

RS-21-069

10 CFR 50.55a

June 28, 2021

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001


Clinton Power Station, Unit 1
Facility Operating License No. NPF-62
NRC Docket No. 50-461

Subject: Third Inservice Inspection Interval Relief Request I3R-18

In accordance with 10 CFR 50.55a, "Codes and standards," paragraphs (g)(5)(iv), Exelon Generation Company, LLC (EGC), requests NRC approval of the attached relief request associated with the third Inservice Inspection (ISI) Interval for Clinton Power Station, Unit 1 (CPS). Relief is requested due to the impracticality of satisfying the requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components." The third ISI interval for CPS ended June 30, 2020. EGC requests approval of the request by June 28, 2022.

There are no regulatory commitments contained within this letter. Should you have any questions concerning this letter, please contact Mr. Kenneth M. Nicely at (630) 657-2803.

Respectfully,



Patrick R. Simpson
Sr. Manager Licensing

Attachment: 10 CFR 50.55a Request Number I3R-18

cc: NRC Regional Administrator, Region III
NRC Senior Resident Inspector – Clinton Power Station

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Relief Requested in Accordance with 10 CFR 50.55a(g)(5)(iv)
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1. ASME Code Component(s) Affected

Code Class:	1
Reference:	IWB-2500
	Code Case N-460
Component Number:	RPV-C5
Examination Category:	B-A
Item Number:	B1.30
Description:	Reactor Pressure Vessel (RPV) Shell to Flange Weld

2. Applicable Code Edition

The third 10-year interval of the Clinton Power Station, Unit 1 (CPS) Inservice Inspection (ISI) Program ended on June 30, 2020, and complied with the 2004 Edition of American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code), Section XI, and No Addenda.

3. Applicable Code Requirement

Class 1 Reactor Pressure Vessel (RPV) Shell to Flange Weld examination requirements are given in Subsection IWB, Table IWB-2500-1, Examination Category B-A, Item Number B1.30. The method of examination is volumetric examination (ultrasonic examination, UT).

4. Impracticality of Compliance

Code required UT coverage is impractical for this weld due to the RPV Shell Flange configuration/geometry. The UT examination can only be performed from the shell side due to the flange configuration. Relief is requested from performing the required UT examination volume. To perform a full Code required UT examination of this weld, the RPV Shell Flange would have to be modified. The following describes the UT coverage:

- First 1/2 length of the weld (from 0 degrees to 180 degrees) – 62.8%
- Second 1/2 length of the weld (from 180 degrees to 360 degrees) – 72.9%

5. Burden Caused by Compliance

The RPV Shell Flange configuration/geometry does not allow CPS to perform UT examination from flange side. To perform a full Code required UT examination of this weld, the RPV Shell flange would have to be modified.

6. Proposed Alternative and Basis for Use

Proposed Alternative

In accordance with 10 CFR 50.55a(g)(5)(iv), relief is requested from performing the required examination on essentially 100% of the examination area. Code Case N-460 (i.e.,

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Reference 1) allows a reduction in the examination area of up to 10%. This Code Case N-460 has been approved and incorporated into Regulatory Guide 1.147, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1." The RPV Shell Flange configuration/geometry does not allow UT examination from the flange side. CPS proposes to perform the UT examination from the RPV Shell side only and perform UT examination on this weld to the maximum extent feasible. CPS evaluated the feasibility of using a remote auto UT system to potentially increase the examination volume. It was concluded that due to the size of the auto UT equipment the examination volume would have been less.

Basis for Use

Performance of UT examination from the RPV Shell side only provides reasonable assurance of the structural integrity of the entire weld. CPS has performed UT examination on this weld to the maximum extent feasible. It should be noted that during initial plant construction, the entire weld was radiographed and the results were acceptable. The weld was also ultrasonically examined in accordance with the Preservice Inspection Plan, and the results of that examination were also acceptable.

Due to the bend radius on the flange side and the thickness of the flange, the following examination volumes can be scanned:

- From 0 deg to 180 deg -- Composite coverage of 62.8%
- From 180 deg to 360 deg -- Composite coverage of 72.9%

This weld was examined in two separate segments. The 0 to 180 degrees segment was examined in 2011, and the 180 to 360 degrees segment was examined in 2019. The lower coverage achieved in the 0 to 180 degrees scan (i.e., 62.8% coverage) was due to different procedures and equipment technical capabilities in place during the 2011 refueling outage. The other half of this weld was examined in 2019 with superior results (i.e., 72.9% coverage) due to advancements in both procedure and equipment. There was no indication identified during the examinations of the above two areas. As shown above, performance of the above examinations provides reasonable assurance of the structural integrity of the entire weld.

7. Duration of Proposed Alternative

Relief is requested for the CPS third 10-year ISI interval.

8. Precedents

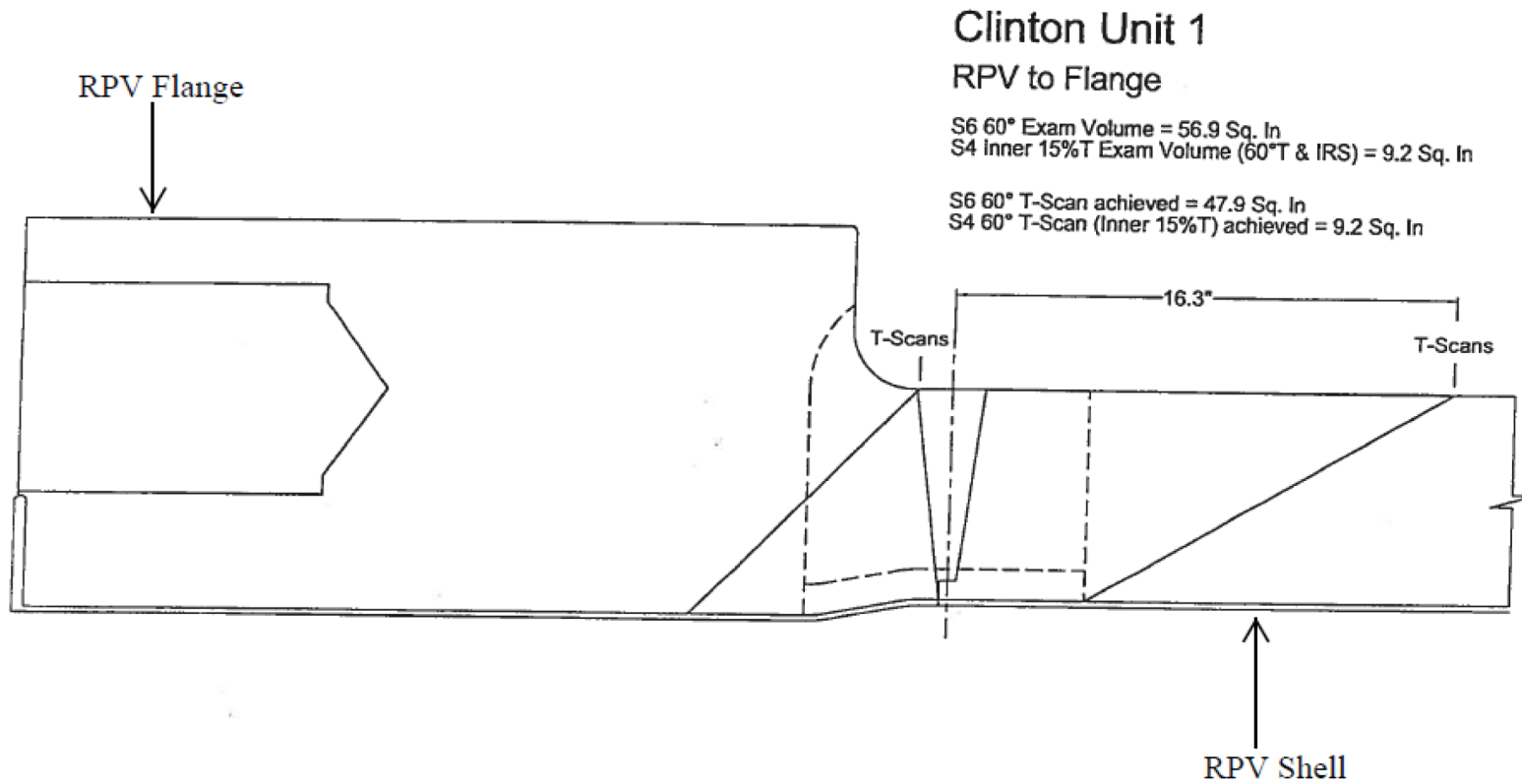
Similar relief requests were approved for the first and second 10-year ISI intervals at CPS as Relief Request Numbers 4015 and 4218 as discussed in References 2 and 3.

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9. References

1. Code Case N-460, "Alternative Examination Coverage for Class 1 and Class 2 Welds, Section XI, Division 1"
2. Letter from A. J. Mendiola (U.S. NRC) to M. Reandeau (Clinton Power Station), "Clinton Power Station – First 10-Year Interval Inservice Inspection Program Plan Requests for Relief Nos. 4014, 4015, 4016, and 4017, (TAC No. MA6192)," dated March 28, 2000
3. Letter from J. I. Zimmerman (U.S. NRC) to M. J. Pacilio (Exelon Generation Company, LLC), "Clinton Power Station, Unit No. 1 – Relief Requests (RRs) 4216, 4217, 4218, 4219, 4220, 4221, and 4222 Regarding Examination Coverage for the Second 10-Year Inservice Inspection (ISI) Interval (TAC Nos. ME4183, ME4184, ME4185, ME4186, ME4187, ME4188 and ME4189)," dated June 17, 2011

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Achieved Examination Coverage for Weld RPV-C5
Examined 1/2 of Weld Length from 0 - 180 degrees
Exam Performed 2011

Figure 1a: RPV Shell-to-Flange Weld

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Achieved Examination Coverage for Weld RPV-C5
Examined 1/2 of Weld Length from 0 - 180 degrees
Exam Performed 2011

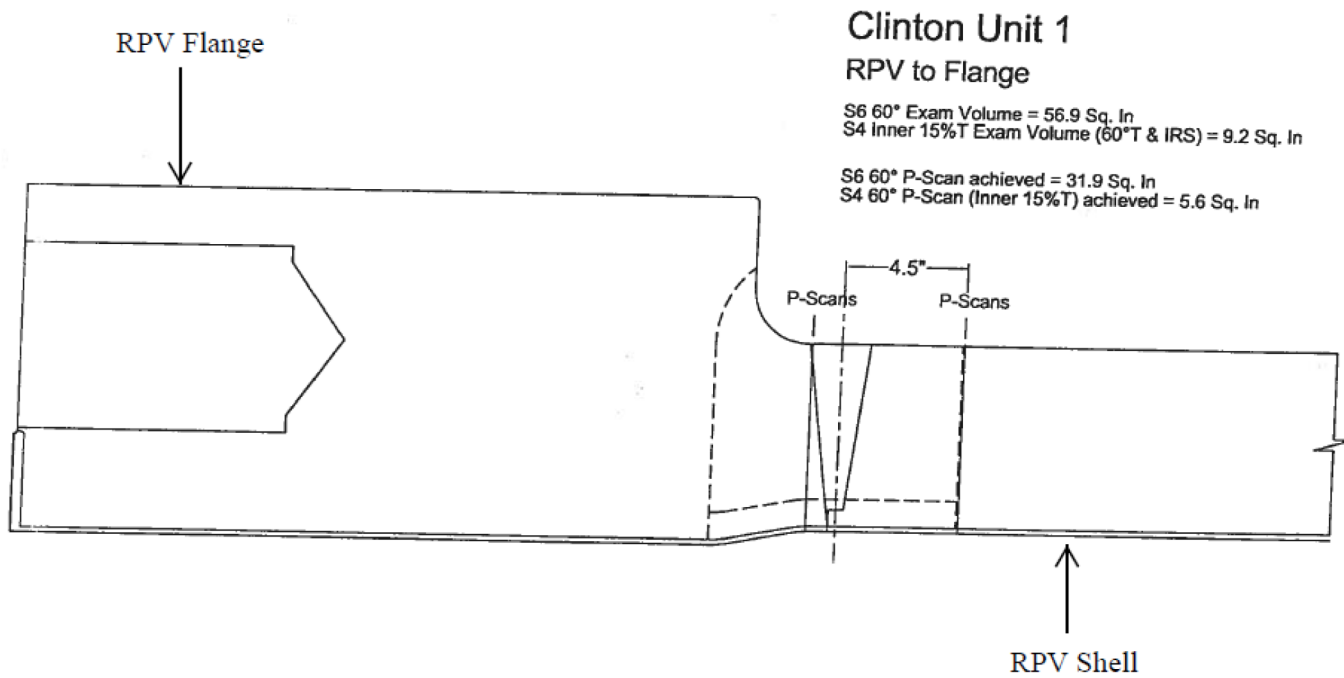


Figure 1b: RPV Shell-to-Flange Weld

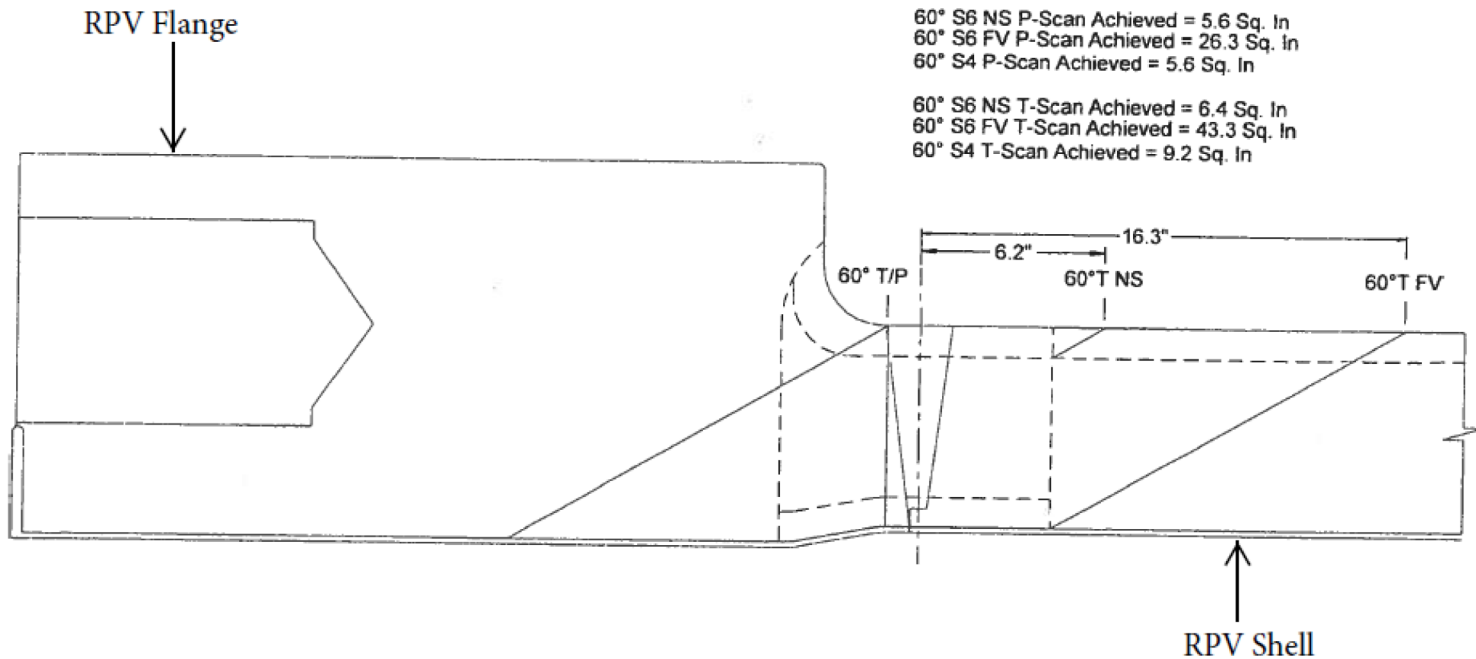
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Clinton Unit 1
RPV to Flange

60° S6 NS Exam Volume = 11.0 Sq. In
60° S6 FV Exam Volume = 45.9 Sq. In
60° S4 Exam Volume = 9.2 Sq. In

60° S6 NS P-Scan Achieved = 5.6 Sq. In
60° S6 FV P-Scan Achieved = 26.3 Sq. In
60° S4 P-Scan Achieved = 5.6 Sq. In

60° S6 NS T-Scan Achieved = 6.4 Sq. In
60° S6 FV T-Scan Achieved = 43.3 Sq. In
60° S4 T-Scan Achieved = 9.2 Sq. In



Achieved Examination Coverage for Weld RPV-C5
Examined 1/2 of Weld Length from 180 - 360
degrees Exam Performed 2019

Figure 2: RPV Shell-to-Flange Weld