

South Texas Project Electric Generating Station P.O. Box 289 Wadsworth, Texas 77483

August 10, 2021 NOC-AE-21003812 10 CFR 50.90 STI: 35177160

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

South Texas Project
Units 1 & 2
Docket Nos. STN 50-498, STN 50-499
Application to Revise Technical Specifications to Adopt
TSTF-577, "Revised Frequencies for Steam Generator Tube Inspections"

Pursuant to 10 CFR 50.90, STP Nuclear Operating Company (STPNOC) is submitting a request for an amendment to the Technical Specifications (TS) for South Texas Project (STP), Units 1 and 2.

STPNOC 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 STP, Units 1 and 2, TS. The TS related to steam generator (SG) tube inspections and reporting are revised based on operating history.

The enclosure provides a description and assessment of the proposed changes. Attachment 1 provides the existing TS pages marked to show the proposed changes. Attachment 2 provides revised (clean) TS pages. The TS Bases are not affected by the proposed changes.

STPNOC requests that the amendment be reviewed under the Consolidated Line Item Improvement Process (CLIIP). Approval of the proposed amendment is requested by July 1, 2022, in support of an upcoming refueling outage. Once approved, the amendment shall be implemented within 90 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.

If there are any questions or if additional information is needed, please contact Ali Albaaj at (361) 972-8172 or me at (361) 972-7888.

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

Executed on <u>August 10, 2021</u>

Executive VP and CNC

Enclosure: Description and Assessment

CC:

Regional Administrator, Region IV U.S. Nuclear Regulatory Commission 1600 E. Lamar Boulevard Arlington, TX 76011-4511

cc (electronic distribution):

Robert Free, Texas Department of State Health Services

Dennis Galvin, Project Manager, U.S. Nuclear Regulatory Commission

Gregory Kolcum, Senior Resident Inspector, U.S. Nuclear Regulatory Commission

Chad Stott, Resident Inspector, U.S. Nuclear Regulatory Commission

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### **ENCLOSURE**

# **Description and Assessment**

Subject: Application to Revise Technical Specifications to Adopt TSTF-577, "Revised Frequencies for Steam Generator Tube Inspections"

- 1 DESCRIPTION
- 2 ASSESSMENT
- 3 REGULATORY ANALYSIS
- 4 ENVIRONMENTAL CONSIDERATION

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#### ATTACHMENTS:

- 1. Proposed Technical Specification Changes (Mark-Up)
- 2. Revised Technical Specification Pages

#### 1 DESCRIPTION

STP Nuclear Operating Company (STPNOC) 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 South Texas Project (STP), Units 1 and 2, Technical Specifications (TS). The TS related to steam generator (SG) tube inspections and reporting are revised based on operating history.

#### 2 ASSESSMENT

#### 2.1 Applicability of Safety Evaluation

STPNOC has reviewed the safety evaluation for TSTF-577 provided to the Technical Specifications Task Force in a letter dated April 14, 2021. This review included a review of the NRC staff's evaluation, as well as the information provided in TSTF-577. As described herein, STPNOC has concluded that the justifications presented in TSTF-577 and the safety evaluation prepared by the NRC staff are applicable to STP, Units 1 and 2, and justify this amendment for the incorporation of the changes to the STP TS.

The current SG TS requirements are based on TSTF-510, "Revision to Steam Generator Program Inspection Frequencies and Tube Sample Selection." The SG tubes are made from Thermally Treated Alloy 690 (Alloy 690TT).

#### 2.2 Variations

STPNOC is proposing the following variations from the TS changes described in TSTF-577 or the applicable parts of the NRC staff's safety evaluation:

- 1. The STP TS utilize different numbering than the Standard Technical Specifications on which TSTF-577 was based. Specifically, the Steam Generator (SG) Program is Specification 6.8.3.o and the Steam Generator Tube Inspection Report is Specification 6.9.1.7.
- 2. STP Specification 6.8.3.0 title and introductory paragraph and paragraph "b" are revised to use the initialism "SG" for "steam generator." This change is consistent with TSTF-577.
- 3. STP Specification 6.9.1.7 is revised to add the title of Specification 6.8.3.o. This change is consistent with TSTF-577.

These differences are administrative and do not affect the applicability of TSTF-577 to the STP TS.

#### 3 REGULATORY ANALYSIS

3.1 No Significant Hazards Consideration Analysis

STP Nuclear Operating Company (STPNOC) 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 South Texas Project (STP), Units 1 and 2, Technical Specifications (TS). The TS related to steam generator (SG) tube inspections and reporting are revised based on operating history.

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, STPNOC 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 Conclusions

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 ENVIRONMENTAL CONSIDERATION

A review has determined that the proposed amendment 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. However, the

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proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or a 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 amendment 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 amendment.

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# **Attachment 1**

**Proposed Technical Specification Changes (Mark-Up)** 

- The ODCM shall also contain descriptions of the radioactive effluent controls and radiological environmental monitoring activities, and descriptions of the information that should be included in the Annual Radiological Environmental Operating Report and the Radiological Effluent Release Report required by Specifications 6.9.1.3 and 6.9.1.4.
- 3) Licensee-initiated changes to the ODCM:
  - a) Shall be documented and records of reviews performed shall be retained.

    This documentation shall contain:
    - 1. Sufficient information to support the changes together with the appropriate analyses or evaluations justifying the changes and
    - A determination that the changes maintain the levels of radioactive effluent control required by 10 CFR 20.1302, 40 CFR 190, 10 CFR 50.36a, and 10 CFR 50, Appendix I, and do not adversely impact the accuracy or reliability of effluent, dose, or setpoint calculations.
  - b) Shall become effective after approval of the plant manager.
  - c) Shall be submitted to the NRC in the form *of* a complete, legible copy of the entire ODCM as a part of or concurrent with the Radioactive Effluent Release Report for the period of the report in which any change to the ODCM was made. Each change shall be identified by markings in the margin of the affected pages, clearly indicating the area of the page that was changed, and shall indicate the date (month and year) the change was implemented.
- o. Steam Generator (SG) Program

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

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- Provisions for condition monitoring assessments. Condition monitoring a. 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. **SGSteam generator** 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 inservice SG tubes shall retain structural integrity over the full range of normal operating conditions (including startup, operation in the power range, hot standby, and cooldown), all anticipated transients included in the design specification, and design basis accidents. This includes retaining a safety factor of 3.0 ( $3\Delta P$ ) against burst under normal steady state full power operation primary-tosecondary 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.
  - 2. Accident induced leakage performance criterion. The primary-tosecondary 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. Accident induced leakage is not 'to exceed 1 gpm total for all four SGs in one unit.

- 3. The operational leakage performance criterion is specified in LCO 3.4.6.2, "Reactor Coolant System 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 9672 effective full power months, which defines the inspection period. 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.

- 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;
- During the next 120 effective full power months, inspect 100% of the tubes. This constitutes the second inspection period;
- During the next 96 effective full power months, inspect 100% of the tubes. This constitutes the third inspection period; and
- 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.

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- 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 nondestructive 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.

#### p. Battery Monitoring and Maintenance Program

This Program provides for battery restoration and maintenance, which includes the following:

- 1) Actions to restore battery cells discovered with float voltage < 2.13 V;
- 2) Actions to equalize and test battery cells found with electrolyte level below the top of the plates;
- 3) Actions to verify that the remaining cells are > 2.07 V when a cell or cells are found to be < 2.13 V; AND
- 4) Actions to ensure that specific gravity readings are taken prior to each discharge test.

### q. Control Room Envelope Habitability Program

A Control Room Envelope (CRE) Habitability Program shall be established and implemented to ensure that CRE habitability is maintained such that, with an OPERABLE Control Room Makeup and Cleanup Filtration System, CRE occupants can control the reactor safely under normal conditions and maintain it in a safe condition following a radiological event, hazardous chemical release, or a smoke challenge. The program shall ensure that adequate radiation protection is provided to permit access and occupancy of the CRE under design basis accident (DBA) conditions without personnel receiving radiation exposures in excess of 5 rem total effective dose equivalent (TEDE) for the duration of the accident. The program shall include the following elements:

- 1. The definition of the CRE and the CRE boundary.
- 2. Requirements for maintaining the CRE boundary in its design condition including configuration control and preventive maintenance.

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# 6.9.1.6 (continued)

10. WCAP-13749-P-A, "Safety Evaluation Supporting the Conditional Exemption of the Most Negative EOL Moderator Temperature Coefficient Measurement," March 1997, (W Proprietary).

(Methodology for Specification 3.1.1.3 - Moderator Temperature Coefficient)

WCAP 124 72-P-A, "BEACON Core Monitoring and Operations Support System," August 1994 (W Proprietary), including Addenda 1-A (January 2000) and 4 (September 2012)

(Methodology for uncertainties in Specification 3.2.2-Heat Flux Hot Channel Factor and 3.2.3-Nuclear Enthalpy Rise Hot Channel Factor)

- c. The core operating limits shall be determined so that all applicable limits (e.g., fuel thermal-mechanical limits, core thermal-hydraulic limits, Emergency Core Cooling System (ECCS) limits, nuclear limits such as shutdown margin, transient analysis limits, and accident analysis limits) of the safety analysis are met.
- d. The COLR, including any mid-cycle revisions or supplements, shall be provided to the NRC upon issuance for each reload cycle.

#### 6.9.1.7 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 Specification 6.8.3.o, "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:
  - 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;
  - 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 [or repaired] during the inspection outage.

### 6.9.1.7 (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:
- 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,

# 6.9.2 Not Used

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# Attachment 2 Revised Technical Specification Pages

- 2) The ODCM shall also contain descriptions of the radioactive effluent controls and radiological environmental monitoring activities, and descriptions of the information that should be included in the Annual Radiological Environmental Operating Report and the Radiological Effluent Release Report required by Specifications 6.9.1.3 and 6.9.1.4.
- 3) Licensee-initiated changes to the ODCM:
  - a) Shall be documented and records of reviews performed shall be retained.

This documentation shall contain:

- 1. Sufficient information to support the changes together with the appropriate analyses or evaluations justifying the changes and
- A determination that the changes maintain the levels of radioactive effluent control required by 10 CFR 20.1302, 40 CFR 190, 10 CFR 50.36a, and 10 CFR 50, Appendix I, and do not adversely impact the accuracy or reliability of effluent, dose, or setpoint calculations.
- b) Shall become effective after approval of the plant manager.
- c) Shall be submitted to the NRC in the form of a complete, legible copy of the entire ODCM as a part of or concurrent with the Radioactive Effluent Release Report for the period of the report in which any change to the ODCM was made. Each change shall be identified by markings in the margin of the affected pages, clearly indicating the area of the page that was changed, and shall indicate the date (month and year) the change was implemented.

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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:

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- 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.

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Unit 2 - Amendment No. 139, 154 196,

- 1. Structural integrity performance criterion. All inservice SG tubes shall retain structural integrity over the full range of normal operating conditions (including startup, operation in the power range, hot standby, and cooldown), all anticipated transients included in the design specification, and design basis accidents. This includes retaining a safety factor of 3.0 (3ΔP) 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.
- 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. Accident induced leakage is not to exceed 1 gpm total for all four SGs in one unit.
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  - 1. Inspect 100% of the tubes in each SG during the first refueling outage following SG installation.

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- 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.
- 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 refueling outage. If definitive information, such as from examination of a pulled tube, diagnostic nondestructive 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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Unit 1 - Amendment No. <del>164, 209</del>, Unit 2 - Amendment No. <del>154, 196</del>, This Page Not Used

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### 6.9.1.6 (continued)

10. WCAP-13749-P-A, "Safety Evaluation Supporting the Conditional Exemption of the Most Negative EOL Moderator Temperature Coefficient Measurement," March 1997, (W Proprietary).

(Methodology for Specification 3.1.1.3 - Moderator Temperature Coefficient)

11. WCAP 12472-P-A, "BEACON Core Monitoring and Operations Support System," August 1994 (<u>W</u> Proprietary), including Addenda 1-A (January 2000) and 4 (September 2012)

(Methodology for uncertainties in Specification 3.2.2-Heat Flux Hot Channel Factor and 3.2.3-Nuclear Enthalpy Rise Hot Channel Factor)

- c. The core operating limits shall be determined so that all applicable limits (e.g., fuel thermal-mechanical limits, core thermal-hydraulic limits, Emergency Core Cooling System (ECCS) limits, nuclear limits such as shutdown margin, transient analysis limits, and accident analysis limits) of the safety analysis are met.
- d. The COLR, including any mid-cycle revisions or supplements, shall be provided to the NRC upon issuance for each reload cycle.

#### 6.9.1.7 Steam Generator Tube Inspection 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 [or repaired] during the inspection outage.

### 6.9.1.7 (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;
- The number and percentage of tubes plugged to date, and the effective plugging e. percentage in each SG; and
- f. The results of any SG secondary side inspections.

# 6.9.2 Not Used