FPL.

JUL 16 2012

L-2012-231
10 CFR 50.90

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

Re: Turkey Point Nuclear Generating Station Units 3 and 4
Docket Nos. 50-250 and 50-251
License Amendment Request No. 221: Application to Revise Technical Specifications to Adopt TSTF-510, "Revision to Steam Generator Program Inspection Frequencies and Tube Sample Selection," Using the Consolidated Line Item Improvement Process

Pursuant to 10 CFR 50.90, Florida Power & Light Company (FPL) is submitting a request for an amendment to the Technical Specifications (TS) for Turkey Point Nuclear Generating Station (Turkey Point) Units 3 and 4.

The proposed amendment would modify TS requirements regarding steam generator tube inspections and reporting as described in TSTF-510, Revision 2, "Revision to Steam Generator Program Inspection Frequencies and Tube Sample Selection."

Enclosure 1 provides a description and assessment of the proposed changes, the requested confirmation of applicability, and plant-specific verifications. Enclosure 2 provides the existing TS pages marked up to show the proposed changes. Enclosure 3 provides existing TS Bases pages marked up to show the proposed changes. The TS Bases are provided for NRC information only and do not require NRC approval.

FPL requests approval of the proposed amendment by November 5, 2012 to support the fall 2012 Turkey Point Unit 4 steam generator inspections. Once approved, the amendment shall be implemented within 7 days.

In accordance with 10 CFR 50.91, a copy of this application, with attachments, is being provided to the State Designee for the State of Florida.

A001
NRR

If you should have any questions regarding this submittal, please contact Mr. Robert Tomonto, Licensing Manager, at 305-246-7327.

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

Executed on 7 / 16 /2012.

Sincerely,

Michael W. Kiley
Vice President - Turkey Point Nuclear Generating Station

Enclosures:
1. Description and Assessment
2. Proposed Technical Specification Changes (Mark-Up)
3. Proposed Technical Specification Bases Changes (Mark-Up)

cc: Regional Administrator, Region II, USNRC
NRC Senior Resident Inspector
NRC Project Manager, Turkey Point
W. A. Passetti, Florida Department of Health

ENCLOSURE 1

DESCRIPTION AND ASSESSMENT OF THE PROPOSED CHANGES

Table of Contents

Turkey Point Units 3 & 4
License Amendment Request for TSTF-510, "Revision to Steam Generator Program Inspection Frequencies and Tube Sample Selection," Using the Consolidated Line Item Improvement Process

1.0 DESCRIPTION

The proposed change revises Technical Specifications (TS) 6.8.4.j, "Steam Generator (SG) Program" and TS 6.9.1.8, "Steam Generator Tube Inspection Report." The proposed changes are needed to address implementation issues associated with the inspection periods, and address other administrative changes and clarifications.

The proposed amendment is consistent with TSTF-510, Revision 2, "Revision to Steam Generator Program Inspection Frequencies and Tube Sample Selection."

2.0 ASSESSMENT

2.1 Applicability of Published Safety Evaluation

Florida Power & Light Company (FPL) has reviewed TSTF-510, Revision 2, "Revision to Steam Generator Program Inspection Frequencies and Tube Sample Selection," and the model safety evaluation dated October 27, 2011 (76 FR 66763) provided as part of the Federal Register Notice for Availability. As described in the subsequent paragraphs, FPL has concluded that the justifications presented in TSTF-510 and the model safety evaluation prepared by the NRC staff are applicable to Turkey Point Nuclear Generating Station (Turkey Point) Units 3 and 4 and justify this amendment for the incorporation of the changes to the Turkey Point Unit 3 and 4 TS.

2.2 Need for Implementation of TSTF-510 at Turkey Point

For Turkey Point Units 3 and 4, FPL is proposing to implement TSTF-510 during the current inspection period (the 3rd Inspection Period of 60 Effective Full Power Months (EFPM)) for both units, thereby increasing the current inspection period duration from 60 EFPM to 72 EFPM. Increasing the inspection period from 60 EFPM to 72 EFPM would also increase the number of refueling outages within the period for each unit.

Turkey Point Unit 3 completed 100% full length bobbin coil inspections in the first and third refueling outages in the 3rd Inservice Inspection (ISI) period (at RFO-23 and RFO-25) under the requirements of the current TS 6.8.4.j.d.2.

Turkey Point Unit 4 completed a 100% full length bobbin coil inspection in the second refueling outage in the 3rd ISI period (RFO-25) under the requirements of the current TS 6.8.4.j.d.2.

Turkey Point Units 3 and 4 are each planning 100% full length bobbin coil inspections during the next refueling outage (RFO-27 for each unit).

The initial need for implementation of TSTF-510 is for Turkey Point Unit 4, which is currently operating in the 3rd Inspection Period of 60 EFPM. The first operating cycle in the 3rd Inspection Period for Unit 4 was Cycle 23. However, only a portion of Cycle 23's operating-time is shown to elapse in the 3rd Inspection Period because Cycle 23 started during the last operating cycle in the 2nd Inspection Period of 90 EFPM. Because the 90 EFPM limit was reached for the 2nd Inspection Period during Cycle 23 operation, the remainder of Cycle 23's operating time was assigned to the 3rd Inspection Period of 60 EFPM.

During Refueling Outage 24 (RFO-24) at the End of Cycle 23 (EOC-23) operation, and during Refueling Outage 26 (RFO-26) at the End of Cycle 25 (EOC-25) operation, no SG examinations were required to be performed for Turkey Point Unit 4. Although SG inspections are scheduled to be performed at Unit 4 during Refueling Outage 27 (RFO-27) in the fall of 2012, to date there has only been one SG examination in the 3rd Inspection Period of 60 EFPM, performed during RFO-25 in 2009.

The need for implementation for Unit 4 during this fall outage is as follows: Unit 4 is currently in Cycle 26 operation, which is the last cycle of operation in the 3rd Inspection Period. As Cycle 26 approaches its end, the 3rd Inspection Period will be very nearly approaching 60 EFPM, which would be the end of the 3rd Inspection Period. If for some reason Cycle 26 operation was extended, there is a possibility that the SG examination scheduled for the fall of 2012 could slip into the 4th Inspection Period, which would result in Unit 4 having received only one SG examination in the 3rd Inspection Period.

Although the current plan is for the RFO-27 SG examination to take place as the 2nd inspection in the 3rd Inspection Period, implementation of TSTF-510 would permit extension of the 3rd Inspection Period from 60 EFPM to 72 EFPM, thereby ensuring that the SG examination scheduled for the fall of 2012 would fall in second half of the 3rd Inspection Period, as originally intended.

For Turkey Point Units 3 and 4, previously completed inspection periods and subsequent periods going forward will be adjusted as follows: 2nd period; 96 months; 3rd and subsequent periods; 72 months (once the License Amendment Request for TSTF-510 is approved).

2.3 Optional Changes and Variations

FPL is not proposing any variations or deviations from the TS changes described in the TSTF-510, Revision 2, or the applicable parts of the NRC staff's model safety evaluation dated October 27, 2011. Some minor administrative clarifications are discussed below:

2.3.1 The Turkey Point Units 3 and 4 TS utilize different numbering than the Standard Technical Specifications on which TSTF-510 was based (i.e., NUREG-1431). Specifically, Turkey Point Units 3 and 4 use the Standard Technical Specifications format as cited in NUREG-0452, "Standard Technical Specifications for Westinghouse Pressurized Water Reactors." These differences are administrative and do not affect the applicability of TSTF-510 to the Turkey Point Units 3 and 4 TS.

2.3.2 One of the improvements of TSTF-510 was to revise references to "tube repair criteria" to "tube plugging [or repair] criteria". The WOG Standards TS mark-up of TS Section 5.5.9, "Steam Generator (SG) Program," provided in TSTF-510, Revision 2 contained three versions of paragraph 5.5.9.d.2 (one each for 600MA tubing, 600TT tubing, and 690TT tubing). All three versions contain the following statement:

> "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 repair criteria***, the minimum number of locations inspected with such a capable inspection technique during the remainder of the inspection period may be prorated." (emphasis added).

The Technical Specification Task Force, by letter dated March 28, 2012 (NRC Accession No. ML12088A082), has determined that the paragraph shown above contains an administrative error. The italicized phrase in paragraph 5.5.9.d.2 (above) should state "tube plugging [or repair] criteria," consistent with the other changes made in TSTF-510, Revision 2. FPL has corrected this administrative error in the submitted mark-up for TS 6.8.4.j.d.2. This change meets the original intent of TSTF-510.

2.3.4 Revised (clean) TS pages are not included in this amendment request given the outstanding Turkey Point license amendment request for Permanent Alternate Repair Criteria (H*) dated April 30th, 2012, which will impact some of the same TS pages. Providing only mark-ups of the proposed TS changes satisfies the requirements of 10 CFR 50.90 in that

the mark-ups fully describe the changes desired. This is an administrative deviation from the NRC's model application dated October 27, 2011, with no impact on the NRC's model safety evaluation published in the same Federal Register notice. As a result of this deviation, the contents and numbering of the attachments for this amendment request differ from the attachments specified in the NRC's model application. Mark-ups of five TS pages with proposed TS changes for Turkey Point are provided in Enclosure 2. Enclosure 2 also includes mark-ups of the three TS pages to additionally reflect the outstanding request for Permanent Alternate Repair Criteria (i.e., TS pages 6-18a, 6-18b, and 6-22a). Further, mark-ups of the proposed changes to the TS Bases pages for Turkey Point are provided in Enclosure 3. Enclosure 3 also provides mark-ups of the TS Bases page to additionally reflect the outstanding request for Permanent Alternate Repair Criteria (i.e., TS Bases page 57). The proposed changes to the TS Bases are provided for NRC information only and do not require NRC approval. Changes to the Bases will be incorporated in accordance with the TS Bases Control Program.

3.0 REGULATORY ANALYSIS

3.1 No Significant Hazards Consideration Determination

FPL requests adoption of an approved change to the standard technical specifications (STS) into the plant specific technical specifications (TS) for Turkey Point Units 3 and 4, to revise TS 6.8.4.j, "Steam Generator (SG) Program," TS 6.9.1.8, "Steam Generator Tube Inspection Report," and TS 3/4.4.5 "Steam Generator (SG) Tube Integrity" to address inspection periods and other administrative changes and clarifications.

As required by 10 CFR 50.91(a), an analysis of the issue of no significant hazards consideration is presented below:

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

   Response: No.

   The proposed change revises the Steam Generator (SG) Program to modify the frequency of verification of SG tube integrity and SG tube sample selection. A steam generator tube rupture (SGTR) event is one of the design basis accidents that are analyzed as part of a plant's licensing basis. The proposed SG tube inspection frequency and sample selection criteria will continue to ensure that the SG tubes are inspected such that the probability of a SGTR is not increased. The consequences of a SGTR are bounded by

the conservative assumptions in the design basis accident analysis. The proposed change will not cause the consequences of a SGTR to exceed those assumptions. Therefore, it is concluded that this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

   Response: No.

   The proposed changes to the Steam Generator Program will not introduce any adverse changes to the plant design basis or postulated accidents resulting from potential tube degradation. The proposed change does not affect the design of the SGs or their method of operation. In addition, the proposed change does not impact any other plant system or component.

   Therefore, it is concluded that this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

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

   Response: No.

   The SG tubes in pressurized water reactors are an integral part of the reactor coolant system pressure boundary and, as such, are relied upon to maintain the primary system's pressure and inventory. As part of the reactor coolant system pressure boundary, the SG tubes are unique in that they are also relied upon as a heat transfer surface between the primary and secondary systems such that residual heat can be removed from the primary system. In addition, the SG tubes also isolate the radioactive fission products in the primary coolant from the secondary system. In summary, the safety function of a SG is maintained by ensuring the integrity of its tubes.

   Steam generator tube integrity is a function of the design, environment, and the physical condition of the tube. The proposed change does not affect tube design or operating environment. The proposed change will continue to require monitoring of the physical condition of the SG tubes such that there will not be a reduction in the margin of safety compared to the current requirements.

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

Based on the above, FPL 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.

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. However, 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 effluent 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.

ENCLOSURE 2

PROPOSED TECHNICAL SPECIFICATION CHANGES (MARK-UP)

3/4.4.5 STEAM GENERATOR (SG) TUBE INTEGRITY

LIMITING CONDITION FOR OPERATION

3.4.5 SG tube integrity shall be maintained

AND

plugging

All SG tubes satisfying the tube ~~repair~~ criteria shall be plugged in accordance with the SG Program.

APPLICABILITY: MODES 1, 2, 3 and 4.

plugging

ACTION*:

a. With one or more SG tubes satisfying the tube ~~repair~~ criteria and not plugged in accordance with the Steam Generator Program;

1. Within 7 days verify tube integrity of the affected tube(s) is maintained until the next refueling outage or SG tube inspection, and

2. Plug the affected tube(s) in accordance with the Steam Generator Program prior to entering HOT SHUTDOWN following the next refueling outage or SG tube inspection.

b. With the requirements and associated allowable outage time of Action a above not met or SG tube integrity not maintained, be in HOT STANDBY within 6 hours and in COLD SHUTDOWN within the next 30 hours.

SURVEILLANCE REQUIREMENTS

4.4.5.1 Verify SG tube integrity in accordance with the Steam Generator Program.

plugging

4.4.5.2 Verify that each inspected SG tube that satisfies the tube ~~repair~~ criteria is plugged in accordance with the Steam Generator Program prior to entering HOT SHUTDOWN following a SG tube inspection.

* Separate Action entry is allowed for each SG tube.

PROCEDURES AND PROGRAMS (Continued)

- The combined As-left leakage rates determined on a maximum pathway leakage rate basis for all penetrations shall be verified to be less than 0.60 L_a, prior to increasing primary coolant temperature above 200°F following an outage or shutdown that included Type B and Type C testing only.

- The As-found leakage rates, determined on a minimum pathway leakage rate basis, for all newly tested penetrations when summed with the As-left minimum pathway leakage rate leakage rates for all other penetrations shall be less than 0.6 L_a, at all times when containment integrity is required.

3) Overall air lock leakage acceptance criteria is $\leq$ 0.05 L_a, when pressurized to P_a.

The provisions of Specification 4.0.2 do not apply to the test frequencies contained within the Containment Leakage Rate Testing Program.

i. Technical Specifications (TS) Bases Control Program

This program provides a means for processing changes to the Bases of these Technical Specifications.

a. Changes to the Bases of the TS shall be made under appropriate administrative controls and reviews.

b. Licensees may make changes to Bases without prior NRC approval provided the changes do not require either of the following:

1. Change in the TS incorporated in the license or

2. A change to the updated FSAR or Bases that requires NRC approval pursuant to 10 CFR 50.59.

c. The Bases Control Program shall contain provisions to ensure that the Bases are maintained consistent with the FSAR.

d. Proposed changes that meet the criteria of Specification 6.8.4 i.b. above shall be reviewed and approved by the NRC prior to implementation. Changes to the Bases implemented without prior NRC approval shall be provided to the NRC on a frequency consistent with 10 CFR 50.71(e).

j. Steam Generator (SG) Program

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

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.

All in-service 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.

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 cooldown and 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.

2. Accident induced leakage performance criterion: The primary-to-secondary accident induced leakage rate for any design basis accident, other than 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 0.60 gpm total through all SGs and 0.20 gpm through any one SG at room temperature conditions.

3. The operational leakage performance criterion is specified in LCO 3.4.6.2, "Reactor Coolant System Operational Leakage."

plugging

c. Provisions for SG tube ~~repair~~ 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.

plugging

The following alternate tube ~~repair~~ criteria shall be applied as an alternative to the 40% depth based criteria:

1. For Unit 3 through Refueling Outage 25 and the next operating cycle, and for Unit 4 during Refueling Outage 25 and the subsequent operating cycles until the next scheduled inspection, tubes with service-induced flaws located greater than 17.28 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 17.28 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, and that may satisfy the applicable tube ~~repair~~ criteria. For Unit 3 through Refueling Outage 25 and the next operating cycle, and for Unit 4 during Refueling Outage 25 and the subsequent operating cycles until the next scheduled inspection, the portion of the tube below 17.28 inches from the top of the tubesheet is excluded from inspection. 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. ~~An assessment of degradation~~ shall be performed to determine the type and location of flaws to which the tube may be susceptible and, based on this assessment, to determine which inspection methods need to be employed and at what locations.

plugging

A degradation assessment

1. Inspect 100% of the tubes in each SG during the first refueling outage following SG ~~replacement~~.

installation

~~2. Inspect 100% of the tubes at sequential periods of 120, 90, and, thereafter, 60 effective full power months. The first sequential period shall be considered to begin after the first inservice inspection of the SGs. In addition, inspect 50% of the tubes by the refueling outage nearest the midpoint of the period and the remaining 50% by the refueling outages nearest the end of the period. No SG shall operate for more than 48 effective full power months or two refueling outages (whichever is less) without being inspected.~~

Replace with INSERT 1

3. If crack indications are found in any portion of a SG tube not excluded above, then the next inspection for each SG for the degradation mechanism that caused the crack indication shall not exceed 24 effective full power months or one refueling outage (whichever ~~is less~~). 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.

affected and potentially affected

results in more frequent inspections

e. Provisions for monitoring operational primary-secondary leakage.

k. 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 Emergency Ventilation System (CREVS), 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:

a. The definition of the CRE and the CRE boundary.

b. Requirements for maintaining the CRE boundary in its design condition including configuration control and preventive maintenance.

INSERT 1

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 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) 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.

STEAM GENERATOR TUBE INSPECTION REPORT

6.9.1.8 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 6.8.4.j, Steam Generator (SG) Program. The report shall include:

a. The scope of inspections performed on each SG,

Degradation

b. ~~Active 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 ~~active~~ degradation mechanism,

f. ~~Total number and percentage of tubes plugged to date.~~

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

~~h. The effective plugging percentage for all plugging in each SG.~~

h, i, and j

Note: Report items ~~i, j, and k~~ are applicable following completion of inspections performed through Refueling Outage 25 at Unit 3 (and any inspection performed in the next operating cycle) and Refueling Outage 25 at Unit 4 (and any inspections performed in the subsequent operating cycles until the next scheduled inspection).

h.

~~i.~~ 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,

i.

~~j.~~ The calculated accident induced leakage rate from the portion of the tubes below 17.28 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 1.82 times the maximum operational primary to secondary leakage rate, the report should describe how it was determined, and

j.

~~k.~~ The results of monitoring for tube axial displacement (slippage). If slippage is discovered, the implications of the discovery and corrective action shall be provided.

SPECIAL REPORTS

6.9.2 Special reports shall be submitted to the Regional Administrator of the Regional Office of the NRC within the time period specified for each report as stated in the Specifications within Sections 3.0, 4.0, or 5.0.

The number and percentage of tubes plugged to date, and the effective plugging percentage in each steam generator,

This TS Page (6-18a) reflects proposed changes for TSTF-510 Implementation as well as the changes proposed in the H* Permanent Alternate Repair Criteria LAR dated April 30th, 2012.

ADMINISTRATIVE CONTROLS

PROCEDURES AND PROGRAMS (Continued)

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.

All in-service 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.

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 cooldown and 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.

2. Accident induced leakage performance criterion: The primary-to-secondary accident induced leakage rate for any design basis accident, other than 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 0.60 gpm total through all SGs and 0.20 gpm through any one SG at room temperature conditions.

plugging

3. The operational leakage performance criterion is specified in LCO 3.4.6.2, "Reactor Coolant System Operational Leakage."

c. Provisions for SG tube ~~repair~~ 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.

plugging

The following alternate tube ~~repair~~ criteria shall be applied as an alternative to the 40% depth based criteria:

1. ~~For Unit 3 through Refueling Outage 25 and the next operating cycle, and for Unit 4 during Refueling Outage 25 and the subsequent operating cycles until the next scheduled inspection, t~~ **Tubes** with service-induced flaws located greater than ~~17.28~~ **18.11** 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 ~~17.28~~ **18.11** inches below the top of the tubesheet shall be plugged upon detection.

This TS Page (6-18b) reflects proposed changes for TSTF-510 Implementation as well as the changes proposed in the H* Permanent Alternate Repair Criteria LAR dated April 30th, 2012.

ADMINISTRATIVE CONTROLS

PROCEDURES AND PROGRAMS (Continued)

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 ~~repair~~ criteria. ~~For Unit 3 through Refueling Outage 25 and the next operating cycle, and for Unit 4 during Refueling Outage 25 and the subsequent operating cycles until the next scheduled inspection, t~~ The portion of the tube below **18.11** ~~17.28~~ inches from the top of the tubesheet is excluded from inspection. 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. ~~An assessment of degradation~~ shall be performed to determine the type and location of flaws to which the tube may be susceptible and, based on this assessment, to determine which inspection methods need to be employed and at what locations.

plugging

A degradation assessment

1. Inspect 100% of the tubes in each SG during the first refueling outage following SG ~~replacement~~.

installation

2. ~~Inspect 100% of the tubes at sequential periods of 120, 90, and, thereafter, 60 effective full power months. The first sequential period shall be considered to begin after the first inservice inspection of the SGs. In addition, inspect 50% of the tubes by the refueling outage nearest the midpoint of the period and the remaining 50% by the refueling outages nearest the end of the period. No SG shall operate for more than 48 effective full power months or two refueling outages (whichever is less) without being inspected.~~

Replace with INSERT 1

3. If crack indications are found in any portion of a SG tube not excluded above, then the next inspection for each SG for the degradation mechanism that caused the crack indication shall not exceed 24 effective full power months or one refueling outage (whichever ~~is less~~). 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.

affected and potentially affected

results in more frequent inspections

e. Provisions for monitoring operational primary-secondary leakage.

k. 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 Emergency Ventilation System (CREVS), 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:

a. The definition of the CRE and the CRE boundary.

b. Requirements for maintaining the CRE boundary in its design condition including configuration control and preventive maintenance.

This TS Page (6-22a) reflects proposed changes for TSTF-510 Implementation as well as the changes proposed in the H* Permanent Alternate Repair Criteria LAR dated April 30th, 2012.

ADMINISTRATIVE CONTROLS

STEAM GENERATOR TUBE INSPECTION REPORT

6.9.1.8 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 6.8.4.j, Steam Generator (SG) Program. The report shall include:

a. The scope of inspections performed on each SG,

Degradation

b. ~~Active 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 ~~active~~ degradation mechanism,

f. ~~Total number and percentage of tubes plugged to date.~~

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

~~h. The effective plugging percentage for all plugging in each SG.~~

~~Note: Report items i, j, and k are applicable following completion of inspections performed through Refueling Outage 25 at Unit 3 (and any inspection performed in the next operating cycle) and Refueling Outage 25 at Unit 4 (and any inspections performed in the subsequent operating cycles until the next scheduled inspection).~~

h. → ~~i.~~ 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,

i. → ~~j.~~ The calculated accident induced leakage rate from the portion of the tubes below **18.11** ~~17.28~~ 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 1.82 times the maximum operational primary to secondary leakage rate, the report should describe how it was determined, and

j. → ~~k.~~ The results of monitoring for tube axial displacement (slippage). If slippage is discovered, the implications of the discovery and corrective action shall be provided.

SPECIAL REPORTS

6.9.2 Special reports shall be submitted to the Regional Administrator of the Regional Office of the NRC within the time period specified for each report as stated in the Specifications within Sections 3.0, 4.0, or 5.0.

The number and percentage of tubes plugged to date, and the effective plugging percentage in each steam generator,

ENCLOSURE 3

PROPOSED TECHNICAL SPECIFICATION BASES CHANGES (MARK-UP)

ATTACHMENT 1
(Page 46 of 114)

TECHNICAL SPECIFICATION BASES

3/4.4.5 (Cont'd)

Limiting Condition for Operation (LCO)

The LCO requires that SG tube integrity be maintained. The LCO also requires that all SG tubes that satisfy the ~~repair~~ criteria be plugged in accordance with the Steam Generator Program.

plugging

plugging

During a SG inspection, any inspected tube that satisfies the Steam Generator Program ~~repair~~ criteria is removed from service by plugging. If a tube was determined to satisfy the ~~repair~~ criteria but was not plugged, the tube may still have tube integrity.

plugging

In the context of this Specification, a SG tube is defined as the entire length of the tube, including the tube wall from 17.28 inches below the top of the tubesheet on the hot leg side to 17.28 inches below the top of the tubesheet on the cold leg side. The tube-to-tubesheet weld is not considered part of the tube.

A SG tube has integrity when it satisfies the SG performance criteria. The SG performance criteria are defined in Specification 6.8.4.j and describe acceptable SG tube performance. The Steam Generator Program also provides the evaluation process for determining conformance with the SG performance criteria.

There are three SG performance criteria: structural integrity, accident induced leakage, and operational leakage. Failure to meet any one of these criteria is considered failure to meet the LCO.

The structural integrity performance criterion provides a margin of safety against tube burst or collapse under normal and accident conditions, and ensures structural integrity of the SG tubes under all anticipated transients included in the design specification. Tube burst is defined as, the gross structural failure of the tube wall. The condition typically corresponds to an unstable opening displacement (e.g., opening area increased in response to constant pressure) accompanied by ductile (plastic) tearing of the tube material at the ends of the degradation. Tube collapse is defined as, for the load displacement curve for a given structure, collapse occurs at the top of the load verses displacement curve where the slope of the curve becomes zero. The structural integrity performance criterion provides guidance on assessing loads that have a significant effect on burst or collapse. In that context, the term significant is defined as an accident loading condition other than differential pressure is considered significant when the addition of such loads in the assessment of the structural integrity performance criterion could cause a lower structural limit or limiting burst/collapse to be established. For tube integrity evaluations, except for circumferential degradation, axial thermal loads are classified as secondary loads. For circumferential degradation, the classification of axial thermal loads as primary or secondary loads will be evaluated on a case-by-case basis. The division between primary and secondary classifications will be based on detailed analysis and/or testing.

ATTACHMENT 1
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TECHNICAL SPECIFICATION BASES

3/4.4.5 (Cont'd)

plugging

a.1 &
a.2 ACTIONS a.1 and a.2 apply if it is discovered that one or more SG tubes examined in an inservice inspection satisfy the tube ~~repair~~ criteria but were not plugged in accordance with the Steam Generator Program as required by Surveillance Requirement (SR) 4.4.5.2. An evaluation of SG tube integrity of the affected tubes must be made. SG tube integrity is based on meeting the SG performance criteria described in the Steam Generator Program. The SG ~~repair~~ criteria limits on SG tube degradation that allow for flaw growth between inspections while still providing assurance that the SG performance criteria will continue to be met. In order to determine if a SG tube that should have been plugged has tube integrity, an evaluation must be completed that demonstrates that the SG performance criteria will continue to be met until the next refueling outage or SG tube inspection. The tube integrity determination is based on the estimated condition of the tube at the time the situation is discovered and the estimated growth of the degradation prior to the next SG tube inspection. If it is determined that tube integrity is not being maintained, ACTION b applies.

plugging

An allowable outage time of seven days is sufficient to complete the evaluation while minimizing the risk of plant operation with a SG tube that may not have tube integrity.

If the evaluation determines that the affected tubes have tube integrity, ACTION a.2 allows plant operation to continue until the next refueling outage or SG inspection provided the inspection interval continues to be supported by an operational assessment that reflects the affected tubes. However, the affected tubes must be plugged prior to entering MODE 4 following the next refueling outage or SG inspection. This allowable outage time is acceptable since operation until the next inspection is supported by the operational assessment.

b. If the requirements and associated allowable outage time of ACTION a are not met or if SG tube integrity is not being maintained, the reactor must be brought to HOT STANDBY within 6 hours and COLD SHUTDOWN within the following 30 hours. The allowable outage times are reasonable, based on operating experience, to reach the desired plant conditions from full power conditions in an orderly manner and without challenging plant systems.

Surveillance Requirements

SR 4.4.5.1

During shutdown periods the SGs are inspected as required by this SR and the Steam Generator Program. NEI 97-06, Steam Generator Guidelines (Ref. 1), and its referenced EPRI Guidelines, establish the content of the Steam Generator Program. Use of the Steam Generator Program ensures that the inspection is appropriate and consistent with accepted industry practices.

ATTACHMENT 1
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TECHNICAL SPECIFICATION BASES

3/4.4.5 (Cont'd)

During SG inspections a condition monitoring assessment of the SG tubes is performed. The condition monitoring assessment determines the as found condition of the SG tubes. The purpose of the condition monitoring assessment is to ensure that the SG performance criteria have been met for the previous operating period.

plugging

The Steam Generator Program determines the scope of the inspection and the methods used to determine whether the tubes contain flaws satisfying the tube ~~repair~~ criteria. Inspection scope (i.e., which tubes or areas of tubing within the SG are to be inspected) is a function of existing and potential degradation locations. The Steam Generator Program also specifies the inspection methods to be used to find potential degradation. Inspection methods are a function of degradation morphology, non-destructive examination (NDE) technique capabilities, and inspection locations.

The Steam Generator Program defines the frequency of SR 4.4.5.1. The frequency is determined by the operational assessment and other limits in the SG examination guidelines (Ref. 6). The Steam Generator Program uses information on existing degradations and growth rates to determine an inspection frequency that provides reasonable assurance that the tubing will meet the SG performance criteria at the next scheduled inspection. In addition, Specification 6.8.4.j contains prescriptive requirements concerning inspection intervals to provide added assurance that the SG performance criteria will be met between scheduled inspections.

plugging

SR 4.4.5.2

plugging

plugging

During a SG inspection any inspected tube that satisfies the Steam Generator Program ~~repair~~ criteria is removed from service by plugging. The tube ~~repair~~ criteria delineated in Specification 6.8.4.j are intended to ensure that tubes accepted for continued service satisfy the SG performance criteria with allowance for error in the flaw size measurement for future flaw growth. In addition, the tube ~~repair~~ criteria, in conjunction with other elements of the Steam Generator Program, ensure that the SG performance criteria will continue to be met until the next inspection of the subject tubes. Reference 1 provides guidance for performing operational assessments to verify that the tubes remaining in service will continue to meet the SG performance criteria.

The frequency of prior to entering HOT SHUTDOWN following a SG inspection ensures that the Surveillance has been completed and all tubes meeting the ~~repair~~ criteria are plugged prior to subjecting the SG tubes to significant primary-to-secondary pressure differential.

plugging

If crack indications are found in any SG tube, the maximum inspection interval for all affected and potentially affected SGs is restricted by Specification 6.8.4.j until subsequent inspections support extending the inspection interval.

ATTACHMENT 1
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TECHNICAL SPECIFICATION BASES

This page reflects proposed changes for TSTF-510 Implementation as well as the changes proposed in the H* Permanent Alternate Repair Criteria LAR dated April 30th, 2012.

3/4.4.5 (Cont'd)

Limiting Condition for Operation (LCO)

The LCO requires that SG tube integrity be maintained. The LCO also requires that all SG tubes that satisfy the ~~repair~~ plugging criteria be plugged in accordance with the Steam Generator Program.

plugging

plugging

During a SG inspection, any inspected tube that satisfies the Steam Generator Program ~~repair~~ criteria is removed from service by plugging. If a tube was determined to satisfy the ~~repair~~ criteria but was not plugged, the tube may still have tube integrity.

plugging

In the context of this Specification, a SG tube is defined as the entire length of the tube, including the tube wall from ~~17.28~~ inches below the top of the tubesheet on the hot leg side to ~~17.28~~ inches below the top of the tubesheet on the cold leg side. The tube-to-tubesheet weld is not considered part of the tube.

18.11

18.11

A SG tube has integrity when it satisfies the SG performance criteria. The SG performance criteria are defined in Specification 6.8.4.j and describe acceptable SG tube performance. The Steam Generator Program also provides the evaluation process for determining conformance with the SG performance criteria.

There are three SG performance criteria: structural integrity, accident induced leakage, and operational leakage. Failure to meet any one of these criteria is considered failure to meet the LCO.

The structural integrity performance criterion provides a margin of safety against tube burst or collapse under normal and accident conditions, and ensures structural integrity of the SG tubes under all anticipated transients included in the design specification. Tube burst is defined as, the gross structural failure of the tube wall. The condition typically corresponds to an unstable opening displacement (e.g., opening area increased in response to constant pressure) accompanied by ductile (plastic) tearing of the tube material at the ends of the degradation. Tube collapse is defined as, for the load displacement curve for a given structure, collapse occurs at the top of the load verses displacement curve where the slope of the curve becomes zero. The structural integrity performance criterion provides guidance on assessing loads that have a significant effect on burst or collapse. In that context, the term significant is defined as an accident loading condition other than differential pressure is considered significant when the addition of such loads in the assessment of the structural integrity performance criterion could cause a lower structural limit or limiting burst/collapse to be established. For tube integrity evaluations, except for circumferential degradation, axial thermal loads are classified as secondary loads. For circumferential degradation, the classification of axial thermal loads as primary or secondary loads will be evaluated on a case-by-case basis. The division between primary and secondary classifications will be based on detailed analysis and/or testing.