

Entergy Nuclear Northeast Indian Point Energy Center 295 Broadway, Suite 1 P.O. Box 249 Buchanan, NY 10511-0249 Tel 914 734 5340 Fax 914 734 5718

Fred Dacimo Vice President, Operations

December <u>30</u>, 2003 NL-03-188

U. S. Nuclear Regulatory Commission ATTN: Document Control Desk Mail Stop O-P1-17 Washington, DC 20555-0001

SUBJECT:

Indian Point Nuclear Generating Units No. 2 and No. 3

Docket No. 50-247, and 50-286

Alternative to Use Code Case N-613-1 for

Reactor Vessel Nozzle to Vessel Weld Inspection

References:

 NRC Letter from James W. Clifford to Roy A. Anderson, "Hope Creek Generating Station - Evaluation of Relief Request HC-RR-B08 (TAC NO. MB7839)," dated August 26, 2003.

Dear Sir:

Pursuant to 10CFR50.55a(a)(3)(i), Entergy Nuclear Operations, Inc. (ENO) hereby requests the Nuclear Regulatory Commission (NRC) to approve the use of an alternative to the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI requirements regarding the inspection of Class 1, Examination Category B-D, Reactor Vessel Nozzle to Vessel Welds.

Enclosed are two (2) similar requests for relief (RRs) to use the proposed alternatives for Indian Point Nuclear Generating Unit No. 2 (IP2, Enclosure 1) and Indian Point Nuclear Generating Unit No. 3 (IP3, Enclosure 2). The proposed alternative would allow the plants to perform the required inspections in accordance with Code Case N-613-1, in lieu of the ASME Section XI Code requirements. In accordance with 10 CFR 50.55a(a)(3)(i), the proposed alternative to use Code Case N-613-1 in its entirety provides an acceptable level of quality and safety for the examination of the affected welds.

These requests for relief for IP2 and IP3 are for their 3rd ISI Interval, and the applicable code of record is the 1989 Edition, No Addenda of the ASME Section XI Code.

A similar request for relief was approved for Hope Creek (Reference 1).

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Entergy requests approval of the IP2 relief request (Enclosure 1) by June 2004 to support its Fall 2004 refueling outage. Since these RRs are practically identical, Entergy requests that the IP3 relief request (Enclosure 2) be approved at the same time.

There are no new commitments made in this letter. If you have any questions, please contact Ms. Charlene Faison at 914-272-3378.

Very truly yours,

Fred R. Dacimo

Vice President, Operations Indian Point Energy Center

List of Enclosures:

- 1. Indian Point Generating Station Unit No. 2, RR-67
- 2. Indian Point Generating Station Unit No. 3, RR 3-36

CC:

Mr. Hubert J. Miller Regional Administrator, Region I U.S. Nuclear Regulatory Commission 475 Allendale Road King of Prussia, PA 19406-1415

Mr. Patrick D. Milano, Sr. Project Manager Project Directorate I Division of Licensing Project Management Office of Nuclear Reactor Regulation U.S. Nuclear Regulatory Commission Mail Stop 0-8-C2 Washington, DC 20555-0001

Resident Inspector's Office Indian Point Unit 3 U.S. Nuclear Regulatory Commission P.O. Box 337 Buchanan, NY 10511-0337

Senior Resident Inspector's Office Indian Point Unit 2 U.S. Nuclear Regulatory Commission P.O. Box 38 Buchanan, NY 10511-0038 Mr. Paul Eddy New York State Department of Public Service 3 Empire State Plaza Albany, NY 12223

Mr. Peter R. Smith, Acting President New York State Energy, Research, and Development Authority Corporate Plaza West 286 Washington Avenue Extension Albany, NY 12203-6399

INDIAN POINT NUCLEAR GENERATING UNIT NO. 2 THIRD TEN-YEAR INTERVAL INSERVICE INSPECTION PROGRAM RELIEF REQUEST RR-67

Proposed Alternative In Accordance with 10CFR50.55a(a)(3)(i)

-- Alternative Provides Acceptable Level of Quality and Safety--

1. ASME Code Component(s) Affected

Component Numbers:

ASME Code Class 1 Reactor Vessel Nozzle to Vessel Welds.

Examination Category:

B-D

Item Number:

B3.90 - Nozzle to Vessel Welds

2. Applicable Code Edition and Addenda

The Code of Record for the third Inservice Inspection Interval is ASME Section XI Code, 1989 Edition, No Addenda.

3. Applicable Code Requirements

ASME Boiler and Pressure Vessel Code, Section XI, Rules for Inservice Inspection of Nuclear Power Plant Components, 1989 Edition with No Addenda: Table IWB-2500-1 Code Item B3.90, Figures IWB-2500-7 (a) thru (d) for defining the examination volume of the reactor vessel nozzle to shell welds. The examination requirements for reactor vessel nozzle to shell welds are defined in the ASME Code, Section XI, Appendix VIII, Supplements 4, 6 and 7, 1995 Edition, 1996 Addenda as modified by 10 CFR 50.55a. Eight (8) RPV nozzle to shell welds, 4 inlet and 4 outlet, are planned for examination in 2004 as follows:

Nozzle to Vessel Weld RPVN1 @ 22° Azimuth

Nozzle to Vessel Weld RPVN2 @ 67° Azimuth

Nozzle to Vessel Weld RPVN3 @ 113° Azimuth

Nozzle to Vessel Weld RPVN4 @ 158° Azimuth

Nozzle to Vessel Weld RPVN5 @ 202° Azimuth

Nozzle to Vessel Weld RPVN6 @ 247° Azimuth

Nozzle to Vessel Weld RPVN7 @ 293° Azimuth

Nozzle to Vessel Weld RPVN8 @ 338° Azimuth

4. Reason for Request

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The Code required examination volume of the nozzle to vessel welds is unnecessarily large. The proposed alternative to use Code Case N-613-1 in its entirety will not affect the flaw detection capabilities in the weld and the heat affected zone, and provides an adequate level of quality and safety for examination of the affected welds.

5. Proposed Alternative

In accordance with 10CFR50.55a(a)(3)(i), IP2 requests relief from the $t_s/2$ (t_s is equal to the vessel wall thickness) examination volume requirement and instead proposes examination of the base material volume extending 1/2 inch from each side of the weld. This refined examination volume is defined in detail within Code Case N-613-1 (Attachment 1) and the WesDyne sketches (Attachment 2).

Basis for Use

The examination (exam) volumes for the reactor vessel nozzle to vessel welds are unnecessarily large. For the IP2 reactor vessel, the nozzle to shell volume would extend about 5 inches into the nozzle forging and the same distance into the upper shell course forging. This proposed alternative would re-define the examination volume boundary to 1/2 inch of base metal on each side of the thickest portion of the weld. This reduction in base metal inspection will not affect the flaw detection capabilities in the weld and heat affected zone.

Compliance with these requirements will assure the requisite level of quality and safety is maintained.

The proposed reduction in exam volume is base metal only, extensively interrogated by ultrasonic examination during fabrication, preservice examinations and the last inservice examinations performed in 1995 at the end of the second interval. In 1995, the data was acquired, archived and analyzed using automated ultrasonic systems. Entergy Nuclear Operations, Inc. (Entergy) is confident that reasonable comparisons can be made between the past and present if necessary. During the 1995 examinations, there were no unacceptable indications found in the eight-reactor vessel nozzle to vessel examination volumes including the base metal areas proposed for exclusion from examination in this request. The 1995 results were based on examinations performed in accordance with the ASME Code, Section XI, Section V and Regulatory Guide 1.150, Rev. 1.

The Section XI examination volume for the pressure-retaining nozzle to vessel welds extends from the edge of the weld to include a significant portion of the nozzle forging body (inward) and reactor vessel upper shell course (outward) which is a forged ring. The large volume results in a significant increase in examination time with no corresponding increase in safety as the greatest portion of the volume is base material not prone to inservice cracking.

The implementation of this request for relief would reduce the examination volume next to the widest portion of the weld from half the vessel wall thickness to 1/2 inch from the weld. This reduction applies only to base metal and not the stressed areas of the nozzle to shell weld.

Entergy shall ensure that the high stressed areas of the IP2 reactor vessel nozzle to shell welds shall be included in the examination. The examinations shall consist of techniques and

procedures qualified in accordance with the ASME Code, Section XI, Appendix VIII, and supplements 4, 6 and 7. The weld and surrounding 1/2 inch volume will be interrogated from the nozzle bore using techniques and procedures specifically qualified to inspect the nozzle to shell weld from the nozzle bore. These procedures were qualified in January 2003 in accordance with Appendix VIII, Supplement 7 as administered by the PDI.

The nozzle to vessel examination volume is also accessible from the vessel ID surface and will be examined in four orthogonal directions for the first 15 percent of weld thickness with respect to the vessel ID surface using Appendix VIII, Supplement 4 qualified techniques. The remaining 85 percent of weld volume accessible from the vessel ID surface will be examined in two opposing circumferential scanning directions using Appendix VIII, Supplement 6 qualified techniques to interrogate for transverse defects.

This combination of scans addresses the requirements set forth by the ASME Code, Section XI, 1995 Edition with 1996 Addenda as modified by 10CFR50.55a and assures that current qualified technology will be applied to the re-defined examination volume specified herein to the maximum extent practical. Compliance with these requirements will assure the requisite level of quality and safety is maintained.

6. Duration of Proposed Alternative

It is proposed to use the alternative for the remainder of the Third Inservice Inspection Interval for IP2.

7. Precedents

A similar request for relief was approved for Hope Creek (Docket No. 50-354, TAC NO. MB7839, dated August 26, 2003).

8. Attachment

- 1. Code Case N-613-1 (for information)
- 2. WesDyne Sketch, Indian Point Units 2 and 3 (TYP.), RPV Inlet and Outlet Nozzles Examination Volume Code Case N-613-1 (2 pages)

NL-03-188, Enclosure 1 Attachment 1, page 1 of 4

N-613-1

CASES OF ASME BOILER AND PRESSURE VESSEL CODE

Approval Date: August 20, 2002 See Numeric Index for expiration and any reaffirmation dates.

Case N-613-1
Ultrasonic Examination of Full Penetration
Nozzles in Vessels, Examination Category B-D,
Item No'a. B3.10 and B3.90, Reactor Nozzle-TeVessel Welds, Figs. IWB-2500-7(a), (b), and (c)
Section XI, Division 1

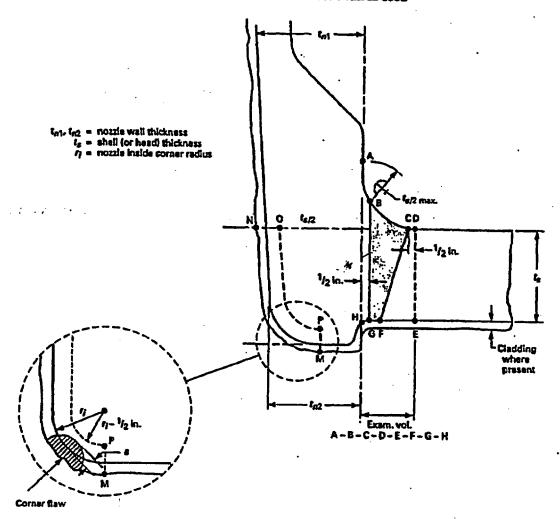
Inquiry: What alternatives to the examination volume requirements of Figs. IWB-2500-7(a), (b), and (c) are permissible for ultrasonic examination of reactor-nozzle-to-vessel welds?

Reply: It is the opinion of the Committee that Category B-D nozzie-to-vessel welds previously ultrasonically examined using the examination volumes of Figs. IWB-2500-7(a), (b), and (c) may be examined using the reduced examination volume (A-B-C-D-E-F-O-H) of Figs. 1, 2, and 3.

CASE (continued)

N-613-1

CASES OF ASME BOILER AND PRESSURE VESSEL CODE



EXAMINATION REGION (Note (1))

Shell (or head) adjoining region Attachment weld region Nozzle cylinder region Nozzle inside corner region

EXAMINATION VOLUME [Note |21]

A-B-G-H M-N-0-P

- Examination regions are identified for the purpose of differentiating the acceptance standards in IWB-3512.
 Examination volumes may be determined either by direct measurements on the component or by measurements based on design drawings.

FIG. 1 NOZZLE IN SHELL OR HEAD (Examination Zones in Barrel Type Nozzies Joined by Full Penetration Corner Welds)

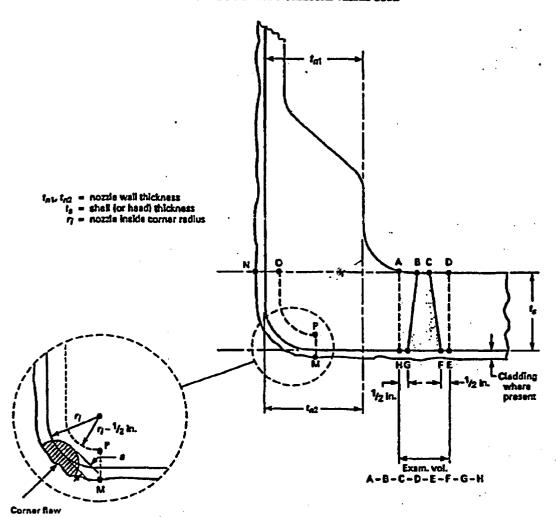
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NL-03-188, Enclosure 1 Attachment 1, page 3 of 4

CASE (continued)

N-613-1

CASES OF ASME BOILER AND PRESSURE VESSEL CODE



EXAMINATION REGION [Note [1]]

Shell (or head) adjoining region Attachment weld region Nozzle cylinder region Nozzie inside corner region

EXAMINATION VOLUME [Note (2)]

C-D-E-F A-B-G-H M-N-0-P

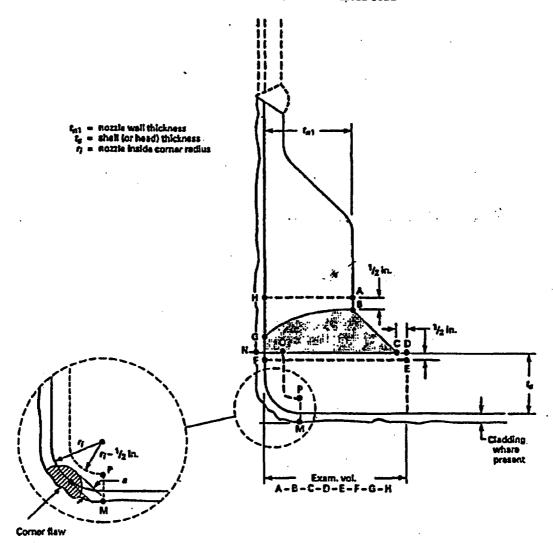
NOTES:

- (1) Examination regions are identified for the purpose of differentiating the acceptance standards in IWB-3512.
 (2) Examination volumes may be determined either by direct measurements on the component or by measurements based on design drawings.

FIG. 2 NOZZLE IN SHELL OR HEAD (Examination Zones in Flange Type Nozzies Joined by Full Penetration Butt Welds) CADE (CONTINUED)

N-613-1

CASES OF ASME BOILER AND PRESSURE VESSEL CODE



EXAMINATION REGION (Note (1))

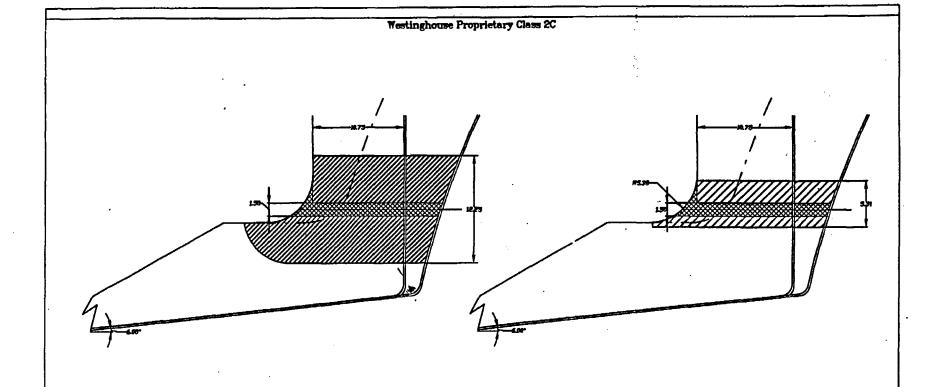
Shall (or head) adjoining region Attachment weld region Nozzie cylinder region Nozzie inside corner region

EXAMINATION VOLUME [Note (2)]

C-D-E-F-G A-B-G-H M-N-0-P

- (1) Examination regions are identified for the purpose of differentiating the acceptance standards in IWB-8512.
 (2) Examination volumes may be determined either by direct measurements on the component or by measurements based on design drawings.

FIG. 3 NOZZLE IN SHELL OR HEAD (Examination Zones in Set-On Type Nozzles Joined by Full Penetration Corner Welds)



EXAMINATION VOLUME - CODE CASE N-613-1

INDIAN POINT UNITS 2 AND 3 (TYP.)

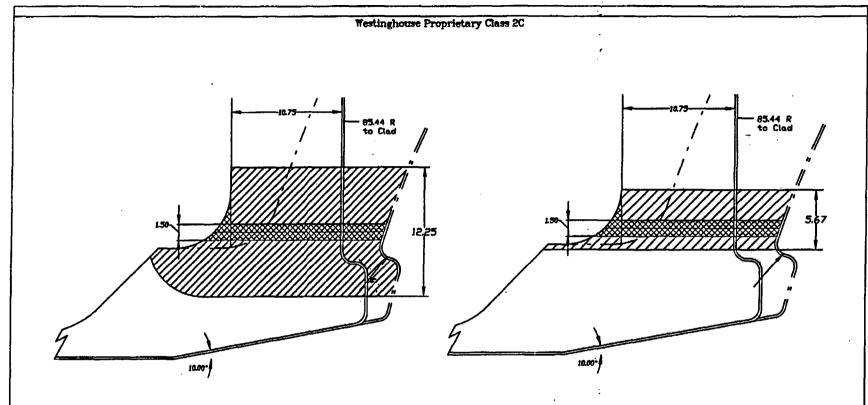
RPV INLET NOZZLE

SHEET CODE CASE NOZZLE VOLUME REFINEMENT

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EXAMINATION VOLUME - CODE CASE N-613-1

INDIAN POINT UNITS 2 AND 3 (TYP)

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B. KUREK VESDYNE 12-17-03

INDIAN POINT NUCLEAR GENERATING UNIT NO. 3 THIRD TEN-YEAR INTERVAL INSERVICE INSPECTION PROGRAM RELIEF REQUEST RR 3-36

Proposed Alternative In Accordance with 10CFR50.55a(a)(3)(i)

-- Alternative Provides Acceptable Level of Quality and Safety--

1. ASME Code Component(s) Affected

Component Numbers:

ASME Code Class 1 Reactor Vessel Nozzle to Shell Welds.

Examination Category:

B-D

Item Number:

B3.90 - Nozzle to Vessel Welds

2. Applicable Code Edition and Addenda

The Code of Record for the third Inservice Inspection Interval is ASME Section XI Code, 1989 Edition, No Addenda.

3. Applicable Code Requirements

ASME Boiler and Pressure Vessel Code, Section XI, Rules for Inservice Inspection of Nuclear Power Plant Components, 1989 Edition with No Addenda: Table IWB-2500-1 Code Item B3.90, Figures IWB-2500-7 (a) thru (d) for defining the examination volume of the reactor vessel nozzle to shell welds. The examination requirements for reactor vessel nozzle to shell welds are defined in the ASME Code, Section XI, Appendix VIII, Supplements 4, 6 and 7, 1995 Edition, 1996 Addenda as modified by 10 CFR 50.55a. Eight (8) RPV nozzle to shell welds, 4 inlet and 4 outlet, are planned for examination in 2009 as follows:

Nozzle to Vessel Weld 21 @ 113° Azimuth

Nozzle to Vessel Weld 22 @ 158° Azimuth

Nozzle to Vessel Weld 23 @ 202° Azimuth

Nozzle to Vessel Weld 24 @ 247° Azimuth

Nozzle to Vessel Weld 25 @ 293° Azimuth

Nozzle to Vessel Weld 26 @ 338° Azimuth

Nozzle to Vessel Weld 27 @ 22° Azimuth

Nozzle to Vessel Weld 28 @ 67° Azimuth

4. Reason for Request

The Code required examination volume of the nozzle to vessel welds is unnecessarily large. The proposed alternative to use Code Case N-613-1 in its entirety will not affect the flaw detection capabilities in the weld and the heat affected zone, and provides an adequate level of quality and safety for examination of the affected welds.

5. Proposed Alternative

In accordance with 10CFR50.55a(a)(3)(i), IP3 requests relief from the $t_s/2$ (t_s is equal to the vessel wall thickness) examination volume requirement and instead proposes examination of the base material volume extending 1/2 inch from each side of the weld. This refined examination volume is defined in detail within Code Case N-613-1 (Attachment 1) and the WesDyne sketches (Attachment 2).

Basis for Use

The examination (exam) volumes for the reactor vessel nozzle to vessel welds are unnecessarily large. For the IP3 reactor vessel, the nozzle to shell volume would extend about 5 inches into the nozzle forging and the same distance into the upper shell course forging. This proposed alternative would re-define the examination volume boundary to 1/2 inch of base metal on each side of the thickest portion of the weld. This reduction in base metal inspection will not affect the flaw detection capabilities in the weld and heat affected zone.

Compliance with these requirements will assure the requisite level of quality and safety is maintained.

The proposed reduction in exam volume is base metal only, extensively interrogated by ultrasonic examination during fabrication, preservice examinations and the last inservice examinations performed in 1999 at the end of the second interval. In 1999, the data was acquired, archived and analyzed using automated ultrasonic systems. Entergy Nuclear Operations, Inc. (Entergy) is confident that reasonable comparisons can be made between the past and present if necessary. During the 1999 examinations, there were no unacceptable indications were found in the eight-reactor vessel nozzle to shell examination volumes including the base metal areas proposed for exclusion from examination in this request. The 1999 results were based on examinations performed in accordance with the ASME Code, Section XI, Section V and Regulatory Guide 1.150, Rev. 1.

The Section XI examination volume for the pressure-retaining nozzle to shell welds extends from the edge of the weld to include a significant portion of the nozzle forging body (inward) and reactor vessel upper shell course (outward) which is a forged ring. The large volume results in a significant increase in examination time with no corresponding increase in safety as the greatest portion of the volume is base material not prone to inservice cracking.

The implementation of this request for relief would reduce the examination volume next to the widest portion of the weld from half the vessel wall thickness to 1/2 inch from the weld. This reduction applies only to base metal and not the stressed areas of the nozzle to shell weld.

Entergy shall ensure that the high stressed areas of the IP3 reactor vessel nozzle to shell welds shall be included in the examination. The examinations shall consist of techniques and procedures qualified in accordance with the ASME Code, Section XI, Appendix VIII, and supplements 4, 6 and 7. The weld and surrounding 1/2 inch volume will be interrogated from the nozzle bore using techniques and procedures specifically qualified to inspect the nozzle to shell weld from the nozzle bore. These procedures were qualified in January 2003 in accordance with Appendix VIII, Supplement 7 as administered by the PDI.

The nozzle to vessel examination volume is also accessible from the vessel ID surface and will be examined in four orthogonal directions for the first 15 percent of weld thickness with respect to the vessel ID surface using Appendix VIII, Supplement 4 qualified techniques. The remaining 85 percent of weld volume accessible from the vessel ID surface will be examined in two opposing circumferential scanning directions using Appendix VIII, Supplement 6 qualified techniques to interrogate for transverse defects.

This combination of scans addresses the requirements set forth by the ASME Code, Section XI, 1995 Edition with 1996 Addenda as modified by 10CFR50.55a and assures that current qualified technology will be applied to the re-defined examination volume specified herein to the maximum extent practical. Compliance with these requirements will assure the requisite level of quality and safety is maintained.

6. Duration of Proposed Alternative

It is proposed to use the alternative for the remainder of the Third Inservice Inspection Interval for IP3.

7. Precedents

A similar request for relief was approved for Hope Creek (Docket No. 50-354, TAC NO. MB7839, dated August 26, 2003).

8. Attachment

- 1. Code Case N-613-1 (for information)
- 2. WesDyne Sketch, Indian Point Units 2 and 3 (TYP.), RPV Inlet and Outlet Nozzles Examination Volume Code Case N-613-1 (2 pages)

NL-03-188, Enclosure 2 Attachment 1, page 1 of 4

N-613-1

CASES OF ASME BOILER AND PRESSURE VESSEL CODE

Approval Date: August 20, 2002 See Numeric Index for expiration and any reaffirmation dates.

Case N-613-1 Ultrasonic Examination of Full Penetration Nozzles in Vessels, Examination Category B-D, Item No's. B3.10 and B3.90, Reactor Nozzle-To-Vessel Welds, Figs. IWB-2500-7(a), (b), and (c) Section XI, Division 1

Inquiry: What alternatives to the examination volume requirements of Figs. IWB-2500-7(a), (b), and (c) are permissible for ultrasonic examination of reactor-nozzle-to-vessel welds?

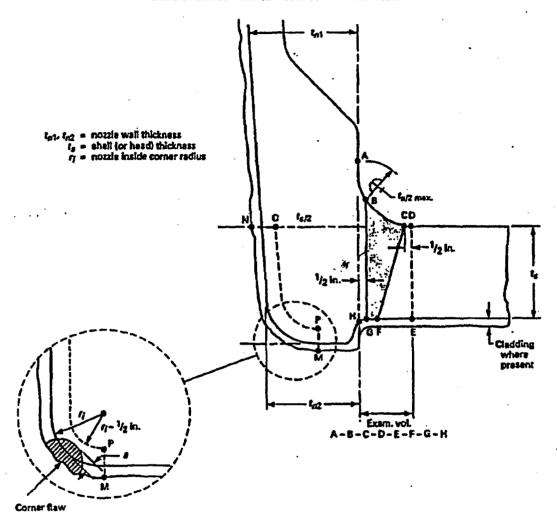
Reply: It is the opinion of the Committee that Category B-D accele-to-vessel welds previously ultrasonically examined using the examination volumes of Figs. IWB-2500-7(a). (b), and (c) may be examined using the reduced examination volume (A-B-C-D-E-F-G-H) of Figs. 1, 2, and 3.

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CASE (continued)

N-613-1

CASES OF ASME BOILER AND PRESSURE VESSEL CODE



EXAMINATION REGION (Note (1))

Shell (or head) adjoining region Attachment weld region Nozzie cylinder region Nozzie inside corner region

EXAMINATION VOLUME [Note (2))

C-D-E-F B-C-F-G A-B-G-H M-N-0-P

- NOTES:
 (1) Examination regions are identified for the purpose of differentiating the acceptance standards in IWB-1512.
 (2) Examination volumes may be determined either by direct measurements on the component or by measurements based on design drawings.

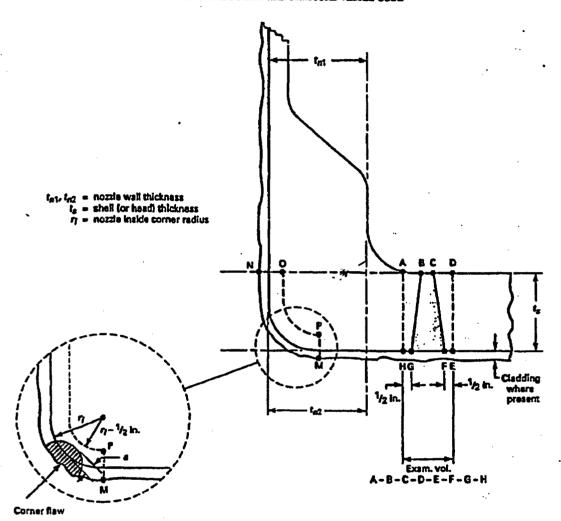
FIG. 1 NOZZLE IN SHELL OR HEAD (Examination Zones in Barrel Type Nozzies Joined by Full Penetration Corner Welds)

NL-03-188, Enclosure 2 Attachment 1, page 3 of 4

CASE (continued)

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EXAMINATION REGION (Note (1))

Shell (or head) adjoining region Attachment weld region Nozzla cylinder region Nozzie inside corner region

EXAMINATION VOLUME [Note (2)]

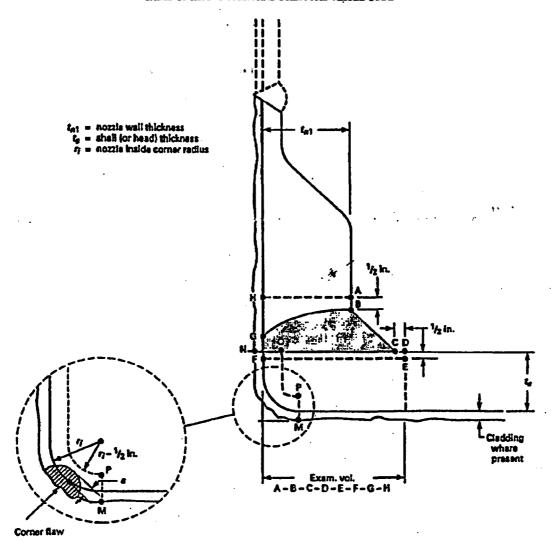
C-D-E-F B-C-F-G A-B-G-H M-N-Q-P

- (1) Examination regions are identified for the purpose of differentiating the acceptance standards in IWB-3512.
 (2) Examination volumes may be determined either by direct measurements on the component or by measurements based on design drawings.

FIG. 2 NOZZLE IN SHELL OR HEAD (Examination Zones in Flange Type Nozzles Joined by Full Penetration Butt Welds) CAPE (continued)

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CASES OF ASME BOILER AND PRESSURE VESSEL CODE



EXAMINATION REGION [Note [1]]

Shell for head) adjoining region Attachment weld region Nozzie cylindar region Nozzie insida corner region

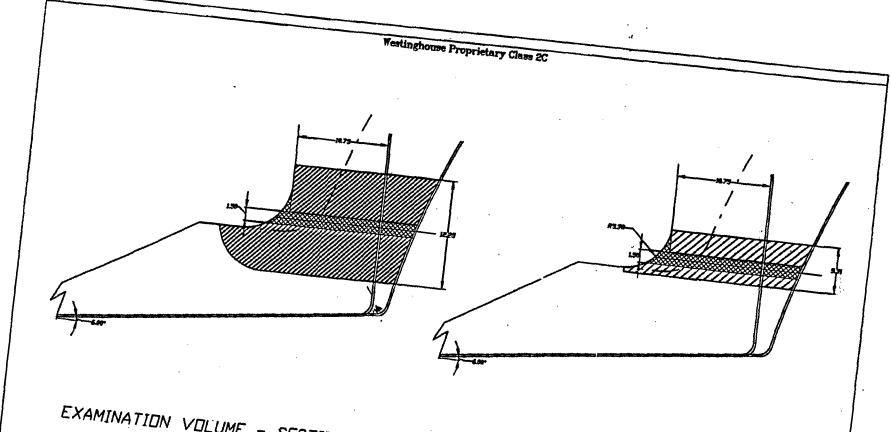
EXAMINATION VOLUME (Note (2)1

A-B-G-K

- (1) Examination regions are identified for the purpose of differentiating the acceptance standards in fWB-3512.

 (2) Examination volumes may be determined either by direct measurements on the component or by measurements based on design drawings.

FIG. 3 NOZZLE IN SHELL OR HEAD (Examination Zones in Set-On Type Nozzles Joined by Full Penetration Corner Welds)



EXAMINATION VOLUME - CODE CASE N-613-1

INDIAN POINT UNITS 2 AND 3 (TYP.)

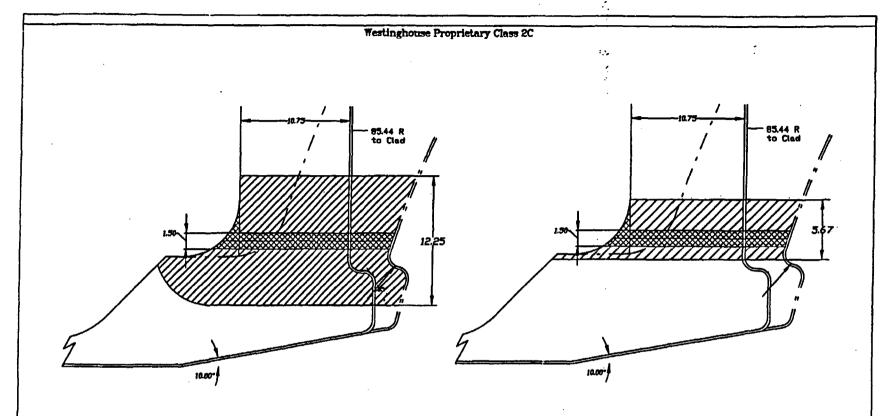
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EXAMINATION VOLUME - CODE CASE N-613-1

INDIAN POINT UNITS 2 AND 3 (TYP)

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