Entergy

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W3F1-2006-0030

June 2, 2006

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

SUBJECT: Supplement 2 to Amendment Request NPF-38-260
Tubesheet Inspection Depth for Steam Generator Tube Inspections
Waterford Steam Electric Station, Unit 3
Docket No. 50-382
License No. NPF-38

REFERENCES:
1. Entergy letter dated March 15, 2005, *License Amendment Request NPF-38-260 Proposed Technical Specification Change Regarding Tubesheet Inspection Depth for Steam Generator Tube Inspections* (W3F1-2005-0009)
2. Entergy letter dated July 21, 2005, *License Amendment Request NPF-38-262 Proposed Technical Specification Change to Waterford-3 Steam Generator Tube Inservice Inspection Program Using Consolidated Line Item Improvement Process* (W3F1-2005-0040)
3. Entergy letter dated February 15, 2006, *Supplement to Amendment Request NPF-38-262 Steam Generator Tube Inservice Inspection Program* (W3F1-2006-0007)
4. Entergy letter dated March 22, 2006, *Supplement to Amendment Request NPF-38-260 Tubesheet Inspection Depth for Steam Generator Tube Inspections* (W3F1-2006-0008)
5. Entergy letter dated May 3, 2006, *Supplement 2 to Amendment Request NPF-38-262 Steam Generator Tube Inservice Inspection Program* (W3F1-2006-0016)
6. Entergy letter dated June 2, 2006, *Revision to Amendment Request NPF-38-262 Steam Generator Tube Inservice Inspection Program* (W3F1-2006-0029)

Dear Sir or Madam:

By letter dated March 15, 2005 (Reference 1), Entergy Operations, Inc. (Entergy) proposed a change to Waterford Steam Electric Station, Unit 3 (Waterford-3) Technical Specifications (TSs) Section 4.4.4.4 to modify the steam generator tube inspection Acceptance Criteria for the "Plugging or Repair Limit" and the "Tube Inspection," as contained in the Waterford-3

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Surveillance Requirements 4.4.4.4.a.7 and 4.4.4.4.a.9, respectively. The purpose of these changes was to define the depth of the required tube inspections and to clarify the plugging criteria within the tubesheet region.

On November 17, 2005, Entergy received an NRC Staff Request for Additional Information (RAI) on the proposed amendment request. The RAI response was provided on March 22, 2006 in Reference 4.

On April 17, 2006, Entergy received an NRC Staff RAI dated March 31, 2006 on the proposed amendment request for the TSTF-449 modeled TS change (Reference 2 supplemented by Reference 3) currently under NRC review. On April 25, 2006, Entergy discussed and received agreement from members of your staff to have the proposed TSTF-449 modeled TS change (Reference 2 supplemented by Reference 3) formatted without the Steam Generator tubesheet inspection depth proposed TS change (C*) to expedite the review process. On May 3, 2006, Entergy provided the revised TSTF-449 modeled TS change pages, the response to the RAI (Reference 5), and removed references to the tubesheet inspection depth proposed change.

On May 9, 2006, Entergy received a second NRC Staff RAI dated May 3, 2006 to support the review of the proposed C* TS change. Entergy's response to this RAI is contained in Attachment 1.

Additionally, Entergy is revising TS 6.5.9 currently proposed in References 5 and 6 to modify the definition of a steam generator tube and the requirements for repair due to the new C* depth allowance. These changes to TS 6.5.9, originally submitted in Reference 1 and supplemented by Reference 4, are included in Attachment 2. These proposed TS changes are identified by the revision bar in the right hand margin.

The conclusions of the original no significant hazards consideration included in Reference 1 are not affected by any information contained in this supplemental letter. There are no new commitments contained in this letter.

If you have any questions or require additional information, please contact Steve Bennett or Ron Williams at (479) 858-4626 and (504) 739-6255, respectively.

I declare under penalty of perjury that the foregoing is true and correct. Executed on June 2, 2006.

Sincerely,

R.J. Murillo
Acting Nuclear Safety Assurance
Director

RJM/RLW

Attachments:
1. Response to Request for Additional Information
2. Revised Markup of TS Changes.

cc: (w/Attachments)

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(w/o Attachment 2)

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Attachment 1
To
W3F1-2006-0030

Response to Request for Additional Information

Response to Request for Additional Information

Question 1:

In your response to RAI #6, you noted that, after approval of a pending amendment, your reporting requirements will be governed by the "Steam Generator Tube Inspection Report" in Technical Specification Task Force (TSTF) Traveler TSTF-449, Revision 4. These reporting requirements include much of the information the staff is interested in receiving as discussed in RAI #6. Please confirm that, as part of the requirement to submit the results of your condition monitoring assessment, you intend to provide your assessment of accident-induced leakage from all tubesheet indications.

Response 1:

Entergy confirms that TS 6.9.1.5 g of proposed TSTF-449 modeled TS change (Reference 2 and supplemented by References 3, 5, and 6) presently under NRC review states the steam generator tube inspection report shall include the results of condition monitoring. As part of this TS requirement, Waterford-3 proposes to revise TS 6.9.1.5 g to read as follows:

> g. *The results of condition monitoring, including the results of tube pulls, in-situ testing, and assessment of accident-induced leakage from all tubesheet indications, and*

The change is reflected in the proposed TS page revisions contained in Attachment 2 of this letter.

Question 2:

In your response to RAI #9 regarding the use of leak-tight sleeves, you stated that sleeves would be periodically inspected over their full length plus 5 inches beyond the sleeve-to-tube rolled joint using an appropriate examination methodology. The response also refers to your pending application to adopt TSTF-449, Revision 4 "Steam Generator Tube Integrity Program." Currently, no sleeves are installed in the Waterford-3 steam generators; however, your current TSs and TS 6.5.9.f proposed in your TSTF-449 application allow the use of sleeving (CENS Report CEN-605-P, "Steam Generator Tube Repair Using Leak Tight Sleeves").

In a letter dated March 31, 2006 (ML060860221), as part of the TSTF-449 application review for Waterford-3, the staff asked a question regarding the ability to inspect a certain portion of these sleeves (RAI #1). As currently proposed, your TSs would no longer require an inspection of a portion of the sleeves if it was installed approximately 10.6" below the top of the tubesheet. Since no technical basis was provided for not inspecting the lower part of the sleeves, it is not clear why your TSs do not include a requirement to inspect this part of the sleeves. Please discuss your plans for modifying your TSs to reflect your plans for inspecting sleeves (including the lower sleeve joint).

In addition, discuss your plans to incorporate into your TSs the appropriate repair criteria for flaws located in the sleeve/tube assembly. As discussed in TSTF-449, steam generator tube integrity satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).

Response 2:

In Entergy's response to NRC Staff RAI letter dated March 31, 2006 (ML060860221) regarding the TSTF-449 modeled proposed TS change (Reference 5), it was stated in RAI question #1 response that currently there are no sleeves installed in the Waterford-3 Steam Generators (SG) and no future plans to install any using this approved tube repair methodology. Entergy removed this repair method as part of the TSTF-449 modeled proposed TS change in Reference 5.

Also in response to RAI questions #4 and #8 from the March 31, 2006 NRC letter, Entergy withdrew the commitment to inspect the installed sleeves (including lower sleeve joint) and eliminated the need to incorporate appropriate repair criteria for flaws located in the sleeve/tube assembly into the TS.

Therefore, based on the above discussion, the inspection of these sleeves no longer applies with the removal of the sleeving tube repair method from the TS.

Attachment 2
To
W3F1-2006-0030

Revised Markup of TS Changes

ADMINISTRATIVE CONTROLS

STEAM GENERATOR (SG) PROGRAM (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.

1. Structural integrity performance criterion: 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 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 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. Primary to secondary leakage is not to exceed 540 gpd through any one SG.

3. The operational leakage performance criterion is specified in LCO 3.4.5.2, "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 is not applicable in the portion of the tube that is greater than 10.6 inches below the bottom of the hot leg expansion transition or top of the hot leg tubesheet, whichever is lower, to the tube end. Degradation detected between 10.6 inches below the bottom of the expansion transition or top of the tubesheet, whichever is lower, and the bottom of the expansion transition or top of the tubesheet, whichever is higher, shall be plugged on detection.

ADMINISTRATIVE CONTROLS

STEAM GENERATOR (SG) PROGRAM (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, 10.6 inches below the bottom of the hot leg expansion transition or top of the hot leg tubesheet, whichever is lower, completely around the U-bend to the tube-to-tubesheet weld at the tube outlet and that may satisfy the applicable tube repair 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. An assessment of degradation 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 employs and at what locations.

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

2. Inspection 100% of the tubes at sequential periods of 60 effective full power months. The first sequential period shall be considered to begin after the first inservice inspection of the SGs. No SG shall operate for more than 24 effective full power months or one refueling outage (whichever is less) without being inspected.

3. If crack indications are found in any SG tube, 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.

e. Provisions for monitoring operational primary to secondary leakage.

ANNUAL REPORTS (Continued)

(1) Reactor power history starting 48 hours prior to the first sample in which the limit was exceeded;

(2) Results of the last isotopic analysis for radioiodine performed prior to exceeding the limit, results of analysis while limit was exceeded and results of one analysis after the radioiodine activity was reduced to less than limit. Each result should include date and time of sampling and the radioiodine concentrations;

(3) Clean-up system flow history starting 48 hours prior to the first sample in which the limit was exceeded;

(4) Graph of the I-131 concentration and one other radioiodine isotope concentration in microcuries per gram as a function of time for the duration of the specific activity above steady-state level; and

(5) The time duration when the specific activity of the primary coolant exceeded the radioiodine limit.

6.9.1.5 STEAM GENERATOR TUBE INSPECTION REPORT

A report shall be submitted within 180 days after the initial entry into HOT SHUTDOWN following completion of an inspection performed in accordance with the Specification 6.5.9, Steam Generator (SG) Program. The report shall include:

a. The scope of inspections performed on each SG,

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, in-situ testing, and assessment of accident-induced leakage from all tubesheet indications, and

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