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TXX-21115
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U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Ref 10 CFR 50.90
10 CFR 50.91

Subject: Comanche Peak Nuclear Power Plant (CPNPP)
Docket Nos. 50-445 and 50-446
NRC Request for Additional Information for Application to Revise Technical Specifications to Adopt TSTF 577, "Revised Frequencies for Steam Generator Tube Inspections"

- References:
1. Letter to NRC from Thomas P. McCool, Application to Revise Technical Specifications to Adopt TSTF 577, "Revised Frequencies for Steam Generator Tube Inspections" dated July 29, 2021 [ADAMS Accession No. ML21208A023]
 2. Letter to NRC from Thomas P. McCool, Supplement to Application to Revise Technical Specifications to Adopt TSTF 577, "Revised Frequencies for Steam Generator Tube Inspections" dated August 31, 2021 [ADAMS Accession No. ML21243A232]
 3. Request for Additional Information regarding the CPNPP Application to Revise Technical Specifications to Adopt TSTF 577, "Revised Frequencies for Steam Generator Tube Inspections" from the NRC to Jack C. Hicks dated October 13, 2021 [ADAMS Accession No. ML21286A791]

Dear Sir or Madam:

Pursuant to 10 CFR 50.90, Vistra Operations Company LLC ("Vistra OpCo") is responding to a request for additional information for an amendment to the Technical Specifications (TS) for Comanche Peak, Units 1 and 2 made by Reference 1 and Reference 2.

Vistra OpCo requests adoption of TSTF-577, "Revised Frequencies for Steam Generator Tube Inspections," which is an approved change to the Standard Technical Specifications (STS), into the Comanche Peak, Units 1 and 2 TS. The TS related to steam generator (SG) tube inspections and reporting are revised based on operating history.

Enclosure 1 provides the Comanche Peak response to request for additional information. Attachment 1 provides the updated markup TS pages. Attachment 2 provides the updated proposed TS pages. Attachment 3 provides the updated revised (clean) TS pages. The TS Bases are not affected by the proposed changes.

Vistra OpCo requests that the amendment be reviewed under the Consolidated Line Item Improvement Process (CLIIP). Approval of the proposed amendment is requested within 6 months of completion of the NRC's acceptance review. Once approved, the amendment shall be implemented within 60 days.

There are no regulatory commitments made in this submittal.

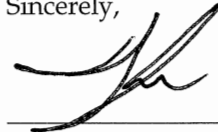
In accordance with 10 CFR 50.91, a copy of this application, with attachments, is being provided to the designated State of Texas Official.

Should you have any questions, please contact Garry Struble at (254) 897-6628 or Garry.Struble@luminant.com.

I state under penalty of perjury that the foregoing is true and correct.

Executed on October 25, 2021.

Sincerely,



Thomas P. McCool

Enclosures: 1. Comanche Peak Response to Request for Additional Information

Attachments: 1. Markup Technical Specification Pages [TS 5.5.9 and 5.6.9]
2. Proposed Technical Specification Pages [TS 5.5.9 and 5.6.9]
3. Revised Technical Specification Pages [TS 5.5.9 and 5.6.9]

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TXX-21115
Enclosure 1
Comanche Peak
Response to Request for
Additional Information

ENCLOSURE 1 to TXX-21115
Comanche Peak Response to Request for
Additional Information

By letter dated July 27, 2021 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML21208A023), as supplemented by letter dated August 31, 2021 (ADAMS Accession No. ML21243A232), Vistra Operations Company LLC (the licensee) submitted a license amendment request (LAR) for Nuclear Regulatory Commission (NRC) approval for an amendment to the facility operating license for the Comanche Peak Nuclear Power Plant, Units 1 and 2 (Comanche Peak). The licensee requested that the NRC process the proposed amendment under the Consolidated Line Item Improvement Process (CLIIP). The proposed changes would revise the "Unit 1 Model D76 and Unit 2 Model D5 Steam Generator (SG) Program" and the "Unit 1 Model D76 and Unit 2 Model D5 Steam Generator Tube Inspection Report" technical specifications (TSs) based on Technical Specifications Task Force (TSTF) Traveler TSTF-577, Revision 1, "Revised Frequencies for Steam Generator Tube Inspections" (TSTF-577) (ADAMS Accession No. ML21060B434), and the associated NRC staff safety evaluation (SE) TSTF-577 (ADAMS Accession No. ML21098A188).

The NRC staff has determined that additional information is needed to complete its review, as described in the following request.

In response to the Request for Additional Information regarding the Comanche Peak license amendment request for Application to Revise Technical Specifications to Adopt TSTF 577, "Revised Frequencies for Steam Generator Tube Inspections" the Comanche Peak responses are provided in red text.

Request for Additional Information

To complete its evaluation of whether the proposed TS changes meet the SG Program requirements, the NRC staff requests the following information:

1. The licensee letter dated August 31, 2021, contains three attachments: Attachment 1, "Markup Technical Specification Pages;" Attachment 2, "Proposed Technical Specification Pages;" and Attachment 3, "Revised Technical Specification Pages." These attachments contain changes to the TSs, but in a few instances where they should agree, they do not agree. In addition, in a few instances where all three attachments agree, it appears that numbered lists are formatted incorrectly. Specifically:
 - a. In Attachment 1, there is a TS 5.5.9 paragraph d.3, but in Attachments 2 and 3, the paragraph that appears to be paragraph d.3 in TS 5.5.9 is not numbered.

Attachment 2, "Proposed Technical Specification Pages" and Attachment 3, "Revised Technical Specification Pages" have been revised to include paragraph d.3 in TS 5.5.9. Please see updated Attachments 2 and 3 included in this response.

- b. In Attachment 1, within TS 5.5.9 paragraph d.3, there is a comma after the first use of the phrase "refueling outage" but this comma does not appear in Attachments 2 and 3.

Attachment 2, "Proposed Technical Specification Pages" and Attachment 3, "Revised Technical Specification Pages" have been revised to include the comma after the first use of the phrase "refueling outage" in paragraph d.3. Please see updated Attachments 2 and 3 included in this response.

- c. In Attachment 1, within TS 5.5.9 paragraph d.3, there is a period after the phrase "paragraph d.2" but this period does not show up in Attachments 2 and 3. In addition, it appears that paragraph d.3 should be reviewed for proper spacing between the sentence ending with "paragraph d.2" and the next sentence beginning with "If definitive information."

Attachment 2, "Proposed Technical Specification Pages" and Attachment 3, "Revised Technical Specification Pages" have been revised to include the period and space after the phrase "paragraph d.2" in paragraph d.3. Please see updated Attachments 2 and 3 included in this response.

- d. In all three attachments, there is a TS 5.5.9, paragraph e, that does not appear to have the proper list indentation distance (indented too far to the right).

Attachment 1, "Markup Technical Specification Pages," Attachment 2, "Proposed Technical Specification Pages," and Attachment 3, "Revised Technical Specification Pages" have been revised to include proper indentation for paragraph e. Please see updated Attachments 1, 2, and 3 included in this response.

- e. In all three attachments, there is a TS 5.6.9, "Steam Generator Tube Inspection Report," that removes numbering for items h, i, and j and combines them into new item g with no change in technical content. Current items h, i, and j contain distinct reporting requirements and because of their independence, it appears they merit being identified by a unique number. Please justify why the numbering for these independent items was combined into new item g or reestablish individual numbering for each independent item.

TSTF-577 markup for Westinghouse plants states to insert any plant-specific reporting requirements, if applicable at paragraph g. Following the template provide by the TSTF, current Comanche Peak TS 5.6.9 is marked up with paragraphs h, i, and j being paragraphs g, h, and i in the proposed TS change. Attachments 1, 2, and 3 are updated to use paragraphs g, h, and i to list the plant-specific reporting requirements for Comanche Peak, Unit 2 Steam Generators. Please see updated Attachments 1, 2, and 3 included in this response.

For all corrections, please provide new Attachments for the affected TS pages for the NRC staff to review.

The following documents included in the original submittal under TXX-21083 [ADAMS Accession No. ML21208A023] and the supplemental submittal under TXX-21107 [ADAMS Accession No. ML21243A232];

Attachment 1, Current Technical Specification Pages [TS 5.5.9 and 5.6.9]

Attachment 2, Proposed Technical Specification Changes [TS 5.5.9 and 5.6.9]

Attachment 3, Revised Technical Specification Pages [TS 5.5.9 and 5.6.9]

are superseded by the following documents submitted under TXX-21115;

Attachment 1, Current Technical Specification Pages [TS 5.5.9 and 5.6.9]

Attachment 2, Proposed Technical Specification Changes [TS 5.5.9 and 5.6.9]

Attachment 3, Revised Technical Specification Pages [TS 5.5.9 and 5.6.9].

TXX-21115
Attachment 1
Markup Technical Specification Pages
[TS 5.5.9 and 5.6.9]

5.5 Programs and Manuals (continued)

5.5.7 Reactor Coolant Pump Flywheel Inspection Program

This program shall provide for the inspection of each reactor coolant pump flywheel per the recommendations of Regulatory Position C.4.b of Regulatory Guide 1.14, Revision 1, August 1975. In lieu of Position C.4.b(1) and C.4.b(2), a qualified in-place UT examination over the volume from the inner bore of the flywheel to the circle one-half of the outer radius or a surface examination (MT and/or PT) of exposed surfaces of the removed flywheels may be conducted at 20 year intervals.

5.5.8 Deleted

5.5.9 ~~Unit 1 Model D76 and Unit 2 Model D5~~ Steam Generator (SG) Program

An ~~SG Steam Generator~~ Program shall be established and implemented to ensure that SG tube integrity is maintained. In addition, the ~~SG Steam Generator~~ Program shall include the following:

- 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"~~ "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. 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

5.5 Programs and Manuals

5.5.9 ~~Unit 1 Model D76 and Unit 2 Model D5~~ Steam Generator (SG) Program (continued)

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.

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 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 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.
1. The following alternate tube plugging criteria shall be applied as an alternative to the 40% depth based criteria:
 - a. For Unit 2 only, tubes with service-induced flaws located greater than 14.01 inches below the top of the tubesheet do not require plugging. Tubes with service-induced flaws located in the portion of the tube from the top of the tubesheet to 14.01 inches below the top of the tubesheet shall be plugged upon detection.
- d. Provisions for SG tube inspections. Periodic SG tube inspections shall be performed. ~~For Unit 1, t~~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 ~~except for any portions of the tube that are exempt from inspection by alternate repair criteria, and that may satisfy the applicable tube plugging criteria. For Unit 2, 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 14.01 inches below the top of the tubesheet on the hot leg side to 14.01 inches below the top of the tubesheet on the cold leg side 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 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

5.5 Programs and Manuals

5.5.9 Unit 1 Model D76 and Unit 2 Model D5 Steam Generator (SG) Program (continued)

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. For the Unit 1 model Delta-76 SGs (Alloy 690 thermally treated) 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.
- ~~2. Implement a one-time change to TS 5.5.9.d.2, for Unit 2 Cycle 19 only, to inspect each SG at least every 54 effective full power months. For the Unit 2 model D5 steam generators SGs (Alloy 600 thermally treated) after the first refueling outage following SG installation, inspect 100% of the tubes in each SG at least every 54 effective full power months, which defines the inspection period. If none of the SG tubes have ever experienced cracking other than in regions that are exempt from inspection by alternate repair criteria and the SG inspection was performed with enhanced probes, the inspection period may be extended to 72 effective full power months. Enhanced probes have a capability to detect flaws of any type equivalent to or better than array probe technology. The enhanced probes shall be used from the tube-to-tubesheet weld at the tube inlet to the tube-to-tubesheet weld at the tube outlet except any portions of the tube that are exempt from inspection by alternate repair criteria. If there are regions where enhanced probes cannot be used, the tube inspection techniques shall be capable of detecting all forms of existing and potential degradation in that region. after the first refueling outage following SG installation, inspect each SG at least every 48 effective full power months or at least every other 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, and c 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 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~~

5.5 Programs and Manuals

5.5.9 ~~Unit 1 Model D76 and Unit 2 Model D5 Steam Generator (SG) Program (continued)~~
~~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 120 effective full power months. This constitutes the first inspection period;~~
- ~~b. During the next 96 effective full power months, inspect 100% of the tubes. This constitutes the second inspection period; and~~
- ~~c. Implement a one-time change to TS 5.5.9.d.2.c, for Unit 2 Cycle 19 only, to inspect 100% of the tubes every 90 effective full power months.~~

~~During the remaining life of the SGs, inspect 100% of the tubes every 72 effective full power months. This constitutes the third and subsequent inspection periods.~~

- ~~3. For the Unit 1 model Delta 76 steam generators (Alloy 690 thermally treated) 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 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.~~

5.5 Programs and Manuals

5.5.9 Unit 1 Model D76 and Unit 2 Model D5 Steam Generator (SG) Program (continued)

- ~~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.~~
 - 34. For Unit 1, if crack indications are found in any SG tube excluding any region that is exempt from inspection by alternate repair criteria, then the next inspection for each affected and potentially affected SG for the degradation mechanism that caused the crack indications shall ~~not be at the next exceed 24 effective full power months or one~~ refueling outage (whichever results in more frequent inspections), but for Unit 2, the next inspection may be deferred to the following refueling outage if the 100% inspection of all SGs was performed with enhanced probes as described in paragraph d.2. ~~if crack indications are found in any SG tube from 14.01 inches below the top of the tubesheet on the hot leg side to 14.01 inches below the top of the tubesheet on the cold leg side, then the next inspection for each affected and potentially affected SG for the degradation mechanism that caused the crack indications shall 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.
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5.6 Reporting Requirements

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

1. WCAP-14040-NP-A; "Methodology used to Develop Cold Overpressure Mitigating System Setpoints and RCS Heatup and Cooldown Limit Curves."
- c. The PTLR shall be provided to the NRC upon issuance for each reactor vessel fluence period and for any revision or supplement thereto.

5.6.7 Not used

5.6.8 PAM Report

When a report is required by the required actions 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.

5.6.9 ~~Unit 1 Model D76 and Unit 2 Model D5~~ Steam Generator 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 5.5.9, "Steam Generator (SG) Program." The report shall include:

- a. The scope of inspections performed on each SG;
- b. ~~Degradation mechanisms found,~~ The nondestructive examination techniques utilized for tubes with increased degradation susceptibility;
- c. ~~Nondestructive examination techniques utilized for each degradation mechanism,~~ 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
 4. The number of tubes plugged during the inspection outage.

5.6 Reporting Requirements

5.6.9 ~~Unit 1 Model D76 and Unit 2 Model D5~~ Steam Generator Tube Inspection Report
(continued)

- d. ~~Location, orientation (if linear), and measured sizes (if available) of service-induced indications;~~ 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;
 - e. ~~Number of tubes plugged during the inspection outage for each degradation mechanism;~~ The number and percentage of tubes plugged to date, and the effective plugging percentage in each SG steam generator,;
 - f. The results of any SG secondary side inspections; and
 - g. ~~The results of condition monitoring, including the results of tube pulls and in-situ testing;~~ For Unit 2, the primary to secondary leakage rate observed in each SG (if it is not practical to assign the leakage to an individual SG, the entire primary to secondary leakage should be conservatively assumed to be from one SG) during the cycle preceding the inspection which is the subject of the report;
 - h. For Unit 2, the calculated accident induced leakage rate from the portion of the tubes below 14.01 inches from the top of the tubesheet for the most limiting accident in the most limiting SG. In addition, if the calculated accident induced leakage rate from the most limiting accident is less than 3.16 times the maximum operational primary to secondary leakage rate, the report should describe how it was determined; and
 - ij. For Unit 2, the results of monitoring for tube axial displacement (slippage). If slippage is discovered, the implications of the discovery and corrective action shall be provided.
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TXX-21115
Attachment 2
Proposed Technical Specification Pages
[TS 5.5.9 and 5.6.9]

5.5 Programs and Manuals (continued)

5.5.7 Reactor Coolant Pump Flywheel Inspection Program

This program shall provide for the inspection of each reactor coolant pump flywheel per the recommendations of Regulatory Position C.4.b of Regulatory Guide 1.14, Revision 1, August 1975. In lieu of Position C.4.b(1) and C.4.b(2), a qualified in-place UT examination over the volume from the inner bore of the flywheel to the circle one-half of the outer radius or a surface examination (MT and/or PT) of exposed surfaces of the removed flywheels may be conducted at 20 year intervals.

5.5.8 Deleted

5.5.9 Steam Generator (SG) Program

An SG Program shall be established and implemented to ensure that SG tube integrity is maintained. In addition, the SG Program shall include the following:

- 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. 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 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

5.5 Programs and Manuals

5.5.9 Steam Generator (SG) Program (continued)

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.

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 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 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.
1. The following alternate tube plugging criteria shall be applied as an alternative to the 40% depth based criteria:
 - a. For Unit 2 only, tubes with service-induced flaws located greater than 14.01 inches below the top of the tubesheet do not require plugging. Tubes with service-induced flaws located in the portion of the tube from the top of the tubesheet to 14.01 inches below the top of the tubesheet shall be plugged upon detection.
- 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 **except for any portions of the tube that are exempt from inspection by alternate repair criteria**, 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 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

5.5 Programs and Manuals

5.5.9 Steam Generator (SG) Program (continued)

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. For the Unit 1 model Delta-76 SGs (Alloy 690 thermally treated) 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.

For the Unit 2 model D5 SGs (Alloy 600 thermally treated) after the first refueling outage following SG installation, inspect 100% of the tubes in each SG at least every 54 effective full power months, which defines the inspection period. If none of the SG tubes have ever experienced cracking other than in regions that are exempt from inspection by alternate repair criteria and the SG inspection was performed with enhanced probes, the inspection period may be extended to 72 effective full power months. Enhanced probes have a capability to detect flaws of any type equivalent to or better than array probe technology. The enhanced probes shall be used from the tube-to-tubesheet weld at the tube inlet to the tube-to-tubesheet weld at the tube outlet except any portions of the tube that are exempt from inspection by alternate repair criteria. If there are regions where enhanced probes cannot be used, the tube inspection techniques shall be capable of detecting all forms of existing and potential degradation in that region.

3. If crack indications are found in any SG tube excluding any region that is exempt from inspection by alternate repair criteria, then the next inspection for each affected and potentially affected SG for the degradation mechanism that caused the crack indications shall be at the next refueling outage, but for Unit 2, the next inspection may be deferred to the following refueling outage if the 100% inspection of all SGs was performed with enhanced probes as described in paragraph d.2. 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.
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5.6 Reporting Requirements

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

1. WCAP-14040-NP-A; "Methodology used to Develop Cold Overpressure Mitigating System Setpoints and RCS Heatup and Cooldown Limit Curves."
- c. The PTLR shall be provided to the NRC upon issuance for each reactor vessel fluence period and for any revision or supplement thereto.

5.6.7 Not used

5.6.8 PAM Report

When a report is required by the required actions 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.

5.6.9 Steam Generator 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 5.5.9, "Steam Generator (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
 4. The number of tubes plugged during the inspection outage.

5.6 Reporting Requirements

5.6.9 Steam Generator Tube Inspection Report (continued)

- 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;
 - e. The number and percentage of tubes plugged to date, and the effective plugging percentage in each SG;
 - f. The results of any SG secondary side inspections; and
 - g. For Unit 2, the primary to secondary leakage rate observed in each SG (if it is not practical to assign the leakage to an individual SG, the entire primary to secondary leakage should be conservatively assumed to be from one SG) during the cycle preceding the inspection which is the subject of the report;
 - h. For Unit 2, the calculated accident induced leakage rate from the portion of the tubes below 14.01 inches from the top of the tubesheet for the most limiting accident in the most limiting SG. In addition, if the calculated accident induced leakage rate from the most limiting accident is less than 3.16 times the maximum operational primary to secondary leakage rate, the report should describe how it was determined; and
 - i. For Unit 2, the results of monitoring for tube axial displacement (slippage). If slippage is discovered, the implications of the discovery and corrective action shall be provided.
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TXX-21115
Attachment 3
Revised Technical Specification Pages
[TS 5.5.9 and 5.6.9]

5.5 Programs and Manuals (continued)

5.5.7 Reactor Coolant Pump Flywheel Inspection Program

This program shall provide for the inspection of each reactor coolant pump flywheel per the recommendations of Regulatory Position C.4.b of Regulatory Guide 1.14, Revision 1, August 1975. In lieu of Position C.4.b(1) and C.4.b(2), a qualified in-place UT examination over the volume from the inner bore of the flywheel to the circle one-half of the outer radius or a surface examination (MT and/or PT) of exposed surfaces of the removed flywheels may be conducted at 20 year intervals.

5.5.8 Deleted

5.5.9 Steam Generator (SG) Program

An SG Program shall be established and implemented to ensure that SG tube integrity is maintained. In addition, the SG Program shall include the following:

- 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. 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 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

5.5 Programs and Manuals

5.5.9 Steam Generator (SG) Program (continued)

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.

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 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 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.
1. The following alternate tube plugging criteria shall be applied as an alternative to the 40% depth based criteria:
 - a. For Unit 2 only, tubes with service-induced flaws located greater than 14.01 inches below the top of the tubesheet do not require plugging. Tubes with service-induced flaws located in the portion of the tube from the top of the tubesheet to 14.01 inches below the top of the tubesheet shall be plugged upon detection.
- 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 except for any portions of the tube that are exempt from inspection by alternate repair criteria, 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 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

5.5 Programs and Manuals

5.5.9 Steam Generator (SG) Program (continued)

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. For the Unit 1 model Delta-76 SGs (Alloy 690 thermally treated) 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.

For the Unit 2 model D5 SGs (Alloy 600 thermally treated) after the first refueling outage following SG installation, inspect 100% of the tubes in each SG at least every 54 effective full power months, which defines the inspection period. If none of the SG tubes have ever experienced cracking other than in regions that are exempt from inspection by alternate repair criteria and the SG inspection was performed with enhanced probes, the inspection period may be extended to 72 effective full power months. Enhanced probes have a capability to detect flaws of any type equivalent to or better than array probe technology. The enhanced probes shall be used from the tube-to-tubesheet weld at the tube inlet to the tube-to-tubesheet weld at the tube outlet except any portions of the tube that are exempt from inspection by alternate repair criteria. If there are regions where enhanced probes cannot be used, the tube inspection techniques shall be capable of detecting all forms of existing and potential degradation in that region.

3. If crack indications are found in any SG tube excluding any region that is exempt from inspection by alternate repair criteria, then the next inspection for each affected and potentially affected SG for the degradation mechanism that caused the crack indications shall be at the next refueling outage, but for Unit 2, the next inspection may be deferred to the following refueling outage if the 100% inspection of all SGs was performed with enhanced probes as described in paragraph d.2. 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.
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5.6 Reporting Requirements

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

1. WCAP-14040-NP-A; "Methodology used to Develop Cold Overpressure Mitigating System Setpoints and RCS Heatup and Cooldown Limit Curves."
- c. The PTLR shall be provided to the NRC upon issuance for each reactor vessel fluence period and for any revision or supplement thereto.

5.6.7 Not used

5.6.8 PAM Report

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

5.6 Reporting Requirements

5.6.9 Steam Generator Tube Inspection Report (continued)

- 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;
 - e. The number and percentage of tubes plugged to date, and the effective plugging percentage in each SG;
 - f. The results of any SG secondary side inspections; and
 - g. For Unit 2, the primary to secondary leakage rate observed in each SG (if it is not practical to assign the leakage to an individual SG, the entire primary to secondary leakage should be conservatively assumed to be from one SG) during the cycle preceding the inspection which is the subject of the report;
 - h. For Unit 2, the calculated accident induced leakage rate from the portion of the tubes below 14.01 inches from the top of the tubesheet for the most limiting accident in the most limiting SG. In addition, if the calculated accident induced leakage rate from the most limiting accident is less than 3.16 times the maximum operational primary to secondary leakage rate, the report should describe how it was determined; and
 - i. For Unit 2, the results of monitoring for tube axial displacement (slippage). If slippage is discovered, the implications of the discovery and corrective action shall be provided.
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