

May 31, 2017

Docket Nos.: 50-321  
50-366

NL-17-0917

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D. C. 20555-0001Edwin I. Hatch Nuclear Plant  
Response to Request for Additional Information Regarding Relief Requests  
RR-16, RR-17, RR-21 and RR-22

Ladies and Gentlemen:

By letter dated December 27, 2016 (Agencywide Documents Access and Management System Accession No. ML16362A273), Southern Nuclear Operating Company (SNC) submitted 11 Requests for Relief associated with the fourth 10-year Interval Inservice Inspection (ISI) Program for the Edwin I. Hatch Nuclear Plant (HNP), Units 1 and 2. The Nuclear Regulatory Commission (NRC) staff reviewed the information provided regarding relief requests RR-16, RR-17, RR-21, and RR-22, and determined that additional information is needed to complete its evaluation. The Enclosure provides the SNC response to the NRC request for additional information.

This letter contains no new NRC commitments. If you have any questions, please contact Ken McElroy at 205.992.7369.

Respectfully submitted,

Justin T. Wheat  
Nuclear Licensing Manager

JJH/RMJ/cg

Enclosure: SNC Response to NRC RAI

Attachment: Coverage Plots 2C-1 Vessel to Flange Weld

cc: Regional Administrator, Region II  
NRR Project Manager – Hatch  
Senior Resident Inspector – Hatch  
RType: CHA02.004

**Edwin I. Hatch Nuclear Plant  
Response to Request for Additional Information Regarding Relief Requests  
RR-16, RR-17, RR-21 and RR-22**

**Enclosure**

**SNC Response to NRC RAI**

RR-16

1. Please provide any plant-specific and industry-wide operating experience of detected flaws in the nozzle-to-vessel welds subject to relief request RR-16, since some of the welds had limited coverage (e.g., approximately 32% coverage was obtained for weld number 1B11\1N4C). Were any flaws or degradation identified in past examinations of the welds subject to relief request RR-16, and if so, how were the flaws dispositioned?

SNC Response

No relevant industry experience was found. Below is a list of 4<sup>th</sup> interval B-D inspections with indications and dispositions. All the inspections were compared against the previous interval examinations with no changes in data.

1B11\1N2H(N-SH)	3 relevant indications were found. These indications were sub-surface. They did not have a measurable through wall to make them ID connected. The indications were not service induced nor surface connected. The indications were from fabrication issues and were found to be acceptable per IWB-3512.
1B11\1N2K(N-SH)	2 relevant indications were found. These indications were sub-surface. They did not have a measurable through wall to make them ID connected. The indications were not service induced nor surface connected. The indications were from fabrication issues and were found to be acceptable per IWB-3512.
1B11\1N3A(SH-N)	2 indications were found. Previous inspections found acceptable indications per IWB-3512. However, due to more reliable PDI exams, the flaws did not pass the acceptance criteria of IWB-3512 in the 4 <sup>th</sup> Interval examination. The indications were evaluated per IWB-3610 and were found to be acceptable. The evaluation was sent to the NRC (ML060610658).
1B11\1N3B(SH-N)	6 indications were found. These indications were sub-surface. They did not have a measurable through wall to make them ID connected. The indications were not service induced nor surface connected. The indications were from fabrication issues and were found to be acceptable per IWB-3512.
1B11\1N4C(N-SH)	1 indication was found. This indication was sub-surface. It did not have a measurable through wall to make it ID connected. The indication was not service induced nor surface connected. The indication was from fabrication issues and was found to be acceptable per IWB-3512.
1B11\1N4D(N-SH)	2 indications were found. These indications were sub-surface. They did not have a measurable through wall to make them ID connected. The indications were not service induced nor surface connected. The indications were from fabrication issues and were found to be acceptable per IWB-3512.

2B11\2N1A(SH-N)	4 indications were found. These indications were sub-surface. They did not have a measurable through wall to make them ID connected. The indications were not service induced nor surface connected. The indications were from fabrication issues and were found to be acceptable per IWB-3512.
2B11\2N2C(N-SH)	4 indications were found. These indications were sub-surface. They did not have a measurable through wall to make them ID connected. The indications were not service induced nor surface connected. The indications were from fabrication issues and were found to be acceptable per IWB-3512.
2B11\2N2E(N-SH)	1 indication was found. This indication was sub-surface. It did not have a measurable through wall to make it ID connected. The indication was not service induced nor surface connected. The indication was from fabrication issues and was found to be acceptable per IWB-3512.
2B11\2N2H(N-SH)	5 indications were found. These indications were sub-surface. They did not have a measurable through wall to make them ID connected. The indications were not service induced nor surface connected. The indications were from fabrication issues and were found to be acceptable per IWB-3512.
2B11\2N4C(N-SH)	2 indications were found. These indications were sub-surface. They did not have a measurable through wall to make them ID connected. The indications were not service induced nor surface connected. The indications were from fabrication issues and were found to be acceptable per IWB-3512.

RR-17

2. Were any flaws or degradation identified in the past examination of the welds subject to relief request RR-17, and if so, how were the flaws dispositioned?

SNC Response

Below is a list of 4<sup>th</sup> interval B-A inspections with indications and dispositions. All the inspections were compared against the previous interval examinations with no changes in data.

2B11\2C-1	3 relevant indications found. These indications were sub-surface. They did not have a measurable through wall to make them ID connected. The indications were not service induced nor surface connected. The data was evaluated per the requirements of IWB-3510 and found to be acceptable.
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3. It is not clear how the three thermocouple pads are positioned around the shell circumference and obstructing the examinations. Please provide a diagram that

illustrates the position and size of the thermocouple pads on the shell side of the weld around the circumference.

SNC Response

The thermocouple pads are 2.0 inches in diameter, 4.0 inches in separation (center to center) at 0°, 135° and 270° on the shell side of the weld. The Attachment to this letter shows an excerpt from the General Electric Hitachi (GEH) nondestructive examination (NDE) report showing approximate placement within the examination area.

RR-21

4. Were any flaws or degradation identified in the past examination of the welds subject to relief request RR-21, and if so, how were the flaws dispositioned?

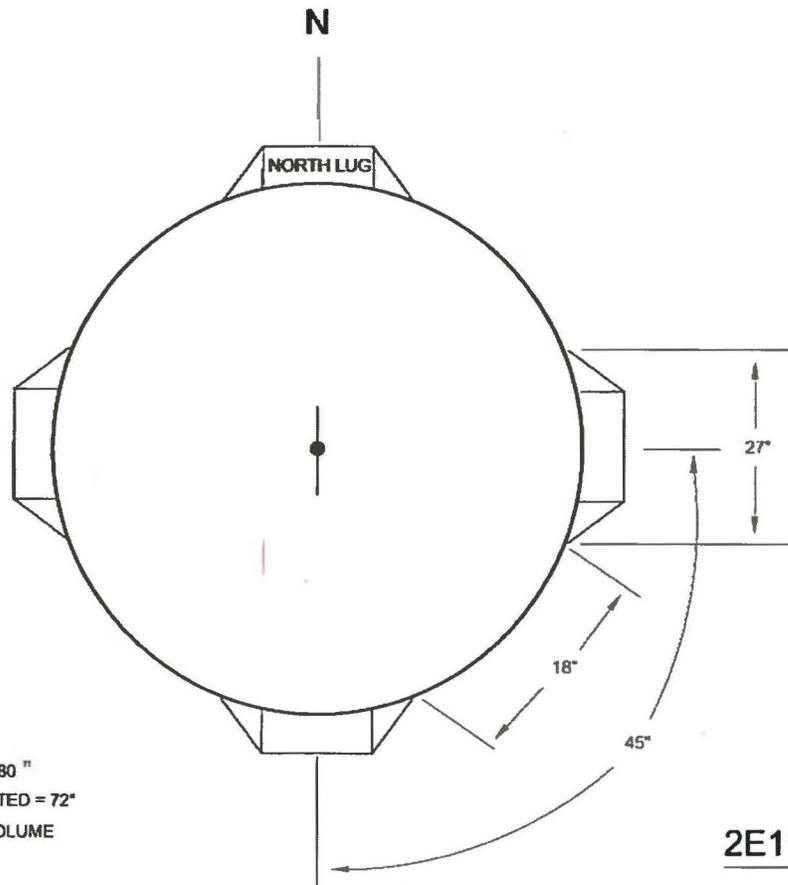
SNC Response

No recordable indications were found during the 4<sup>th</sup> interval C-A inspections. All the inspections were compared against the previous interval examinations with no changes in data.

5. The staff reviewed the October 17, 1995 submittal identified under Section 8 (Precedents) of RR-21. In this submittal (which corresponds to a similar relief request for the third interval for weld 2E11-2HX-A-1), it is stated that 72% of the required volume was inspected. Please discuss the rationale and basis for the decrease in coverage to 40% during the fourth interval from 72% during the third interval.

SNC Response

Upon review of the initial submittal of RR-5 and the data sheets from the examination, the 72% percent coverage contained in the submittal for 2E11-2HX-A-1 was actually 72" of coverage out of 180" of total weld length, or 40% (72"/180"). The volume calculation has been consistent when comparing examination results. The figure on the next page shows the configuration documented in the data sheets. This error has since been documented in the SNC Corrective Action Program (CAP).



TOTAL EXAM  
TOTAL CIRCUMFERENCE = 180"  
TOTAL INCHES UNOBSTRUCTED = 72"  
 $72 / 180 = 40\%$  OF EXAM VOLUME

TOP VIEW  
2E11-2HX-A-1 Configuration

2E11-2HX-A-1

RR-22

6. Were any flaws or degradation identified in the past examination of the welds subject to relief request RR-22, and if so, how were the flaws dispositioned?

SNC Response

Below is a list of 4<sup>th</sup> interval C-B inspections with indications and dispositions. All the inspections were compared against the previous interval examinations with no changes in data unless noted below.

2E11-2HX-A-O	2 flaw type indications were found. 1 <sup>st</sup> flaw was characterized as porosity and validated by original RT film. 2 <sup>nd</sup> flaw was characterized as slag and validated by original RT film. The indications were from fabrication issues and were found to be acceptable per IWC-3511. None of the flaws had degradation.
1E11-2HX-A-I	2 flaw type indications were found. The indications were evaluated per IWB-3600 using an analytical evaluation and found acceptable. The evaluation was submitted to the NRC (ML081280092). These surface planar flaws were not previously noted.

7. It is stated that “two UT indications were recorded on weld 1E11-2HX-A-I” and a fracture mechanics and fatigue crack growth evaluation was performed. It is then stated that “the flaw is acceptable” based on the evaluation. Please confirm that the indications were first evaluated to the requirements of ASME Section XI, IWB-3500 and that the analyses performed by Structural Integrity Associates were evaluated to the requirements of IWB-3600. Please also confirm that the flaw size assumed in the flaw evaluation bounds the size of the two UT indications.

SNC Response

As referenced in the original submittal to the NRC for the flaw evaluation (ML081280092), the indications were evaluated against the acceptance standards of Table IWC-3410-1 and IWC-3511 of ASME Section XI, 2001 Edition with Addenda through 2003. The analytical evaluation of the flaws was performed per the requirements of IWC-3610 which references IWB-3610 for the acceptance criteria.

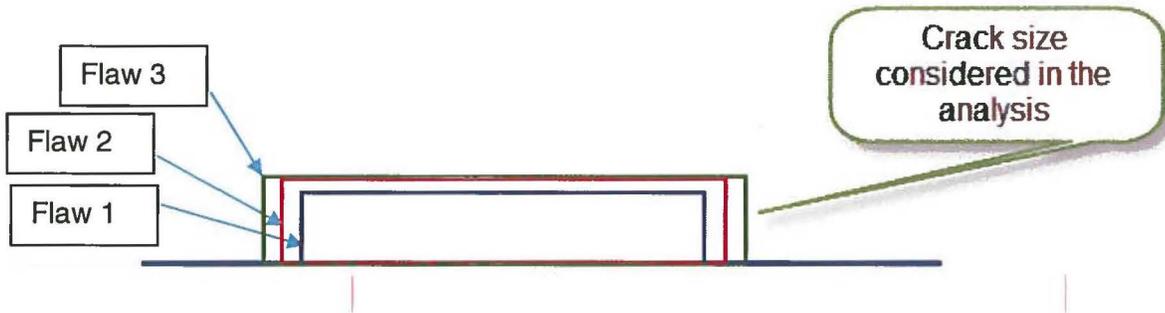
The flaw size used in the analysis is bounding.

Flaws	Depth (in)	Length (in)	Depth/Length
Flaw #1	0.12	0.75	0.16
Flaw #2	0.18	0.80	0.225
Flaw #3, Assumed Flaw	0.18	0.90	0.20

Since Flaw #2 is larger than Flaw #1, both in the depth and the length directions, only Flaw #2 needs to be considered. Assuming the a/l for Flaw #2 to be 0.2 makes the flaw longer and thus more conservative.

The fatigue crack growth (Section 6.2.4) was performed using an initial crack of depth = 0.18 inch and length = 0.9 inch ( $a/l = 0.2$ ).

For further clarification, ignore  $a/l$ , and only compare the depths and the lengths of the flaws. The flaw assumed for further analysis (Flaw #3) is larger than the observed flaws as shown in the sketch below.



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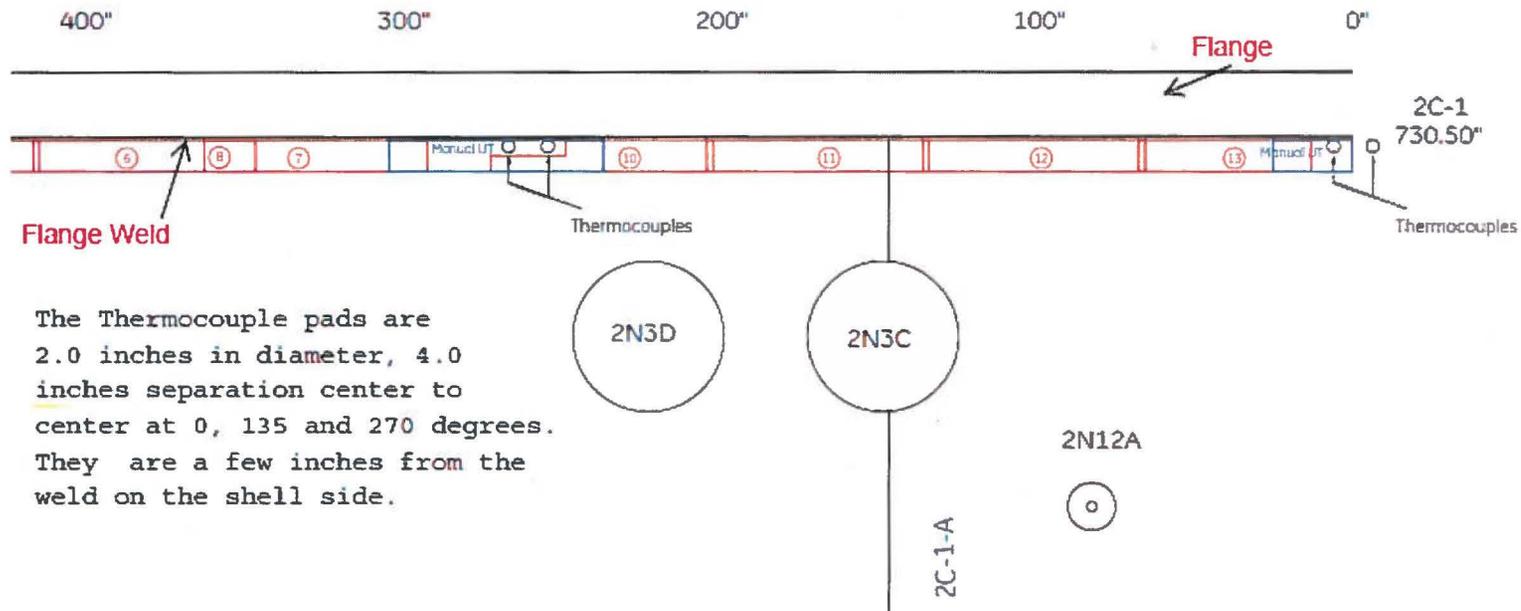
**Attachment**

**Coverage Plots 2C-1 Vessel to Flange Weld**



HITACHI

# Coverage Plot 2C-1 Vessel to Flange Weld



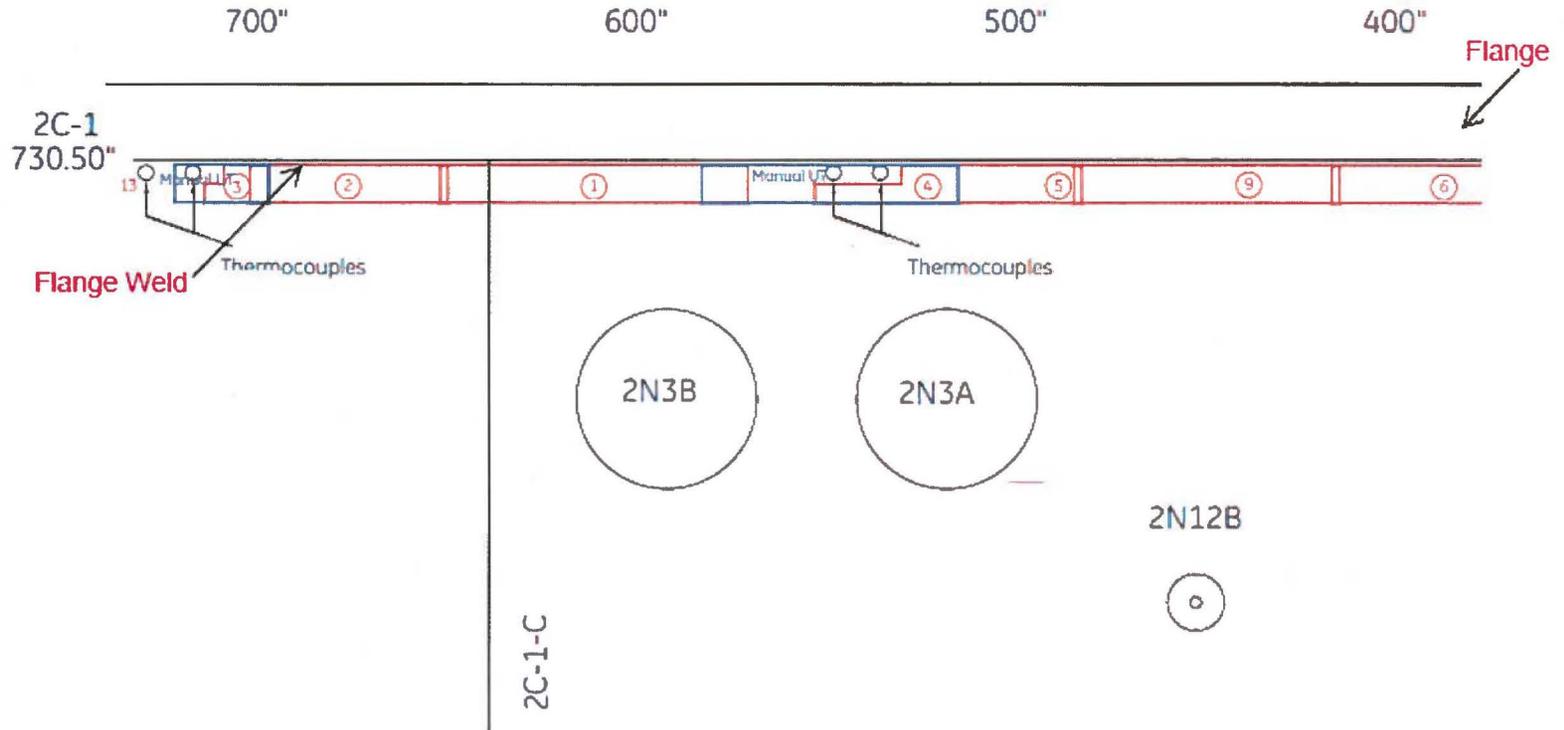
The Thermocouple pads are 2.0 inches in diameter, 4.0 inches separation center to center at 0, 135 and 270 degrees. They are a few inches from the weld on the shell side.

Automated UT and Manual UT examination patches

In the graphic above, the red boxes with numbered circles indicate automated scan areas. The blue boxes indicate where manual scans were performed in the location of the thermocouples to achieve greater coverage.



# Coverage Plot 2C-1 Vessel to Flange Weld



Automated UT and Manual UT examination patches

In the graphic above, the red boxes with numbered circles indicate automated scan areas. The blue boxes indicate where manual scans were performed in the location of the thermocouples to achieve greater coverage.