

RS-20-096

10 CFR 50.55a

August 13, 2020

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: Response to Request for Additional Information Related to Relief Request I4R-07 for the Fourth Inservice Inspection Interval

- References:
1. Letter from D. M. Gullott (Exelon Generation Company, LLC) to U.S. NRC, "Relief Requests Associated with the Fourth Inservice Inspection Interval," dated December 16, 2019
 2. Email from J. Wiebe (U.S. NRC) to K. M. Nicely (Exelon Generation Company, LLC), "Preliminary RAIs for Clinton Relief Request I4R-07," dated July 22, 2020

In Reference 1, in accordance with 10 CFR 50.55a, "Codes and standards," paragraph (z)(1), Exelon Generation Company, LLC (EGC) requested NRC approval of the several relief requests associated with the fourth Inservice Inspection (ISI) interval for Clinton Power Station (CPS), Unit 1. One of the relief requests (i.e., Relief Request I4R-07) requested approval to eliminate volumetric examination of the reactor pressure vessel (RPV) threads in flange (i.e., Category B-G-1 examinations) during the fourth inservice inspection (ISI) interval.

In Reference 2, the NRC requested additional information that is needed to complete review of Relief Request I4R-07, "Alternative to Use ASME Code Case N-864, Examination of ASME Section XI, Examination Category B-G-1, Item Number B6.40, Threads in Flange." In response to this request, EGC is providing the attached information.

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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,

A handwritten signature in black ink that reads "Patrick R. Simpson". The signature is written in a cursive style with a long horizontal flourish extending to the right.

Patrick R. Simpson
Sr. Manager Licensing

Attachment: Response to Request for Additional Information Regarding Relief Request I4R-07

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

ATTACHMENT
Response to Request for Additional Information Regarding Relief Request I4R-07

NRC Request

In its December 16, 2019, description of procedure MA-CL-716-102, "Reactor Disassembly," and procedure MA-CL-716-103, "Reactor Assembly," the licensee describes the cleaning, inspection (for nicks, marks, or signs of galling), and lubrication of nut and stud threads and washers. Regarding the RPV stud holes the licensee states that the [assembly] procedure requires cleaning RPV stud holes and lubricating threads with approved thread lubricant.

In order for the NRC staff to determine that the proposed alternative will provide an acceptable level of quality and safety, describe the inspections that are performed on the RPV stud holes and threads. Alternatively, provide information that demonstrates that gross degradation of the threads will not go unnoticed for extended periods of time.

Response

As stated in Relief Request I4R-07, to protect against non-service related degradation, Clinton Power Station (CPS) uses detailed procedures for the care and visual inspection of the reactor pressure vessel (RPV) studs and the threads in flange each time the RPV closure head is removed. Care is taken to inspect the RPV threads for damage and to protect threads from damage when the studs are removed. Prior to reinstallation, the studs and stud holes are cleaned and lubricated. The studs are then replaced and tensioned into the RPV flange. This activity is performed each time the closure head is removed, and the procedures document each step. These controlled maintenance activities provide further assurance that degradation is detected and mitigated prior to returning the reactor to service.

The following excerpts from CPS procedures describe the care and visual inspections currently performed on the RPV threads in flange and studs.

REACTOR DISASSEMBLY (MA-CL-716-102, Revision 15)

- 4.11.1. **VERIFY** RPV stud threads and RPV head flange including around nuts and washers are free of debris prior to de-tensioning, **CLEAN** as required and peer check.

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- 4.11.2. **APPLY** a light coating of DAG-156 to all RPV studs to assist in nut rotation, prior to de-tensioning after cleaning is completed.
- 4.15.1. **INSPECT** RPV studs and RPV flange for debris. **CLEAN** as required.
- 4.15.6. (Initial) **INSTALL** flange protector and if required, **INSTALL** stud protectors on RPV studs as directed by the refuel floor supervisor.
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- 4.17.1. **CLEAN** as necessary, and **INSPECT** RPV nut and stud threads for nicks, marks, or signs of galling.

REACTOR ASSEMBLY (MA-CL-716-103, Revision 15)

4.1. **RE-ASSEMBLY PREPS**

- 4.1.3. Clean RPV head components and flange

NOTE: RPV head flange and components shall be cleaned of all dirt and granular type material by brushing, blasting with air (except O-ring grooves), wiping with lint free wipes, or by using either demineralized water or approved cleaning fluid. If bristle brushing or air blasting is used consult with RP prior to use.

2. **CLEAN** surfaces of RPV head as follows:

A. Head flange surface. Remove dirt, debris and residual silver build-up.

B. Stud holes

NOTE: Closure nuts and washers are a matched set. Maintain corresponding nuts and washers as a set.

C. Stud washers

D. Closure nuts

E. Removed Studs

F. Extensometer rods

G. Extensometer rod holes in studs

H. Stud cap screws

I. Metal O-rings as necessary

4.5. **PREPARE REACTOR CAVITY FOR RPV HEAD INSTALLATION**

- 4.5.3. **CLEAN** RPV flange stud holes, and **LUBRICATE** threads with approved thread lubricant.

- 4.5.4. **REMOVE** thread protectors and stud caps from RPV studs, if installed.

- 4.5.5. **ENSURE** stud guide caps installed on studs C-1 and G-1. _____

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NOTE: RPV head and vessel flanges and seal components shall be cleaned of all dirt and granular type material before RPV head can be installed.

4.5.6. (Initial) **REMOVE** RPV vessel flange seal surface protectors and **CLEAN** RPV flange by wiping with lint free wipes, or by using either demineralized water or approved cleaning fluid.

4.7. SET RPV HEAD

4.7.8. **LOWER** RPV head to flange.

1. **ENSURE** that the RPV head remains level to within 1" across the entire diameter, by continuous measurement, as it lowers.
2. **VERIFY**, prior to landing:
 - i. RPV head O-ring retaining hardware is in place.
 - ii. RPV flange is free from debris or any granular material.
 - iii. **ENSURE** removed studs will thread in w/out interference and RPV head will rest squarely on RPV flange.
3. Using slow speed and monitoring load cell **LOWER** RPV head ensuring head does not bind on studs or guide caps.

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4.7.9. **REMOVE** stud guide caps.

4.8. INSTALL RPV STUDS AND NUTS

4.8.8. **CAREFULLY** align and start thread engagement of RPV stud into RPV flange.

4.8.9. Using stud runner tool, cautiously **THREAD** RPV stud into RPV flange.

4.8.10. Slowly **BOTTOM-OUT** RPV stud in RPV flange hole.

4.8.11. **BACK-OFF** RPV stud one quarter turn.

4.8.12. **REPEAT** steps 4.8.1 to 4.8.11 to install remaining RPV studs.

4.8.16. **LUBRICATE** RPV studs/nuts with approved thread lubricant.

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- 4.8.17. (Initial) **INSTALL** nuts and washers on RPV studs.
1. **ENSURE** spherical side of washer is facing up and the flat side is against the RPV.
 2. **ENSURE** washer is approximately centered on stud. _____

4.8.18. (Initial) Technical Director/FLS **VERIFY** correct RPV washer orientation. _____

4.8.19. **RUN** nuts down close to washer and **VERIFY** the nut is free to turn and that it is not in contact with the washer.

4.9. TENSION RPV STUDS

4.9.10. **VERIFY** RPV stud threads and flange, including around nuts and washers, are free of debris prior to tensioning. **CLEAN** as required.

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4.9.19. **TENSION** RPV studs.