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W3F1-2009-0020

June 1, 2009

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

SUBJECT: Response to NRC Request for Additional Information Re: The 2007 and 2008 (Refueling Outage 15) Steam Generator Tube Inspections (TAC No. ME0164)  
Waterford Steam Electric Station, Unit 3  
Docket No. 50-382  
License No. NPF-38

REFERENCES: 1 Entergy letter dated November 25, 2008 "180-Day Steam Generator Tube Inspection Report for the 15<sup>th</sup> Refueling Outage" (W3F1-2008-0074)  
2 NRC letter dated April 17, 2009 "Waterford Steam Electric Station, Unit 3 – Request for Additional Information Re: The 2007 and 2008 (Refueling Outage 15) Steam Generator Tube Inspections (TAC No. ME0164)" (ILN09-0044)

Dear Sir or Madam:

On April 17, 2009, Entergy received communication (Reference 2) from members of the NRC Staff requesting additional information associated with Entergy's submittal of Waterford 3's "180-Day Steam Generator Tube Inspection Report for the 15<sup>th</sup> Refueling Outage" (Reference 1).

Attachment 1 contains Entergy's response to the NRC questions. Attachment 2 contains a legible copy of Table E-1.

There are no new commitments contained in this letter.

AOO  
NFR

If you have any questions or require additional information, please contact me at 504-739-6715.

Sincerely,

A handwritten signature in black ink, appearing to read "Randy J. Munro". The signature is fluid and cursive, with a long horizontal stroke at the end.

RJM/RJP

Attachments:

1. Entergy's response to the NRC questions
2. Legible copy of Table E-1

cc: Mr. Elmo E. Collins, Jr.  
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**Attachment 1  
To  
W3F1-2009-0020**

**Response to NRC Request for Additional Information  
Re: The 2007 and 2008 (Refueling Outage 15)  
Steam Generator Tube Inspections**

## **Response to Request for Additional Information**

### **Question 1:**

The information in Table E-1 is not legible; please provide another copy of Table E-1.

### **Response 1:**

A legible copy of Table E-1 is provided as Attachment 2.

### **Question 2:**

In Table E-1, SG-31 appears to have 8474 tubes in service prior to RFO15 and 1176 tubes that were previously removed from service. These numbers do not agree with the total number of SG tubes (i.e., 9350 tubes). Please clarify the actual number of tubes in service and removed from service.

### **Response 2:**

A corrected copy of Table E-1 is provided as Attachment 2.

The original submittal includes the correct number of tubes in-service in paragraph 2.0.

### **Question 3:**

In Table F-1, the total number of plugs listed for SG-32 is 1217; however, the numbers associated with the separate outages from the column "SG32 Plugs" sum to 1218, not 1217. The asterisk associated with the number 460 (for 2006) was not shown in your outage summary report for RFO 14 (fall 2006). Please verify the number of tubes plugged in SG-32. Also, please discuss the tube that is plugged in just one end (i.e., the tube referenced by the asterisk).

### **Response 3:**

During RF14 tube SG32 R1 C115 was selected to be plugged preventatively as part of the response to failed batwings. The tube was plugged on one end only. The inability to plug this tube on one end was entered into the W3 Corrective Action program in Condition Report CR-WF3-2006-04601. Entergy determined that it was acceptable to operate with the tube plugged on one end prior to start-up from RF14.

The number of tubes "in-service" has duplicity because one is treated as "plugged" with respect to plugging limits [reduces RCS flow] and is "open" for tube integrity [RCS pressure boundary].

During RF15 the tube was re-examined and found to be without flaws. The plug was planned to be removed to allow full examination. The plug was not removed due to technical difficulties. This condition was also entered into the W3 Corrective Action program in

Condition Report CR-WF3-2008-02203. The open end of the tube was plugged during RF15, and the tube was removed from service. The number of tubes plugged in SG32 is 1217.

**Question 4:**

In Section G of your November 25, 2008, letter, you discuss condition monitoring, but the discussion on structural integrity limits only references the three times the normal operating differential pressure criterion. Please confirm that this criterion is the most limiting of the structural integrity performance criteria. If this is not the most limiting criterion, please discuss whether the tubes satisfied all the structural integrity performance criteria.

**Response 4:**

Structural Integrity Performance Criteria evaluation concludes 3dP is most limiting.

**Question 5:**

Please confirm that no crack-like indications were found in the U-bend region of Rows 1 and 2 and that no crack-like indications were found during your dent and ding examinations. If indications were identified, please discuss the nature of the indications and the size of the dent/ding (if applicable) and the basis for not expanding the inspection.

**Response 5:**

The results of the examination of the Row 1 and 2 tubes identified no U-bend cracks and no dent/ding cracks.

**Question 6:**

Other than the free span indication in SG 31 in row 109 column 99, please discuss (and identify) whether any other free span indications (other than those near the top of the tubesheet) were detected.

**Response 6:**

A free span axial Outside Diameter Stress Corrosion Cracking (ODSCC) was also reported on R49 C59 at 04H +14.9" in SG32. Plus Point amplitude was 0.37V; length from profiling was 0.35 inch.

**Question 7:**

During a conference call in May 2008, preliminary results indicated that one tube had a 42 percent through wall (TW) wear indication. Please identify this tube and confirm it was plugged. Also, please confirm that all other wear indications greater than or equal to 40 percent TW were plugged.

**Response 7:**

All tubes with greater than or equal to 40 percent TW were plugged. The tube with the 42% TW is listed.

SG31 had no indications greater to or equal to 40 percent TW.

SG32: R74 C48 at BW5, 42%TW

SG32: R110 C32 at BW9, 47%TW, both plugged

**Question 8:**

Please discuss whether any crack-like indications were found at or near locations with wear indications (e.g., at the same eggcrate location).

**Response 8:**

There were no crack wear indications found at the same location.

In SG31, tube R26 C58 at 03H, both axial ODSCC and wear reported at same structure, wear and ODSCC are not coincident (Different bars of eggcrate structure).

**Attachment 2  
To  
W3F1-2009-0020**

**Table E-1**

Table E-1  
Waterford 3  
RFO 15  
Repair Summary  
May 2008

<b>Tube Status</b>	<b>SG - 31</b>	<b>SG - 32</b>
Tubes in service prior to RF	8174	8184
Total Number of tubes previously removed from service	1176	1166
<b>Repair Candidates from RFO15:</b>		
Hot Leg Top of Tubesheet Axial Indications (Above TTS)	0	0
Hot Leg Top of Tubesheet Circ. Indications (Above TTS)	0	1
Hot Leg Tube Sheet Axial Indications (Within Tubesheet)	23	9
Hot Leg Tube Sheet Circ. Indications (Within Tubesheet)	32	8
Tubesheet with Axial and Circumferential Indications	2	0
Tubesheet and Support Plate with Axial Indications	1	0
Tubesheet Circumferential and Support Plate Axial Indications	0	0
Egg-Crate With Axial Indications	73	15
Batwings With Axial Indication	6	4
Batwings With Axial Indication and Support Plate Axial Indication	0	0
Batwings With Volumetric Indication	0	0
Hot Leg Volumetric Indications	1	0
Cold Leg Volumetric Indications	0	0
Row 1 - Row 2 U-Bend Indications	0	0
Bobbin Percents => 40%	0	2
Customer Decision Preventative (Box In)	0	6
Customer Decision Preventative (Row 1/Row 2)	5	6
Hot Leg Total Tubes Depugged and Replugged - Post RFO15	0	0
Cold Leg Total Tubes Depugged and Replugged - Post RFO15	3	21
<b>Total Candidate Tubes to be Repaired</b>	<b>146</b>	<b>72</b>
Hot Leg 54" Stabilizers Installed During RFO15*	11	7
Hot Leg 268" Stabilizers Installed During RFO15*	0	4
Hot Leg 384" Stabilizers Installed During RFO15*	0	0
Cold Leg 54" Stabilizers Installed During RFO15*	0	0
Cold Leg 268" Stabilizers Installed During RFO15*	0	5
Cold Leg 384" Stabilizers Installed During RFO15*	0	12
Total Stabilizers Installed - RFO15	11	28
Total Tubes Plugged - Post RFO15	1319	1217
Note: Above Tubesheet is all calls => .01" above. Note: Within Tubesheet is all calls =<.00". Note: * Denotes Includes Depugged tubes		