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APR 24 1996

Docket No. 50-423
B15594

Re: 10CFR50.55a(g)

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

Millstone Nuclear Power Station, Unit No. 3
Response to Request for Additional Information
Inservice Inspection Program
Request for Relief from ASME Section XI

On January 12, 1996, Northeast Nuclear Energy Company (NNECO) submitted a request[1] for relief from the requirements of 10CFR50.55a(g) for performing the required examinations for certain Class 1 components in accordance with ASME Section XI.

On March 6, 1996, the NRC Staff requested additional information for relief request IR-20, Integrally Welded Attachment Welds, and relief request IR-21, Pressure Retaining Nozzle Welds in Reactor Vessel.

Revised relief requests IR-20 and IR-21 are provided as Attachment 1. Relief request IR-20 is revised to provide additional information regarding radiation levels. Relief request IR-21 is revised to correct an error in the ASME, Section XI reference. In addition, a question arose concerning the accuracy of the beam angle for weld no. 105-121A. NNECO has verified that the beam angle identified for weld no. 105-121A is correct.

The Staff also requested information on our examination technique. Provided as Attachment 2 is the requested information which summarizes the technique developed by the Southwest Research Institute.

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1 E. A. Debarba letter to the U. S. Nuclear Regulatory Commission, "Millstone Nuclear Power Station, Unit No. 3, Inservice Inspection Program, Request for Relief from ASME Section XI," dated January 12, 1996.

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1/1

We trust this revised relief request provides an adequate response to the Staff's request. Should you require any additional information, please contact Mr. W. J. Temple at (860) 437-5904.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

F. R. Dacimo
Vice President

cc: T. T. Martin, Region I Administrator
V. L. Rooney, NRC Project Manager, Millstone Unit No. 3
A. C. Cerne, Senior Resident Inspector, Millstone Unit No. 3

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Attachment 1

Millstone Nuclear Power Station, Unit No. 3
Response to Request for Additional Information
Inservice Inspection Program
Request for Relief from ASME Section XI

Revised Relief Requests IR-20 and IR-21

April 1996

Millstone Unit No. 3
Relief from Inservice Inspection Requirements

Relief Request: IR-20, Rev. 1

Integrally welded attachment welds

Component Identification:

Code Class: 1 Examination Category: B-K-1

Code Requirement:

For Millstone Unit No. 3, a surface examination of essentially one hundred percent of the length of each integral attachment weld and a one half inch area on each side of the welds as depicted on Figure IWB-2500-15 shall be conducted in accordance with the ASME B&PV Code 1983 Edition through the Summer 1983 Addenda, Article IWB-2500.

Code Relief Request:

Pursuant to 10CFR50.55a(g)(5)(iii), relief is requested from performing the inservice surface examination of the inaccessible portions of the welds listed in the attached table.

Proposed Alternative Examinations:

Surface examinations on the accessible 83 percent of the required examination area as required by ASME Section XI, IWB-2500 were performed during the fourth refueling outage. In addition, inservice system leakage tests were performed in accordance with Category B-P, IWB-2500-1.

Basis for Requesting Relief:

Access to these attachment welds is essentially limited to three sides, as shown on the attached diagram, due to a hanger clamp which prohibits one hundred percent surface examination coverage of the code required examination area. These welded support lugs are welded on three sides located on vertical pipe risers that transmit the load to variable spring can supports. Radiation levels were high, estimated dose rates were 200 - 400 mR/hour general area, 400 - 800 mR/hour on contact, with localized hot spots (crud traps and drain valves) of 10 R - 200 R/hour. In keeping with ALARA, regarding radiation exposure, to disassemble these spring can supports provides a very small increase in examination coverage with a disproportionate impact on personnel exposure. Relief is therefore requested from performing the inservice examination on the inaccessible portions of the exam area base metal located under the pipe clamp as noted in the attached table.

Millstone Unit No. 3
Relief from Inservice Inspection Requirements
IR-20, Integrally Welded Attachment Welds

Zone DRWG/P&ID	Exam Cat. & Item No.	System	Component or Weld Identification	Size	Exam	Data Sheet	Configuration/ Limitation
030 25212-20932	B-K-1 B10.10	RCS	RCS-504B-PSSH507 Integral attachment to pipe for 3RHS-1-PSSH507	8.00	LP	93-PT-053	Side under clamp not accessible; 83% of weld examined
030 25212-20932	B-K-1 B10.10	RCS	RCS-504B-PSSH508 Integral attachment to pipe for 3RHS-1-PSSH508	8.00	LP	93-PT-065	Side under clamp not accessible; 83% of weld examined

ED4297 5-80

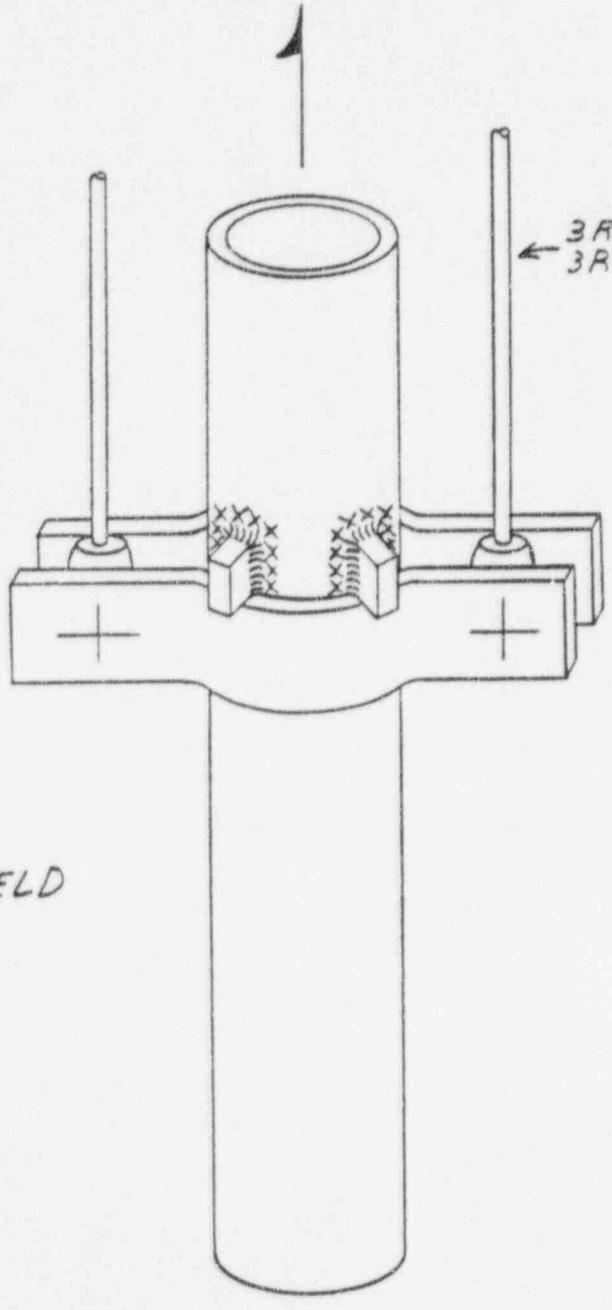
NORTHEAST UTILITIES SERVICE COMPANY

SUBJECT RELIEF REQUEST IR-2 BY RK-L DATE 9-28-15

CHKD. BY _____ DATE _____

CALC. NO. _____ REV. _____

SHEET NO. _____ OF _____



xxx = ½" FROM WELD

DRN BY: R COLOPOULOS

Millstone Unit No. 3
Relief from Inservice Inspection Requirements

Relief Request: IR-21, Rev. 1

Pressure Retaining Nozzle Welds in Reactor Vessel

Component Identification:

Code Class: 1 Examination Category: B-D

Code Requirement:

For Millstone Unit No. 3, a volumetric examination of essentially one hundred percent of the weld length shall be conducted for the following items in accordance with ASME B&PV Code 1983 Edition through the Summer 1983 Addenda, Article IWB-2500:

Item Description:

B3.90 Nozzle to Shell Welds

B3.100 Nozzle Inner Radius Areas

Code Relief Request:

Pursuant to 10CFR50.55a(g)(5)(iii), relief is requested from performing the inservice volumetric examination of the inaccessible portions of the subject vessel welds listed in the attached table.

Proposed Alternative Examinations:

A volumetric examination on the accessible areas in accordance with ASME Section XI, IWB-2500-1 was performed during the fifth refueling outage. In addition, inservice system leakage tests were performed in accordance with Category B-P, IWB-2500-1.

Basis for Requesting Relief:

Permanent obstructions limited the volumetric examination of the welds and nozzle inner radius areas listed in the attached table. Examination scan plans, data sheets and limitation sketches generated during the ten year ISI on the RVP depict the affected areas. Relief is therefore requested from performing the inservice examination on the inaccessible portions of the volume required as noted in the attached table.

Millstone Unit No. 3
Relief from Inservice Inspection Requirements
IR-21, Pressure Retaining Nozzle Welds in Reactor Vessel

Zone No.	Weld No.	Exam Area ID	Technique	Beam Angle	Exam Type	Beam Direction	Code Coverage	Limitation
1	107-121A	Outlet nozzle to shell at 22°	Ultrasonic	0 & 45 50/70 45 & 60 0 0	Parallel Transverse Transverse Lamination Planar (weld)	1 Direction 2 Directions 2 Directions N/A N/A Average	100% 38% 28% 100% 34% 60%	Limited exam due to the integral extension
1	105-121A	Inlet nozzle to shell at 67°	Ultrasonic	6 & 45 50/70 45 & 60 0 0	Parallel Transverse Transverse Lamination Planar (weld)	1 Direction 2 Directions 2 Directions N/A N/A Average	100% 89% 76% 100% 87% 90%	Limited exam due to the nozzle geometry

1	105- 121B	Inlet nozzle to shell at 113°	Ultrasonic	6 & 45 50/70 45 & 60 0 0	Parallel Transverse Transverse Lamination Planar (weld)	1 Direction 2 Directions 2 Directions N/A N/A Average	100% 89% 76% 100% 87% 90%	Limited exam due to the nozzle geometry
1	107- 121B	Outlet nozzle to shell at 158°	Ultrasonic	6 & 45 50/70 45 & 60 0 0	Parallel Transverse Transverse Lamination Planar (weld)	1 Direction 2 Directions 2 Directions N/A N/A Average	100% 38% 28% 100% 34% 60%	Limited exam due to the integral extension
1	107- 121C	Outlet nozzle to shell at 202°	Ultrasonic	0 & 45 50/70 45 & 60 0 0	Parallel Transverse Transverse Lamination Planar (weld)	1 Direction 2 Directions 2 Directions N/A N/A Average	100% 38% 28% 100% 34% 60%	Limited exam due to the integral extension
1	105- 121C	Inlet nozzle to shell at 247°	Ultrasonic	6 & 45 50/70 45 & 60 0 0	Parallel Transverse Transverse Lamination Planar (weld)	1 Direction 2 Directions 2 Directions N/A N/A Average	100% 89% 76% 100% 87% 90%	Limited exam due to the nozzle geometry
1	105- 121D	Inlet nozzle to shell at 293°	Ultrasonic	6 & 45 50/70 45 & 60 0 0	Parallel Transverse Transverse Lamination Planar (weld)	1 Direction 2 Directions 2 Directions N/A N/A Average	100% 89% 76% 100% 87% 90%	Limited exam due to the integral extension

1	107- 121D	Outlet nozzle to shell at 338°	Ultrasonic	6 & 45 50/70 45 & 60 0 0	Parallel Transverse Transverse Lamination Planar (weld)	1 Direction 2 Directions 2 Directions N/A N/A Average	100% 38% 28% 100% 34% 60%	Limited exam due to the integral extension

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Attachment 2

Millstone Nuclear Power Station, Unit No. 3
Response to Request for Additional Information
Inservice Inspection Program
Request for Relief from ASME Section XI

Summary of Automated Ultrasonic Test
of Reactor Pressure Vessel

April 1996

SUMMARY OF AUTOMATED
ULTRASONIC TEST (AUT)
OF REACTOR PRESSURE VESSEL

RPV AUT Examinations

AUT examinations were performed on the reactor vessel welds from the inside surface (ID) utilizing the PaR Device with Fast PaR and Enhanced Data Acquisition System (EDAS™) equipment.

A description of the AUT techniques follows:

Nozzle to shell welds: The inlet nozzle-to-vessel welds were examined from the bore utilizing search units producing 6-degree refracted longitudinal and a 45-degree shear wave for detection of reflectors in the weld and base material. The outlet nozzles were examined from the bore utilizing search units producing 0-degree refracted longitudinal and a 45-degree shear wave for detection of reflectors in the weld and base material. In addition, a 0-degree longitudinal and 45- and 60-degree shear-wave examinations were performed from the vessel shell ID for both the inlet and outlet nozzles to detect reflectors oriented transverse to the weld and base material. These transverse examinations utilized computer-controlled movements of the PaR Device to assure accurate positioning around the nozzle during examinations. The 50/70-degree tandem search units were utilized from the bore and shell ID for detection of reflectors located in the clad-to-base metal interface region for the purpose of satisfying the requirements of Section XI.

RPV Nozzle Inner Radius: The nozzle inner radius regions were examined from the nozzle bore and the vessel wall with the 50/70-degree tandem search units for detection of underclad cracking and near-surface flaws oriented axially to the nozzle.

RPV Inlet and Outlet Nozzle-to-Safe End Welds: In accordance with NNECO's request for relief number IR-9 Rev. 1, a full-volume UT examination of the weld and base metal was performed in lieu of a surface examination. SLIC 40 refracted longitudinal-search units were used from the nozzle bore for detection of reflectors in the weld and 1/2 inch of base material on each side of the outside surface (OD) weld fusion lines. The SLIC 40 search units were manipulated and scanned in four directions [towards (TWD), away (AWY), (counterclockwise (CCW), and clockwise (CW)] to obtain full-volume coverage. Prior to onsite examinations, this technique had been demonstrated to NNECO and USNRC in accordance with the relief request requirements.

The examination coverage for the RPV welds was determined in accordance with the requirements of Section V, T-441.3.2. These requirements are as follows:

(1) Reflectors oriented parallel to the weld

(a) The **inner 25%t including the weld metal and adjacent base metal for 1/2t either side of the weld fusion line** (volume A in the figures) must be completely scanned with the 50/70 search unit aimed at right angles to the weld axis. Scanning shall be performed in two directions 180 degrees to each other.

(b) The **weld metal in the outer 75%t** (volume B in the figures) must be completely scanned by two angle beams, (45- and 60-degree) with the search units aimed at right angles to the weld axis. Scanning shall be performed in two directions 180 degrees to each other.

(c) The **adjacent base metal in the outer 75%t for 1/2t either side of the weld fusion line** (volumes C and D in the figures) must be completely scanned by two angle beams (45- and

60-degree), but need not be completely scanned by both angle beams from both directions (any combination of two angle beams will satisfy the requirement).

(d) For those examinations performed from the nozzle bores and flange seal surface, the UT beams must be directed essentially perpendicular to the plane of the weld to detect reflectors parallel to the welds. The beam angles used must be sufficient to provide complete coverage of the required volumes from one direction.

(2) Reflectors oriented transverse to the weld

(a) The **inner 25%t including the weld metal and adjacent base metal for 1/2t either side of the weld fusion line** (volume A in the figures) must be scanned with the 50/70 search unit beam directed parallel to the weld axis. scanning shall be performed in two directions 180 degrees to each other to the extent possible. Areas blocked by geometric conditions shall be examined from at least one direction.

(b) The **weld metal and adjacent base metal in the outer 75%t for 1/2t either side of the weld fusion line** (volumes B, C, and D, in the figures) must be scanned with the 45- and 60-degree search unit beams directed parallel to the weld axis. Scanning shall be performed in two directions 180 degrees to each other to the extent possible. Areas blocked by geometric conditions shall be examined from at least one direction.

(3) The **base material through which the angle beams pass** must be scanned with a straight-beam search unit to detect laminar reflectors which might affect interpretation of angle-beam results. The required volume to be examined is limited to only those volumes that receive coverage with angle beams. This could be all, or any part of the ABCDEF volumes shown in the figures.

(4) Straight beam scanning for planar reflectors must be performed on the entire **weld and adjacent base material** (volumes A, B, C, and D in the figures).

The examination coverage for nozzle inner radius areas was determined in accordance with the requirements of Figure IWB-2500-7. The required area must be scanned with 50/70 search units in two directions (clockwise and counterclockwise) to detect radial-axial flaws.

The examination coverage for nozzle-to-safe end welds was determined in accordance with the requirements of NNECO Request for Relief No. IR-9 Rev. 1. As an alternative to the surface examination of requirements of Section XI, a full volumetric examination of the weld and heart-affected zone was performed as described below:

(1) Reflectors parallel to the weld:

The weld metal and adjacent base metal for 1/2 inch either side of the weld fusion line (volume shown in Figure 9) must be examined from two sides of the weld using the SLIC 40 search unit. The UT beam must pass through the volume in two opposing directions.

(2) Reflectors transverse to the weld:

The weld metal and adjacent base metal for 1/2 inch either side of the weld fusion line (volume shown in Figure 9) must be examined with the SLIC 40 search unit. The UT beam is directed parallel to the weld to detect reflectors transverse to the weld. The UT beam must pass through the volume in two opposing directions.