8.5 Sq. In.

70° T-Scan achieved = 5.8 Sq. In.
45° T-Scan achieved = 33.5 Sq. In.
60° T-Scan achieved = 6.6 Sq. In.



Unit 2 Vessel Nozzle and Weld Locations



The location of the N18A nozzle limits the examination of the N12C nozzle.

Weld: N2E

Summary Number: 705700

Unit: 2

Item Number: 83.90

Outage: 2R07 (Spring 2003)

Coverage: 77%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Automated UT Examination 0°L, 45°S, 60°RL, and 70°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was in accordance with ASME Section XI Appendix VIII as modified by PDI program.

Limitation Description:

The completed examination was limited to 77% Code required coverage due to the design of the reactor vessel nozzle. The following coverage calculation sheet and the drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

Summary No.: 704200
705700Limerick Unit 2, L2RO7
Weld Li2-N2BE
Spring 2003

Weld Length = 360° Exam Volume = 59.7		CODE CROSS-SECTIONAL AREA		TOTAL CODE COVERAGE		
		Required Exam Area Sq. In.	Area Scanned Auto	Percent of Area Auto	Weld Length Auto	Percent Auto
70° T-Scan	A	12	5.8	9.7%	360°	4.9%
45° T-Scan	A	39.2	33.5	56.1%	360°	28.1%
60° T-Scan	A	8.5	8.5	14.2%	360°	7.1%
70° P-Scan	A	12	4.5	7.5%	360°	3.8%
45° P-Scan	A	39.2	31.3	52.4%	360°	26.2%
IRS P-Scan	A	8.5	8.5	14.2%	360°	7.1%
70° T-Scan						
45° T-Scan						
60° T-Scan						
70° P-Scan						
45° P-Scan						
IRS P-Scan						
70° T-Scan						
45° T-Scan						
60° T-Scan						
70° P-Scan						
45° P-Scan						
IRS P-Scan						

% Total Composite Coverage = 77%

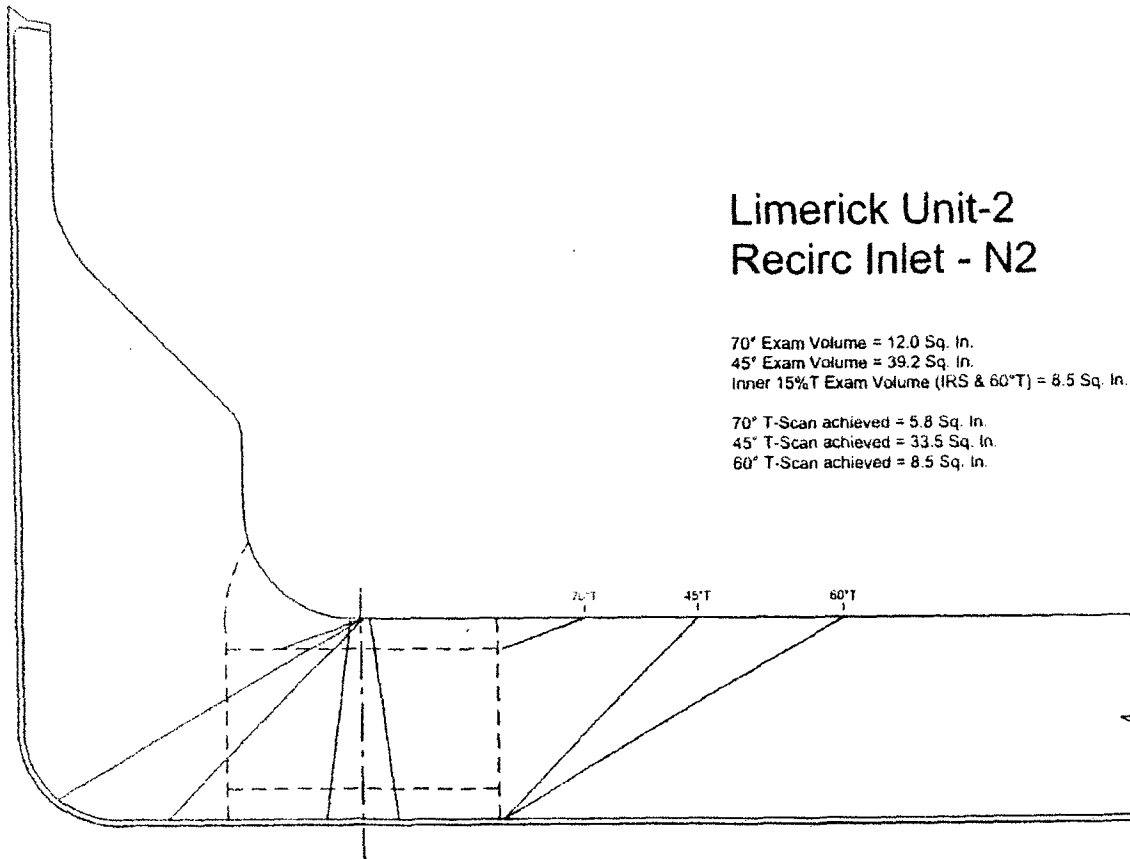
Comments: A - Examined 360°. Scanning limited due to nozzle configuration.

Note - Rounding methods may affect calculated values.

Limerick Unit-2 Recirc Inlet - N2

70° Exam Volume = 12.0 Sq. In.
45° Exam Volume = 39.2 Sq. In.
Inner 15%T Exam Volume (IRS & 60°T) = 8.5 Sq. In.

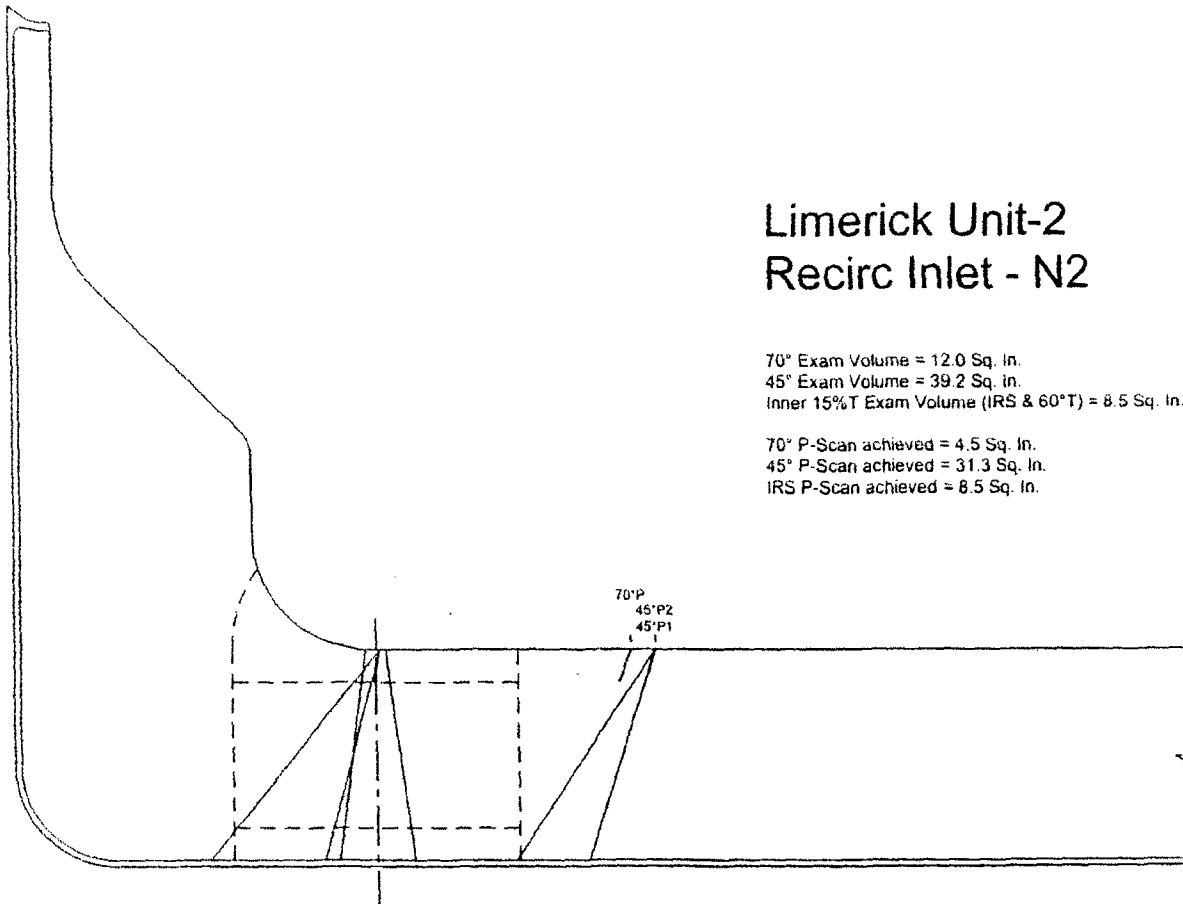
70° T-Scan achieved = 5.8 Sq. In.
45° T-Scan achieved = 33.5 Sq. In.
60° T-Scan achieved = 8.5 Sq. In.



Limerick Unit-2 Recirc Inlet - N2

70° Exam Volume = 12.0 Sq. In.
45° Exam Volume = 39.2 Sq. In.
Inner 15°T Exam Volume (IRS & 60°T) = 8.5 Sq. In.

70° P-Scan achieved = 4.5 Sq. In.
45° P-Scan achieved = 31.3 Sq. In.
IRS P-Scan achieved = 8.5 Sq. In.



Weld: N2F

Summary Number: 706000

Unit: 2

Item Number: B3.90

Outage: 2R07 (Spring 2003)

Coverage: 77%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Automated UT Examination 0°L, 45°S, 60°RL, and 70°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was in accordance with ASME Section XI Appendix VIII as modified by PDI program.

Limitation Description:

The completed examination was limited to 77% Code required coverage due to the design of the reactor vessel nozzle. The following coverage calculation sheet and the drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

Limerick Unit 2 L2RO7
Li2 / N2F
Spring 2003

Weld Length = 360° Exam Volume = 59.7		CODE CROSS-SECTIONAL AREA		TOTAL CODE COVERAGE		
		Required Exam Area Sq. In.	Area Scanned Auto	Percent of Area Auto	Weld Length Auto	Percent Auto
70° T-Scan	A	12	5.8	9.7%	360°	4.9%
45° T-Scan	A	39.2	33.5	56.1%	360°	28.1%
60° T-Scan	A	8.5	8.5	14.2%	360°	7.1%
70° P-Scan	A	12	4.5	7.5%	360°	3.8%
45° P-Scan	A	39.2	31.3	52.4%	360°	26.2%
IRS P-Scan	A	8.5	8.5	14.2%	360°	7.1%
70° T-Scan						
45° T-Scan						
60° T-Scan						
70° P-Scan						
45° P-Scan						
IRS P-Scan						
70° T-Scan						
45° T-Scan						
60° T-Scan						
70° P-Scan						
45° P-Scan						
IRS P-Scan						

% Total Composite Coverage = 77%

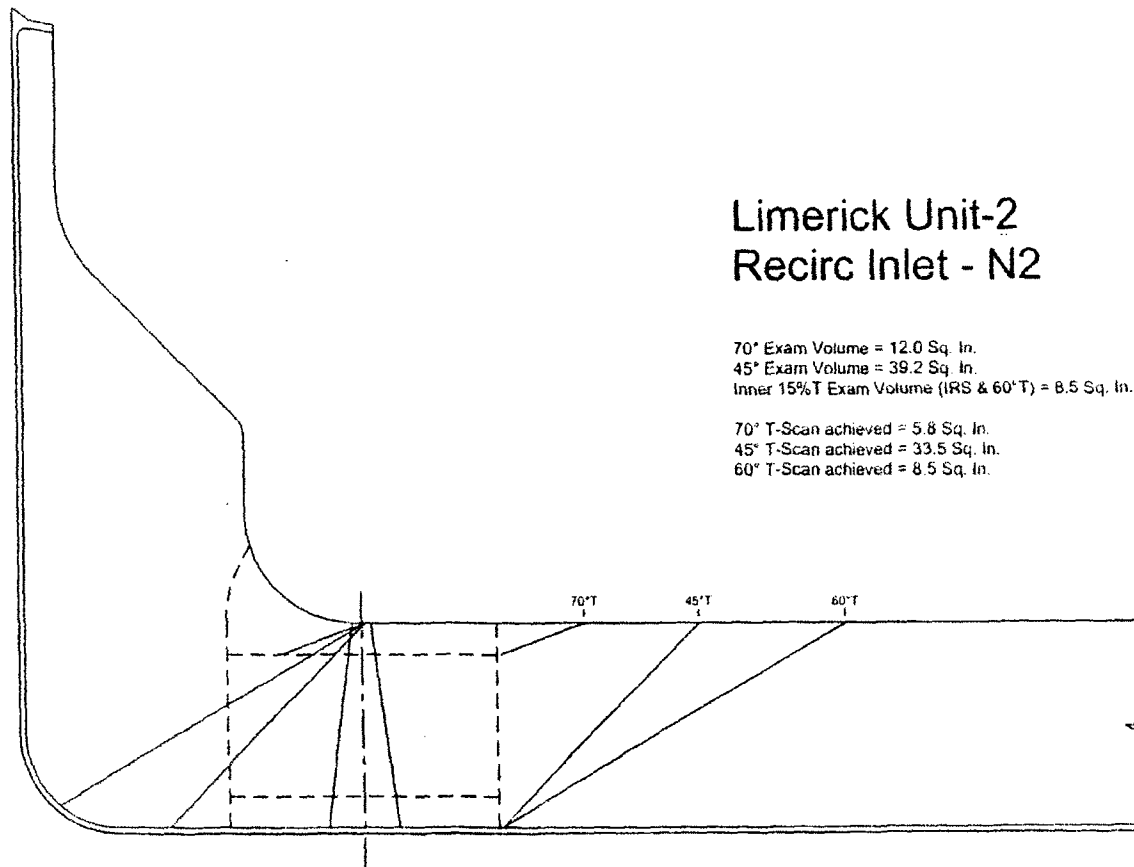
Comments: A - Examined 360°. Scanning limited due to nozzle configuration.

Note - Rounding methods may affect calculated values.

Limerick Unit-2 Recirc Inlet - N2

70° Exam Volume = 12.0 Sq. In.
45° Exam Volume = 39.2 Sq. In.
Inner 15°T Exam Volume (IRS & 60°T) = 8.5 Sq. In.

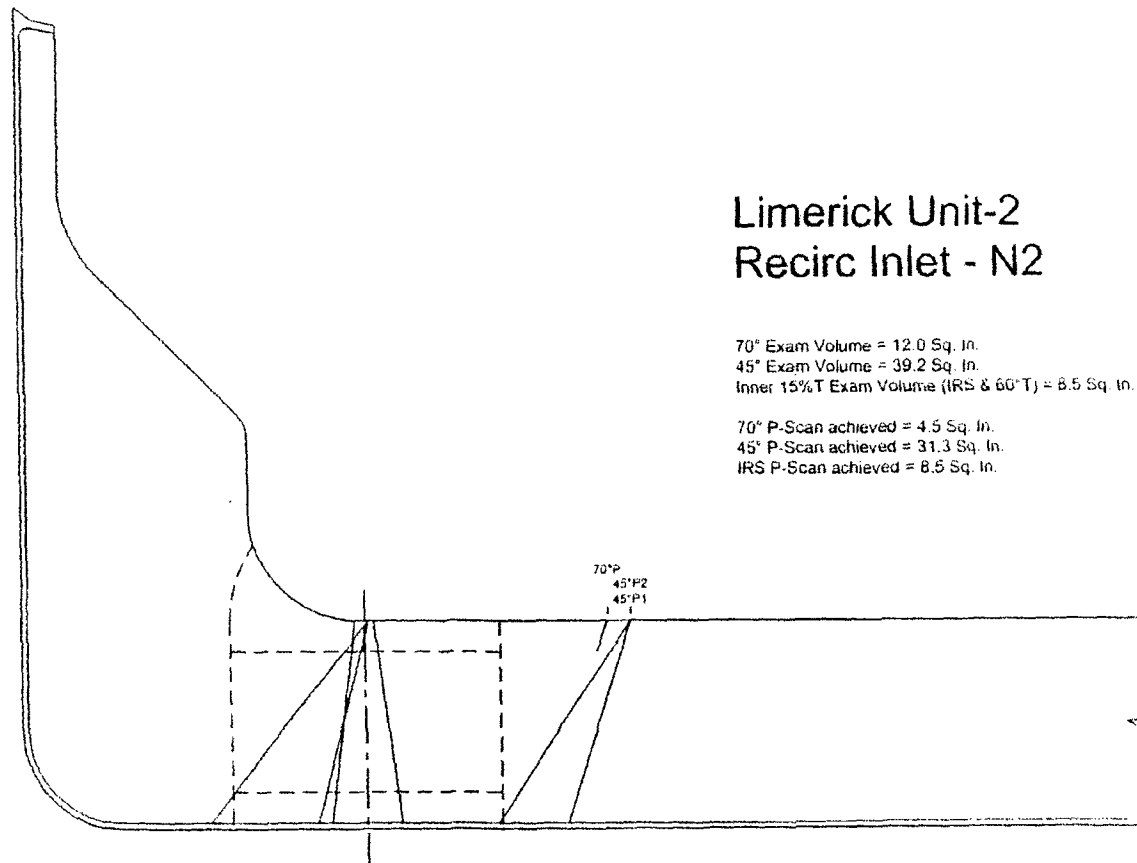
70° T-Scan achieved = 5.8 Sq. In.
45° T-Scan achieved = 33.5 Sq. In.
60° T-Scan achieved = 8.5 Sq. In.



Limerick Unit-2 Recirc Inlet - N2

70° Exam Volume = 12.0 Sq. In.
45° Exam Volume = 39.2 Sq. In.
Inner 15°T Exam Volume (IRS & 60°T) = 8.5 Sq. In.

70° P-Scan achieved = 4.5 Sq. In.
45° P-Scan achieved = 31.3 Sq. In.
IRS P-Scan achieved = 8.5 Sq. In.



Weld: N2G

Summary Number: 706300

Unit: 2

Item Number: B3.90

Outage: 2R07 (Spring 2003)

Coverage: 77%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Automated UT Examination 0°L, 45°S, 60°RL, and 70°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was in accordance with ASME Section XI Appendix VIII as modified by PDI program.

Limitation Description:

The completed examination was limited to 77% Code required coverage due to the design of the reactor vessel nozzle. The following coverage calculation sheet and the drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

Limerick Unit 2, L2RO7
Weld Li2-N2G
Spring 2003

Weld Length = 360° Exam Volume = 59.7		CODE CROSS-SECTIONAL AREA		TOTAL CODE COVERAGE		
		Required Exam Area Sq. In.	Area Scanned Auto	Percent of Area Auto	Weld Length Auto	Percent Auto
70° T-Scan	A	12	5.8	9.7%	360°	4.9%
45° T-Scan	A	39.2	33.5	56.1%	360°	28.1%
60° T-Scan	A	8.5	8.5	14.2%	360°	7.1%
70° P-Scan	A	12	4.5	7.5%	360°	3.8%
45° P-Scan	A	39.2	31.3	52.4%	360°	26.2%
IRS P-Scan	A	8.5	8.5	14.2%	360°	7.1%
70° T-Scan						
45° T-Scan						
60° T-Scan						
70° P-Scan						
45° P-Scan						
IRS P-Scan						
70° T-Scan						
45° T-Scan						
60° T-Scan						
70° P-Scan						
45° P-Scan						
IRS P-Scan						

% Total Composite Coverage = 77%

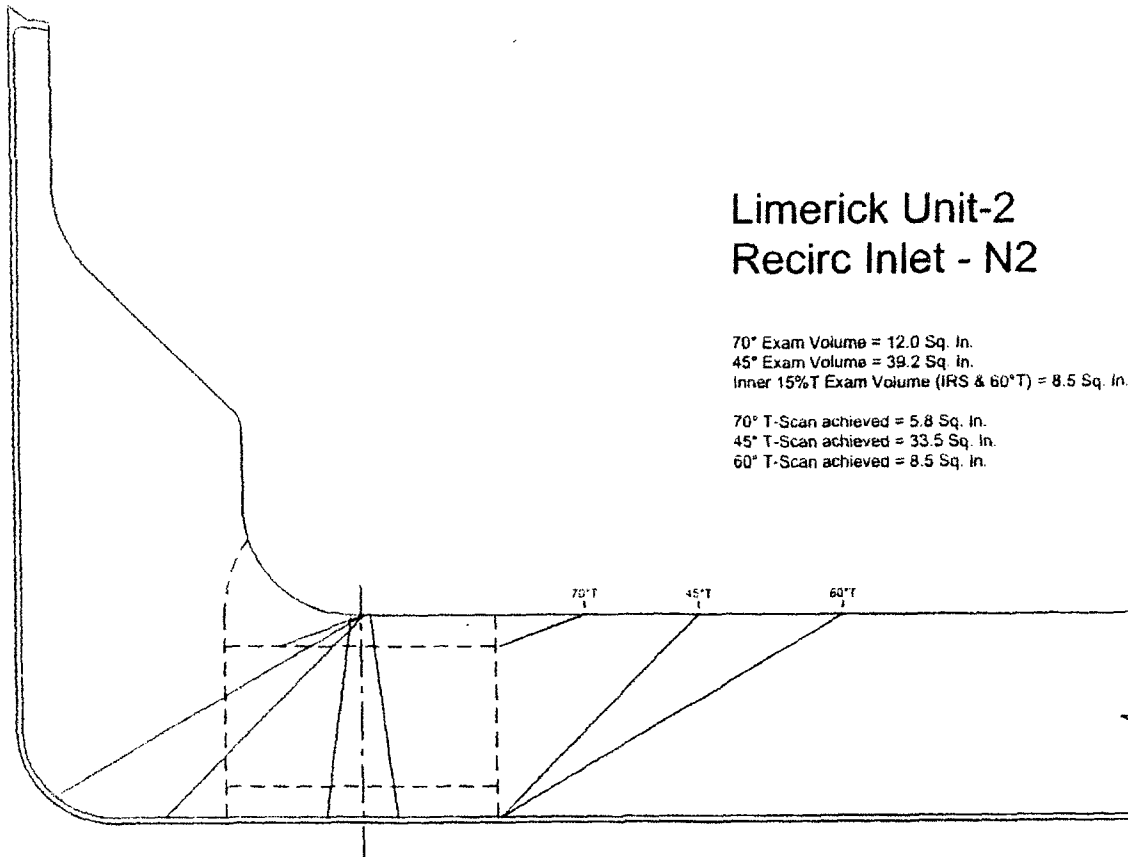
Comments: A - Examined 360°. Scanning limited due to nozzle configuration.

Note - Rounding methods may affect calculated values.

Limerick Unit-2 Recirc Inlet - N2

70° Exam Volume = 12.0 Sq. In.
45° Exam Volume = 39.2 Sq. In.
Inner 15°T Exam Volume (IRS & 60°T) = 8.5 Sq. In.

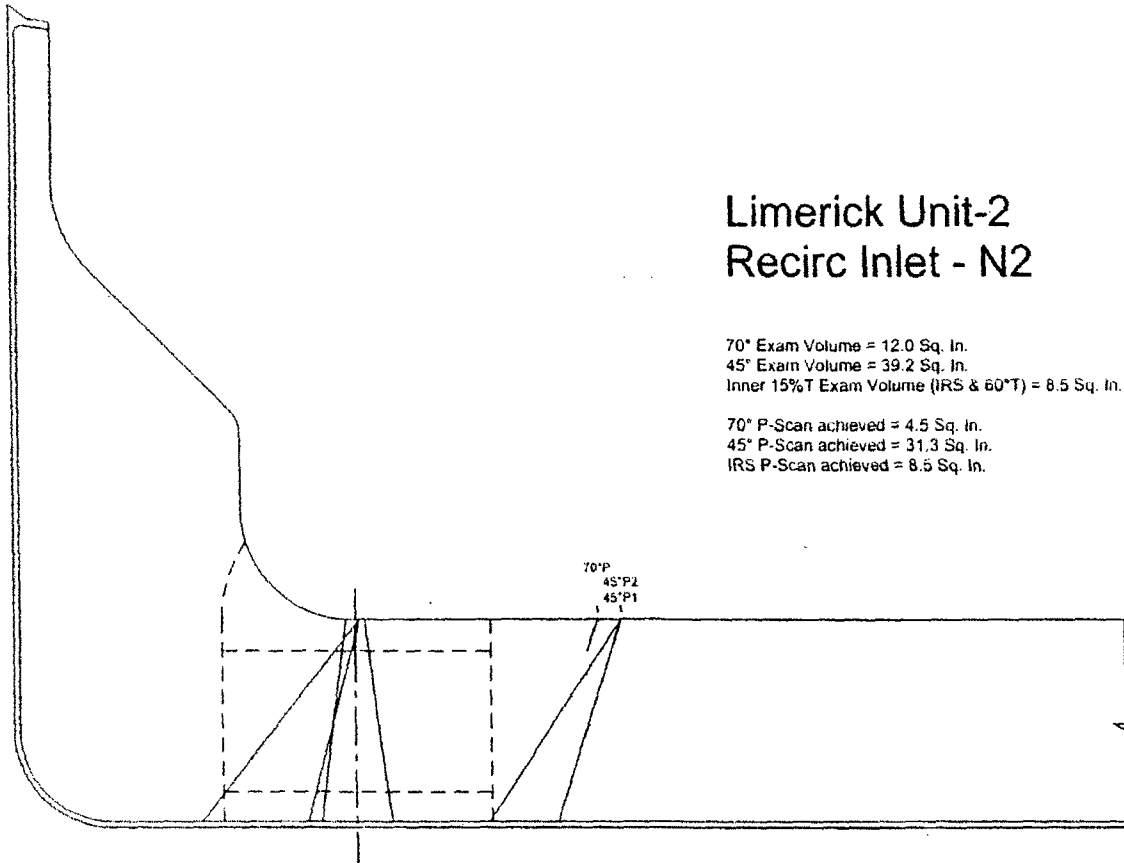
70° T-Scan achieved = 5.8 Sq. In.
45° T-Scan achieved = 33.5 Sq. In.
60° T-Scan achieved = 8.5 Sq. In.



Limerick Unit-2 Recirc Inlet - N2

70° Exam Volume = 12.0 Sq. In.
45° Exam Volume = 39.2 Sq. In.
Inner 15°T Exam Volume (IRS & 60°T) = 8.5 Sq. In.

70° P-Scan achieved = 4.5 Sq. In.
45° P-Scan achieved = 31.3 Sq. In.
IRS P-Scan achieved = 8.5 Sq. In.



Weld: N3A

Summary Number: 707500

Unit: 2

Item Number: B3.90

Outage: 2R07 (Spring 2003)

Coverage: 77%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Automated UT Examination 0°L, 45°S, 60°RL, and 70°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was in accordance with ASME Section XI Appendix VIII as modified by PDI program.

Limitation Description:

The completed examination was limited to 77% Code required coverage due to the design of the reactor vessel nozzle. The following coverage calculation sheet and the drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

Limerick Unit 2 L2RO7
N3A-N/S
Spring 2003

Weld Length = 360° Exam Volume = 75		CODE CROSS-SECTIONAL AREA		TOTAL CODE COVERAGE		
		Required Exam Area Sq. In.	Area Scanned Auto	Percent of Area Auto	Weld Length Auto	Percent Auto
70° T-Scan	A	13.9	6.2	8.3%	360°	4.1%
45° T-Scan	A	50.5	42.8	57.1%	360°	28.5%
60° T-Scan	A	10.6	10.6	14.1%	360°	7.1%
70° P-Scan	A	13.9	5.5	7.3%	360°	3.7%
45° P-Scan	A	50.5	40.5	54.0%	360°	27.0%
IRS P-Scan	A	10.6	10.6	14.1%	360°	7.1%
70° T-Scan						
45° T-Scan						
60° T-Scan						
70° P-Scan						
45° P-Scan						
IRS P-Scan						
70° T-Scan						
45° T-Scan						
60° T-Scan						
70° P-Scan						
45° P-Scan						
IRS P-Scan						

% Total Composite Coverage = 77%

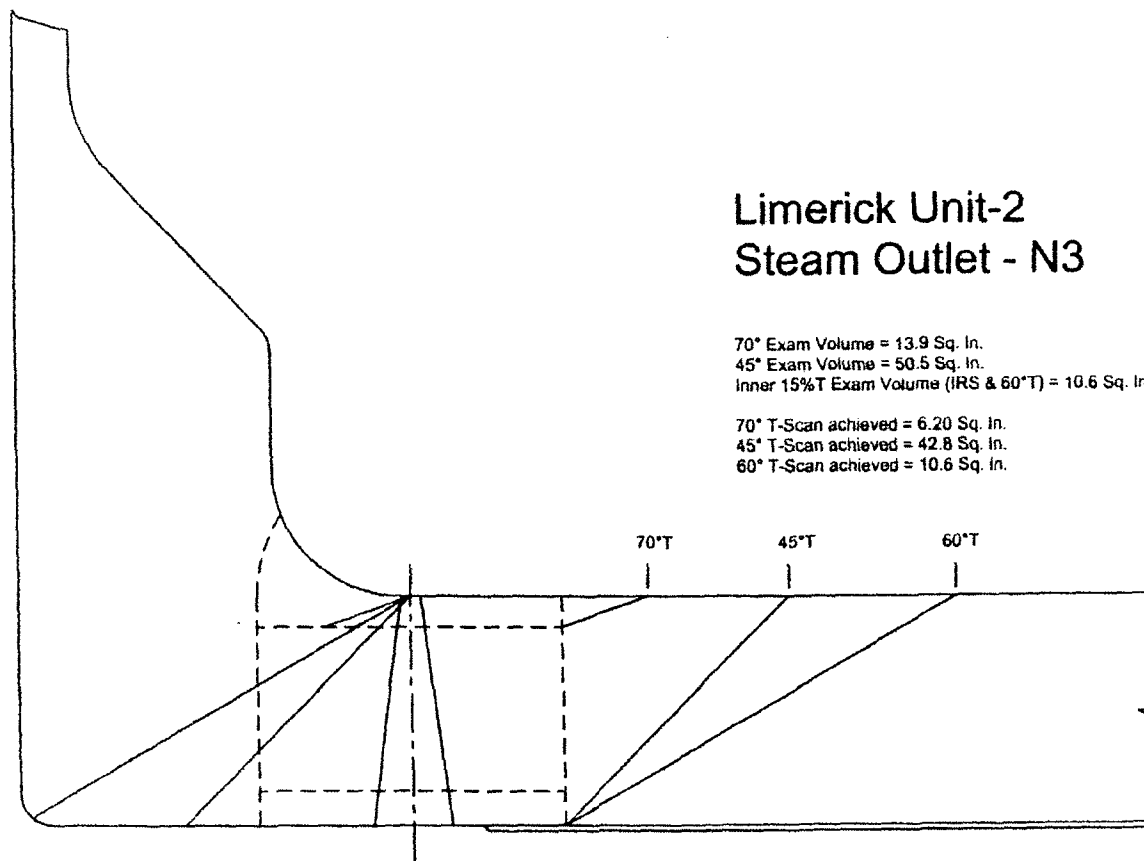
Comments: A - Examined 360°. Scanning limited due to nozzle configuration.

Note - Rounding methods may make calculated values appear in error.

Limerick Unit-2 Steam Outlet - N3

70° Exam Volume = 13.9 Sq. In.
45° Exam Volume = 50.5 Sq. In.
Inner 15°T Exam Volume (IRS & 60°T) = 10.6 Sq. In.

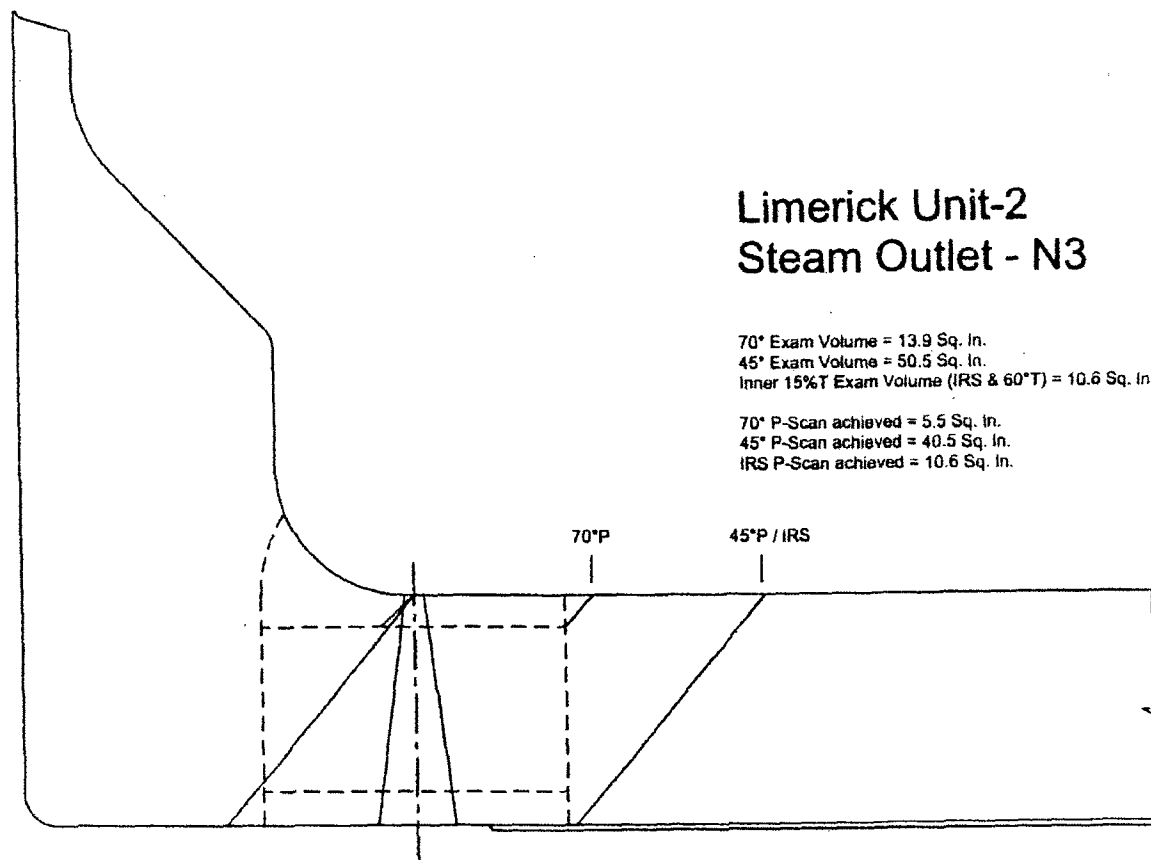
70° T-Scan achieved = 6.20 Sq. In.
45° T-Scan achieved = 42.8 Sq. In.
60° T-Scan achieved = 10.6 Sq. In.



Limerick Unit-2 Steam Outlet - N3

70° Exam Volume = 13.9 Sq. In.
45° Exam Volume = 50.5 Sq. In.
Inner 15°T Exam Volume (IRS & 60°T) = 10.6 Sq. In.

70° P-Scan achieved = 5.5 Sq. In.
45° P-Scan achieved = 40.5 Sq. In.
IRS P-Scan achieved = 10.6 Sq. In.



Weld: N3B

Summary Number: 707800

Unit: 2

Item Number: B3.90

Outage: 2R07 (Spring 2003)

Coverage: 77%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Automated UT Examination 0°L, 45°S, 60°RL, and 70°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was in accordance with ASME Section XI Appendix VIII as modified by PDI program.

Limitation Description:

The completed examination was limited to 77% Code required coverage due to the design of the reactor vessel nozzle. The following coverage calculation sheet and the drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

Summary No.: 707800

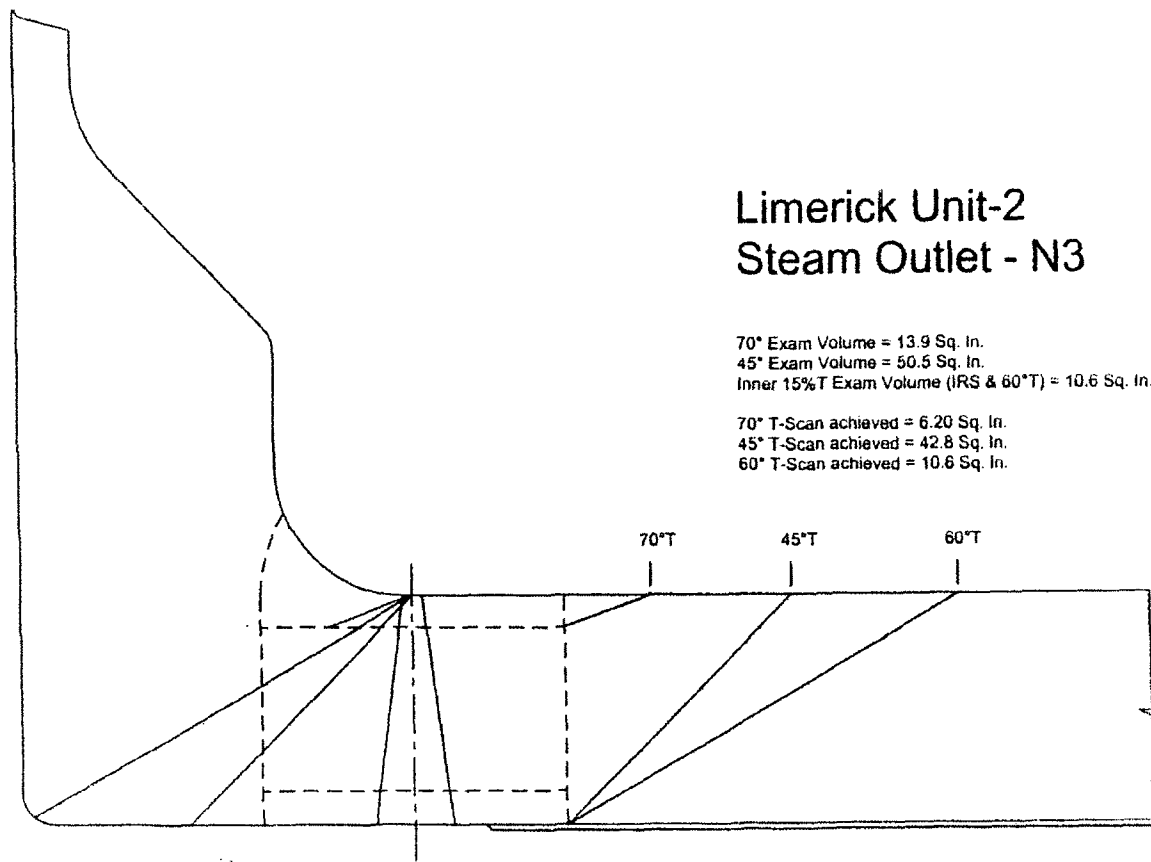
Limerick Unit 2 L2RO7
N3B-N/S
Spring 2003

Weld Length = 360° Exam Volume = 75		CODE CROSS-SECTIONAL AREA		TOTAL CODE COVERAGE		
		Required Exam Area Sq. In.	Area Scanned Auto	Percent of Area Auto	Weld Length Auto	Percent Auto
70° T-Scan	A	13.9	6.2	8.3%	360°	4.1%
45° T-Scan	A	50.5	42.8	57.1%	360°	28.5%
60° T-Scan	A	10.6	10.6	14.1%	360°	7.1%
70° P-Scan	A	13.9	5.5	7.3%	360°	3.7%
45° P-Scan	A	50.5	40.5	54.0%	360°	27.0%
IRS P-Scan	A	10.6	10.6	14.1%	360°	7.1%
70° T-Scan						
45° T-Scan						
60° T-Scan						
70° P-Scan						
45° P-Scan						
IRS P-Scan						
70° T-Scan						
45° T-Scan						
60° T-Scan						
70° P-Scan						
45° P-Scan						
IRS P-Scan						

% Total Composite Coverage = 77%

Comments: A - Examined 360°. Scanning limited due to nozzle configuration.

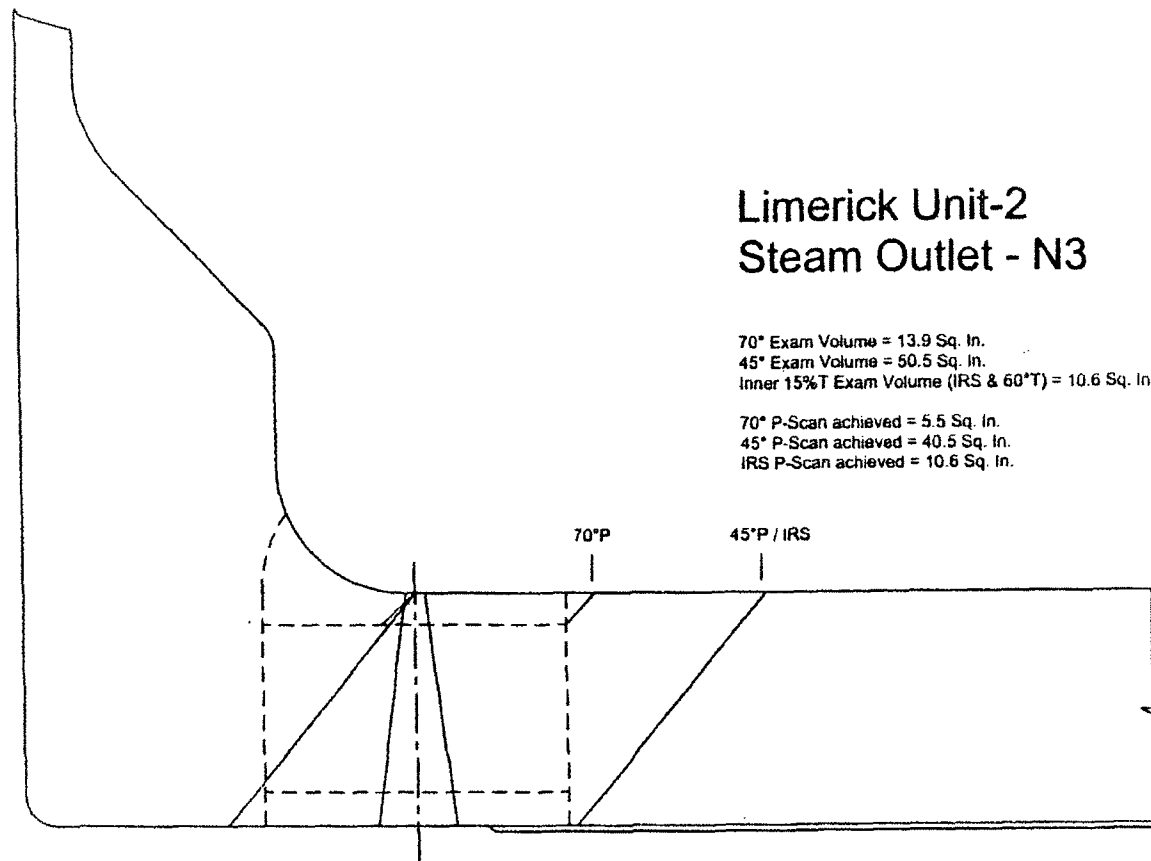
Note - Rounding methods may make calculated values appear in error.



Limerick Unit-2 Steam Outlet - N3

70° Exam Volume = 13.9 Sq. In.
45° Exam Volume = 50.5 Sq. In.
Inner 15%T Exam Volume (IRS & 60°T) = 10.6 Sq. In.

70° P-Scan achieved = 5.5 Sq. In.
45° P-Scan achieved = 40.5 Sq. In.
IRS P-Scan achieved = 10.6 Sq. In.



Weld: N4C

Summary Number: 705100

Unit: 2

Item Number: B3.90

Outage: 2R07 (Spring 2003)

Coverage: 77%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Automated UT Examination 0°L, 45°S, 60°RL, and 70°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was in accordance with ASME Section XI Appendix VIII as modified by PDI program.

Limitation Description:

The completed examination was limited to 77% Code required coverage due to the design of the reactor vessel nozzle and the location of the N9 nozzle. The following coverage calculation sheet and the drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

Limerick Unit 2
Weld Li 2-N4DC
Spring 2003

Weld Length = 360° Exam Volume = 59.7		CODE CROSS-SECTIONAL AREA		TOTAL CODE COVERAGE		
		Required Exam Area Sq. In.	Area Scanned Auto	Percent of Area Auto	Weld Length Auto	Percent Auto
70° T-Scan	A	12	5.8	9.7%	318°	4.3%
45° T-Scan	A	39.2	33.5	56.1%	318°	24.8%
60° T-Scan	A	8.5	8.5	14.2%	318°	6.3%
70° P-Scan	A	12	4.5	7.5%	318°	3.3%
45° P-Scan	A	39.2	31.3	52.4%	318°	23.2%
IRS P-Scan	A	8.5	8.5	14.2%	318°	6.3%
70° T-Scan	B	12	5.8	9.7%	42°	0.6%
45° T-Scan	B	39.2	33.5	56.1%	42°	3.3%
60° T-Scan	B	8.5	7.1	11.9%	42°	0.7%
70° P-Scan	B	12	4.5	7.5%	42°	0.4%
45° P-Scan	B	39.2	31.3	52.4%	42°	3.1%
IRS P-Scan	B	8.5	8.5	14.2%	42°	0.8%
70° T-Scan						
45° T-Scan						
60° T-Scan						
70° P-Scan						
45° P-Scan						
IRS P-Scan						

% Total Composite Coverage = 77%

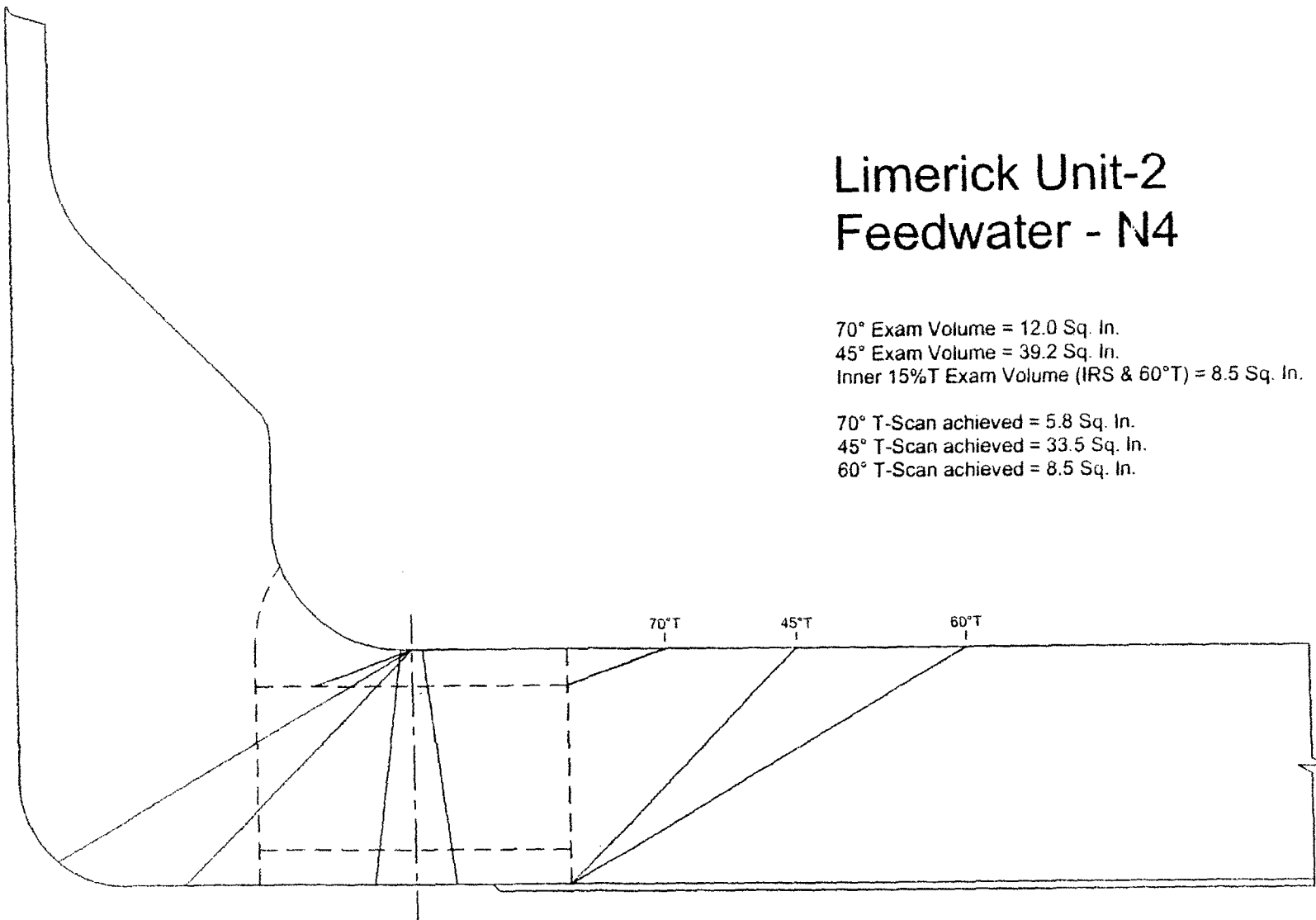
Comments: A - Examined 360°. Scanning limited due to nozzle configuration and N9 nozzle.
B - Examination area was limited due to N9 nozzle.

Note - Rounding methods may make calculated values appear in error.

Limerick Unit-2 Feedwater - N4

70° Exam Volume = 12.0 Sq. In.
45° Exam Volume = 39.2 Sq. In.
Inner 15%T Exam Volume (IRS & 60°T) = 8.5 Sq. In.

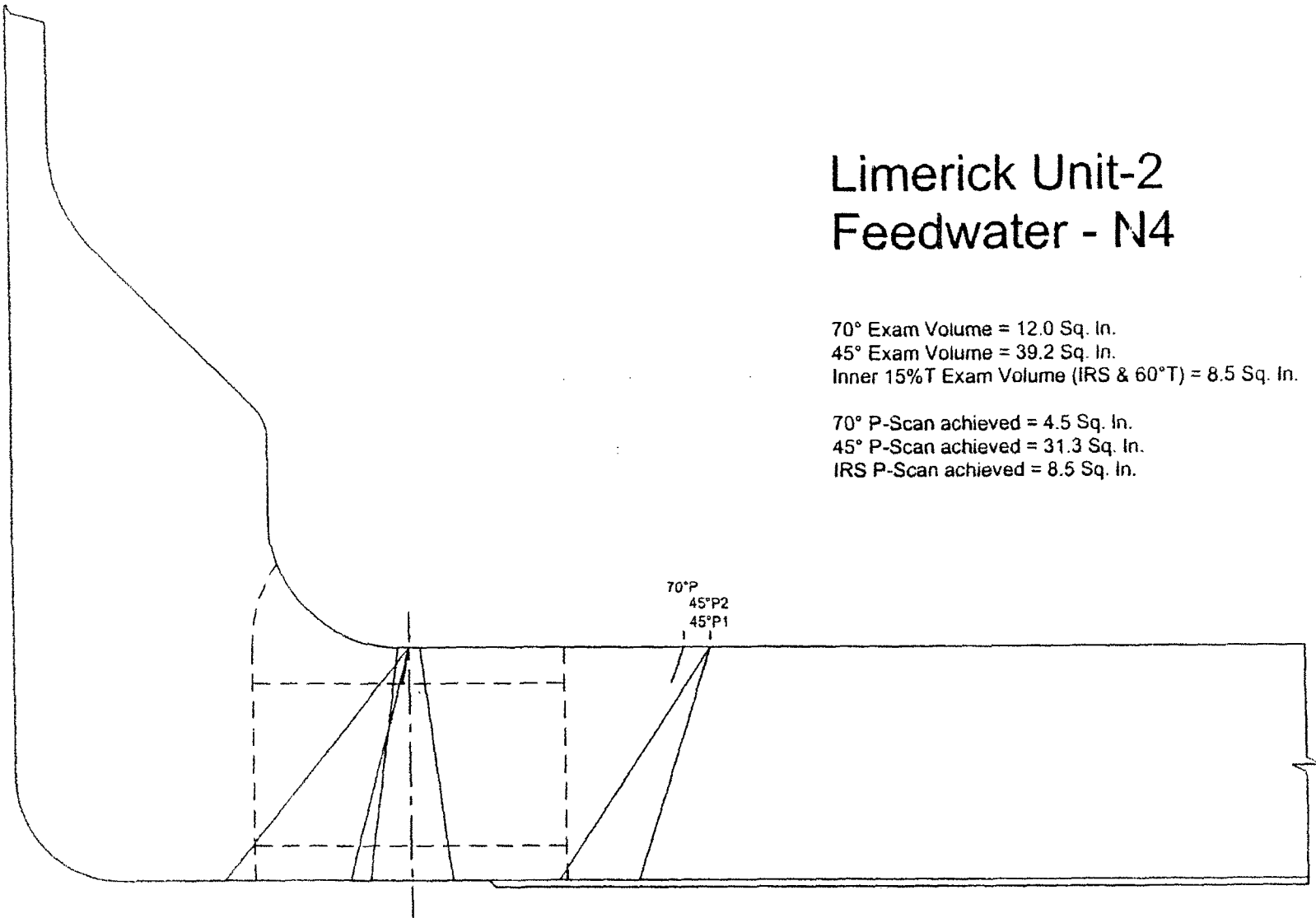
70° T-Scan achieved = 5.8 Sq. In.
45° T-Scan achieved = 33.5 Sq. In.
60° T-Scan achieved = 8.5 Sq. In.



Limerick Unit-2 Feedwater - N4

70° Exam Volume = 12.0 Sq. In.
45° Exam Volume = 39.2 Sq. In.
Inner 15%T Exam Volume (IRS & 60°T) = 8.5 Sq. In.

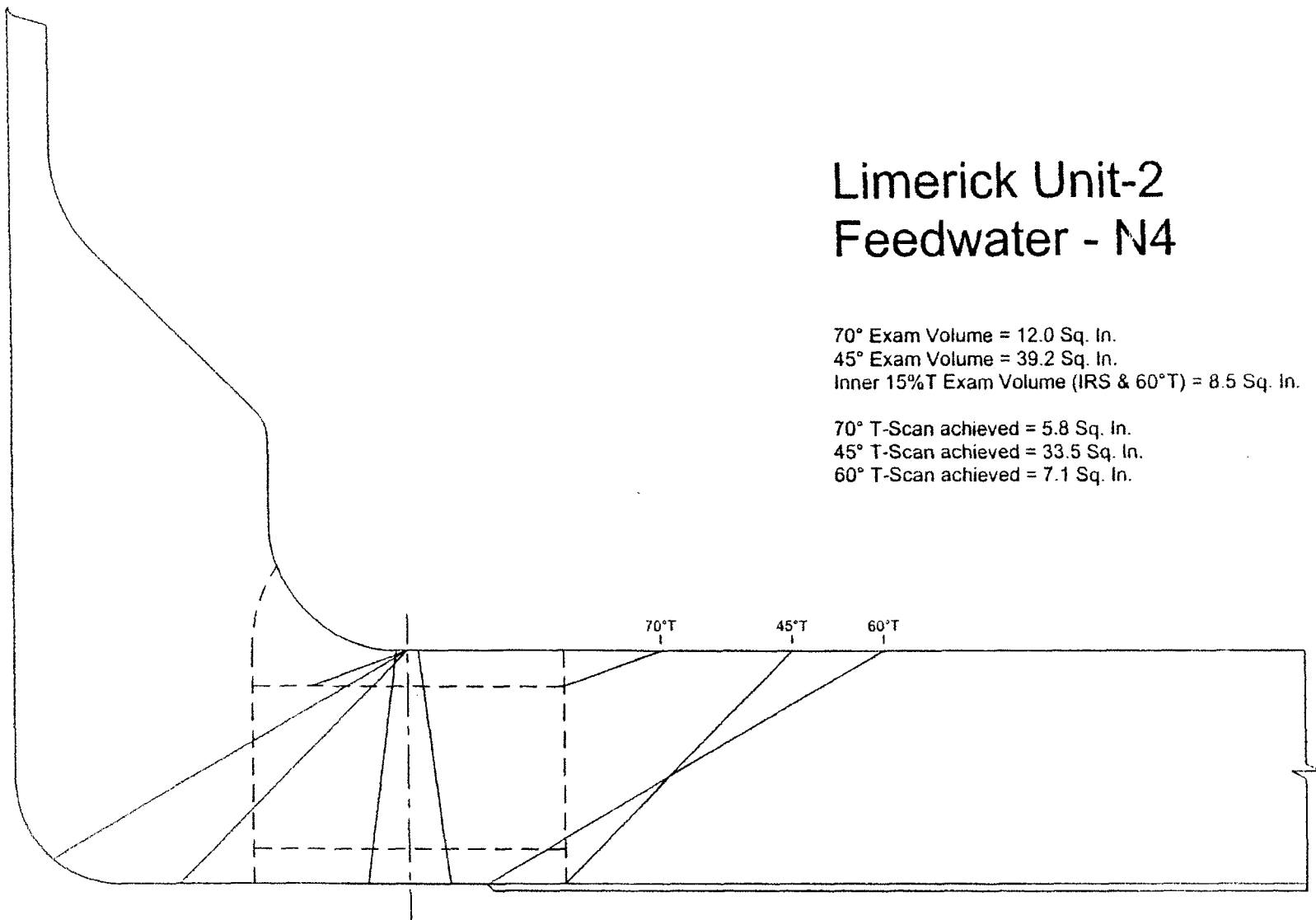
70° P-Scan achieved = 4.5 Sq. In.
45° P-Scan achieved = 31.3 Sq. In.
IRS P-Scan achieved = 8.5 Sq. In.



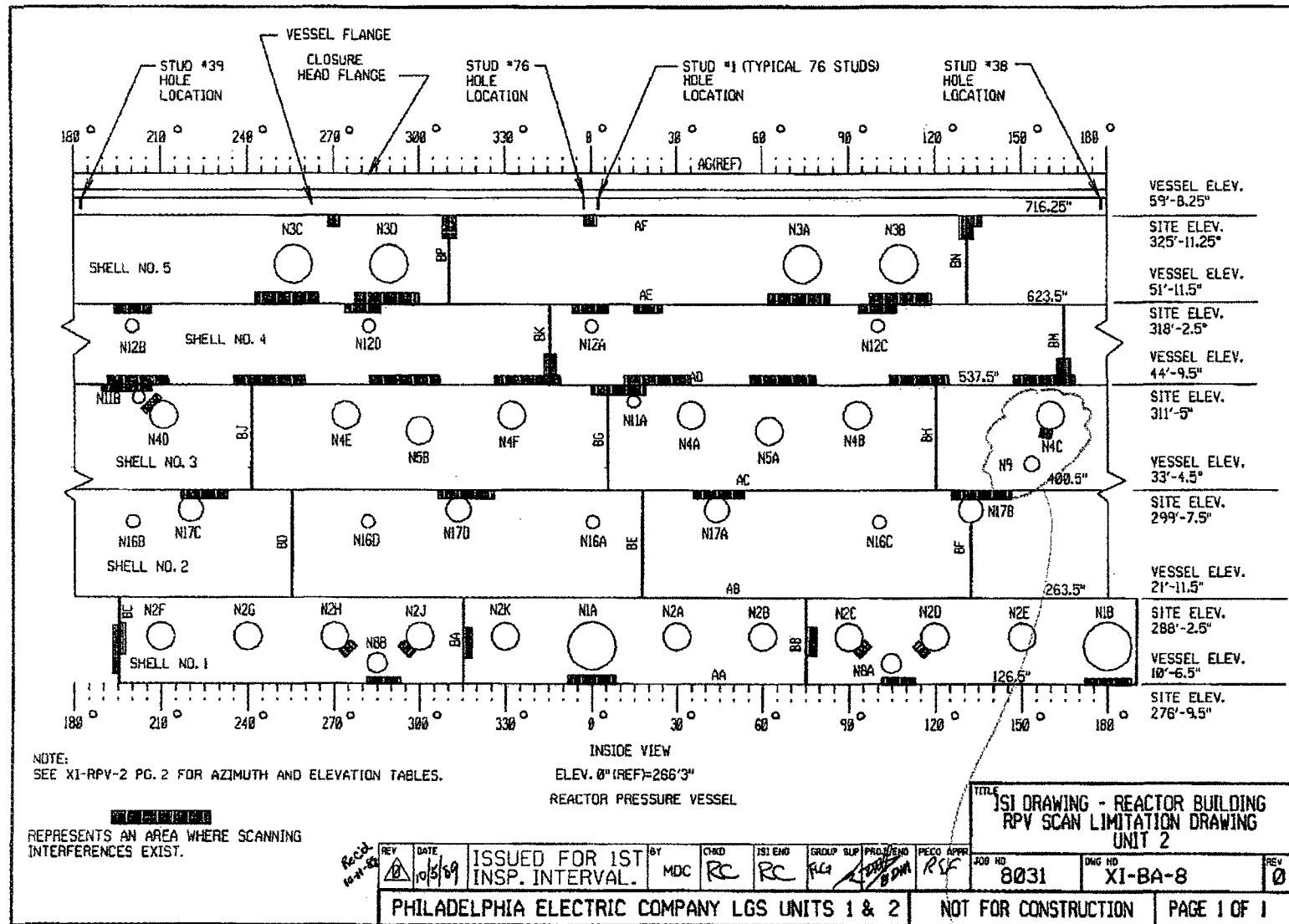
Limerick Unit-2 Feedwater - N4

70° Exam Volume = 12.0 Sq. In.
45° Exam Volume = 39.2 Sq. In.
Inner 15%T Exam Volume (IRS & 60°T) = 8.5 Sq. In.

70° T-Scan achieved = 5.8 Sq. In.
45° T-Scan achieved = 33.5 Sq. In.
60° T-Scan achieved = 7.1 Sq. In.



Unit 2 Vessel Nozzle and Weld Locations



The location of the N1P nozzle limits the examination of the N1Q nozzle

Weld: N4D

Summary Number: 709600

Unit: 2

Item Number: B3.90

Outage: 2R07 (Spring 2003)

Coverage: 66%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Automated UT Examination 0°L, 45°S, 60°RL, and 70°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was in accordance with ASME Section XI Appendix VIII as modified by PDI program.

Limitation Description:

The completed examination was limited to 66% Code required coverage due to the design of the reactor vessel nozzle and the location of the N11B nozzle. The following coverage calculation sheet and the drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

Limerick Unit 2
Weld Li 2-N4D
Spring 2003

Weld Length = 360° Exam Volume = 59.7		CODE CROSS-SECTIONAL AREA		TOTAL CODE COVERAGE		
		Required Exam Area Sq. In.	Area Scanned Auto	Percent of Area Auto	Weld Length Auto	Percent Auto
70° T-Scan	A	12	5.8	9.7%	306°	4.1%
45° T-Scan	A	39.2	33.5	56.1%	306°	23.9%
60° T-Scan	A	8.5	8.5	14.2%	306°	6.1%
70° P-Scan	A	12	4.5	7.5%	306°	3.2%
45° P-Scan	A	39.2	31.3	52.4%	306°	22.3%
IRS P-Scan	A	8.5	8.5	14.2%	306°	6.1%
70° T-Scan						
45° T-Scan						
60° T-Scan						
70° P-Scan						
45° P-Scan						
IRS P-Scan						
70° T-Scan						
45° T-Scan						
60° T-Scan						
70° P-Scan						
45° P-Scan						
IRS P-Scan						

% Total Composite Coverage = 66%

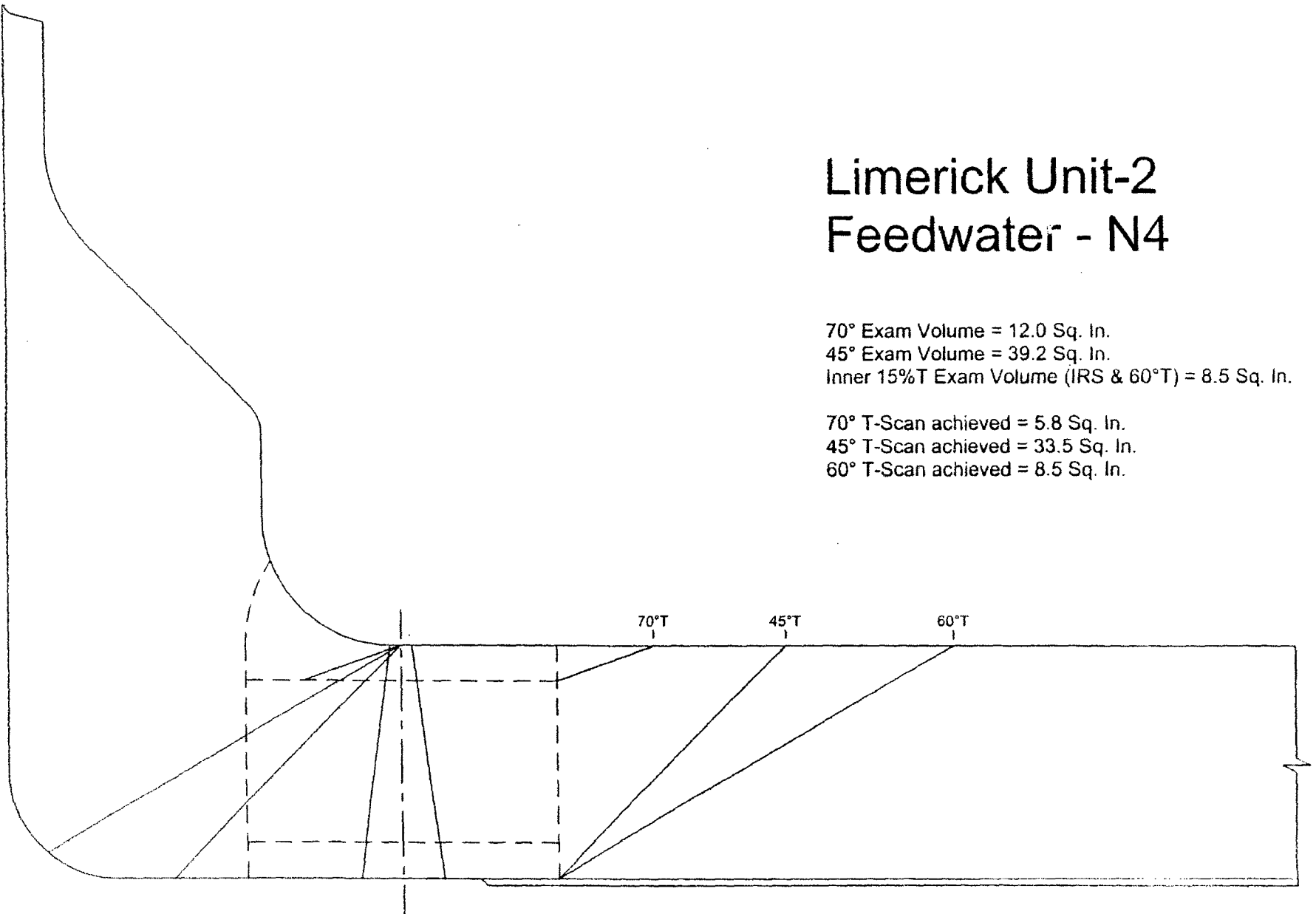
Comments: A - Examined 360°. Scanning limited due to nozzle configuration and N11B nozzle.

Note - Rounding methods may make calculated values appear in error.

Limerick Unit-2 Feedwater - N4

70° Exam Volume = 12.0 Sq. In.
45° Exam Volume = 39.2 Sq. In.
Inner 15%T Exam Volume (IRS & 60°T) = 8.5 Sq. In.

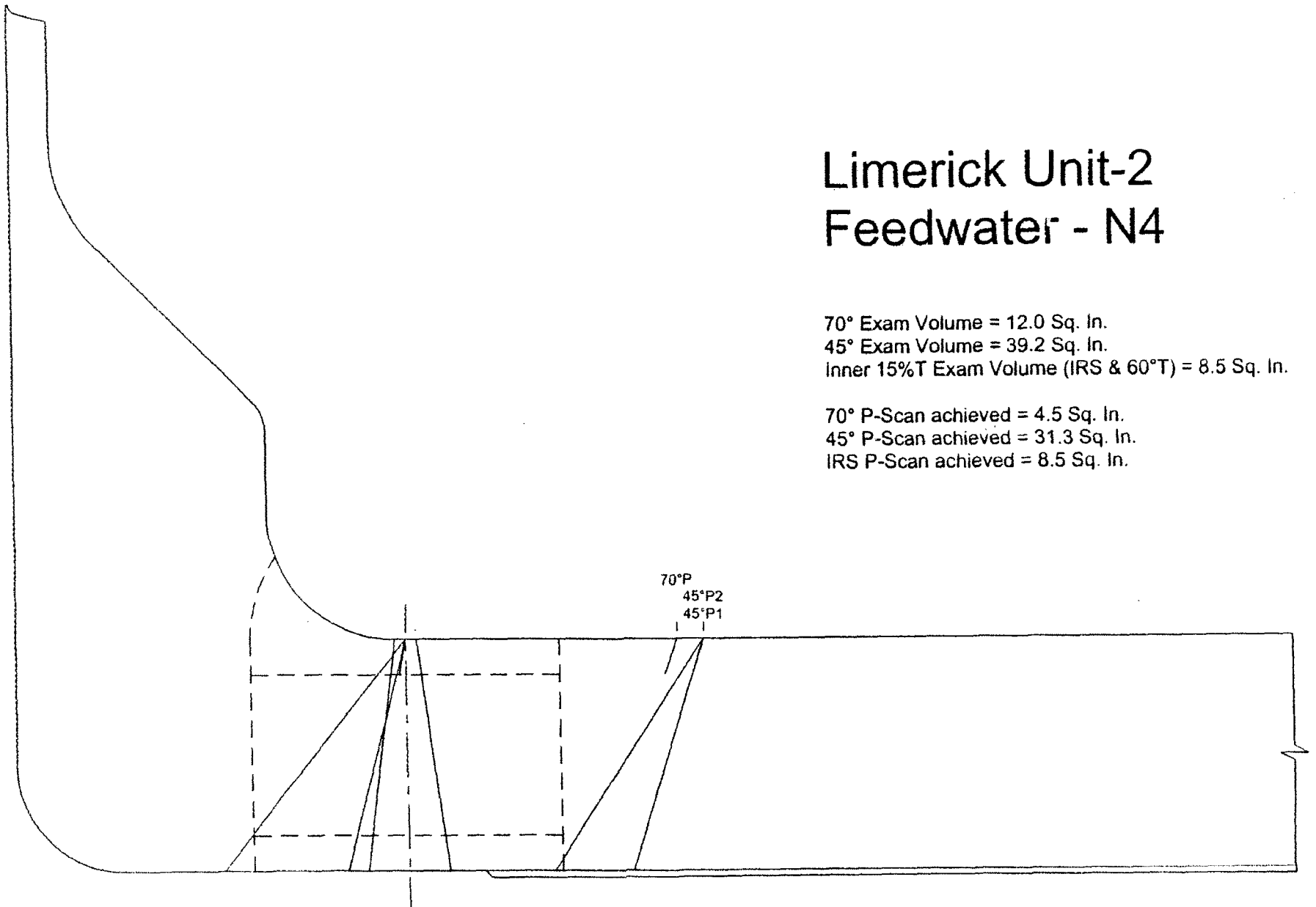
70° T-Scan achieved = 5.8 Sq. In.
45° T-Scan achieved = 33.5 Sq. In.
60° T-Scan achieved = 8.5 Sq. In.



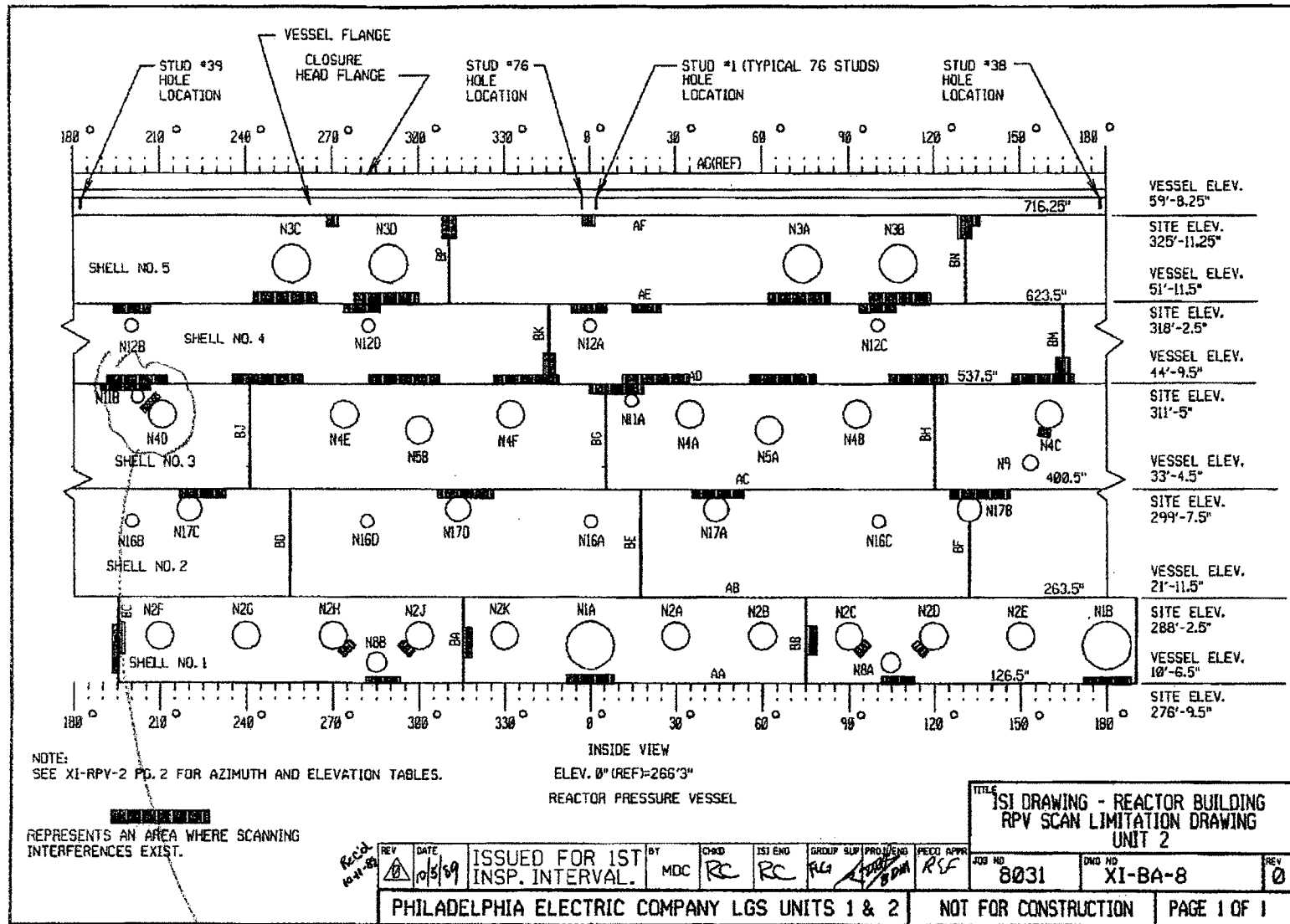
Limerick Unit-2 Feedwater - N4

70° Exam Volume = 12.0 Sq. In.
45° Exam Volume = 39.2 Sq. In.
Inner 15%T Exam Volume (IRS & 60°T) = 8.5 Sq. In.

70° P-Scan achieved = 4.5 Sq. In.
45° P-Scan achieved = 31.3 Sq. In.
IRS P-Scan achieved = 8.5 Sq. In.



Unit 2 Vessel Nozzle and Weld Locations



The location of the N11 nozzle
limits the examination of the
N14D nozzle.

Weld: N4D-IR

Summary Number: 709700

Unit: 2

Item Number: B3.100

Outage: 2R07 (Spring 2003)

Coverage: 88%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Automated UT Examination 68°S, 66.7°S, 28°S, and 20°S

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was in accordance with ASME Section XI Appendix VIII as modified by PDI program.

Limitation Description:

The completed examination was limited to 88% Code required coverage due to the location of the N11B nozzle and the thermocouple. The following coverage calculation sheet and the drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

Limerick Unit-2

Weld 2-NIR-4D N4D-IR

Spring 2003

		CODE CROSS-SECTIONAL AREA		TOTAL CODE COVERAGE		
Exam Length =	360.	Required Exam	Area Scanned	Percent	Exam Length	Percent
Exam Volume =	3.9	Area Sq. In.	Auto	of Area	Auto	Auto
Zone 1/ 2A *	A	3.9	3.9	100.0%	315	88%
Zone 1/ 2A						

% Total Composite Coverage = 88%

		CODE CROSS-SECTIONAL AREA		TOTAL CODE COVERAGE		
Exam Length =	360.	Required Exam	Area Scanned	Percent	Exam Length	Percent
Exam Volume =	3.1	Area Sq. In.	Auto	of Area	Auto	Auto
Zone 2B / 3 **	A	3.1	3.1	100.0%	315	88%
Zone 2B / 3						

% Total Composite Coverage = 88%

Comments: A - Examined 360°. Scanning not limited.

Zones 1 and 2A are ASME Section XI examinations.

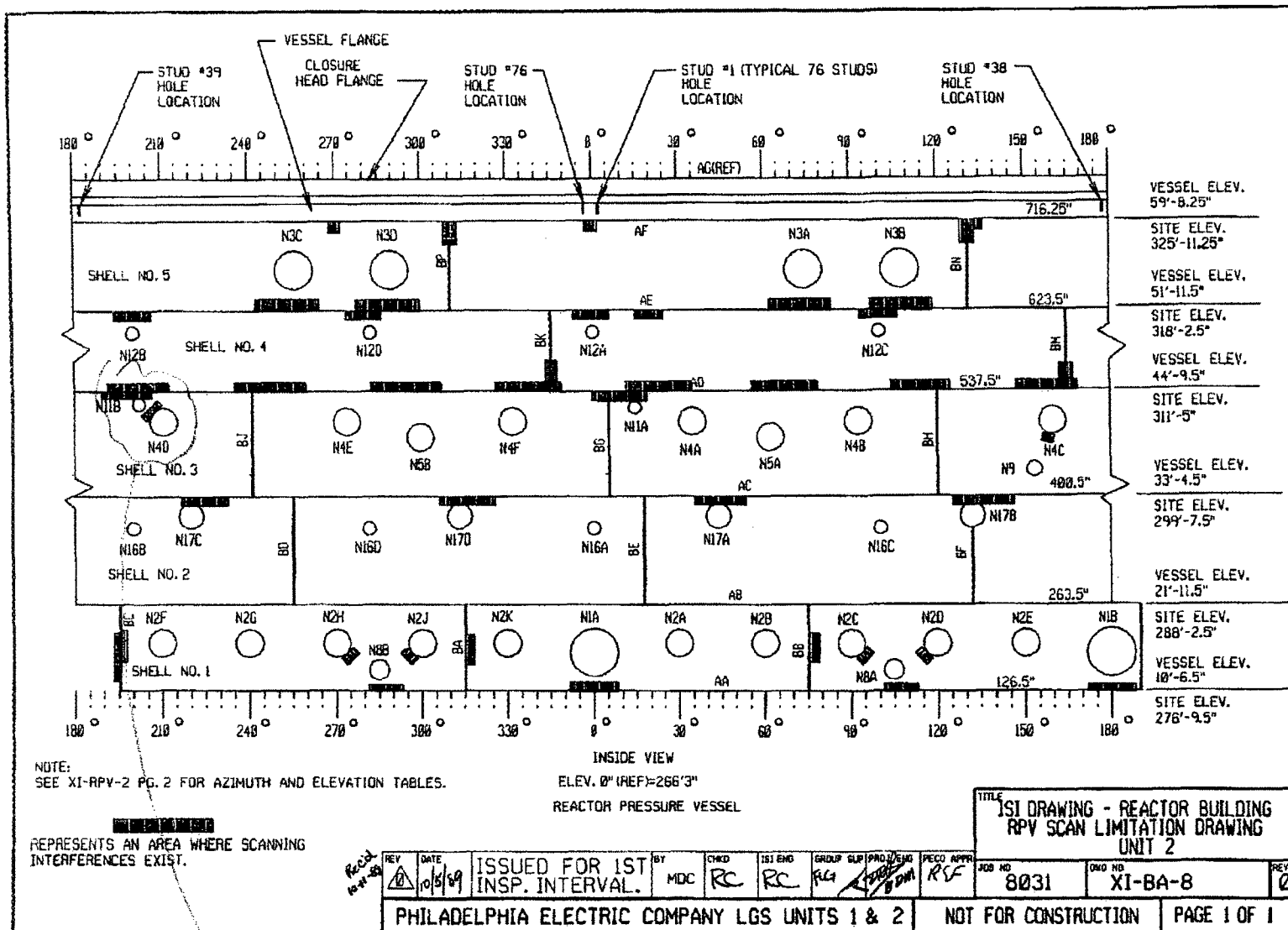
Zones 2B and 3 are BWROG alternate requirements to NUREG-0619 feedwater nozzle examinations.

* Single sided coverage was obtained in the area restricted by N11 nozzle.

** Single sided coverage was obtained in the area restricted by a thermocouple.

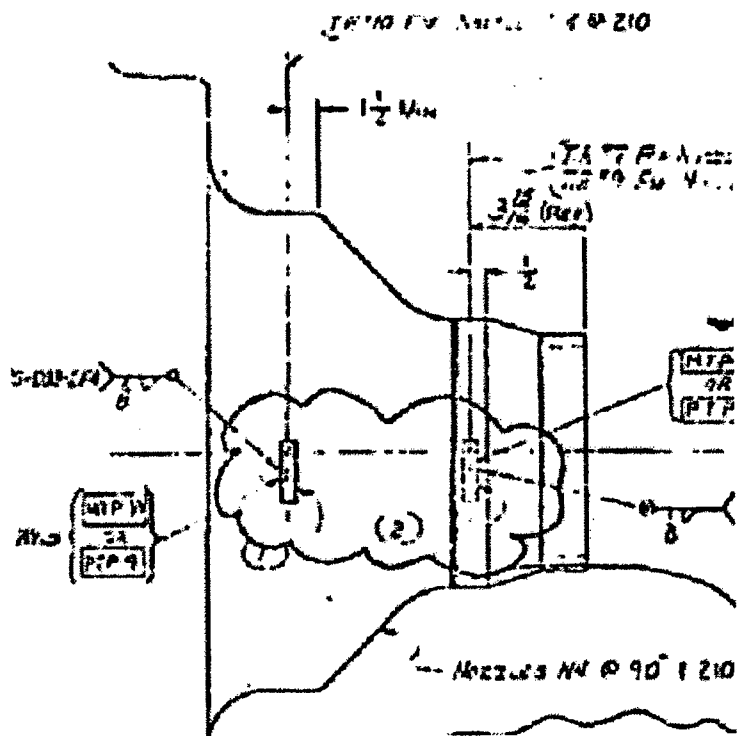
Note - Rounding methods may make calculated values appear in error.

Unit 2 Vessel Nozzle and Weld Locations



The location of the N11 nozzle limits the examination of the N4D nozzle inner radius

02AUG222041MAR1500N



Location of the thermocouple on the N4D nozzle

Weld: N5A

Summary Number: 710500

Unit: 2

Item Number: B3.90

Outage: 2R08 (Spring 2005)

Coverage: 71.75%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Manual UT Examination 45°S and 60°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was in accordance with ASME Section XI Appendix VIII as modified by PDI program.

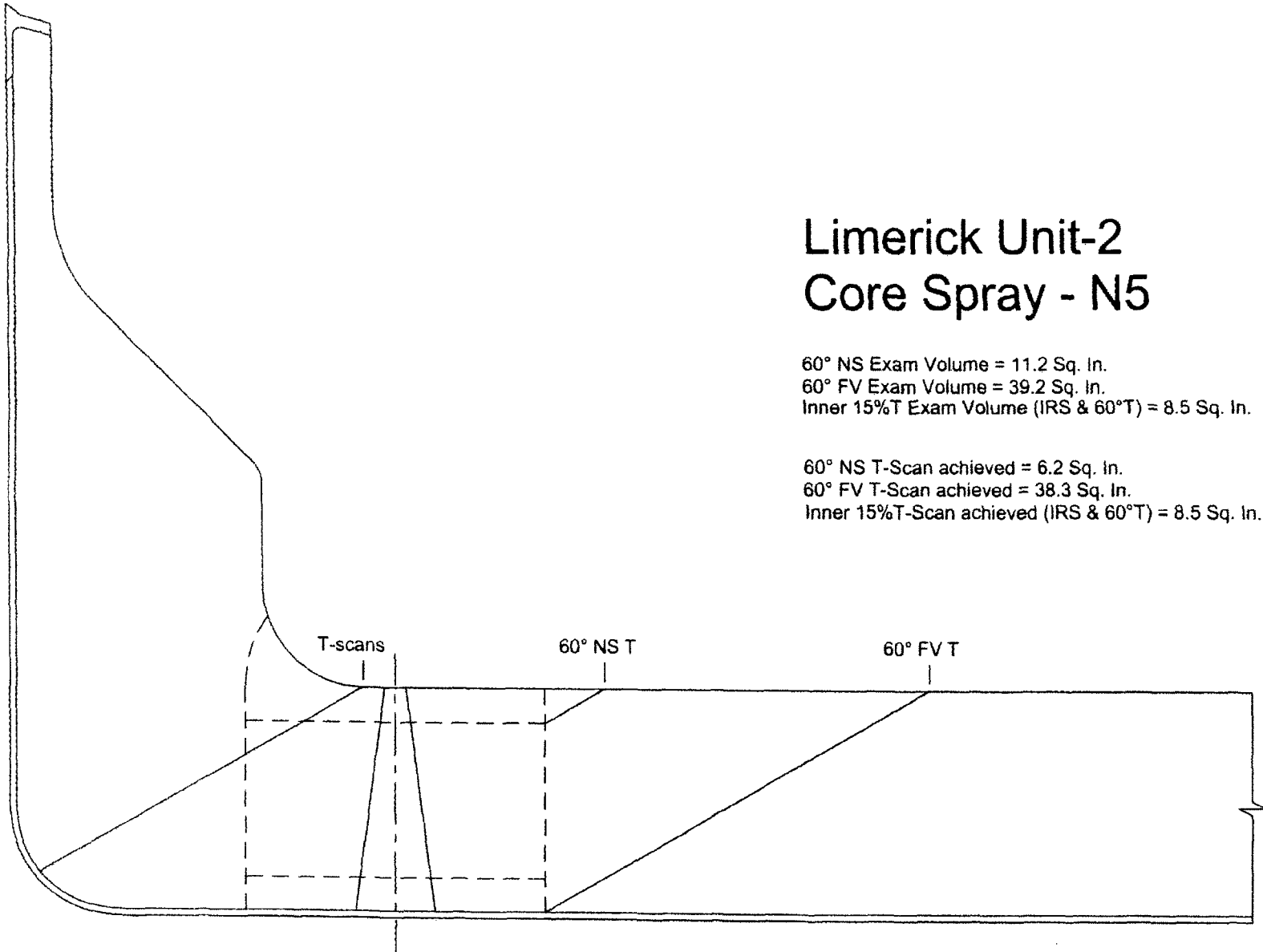
Limitation Description:

The completed examination was limited to 71.75% Code required coverage due to the design of the reactor vessel nozzle. The following drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

Limerick Unit-2 Core Spray - N5

60° NS Exam Volume = 11.2 Sq. In.
60° FV Exam Volume = 39.2 Sq. In.
Inner 15%T Exam Volume (IRS & 60°T) = 8.5 Sq. In.

60° NS T-Scan achieved = 6.2 Sq. In.
60° FV T-Scan achieved = 38.3 Sq. In.
Inner 15%T-Scan achieved (IRS & 60°T) = 8.5 Sq. In.

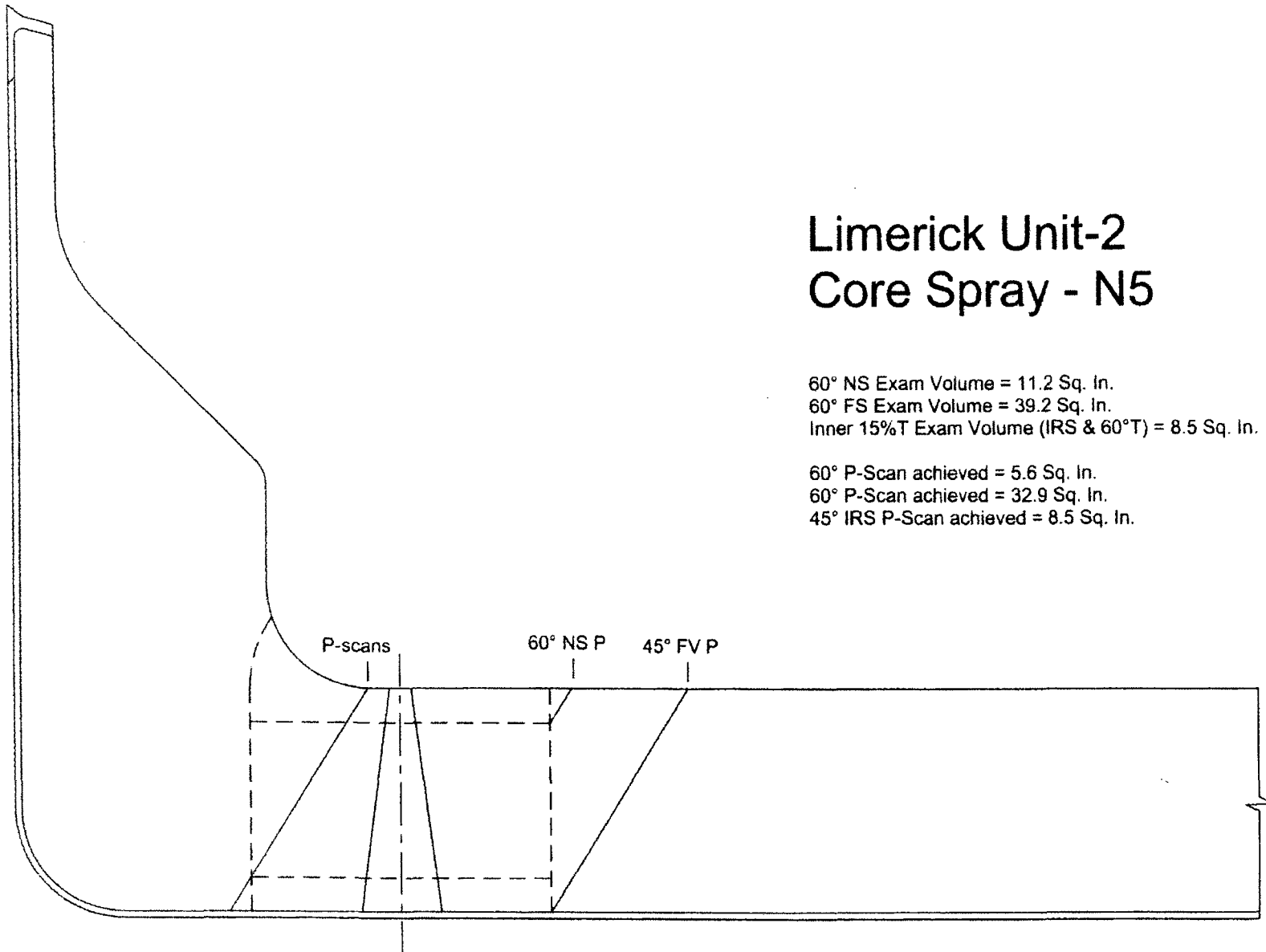


Mount. by: J. J. J.
LEVEL III 3/11/2005

Limerick Unit-2 Core Spray - N5

60° NS Exam Volume = 11.2 Sq. In.
60° FS Exam Volume = 39.2 Sq. In.
Inner 15%T Exam Volume (IRS & 60°T) = 8.5 Sq. In.

60° P-Scan achieved = 5.6 Sq. In.
60° P-Scan achieved = 32.9 Sq. In.
45° IRS P-Scan achieved = 8.5 Sq. In.



Weld: N6A

Summary Number: 715400

Unit: 2

Item Number: B3.90

Outage: 2R08 (Spring 2005)

Coverage: 71.75%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

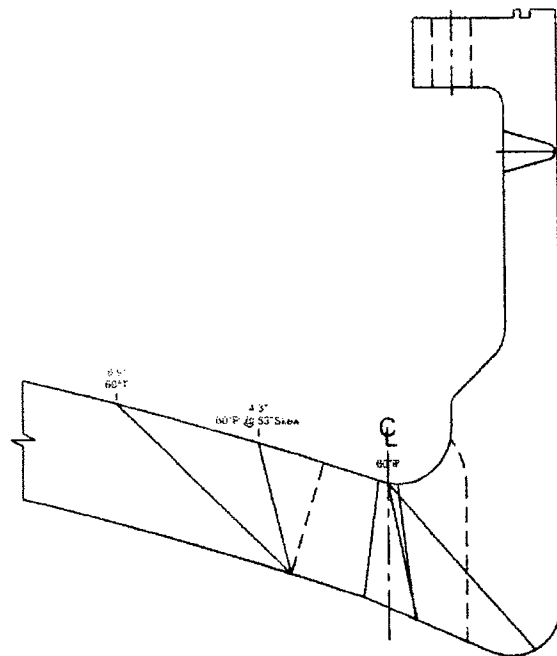
UT Exam Type: Manual UT Examination 60°S and 60°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was in accordance with ASME Section XI Appendix VIII as modified by PDI program.

Limitation Description:

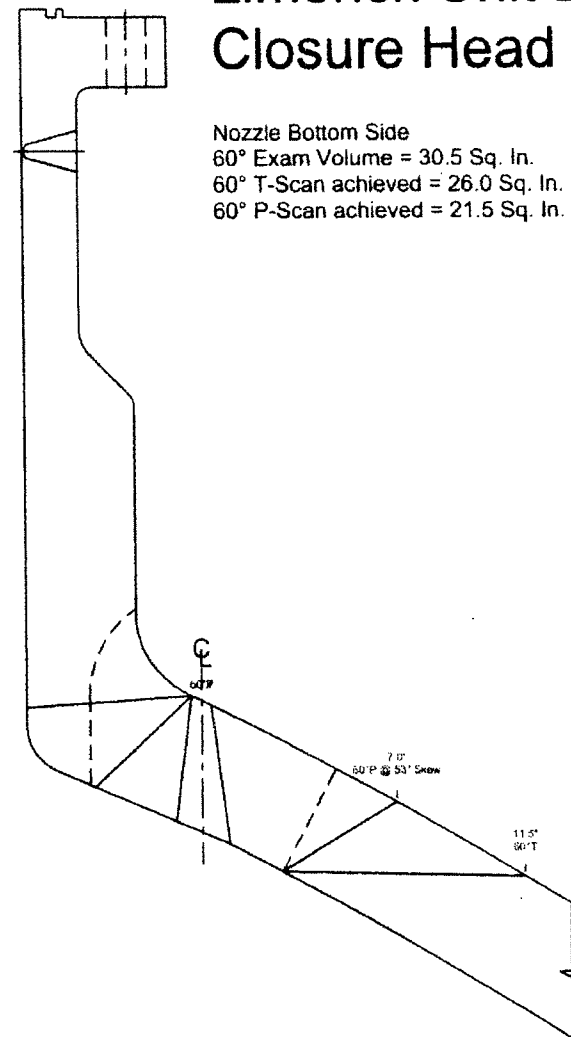
The completed examination was limited to 71.75% Code required coverage due to the design of the reactor vessel nozzle. The following drawing contains the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.



Nozzle Top Side
 60° Exam Volume = 22.0 Sq. In.
 60° T-Scan achieved = 17.4 Sq. In.
 60° P-Scan achieved = 11.6 Sq. In.

Limerick Unit-2 Closure Head N6

Nozzle Bottom Side
 60° Exam Volume = 30.5 Sq. In.
 60° T-Scan achieved = 26.0 Sq. In.
 60° P-Scan achieved = 21.5 Sq. In.



Weld: N6B

Summary Number: 715600

Unit: 2

Item Number: B3.90

Outage: 2R08 (Spring 2005)

Coverage: 71.9%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Manual UT Examination 60°S and 60°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

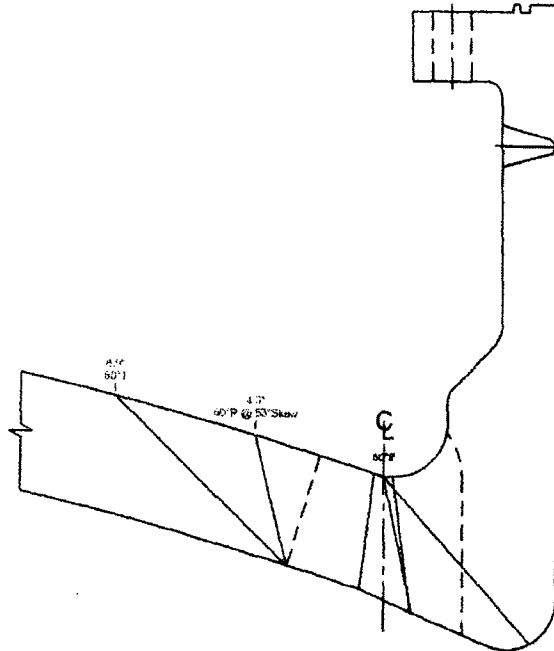
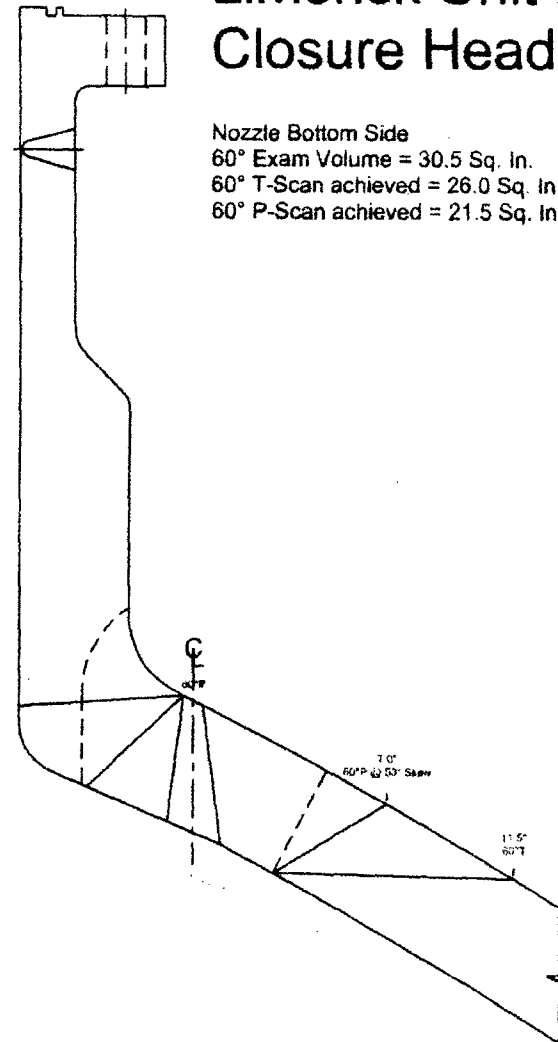
Yes, the examination was in accordance with ASME Section XI Appendix VIII as modified by PDI program.

Limitation Description:

The completed examination was limited to 71.9% Code required coverage due to the design of the reactor vessel nozzle. The following drawing contains the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

Limerick Unit-2 Closure Head N6

Nozzle Bottom Side
 60° Exam Volume = 30.5 Sq. In.
 60° T-Scan achieved = 26.0 Sq. In.
 60° P-Scan achieved = 21.5 Sq. In.



Nozzle Top Side
 60° Exam Volume = 22.0 Sq. In.
 60° T-Scan achieved = 17.4 Sq. In.
 60° P-Scan achieved = 11.6 Sq. In.

Weld: N7

Summary Number: 715800

Unit: 2

Item Number: B3.90

Outage: 2R08 (Spring 2005)

Coverage: 81.25%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Manual UT Examination 60°S and 60°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

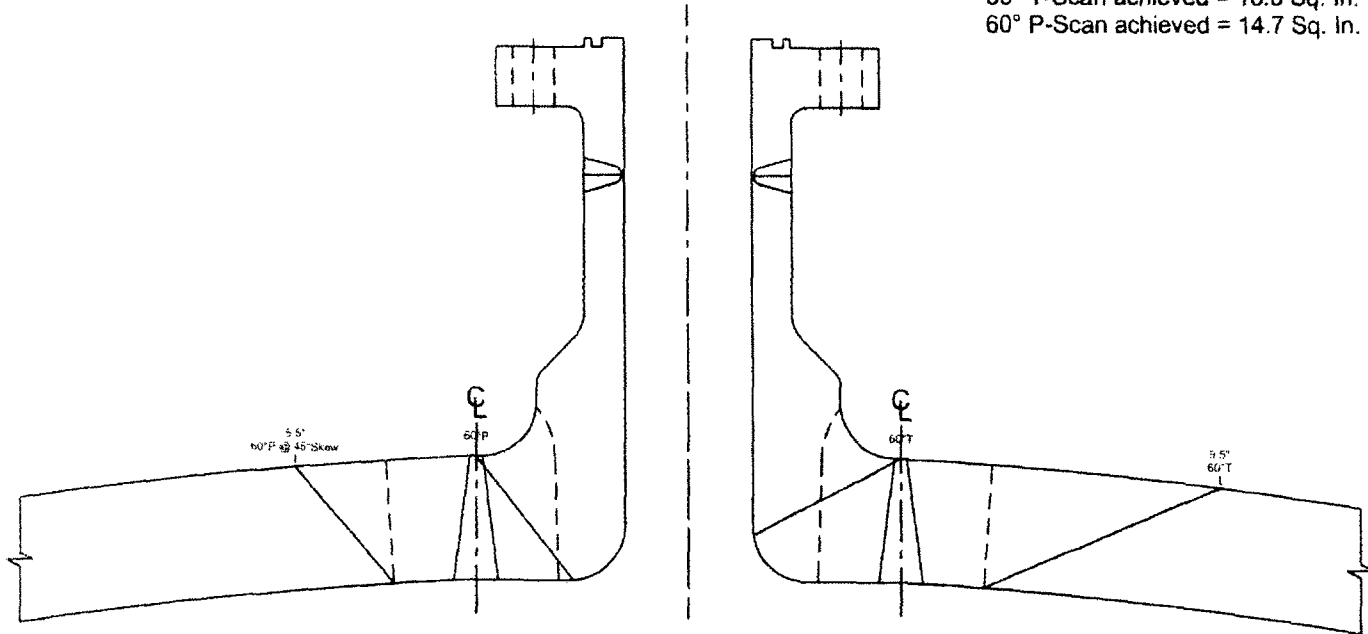
Yes, the examination was in accordance with ASME Section XI Appendix VIII as modified by PDI program.

Limitation Description:

The completed examination was limited to 81.25% Code required coverage due to the design of the reactor vessel nozzle. The following drawing contains the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

Limerick Unit-2 Closure Head N7

60° Exam Volume = 19.4 Sq. In.
60° T-Scan achieved = 16.8 Sq. In.
60° P-Scan achieved = 14.7 Sq. In.



Weld: N9

Summary Number: 711500

Unit: 2

Item Number: B3.90

Outage: 2R08 (Spring 2008)

Coverage: 77.1%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Manual UT Examination 45°S and 60°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was in accordance with ASME Section XI Appendix VIII as modified by PDI program.

Limitation Description:

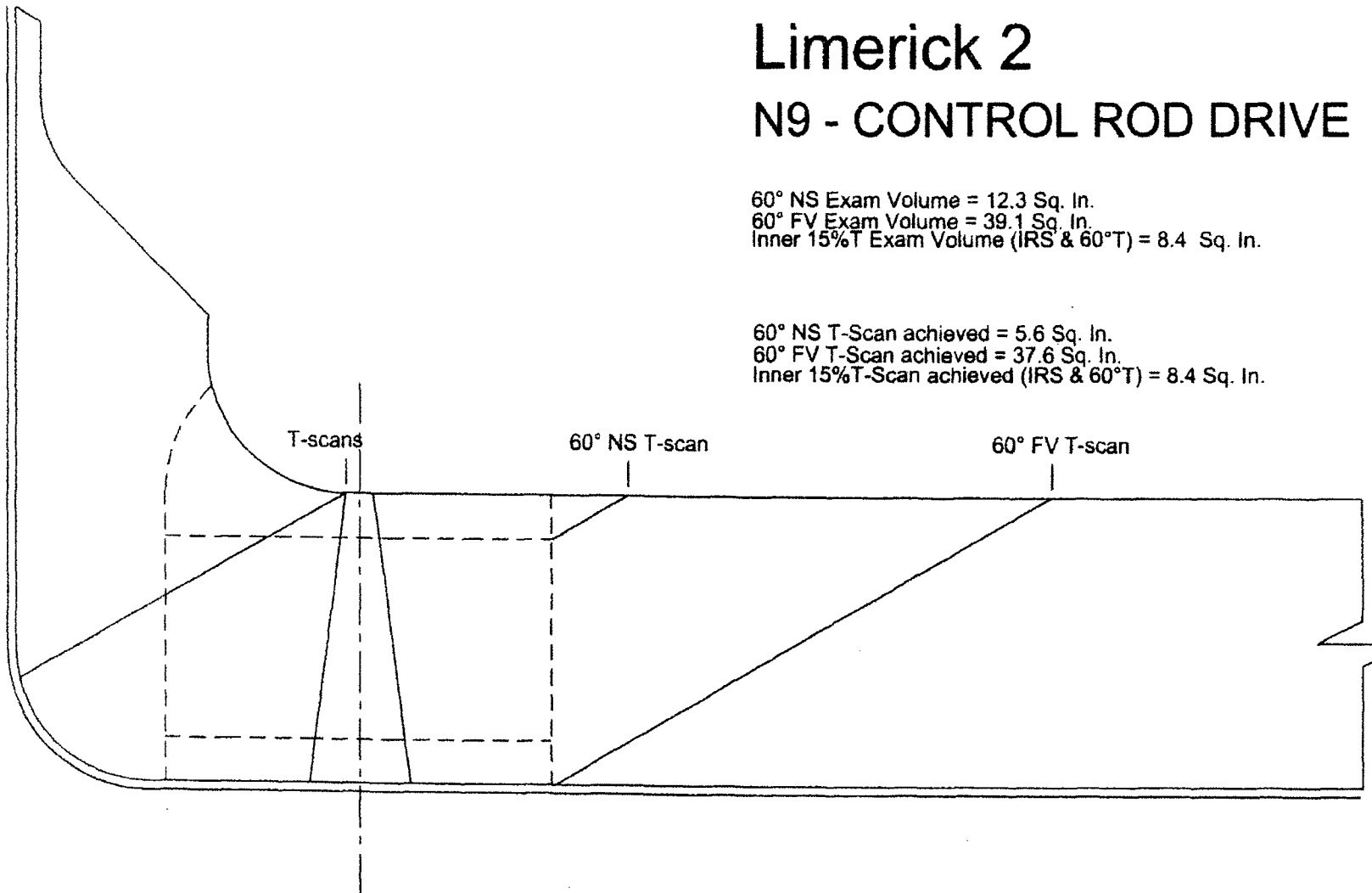
The completed examination was limited to 77.1% Code required coverage due to the design of the reactor vessel nozzle. The following drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

Limerick 2

N9 - CONTROL ROD DRIVE

60° NS Exam Volume = 12.3 Sq. In.
 60° FV Exam Volume = 39.1 Sq. In.
 Inner 15%T Exam Volume (IRS & 60°T) = 8.4 Sq. In.

60° NS T-Scan achieved = 5.6 Sq. In.
 60° FV T-Scan achieved = 37.6 Sq. In.
 Inner 15%T-Scan achieved (IRS & 60°T) = 8.4 Sq. In.

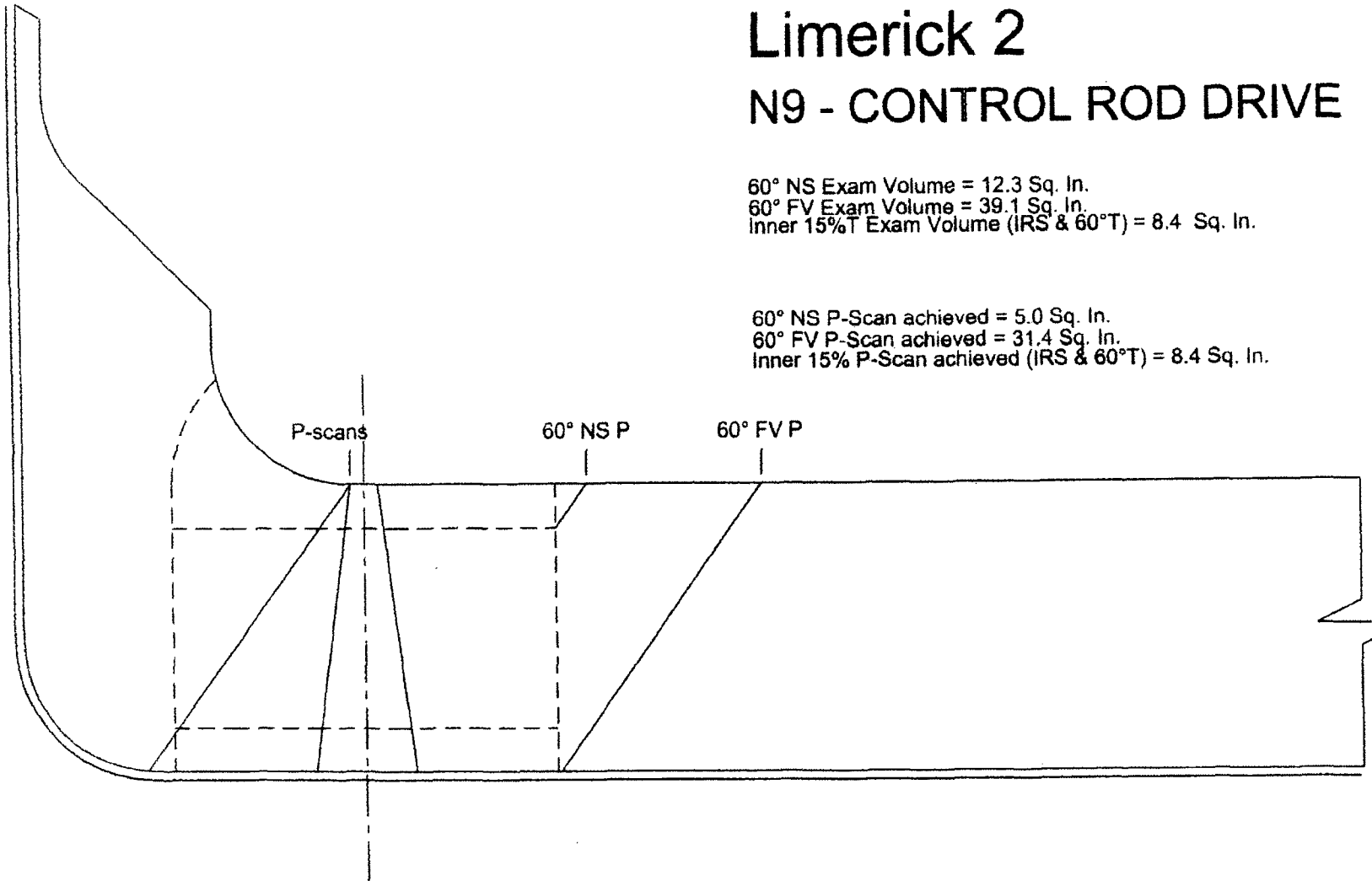


Limerick 2

N9 - CONTROL ROD DRIVE

60° NS Exam Volume = 12.3 Sq. In.
60° FV Exam Volume = 39.1 Sq. In.
Inner 15%T Exam Volume (IRS & 60°T) = 8.4 Sq. In.

60° NS P-Scan achieved = 5.0 Sq. In.
60° FV P-Scan achieved = 31.4 Sq. In.
Inner 15% P-Scan achieved (IRS & 60°T) = 8.4 Sq. In.



Weld: N17A

Summary Number: 711700

Unit: 2

Item Number: B3.90

Outage: 2R08 (Spring 2005)

Coverage: 81.2%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Manual UT Examination 45°S and 60°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was in accordance with ASME Section XI Appendix VIII as modified by PDI program.

Limitation Description:

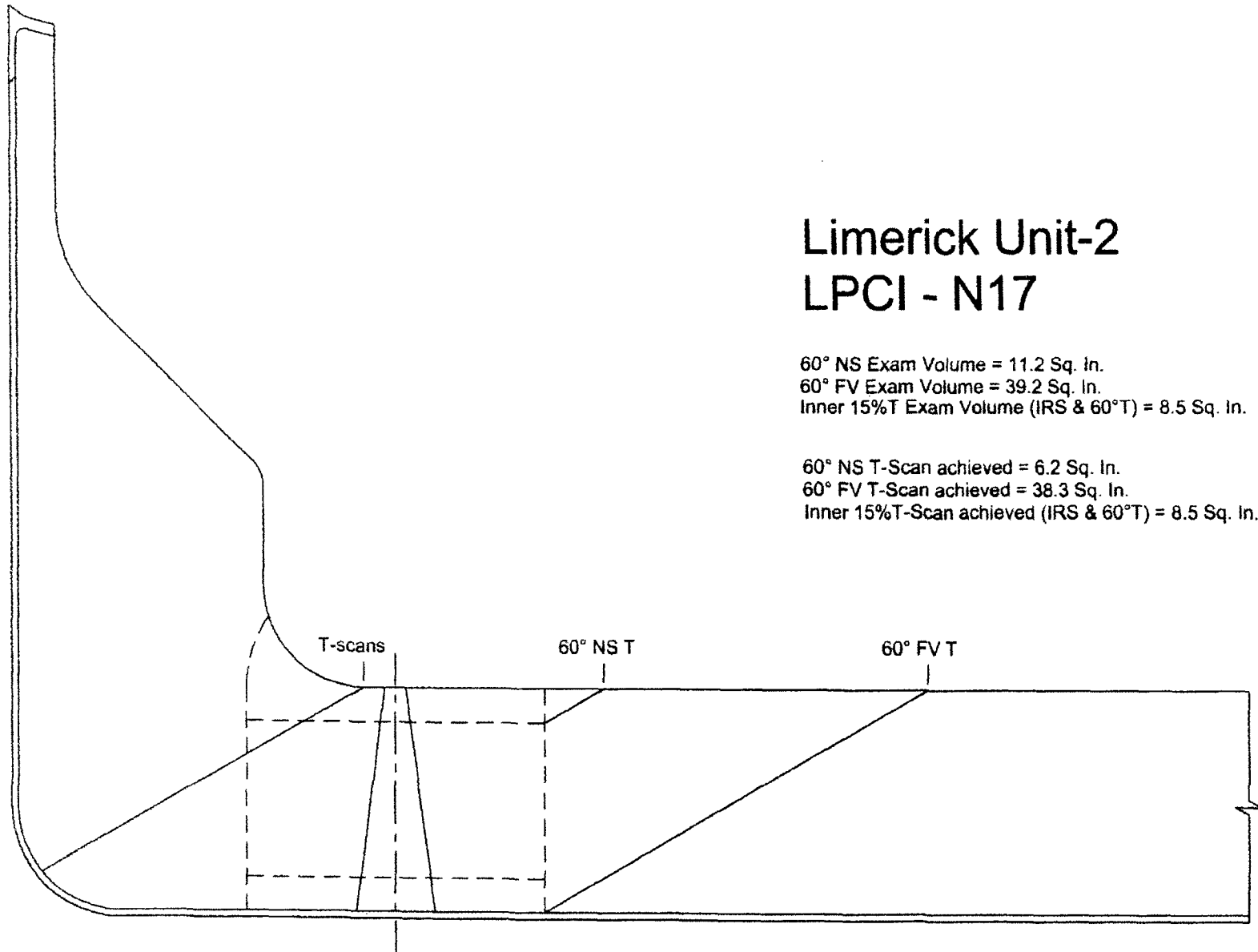
The completed examination was limited to 81.2% Code required coverage due to the design of the reactor vessel nozzle. The following drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

Mark H. Spidner
LEVEL III 3/12/2005

Limerick Unit-2 LPCI - N17

60° NS Exam Volume = 11.2 Sq. In.
60° FV Exam Volume = 39.2 Sq. In.
Inner 15%T Exam Volume (IRS & 60°T) = 8.5 Sq. In.

60° NS T-Scan achieved = 6.2 Sq. In.
60° FV T-Scan achieved = 38.3 Sq. In.
Inner 15%T-Scan achieved (IRS & 60°T) = 8.5 Sq. In.

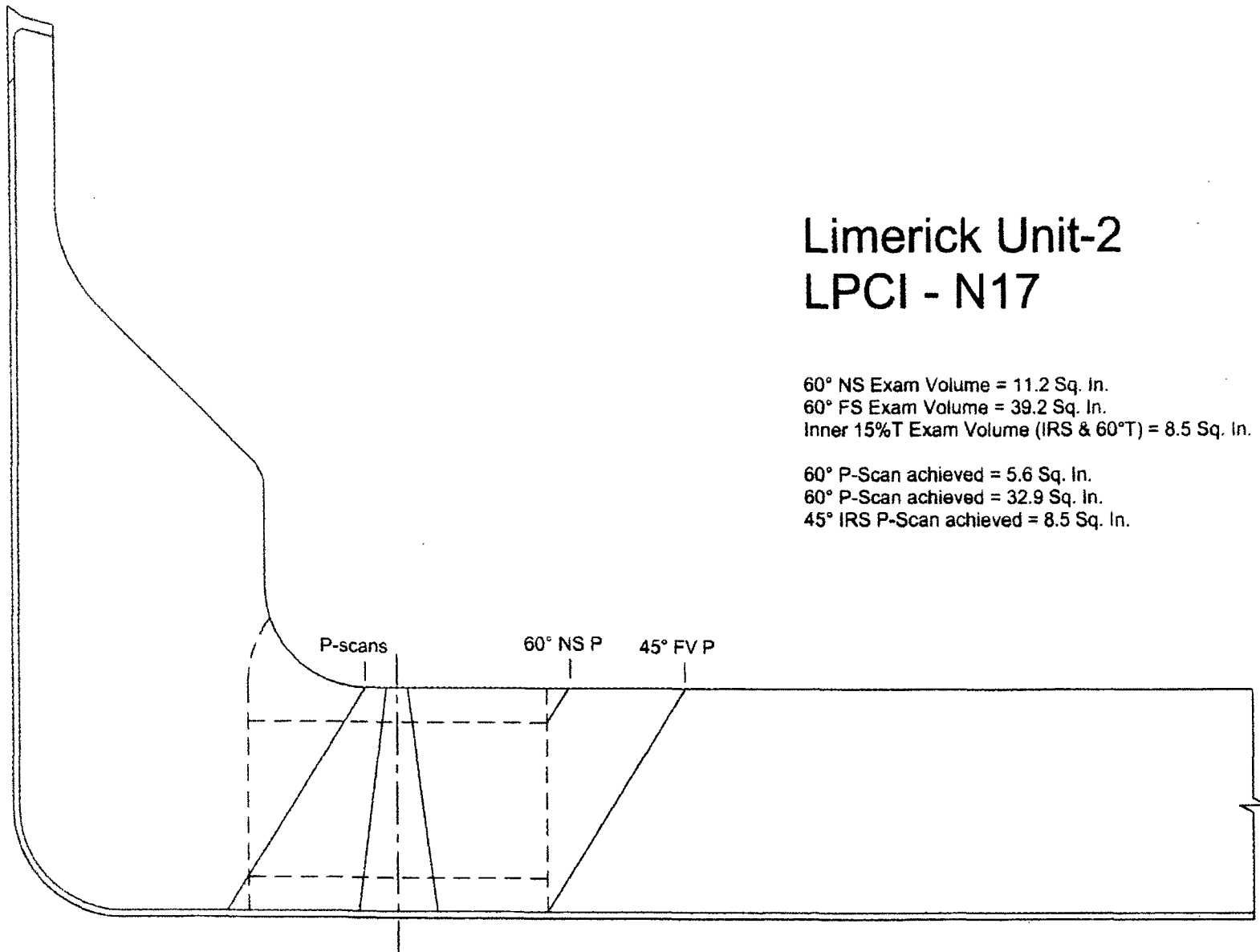


Walter H. Miller
Level III
3/12/2005

Limerick Unit-2 LPCI - N17

60° NS Exam Volume = 11.2 Sq. In.
60° FS Exam Volume = 39.2 Sq. In.
Inner 15%T Exam Volume (IRS & 60°T) = 8.5 Sq. In.

60° P-Scan achieved = 5.6 Sq. In.
60° P-Scan achieved = 32.9 Sq. In.
45° IRS P-Scan achieved = 8.5 Sq. In.



Weld: N17C

Summary Number: 712300

Unit: 2

Item Number: B3.90

Outage: 2R07 (Spring 2003)

Coverage: 77%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-7 "Nozzle in Shell or Head"

UT Exam Type: Automated UT Examination 0°L, 45°S, 60°RL, and 70°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was in accordance with ASME Section XI Appendix VIII as modified by PDI program.

Limitation Description:

The completed examination was limited to 77% Code required coverage due to the design of the reactor vessel nozzle. The following coverage calculation sheet and the drawings contain the limitations. No unacceptable indications were noted. A system pressure test was also completed with no unacceptable indications observed.

Limerick Unit 2 L2RO7
Li2 / N17C
Spring 2003

Weld Length = 360° Exam Volume = 59.7		CODE CROSS-SECTIONAL AREA		TOTAL CODE COVERAGE		
		Required Exam Area Sq. In.	Area Scanned Auto	Percent of Area Auto	Weld Length Auto	Percent Auto
70° T-Scan	A	12	5.8	9.7%	360°	4.9%
45° T-Scan	A	39.2	33.5	56.1%	360°	28.1%
60° T-Scan	A	8.5	8.5	14.2%	360°	7.1%
70° P-Scan	A	12	4.5	7.5%	360°	3.8%
45° P-Scan	A	39.2	31.3	52.4%	360°	26.2%
IRS P-Scan	A	8.5	8.5	14.2%	360°	7.1%
70° T-Scan						
45° T-Scan						
60° T-Scan						
70° P-Scan						
45° P-Scan						
IRS P-Scan						
70° T-Scan						
45° T-Scan						
60° T-Scan						
70° P-Scan						
45° P-Scan						
IRS P-Scan						

% Total Composite Coverage = 77%

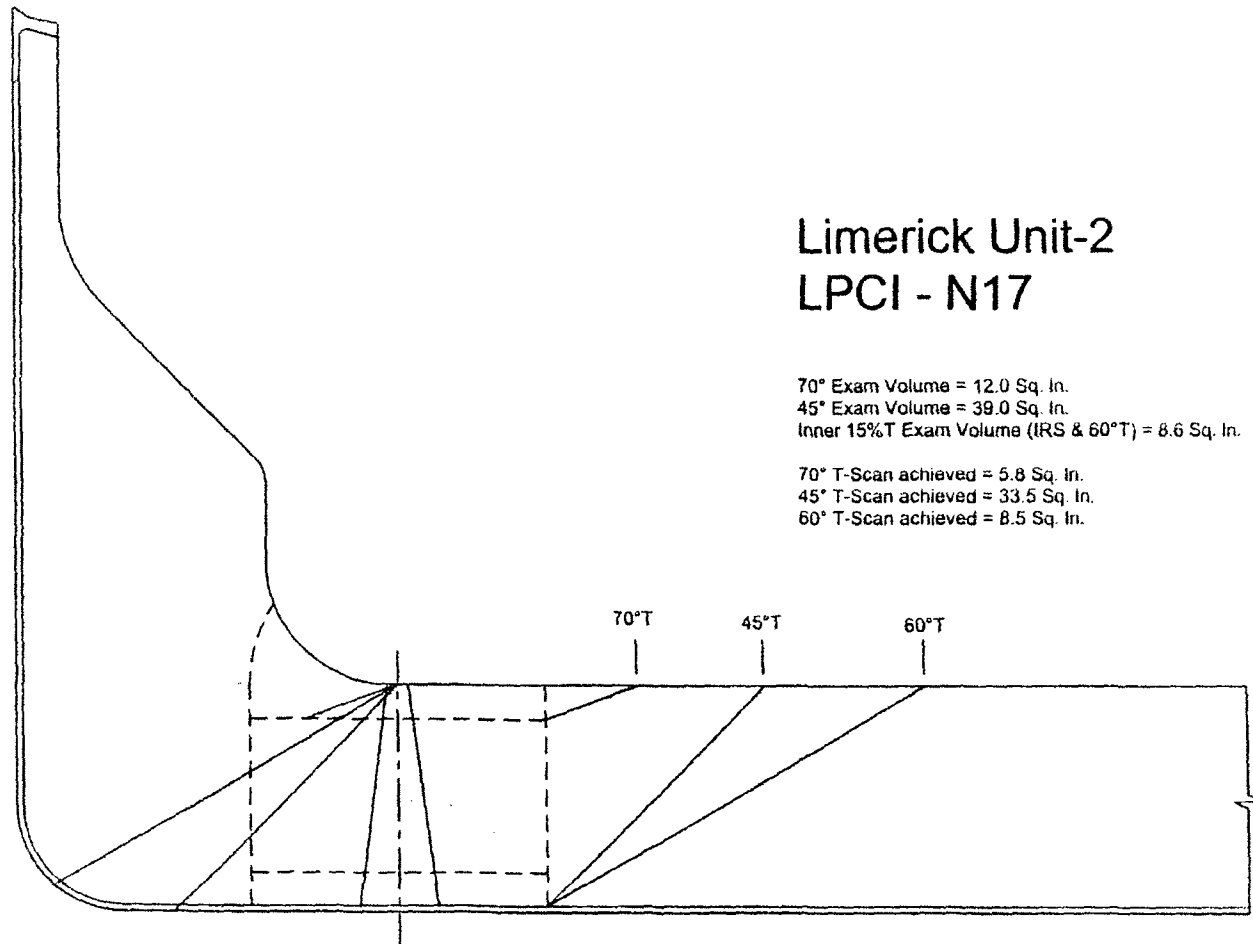
Comments: A - Examined 360°. Scanning limited due to nozzle configuration.

Note - Rounding methods may affect calculated values.

Limerick Unit-2 LPCI - N17

70° Exam Volume = 12.0 Sq. In.
45° Exam Volume = 39.0 Sq. In.
Inner 15%T Exam Volume (IRS & 60°T) = 8.6 Sq. In.

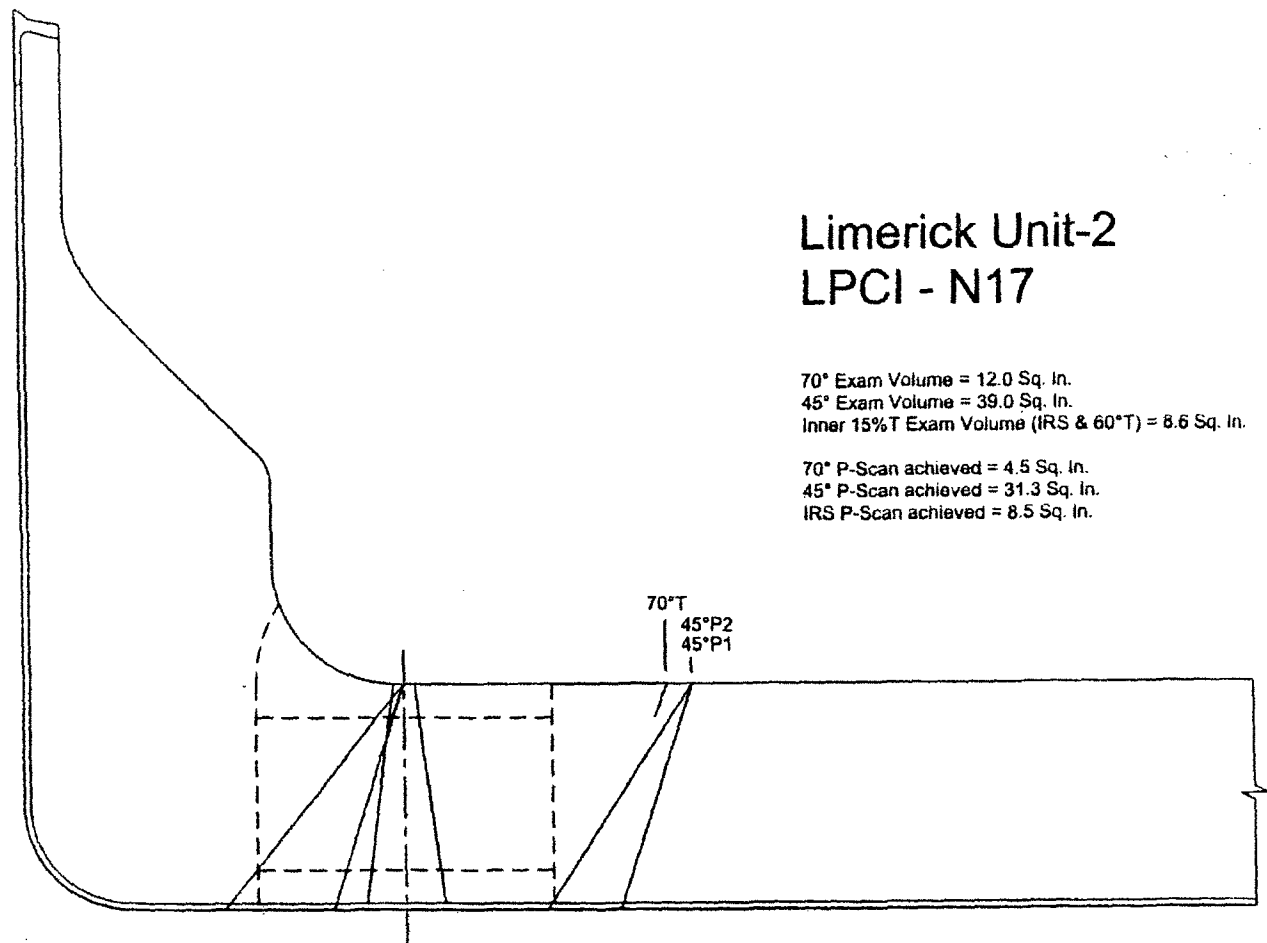
70° T-Scan achieved = 5.8 Sq. In.
45° T-Scan achieved = 33.5 Sq. In.
60° T-Scan achieved = 8.5 Sq. In.



Limerick Unit-2 LPCI - N17

70° Exam Volume = 12.0 Sq. In.
45° Exam Volume = 39.0 Sq. In.
Inner 15%T Exam Volume (IRS & 60°T) = 8.6 Sq. In.

70° P-Scan achieved = 4.5 Sq. In.
45° P-Scan achieved = 31.3 Sq. In.
IRS P-Scan achieved = 8.5 Sq. In.



Weld: AG

Summary Number: 714500

Unit: 2

Item Number: B1.40

Outage: 2R08 (33.3%) (Spring 2005) and 2R07 (33.3%) (Spring 2003)

Coverage: 88.4%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: Full penetration coverage per figure IWB-2500-5 "Head to Flange Weld Joint"

UT Exam Type: 2R07 manual UT Examination 60°RL

2R08 Manual UT Examination 60°RL

Magnetic Particle Examination (MT)

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

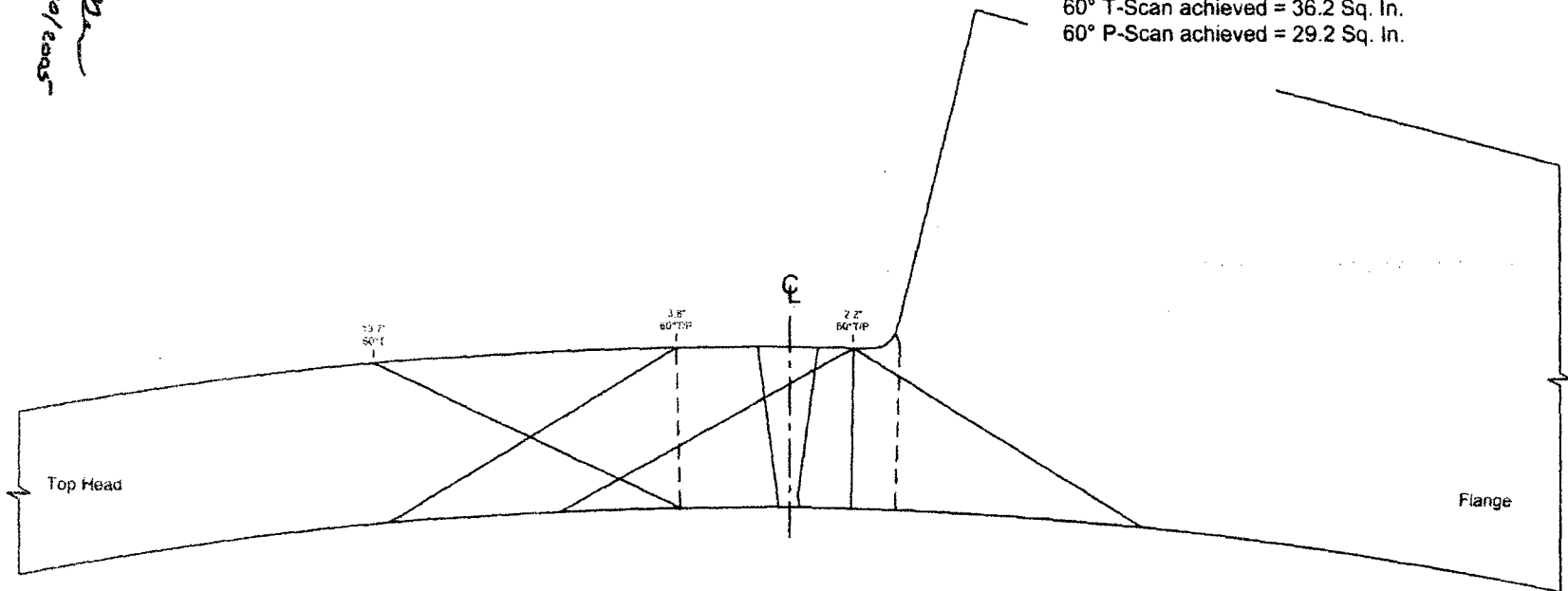
Yes, the examination was in accordance with ASME Section XI Appendix VIII as modified by PDI program.

Limitation Description:

The completed examination was limited to 88.4% Code required coverage due to the design of the reactor vessel nozzle. The following drawing contains the limitations. No unacceptable indications were noted. A Magnetic Particle Examination (Surface) and a system pressure test were also completed with no unacceptable indications observed.

Limerick Unit-2 Closure Head Flange Weld

60° Exam Volume = 37.0 Sq. In.
60° T-Scan achieved = 36.2 Sq. In.
60° P-Scan achieved = 29.2 Sq. In.



Handwritten:
LEVEL III
3/10/2005

Attachment 5

**Relief Request 35 – LGS, Unit 1 Second
Ten-Year Inservice Inspection Interval
Component NDE Exam Limitations**

Weld: CSB 015

Summary Number: 100990

Unit: 1

Item Number: R1.20

Outage: 1R10 (Spring 2004)

Coverage: 50%

Base Metal and Weld Materials: Stainless Steel

Examination Volume: The examination volume is defined in EPRI TR-112657 "Revised Risk-Informed Inservice Inspection Evaluation Procedure" Rev B-A. For a failure mechanism of R1.20 (element is not subject to a damage mechanism) the required volume is N-578-1 "Risk-Informed Requirements for Class 1, 2, or 3 Piping, Method B Section XI, Division 1". Per the code case the examination volume is contained in Figure IWB-2500-8(c) "Similar and Dissimilar Metal Welds in Components and Piping" with an expanded volume of ½ inch beyond each side of the base metal thickness transition or counterbore.

UT Exam Type: Manual examination 45°S, 45°RL and 60°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was performed to requirements contained in ASME Section XI Appendix VIII per the PDI program.

Limitation Description:

The exam completed was limited to 50% Code required coverage because the upstream axial UT scan was not performed due to the weld configuration. The valve material is cast stainless steel whose acoustic properties are not conducive for ultrasonic examination of the full weld. No unacceptable indications were noted. The following drawings characterize the limitations. No technology has been approved to obtain additional coverage on cast stainless steel components with this configuration.



GE NUCLEAR ENERGY

Wall Thickness Profile Sheet

Site: Limerick

Unit: 1

Summary No.: 100990

Project: 32318

100990

System: CS

Position	0°	90°	180°	270°
1	0.82"	0.76"	0.72"	0.76"
2	0.80"	0.76"	0.72"	0.74"
3	0.86"	0.74"	0.74"	0.80"
4	0.70"	0.76"	0.79"	0.76"
5	0.72"	0.68"	0.68"	0.70"

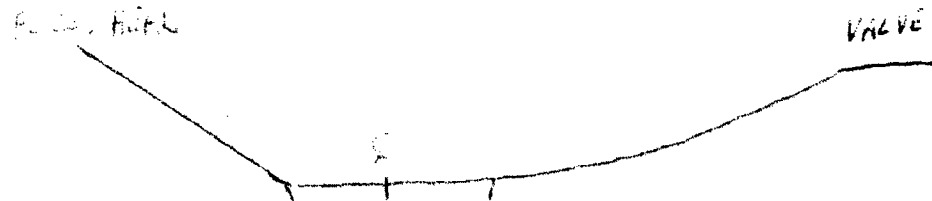
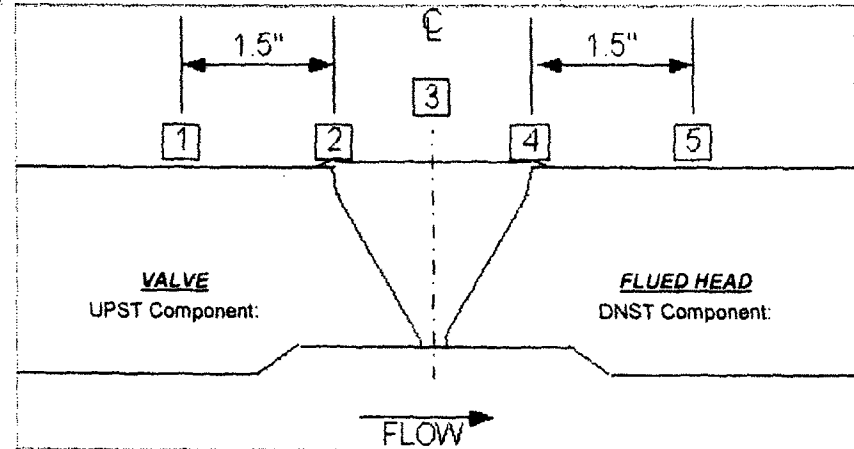
Component ID Number: CSB 015

Crown Height: FLUSH

Crown Width: 1.1"

Nominal Diameter: 12.0"

Weld Length: 37.8"



WALL THICKNESS & CENTERLINE
FROM PREVIOUS DATA.

Scale = 1 : 1

Initials: Examiner: Ed Donovan

Level: III Date: 3/3/2004

GE Reviewed By: M. F. Zylman III Date: 3/14/04

Utility Reviewed By: [Signature]

Date: 3-13-04

ANII Reviewed By: [Signature]

Date: 3/16/04



GE NUCLEAR ENERGY

Indication / Coverage Plot Sheet

Site: Limerick

Unit: 1

Report No.: 100890

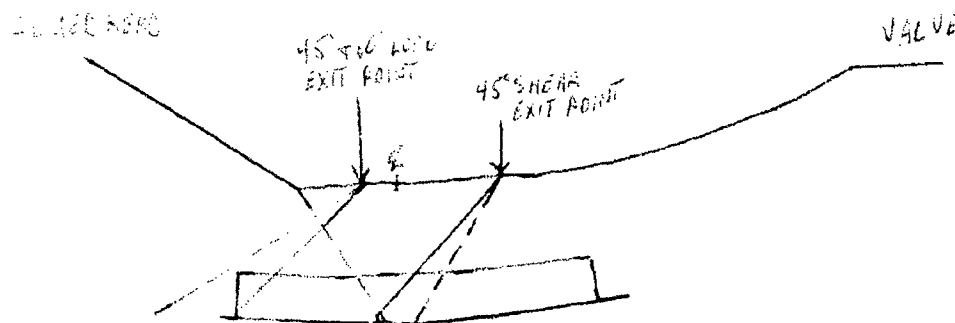
Project: 32318

System: CS

Component ID Number: CSB 015

Configuration: VALVE

FLUED HEAD



ERD

Ed Donovan

Level: III Date: 3/3/2004

Initials: Examiner:

Level: Date:

GE Reviewed By: [Signature]

Level: III

Date: 3/12/04

Date:

Unit Reviewed By: [Signature]

Date: 3-13-04

Date:

ANII Reviewed By: [Signature]

Date: 3/16/04

Weld: DCA-101-1 SW2402

Summary Number: 113401

Unit: 1

Item Number: R1.20

Outage: 1R09 (Spring 2002)

Coverage: 50%

Base Metal and Weld Materials: Stainless Steel

Examination Volume: The examination volume is defined in EPRI TR-112657 "Revised Risk-Informed Inservice Inspection Evaluation Procedure" Rev B-A. For a failure mechanism of R1.20 (element is not subject to a damage mechanism) the required volume is N-578-1 "Risk-Informed Requirements for Class 1, 2, or 3 Piping, Method B Section XI, Division 1". Per the code case the examination volume is contained in Figure IWB-2500-8(c) "Similar and Dissimilar Metal Welds in Components and Piping" with an expanded volume of ½ inch beyond each side of the base metal thickness transition or counterbore.

UT Exam Type: Manual examination 0°L, 45°S and 70°S

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was performed to requirements contained in ASME Section XI Appendix VIII per the PDI program.

Limitation Description:

The exam completed was limited to 50% Code required coverage because the downstream axial UT scan was not performed due to the weld configuration. The valve material is cast stainless steel whose acoustic properties are not conducive for ultrasonic examination of the full weld. No unacceptable indications were noted. The following drawings characterize the limitations. No technology has been approved to obtain additional coverage on cast stainless steel components with this configuration.



GE NUCLEAR ENERGY

Indication / Coverage Plot Sheet

Site: Limerick

Unit: 1

Report No.:

Project: 1R09

113401

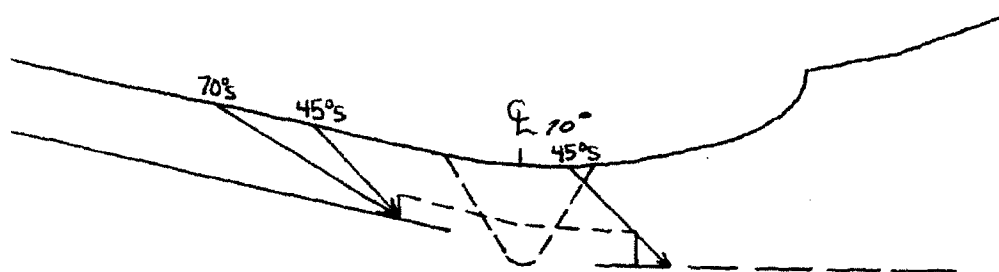
System: RWCU

Component ID Number DCA-101-1 SW2402

Configuration:

PIPE

VALVE



50% COVERAGE PER PDI.

Wm

JMB

Todd Ginder

II 02/22/02

Initials Examiner:

Level: Date:

Wade F. Ginder III 3/12/02

GE Reviewed By:

Level: Date:

C. E. STAFFER

Utility Reviewed By:

Date:

ANII Reviewed By:

Date:



GE NUCLEAR ENERGY

Wall Thickness Profile Sheet

Site: Limerick

Unit: 1

Report No.: 113401

Project: 1R09

113401

System: RWCU

Position	0°	90°	180°	270°
1	0.40	0.41	0.40	0.41
2	0.40	0.40	0.40	0.41
3	0.54	0.54	0.53	0.52
4	0.56	0.56	0.56	0.56
5	N/A	N/A	N/A	N/A

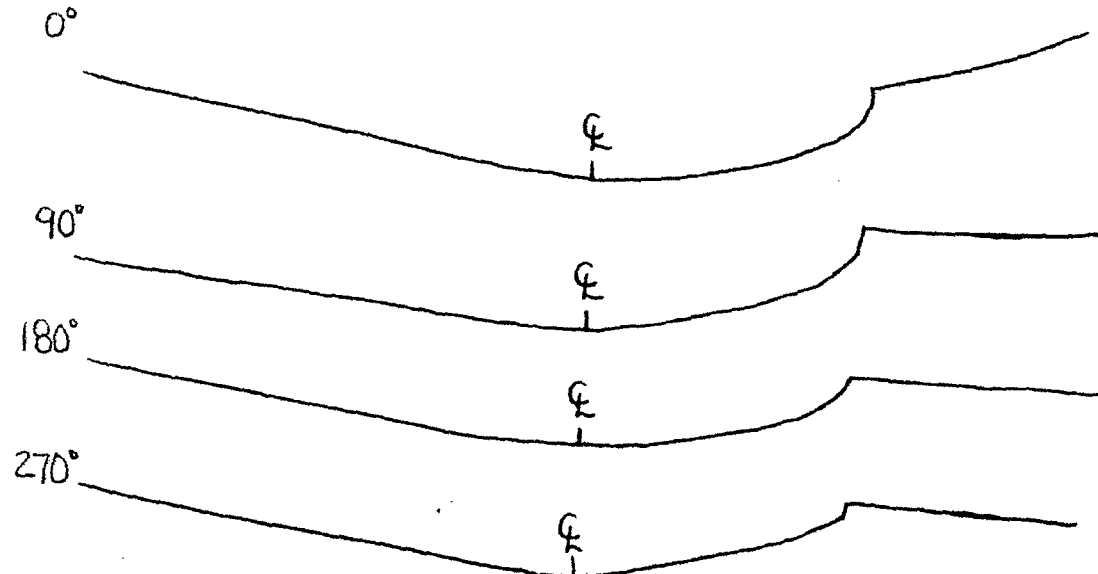
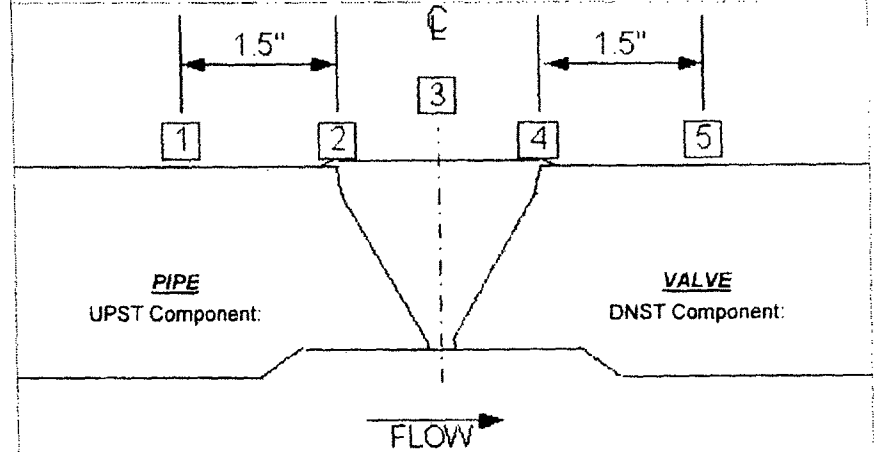
Component ID Number DCA-101-1 SW2402

Crown Height: FLUSH

Crown Width: 0.8"

Nominal Diameter 6.0"

Weld Length: 21.0"



JMG

Todd Ginder

II

02/22/02

Initials: Examiner:

Level: Date:

Wade H. Miller III

3/12/02

GE Reviewed By:

Level:

Date:

C.E. STAUFFER

Utility Reviewed By:

3/12/02

Date:

Paul Kenna

ANII Reviewed By:

3/19/02

Date:

Weld: DCA-101-1 SW2403

Summary Number: 113411

Unit: 1

Item Number: R1.20

Outage: 1R09 (Spring 2002)

Coverage: 50%

Base Metal and Weld Materials: Stainless Steel

Examination Volume: The examination volume is defined in EPRI TR-112657 "Revised Risk-Informed Inservice Inspection Evaluation Procedure" Rev B-A. For a failure mechanism of R1.20 (element is not subject to a damage mechanism) the required volume is N-578-1 "Risk-Informed Requirements for Class 1, 2, or 3 Piping, Method B Section XI, Division 1". Per the code case the examination volume is contained in Figure IWB-2500-8(c) "Similar and Dissimilar Metal Welds in Components and Piping" with an expanded volume of ½ inch beyond each side of the base metal thickness transition or counterbore.

UT Exam Type: Manual examination 0°L, 45°S and 70°S

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was performed to requirements contained in ASME Section XI Appendix VIII per the PDI program.

Limitation Description:

The exam completed was limited to 50% Code required coverage because the upstream axial UT scan was not performed due to the weld configuration. The valve material is cast stainless steel whose acoustic properties are not conducive for ultrasonic examination of the full weld. No unacceptable indications were noted. The following drawings characterize the limitations. No technology has been approved to obtain additional coverage on cast stainless steel components with this configuration.



GE NUCLEAR ENERGY

System: RWCU

Position	0°	90°	180°	270°
1	N/A	N/A	N/A	N/A
2	0.56	0.56	0.55	0.56
3	0.55	0.54	0.54	0.55
4	0.40	0.39	0.40	0.41
5	0.41	0.40	0.40	0.41

Wall Thickness Profile Sheet

Component ID Number DCA-101-1 SW2403

Crown Height: FLUSH

Crown Width: 0.7"

Nominal Diameter: 6.0"

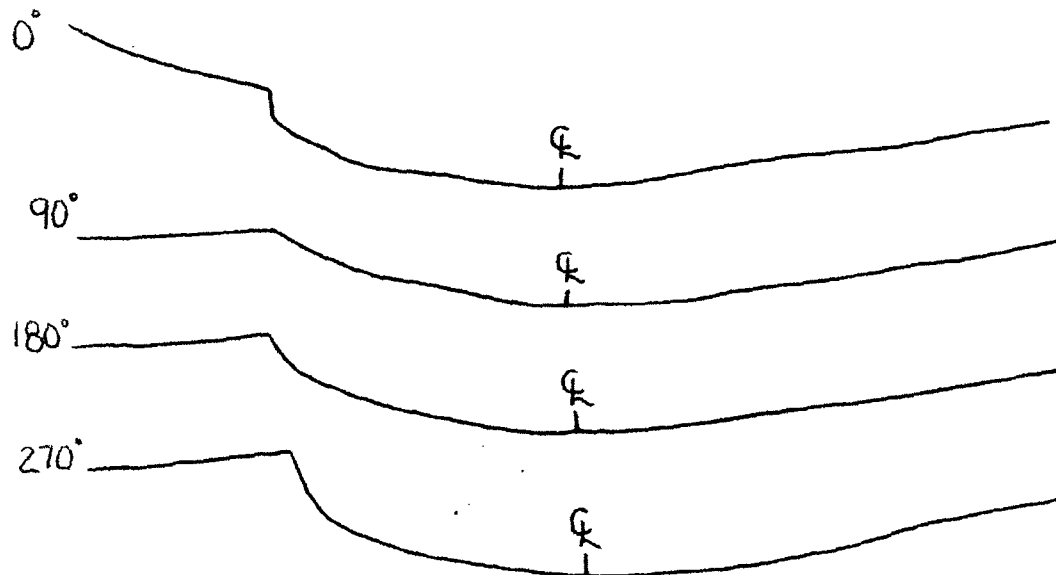
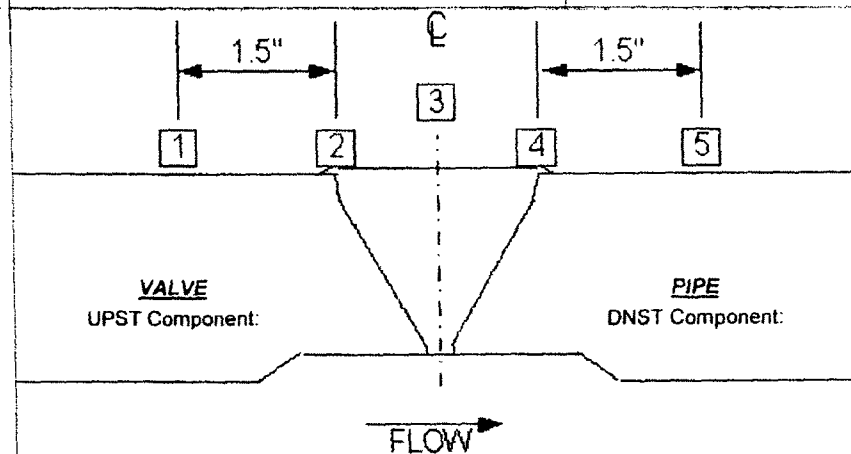
Weld Length: 21.0"

Site: Limerick

Unit: 1

Report No.: 113411

Project: 1R09



JMG

Todd Ginder

II 02/22/02

Initials: Examiner:

Level: Date:

Handwritten signature

III 3/12/02

GE Reviewed By:

Level:

Date:

Handwritten signature

Utility Reviewed By:

Date:

STRUISER 3/13/02

ANII Reviewed By:

Date:

Handwritten signature

3/14/02



GE NUCLEAR ENERGY

Indication / Coverage Plot Sheet

Site: Limerick

Unit: 1

Report No.: 113411

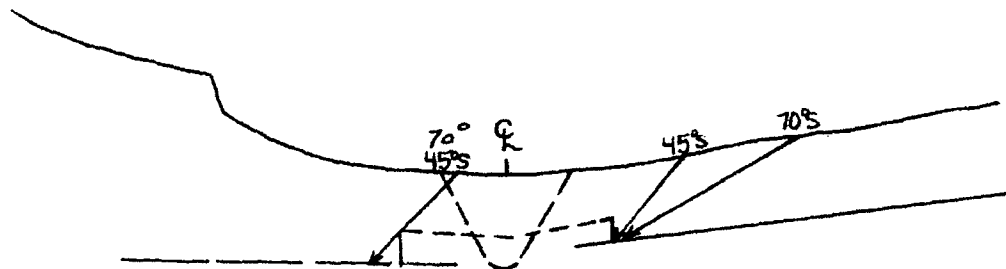
Project: 1R09

System: RWCU

Component ID Number DCA-101-1 SW2403

Configuration: VALVE

PIPE



50% COVERAGE PER PDI.

Wm

JMG

Todd Ginder

II 02/22/02

Wendy Ziller III

3/12/02

STAFFAC 3/13/02

Paul R. R. 3/19/02

Initials: Examiner:

Level: Date:

GE Reviewed By:

Level:

Date:

Utility Reviewed By:

Date:

ANII Reviewed By:

Date:

Weld: DCA-101-1 SW2406

Summary Number: 113431

Unit: 1

Item Number: R1.20

Outage: 1R09 (Spring 2002)

Coverage: 50%

Base Metal and Weld Materials: Stainless Steel

Examination Volume: The examination volume is defined in EPRI TR-112657 "Revised Risk-Informed Inservice Inspection Evaluation Procedure" Rev B-A. For a failure mechanism of R1.20 (element is not subject to a damage mechanism) the required volume is N-578-1 "Risk-Informed Requirements for Class 1, 2, or 3 Piping, Method B Section XI, Division 1". Per the code case the examination volume is contained in Figure IWB-2500-8(c) "Similar and Dissimilar Metal Welds in Components and Piping" with an expanded volume of ½ inch beyond each side of the base metal thickness transition or counterbore.

UT Exam Type: Manual examination 0°L, 45°S and 70°S

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was performed to requirements contained in ASME Section XI Appendix VIII per the PDI program.

Limitation Description:

The exam completed was limited to 50% Code required coverage because the downstream axial UT scan was not performed due to the weld configuration. The valve material is cast stainless steel whose acoustic properties are not conducive for ultrasonic examination of the full weld. No unacceptable indications were noted. The following drawings characterize the limitations. No technology has been approved to obtain additional coverage on cast stainless steel components with this configuration.



GE NUCLEAR ENERGY

Wall Thickness Profile Sheet

Site: Limerick

Unit: 1

Report I.

Project: 1R09

113431

System: RWCU

Component ID Number DCA-101-1 SW2406

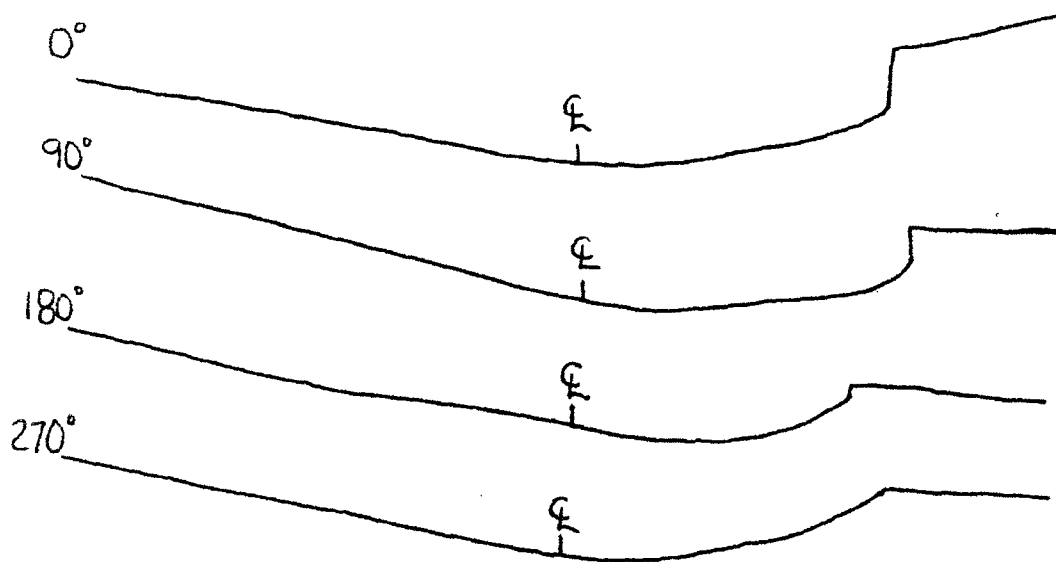
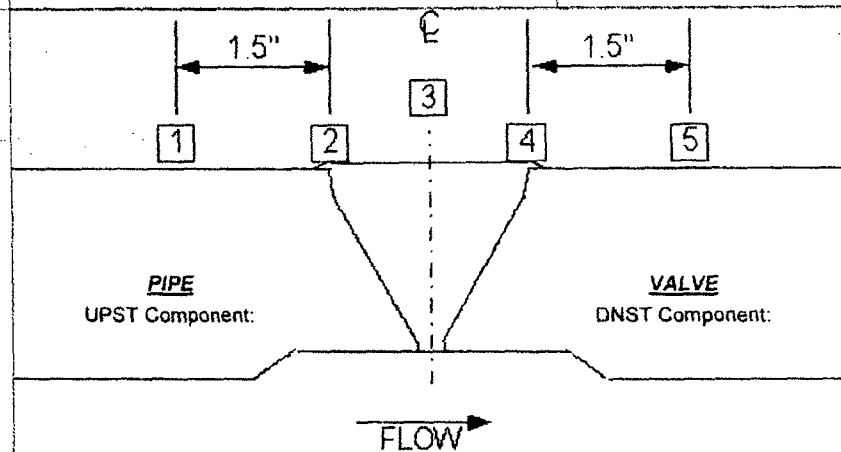
Position	0°	90°	180°	270°
1	0.40	0.40	0.40	0.40
2	0.40	0.40	0.40	0.40
3	0.52	0.52	0.53	0.54
4	0.58	0.56	0.58	0.56
5	N/A	N/A	N/A	N/A

Crown Height: FLUSH

Crown Width: 0.7"

Nominal Diameter 6.0"

Weld Length: 21.0"



TG

Todd Ginder

II 02/22/02

Initials: Examiner:

Level: Date:

W. E. Stauffer III 3/12/02

GE Reviewed By:

Level: Date:

C. E. STAUFFER

III 3/13/02

Utility Reviewed By:

Date:

R. E. Stauffer

ANII Reviewed By:

Date:



GE NUCLEAR ENERGY

Indication / Coverage Plot Sheet

Site: Limerick

Unit: 1

Report N

Project: 1R09

113431

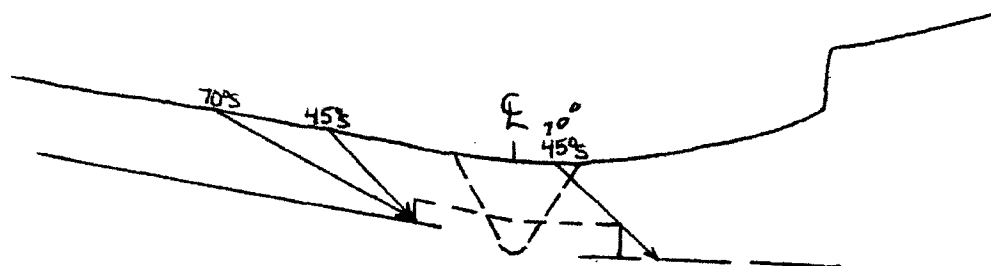
System: RWCU

Component ID Number DCA-101-1 SW2406

Configuration:

PIPE

VALVE



50% COVERAGE CREDIT PER POI.
WFm

JMG

Todd Ginder

II 02/22/02

Initials: Examiner:

Level: Date:

W. J. J. III 3/12/02

GE Reviewed By:

Level: Date:

L.E. STAUFFER

III 3/13/02

Utility Reviewed By:

Date:

ANII Reviewed By:

3/19/02

Date:

Weld: DCA-104-2 SW501

Summary Number: 116050

Unit: 1

Item Number: R1.11

Outage: 1R11 (Spring 2006)

Coverage: 50%

Base Metal and Weld Materials: Stainless Steel

Examination Volume: The examination volume is defined in EPRI TR-112657 "Revised Risk-Informed Inservice Inspection Evaluation Procedure" Rev B-A. For a failure mechanism of R1.11 (Thermal Fatigue) the required volume is EPRI TR-112657 Figure 4-2 "Examination Volume for Thermal Cracking in Piping Welds NPS 4 or Larger."

UT Exam Type: Manual examination 45°S, 0°L and 60°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was performed to requirements contained in ASME Section XI Appendix VIII per the PDI program.

Limitation Description:

The exam completed was limited to 50% Code required coverage because the upstream axial UT scan was not performed due to the weld configuration. The valve material is cast stainless steel whose acoustic properties are not conducive for ultrasonic examination of the full weld. No unacceptable indications were noted. The following drawings characterize the limitations. No technology has been approved to obtain additional coverage on cast stainless steel components with this configuration.



GE NUCLEAR ENERGY

System: RHR

Position	0	90	180	270
1	N/A	N/A	N/A	N/A
2	N/A	N/A	N/A	N/A
3	N/A	.689	N/A	N/A
4	N/A	.636	N/A	N/A
5	N/A	.978	N/A	N/A

Wall Thickness Profile Sheet

Component ID Number: DCA-104-4 FW501

Crown Height: FLUSH

Crown Width: 1.1

Nominal Diameter: 12.0"

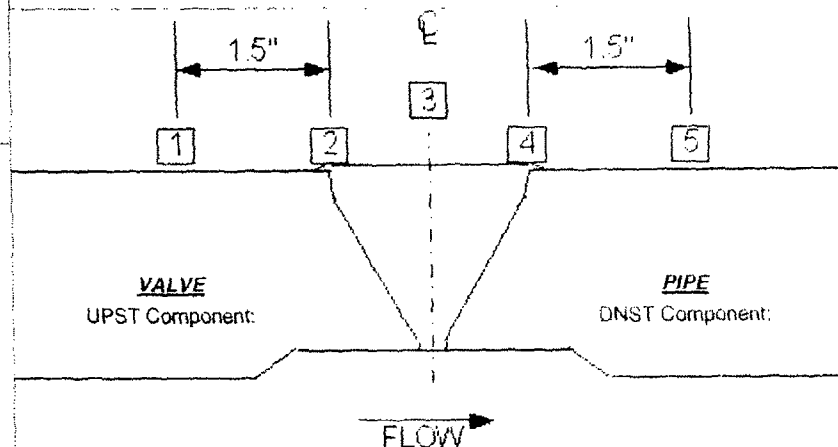
Weld Length: 40.5"

Site: Limerick

Unit: 1

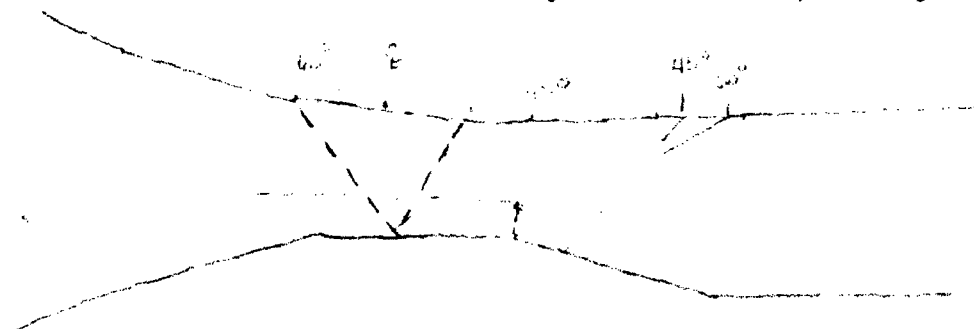
Report No.: 116050

Project: LI 1R11



Reading 4&5 taken from ID and OD profiles.

Readings 4&5 were not taken on Pipe, no readings due to non parallel surfaces.



Coverage = 50%

John Shea
Drawn by:

II
Level: 3/2/2006
Date:

John Shea
GE Reviewed By: John Shea
Level: II
Date: 3/2/06

John Shea
Utility Review: John Shea
Date: 3-19-06

John Shea
ANII Review: John Shea
Date: 3/2/06

Weld: DCA-104-4 SW1702C1

Summary Number: 116070

Unit: 1

Item Number: R1.11

Outage: 1R11 (Spring 2006)

Coverage: 50%

Base Metal and Weld Materials: Stainless Steel

Examination Volume: The examination volume is defined in EPRI TR-112657 "Revised Risk-Informed Inservice Inspection Evaluation Procedure" Rev B-A. For a failure mechanism of R1.11 (Thermal Fatigue) the required volume is EPRI TR-112657 Figure 4-2 "Examination Volume for Thermal Cracking in Piping Welds NPS 4 or Larger."

UT Exam Type: Manual examination 45°S, 60°S and 60°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was performed to requirements contained in ASME Section XI Appendix VIII per the PDI program.

Limitation Description:

The exam completed was limited to 50% Code required coverage because the upstream axial UT scan was not performed due to the weld configuration. The valve material is cast stainless steel whose acoustic properties are not conducive for ultrasonic examination of the full weld. No unacceptable indications were noted. The following drawings characterize the limitations. No technology has been approved to obtain additional coverage on cast stainless steel components with this configuration.



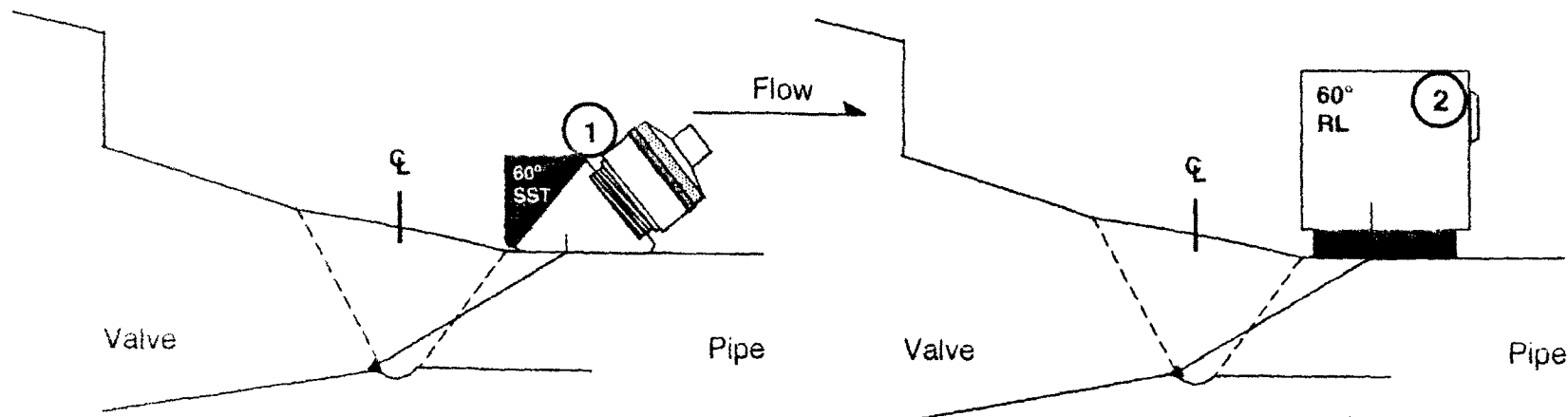
GE NUCLEAR ENERGY

Ultrasonic Examination Indication Report

Site: LimerickProcedure: GE-PDI-UT-2 / 3 / 06-07.05-40Data Report Number: 116070Cal / Data Sheet Number: D-099Weld ID: DCA-104-2 FW1702 CIDrawing: DCA-104-4, Rev. 4Size: 12" Thickness: 0.688"Exam Start: 1554Lo Location: Top Dead CenterWo Location: Center LineWeld Width: 1.2"Weld Height: FLUSHExam End: 1637

Ind No.	Angle Used	% of DAC	Indication Length			W Distance			Metal Path			Ax / Circ	Upst/ Dnst	Comments:
			L1	L Max	L2	W1	W Max	W2	MP 1	MP Max	MP 2			
1	60°	50		12°CCW			.95			1.35°		AX	DNST	ROOT GEOMETRY (60° Shear)
2	60°	125		12°CCW			1.0			1.35°		AX	DNST	ROOT GEOMETRY (60°RL)

Sketch



1 2

Root Geometry, seen intermittently 360°

Wade F. Miller
 LEVEL II 3/19/2006

Wade F. Miller
 ANII 3/27/06



GE NUCLEAR ENERGY

Wall Thickness Profile Sheet

Site: Limerick

Unit: 1

Report No.: 116070

Project: LI 1R11

System:

RHR

Position	0	90°	180°	270°
1	N/A	N/A	N/A	N/A
2	N/A	N/A	N/A	N/A
3	N/A	N/A	N/A	N/A
4	.68"	N/A	N/A	N/A
5	.68"	N/A	N/A	N/A

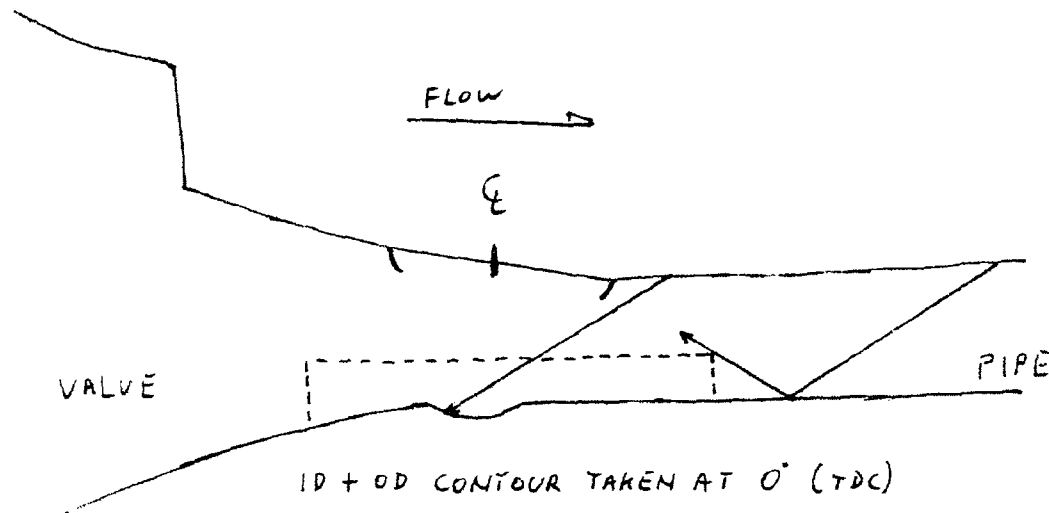
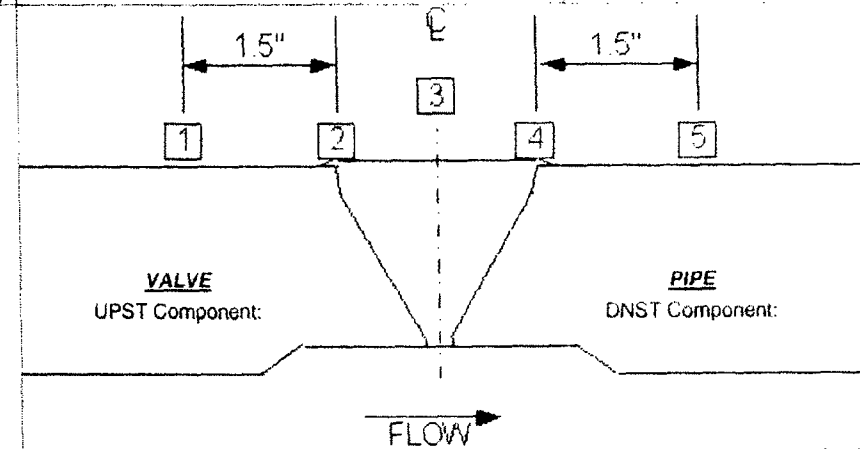
Component ID Number: DCA-104-2 FW1702 CI

Crown Height: FLUSH

Crown Width: 1.2"

Nominal Diameter: 12.0"

Weld Length: 40.0"



Simon Crothers

Drawn by:

II 3/16/2006

Level: Date:

Mark H. Miller III 3/19/2006

GE Reviewed By:

Level:

Date:

Utility Review:

3-21-06

Date:

Paul R. Ruffalo

ANII Review:

3/27/06

Date:

Weld: GBB-105-2 FW5

Summary Number: 254750

Unit: 1

Item Number: R1.20

Outage: 1R11 (Spring 2006)

Coverage: 69.5%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: The examination volume is defined in EPRI TR-112657 "Revised Risk-Informed Inservice Inspection Evaluation Procedure" Rev B-A. For a failure mechanism of R1.20 (element is not subject to a damage mechanism) the required volume is N-578-1 "Risk-Informed Requirements for Class 1, 2, or 3 Piping, Method B Section XI, Division 1". Per the code case the examination volume is contained in Figure IWB-2500-8(c) "Similar and Dissimilar Metal Welds in Components and Piping" with an expanded volume of ½ inch beyond each side of the base metal thickness transition or counterbore.

UT Exam Type: Manual examination 0°L, 45°S, 60°S and 70°S

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was performed to requirements contained in ASME Section XI Appendix VIII per the PDI program.

Limitation Description:

The exam completed was limited to 69.5% code required coverage because the downstream axial UT scan was limited due to the weld configuration. No unacceptable indications were noted. The following drawings characterize the limitations.



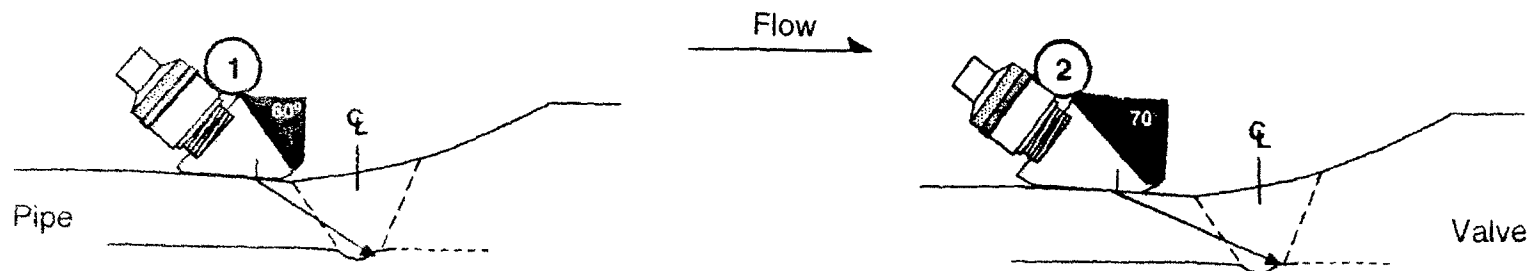
GE NUCLEAR ENERGY

Ultrasonic Examination Indication Report

Site: LimerickProcedure: GE-PDI-UT-1 / 4 / 06-06Data Report Number: 254750Cal / Data Sheet Number: D-027 to D-028Weld ID: GBB-105-2 FW5Drawing: GBB-105-2Size: 16"Thickness: .375"Exam Start: 0959Lo Location: Top Dead CenterWo Location: Weld CenterlineWeld Width: 0.7"Weld Height: 0.05"Exam End: 1048

Ind No.	Angle Used	% of DAC	Indication Length			W Distance			Metal Path			Ax / Circ	Upst/ Dnst	Comments:
			L1	L Max	L2	W1	W Max	W2	MP1	MP Max	MP2			
1	60°	400		5.0° CCW			0.55°			0.75°		Ax	Upst	Root Geometry
2	70°	50		5.0° CCW			0.80°			1.0°		Ax	Upst	Root Geometry

Sketch



1 2

Root Geometry, seen intermittently 360°

Examiner: Simon CrothersLevel: II Date: 3/10/2006GE Reviewed By: [Signature]Level: III Date: 3/12/2006

Utility Review:

Date:

Review: [Signature]Date: 3/14/06Page 6 of 10



GE NUCLEAR ENERGY

System: RHR

Position	0	90	180	270
1	0.38"	N/A	N/A	N/A
2	0.39"	N/A	N/A	N/A
3	0.49"	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A
5	N/A	N/A	N/A	N/A

Wall Thickness Profile Sheet

Component ID Number: GBB-105-2 FW5

Crown Height: 0.05"

Crown Width: 0.70"

Nominal Diameter: 16.0"

Weld Length: 50.25"

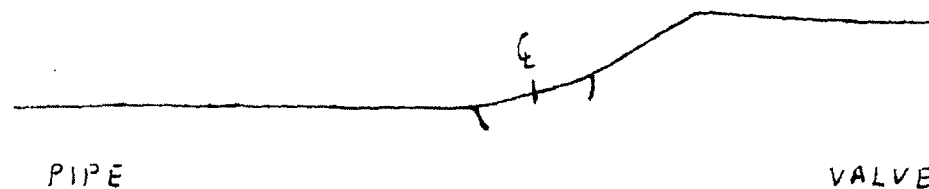
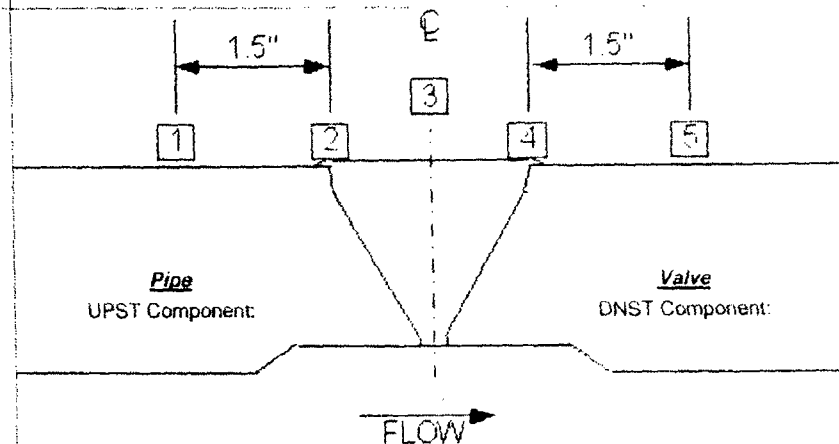
Site: Limerick

Unit: 1

Report No.:

Project: LI 1R11

254750



Simon Crothers

Drawn by:

3/10/2006

Level: Date:

3/10/2006

GE Reviewed by:

Level: Date:

Utility Review:

Date:

Review:

3/13/06

Date:



GE NUCLEAR ENERGY

Indication / Coverage Plot Sheet

Site: Limerick

Unit: 1

Report Number: 254750

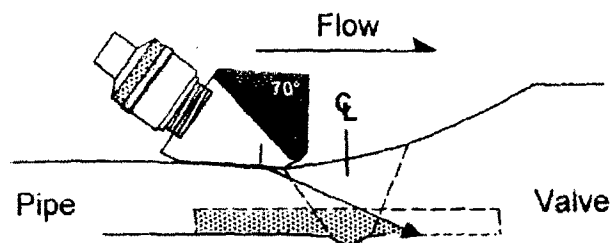
Project: LI 1R11

System: RHR

Component ID Number: GBB-105-2 FWS

Configuration: Pipe

Valve



Exam Area:

- $(0.5" \text{ us} + \text{crown} + 0.5" \text{ ds}) \times (T / 3) = 1.7" \times 0.13" = 0.22 \text{ in}^2$

Axial Exam:

- $(0.95 \times 0.13) + (0.4 \times 0.13) / 2 = 0.15 \text{ in}^2$
- $0.15 / 0.22 = \underline{68\%}$

Circ Exam:

- Exam width = $(0.5" \text{ us} + \text{crown} + 0.5") \text{ ds} = 1.7"$
- Examined $(0.5" \text{ us} + \text{crown}) = 1.2"$
- $1.2 / 1.7 = \underline{71\%}$

Coverage Calc:

- $(68\% + 71\%) / 2 = 69.5\%$
- **Achieved 69.5% coverage.**

Simon Crothers

Drawn by:

II

3/10/2006

Level:

Date:

GE Reviewed By: [Signature]

Level:

Date:

Utility Reviewed By:

Date:

ANU Reviewed By: [Signature]

3/13/06
Date:

Weld: RH 004 (DCA-105-3-2 FW2)

Summary Number: 115070

Unit: 1

Item Number: B9.11

Outage: 1R08 (Spring 2000)

Coverage: 50%

Base Metal and Weld Materials: Stainless Steel

Examination Volume: IWB-2500-8 "Similar and Dissimilar Metal Welds in Components and Piping"

UT Exam Type: Manual examination 45°S and 60°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was performed to requirements contained in ASME Section XI Appendix VIII per the PDI program.

Limitation Description:

The exam completed was limited to 50% Code required coverage because the downstream axial UT scan was not performed due to the weld configuration. The valve material is cast stainless steel whose acoustic properties are not conducive for ultrasonic examination of the full weld. No unacceptable indications were noted. A liquid penetrant exam and system pressure test were also completed with no unacceptable indications observed. The following drawings characterize the limitations. No technology has been approved to obtain additional coverage on cast stainless steel components with this configuration.



GE Nuclear Energy

WALL THICKNESS PROFILE SHEET

SITE: Limerick UNIT: 1

SUMMARY NO.:

PROJECT: 11315

114980

SYSTEM: RHR

COMPONENT ID NO.: DCA-105-3-2 FW2

POSITION 0° 90° 180° 270°

PROCEDURE NO.: UT-LIM-102V0_R1, PPE-UT-2
Rev B

1 1.0 N/A N/A N/A

CROWN HEIGHT: 20 INCHES

2 1.0 N/A N/A N/A

CROWN WIDTH: 2.70 INCHES

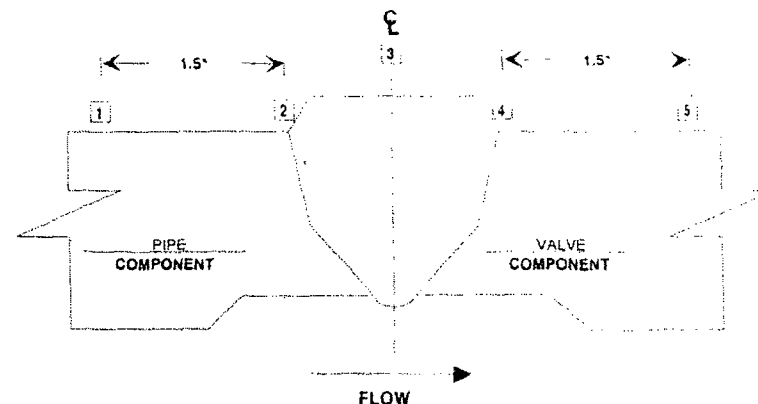
3 .96 N/A N/A N/A

NOM DIAMETER: 20.0 INCHES

4 1.04 N/A N/A N/A

WELD LENGTH: 64.0 INCHES

5 N/A N/A N/A N/A



THICKNESS AND CONTOUR TAKEN FROM 1989 DATA

Handwritten signature II 4/15/00
DRAWN BY LEVEL DATE
Handwritten signature III 04/18/00
GE REVIEW BY LEVEL DATE

Handwritten signature 4/24/00
PECO NDE REVIEW BY DATE

Handwritten signature 4/28/00
H.S.B.I. & I. CO. ANII REVIEW BY DATE

PAGE: 5 OF: 8

WALLTHA.FPP



GE Nuclear Energy

INDICATION PLOT SHEET

SITE: Limerick UNIT: 1R08

SUMMARY NO.: 114980

COMPONENT ID NO.: DCA-105-3-2 FW2

PROJECT: 11315

SUMMARY NO.: 114980

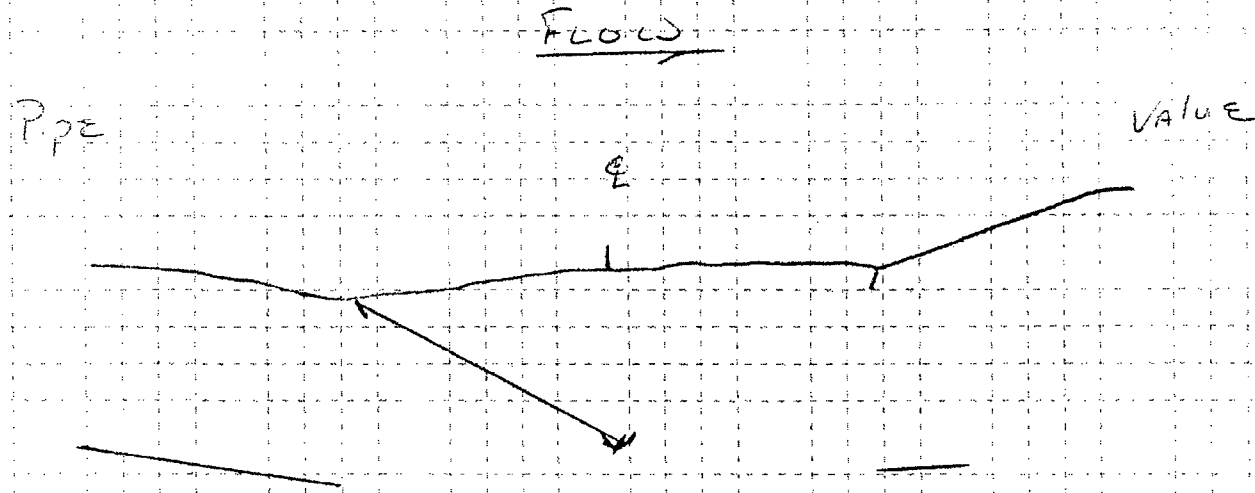
SYSTEM: RHR

PROCEDURE NO.: UT-LIM-102V0_R1 PD-05-2 Rev B

CONFIGURATION: PIPE

FLOW

VALVE



INDICATION #1 = ID GEOMETRY (ROOT)

Handwritten signature
DRAWN BY
Handwritten signature
GE REVIEW BY
LEVEL II DATE 4/15/00
LEVEL III DATE 04/18/00

Handwritten signature
PECO NDE REVIEW
DATE 4/24/00

Handwritten signature
H.S.B.I. & I. CO. ANI REVIEW
DATE 4/28/00

PAGE: 8 OF: 8
FORM 4722-R11

Weld: RH 007 (DCA-105-3-1 FW4)

Summary Number: 115070

Unit: 1

Item Number: B9.11

Outage: 1R07 (Spring 1998)

Coverage: 50%

Base Metal and Weld Materials: Stainless Steel

Examination Volume: IWB-2500-8 "Similar and Dissimilar Metal Welds in Components and Piping"

UT Exam Type: Manual examination 45°S and 60°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

No, the examination was performed to requirements contained in ASME Section XI and V. This was the approved technical guidance at the time of the examination.

Limitation Description:

The exam completed was limited to 50% Code required coverage because the downstream axial UT scan was not performed due to the weld configuration. The valve material is cast stainless steel whose acoustic properties are not conducive for ultrasonic examination of the full weld. No unacceptable indications were noted. A liquid penetrant exam and system pressure test were also completed with no unacceptable indications observed. The following drawings characterize the limitations. No technology has been approved to obtain additional coverage on cast stainless steel components with this configuration.



GE Nuclear Energy

WALL THICKNESS PROFILE SHEET

SITE: LIMERICK

UNIT: 1.R07

SUMMARY NO.:

PROJECT: 1G10Q

115070

SYSTEM: RHR

COMPONENT ID DCA-105-3-1 FW4

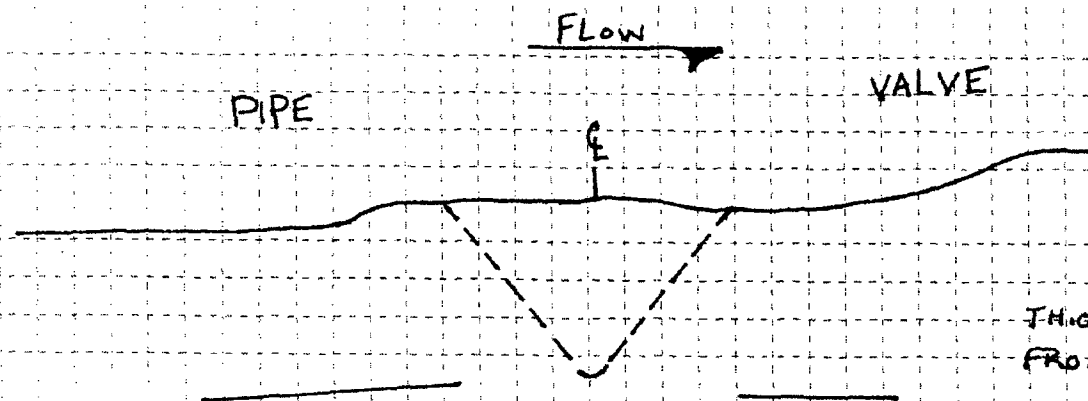
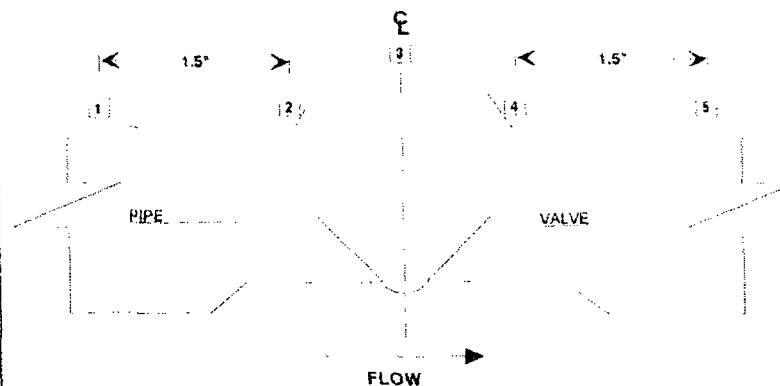
POSITION	0°	90°	180°	270°
1	90	N/A	N/A	N/A
2	95	N/A	N/A	N/A
3	95	N/A	N/A	N/A
4	1.00	N/A	N/A	N/A
5	N/A	N/A	N/A	N/A

CROWN HEIGHT: .10"

CROWN WIDTH: 2.80"

NOM DIAMETER: 20.0"

WELD LENGTH: 64.0"



James M. Baughman II 4-25-98
DRAWN BY LEVEL DATE

N/A
GE REVIEW BY LEVEL DATE

Philip M. Bock III 5-1-98
GE REVIEWED BY LEVEL DATE

PECO NDE REVIEW

DATE

Paul Brennan 5/7/98
H.S.B.I. & CO. ANII REVIEW DATE

PAGE: 4 OF: 6

FORM 101 REV 1



GE Nuclear Energy

SKETCH SHEET

SITE: LIMERICK

UNIT: 1R07

SUMMARY NO.:

PROJECT: 1G10Q

115070

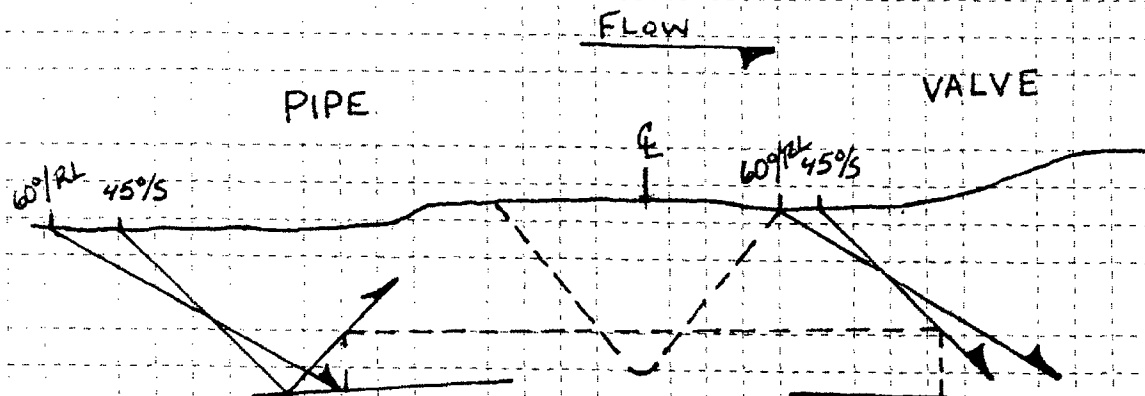
SYSTEM: RHR

COMPONENT ID DCA-105-3-1 FW4

CONFIGURATION: PIPE

FLOW

VALVE



COVERAGE PHOTO 45° SHEAR

CODE COVERAGE ACHIEVED TRG
L III

James M. Zullo II 4-25-98
DRAWN BY LEVEL DATE

N/A
GE REVIEW BY LEVEL DATE

Paul H. [Signature] 5-1-98
GE REVIEW BY DATE

PECO NDE REVIEW BY DATE

Paul H. [Signature] 5/7/98
H.S.B.I. & CO. ANI REVIEW DATE

PAGE: 5 OF: 6

FORM UT23 REV 1

Weld: RH 008 (DCA-105-1-3 FW5)

Summary Number: 115090

Unit: 1

Item Number: B9.11

Outage: 1R07 (Spring 1998)

Coverage: 50%

Base Metal and Weld Materials: Stainless Steel

Examination Volume: IWB-2500-8 "Similar and Dissimilar Metal Welds in Components and Piping"

UT Exam Type: Manual examination 45°S and 60°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

No, the examination was performed to requirements contained in ASME Section XI and V. This was the approved technical guidance at the time of the examination.

Limitation Description:

The exam completed was limited to 50% Code required coverage because the upstream axial UT scan was not performed due to the weld configuration. The valve material is cast stainless steel whose acoustic properties are not conducive for ultrasonic examination of the full weld. No unacceptable indications were noted. A liquid penetrant exam and system pressure test were also completed with no unacceptable indications observed. The following drawings characterize the limitations. No technology has been approved to obtain additional coverage on cast stainless steel components with this configuration.



GE Nuclear Energy

WALL THICKNESS PROFILE SHEET

SITE: LIMERICK UNIT: 1 ROZ

SUMMARY NO.:

PROJECT: 1G10Q

115090

SYSTEM: RHR

COMPONENT ID DCA-105-1-3 FW5

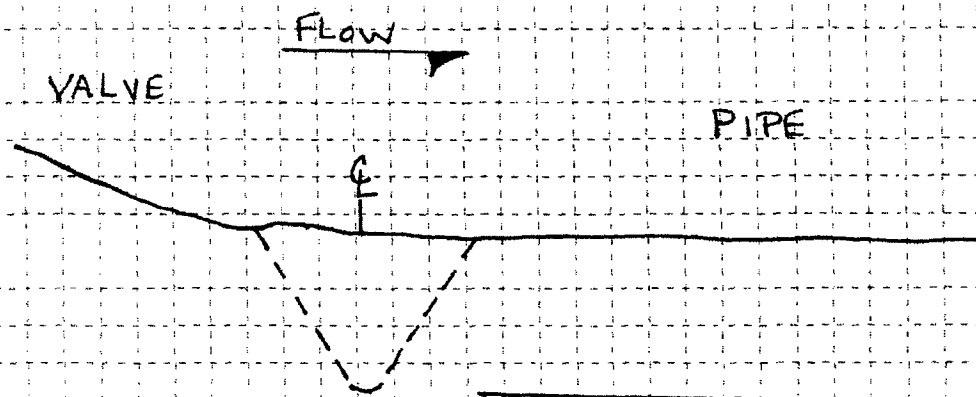
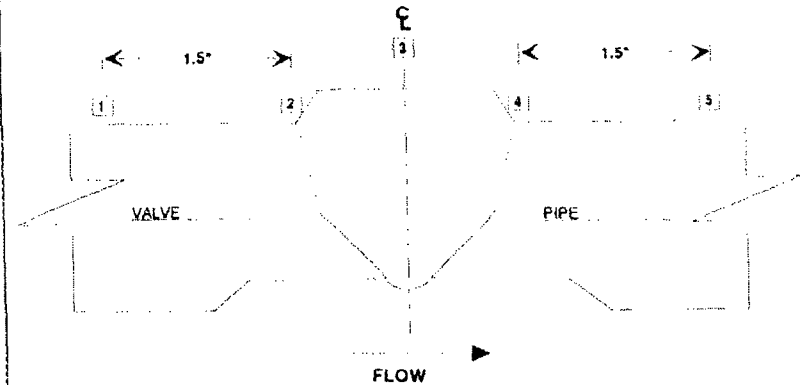
POSITION	0°	90°	180°	270°
1	N/A	N/A	N/A	N/A
2	.91"	N/A	N/A	N/A
3	.87"	N/A	N/A	N/A
4	.85"	N/A	N/A	N/A
5	.87"	N/A	N/A	N/A

CROWN HEIGHT: FLUSH

CROWN WIDTH: 1.20"

NOM DIAMETER: 20.0"

WELD LENGTH: 63.0"



THICKNESS READINGS
TAKEN FROM PREVIOUS DATA

James M. Sullivan II. 4-25-98
DRAWN BY LEVEL DATE
GE REVIEW BY *N/A* LEVEL DATE

Paul M. Smith III 5-1-98
GE REVIEWED BY LEVEL DATE
PECO NDE REVIEW DATE

Paul M. Smith 5/5/98
H.S.B.I. & CO. ANI REVIEW DATE

PAGE: 4 OF: 6

PC-MAN-105-1-3



GE Nuclear Energy

SKETCH SHEET

SITE: LIMERICK

UNIT: 1R07

SUMMARY NO.:

PROJECT: 1G10Q

115090

SYSTEM: RHR

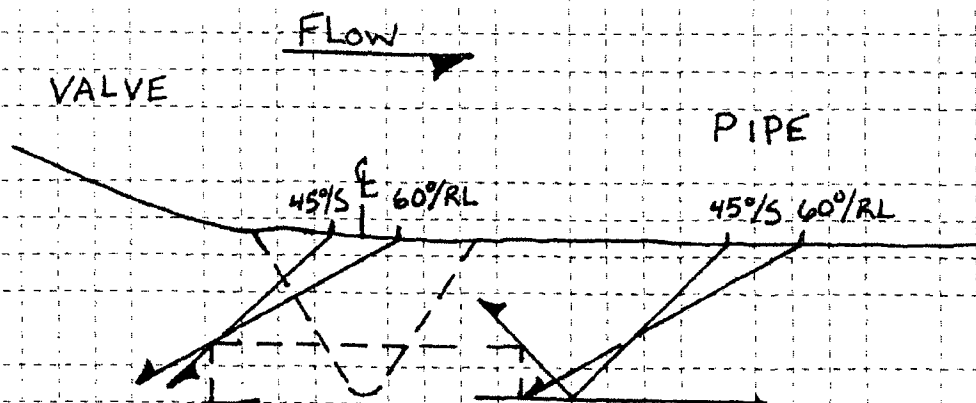
COMPONENT ID

DCA-105-1-3 FW5

CONFIGURATION: VALVE

FLOW

PIPE



COVERAGE Plot 45° SHEAR

CODE COVERAGE Achieved PG
LIII

James M. Bull
DRAWN BY

II
LEVEL

4-25-98
DATE

GE REVIEW BY

N/A

LEVEL

DATE

Philip R. R.
GE REVIEW BY

5-1-98
DATE

PECO NDE REVIEW BY

DATE

Paul H. R.
H.S.B.I. & CO. ANI REVIEW

5/5/98
DATE

PAGE: 5 OF: 6

FORM-UT23 REV 1

Weld: RH 015

Summary Number: 115240

Unit: 1

Item Number: R1.20

Outage: 1R10 (Spring 2004)

Coverage: 50%

Base Metal and Weld Materials: Stainless Steel

Examination Volume: The examination volume is defined in EPRI TR-112657 "Revised Risk-Informed Inservice Inspection Evaluation Procedure" Rev B-A. For a failure mechanism of R1.20 (element is not subject to a damage mechanism) the required volume is N-578-1 "Risk-Informed Requirements for Class 1, 2, or 3 Piping, Method B Section XI, Division 1". Per the code case the examination volume is contained in Figure IWB-2500-8(c) "Similar and Dissimilar Metal Welds in Components and Piping" with an expanded volume of ½ inch beyond each side of the base metal thickness transition or counterbore.

UT Exam Type: Manual examination 45°S, 45°RL, and 60°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was performed to requirements contained in ASME Section XI Appendix VIII per the PDI program.

Limitation Description:

The exam completed was limited to 50% Code required coverage because the downstream axial UT scan was not performed due to the weld configuration. The valve material is cast stainless steel whose acoustic properties are not conducive for ultrasonic examination of the full weld. No unacceptable indications were noted. The following drawings characterize the limitations. No technology has been approved to obtain additional coverage on cast stainless steel components with this configuration.



GE NUCLEAR ENERGY

Wall Thickness Profile Sheet

Site: Limerick

Unit: 1

Summary No.: 115240

Project: 32318

115240

System: RHR

Position	0°	90°	180°	270°
1	0.90	0.88	1.00	0.96
2	0.82	0.82	0.86	0.84
3	0.90	0.92	0.92	0.94
4	0.88	0.88	0.86	0.92
5	1.16	1.12	1.12	1.26

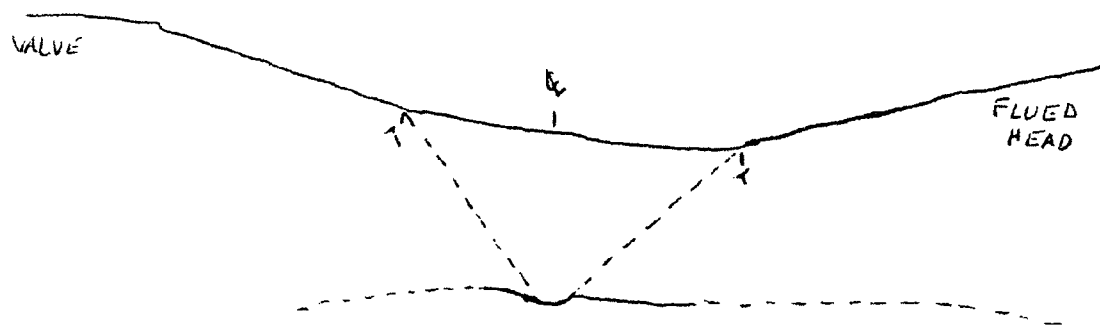
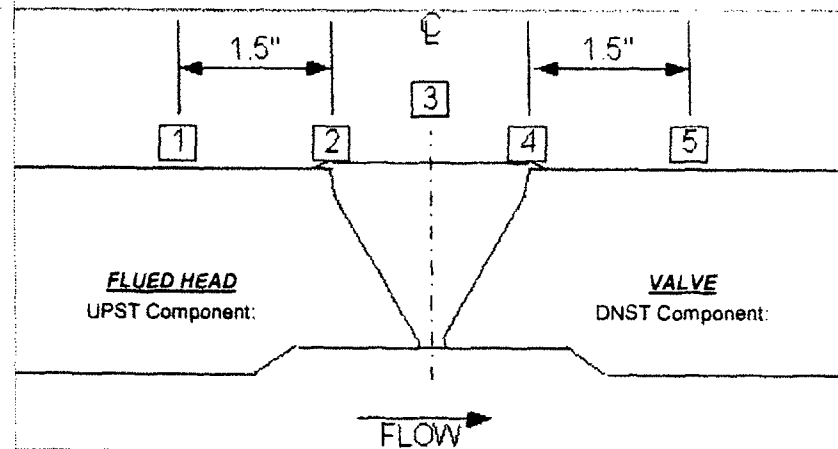
Component ID Number: RH 015

Crown Height: FLUSH

Crown Width: 1.5"

Nominal Diameter: 20.0"

Weld Length: 63.0"



*Thickness Profile Taken
From Process Data*

Scale = 1 : 1

Initials: Nicholas Shearer
Examiner:

Level: III
Date: 3/11/04

GE Reviewed By: MS - H. J. J. III
Level: III
Date: 3/11/04

Utility Reviewed By:

Date:

ANII Reviewed By:

Date:

Page 6 of 8



GE NUCLEAR ENERGY

Indication / Coverage Plot Sheet

Site: Limerick

Unit: 1

Report No.:

Project: 32318

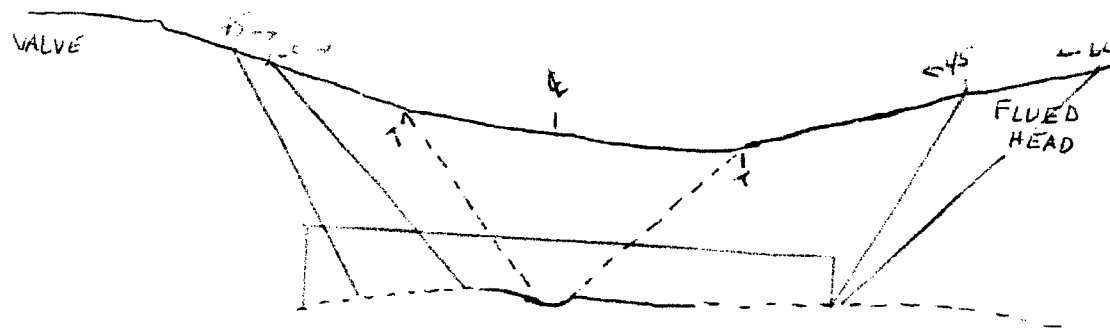
115240

System: RHR

Component ID Number: RH 015

Configuration: FLUED HEAD

VALVE



COMPLETE COVERAGE BOTH DIRECTIONS

Initials: Examiner: Nicholas Shearer III
Level: III Date: 3/3/2004

GE Reviewed By: [Signature] III
Level: III Date: 3/1/04

Utility Reviewed By:

Date:

ANII Reviewed By: [Signature]
Date: 3/1/04

Weld: RHA 002 (DCA-318-3-1 FW4)

Summary Number: 115750

Unit: 1

Item Number: B9.11

Outage: 1R07 (Spring 1998)

Coverage: 50%

Base Metal and Weld Materials: Stainless Steel

Examination Volume: IWB-2500-8 "Similar and Dissimilar Metal Welds in Components and Piping"

UT Exam Type: Manual examination 45°S and 60°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

No, the examination was performed to requirements contained in ASME Section XI and V. This was the approved technical guidance at the time of the examination.

Limitation Description:

The exam completed was limited to 50% Code required coverage because the upstream axial UT scan was not performed due to the weld configuration. The valve material is cast stainless steel whose acoustic properties are not conducive for ultrasonic examination of the full weld. No unacceptable indications were noted. A liquid penetrant exam and system pressure test were also completed with no unacceptable indications observed. The following drawings characterize the limitations. No technology has been approved to obtain additional coverage on cast stainless steel components with this configuration.



GE Nuclear Energy

WALL THICKNESS PROFILE SHEET

SITE: LIMERICK UNIT: 1 R07

SUMMARY NO.:

PROJECT: 1G100

115750

SYSTEM: RHR

COMPONENT ID DCA-318-3-1 FW4

POSITION 0° 90° 180° 270°

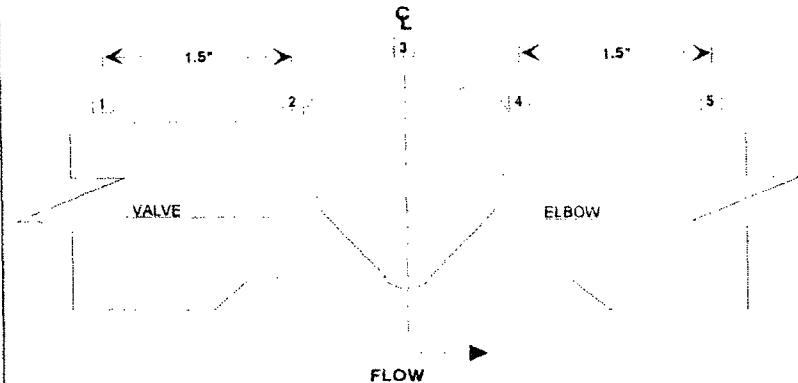
1	N/A	N/A	N/A	N/A
2	.70	N/A	N/A	N/A
3	.64	N/A	N/A	N/A
4	.62	N/A	N/A	N/A
5	.64	N/A	N/A	N/A

CROWN HEIGHT: FLUSH

CROWN WIDTH: 1.25"

NOM DIAMETER: 12.0"

WELD LENGTH: 38.0"



VALVE

Flow

ELBOW

THICKNESS & CONTOUR TAKEN FROM
PREVIOUS DATA

James H. Buller II
DRAWN BY LEVEL DATE 4-24-98
N/A
GE REVIEW BY LEVEL DATE

Patricia J. Set III
GE REVIEWED BY LEVEL DATE 5-1-98
PECO NDE REVIEW DATE

Paul K. ...
H.S.B.I. & CO. ANI REVIEW DATE 5/7/98

PAGE: 4 OF: 6
FORM 12-11-92



GE Nuclear Energy

SKETCH SHEET

SITE: LIMERICK UNIT: 1R07

SUMMARY NO.:

PROJECT: 1G100

115750

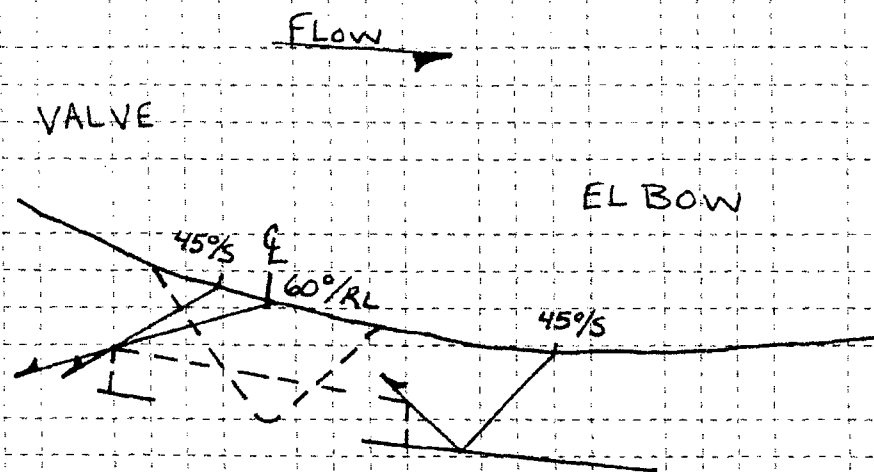
SYSTEM: RHR

COMPONENT ID DCA-318-3-1 EW4

CONFIGURATION: VALVE

FLOW

ELBOW



COVERAGE PLOT 45° SHEAR

CODE COVERAGE ACHIEVED

TAG
LIII

James H. Bullen II
DRAWN BY

LEVEL

4-24-98
DATE

GE REVIEW BY

N/A

LEVEL

DATE

Timothy H. Smith
GE REVIEW BY

5-1-98
DATE

PECO NDE REVIEW BY

DATE

Paul Pennington
H.S.B.I. & CO. ANI REVIEW

5/1/98
DATE

PAGE: 5 OF: 6

FORM UT23 REV 1

Weld: RHA 003 (DCA-318-3-2 FW5)

Summary Number: 115780

Unit: 1

Item Number: B9.11

Outage: 1R07 (Spring 1998)

Coverage: 50%

Base Metal and Weld Materials: Stainless Steel

Examination Volume: IWB-2500-8 "Similar and Dissimilar Metal Welds in Components and Piping"

UT Exam Type: Manual examination 45°S and 60°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

No, the examination was performed to requirements contained in ASME Section XI and V. This was the approved technical guidance at the time of the examination.

Limitation Description:

The exam completed was limited to 50% Code required coverage because the downstream axial UT scan was not performed due to the weld configuration. The valve material is cast stainless steel whose acoustic properties are not conducive for ultrasonic examination of the full weld. No unacceptable indications were noted. A liquid penetrant exam and system pressure test were also completed with no unacceptable indications observed. The following drawings characterize the limitations. No technology has been approved to obtain additional coverage on cast stainless steel components with this configuration.



GE Nuclear Energy

WALL THICKNESS PROFILE SHEET

SITE: LIMERICK

UNIT: 1 RO7

SUMMARY NO.:

PROJECT: 1G10Q

115780

SYSTEM: RHR

COMPONENT ID DCA-318-3-2 FW5

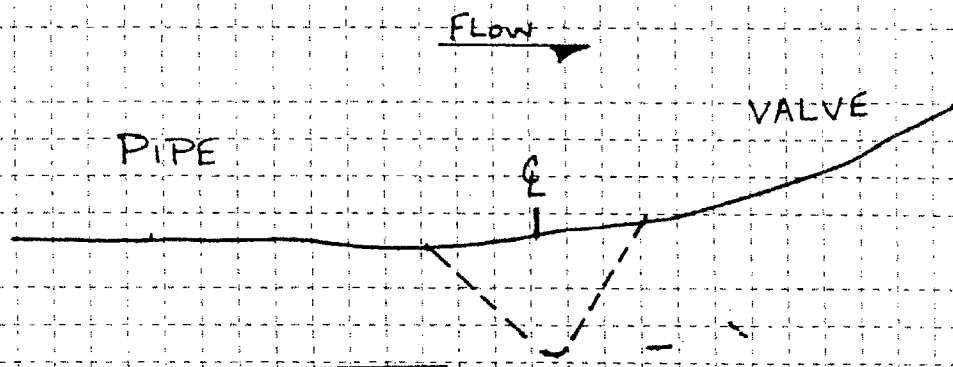
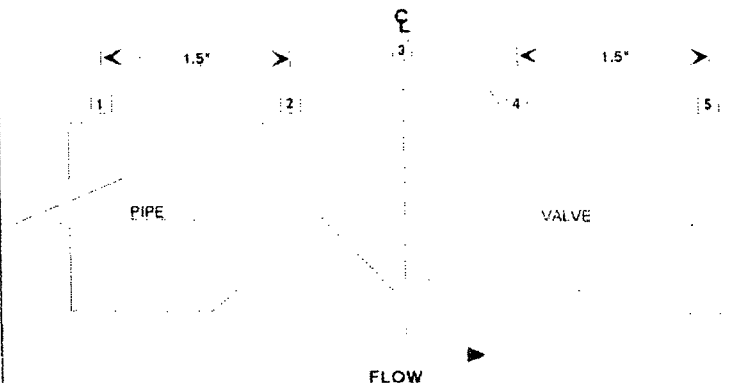
POSITION	0°	90°	180°	270°
1	.70	N/A	N/A	N/A
2	.65	N/A	N/A	N/A
3	.66	N/A	N/A	N/A
4	.68	N/A	N/A	N/A
5	N/A	N/A	N/A	N/A

CROWN HEIGHT: FLUSH

CROWN WIDTH: 1.20"

NOM DIAMETER: 12.0"

WELD LENGTH: 40.0"



THICKNESS & CONTOUR TAKEN FROM PREVIOUS DATA

James M. Bull II 4-24-98
DRAWN BY LEVEL DATE
N/A
GE REVIEW BY LEVEL DATE

John J. K... III 5-1-98
GE REVIEWED BY LEVEL DATE
PECO NDE REVIEW DATE

Paul H. ... 5/7/98
H.S.B.I. & CO. ANI REVIEW DATE
PAGE: 4 OF: 6



GE Nuclear Energy

SKETCH SHEET

SITE: LIMERICK UNIT: 1R07

SUMMARY NO.:

PROJECT: 1G10Q

115780

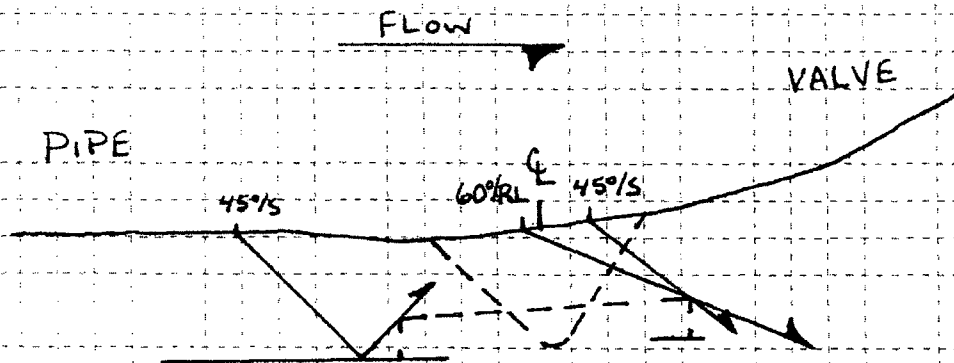
SYSTEM: RHR

COMPONENT ID DCA-318-3-2 FW5

CONFIGURATION: PIPE

FLOW

VALVE



COVERAGE PLOT 45° SHEAR
CODE COVERAGE ACHIEVED

James H. Zuber II 4-24-98
DRAWN BY LEVEL DATE

GE REVIEW BY *N/A* LEVEL DATE

Philip M. Burt 5-1-98
GE REVIEW BY DATE

PECO NDE REVIEW BY DATE

Paul Kennedy
H.S.B.I. & CO. ANI REVIEW

5/7/98
DATE

PAGE: 5 OF: 6

FORM 0123 REV 1

Weld: RHB 002 (DCA-318-2-1 FW4)

Summary Number: 116760

Unit: 1

Item Number: B9.11

Outage: 1R08 (Spring 2000)

Coverage: 50%

Base Metal and Weld Materials: Stainless Steel

Examination Volume: IWB-2500-8 "Similar and Dissimilar Metal Welds in Components and Piping"

UT Exam Type: Manual examination 45°S and 60°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was performed to requirements contained in ASME Section XI Appendix VIII per the PDI program.

Limitation Description:

The exam completed was limited to 50% Code required coverage because the upstream axial UT scan was not performed due to the weld configuration. The valve material is cast stainless steel whose acoustic properties are not conducive for ultrasonic examination of the full weld. No unacceptable indications were noted. A liquid penetrant exam and system pressure test were also completed with no unacceptable indications observed. The following drawings characterize the limitations. No technology has been approved to obtain additional coverage on cast stainless steel components with this configuration.



GE Nuclear Energy

WALL THICKNESS PROFILE SHEET

SITE: Limerick UNIT: 1

SUMMARY NO.:

PROJECT: 11315

116760

SYSTEM: RHR

COMPONENT ID NO.: DCA-318-2-1 FW4

POSITION 0° 90° 180° 270°

PROCEDURE NO.: UT-LIM-102V0, R1, POC-UT-2
REV B

1 N/A N/A N/A N/A

CROWN HEIGHT: FLUSH

2 .70 N/A N/A N/A

CROWN WIDTH: 1.20 INCHES

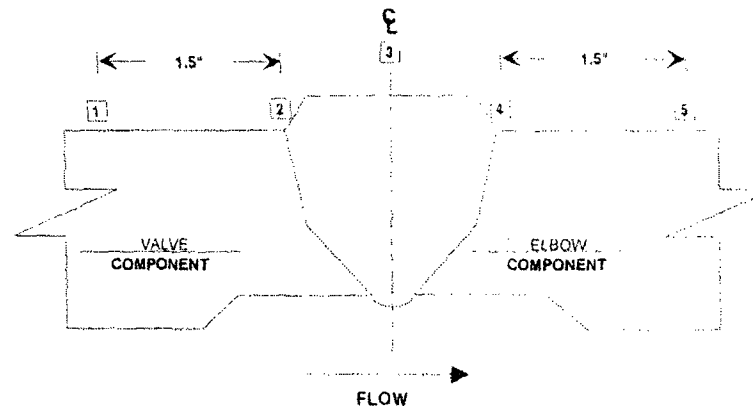
3 .70 N/A N/A N/A

NOM DIAMETER: 12.0 INCHES

4 .67 N/A N/A N/A

WELD LENGTH: 37.70 INCHES

5 .72 N/A N/A N/A



VALVE

FLOW →

€

ELBOW

THICKNESS AND CONTOUR TAKEN FROM PREVIOUS DATA

DRAWN BY

II
LEVEL

4/13/00
DATE

GE REVIEW BY

III
LEVEL

04/17/00
DATE

PECO NDE REVIEW BY

DATE

H.S.B.I. & I. CO. ANII REVIEW BY

DATE

PAGE: 7 OF: 8

WALLTHA.FRP

Weld: RHB 003 (DCA-318-2-1 FW5)

Summary Number: 116790

Unit: 1

Item Number: B9.11

Outage: 1R08 (Spring 2000)

Coverage: 50%

Base Metal and Weld Materials: Stainless Steel

Examination Volume: IWB-2500-8 "Similar and Dissimilar Metal Welds in Components and Piping"

UT Exam Type: Manual examination 45°S and 60°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was performed to requirements contained in ASME Section XI Appendix VIII per the PDI program.

Limitation Description:

The exam completed was limited to 50% Code required coverage because the downstream axial UT scan was not performed due to the weld configuration. The valve material is cast stainless steel whose acoustic properties are not conducive for ultrasonic examination of the full weld. No unacceptable indications were noted. A liquid penetrant exam and system pressure test were also completed with no unacceptable indications observed. The following drawings characterize the limitations. No technology has been approved to obtain additional coverage on cast stainless steel components with this configuration.



GE Nuclear Energy

WALL THICKNESS PROFILE SHEET

SITE: Limerick UNIT: 1

SUMMARY NO.:

PROJECT: 11315

116790

SYSTEM: RHR

COMPONENT ID NO.: DCA-318-2-1 FW5

PROCEDURE NO.: UT-LIM-102V0 R1, PDI-UT-2
REV B

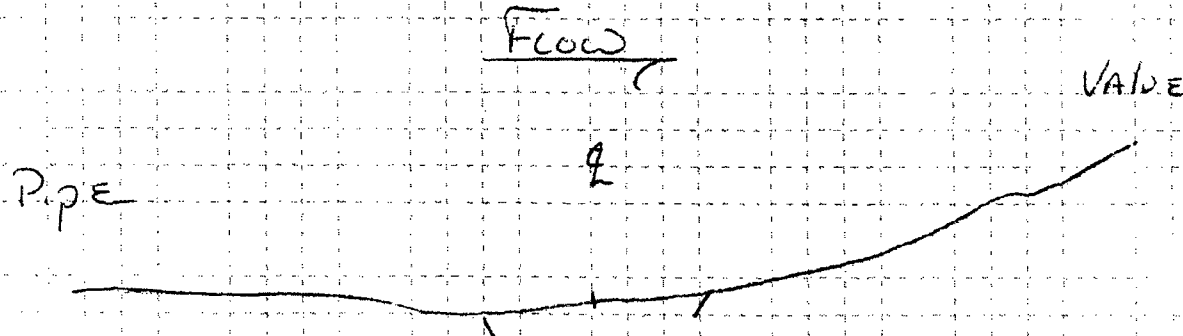
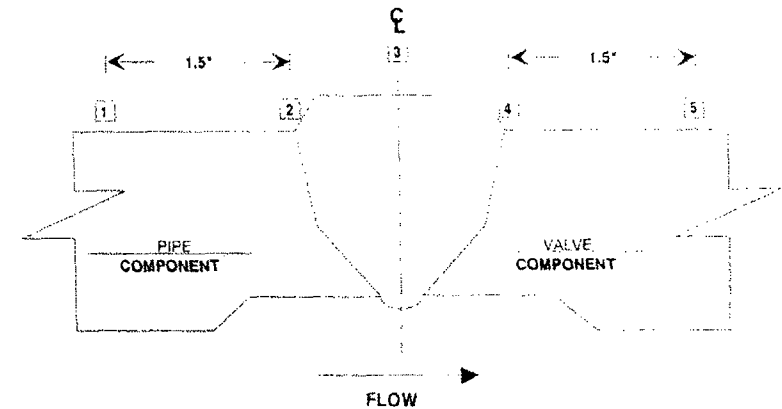
POSITION	0°	90°	180°	270°
1	.68	N/A	N/A	N/A
2	.66	N/A	N/A	N/A
3	.72	N/A	N/A	N/A
4	.72	N/A	N/A	N/A
5	N/A	N/A	N/A	N/A

CROWN HEIGHT: FLUSH

CROWN WIDTH: 1.20 INCHES

NOM DIAMETER: 12.0 INCHES

WELD LENGTH: 37.70 INCHES



[Signature]
DRAWN BY
[Signature]
GE REVIEW BY

II 4/13/00
LEVEL DATE
III 04/17/00
LEVEL DATE

[Signature]
PECO NDE REVIEW BY

4-20-2000
DATE

[Signature] 4/25/00
H.S.B.I. & I. CO. ANI REVIEW BY DATE

PAGE: 7 OF 7

Weld: RRB 004 (RS-1-B2 SWA)

Summary Number: 110150

Unit: 1

Item Number: B9.11

Outage: 1R08 (Spring 2000)

Coverage: 50%

Base Metal and Weld Materials: Stainless Steel

Examination Volume: IWB-2500-8 "Similar and Dissimilar Metal Welds in Components and Piping"

UT Exam Type: Manual examination 45°S and 60°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was performed to requirements contained in ASME Section XI Appendix VIII per the PDI program.

Limitation Description:

The exam completed was limited to 50% Code required coverage because the upstream axial UT scan was not performed due to the weld configuration. No unacceptable indications were noted. A liquid penetrant exam and system pressure test were also completed with no unacceptable indications observed. The following drawings characterize the limitations.



GE Nuclear Energy

WALL THICKNESS PROFILE SHEET

SITE: Limerick

UNIT: 1

SUMMARY NO.:

PROJECT: 11315

110150

SYSTEM: RR

COMPONENT ID NO.: RS-1-B2 SWA

POSITION 0° 90° 180° 270°

PROCEDURE NO.: UT-LIM-102V0, REV 1, POC-v-2
REV 3

1 N/A N/A N/A N/A

CROWN HEIGHT: FLUSH

2 N/A N/A N/A N/A

CROWN WIDTH: 1.90 INCHES

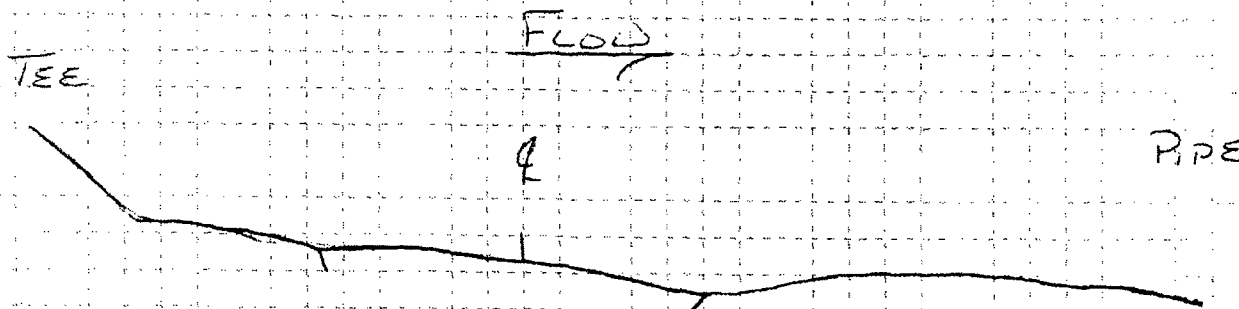
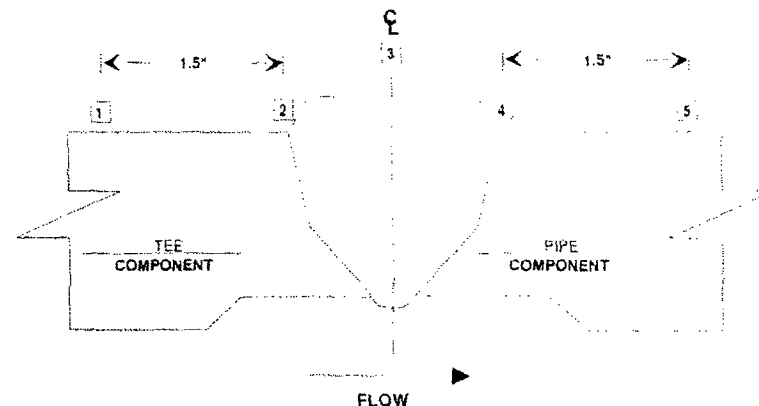
3 1.34 N/A N/A N/A

NOM DIAMETER: 28.0 INCHES

4 1.08 N/A N/A N/A

WELD LENGTH: 87.5 INCHES

5 1.24 N/A N/A N/A



THICKNESS AND CONTOUR TAKEN FROM 1989 DATA

Handwritten Signature II 4/10/00
DRAWN BY LEVEL DATE
Handwritten Signature III 04/18/00
GE REVIEW BY LEVEL DATE

Thomas L. Ardman 4/24/00
PECO NDE REVIEW BY DATE

Handwritten Signature 4/25/00
H.S.B.I. & I. CO. ANII REVIEW BY DATE

PAGE: 7 OF: 8

2011-10-10



GE Nuclear Energy

INDICATION PLOT SHEET

SITE: Limerick

UNIT: 1R08

SUMMARY NO.:

PROJECT: 11315

110150

COMPONENT ID NO.: RS-1-B2 SWA

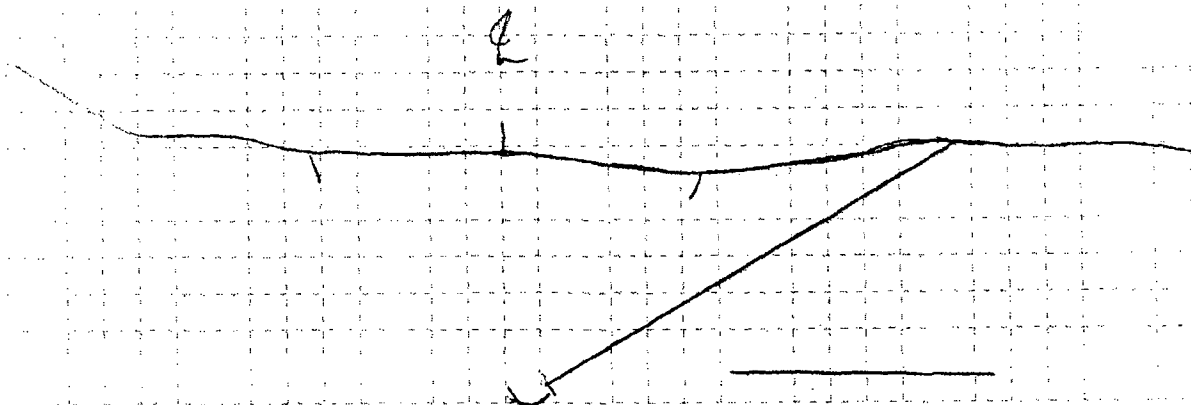
PROCEDURE NO.: UT-LIM-102V0, R1, ^{PRT-UT-2} REV. B

CONFIGURATION: TEE

FLOW

PIPE

SYSTEM: RR



INDICATION #1 = ID GEOMETRY (ROOT)

Handwritten signature
DRAWN BY
Handwritten signature
GE REVIEW BY
LEVEL II
DATE 4/10/00
LEVEL III
DATE 04/18/00

Handwritten signature
PECO NDE REVIEW
DATE 4/24/00

Handwritten signature
H.S.B.J. & I. CO. ANII REVIEW
DATE 4/25/00

PAGE: 8 OF: 8

FORM UT-02, 8-91

Weld: RRB 013 (RD-1-B1 FWWB6)

Summary Number: 110370

Unit: 1

Item Number: B9.11

Outage: 1R07 (Spring 1998)

Coverage: 50%

Base Metal and Weld Materials: Stainless Steel

Examination Volume: IWB-2500-8 "Similar and Dissimilar Metal Welds in Components and Piping"

UT Exam Type: Manual examination 45°S and 60°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

No, the examination was performed to requirements contained in ASME Section XI and V. This was the approved technical guidance at the time of the examination.

Limitation Description:

The exam completed was limited to 50% Code required coverage because the upstream axial UT scan was not performed due to the weld configuration. The pump material is cast stainless steel whose acoustic properties are not conducive for ultrasonic examination of the full weld. No unacceptable indications were noted. A liquid penetrant exam and system pressure test were also completed with no unacceptable indications observed. The following drawings characterize the limitations. No technology has been approved to obtain additional coverage on cast stainless steel components with this configuration.



GE Nuclear Energy

WALL THICKNESS PROFILE SHEET

SITE: LIMERICK UNIT: 1 ROZ

SUMMARY NO.:

PROJECT: 1G100

110370

SYSTEM: RR

COMPONENT ID RD-1-B1 FWWB6

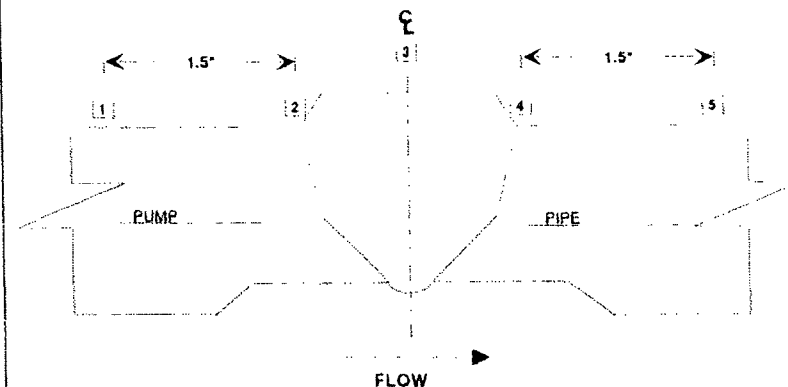
POSITION	0°	90°	180°	270°
1	N/A	N/A	N/A	N/A
2	N/A	N/A	N/A	N/A
3	1.5"	N/A	N/A	N/A
4	1.4"	N/A	N/A	N/A
5	1.5"	N/A	N/A	N/A

CROWN HEIGHT: FLUSH

CROWN WIDTH: 1.5"

NOM DIAMETER: 28.0"

WELD LENGTH: 88.0"



FLOW

T&C TAKEN FROM PREVIOUS DATA

Robert Furkowski II 4-13-98
DRAWN BY LEVEL DATE
Walter F. Green III 4/16/98
GE REVIEW BY LEVEL DATE

N/A
GE REVIEWED BY LEVEL DATE
PECO NDE REVIEW DATE

Paul Bernhardt 4/30/98
H.S.B.I. & CO. ANII REVIEW DATE

PAGE: 4 OF: 7

FORM 1010 REV 1



GE Nuclear Energy

SKETCH SHEET

SITE: LIMERICK UNIT: 1RQZ

SUMMARY NO.: 110370

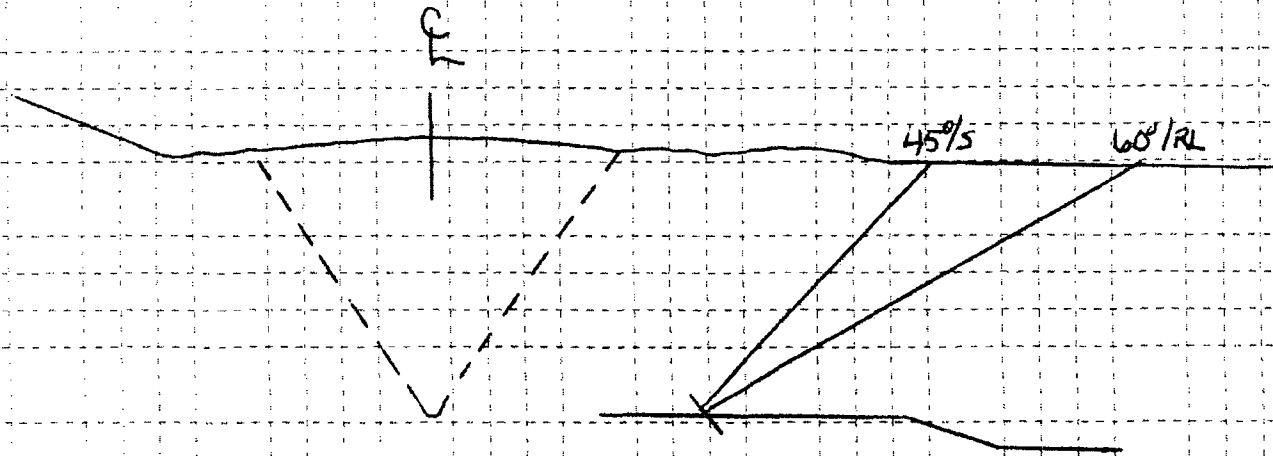
PROJECT: 1G10Q

110370

SYSTEM: RR

COMPONENT ID RD-1-B1 FWWB6

CONFIGURATION: PUMP FLOW PIPE



ID GEOMETRY SEEN WITH 45° SHEAR & 60° RL

Robert P. ...
DRAWN BY

II 4-13-98
LEVEL DATE

N/A
GE REVIEW BY

DATE

Walter F. ...
GE REVIEW BY

III 4/16/98
LEVEL DATE

PECO NDE REVIEW BY

DATE

Paul ...
H.S.B.I. & CO. ANI REVIEW

4/30/98
DATE

PAGE: 5 OF: 7

FORM-UT23 REV 1



GE Nuclear Energy

SKETCH SHEET

SITE: LIMERICK UNIT: 1R07

SUMMARY NO.:

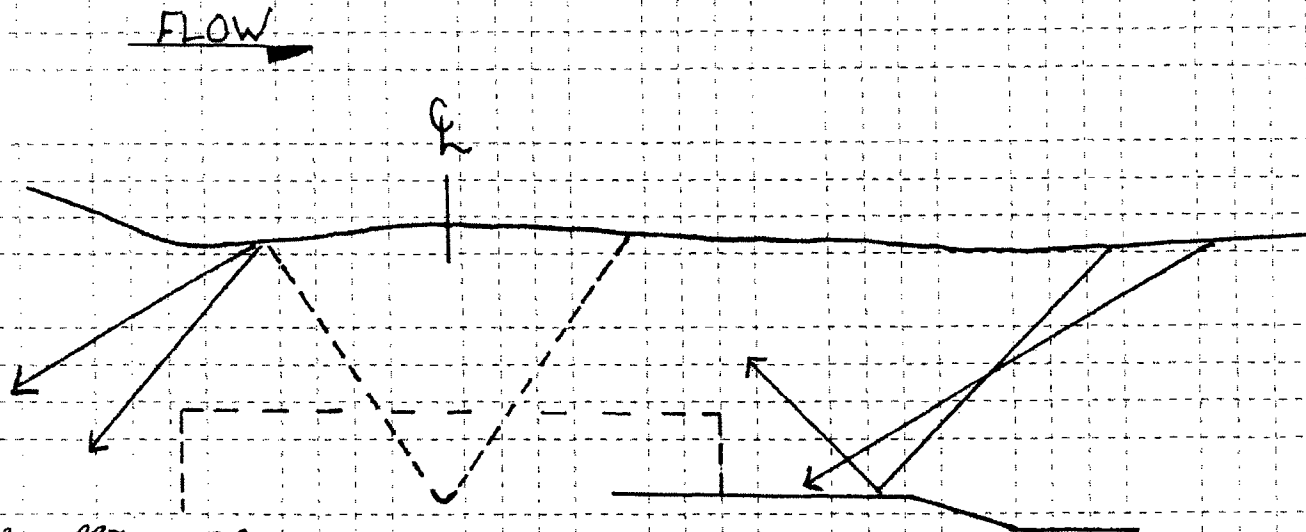
PROJECT: 1G10Q

110370

SYSTEM: RR

COMPONENT ID RD-1-B1 FWWB6

CONFIGURATION: PUMP FLOW PIPE



T&C TAKEN FROM PREVIOUS DATA

COVERAGE PLOT 45°/s and 60°RL

Robert P. Pankowski II 4/13/98
DRAWN BY LEVEL DATE
Walter F. Miller III 4/16/98
GE REVIEW BY LEVEL DATE

N/A
GE REVIEW BY DATE
PECO NDE REVIEW BY DATE

Paul Renard 4/30/98
H.S.B.I. & CO. ANI REVIEW DATE

PAGE: 6 OF: 7

FORM-UT23 REV 1

Weld: RRB 016 (RD-1-B1 FWWB7)

Summary Number: 110390

Unit: 1

Item Number: B9.11

Outage: 1R07 (Spring 1998)

Coverage: 50%

Base Metal and Weld Materials: Stainless Steel

Examination Volume: IWB-2500-8 "Similar and Dissimilar Metal Welds in Components and Piping"

UT Exam Type: Manual examination 45°S and 60°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

No, the examination was performed to requirements contained in ASME Section XI and V. This was the approved technical guidance at the time of the examination.

Limitation Description:

The exam completed was limited to 50% Code required coverage because the downstream axial UT scan was not performed due to the weld configuration. The valve material is cast stainless steel whose acoustic properties are not conducive for ultrasonic examination of the full weld. No unacceptable indications were noted. A liquid penetrant exam and system pressure test were also completed with no unacceptable indications observed. The following drawings characterize the limitations. No technology has been approved to obtain additional coverage on cast stainless steel components with this configuration.



GE Nuclear Energy

WALL THICKNESS PROFILE SHEET

SITE: LIMERICK UNIT: 1 RQ7

SUMMARY NO.:

PROJECT: 1G100

110390

SYSTEM: RR

COMPONENT ID RD-1-B1 FWWB7

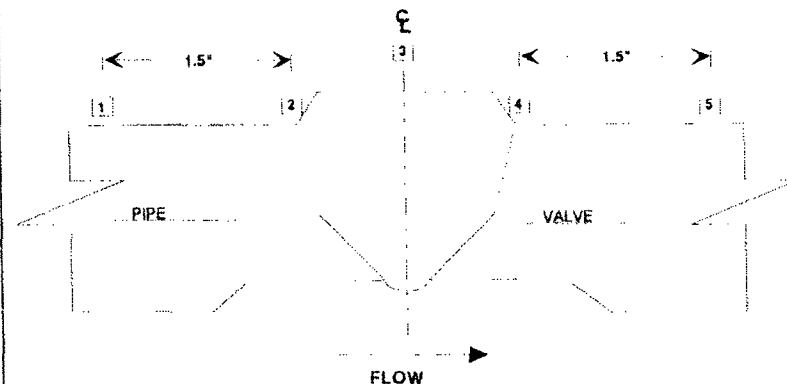
POSITION	0°	90°	180°	270°
1	1.47	N/A	N/A	N/A
2	1.25	N/A	N/A	N/A
3	1.30	N/A	N/A	N/A
4	1.50	N/A	N/A	N/A
5	1.55	N/A	N/A	N/A

CROWN HEIGHT: FLUSH

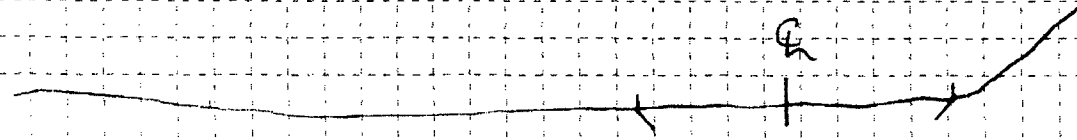
CROWN WIDTH: 1.75"

NOM DIAMETER: 28"

WELD LENGTH: 88"



FLOW



T/C TAKEN FROM PREVIOUS DATA

Robert P. Hawke II 4/13/98
DRAWN BY LEVEL DATE
H. F. Wilson III 4/16/98
GE REVIEW BY LEVEL DATE

N/A
GE REVIEWED BY LEVEL DATE
PECO NDE REVIEW DATE

H.S.B.I. & CO. ANI REVIEW 4/30/98
DATE

PAGE: 4 OF: 7

FORM 101-1000-2-1



GE Nuclear Energy

SKETCH SHEET

SITE: LIMERICK UNIT: 1R0Z

SUMMARY NO.:

PROJECT: 1G100

110390

SYSTEM: RR

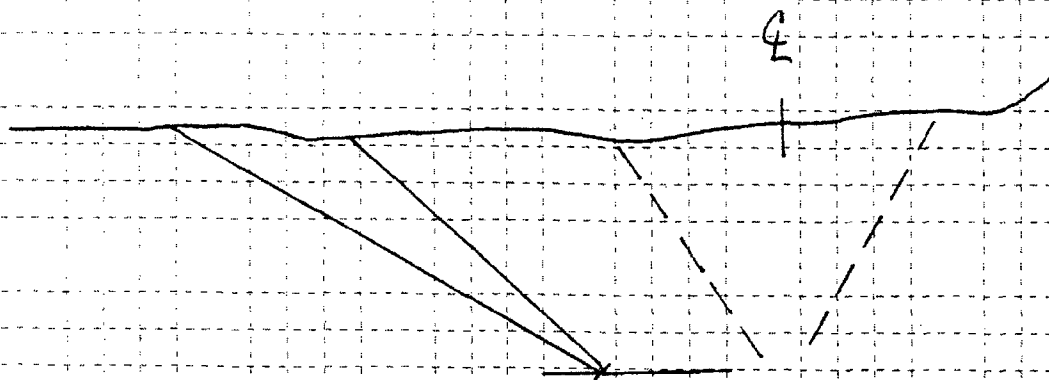
COMPONENT ID RD-1-B1 FWWBZ

CONFIGURATION: PIPE

FLOW

VALVE

INDICATION PLOT SHEET



ID GEOMETRY WITH 45° SHEAR & 60° RL

Robert Parkowski II 4/13/98
DRAWN BY LEVEL DATE
Wendy Miller III 4/16/98
GE REVIEW BY LEVEL DATE

N/A
GE REVIEW BY DATE
PECO NDE REVIEW BY DATE

Paul Penate 4/30/98
H.S.B.I. & CO. ANI REVIEW DATE

PAGE: 5 OF: 7

FORM-UT23 REV 1



GE Nuclear Energy

SKETCH SHEET

SITE: LIMERICK UNIT: 1B07

SUMMARY NO.:

PROJECT: 1G10Q

110390

SYSTEM: RR

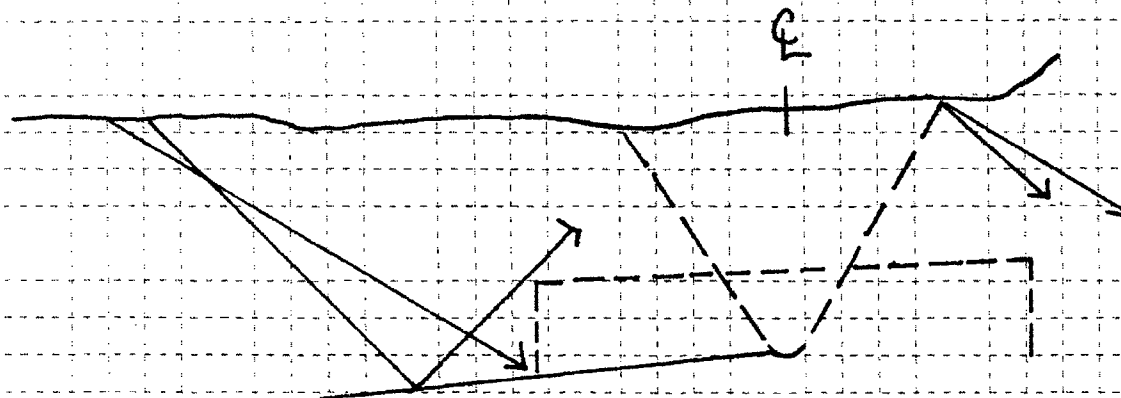
COMPONENT ID RD-1-B1.FWWB7

CONFIGURATION: PIPE

FLOW

VALVE

FLOW



COVERAGE PLOT 45°/S and 60° RL

Robert Pankovick
DRAWN BY

II
LEVEL

4/13/98
DATE

N/A
GE REVIEW BY

DATE

Walter F. Miller
GE REVIEW BY

III
LEVEL

4/16/98
DATE

PECO NDE REVIEW BY

DATE

Pankovick
H.S.B.I. & CO. ANI REVIEW

4/30/98
DATE

PAGE: 6 OF: 7

FORM 11123 REV 1

Weld: RW 020 (DCB-102-1-1 FW1)

Summary Number: 244640

Unit: 1

Item Number: C5.11

Outage: 1R08 (Spring 2000)

Coverage: 50%

Base Metal and Weld Materials: Stainless Steel

Examination Volume: IWC-2500-7 "Welds In Piping"

UT Exam Type: Manual examination 45°S and 70°S

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was performed to requirements contained in ASME Section XI Appendix VIII per the PDI program.

Limitation Description:

The exam completed was limited to 50% Code required coverage because the upstream axial UT scan was not performed due to the weld configuration. The valve material is cast stainless steel whose acoustic properties are not conducive for ultrasonic examination of the full weld. No unacceptable indications were noted. A liquid penetrant exam and system pressure test were also completed with no unacceptable indications observed. The following drawings characterize the limitations. No technology has been approved to obtain additional coverage on cast stainless steel components with this configuration.



GE Nuclear Energy

WALL THICKNESS PROFILE SHEET

SITE: Limerick UNIT: 1

SUMMARY NO.:

PROJECT: 11315

244640

SYSTEM: RWCU

COMPONENT ID NO.: DCB-102-1-1.FW1

CF-LM-102.V0 Rev. 1

PROCEDURE NO.: GE UT-106 VER 2
PDI-UT-2 Rev B

POSITION 0° 90° 180° 270°

1 N/A N/A N/A N/A

2 .45 N/A N/A N/A

3 .50 N/A N/A N/A

4 .45 N/A N/A N/A

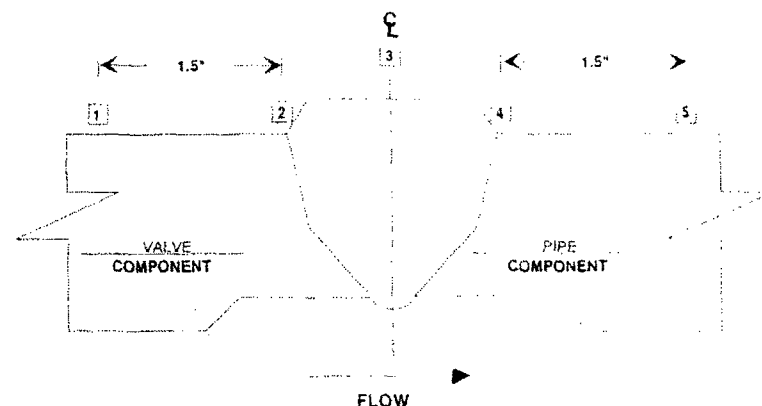
5 .46 N/A N/A N/A

CROWN HEIGHT: FLUSH

CROWN WIDTH: 60 INCHES

NOM DIAMETER: 6.0 INCHES

WELD LENGTH: 21.0 INCHES



Valve

Flow

Pipe

DRAWN BY

LEVEL

DATE

GE REVIEW BY

LEVEL

DATE

PECO NDE REVIEW BY

DATE

H.S.B.I. & I. CO. ANII REVIEW BY

DATE

PAGE: 7 OF 7

Attachment 6

**Relief Request 35 – LGS, Unit 2 Second
Ten-Year Inservice Inspection Interval
Component NDE Exam Limitations**

Weld: DBB-203-1 FW2

Summary Number: 120000

Unit: 2

Item Number: R1.11 and R1.18

Outage: 2R08 (Spring 2005)

Coverage: 81.5%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: The examination volume is defined in EPRI TR-112657 "Revised Risk-Informed Inservice Inspection Evaluation Procedure" Rev B-A. For a failure mechanism of R1.11 (Thermal Fatigue) the required volume is EPRI TR-112657 Figure 4-2 "Examination Volume for Thermal Cracking in Piping Welds NPS 4 or Larger."

UT Exam Type: Manual examination 45°S, 60°S and 70°S

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was performed to requirements contained in ASME Section XI Appendix VIII per the PDI program.

Limitation Description:

The exam completed was limited to 81.5% Code required coverage due to the weld configuration. No unacceptable indications were noted. The following drawings characterize the limitations.



GE NUCLEAR ENERGY

Ultrasonic Examination Indication Report

Data Report Number: 120000

Site: Limerick

Procedure: GE-PDI-UT-1 / R3 / N/A

Cal / Data Sheet Number: D-076

Weld ID: DBB-203-1 FW2

Drawing: XI-DBB-203-1

Size: 24"

Thickness: 1.812"

Exam Start: 15:42

Lo Location: TDC

Wo Location: Weld Centerline

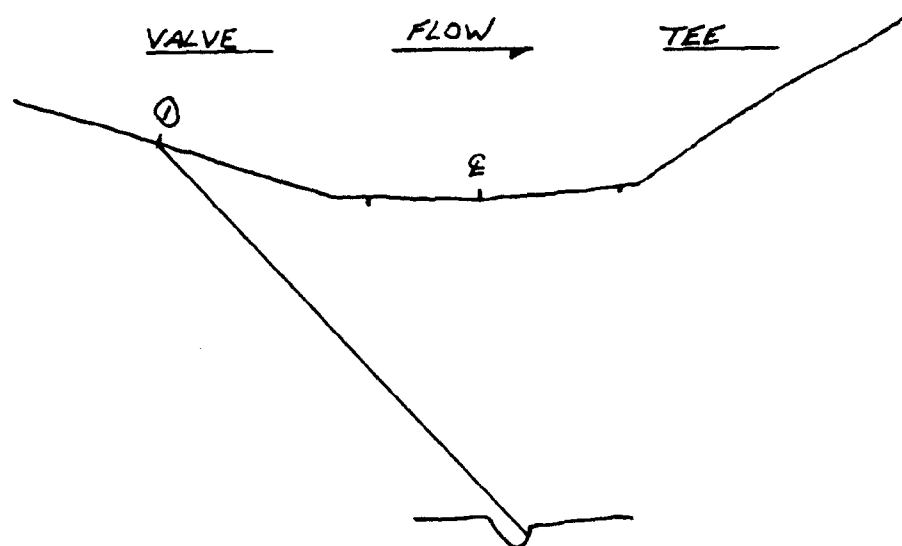
Weld Width: 1.40"

Weld Height: Flush

Exam End: 16:25

Ind No.	Angle Used	% of DAC	Indication Length			W Distance			Metal Path			Ax / Circ	Upst/ Dnst	Comments:
			L1	L Max	L 2	W1	W Max	W 2	MP 1	MP Max	MP 2			
1	60°	282%	*	0"	*	N/A	1.85"	N/A	N/A	2.88"	N/A	Ax	Upst	* Observed Intermittently 360° at varying amplitudes. Root Geometry

Sketch



CO Chad Olson
Examiner

II 3/7/2005
Level: Date:

GE Reviewed By: [Signature]

Level: Date: 03/10/05

Utility Review: [Signature]

Date: 3-14-05

ANII Review: [Signature]

Date: 3/15/05

Page 5 of 7



Wall Thickness Profile Sheet

Report No.:

120000

System: FW

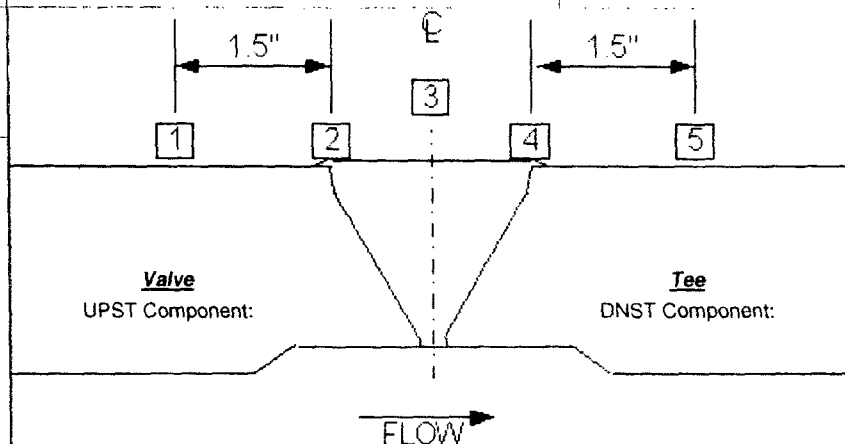
Position	0°	90°	180°	270°
1	N/A	N/A	N/A	N/A
2	1.68"	N/A	N/A	N/A
3	1.85"	N/A	N/A	N/A
4	1.73"	N/A	N/A	N/A
5	N/A	N/A	N/A	N/A

Component ID Number: DBB-203-1 FW2

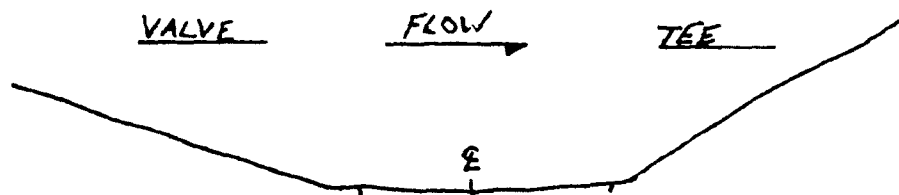
Crown Height: Flush

Crown Width: 1.40"

Nominal Diameter: 24.0"

Weld Length: 76.0"

Contours taken from previous data.



Limited Examination Due to OD Configuration

Ax Scan:

Total Examination Area = 1.235 Square Inches

Actual Examination Area = 0.78 Square Inches

Ax Scan Coverage = 63%

Circ Scan = 100%

Code Coverage Achieved = 81.5%

NO COUNTERBORE DETECTED
REV LTH

CO Chad Olson II 3/7/2005
Initials: Examiner: Level: Date:

GE Reviewed By: PHB III Level: 03/10/05 Date: 2/11/05 Utility Review: 2/11/05

3.14.05 *Handwritten signature* 3/15/05
Date: ANII Review: Date:

Weld: DBB-204-1-1A SW7

Summary Number: 124400

Unit: 2

Item Number: R1.11 and R1.18

Outage: 2R07 (Spring 2003)

Coverage: 89%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: The examination volume is defined in EPRI TR-112657 "Revised Risk-Informed Inservice Inspection Evaluation Procedure" Rev B-A. For a failure mechanism of R1.11 (Thermal Fatigue) the required volume is EPRI TR-112657 Figure 4-2 "Examination Volume for Thermal Cracking in Piping Welds NPS 4 or Larger."

UT Exam Type: Manual examination 45°S

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was performed to requirements contained in ASME Section XI Appendix VIII per the PDI program.

Limitation Description:

The exam completed was limited to 89% Code required coverage due to the sweepolet in the pipe. No unacceptable indications were observed. The following drawings characterize the limitations.



GE NUCLEAR ENERGY

Indication / Coverage Plot Sheet

Site: Limerick

Unit: 2

Report No.:

Project: L12R07

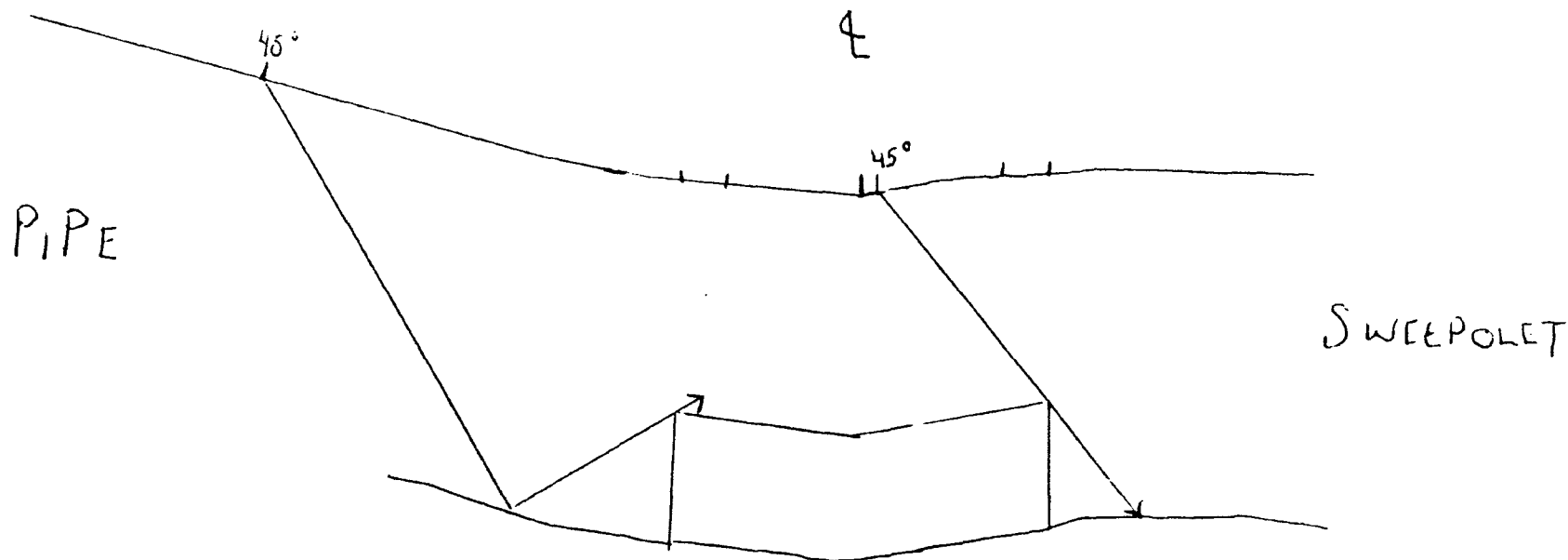
124400

System: FW

Component ID Number: DBB-204-1-1A SW7

Configuration: Pipe

Sweepolet



Charles Littlefield II 3/9/03
Initials: Examiner: Level: Date:

Wade F. Miller III 3/16/03
GE Reviewed By: Level: Date:

JSW 3/17/03
Utility Reviewed By: Date:

Proffitt 3/17/03
ANII Reviewed By: Date:

Weld: DCA-201-1 FW10

Summary Number: 662700

Unit: 2

Item Number: B9.11

Outage: 2R06 (Spring 2001)

Coverage: 50%

Base Metal and Weld Materials: Stainless Steel

Examination Volume: IWB-2500-8 "Similar and Dissimilar Metal Welds in Components and Piping"

UT Exam Type: Manual examination 0°L, 45°S and 70°S

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was performed to requirements contained in ASME Section XI Appendix VIII per the PDI program.

Limitation Description:

The exam completed was limited to 50% Code required coverage because the downstream axial UT scan was not performed due to the weld configuration. The valve material is cast stainless steel whose acoustic properties are not conducive for ultrasonic examination of the full weld. No unacceptable indications were noted. A liquid penetrant exam and system pressure test were also completed with no unacceptable indications observed. The following drawings characterize the limitations. No technology has been approved to obtain additional coverage on cast stainless steel components with this configuration.



GE NUCLEAR ENERGY

Wall Thickness Profile Sheet

Site: Limerick

Unit: 2

Report No.: 662700

Project: 19765

662700

System: RWCU

Position	0°	90°	180°	270°
1	N/A	N/A	N/A	N/A
2	N/A	N/A	N/A	N/A
3	.48	N/A	N/A	N/A
4	.46	N/A	N/A	N/A
5	.42	N/A	N/A	N/A

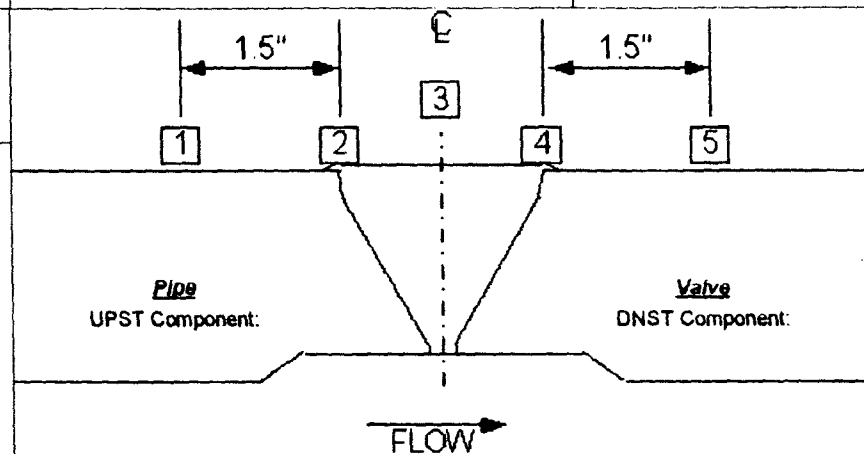
Component ID Number: DCA-201-1 FW10

Crown Height: Flush

Crown Width: .76 inches

Nominal Diameter: 6 inches

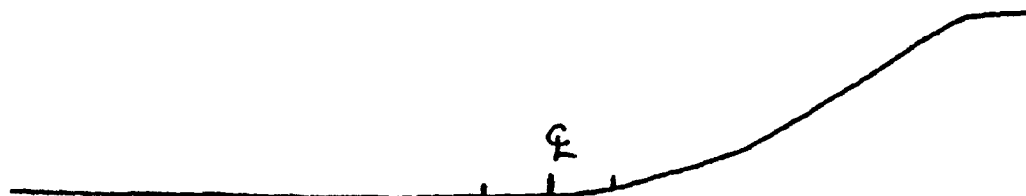
Weld Length: 21 inches



PIPE

FLOW

VALVE



RJJ Richard Jasken II 04/16/01
Initials: Examiner: Level: Date:

Wendy J. Jasken III 4/18/01
GE Reviewed By: Level: Date:

Thomas C. Anderson 4/19/01
Utility Reviewed By: Date:

Paul J. Anderson 4/29/01
ANII Reviewed By: Date:

Weld: DCA-201-1 SW1402

Summary Number: 661810

Unit: 2

Item Number: B9.11

Outage: 2R06 (Spring 2001)

Coverage: 50%

Base Metal and Weld Materials: Stainless Steel

Examination Volume: IWB-2500-8 "Similar and Dissimilar Metal Welds in Components and Piping"

UT Exam Type: Manual examination 0°L, 45°S and 70°S

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was performed to requirements contained in ASME Section XI Appendix VIII per the PDI program.

Limitation Description:

The exam completed was limited to 50% Code required coverage because the downstream axial UT scan was not performed due to the weld configuration. The valve material is cast stainless steel whose acoustic properties are not conducive for ultrasonic examination of the full weld. No unacceptable indications were noted. A liquid penetrant exam and system pressure test were also completed with no unacceptable indications observed. The following drawings characterize the limitations. No technology has been approved to obtain additional coverage on cast stainless steel components with this configuration.



GE NUCLEAR ENERGY

Ultrasonic Examination Indication Report

Site: Limerick

Procedure: PDI-UT-2 / B / N/A

Data Report Number: 661810

Cal / Data Sheet Number: D-049

Weld ID: DCA-201-1 SW1402

Drawing: XI-DCA-201-1

Size: 8

Thickness: 0.432

Exam Start: 1220

Lo Location: 0°

Wo Location: Weld Centerline

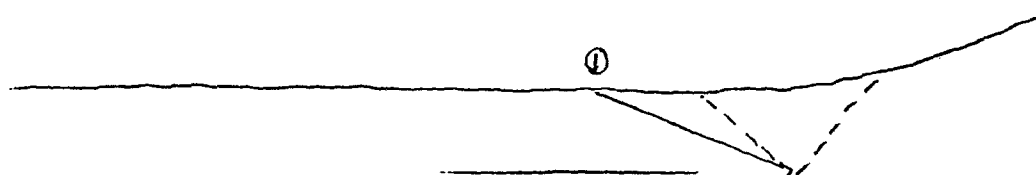
Weld Width: 1.0

Weld Height: Flush

Exam End: 1225

Ind No	Angle Used	% of DAC	Indication Length			W Distance			Metal Path			Ax / Circ	Upst/ Dnst	Comments:
			L1	L Max	L 2	W1	W Max	W 2	MP 1	MP Max	MP 2			
1	70	125	*	16.25	*	*	1.1	*	*	1.2	*	Axial	Upst	* ID geometry root 360° intermittently at varying amplitudes

Sketch



① ID ROOT GEOMETRY

Examiner

John Shea

Level: II Date: 3/30/2001

GE Reviewed By:

Level: III Date: 4/14/01

Utility Reviewed By:

Date: 4/14/01

ANII Reviewed By:

Date: 4/16/01



GE NUCLEAR ENERGY

Wall Thickness Profile Sheet

Site: Limerick

Unit: 2

Report No.: 681810

Project: 19765

System: RWCU

Position	0°	90°	180°	270°
1	.42	.43	.42	.42
2	.42	.42	.42	.42
3	.45	.44	.44	.44
4	*	*	*	*
5	*	*	*	*

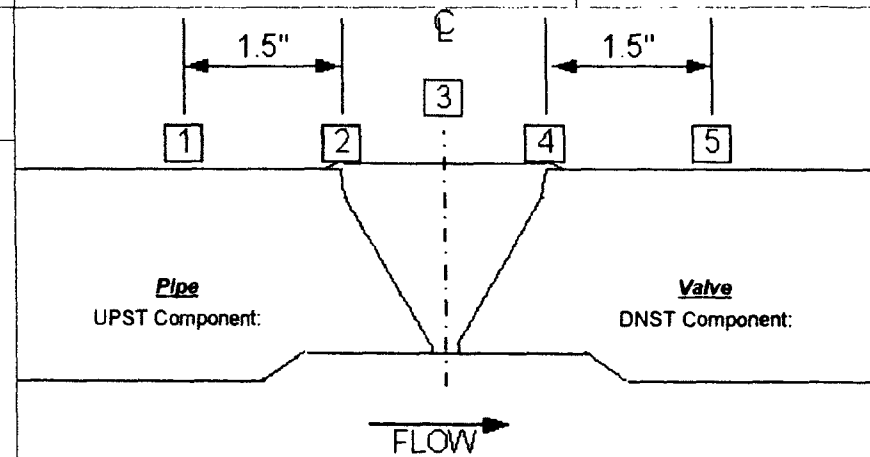
Component ID Number: DCA-201-1 SW1402

Crown Height: Flush

Crown Width: 1.0 inches

Nominal Diameter: 6 inches

Weld Length: 21 inches



* NO THICKNESS READING DUE TO ID/OD CONFIGURATION

Initials: John Shea II 03/30/01
Examiner: Level: Date:

W. J. Anderson III 4/14/01
GE Reviewed By: Level: Date:

J. L. Anderson 4/14/01
Utility Reviewed By: Date:

Paul Knauff 4/16/01
ANII Reviewed By: Date:

Weld: DCA-201-1 SW1403

Summary Number: 662110

Unit: 2

Item Number: B9.11

Outage: 2R06 (Spring 2001)

Coverage: 50%

Base Metal and Weld Materials: Stainless Steel

Examination Volume: IWB-2500-8 "Similar and Dissimilar Metal Welds in Components and Piping"

UT Exam Type: Manual examination 0°L, 45°S, and 70°S

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was performed to requirements contained in ASME Section XI Appendix VIII per the PDI program.

Limitation Description:

The exam completed was limited to 50% Code required coverage because the upstream axial UT scan was not performed due to the weld configuration. The valve material is cast stainless steel whose acoustic properties are not conducive for ultrasonic examination of the full weld. No unacceptable indications were noted. A liquid penetrant exam and system pressure test were also completed with no unacceptable indications observed. The following drawings characterize the limitations. No technology has been approved to obtain additional coverage on cast stainless steel components with this configuration.



GE NUCLEAR ENERGY

Wall Thickness Profile Sheet

Site: Limerick
Project: 19765

Unit: 2

Report No.:
662110

System: RWCU

Position	0°	90°	180°	270°
1	*	*	*	*
2	*	*	*	*
3	.44	.44	.43	.44
4	.40	.42	.42	.40
5	.42	.42	.42	.40

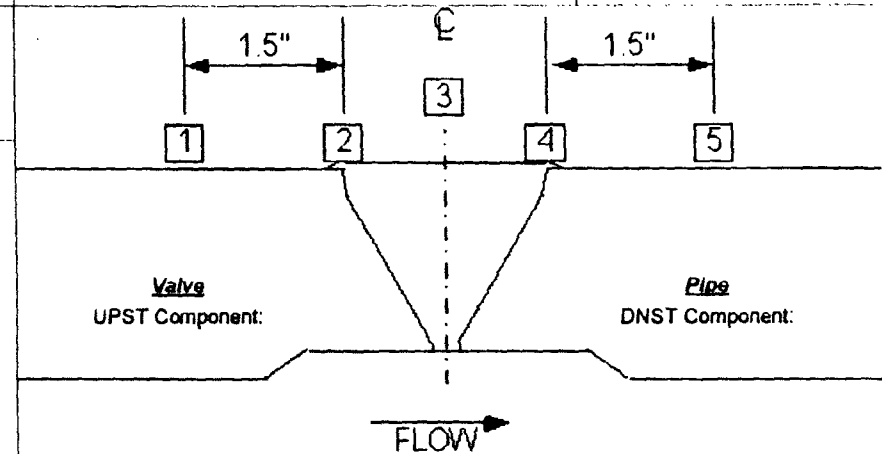
Component ID Number: DCA-201-1 SW1403

Crown Height: Flush

Crown Width: 1.0 inches

Nominal Diameter: 6.0 inches

Weld Length: 21.0 inches

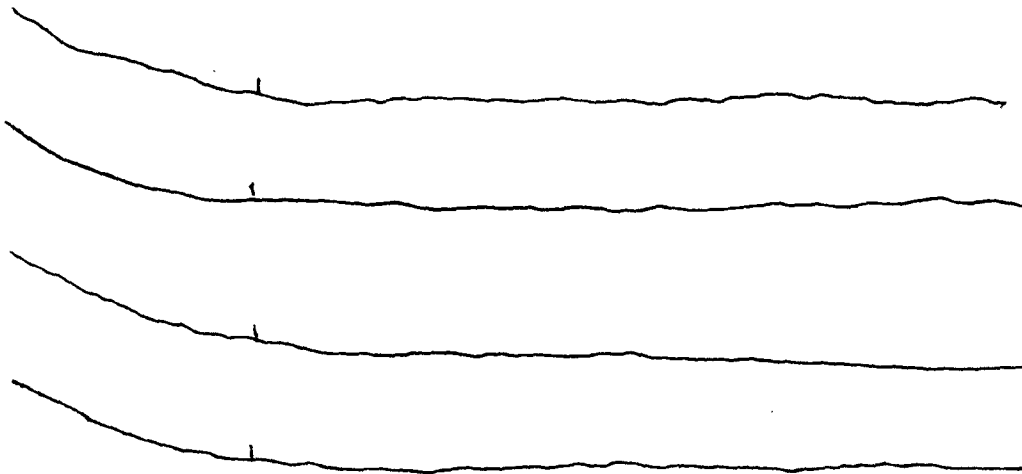


0°

90°

180°

270°



* NO THICKNESS READING DUE TO ID/OD CONFIGURATION

 Initials: <u>John Shea</u> Examiner:	Level: <u>II</u> Date: <u>03/30/01</u>	 GE Reviewed By: <u>J. L. Anderson</u> Level: <u>III</u> Date: <u>4/14/01</u>	 Utility Reviewed By: <u>J. L. Anderson</u> Date: <u>4/14/01</u>	 ANII Reviewed By: <u>J. L. Anderson</u> Date: <u>4/16/01</u>
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Page 4 of 7



GE NUCLEAR ENERGY

Ultrasonic Examination Indication Report

Site: Limerick

Procedure: PDI-UT-2 / B / N/A

Data Report Number: 662110

Cal / Data Sheet Number: D-018

Weld ID: DCA-201-1 SW1403

Drawing: XL-DCA-201-1

Size: 8

Thickness: .432

Exam Start: 1225

Lo Location: Datum 0

Wo Location: Weld Centerline

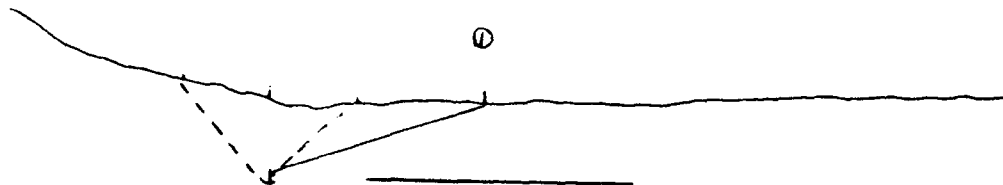
Weld Width: 1.0"

Weld Height: Flush

Exam End: 1230

Ind No	Angle Used	% of DAC	Indication Length			W Distance			Metal Path			Ax / Circ	Upst/ Dnst	Comments:
			L1	L Max	L 2	W1	W Max	W 2	MP 1	MP Max	MP 2			
1	70	100	*	.40	*	-	1.2	-	-	1.26	-	Axial	Dnst	* ID root geometry seen 360° intermittently at varying amplitudes.

Sketch



① ROOT GEOMETRY

John Shea

Examiner

Level: II Date: 3/30/2001

GE Reviewed By: W. J. Anderson

Level: III Date: 4/14/01

Utility Reviewed By: J. L. Anderson Jr.

Date: 4/14/01

ANII Reviewed By: R. J. Anderson

Date: 4/14/01

Page 1 of 1

Weld: DCA-201-2 SW702

Summary Number: 671810

Unit: 2

Item Number: B9.11

Outage: 2R06 (Spring 2001)

Coverage: 50%

Base Metal and Weld Materials: Stainless Steel

Examination Volume: IWB-2500-8 "Similar and Dissimilar Metal Welds in Components and Piping"

UT Exam Type: Manual examination 0°L, 45°S and 70°S

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was performed to requirements contained in ASME Section XI Appendix VIII per the PDI program.

Limitation Description:

The exam completed was limited to 50% Code required coverage because the downstream axial UT scan was not performed due to the weld configuration. The valve material is cast stainless steel whose acoustic properties are not conducive for ultrasonic examination of the full weld. No unacceptable indications were noted. A liquid penetrant exam and system pressure test were also completed with no unacceptable indications observed. The following drawings characterize the limitations. No technology has been approved to obtain additional coverage on cast stainless steel components with this configuration.



GE NUCLEAR ENERGY

Wall Thickness Profile Sheet

Site: Limerick

Unit: 2

Report No.: 671810

Project: 19765

671810

System: RWCU

Position	0°	90°	180°	270°
1	.42	.42	.43	.42
2	.42	.42	.43	.42
3	.44	.44	.45	.44
4	*	*	*	*
5	*	*	*	*

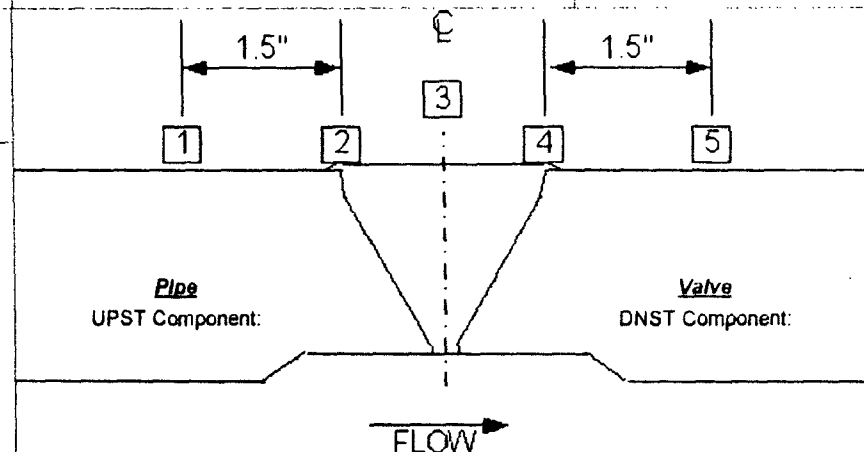
Component ID Number: DCA-201-2 SW702

Crown Height: Flush

Crown Width: 1.0 inches

Nominal Diameter: 6.0 inches

Weld Length: 21 inches



0°

90°

180°

270°

* NO THICKNESS READING DUE TO ID/OD CONFIGURATION

<p><u>JS</u> <u>John Shea</u> II <u>03/30/01</u></p> <p>Initials: Examiner: Level: Date:</p>	<p><u>W. F. [Signature]</u> III <u>4/13/01</u></p> <p>GE Reviewed By: Level: Date:</p>	<p><u>J. E. Anderson</u> <u>4/14/01</u></p> <p>Utility Reviewed By: Date:</p>	<p><u>[Signature]</u> <u>4/16/01</u></p> <p>ANII Reviewed By: Date:</p>
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Weld: DCA-204-2 FW1101

Summary Number: 325510

Unit: 2

Item Number: B9.11

Outage: 2R06 (Spring 2001)

Coverage: 50%

Base Metal and Weld Materials: Stainless Steel

Examination Volume: IWB-2500-8 "Similar and Dissimilar Metal Welds in Components and Piping"

UT Exam Type: Manual examination 0°L, 45°S and 60°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was performed to requirements contained in ASME Section XI Appendix VIII per the PDI program.

Limitation Description:

The exam completed was limited to 50% Code required coverage because the downstream axial UT scan was not performed due to the weld configuration. The valve material is cast stainless steel whose acoustic properties are not conducive for ultrasonic examination of the full weld. No unacceptable indications were noted. A liquid penetrant exam and system pressure test were also completed with no unacceptable indications observed. The following drawings characterize the limitations. No technology has been approved to obtain additional coverage on cast stainless steel components with this configuration.



GE NUCLEAR ENERGY

Ultrasonic Examination Indication Report

Data Report Number: 325510

Cal / Data Sheet Number: D-044

Site: Limerick

Procedure: PDI-UT-2

Weld ID: DCA-204-2 FW1102

Drawing: XI-DCA-204-2

Size: 12

Thickness: .688

Exam Start: 1105

Lo Location: 0°

Wo Location: Weld Centerline

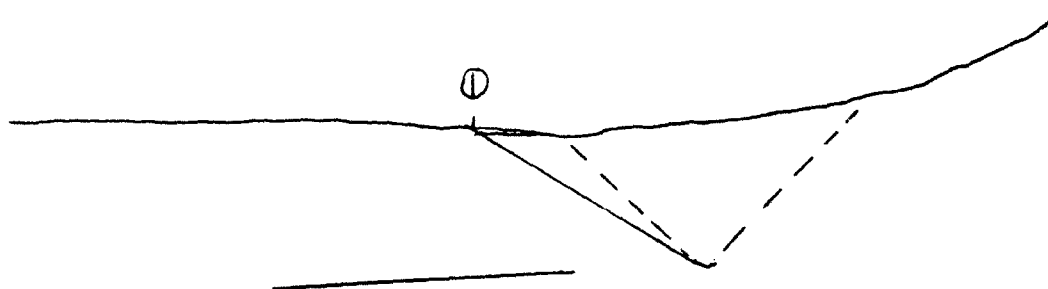
Weld Width: 1.2

Weld Height: Flush

Exam End: 1120

Ind No.	Angle Used	% of DAC	Indication Length			W Distance			Metal Path			Ax / Circ	Upst/ Dnst	Comments:
			L1	L Max	L 2	W1	W Max	W 2	MP 1	MP Max	MP 2			
1	60	112	*	13.75	*	*	1.1	*	*	1.35	*	Axial	Upst	* ID geometry root observed 360° intermittently at varying amplitudes.

Sketch



① ID ROOT GEOMETRY

John Shea

John Shea

Examiner

II 3/23/2001

Level: Date:

GE Reviewed By:

Level: Date:

Utility Reviewed By:

Date:

ANII Reviewed By:

Date:

Page 6 of 7



GE NUCLEAR ENERGY

Wall Thickness Profile Sheet

Site: Limerick

Unit: 2

Report No.

Project: 19765

325510

System: RHR

Component ID Number: DCA-204-2 FW1102

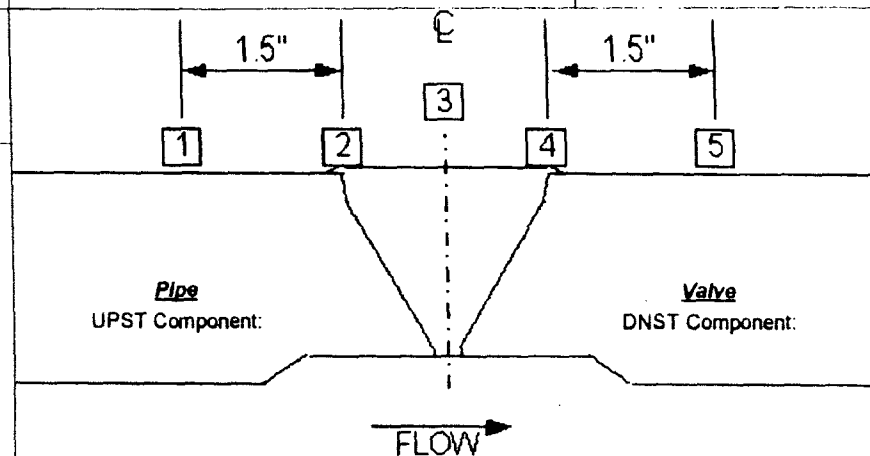
Position	0°	90°	180°	270°
1	.74	.65	.66	.66
2	.74	.69	.68	.66
3	.74	.74	.74	.74
4	*	*	*	*
5	*	*	*	*

Crown Height: Flush

Crown Width: 1.0 inches

Nominal Diameter: 12 inches

Weld Length: 40.75 inches



0°

90°

180°

270°

* NO THICKNESS READING DUE TO OD/ID CONFIGURATION

John Shea

John Shea

Initials: Examiner:

II

Level: Date: 03/23/01

Walter F. Ziller III

GE Reviewed By:

III

Level: Date: 4/13/01

J. L. Anderson

Utility Reviewed By:

4/14/01

Date:

Paul D. Anderson

ANII Reviewed By:

4/14/01

Date:



GE NUCLEAR ENERGY

Ultrasonic Examination Indication Report

Data Report Number: 329915

Site: Limerick

Procedure: PDI-UT-2

Cal / Data Sheet Number: D-062

Weld ID: DCA-204-4 FW701

Drawing: XI-DCA-204-4

Size: 12

Thickness: 0.688

Exam Start: 1120

Lo Location: 0°

Wo Location: Weld Centerline

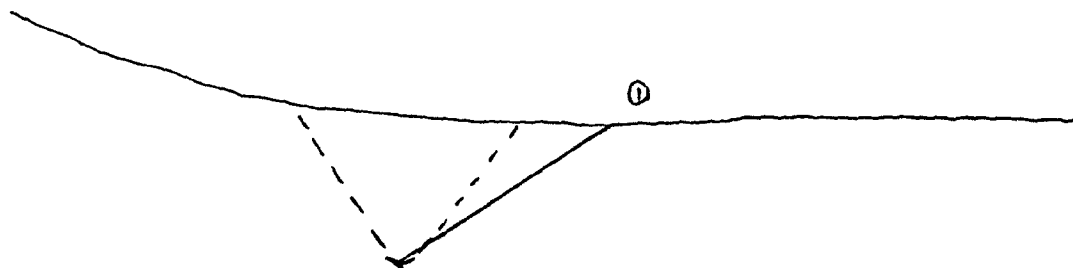
Weld Width: 1.2

Weld Height: Flush

Exam End: 1136

Ind No	Angle Used	% of DAC	Indication Length			W Distance			Metal Path			Ax / Circ	Upst/ Dnst	Comments:
			L1	L Max	L 2	W1	W Max	W 2	MP 1	MP Max	MP 2			
1	60	100	*	34.75	*	*	1.0	*	*	1.45	*	Axial	Dnst	* ID geometry root observed intermittently 360° at varying amplitudes.

Sketch



① ROOT GEOMETRY

John Shea

John Shea

II

3/23/2001

Level: Date:

GE Reviewed By:

Level:

Date:

Utility Reviewed By:

Date:

ANII Reviewed By:

Date:

Page 6 of 7



GE NUCLEAR ENERGY

Wall Thickness Profile Sheet

Site: Limerick

Unit: 2

Report No.:

Project: 19765

329915

System: RHR

Component ID Number: DCA-204-4 FW701

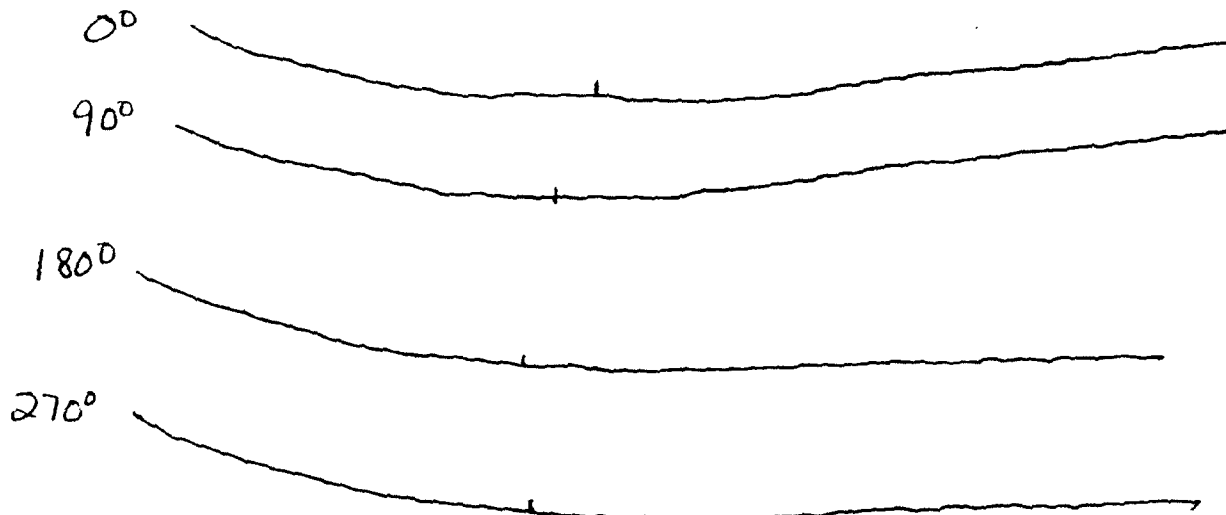
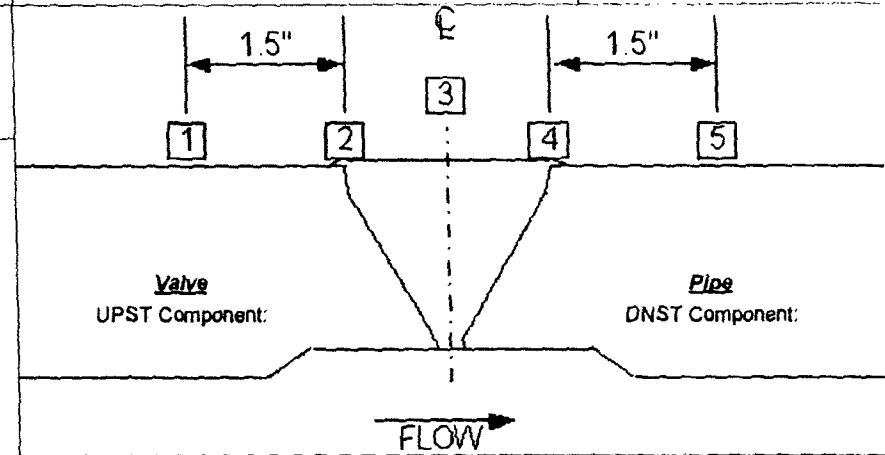
Position	0°	90°	180°	270°
1	*	*	*	*
2	*	*	*	*
3	.74	.74	.78	.75
4	.75	.74	.78	.78
5	.88	.90	.88	.88

Crown Height: Flush

Crown Width: 1.0 inches

Nominal Diameter: 12 inches

Weld Length: 40.75 inches



* NO THICKNESS READING DUE TO OD/ID GEOMETRY

JS

John Shea

II

03/23/01

Initials: Examiner:

Level: Date:

Wendell Zinner III

4/15/01

GE Reviewed By:

Level: Date:

J. L. Anderson

4/14/01

Utility Reviewed By:

Date:

Paul Penney

4/14/01

ANII Reviewed By:

Date:

Weld: DCA-205-1 FW9

Summary Number: 332200

Unit: 2

Item Number: R1.20

Outage: 2R07 (Spring 2003)

Coverage: 75%

Base Metal and Weld Materials: Stainless Steel

Examination Volume: The examination volume is defined in EPRI TR-112657 "Revised Risk-Informed Inservice Inspection Evaluation Procedure" Rev B-A. For a failure mechanism of R1.20 (element is not subject to a damage mechanism) the required volume is N-578-1 "Risk-Informed Requirements for Class 1, 2, or 3 Piping, Method B Section XI, Division 1". Per the code case the examination volume is contained in Figure IWB-2500-8(c) "Similar and Dissimilar Metal Welds in Components and Piping" with an expanded volume of ½ inch beyond each side of the base metal thickness transition or counterbore.

UT Exam Type: Manual examination 45°RL and 60°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was performed to requirements contained in ASME Section XI Appendix VIII per the PDI program.

Limitation Description:

The exam completed was limited to 75% Code required coverage because the downstream axial UT scan was limited due to the weld configuration. The valve material is cast stainless steel whose acoustic properties are not conducive for ultrasonic examination of the full weld. No unacceptable indications were noted. The following drawings characterize the limitations.



GE NUCLEAR ENERGY

Wall Thickness Profile Sheet

Site: Limerick

Unit: 2

Report No.:

Project: L12R07

332200

System: RHR

Position	0°	90°	180°	270°
1	N/A	N/A	N/A	0.90"
2	0.84"	0.80"	0.90"	0.78"
3	0.80"	0.84"	0.90"	0.79"
4	0.84"	0.84"	0.90"	0.96"
5	N/A	N/A	N/A	N/A

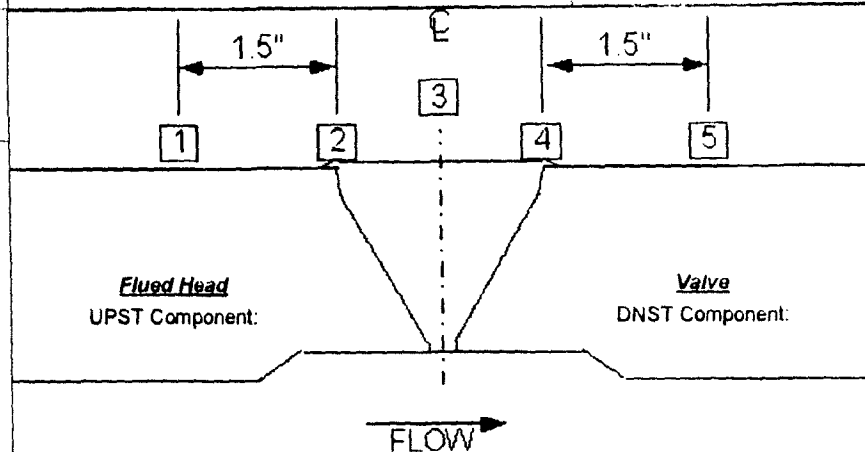
Component ID Number: DCA-206-1 FW3

Crown Height: Flush

Crown Width: 1.75"

Nominal Diameter: 20.0"

Weld Length: 63.25"



FH

VALVE 0°

FH

VALVE 90°

FH

VALVE 180°

FH

VALVE 270°

Charles Littlefield II 3/10/03
Initials: Examiner: Level: Date:

Wade F. Miller III 3/11/03
GE Reviewed By: Level: Date:

CSL 3/11/03
Utility Reviewed By: Date:

Paul L. Smith 3/15/03
ANII Reviewed By: Date:



GE NUCLEAR ENERGY

Indication / Coverage Plot Sheet

Site: Limerick

Unit: 2

Report No.:

Project: L12R07

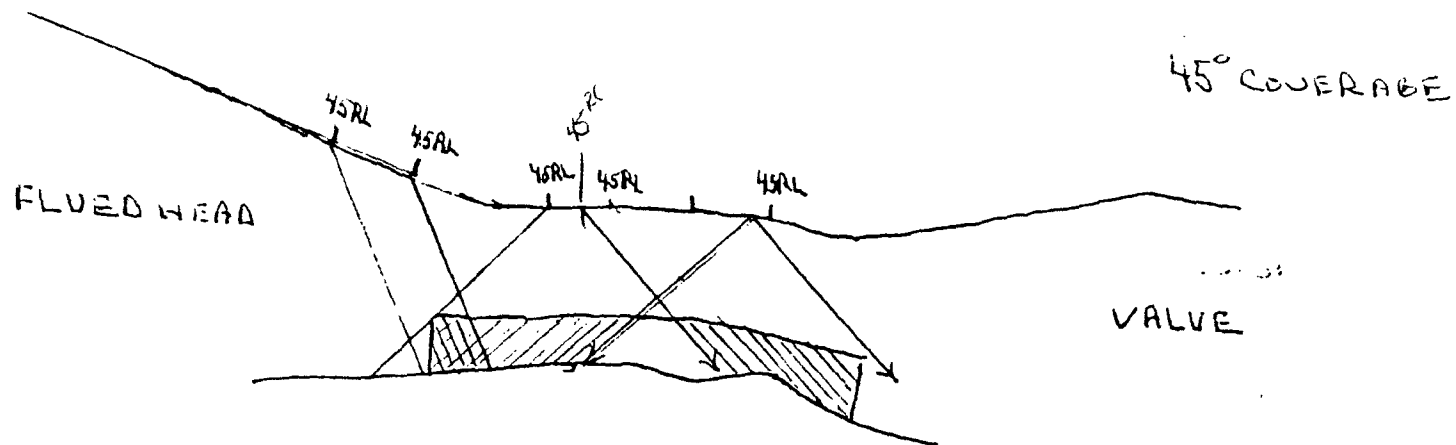
332200

System: RHR

Component ID Number: DCA-205-1 FW8

Configuration: Flued Head

Valve



AREA REQUIRED = .705 in²

AREA EXAMINED = .530 in²

COVERAGE = 75.2%

NO COUNTERBORE DETECTED WFM
3/11/03

Charles Littlefield II 3/10/03
Initials: Examiner: Level: Date:

WFM III 3/11/03
Reviewed By: Level: Date:

3/11/03
Reviewed By: Date:

3/15/03
Reviewed By: Date:



GE NUCLEAR ENERGY

Indication / Coverage Plot Sheet

Site: Limerick

Unit: 2

Report No.: 332200

Project: LI2R07

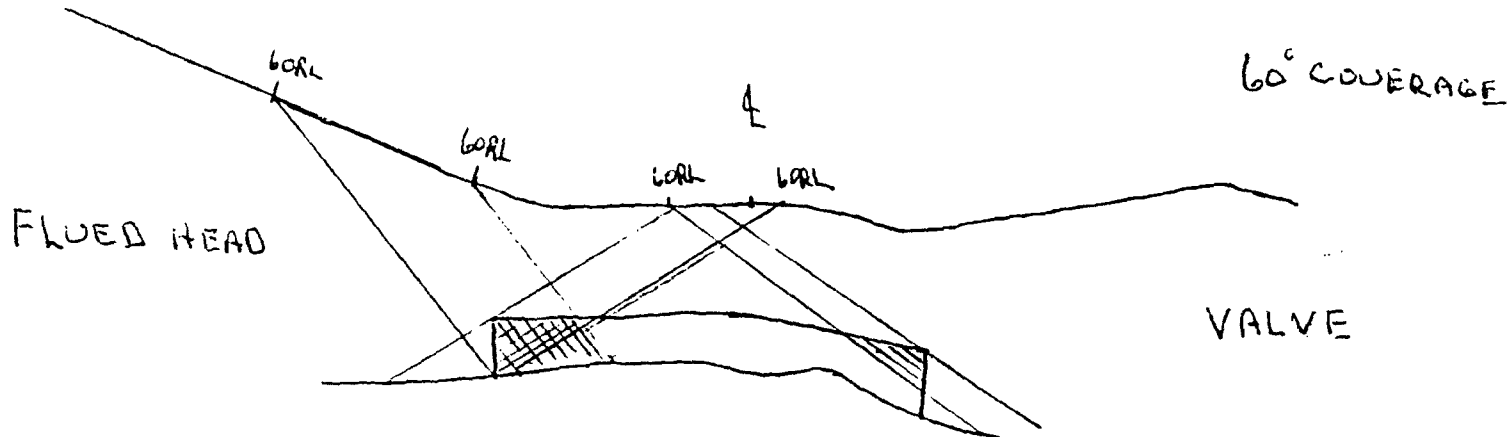
332200

System: RHR

Component ID Number: DCA-205-1 FW9

Configuration: Flued Head

Valve



Charles Littlefield II 3/10/03
Examiner: Level: Date:

W. H. Miller III 3/14/03
GE Reviewed By: Level: Date:

CSL 3/2/03
Utility Reviewed By: Date:

Paul Rencard 3/15/03
ANII Reviewed By: Date:

Weld: DCB-202-1 FW1002 and DCB-202-1 FW1003

Summary Number: 671820 AND 671825

Unit: 2

Item Number: C5.51

Outage: 2R06 (Spring 2001)

Coverage: 50%

Base Metal and Weld Materials: Stainless Steel

Examination Volume: IWC-2500-7 "Welds in Piping"

UT Exam Type: Manual examination 0°L, 45°S and 70°S

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was performed to requirements contained in ASME Section XI Appendix VIII per the PDI program.

Limitation Description:

The exam completed was limited to 50% Code required coverage for both welds because the welds are located so close together that there is no area between the welds that can be examined. No unacceptable indications were noted. A liquid penetrant exam and system pressure test were also completed with no unacceptable indications observed. The following drawings characterize the limitations.



GE NUCLEAR ENERGY

Wall Thickness Profile Sheet

Site: Limerick

Unit: 2

Report No.:

Project: 19766

System: RWCU

Position	0°	90°	180°	270°
1	.42	N/A	N/A	N/A
2	.40	N/A	N/A	N/A
3	.44	N/A	N/A	N/A
4	.44	N/A	N/A	N/A
5	.44	N/A	N/A	N/A

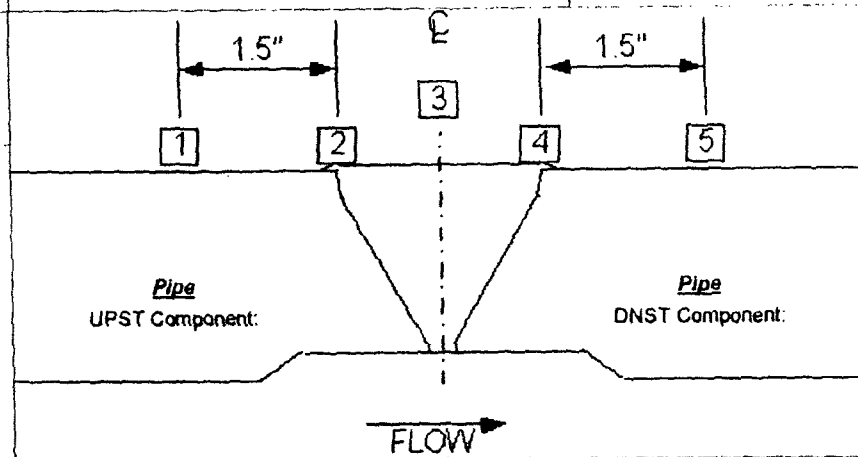
Component ID Number: DCB-202-1 FW1002

Crown Height: Flush

Crown Width: .76 inches

Nominal Diameter: 8 inches

Weld Length: 20.75 inches



PIPE

FLOW

PIPE

WELD DCB-202-1 FW1002

WELD DCB-202-1 FW1003

RJ Richard Jasken II 04/13/01
Initials: Examiner: Level: Date:

W. J. Jasken II 4/13/01
GE Reviewed By: Level: Date:

QA 4-17-01
Utility Reviewed By: Date:

Paul Korman 4/10/01
ANII Reviewed By: Date:

Weld: DCB-202-1 SW1001

Summary Number: 671815

Unit: 2

Item Number: C5.11

Outage: 2R06 (Spring 2001)

Coverage: 50%

Base Metal and Weld Materials: Stainless Steel

Examination Volume: IWC-2500-7 "Welds in Piping"

UT Exam Type: Manual examination 0°L, 45°S and 70°S

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was performed to requirements contained in ASME Section XI Appendix VIII per the PDI program.

Limitation Description:

The exam completed was limited to 50% Code required coverage because the upstream axial UT scan was not performed due to the weld configuration. The valve material is cast stainless steel whose acoustic properties are not conducive for ultrasonic examination of the full weld. No unacceptable indications were noted. A liquid penetrant exam and system pressure test were also completed with no unacceptable indications observed. The following drawings characterize the limitations. No technology has been approved to obtain additional coverage on cast stainless steel components with this configuration.



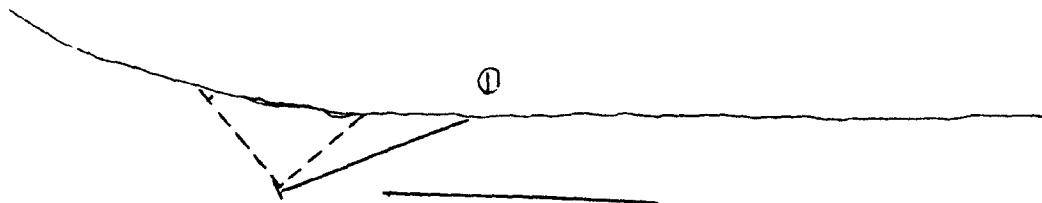
GE NUCLEAR ENERGY

Ultrasonic Examination Indication Report

Site: LimerickProcedure: PDI-UT-2, Rev. BData Report Number: 671815Cal / Data Sheet Number: D-035Weld ID: DCB-202-1 SW1001Drawing: XI-DCB-202-1Size: ØThickness: 0.432Exam Start: 1130Lo Location: 0°Wo Location: Weld CenterlineWeld Width: 1.0"Weld Height: FlushExam End: 1140

Ind No.	Angle Used	% of DAC	Indication Length			W Distance			Metal Path			Ax / Circ	Upst/ Dnst	Comments:
			L1	L Max	L 2	W1	W Max	W 2	MP 1	MP Max	MP 2			
1	70		*	14.8	*	*	1.1	*	*	1.26	*	Axial	Dnst	* ID root geometry 360° intermittently at varying amplitudes.

Sketch



① ID ROOT GEOMETRY

Examiner

John Shea

Level: II Date: 3/30/2001GE Reviewed By: John F. ZellerLevel: III Date: 4/14/01Utility Reviewed By: Sharon L. AndersonDate: 4/14/01ANII Reviewed By: Paula L. AndersonDate: 4/16/01

Page 2 of 2



GE NUCLEAR ENERGY

Wall Thickness Profile Sheet

Site: Limerick

Unit: 2

Report No.: 671815

Project: 19785

671815

System: RWCU

Position	0°	90°	180°	270°
1	*	*	*	*
2	*	*	*	*
3	.44	.44	.44	.45
4	.42	.42	.42	.42
5	.43	.42	.42	.42

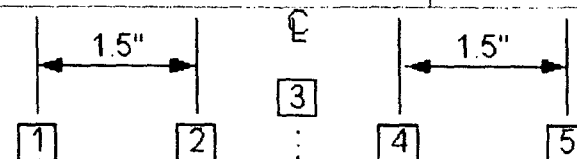
Component ID Number: dcb-202-1 sw1001

Crown Height: Flush

Crown Width: 1.0 inches

Nominal Diameter: 8.0 inches

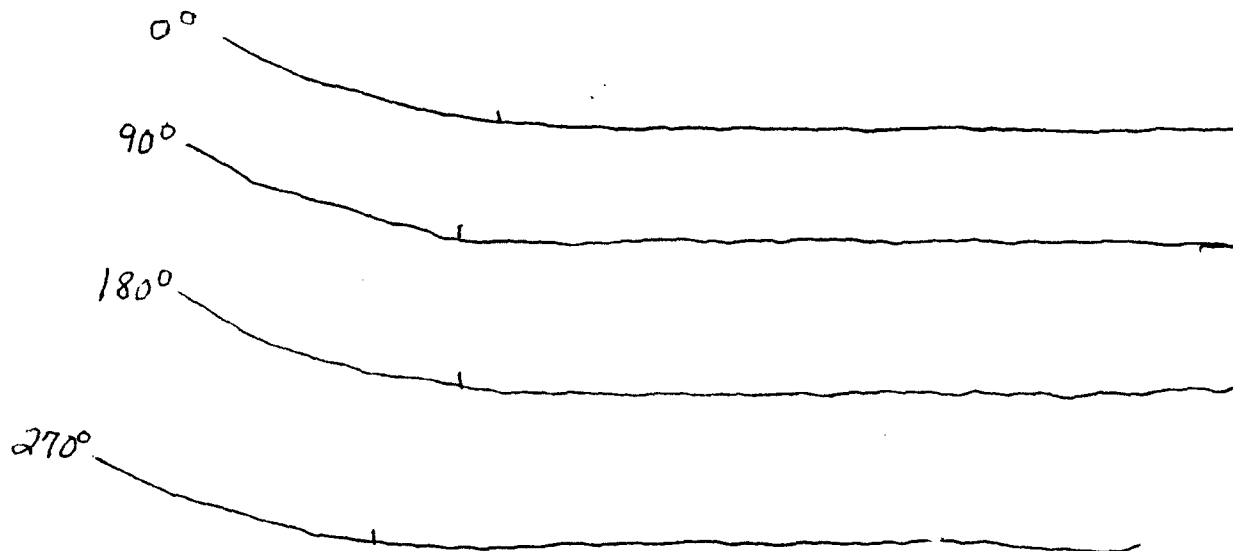
Weird Length: 21 inches



Valve
UPST Component:

Pipe
DNST Component:

FLOW →



John Shea

Initials: Examiner:

John Shea

II

Level:

03/30/01

Date:

GE Reviewed By:

Level:

4/14/01

Date:

Utility Reviewed By:

Date:

ANII Reviewed By:

Date:

Weld: DLA-210-1 FW1

Summary Number: 025900

Unit: 2

Item Number: R1.20

Outage: 2R07 (Spring 2003)

Coverage: 71%

Base Metal and Weld Materials: Carbon Steel

Examination Volume: The examination volume is defined in EPRI TR-112657 "Revised Risk-Informed Inservice Inspection Evaluation Procedure" Rev B-A. For a failure mechanism of R1.20 (element is not subject to a damage mechanism) the required volume is N-578-1 "Risk-Informed Requirements for Class 1, 2, or 3 Piping, Method B Section XI, Division 1". Per the code case the examination volume is contained in Figure IWB-2500-8(c) "Similar and Dissimilar Metal Welds in Components and Piping" with an expanded volume of ½ inch beyond each side of the base metal thickness transition or counterbore.

UT Exam Type: Manual examination 45°RL, 45°S, 60°RL, and 70°S

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was performed to requirements contained in ASME Section XI Appendix VIII per the PDI program.

Limitation Description:

The exam completed was limited to 71% Code required coverage due to the weld configuration. No unacceptable indications were observed. The following drawings characterize the limitations.



GE NUCLEAR ENERGY

Ultrasonic Examination Indication Report

Site: Limerick

Procedure: GE-PDI-UT-2 / R3 / N/A

Data Report Number: 25900

Cal / Data Sheet Number: D-133 / 135

Weld ID: DLA-210-1 FW1

Drawing: XI-DLA-210-1

Size: 12"

Thickness: 0.688"

Exam Start: 1300

Lo Location: TDC

Wo Location: Weld Centerline

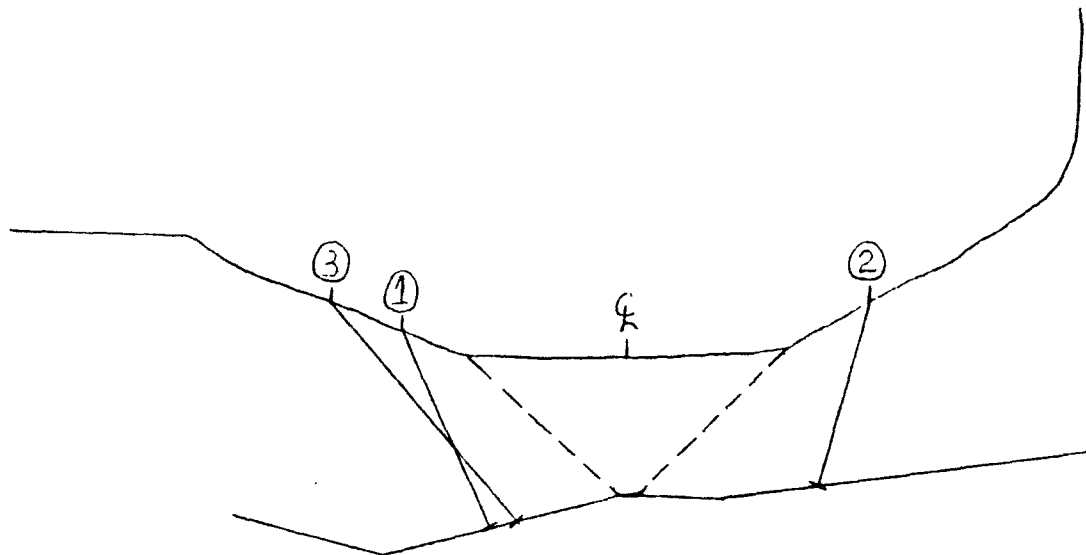
Weld Width: 1.75"

Weld Height: Flush

Exam End: 1500

Ind No.	Angle Used	% of DAC	Indication Length			W Distance			Metal Path			Ax / Circ	Upst/ Dnst	Comments:
			L1	L Max	L 2	W1	W Max	W 2	MP 1	MP Max	MP 2			
2	45°	100%		2"			1.35"			1.0"		Ax	DNST	Inside surface geometry seen 360° at varying amplitudes.
3	60°	100%		0"			1.6"			1.62"		Ax	DNST	Inside surface geometry seen 360° at varying amplitudes.
1	45°	100%		0"			1.2"			1.1"		Ax	UPST	Inside surface geometry seen 360° at varying amplitudes.

Sketch



Todd Ginder
Examiner

Level: II Date: 3/12/2003

W. F. Ginder III 3/15/03
GE Reviewed By: Level: Date:

ASL
Utility Reviewed By:

3/17/03
Date:

Paul Ginder
ANII Reviewed By:

3/17/03
Date:

Weld: GBB-220-1 FW2

Summary Number: 484500

Unit: 2

Item Number: C5.11

Outage: 2R06 (Spring 2001)

Coverage: 50%

Base Metal and Weld Materials: Stainless Steel

Examination Volume: IWC-2500-7 "Welds in Piping"

UT Exam Type: Manual examination 45°S and 60°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was performed to requirements contained in ASME Section XI Appendix VIII per the PDI program.

Limitation Description:

The exam completed was limited to 50% Code required coverage because the downstream axial UT scan was not performed due to the weld configuration. The valve material is cast stainless steel whose acoustic properties are not conducive for ultrasonic examination of the full weld. No unacceptable indications were noted. A liquid penetrant exam and system pressure test were also completed with no unacceptable indications observed. The following drawings characterize the limitations. No technology has been approved to obtain additional coverage on cast stainless steel components with this configuration.



GE NUCLEAR ENERGY

Wall Thickness Profile Sheet

Site: Limerick

Unit: 2

Report No.: 484500

Project: 19785

484500

System: RHR

Position	0°	90°	180°	270°
1	.770	N/A	N/A	N/A
2	.730	N/A	N/A	N/A
3	.820	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A
5	N/A	N/A	N/A	N/A

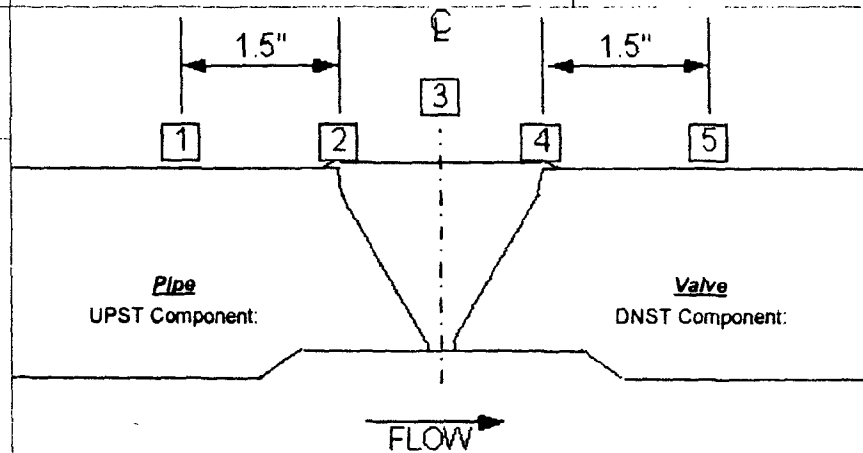
Component ID Number: GBB-220-1 FW2

Crown Height: Flush

Crown Width: 1.20 inches

Nominal Diameter: 12 inches

Weld Length: 40.0 inches



T&C TAKEN FROM PREVIOUS DATA DATED 2/7/87

P.V.

Paul Valden

II

04/09/01

Initials: Examiner:

Level: Date:

GE Reviewed By: Walter F. Valden III

Level: Date: 4/12/01

Utility Reviewed By: [Signature]

Date: 4-17-01

ANII Reviewed By: Paul Valden

Date: 4/20/01

Weld: GBB-220-2 FW2

Summary Number: 486500

Unit: 2

Item Number: C5.11

Outage: 2R06 (Spring 2001)

Coverage: 50%

Base Metal and Weld Materials: Stainless Steel

Examination Volume: IWC-2500-7 "Welds in Piping"

UT Exam Type: Manual examination 45°S and 60°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was performed to requirements contained in ASME Section XI Appendix VIII per the PDI program.

Limitation Description:

The exam completed was limited to 50% Code required coverage because the downstream axial UT scan was not performed due to the weld configuration. The valve material is cast stainless steel whose acoustic properties are not conducive for ultrasonic examination of the full weld. No unacceptable indications were noted. A liquid penetrant exam and system pressure test were also completed with no unacceptable indications observed. The following drawings characterize the limitations. No technology has been approved to obtain additional coverage on cast stainless steel components with this configuration.



GE NUCLEAR ENERGY

Wall Thickness Profile Sheet

Site: Limerick

Unit: 2

Report No.: 486500

Project: 19765

System: RHR

Position	0°	90°	180°	270°
1	.76	N/A	N/A	N/A
2	.76	N/A	N/A	N/A
3	.82	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A
5	N/A	N/A	N/A	N/A

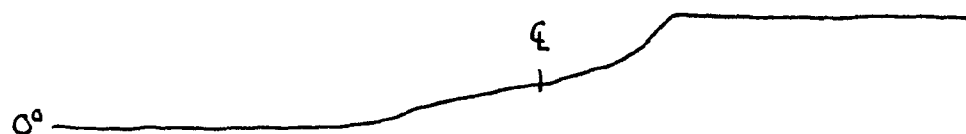
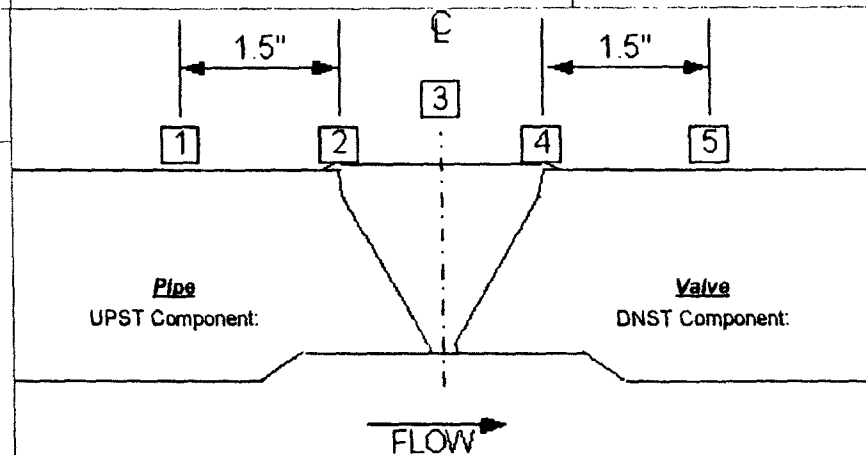
Component ID Number: GBB-220-2 FW2

Crown Height: Flush

Crown Width: 1.85 inches

Nominal Diameter: 12 inches

Weld Length: 40.25 inches



T&C TAKEN FROM PREVIOUS DATA DATED 10/24/94 RFO 2803

Initials: <u>P.V.</u> Examiner: <u>Paul Valden</u>	Level: <u>II</u> Date: <u>04/09/01</u>	GE Reviewed By: <u>Wanda F. Zide</u> Level: <u>III</u> Date: <u>4/12/01</u>	Utility Reviewed By: <u>[Signature]</u> Date: <u>4-17-01</u>	ANII Reviewed By: <u>[Signature]</u> Date: <u>4/18/01</u>
Page 5 of 5				

Weld: HBB-218-1 FW7

Summary Number: 495100

Unit: 2

Item Number: C5.11

Outage: 2R06 (Spring 2001)

Coverage: 50%

Base Metal and Weld Materials: Stainless Steel

Examination Volume: IWC-2500-7 "Welds in Piping"

UT Exam Type: Manual examination 45°S and 60°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was performed to requirements contained in ASME Section XI Appendix VIII per the PDI program.

Limitation Description:

The exam completed was limited to 50% Code required coverage because the upstream axial UT scan was not performed due to the weld configuration. The valve material is cast stainless steel whose acoustic properties are not conducive for ultrasonic examination of the full weld. No unacceptable indications were noted. A liquid penetrant exam and system pressure test were also completed with no unacceptable indications observed. The following drawings characterize the limitations. No technology has been approved to obtain additional coverage on cast stainless steel components with this configuration.



GE NUCLEAR ENERGY

Wall Thickness Profile Sheet

Site: Limerick

Unit: 2

Report No.: 495100

Project: 19765

System: RHR

Position	0°	90°	180°	270°
1	*	*	*	*
2	.87	.82	.82	.84
3	.91	.91	.90	.89
4	.82	.79	.82	.80
5	.90	.90	.90	.91

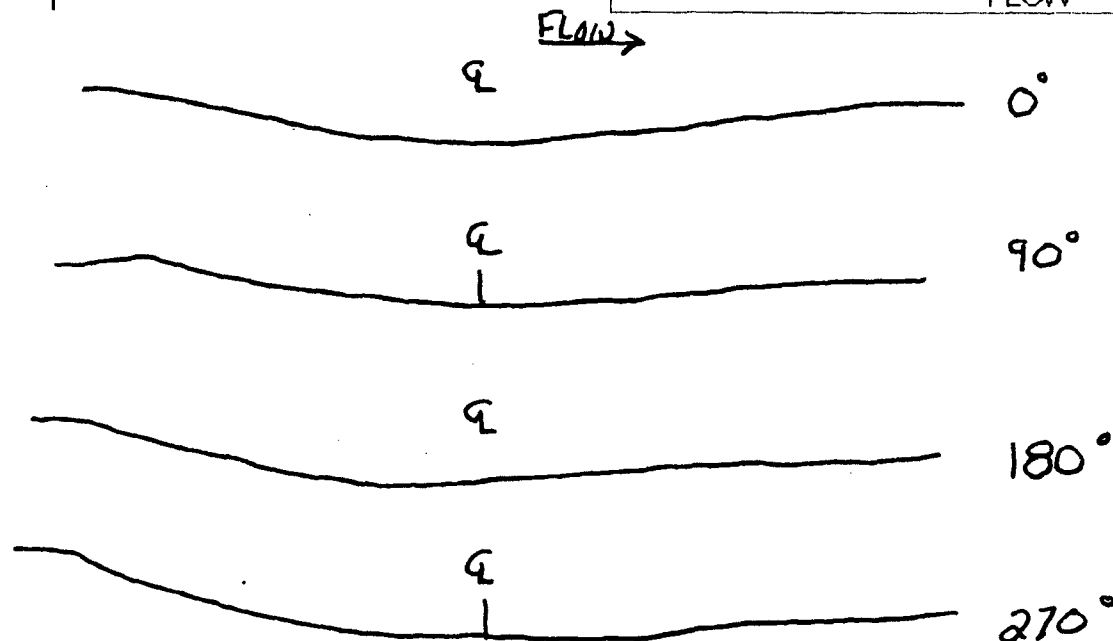
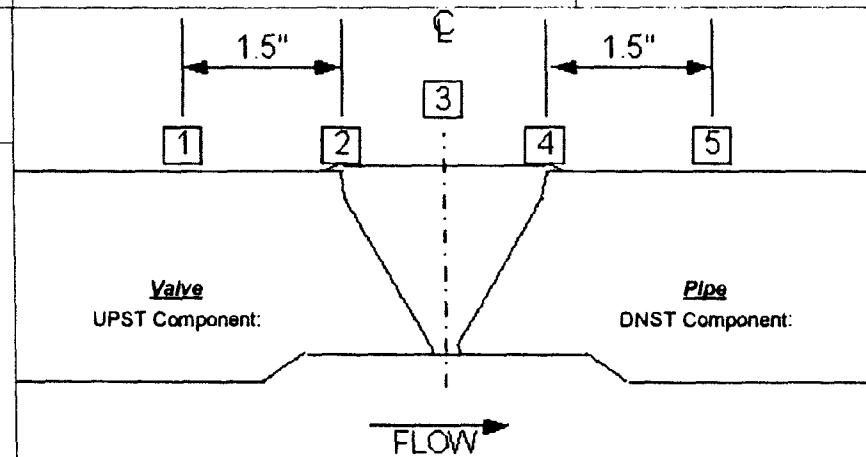
Component ID Number: HBB-218-1 FW7

Crown Height: Flush

Crown Width: 1.1 inches

Nominal Diameter: 20 inches

Weld Length: 83 inches



TAKEN FROM 1993 DATA.

Initials: Troy Steinbauer II 04/07/01
Examiner: Level: Date:

GE Reviewed By: Richard H. Gribble III 4/11/01
Level: Date:

Utility Reviewed By: J.
Date:

ANII Reviewed By: Richard H. Gribble III 4/14/01
Date:

Weld: DCA-204-4 FW701

Summary Number: 329915

Unit: 2

Item Number: B9.11

Outage: 2R06 (Spring 2001)

Coverage: 50%

Base Metal and Weld Materials: Stainless Steel

Examination Volume: IWB-2500-8 "Similar and Dissimilar Metal Welds in Components and Piping"

UT Exam Type: Manual examination 0°L, 45°S and 60°RL

Performed per the requirements of ASME Code, Section XI, Appendix VIII:

Yes, the examination was performed to requirements contained in ASME Section XI Appendix VIII per the PDI program.

Limitation Description:

The exam completed was limited to 50% Code required coverage because the upstream axial UT scan was not performed due to the weld configuration. The valve material is cast stainless steel whose acoustic properties are not conducive for ultrasonic examination of the full weld. No unacceptable indications were noted. A liquid penetrant exam and system pressure test were also completed with no unacceptable indications observed. The following drawings characterize the limitations. No technology has been approved to obtain additional coverage on cast stainless steel components with this configuration.



GE NUCLEAR ENERGY

Indication / Coverage Plot Sheet

Site: Limerick

Unit: 2

Report No.:

Project: Li2R07

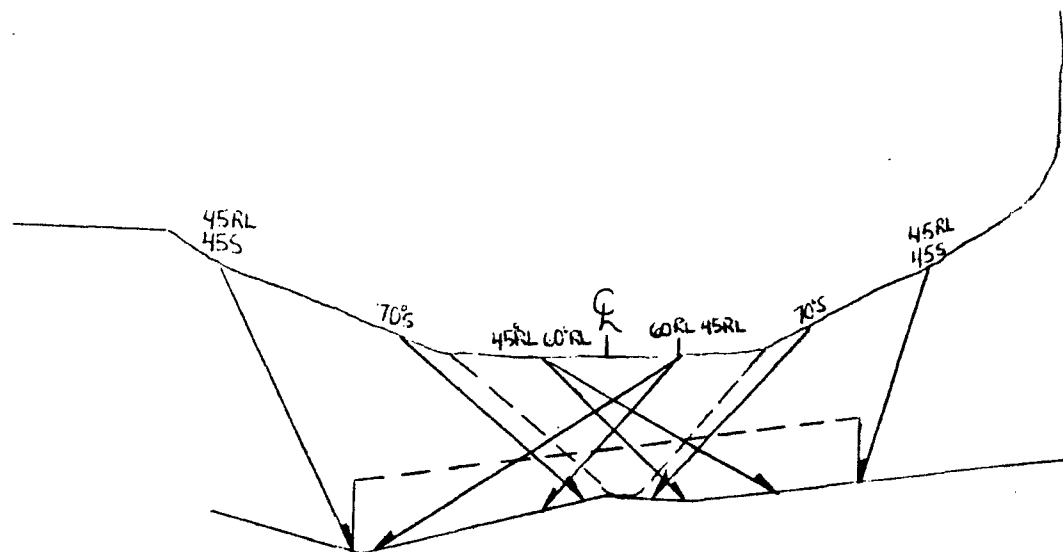
25900

System: CS

Component ID Number: DLA-210-1 FW1

Configuration: Valve

Flued Head



AREA REQUIRED = 1.1 m²

AREA EFFECTIVELY EXAMINED = .78 m²

COVERAGE = .78 / 1.1 x 100 = 70.9%

WSM
3/15/03

TG

Todd Ginder

II

3/12/03

Initials: Examiner:

Level: Date:

W. F. Ginder

III

3/15/03

GE Reviewed By:

Level: Date:

J. S. Lufkin

3/17/03

Utility Reviewed By:

Date:

Paul Corcoran

3/17/03

ANII Reviewed By:

Date: