



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, ILLINOIS 60532-4352

January 8, 2020

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

**SUBJECT: BYRON STATION, UNIT 1—NOTIFICATION OF NRC BASELINE INSPECTION
AND REQUEST FOR INFORMATION; INSPECTION REPORT 05000454/2020001**

Dear Mr. Hanson:

On March 9, 2020, the U.S. Nuclear Regulatory Commission (NRC) will begin the Baseline Inservice Inspection Procedure 71111.08. This onsite inspection is scheduled to be performed March 9, 2020 through March 20, 2020.

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 onsite 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 Ms. Zoe Cox, of your organization. If there are any questions about this inspection or the material requested, please contact the lead inspector Matt Domke at 630-829-9562, or via e-mail at Matthew.Domke@nrc.gov.

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/

Matt Domke, Reactor Inspector
Engineering Branch 1
Division of Reactor Safety

Docket No. 50-454
License No. NPF-37

Enclosure:
Document Request for Inservice Inspection

cc: Distribution via LISTSERV®

Letter to Bryan C. Hanson from Matt Domke dated January 8, 2020.

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DOCUMENT REQUEST FOR INSERVICE INSPECTION

Inspection Report: 05000454/2020001

Inspection Dates: March 9, 2020 – March 20, 2020

Inspection Procedures: Inspection Procedure 71111-08, "Inservice Inspection"

Lead Inspector: Matt Domke, DRS
630-829-9562
Matthew.Domke@nrc.gov

A. Information for the In-Office Preparation Week

The following information (electronic copy) is requested by February 18, 2020, 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 request a list of additional documents needed onsite to 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 the outage Unit 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 examination of dissimilar metal welds and examinations to meet an industry initiative);
 - 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;
 - c. Steam generator (SG) tube inspection and repair activities for the upcoming outage or SG secondary side examinations;¹ and
 - d. Welding on Code Class 1, 2, or 3 components. 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.

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.

Enclosure

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2. A copy of the NDE procedures, SG eddy current examination (ET) acquisition and analysis 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 performance demonstration qualification summary sheets). For SG tube ET this includes the acquisition and analysis procedures.
3. A copy of ASME Section XI, Code Relief Requests applicable to the examinations identified in Item A.1.
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 of repair/replacement welds in Code Class 1, 2 and 3 Systems, which have been fabricated 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. List of reactor vessel weld examinations required by the ASME Code that are scheduled to occur during the upcoming refueling outage, and please provide a detailed description of the welds and the extent of the planned examination.
8. Corrective action list 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 since the beginning of the last refueling outage. Also, include a list of corrective actions associated with foreign material in the reactor vessel, primary coolant system, SG or feed systems since the beginning of the last refueling outage.
9. Title 10 CFR Part 21 reports applicable to your structures, systems, or components within the scope of ASME Code Section XI that have been identified since the beginning of the last refueling outage.
10. Copy of SG history documentation given to vendors performing ET of the SGs during the upcoming outage.¹
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 testing.¹
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).

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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 Assessments.¹
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 Electric Power Research Institute Guidelines.¹
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).¹
17. Provide procedures with guidance/instructions for identifying (e.g., physically locating the tubes that require repair) and plugging SG tubes.¹
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. 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
 - e. Aging Management Programs
 - f. Site Welding Engineer

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);
 - b. Document with a detail of the weld construction (e.g., drawing);

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- c. Applicable portions of the Design Specification and applicable Code of construction for the weldment (e.g., B31.1 or ASME Section III);
 - d. Applicable Code Edition and Addenda for weld procedure qualification;
 - e. Applicable weld procedure specifications and weld data sheets used to fabricate the welds;
 - f. Copies of procedure qualification records supporting the weld procedure specifications;
 - g. Copies of welders' performance qualification records;
 - h. Copies of mechanical test reports identified in the weld 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;
 - k. ASME Code Section XI repair replacement plan and reconciliation for replacement components/materials;
 - l. Certified Material Test Reports for replacement pressure boundary materials; and
 - m. Copies of the NDE required by the construction Code and the pre-service examination records required by the ASME Code Section XI 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.
 - 4. Updated schedules for Item A.1 (including schedule showing contingency repair plans if available).
 - 5. 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.
 - 6. 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.
 - 7. Copy of:
 - a. Engineering evaluations/assessments of boric acid related deposits and associated wastage or corrosion for safety-related components; and

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- b. Corrective action records for coolant leakage including boric acid deposits on safety-related components identified since the beginning of the last refueling outage.
8. 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.
9. 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).
10. Copy of volumetric, surface and visual examination records for the prior inspection of the reactor vessel head and head penetration J-groove welds.
11. Provide a copy of the Electric Power Research Institute Examination Technique Specification Sheets and vendor related documents, which support qualification of the ET probes to be used during the upcoming SG tube inspections.¹
12. Provide a copy of the guidance to be followed if a loose part or foreign material is identified in the SGs.¹
13. Identify the types of SG tube repair processes which will be implemented for defective SG tubes (including any U.S. Nuclear Regulatory Commission reviews/evaluation/approval of this repair process). Provide the flaw depth sizing criteria to be applied for ET indications identified in the SG tubes.¹
14. Copy of document describing actions to be taken if a new SG tube degradation mechanism is identified.¹
15. 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).
16. Provide procedures with guidance/instructions for identifying (e.g., physically locating the tubes that require repair) and plugging SG tubes.¹
17. Provide copies of the following standards at the onsite U.S. Nuclear Regulatory Commission 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. Electric Power Research Institute and industry standards referenced in the site procedures used to perform the SG tube ET, which includes Electric Power Research Institute documents: SG Examination Guidelines, SG Integrity Assessment Guidelines, SG In-Situ Pressure Test Guidelines;¹ and
 - d. Boric Acid Corrosion Guidebook Revision 1—Electric Power Research Institute Technical Report 1000975.
18. Provide training (e.g., Scaffolding, Fall Protection, Foreign Material Exclusion) if required to access the non-destructive examinations selected by the inspector for observation.

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

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