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724-682-5234

September 15, 2021
L-21-190

10 CFR 50.90

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

SUBJECT:
Beaver Valley Power Station, Unit Nos. 1 and 2
Docket No. 50-334, License No. DPR-66
Docket No. 50-412, License No. NPF-73
Request for an Amendment to Adopt TSTF-577-A, Revision 1, "Revised Frequencies for
Steam Generator Tube Inspections"

Pursuant to 10 CFR 50.90, Energy Harbor Nuclear Corp. is submitting a request to amend the Renewed Operating Licenses numbered DPR-66 and NPF-73 for the Beaver Valley Power Station (BVPS), Unit Nos. 1 and 2, respectively.

Energy Harbor Nuclear Corp. requests adoption of TSTF-577-A, Revision 1, "Revised Frequencies for Steam Generator Tube Inspections." The technical specifications related to steam generator tube inspections and reporting would be revised based on operating history.

The enclosure provides a description and assessment of the proposed changes. An attachment to the enclosure provides the existing technical specifications pages marked to show the proposed changes.

Energy Harbor Nuclear Corp. requests that the proposed amendments be reviewed under the Consolidated Line Item Improvement Process (CLIIP). Approval of the proposed amendments are requested by March 31, 2022. Once approved, the amendments shall be implemented within 90 days.

There are no regulatory commitments contained in this submittal. If there are any questions or if additional information is required, please contact Mr. Phil H. Lashley, Manager - Fleet Licensing, at (330) 696-7208.

I declare under penalty of perjury that the foregoing is true and correct. Executed on September 15, 2021.

Sincerely,

Grabnar, John 19072
Site Vice President, Beaver Valley
I am approving this document
Sep 15 2021 11:48 AM

DocuSign

John J. Grabnar

Enclosure: Evaluation of the Proposed Change

cc: NRC Region I Administrator
NRC Resident Inspector
NRC Project Manager
Director BRP/DEP
Site BRP/DEP Representative

Evaluation of Proposed Change
Page 1 of 5

Subject: Application to Revise Technical Specifications to Adopt TSTF-577-A,
Revision 1, "Revised Frequencies for Steam Generation Tube Inspections"

1.0 DESCRIPTION

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1.0 DESCRIPTION

Energy Harbor Nuclear Corp. requests adoption of TSTF-577-A, Revision 1, "Revised Frequencies for Steam Generator Tube Inspections." The Technical Specifications (TSs) related to the Beaver Valley Power Station (BVPS), Unit 1 and Unit 2 steam generator (SG) tube inspections and reporting would be revised based on operating history.

2.0 ASSESSMENT

2.1 Applicability of Safety Evaluation

Energy Harbor Nuclear Corp. has reviewed TSTF-577 and the Nuclear Regulatory Commission (NRC) Staff's safety evaluation for TSTF-577 provided to the Technical Specifications Task Force in a letter dated April 14, 2021. Energy Harbor Nuclear Corp. has concluded that the justifications presented in TSTF-577 and the safety evaluation prepared by the NRC staff are applicable to BVPS Unit Nos. 1 and 2 and justify this amendment for the incorporation of the changes to the BVPS TSs.

The current SG TS requirements are consistent with TSTF-510, Revision 2, "Revision to Steam Generator Program Inspection Frequencies and Tube Sample Selection," and were implemented with BVPS Unit 1 Amendment No. 296 and BVPS Unit 2 Amendment No. 184. The BVPS Unit 1 SG tubes are made from thermally treated Alloy 690 (Alloy 690 TT). The BVPS Unit 2 SG tubes are made from mill annealed Alloy 600 (Alloy 600MA).

2.2 Variations

Energy Harbor Nuclear Corp. is proposing the following variations from the TS changes described in TSTF-577:

2.2.1 The words "Steam Generator" would be replaced with the letters "SG" in the following sections of the BVPS TS:

- TS 5.5.5, "Steam Generator (SG) Program"
- TS 5.5.5.1, "Unit 1 SG Program"
- TS 5.5.5.2, "Unit 2 SG Program"
- TS 5.6.6.1, "Unit 1 SG Tube Inspection Report"
- TS 5.6.6.2, "Unit 2 SG Tube Inspection Report"

2.2.2 The BVPS TSs utilize a different numbering scheme than used in the Standard Technical Specifications on which TSTF-577 was based. Specifically, the numbering differences are:

TS Section Title	TSTF-577	BVPS Unit 1 TS	BVPS Unit 2 TS
Steam Generator (SG) Program	5.5.9	5.5.5/5.5.5.1	5.5.5/5.5.5.2
Steam Generator Tube Inspection Report	5.6.7	5.6.6/5.6.6.1	5.6.6/5.6.6.2

2.2.3 BVPs Unit 1 TSs 5.5.5.1, paragraph d.2 contains a one-time deferral of SG tube inspections from the spring of 2021 refueling outage (1R27) to the fall of 2022 refueling outage (1R28). With implementation of TSTF-577 prior to 1R28 the extension is not required and is deleted. Although approval of this amendment application will revise the required SG inspection frequency, Energy Harbor Nuclear Corp. intends on performing a 100% inspection of the SG tube population in the fall 2022 refueling outage (1R28) in support of the amendment implementation activities.

These differences are administrative and do not affect the applicability of TSTF-577 to the BVPS Unit 1 and Unit 2 TSs.

The BVPS Unit 2 SG Program TS 5.5.5.2.c currently contains provisions for alternate tube plugging or repair criteria. The descriptions of the alternate tube plugging or repair criteria in the proposed change are equivalent to the descriptions in the current TSs and include an allowed accident-induced leakage rate for specific types of degradation at specific locations associated with the tube plugging or repair criteria.

3.0 REGULATORY ANALYSIS

3.1 No Significant Hazards Consideration Analysis

Energy Harbor Nuclear Corp. requests adoption of TSTF-577-A, Revision 1, "Revised Frequencies for Steam Generator Tube Inspections," which is an approved change to the Standard Technical Specifications, into the BVPS Unit Nos.1 and 2 Technical Specifications (TSs). The TSs related to steam generator (SG) tube inspections and reporting are revised based on operating history.

Energy Harbor Nuclear Corp. has evaluated if a significant hazards consideration is involved with the proposed amendments by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

1. Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No

The proposed change revises the inspection frequencies for SG tube inspections and associated reporting requirements. The SG inspections are conducted as part of the SG Program to ensure and demonstrate that performance criteria for tube structural integrity and accident leakage integrity are met. These performance criteria are consistent with the plant design and licensing basis. With the proposed changes to the inspection frequencies, the SG Program must still demonstrate that the performance criteria are met. As a result, the probability of any accident previously evaluated is not significantly increased and the consequences of any accident previously evaluated are not significantly increased.

Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No

The proposed change revises the inspection frequencies for SG tube inspections and associated reporting requirements. The proposed change does not alter the design function or operation of the SGs or the ability of an SG to perform the design function. The SG tubes continue to be required to meet the SG Program performance criteria. The proposed change does not create the possibility of a new or different kind of accident due to credible new failure mechanisms, malfunctions, or accident initiators that are not considered in the design and licensing bases.

Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed amendment involve a significant reduction in a margin of safety?

Response: No

The proposed change revises the inspection frequencies for SG tube inspections and associated reporting requirements. The proposed change does not change any of the controlling values of parameters used to avoid exceeding regulatory or licensing limits. The proposed change does not affect a design basis or safety limit, or any controlling value for a parameter established in the UFSAR or the license.

Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, Energy Harbor Nuclear Corp. concludes that the proposed change presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

3.2 Conclusion

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

4.0 ENVIRONMENTAL EVALUATION

The proposed change would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. The proposed change does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed change meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed change.

Attachment
Technical Specifications Page Markups
(13 pages follow)

5.5 Programs and Manuals

5.5.5 Steam Generator (SG) Program

An ~~SG Steam Generator~~ Program for Unit 1 and Unit 2 shall be established and implemented to ensure that SG tube integrity is maintained. In addition, the ~~SG Steam Generator~~ Program for Unit 1 shall include the provisions of Specification 5.5.5.1 and the ~~SG Steam Generator~~ Program for Unit 2 shall include the provisions of Specification 5.5.5.2.

5.5.5.1 Unit 1 SG Program

a. Provisions for Condition Monitoring Assessments

Condition monitoring assessment means an evaluation of the "as found" condition of the tubing with respect to the performance criteria for structural integrity and accident induced leakage. The "as found" condition refers to the condition of the tubing during an SG inspection outage, as determined from the inservice inspection results or by other means, prior to the plugging of tubes. Condition monitoring assessments shall be conducted during each outage during which the SG tubes are inspected or plugged, to confirm that the performance criteria are being met.

b. Provisions for Performance Criteria for SG Tube Integrity

SG tube integrity shall be maintained by meeting the performance criteria for tube structural integrity, accident induced leakage, and operational LEAKAGE.

1. Structural integrity performance criterion: All in-service ~~SG steam generator~~ tubes shall retain structural integrity over the full range of normal operating conditions (including startup, operation in the power range, hot standby, and cool down), all anticipated transients included in the design specification, and design basis accidents. This includes retaining a safety factor of 3.0 against burst under normal steady state full power operation primary to secondary pressure differential and a safety factor of 1.4 against burst applied to the design basis accident primary to secondary pressure differentials. Apart from the above requirements, additional loading conditions associated with the design basis accidents, or combination of accidents in accordance with the design and licensing basis, shall also be evaluated to determine if the associated loads contribute significantly to burst or collapse. In the assessment of tube integrity, those loads that do significantly affect burst or collapse shall be determined and assessed in combination with the loads due to pressure with a safety factor of 1.2 on the combined primary loads and 1.0 on axial secondary loads.

5.5 Programs and Manuals

5.5.5.1 Unit 1 SG Program (continued)

2. Accident induced leakage performance criterion: The primary to secondary accident induced leakage rate for any design basis accident, other than a SG tube rupture, shall not exceed the leakage rate assumed in the accident analysis in terms of total leakage rate for all SGs and leakage rate for an individual SG. Leakage is also not to exceed 1 gpm per SG, except during a SG tube rupture.
3. The operational LEAKAGE performance criterion is specified in LCO 3.4.13, "RCS Operational LEAKAGE."

c. Provisions for SG Tube Plugging Criteria

Tubes found by inservice inspection to contain flaws with a depth equal to or exceeding 40% of the nominal tube wall thickness shall be plugged.

d. Provisions for SG Tube Inspections

Periodic SG tube inspections shall be performed. The number and portions of the tubes inspected and methods of inspection shall be performed with the objective of detecting flaws of any type (e.g., volumetric flaws, axial and circumferential cracks) that may be present along the length of the tube, from the tube-to-tubesheet weld at the tube inlet to the tube-to-tubesheet weld at the tube outlet, and that may satisfy the applicable tube plugging criteria. The tube-to-tubesheet weld is not part of the tube. In addition to meeting the requirements of d.1, d.2, and d.3 below, the inspection scope, inspection methods, and inspection intervals shall be such as to ensure that SG tube integrity is maintained until the next SG inspection. A degradation assessment shall be performed to determine the type and location of flaws to which the tubes may be susceptible and, based on this assessment, to determine which inspection methods need to be employed and at what locations.

1. Inspect 100% of the tubes in each SG during the first refueling outage following SG installation.
2. **After the first refueling outage following SG installation, inspect 100% of the tubes in each SG at least every 96 effective full power months, which defines the inspection period.** ~~After the first refueling outage following SG installation, inspect each SG at least every 72 effective full power months or at least every third refueling outage (whichever results in more frequent inspections).*~~ In addition, the minimum number of tubes inspected at each scheduled inspection shall be the number of tubes in all SGs divided by the number of SG inspection outages scheduled in each inspection period as defined in a, b, c and d below. If a degradation assessment indicates the potential for a type of degradation to occur at a location not previously inspected with a technique capable of detecting this type

* ~~The spring of 2021 (1R27) refueling outage SG inspections may be deferred to the fall of 2022 (1R28) refueling outage.~~

5.5 Programs and Manuals

5.5.5.1 Unit 1 SG Program (continued)

~~of degradation at this location and that may satisfy the applicable tube plugging criteria, the minimum number of locations inspected with such a capable inspection technique during the remainder of the inspection period may be prorated. The fraction of locations to be inspected for this potential type of degradation at this location at the end of the inspection period shall be no less than the ratio of the number of times the SG is scheduled to be inspected in the inspection period after the determination that a new form of degradation could potentially be occurring at this location divided by the total number of times the SG is scheduled to be inspected in the inspection period. Each inspection period defined below may be extended up to 3 effective full power months to include a SG inspection outage in an inspection period and the subsequent inspection period begins at the conclusion of the included SG inspection outage.~~

- ~~a) After the first refueling outage following SG installation, inspect 100% of the tubes during the next 144 effective full power months. This constitutes the first inspection period;~~
 - ~~b) During the next 120 effective full power months, inspect 100% of the tubes. This constitutes the second inspection period;~~
 - ~~c) During the next 96 effective full power months, inspect 100% of the tubes. This constitutes the third inspection period; and~~
 - ~~d) During the remaining life of the SGs, inspect 100% of the tubes every 72 effective full power months. This constitutes the fourth and subsequent inspection periods.~~
3. If crack indications are found in any SG tube, then the next inspection for each affected and potentially affected SG for the degradation mechanism that caused the crack indication shall **be at the next** ~~not exceed 24 effective full power months or one refueling outage (whichever results in more frequent inspections).~~ If definitive information, such as from examination of a pulled tube, diagnostic non-destructive testing, or engineering evaluation indicates that a crack-like indication is not associated with a crack(s), then the indication need not be treated as a crack.

- e. Provisions for monitoring operational primary to secondary LEAKAGE

5.5 Programs and Manuals

5.5.5.2 Unit 2 SG Program

a. Provisions for Condition Monitoring Assessments

Condition monitoring assessment means an evaluation of the "as found" condition of the tubing with respect to the performance criteria for structural integrity and accident induced leakage. The "as found" condition refers to the condition of the tubing during an SG inspection outage, as determined from the inservice inspection results or by other means, prior to the plugging or repair of tubes. Condition monitoring assessments shall be conducted during each outage during which the SG tubes are inspected, plugged, or repaired to confirm that the performance criteria are being met.

b. Provisions for Performance Criteria for SG Tube Integrity

SG tube integrity shall be maintained by meeting the performance criteria for tube structural integrity, accident induced leakage, and operational LEAKAGE.

1. Structural integrity performance criterion: All in-service ~~SG steam generator~~ **SG** tubes shall retain structural integrity over the full range of normal operating conditions (including startup, operation in the power range, hot standby, and cool down), all anticipated transients included in the design specification, and design basis accidents. This includes retaining a safety factor of 3.0 against burst under normal steady state full power operation primary to secondary pressure differential and, except for flaws addressed through application of the alternate repair criteria discussed in Specification 5.5.5.2.c.4, a safety factor of 1.4 against burst applied to the design basis accident primary to secondary pressure differentials. Apart from the above requirements, additional loading conditions associated with the design basis accidents, or combination of accidents in accordance with the design and licensing basis, shall also be evaluated to determine if the associated loads contribute significantly to burst or collapse. In the assessment of tube integrity, those loads that do significantly affect burst or collapse shall be determined and assessed in combination with the loads due to pressure with a safety factor of 1.2 on the combined primary loads and 1.0 on axial secondary loads.

When alternate repair criteria discussed in Specification 5.5.5.2.c.4 are applied to axially oriented outside diameter stress corrosion cracking indications at tube support plate locations, the probability that one or more of these indications in a SG will burst under postulated main steam line break conditions shall be less than 1×10^{-2} .

2. Accident induced leakage performance criterion: The primary to secondary accident induced leakage rate for any design basis accident, other than a SG tube rupture, shall not exceed the leakage rate assumed in the accident analysis in terms of total leakage rate for all

5.5 Programs and Manuals

5.5.5.2 Unit 2 SG Program (continued)

SGs and leakage rate for an individual SG. Except during a SG tube rupture, leakage from all sources excluding the leakage attributed to the degradation described in Specification 5.5.5.2.c.4 is also not to exceed 1 gpm per SG.

3. The operational LEAKAGE performance criterion is specified in LCO 3.4.13, "RCS Operational LEAKAGE."

c. Provisions for SG Tube Plugging or Repair Criteria

1. Tubes found by inservice inspection to contain a flaw in a non-sleeved region with a depth equal to or exceeding 40% of the nominal tube wall thickness shall be plugged or repaired except if permitted to remain in service through application of the alternate plugging or repair criteria discussed in Specification 5.5.5.2.c.4 or 5.5.5.2.c.5.
2. Tubes found by inservice inspection to contain a flaw in a sleeve (excluding the sleeve to tube joint) with a depth equal to or exceeding the following percentages of the nominal sleeve wall thickness shall be plugged:

ABB Combustion Engineering TIG welded sleeves	27%
Westinghouse laser welded sleeves	25%
Westinghouse leak limiting Alloy 800 sleeves	Any flaw

3. Tubes with a flaw in a sleeve to tube joint shall be plugged.
4. Tube support plate voltage-based plugging or repair criteria may be applied as an alternative to the 40% depth based criteria of Specification 5.5.5.2.c.1.

Tube Support Plate Plugging Limit is used for the disposition of an Alloy 600 ~~SG steam generator~~ tube for continued service that is experiencing predominantly axially oriented outside diameter stress corrosion cracking confined within the thickness of the tube support plates. At tube support plate intersections, the plugging or repair limit is described below:

- a) ~~SG Steam generator~~ tubes, with degradation attributed to outside diameter stress corrosion cracking within the bounds of the tube support plate with bobbin voltages less than or equal to 2.0 volts will be allowed to remain in service.
- b) ~~SG Steam generator~~ tubes, with degradation attributed to outside diameter stress corrosion cracking within the bounds of the tube support plate with a bobbin voltage greater than 2.0 volts will be plugged or repaired, except as noted in 5.5.5.2.c.4.c below.

5.5 Programs and Manuals

5.5.5.2 Unit 2 SG Program (continued)

- c) ~~SG Steam generator~~ tubes, with indications of potential degradation attributed to outside diameter stress corrosion cracking within the bounds of the tube support plate with a bobbin voltage greater than 2.0 volts but less than or equal to the upper voltage repair limit (calculated according to the methodology in Generic Letter 95-05 as supplemented) may remain in service if a rotating pancake coil or acceptable alternative inspection does not detect degradation.
- d) ~~SG Steam generator~~ tubes, with indications of potential degradation attributed to outside diameter stress corrosion cracking within the bounds of the tube support plate with a bobbin voltage greater than the upper voltage repair limit (calculated according to the methodology in Generic Letter 95-05 as supplemented) will be plugged or repaired.
- e) If an unscheduled mid-cycle inspection is performed, the following mid-cycle repair limits apply instead of the limits specified in 5.5.5.2.c.4.a through 5.5.5.2.c.4.d.

The mid-cycle repair limits are determined from the following equations:

$$V_{MURL} = \frac{V_{SL}}{1.0 + NDE + Gr \left(\frac{CL - \Delta t}{CL} \right)}$$

$$V_{MLRL} = V_{MURL} - (V_{URL} - V_{LRL}) \left(\frac{CL - \Delta t}{CL} \right)$$

where:

- V_{URL} = upper voltage repair limit
- V_{LRL} = lower voltage repair limit
- V_{MURL} = mid-cycle upper voltage repair limit based on time into cycle
- V_{MLRL} = mid-cycle lower voltage repair limit based on V_{MURL} and time into cycle
- Δt = length of time since last scheduled inspection during which V_{URL} and V_{LRL} were implemented
- CL = cycle length (the time between two scheduled ~~SG steam generator~~ **SG** inspections)
- V_{SL} = structural limit voltage
- Gr = average growth rate per cycle length

Note: There are no changes proposed to this page. Included for context only.

5.5 Programs and Manuals

5.5.5.2 Unit 2 SG Program (continued)

NDE = 95-percent cumulative probability allowance for nondestructive examination uncertainty (i.e., a value of 20-percent has been approved by NRC). The NDE is the value provided by the NRC in GL 95-05 as supplemented.

Implementation of these mid-cycle repair limits should follow the same approach as in Specifications 5.5.5.2.c.4.a through 5.5.5.2.c.4.d.

5. The F* methodology, as described below, may be applied to the expanded portion of the tube in the hot-leg or cold-leg tubesheet region as an alternative to the 40% depth based criteria of Specification 5.5.5.2.c.1:

- a) Tubes with no portion of a lower sleeve joint in the hot-leg or cold-leg tubesheet region shall be repaired or plugged upon detection of any flaw identified within 3.0 inches below the top of the tubesheet or within 2.22 inches below the bottom of roll transition, whichever elevation is lower. Flaws located below this elevation may remain in service regardless of size.
- b) Tubes which have any portion of a sleeve joint in the hot-leg or cold-leg tubesheet region shall be plugged upon detection of any flaw identified within 3.0 inches below the lower end of the lower sleeve joint. Flaws located greater than 3.0 inches below the lower end of the lower sleeve joint may remain in service regardless of size.
- c) The F* methodology cannot be applied to the tubesheet region where a laser or TIG welded sleeve has been installed.

d. Provisions for SG Tube Inspections

Periodic SG tube inspections shall be performed. The number and portions of the tubes inspected and methods of inspection shall be performed with the objective of detecting flaws of any type (e.g., volumetric flaws, axial and circumferential cracks) that may be present along the length of the tube, from the tube-to-tubesheet weld at the tube inlet to the tube-to-tubesheet weld at the tube outlet, and that may satisfy the applicable tube plugging or repair criteria. The tube-to-tubesheet weld is not part of the tube. In tubes repaired by sleeving, the portion of the original tube wall between the sleeve's joints is not an area requiring re-inspection. In addition to meeting the requirements of d.1, d.2, d.3, d.4 and d.5 below, the inspection scope, inspection methods, and inspection intervals shall be such as to ensure that SG tube integrity is maintained until the next SG inspection. A degradation assessment shall be performed to determine the type and location of flaws to which the tubes may be susceptible and, based on this assessment, to determine which inspection methods need to be employed and at what locations.

5.5 Programs and Manuals

5.5.5.2 Unit 2 SG Program (continued)

1. Inspect 100% of the tubes in each SG during the first refueling outage following SG installation.
2. **After the first refueling outage following SG installation, inspect 100% of the tubes in each SG at least every 24 effective full power months, which defines the inspection period.** After the first refueling outage following SG installation, inspect each steam generator at least every 24 effective full power months or at least every refueling outage (whichever results in more frequent inspections). In addition, inspect 100% of the tubes at sequential periods of 60 effective full power months beginning after the first refueling outage inspection following SG installation. Each 60 effective full power month inspection period may be extended up to 3 effective full power months to include a SG inspection outage in an inspection period and the subsequent inspection period begins at the conclusion of the included SG inspection outage. If a degradation assessment indicates the potential for a type of degradation to occur at a location not previously inspected with a technique capable of detecting this type of degradation at this location and that may satisfy the applicable tube plugging or repair criteria, the minimum number of locations inspected with such a capable inspection technique during the remainder of the inspection period may be prorated. The fraction of locations to be inspected for this potential type of degradation at this location at the end of the inspection period shall be no less than the ratio of the number of times the SG is scheduled to be inspected in the inspection period after the determination that a new form of degradation could potentially be occurring at this location divided by the total number of times the SG is scheduled to be inspected in the inspection period.
3. Indications left in service as a result of application of the tube support plate voltage-based plugging or repair criteria (Specification 5.5.5.2.c.4) shall be inspected by bobbin coil probe during all future refueling outages.

Implementation of the **SG** steam generator tube-to-tube support plate plugging or repair criteria requires a 100-percent bobbin coil inspection for hot-leg and cold-leg tube support plate intersections down to the lowest cold-leg tube support plate with known outside diameter stress corrosion cracking (ODSCC) indications. The determination of the lowest cold-leg tube support plate intersections having ODSCC indications shall be based on the performance of at least a 20-percent random sampling of tubes inspected over their full length.

5.5 Programs and Manuals

5.5.5.2 Unit 2 SG Program (continued)

4. When the F* methodology has been implemented, inspect 100% of the inservice tubes in the hot-leg tubesheet region with the objective of detecting flaws that may satisfy the applicable tube plugging or repair criteria of Specification 5.5.5.2.c.5 every 24 effective full power months or one interval between refueling outages (whichever is less).
 5. For Alloy 800 sleeves: The parent tube, in the area where the sleeve-to-tube hard roll joint and the sleeve-to-tube hydraulic expansion joint will be established, shall be inspected prior to installation of the sleeve. Sleeve installation may proceed only if the inspection finds these regions free from service induced indications.
- e. Provisions for monitoring operational primary to secondary LEAKAGE
- f. Provisions for SG Tube Repair Methods

SG ~~Steam generator~~ tube repair methods shall provide the means to reestablish the RCS pressure boundary integrity of SG tubes without removing the tube from service. For the purposes of these Specifications, tube plugging is not a repair. All acceptable tube repair methods are listed below.

1. ABB Combustion Engineering TIG welded sleeves, CEN-629-P, Revision 02 and CEN-629-P Addendum 1.
2. Westinghouse laser welded sleeves, WCAP-13483, Revision 2.
3. Westinghouse leak-limiting Alloy 800 sleeves, WCAP-15919-P, Revision 2.

5.6 Reporting Requirements

5.6.4 Reactor Coolant System (RCS) PRESSURE AND TEMPERATURE LIMITS REPORT (PTLR) (continued)

NRC Letter, "Beaver Valley Power Station, Units 1 and 2 – Acceptance of Methodology for Referencing Pressure and Temperature Limits Report (TAC Nos. MB3319 and MB3320)," dated October 8, 2002.

WCAP-14040-NP-A, "Methodology Used to Develop Cold Overpressure Mitigating System Setpoints and RCS Heatup and Cooldown Limit Curves."

The methodology listed in WCAP-14040-NP-A was used with two exceptions:

- ASME Code Case N-640, "Alternative Reference Fracture Toughness for Development of P-T Limits for Section XI, Division 1."
 - ASME, Section XI, Appendix G, "Fracture Toughness Criteria for Protection Against Failure," 1996 version.
- c. The PTLR shall be provided to the NRC upon issuance for each reactor vessel fluence period and for any revision or supplement thereto.

5.6.5 Post Accident Monitoring Report

When a report is required by Condition B or F of LCO 3.3.3, "Post Accident Monitoring (PAM) Instrumentation," a report shall be submitted within the following 14 days. The report shall outline the preplanned alternate method of monitoring, the cause of the inoperability, and the plans and schedule for restoring the instrumentation channels of the Function to OPERABLE status.

5.6.6 Steam Generator (SG) Tube Inspection Report

5.6.6.1 Unit 1 SG Tube Inspection Report

A report shall be submitted within 180 days after the initial entry into MODE 4 following completion of an inspection performed in accordance with the Specification 5.5.5.1, "Unit 1 SG Program." The report shall include:

- a. The scope of inspections performed on each SG;
- b. The nondestructive examination techniques utilized for tubes with increased degradation susceptibility;**
- c. For each degradation mechanism found:**
- 1. The nondestructive examination techniques utilized;**
 - 2. The location, orientation (if linear), measured size (if available), and voltage response for each indication, For tube wear at support structures less than 20 percent through-wall, only the total number of indications needs to be reported;**
 - 3. A description of the condition monitoring assessment and results, including the margin to the tube integrity performance criteria and comparison with the margin predicted to exist at the inspection by the previous forward-looking tube integrity assessment; and**

5.6 Reporting Requirements

5.6.6 Steam Generator (SG) Tube Inspection Report (continued)

5.6.6.1 Unit 1 SG Tube Inspection Report (continued)

4. The number of tubes plugged during the inspection outage.

d. An analysis summary of the tube integrity conditions predicted to exist at the next scheduled inspection (the forward-looking tube integrity assessment) relative to the applicable performance criteria, including the analysis methodology, inputs, and results;

~~b. Degradation mechanisms found,~~

~~c. Nondestructive examination techniques utilized for each degradation mechanism,~~

~~d. Location, orientation (if linear), and measured sizes (if available) of service-induced indications,~~

~~e. Number of tubes plugged during the inspection outage for each degradation mechanism,~~

~~ef. The number and percentage of tubes plugged to date, and the effective plugging percentage in each **SG** steam generator,; and~~

f. The results of any SG secondary side inspections.

~~g. The results of condition monitoring, including the results of tube pulls and in-situ testing.~~

5.6 Reporting Requirements

5.6.6 Steam Generator (SG) Tube Inspection Report (continued)

5.6.6.2 Unit 2 SG Tube Inspection Report

1. A report shall be submitted within 180 days after the initial entry into MODE 4 following completion of an inspection performed in accordance with the Specification 5.5.5.2, "Unit 2 SG Program." The report shall include:
 - a. The scope of inspections performed on each SG;₁
 - b. The nondestructive examination techniques utilized for tubes with increased degradation susceptibility;**
 - c. For each degradation mechanism found:**
 - 1. The nondestructive examination techniques utilized;**
 - 2. The location, orientation (if linear), measured size (if available), and voltage response for each indication. For tube wear at support structures less than 20 percent through-wall, only the total number of indications needs to be reported;**
 - 3. A description of the condition monitoring assessment and results, including the margin to the tube integrity performance criteria and comparison with the margin predicted to exist at the inspection by the previous forward-looking tube integrity assessment;**
 - 4. The number of tubes plugged or repaired during the inspection outage; and**
 - 5. The repair methods utilized and the number of tubes repaired by each repair method.**
 - d. An analysis summary of the tube integrity conditions predicted to exist at the next scheduled inspection (the forward-looking tube integrity assessment) relative to the applicable performance criteria, including the analysis methodology, inputs, and results;**
- ~~b. Degradation mechanisms found,~~
- ~~c. Nondestructive examination techniques utilized for each degradation mechanism,~~
- ~~d. Location, orientation (if linear), and measured sizes (if available) of service-induced indications,~~

5.6.6 Steam Generator (SG) Tube Inspection Report (continued)

5.6.6.2 Unit 2 SG Tube Inspection Report (continued)

- ~~e. Number of tubes plugged or repaired during the inspection outage for each degradation mechanism,~~
 - ~~ef. The number and percentage of tubes plugged or repaired to date, and the effective plugging percentage in each **SG** steam generator;; and~~
 - f. The results of any SG secondary side inspections.**
 - ~~g. The results of condition monitoring, including the results of tube pulls and in-situ testing, and~~
 - ~~h. Repair method utilized and the number of tubes repaired by each repair method.~~
2. A report shall be submitted within 90 days after the initial entry into MODE 4 following completion of an inspection performed in accordance with the Specification 5.5.5.2, "Unit 2 SG Program," when voltage-based alternate repair criteria have been applied. The report shall include information described in Section 6.b of Attachment 1 to Generic Letter 95-05, "Voltage-Based Repair Criteria for Westinghouse Steam Generator Tubes Affected by Outside Diameter Stress Corrosion Cracking."
3. For implementation of the voltage-based plugging or repair criteria to tube support plate intersections, notify the Commission prior to returning the **SG steam generators** to service (MODE 4) should any of the following conditions arise:
- a. If circumferential crack-like indications are detected at the tube support plate intersections.
 - b. If indications are identified that extend beyond the confines of the tube support plate.
 - c. If indications are identified at the tube support plate elevations that are attributable to primary water stress corrosion cracking.
4. A report shall be submitted within 90 days after the initial entry into MODE 4 following an outage in which the F* methodology was applied. As applicable, the report shall include the following hot-leg and cold-leg tubesheet region inspection results associated with the application of F*:
- a. Total number of indications, location of each indication, orientation of each indication, severity of each indication, and whether the indications initiated from the inside or outside surface.
 - b. The cumulative number of indications detected in the tubesheet region as a function of elevation within the tubesheet.
 - c. The projected end-of-cycle accident-induced leakage from tubesheet indications.
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