



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, ILLINOIS 60532-4352

June 3, 2019

Mr. Bryan C. Hanson
Senior VP, Exelon Generation Company, LLC
President and CNO, Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

**SUBJECT: BRAIDWOOD STATION, UNIT 1—NOTIFICATION OF NRC INSPECTION AND
REQUEST FOR INFORMATION; INSPECTION REPORT 05000456/2019004;
05000457/2019004**

Dear Mr. Hanson:

On October 7, 2019, the U. S. Nuclear Regulatory Commission (NRC) will begin the Baseline Inservice Inspection Procedure 71111.08. This onsite inspection is scheduled to be performed October 7–18, 2019.

Experience has shown that this inspection is resource intensive both for the NRC inspector and your staff. In order to minimize the impact to your on-site resources, and to ensure a productive inspection for both sides, we have enclosed a request for documents needed for this inspection. These documents have been divided into two groups.

The first group identifies information necessary to ensure that the inspector is adequately prepared. The second group identifies the information the inspector will need upon arrival at the site. It is important that all of these documents are up-to-date, and complete, in order to minimize the number of additional documents requested during the preparation and/or the onsite portions of the inspection.

We have discussed the schedule for inspection activities with your staff and understand that our regulatory contact for this inspection will be Mr. Richard Schliessmann of your organization. If there are any questions about this inspection or the material requested, please contact the lead inspector, Mr. John Bozga at 630-829-9613.

This letter does not contain new or amended information collection requirements subject to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.). Existing information collection requirements were approved by the Office of Management and Budget, Control Number 3150-0011. The NRC may not conduct or sponsor, and a person is not required to respond to, a request for information or an information collection requirement unless the requesting document displays a currently valid Office of Management and Budget Control Number.

This letter and its enclosure will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> and at the NRC Public Document Room in accordance with Title 10 of the *Code of Federal Regulations*, Part 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA/

John V. Bozga, Senior Reactor Inspector
Engineering Branch 1
Division of Reactor Safety

Docket Nos. 50-456; 50-457
License Nos. NPF-72; NPF-77

Enclosure:
Document Request for Inservice Inspection

cc: Distribution via LISTSERV®

Letter to Bryan C. Hanson from John V. Bozga dated June 3, 2019.

SUBJECT: BRAIDWOOD STATION, UNIT 1—NOTIFICATION OF NRC INSPECTION AND
REQUEST FOR INFORMATION; INSPECTION REPORT 05000456/2019004;
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DOCUMENT REQUEST FOR INSERVICE INSPECTION

Inspection Report: 05000456/2019004; 05000457/2019004

Inspection Dates: October 7, 2019, through October 18, 2019

Inspection Procedure: 71111.08, "Inservice Inspection"

Lead Inspector: John V. Bozga
630-829-9613
John.Bozga@nrc.gov

A. *Information for the In-Office Preparation Week*

The following information is requested as an (electronic copy CD ROM if possible) by September 30, 2019, to facilitate the selection of specific items that will be reviewed during the onsite inspection week. The inspector will select specific items from the information requested below and a list of additional documents needed onsite from your staff. We request that the specific items selected from the lists be available and ready for review on the first day of inspection. The following information is applicable to Unit 1 unless otherwise indicated. If you have any questions regarding this information, please call the inspector as soon as possible.

1. For the upcoming outage, a detailed schedule and description of:
 - a. non-destructive examinations (NDEs) planned for Class 1 and 2 Systems and containment, performed as part of your American Society of Mechanical Engineers (ASME) Code Inservice Inspection (ISI) Program (include edition and addenda of Code committed to), and NDEs planned for other systems performed as part of a Risk-Informed ISI Program, or other augmented inspection programs (e.g., ASME Code Case N-770-1 examination of dissimilar metal welds and examinations to meet an industry initiative). For each weld examination, include the weld identification number, description of weld (component name), category, class, type of exam and procedure number, and date of examination;
 - b. reactor vessel upper head examinations required by Title 10 of the *Code of Federal Regulations* (CFR), Part 50.55a(g)(6)(ii)(D) and Code Case N-729-1;
 - c. steam generator (SG) tube inspection and repair activities for the upcoming outage or SG secondary side examinations¹; and
 - d. welding on Code Class 1, 2, or 3 components.

¹ Note 1- If no SG examinations are planned for this outage, please confirm when the next SG examination will occur and no further information is required for the items identified above requesting SG related information.

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2. A copy of the NDE procedures and welding procedures used to perform the activities identified in Item A.1 (including NDE calibration and flaw characterization/sizing procedures and Welding Procedure Qualification Records). For ultrasonic examination procedures qualified in accordance with Appendix VIII, of Section XI of the ASME Code, provide documentation supporting the procedure qualification (e.g., the Electric Power Research Institute (EPRI) performance demonstration qualification summary sheets).
3. A copy of ASME Section XI, Code Relief Requests applicable to the examinations identified in Item A.1. This would include the U.S. Nuclear Regulatory Commission (NRC) approved Relief Request for implementing a Risk-Informed ISI Program (if applicable).
4. A copy of the 10-year ISI Program showing those required exams scheduled to be performed this outage, and those which have been completed.
5. A list identifying NDE reports (ultrasonic, radiography, magnetic particle, or dye penetrant), which have identified relevant indications on Code Class 1 and 2 Systems since the beginning of the last refueling outage.
6. List with short description of the welds in Code Class 1 and 2 Systems, which have been fabricated due to component repair/replacement activities since the beginning of the last refueling outage and identify the system, weld number, and reference applicable documentation (e.g., NIS-2 forms with definitions of system and component acronyms).
7. If reactor vessel weld examinations required by the ASME Code are scheduled to occur during the inspection period, provide a detailed description of the welds to be examined, and the extent of the planned examination.
8. List with description of ISI and SG-related issues such as piping or SG tube degradation or damage (e.g., cracks, wall thinning, wear, microbiologically induced corrosion) or errors identified during piping/SG tube examinations that have been entered into your corrective action system since the beginning of the last refueling outage. Also, include a list of corrective action records associated with foreign material introduced/identified in the reactor vessel, primary coolant system, SG or feed systems since the beginning of the last refueling outage.
9. Copy of any 10 CFR Part 21 reports applicable to your structures systems or components within the scope of Section XI of the ASME Code that have been identified since the beginning of the last refueling outage.
10. Copy of SG history documentation given to vendors performing eddy current (ET) testing of the SGs during the upcoming outage¹.
11. Copy of procedure containing screening criteria used for selecting tubes for in-situ pressure testing and the procedure to be used for in-situ pressure testing¹.

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12. Copy of previous outage SG tube operational assessment completed following ET of the SGs (provide this document even if no SG ET is planned for current outage).
13. Copy of most recent SG Degradation Assessment (provide this document even if no SG ET is planned for current outage).
14. Copy of most recent SG Condition Monitoring Assessment.
15. Copy of the document defining the planned SG ET scope (e.g., 100 percent of unrepaired tubes with bobbin probe and 20 percent sample of hot leg expansion transition regions with rotating probe) and identify the scope expansion criteria, which will be applied. Also identify and describe any deviations in this scope or expansion criteria from the EPRI Guidelines¹.
16. Copy of the document describing the ET acquisition equipment to be applied including ET probe types. Also identify the extent of planned tube examination coverage with each probe type (e.g., rotating probe -0.080 inches, 0.115 inches pancake coils and mid-range + point coil applied at the top-of-tube-sheet plus 3 inches to minus 12 inches).
17. Provide procedures with guidance/instructions for identifying (e.g., physically locating the tubes that require repair) and plugging SG tubes¹.
18. Identify and quantify any SG tube leakage experienced during the previous operating cycle. Also provide documentation identifying which SG was leaking and corrective actions completed or planned for this condition.
19. Copy of current calculations for total effective degradation years, and re-inspection years as defined in Code Case N-729-1 that establish the volumetric and visual examination frequency for the reactor vessel head and J-groove welds.
20. Point of contact information (name and site number) for the following activities:
 - a. ISI - Site and vendor leads
 - b. Boric Acid Inspections and Evaluations
 - c. Reactor Vessel Head Inspection - Site and vendor leads
 - d. SG Inspection - Site and vendor leads

B. Onsite Information to be Provided to the Inspector on the First Day of the Inspection (e.g., Following the Entrance Meeting). Please Provide Hard Copies (e.g., Paper Records) of the Following Documents.

1. For welds selected by the inspector from Item A.1.d and A.6 above, provide copies of the following documents:
 - a. Document of the weld number and location (e.g., system, train, branch);

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- b. Document with a detail of the weld construction (e.g., drawing);
 - c. Applicable portions of the Design Specification and applicable Code Edition and Addenda for construction of the weldment (e.g., B31.1 or ASME Section III);
 - d. Applicable Code Edition and Addenda for weld procedure qualification;
 - e. Applicable weld procedures and weld data sheets used to fabricate the welds;
 - f. Copies of procedure qualification records supporting the weld procedures;
 - g. Copies of welders' performance qualification records;
 - h. Copies of mechanical test reports identified in the procedure qualification records above;
 - i. Copies of the nonconformance reports for the selected welds;
 - j. Access to radiographs and equipment to view radiographs of the selected welds; and
 - k. Copies of the pre-service examination records for the selected welds.
2. For the ISI-related corrective action issues selected by the inspector from Item A.8 above, provide a copy of the corrective actions and supporting documentation.
 3. For the NDE reports with relevant indications on Code Class 1 and 2 Systems selected by the inspector from Item A.5 above, provide a copy of the examination records and associated corrective action documents. Updated schedules for Item A.1 (including schedule showing contingency repair plans if available).
 4. Copy of the procedures which govern the scope, equipment used, and implementation of the inspections required to identify boric acid leakage from systems and components above the vessel head.
 5. Copy of:
 - a. Engineering evaluations/assessments of boric acid related deposits and associated wastage or corrosion for safety significant components; and
 - b. Corrective action records for coolant leakage including boric acid deposits on safety-related components identified since the beginning of the last refueling outage.
 6. Copy of the plant procedures used to perform inspections to identify reactor coolant system leaks or boric acid deposits and the procedures for resolution of leaks or boric acid deposits.

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7. Fabrication Drawings (D size) of the reactor vessel welds (including vessel head J-groove welds) if any are to be examined during the outage. Also provide any drawings used by NDE vendors to locate these welds.
8. Copy of the documents which demonstrate that the procedures to be used for volumetric examination of the reactor vessel head penetration J-groove welds were qualified by a blind demonstration test in accordance with 10 CFR 50.55a(g)(6)(ii)(D).
9. Copy of volumetric, surface and visual examination records for the prior inspection of the reactor vessel head and head penetration J-groove welds.
10. Provide a copy of the EPRI Examination Technique Specification Sheets and vendor documents, which support qualification of the ET probes to be used during the upcoming SG tube inspections¹.
11. Provide a copy of the guidance to be followed if a loose part or foreign material is identified in the SGs¹.
12. Identify the types of SG tube repair processes which will be implemented for defective SG tubes (including any NRC reviews/evaluation/approval of this repair process). Provide the flaw depth sizing criteria to be applied for ET indications identified in the SG tubes¹.
13. Copy of document describing actions to be taken if a new SG tube degradation mechanism is identified¹.
14. Provide document which defines the scope of SG secondary side examinations (if any are planned) and identify site specific operational history related to degradation of SG secondary side components (if any).
15. Provide procedures with guidance/instructions for identifying (e.g., physically locating the tubes that require repair) and plugging SG tubes¹.
16. Provide copies of the following standards at the onsite NRC inspection location for the duration of the inspection:
 - a. Sections V, IX, and XI of the ASME Code with Editions applicable to the ISI Program and the repair/replacement program;
 - b. Copy of the performance demonstration initiative (PDI) generic procedures with the latest applicable revisions that support site qualified ultrasonic examination of piping welds and components (e.g., PDI-UT-1, PDI-UT-2, PDI-UT-3, PDI-UT-10 etc.);

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- c. EPRI and industry standards referenced in the site procedures used to perform the SG tube ET examination, which includes EPRI documents: TR-107621-R1, "Steam Generator Integrity Assessment Guidelines," TR-107620-R1, "Steam Generator In-Situ Pressure Test Guidelines," Steam Generator Management Program: Steam Generator Integrity Assessment Guidelines, Part 10, and 1003138, "Pressurized Water Reactor Steam Generator Examination Guidelines"¹; and
- d. Boric Acid Corrosion Guidebook Revision 2 - EPRI Technical Report 1000975.

If you have questions regarding the information requested, please contact the lead inspector.

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