



Entergy Operations, Inc.
17265 River Road
Killona, LA 70057-3093
Tel 504 739 6673
Fax 504 739 6698
mmason@entergy.com

Michael E. Mason
Licensing Manager, Acting
Waterford 3

W3F1-2012-0052

June 26, 2012

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

Subject: Response to a Request for Additional Information Regarding the
2011 Steam Generators Tube Inspections (TAC No. ME7601)
Waterford Steam Electric Station, Unit 3
Docket No. 50-382
License No. NPF-38

Dear Sir or Madam:

By letter dated November 3, 2011 (ADAMS Accession Number ML113080090), Entergy Operations, Inc. submitted information pertaining to the steam generator (SG) tube inspections performed during refueling outage 17 (spring 2011) at the Waterford Steam Electric Station Unit 3 (Waterford 3).

In Email request from N. Kalyanam to W. Steelman (ADAMS Accession Number ML121180159), Waterford 3 received a request for additional information regarding the 2011 Steam Generators Tube Inspections (TAC No. ME7601).

Please find attached, the additional information requested. There are no commitments associated with this submittal. Should you have any questions or comments concerning this submittal, please contact Michael E. Mason at (504) 739-6673.

Sincerely,



For M. E. Mason

MEM/RJP

Attachments:

1. Response to NRC Request for Additional Information Re: Steam Generator Tube Inspection Report for the 2011 Refueling Outage
2. Revised Table E-1 for Steam Generator Tube Inspection Report for the 2011 Refueling Outage

ADDL
NRR

cc: Mr. Elmo E. Collins, Jr. RidsRgn4MailCenter@nrc.gov
Regional Administrator
U. S. Nuclear Regulatory Commission
Region IV
1600 E. Lamar Blvd.
Arlington, TX 76011-4511

NRC Senior Resident Inspector
Waterford Steam Electric Station Unit 3
P.O. Box 822
Killona, LA 70066-0751
Marlone.Davis@nrc.gov
Dean.Overland@nrc.gov

U. S. Nuclear Regulatory Commission
Attn: Mr. N. Kalyanam
Mail Stop O-07D1
Washington, DC 20555-0001
Kaly.Kalyanam@nrc.gov

Louisiana Department of Environmental
Quality
Office of Environmental Compliance
Surveillance Division
P. O. Box 4312
Baton Rouge, LA 70821-4312
Ji.Wiley@LA.gov

American Nuclear Insurers
Attn: Library
Town Center Suite 300S
29th S. Main Street
West Hartford, CT 06107-2445

Attachment 1 to

W3F1-2012-0052

**Response to NRC Request for Additional Information
Re: Steam Generator Tube Inspection Report for the 2011 Refueling Outage**

Response to Request for Additional Information

Question1:

Please clarify the following, since the staff is unable to reconcile information in Section B and Table E-1 (Attachment 1), and Tables E-2 and E-3 (Attachment 2) of your November 3, 2011, letter.

- a) Please identify the tubes with axially oriented outside diameter stress corrosion cracks in the freespan region in SG 31 not associated with dings (refer to Section B).
- b) Please identify the tubes with axially oriented outside diameter stress corrosion cracks in the freespan region in SGs 31 and 32 associated with dings (refer to Section B).
- c) Please identify the three tubes with U-bend indications (refer to Table E-1).
- d) Please clarify the number of tubes with axial indications in the freespan region of the hot leg since three tubes are reported in Table E-1, but there are five listed in Tables E-2 and E-3.
- e) In light of the above, please fully reconcile Section B and Tables E-1, E-2, and E-3.

Response 1:

Table E-1 contained erroneous entries which have been corrected. The revised Table E-1 is Attachment 2 to this response letter.

1a – Response

The following tubes in Steam Generator 31 contain axially oriented outside diameter stress corrosion cracks in the freespan region (not associated with dings):

SG31	R25	C47
	R95	C55
	R116	C116
	R9	C125

The following tube in Steam Generator 32 contains axially oriented outside diameter stress corrosion cracks in the freespan region (not associated with dings):

SG32	R98	C98
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1b – Response

There was only one tube location that met the reporting threshold for ding used to build the entries contained in Tables E-2 and E-3. That location is SG31 R119 C37. This item is discussed fully in the Response to Question 2 regarding the characterization of the degradation mechanisms in Section B.

1c – Response

The Table E-1 erroneously listed flaws in U-bend locations. There are no flaws in U-bend locations. A corrected Table E-1 is provided as Attachment 2 to this response.

1d – Response

Table E1 contained an error and has been corrected. Table E1 now matches the results contained in Tables E-2 and E-3. There are five tubes with freespan axial cracks (not associated with dings), four in SG31 and one in SG32.

1e – Response

A corrected Table E-1 is provided. The Characterization of Degradation Mechanisms in Section B were developed in the Condition Monitoring and Operational Assessments. Table E-2 and E-3 utilized the analyst reporting protocol. The response to Question 2 provides additional details.

Question 2:

For the indications associated with dings, please provide the magnitude of the ding and discuss whether the indications were initially reported with the bobbin coil probe. If not initially identified with the bobbin probe, please discuss the basis for not expanding your inspections of dings greater than 5 volts (and/or expanding to dings less than 5 volts).

Response 2:

There was only one tube location that met the reporting threshold for ding used to build the entries contained in Tables E-2 and E-3. That location is SG31 R119 C37.

The single axial ODSCC indication observed on tube R119 C37 in SG31 at approximately 1 inch above the TTS in a 25V ding has been associated with tube damage from interaction with the sludge lance cart. Historic review of the bobbin data for this tube suggests that the ding amplitude has become elevated with time, thus implying changes in the stress condition. No ding voltage changes were reported for the last two outages; sludge lancing also was not performed for these outages. The association with the sludge lance cart disassociates this indication from freespan dings >5V.

Two additional locations were conservatively evaluated as “Axial ODSCC at Dings” in the Condition Monitoring Report and the Operational Assessment.

Those locations are:

SG31 - R95 C55 at 01H +11.36 inches

SG32 - R98 C98 at 09H +7.34 inches

These locations were initially identified by the bobbin probe.

The initial analyst call for SG31 R95 C55 was 0.99 V and a DFI (distorted freespan indication).

The initial analyst call for SG32 R98 C98 was 0.23 V and a DFH (distorted freespan historical).

The Condition Monitoring Report and Operational Assessment report provided the characterization of "Axial ODSCC in the freespan region in SG31 and SG32 associated with dings" based on these two locations. This degradation mechanism is appropriate. These reports are available in the site records management system.

Question 3:

For the indications in the U-bend, please discuss the nature of the indications. If the indications are crack-like, please discuss how they were detected (e.g., bobbin probe). If initially detected with the rotating probe, discuss the basis for not expanding the scope of rotating probe inspections in the U-bend region.

Response 3:

There are no U-bend indications. The Table E-1 summary report contained an erroneous entry and has been corrected as reflected in Attachment 2 to this response. The erroneous table issue has been entered into the Site's Corrective Action Program as CR-WF3-2012-02990.

Attachment 2 to

W3F1-2012-0052

**Revised Table E-1 for Steam Generator Tube Inspection Report for the 2011
Refueling Outage**

Table E-1 (Revised)

Tube Status	SG - 31	SG - 32
Tubes inservice prior to RFO17	7943	8093
Total Number of tubes previously removed from service	1407	1257
Repair Candidate tubes from RFO17:		
Hot Leg Tubesheet Axial Indications	7	4
Hot Leg Tubesheet Circ. Indications	3	1
Cold Leg Tubesheet Axial Indications	0	0
Cold Leg Tubesheet Circ. Indications	0	0
Tubesheet with Axial and Circumferential Indications	0	0
Tubesheet and Support Plate with Axial Indications	0	0
Tubesheet Circumferential and Support Plate Axial Indications	0	0
Egg-Crate With Axial Indications	42	16
Batwings With Axial Indication	3	1
Batwings With Axial Indication and Support Plate Axial Indication	0	0
Batwings With Volumetric Indication	0	0
Hot Leg Freespan Axial Indications (Non-Ding)	4	1
Hot Leg Freespan Ding Axial Indications	1	0
Hot Leg Volumetric Indications	0	0
Cold Leg Volumetric Indications	0	0
Row 1 - Row 2 U-Bend Indications	0	0
Square Bend Indications	0	0
Bobbin Percents => 40% (All Locations)	0	2
Customer Decision to Plug	1	0
Total Candidate Tubes to be Repaired	61	25
Hot Leg 54" Stabilizers Installed During RFO17*	2	1
Hot Leg 268" Stabilizers Installed During RFO17*	0	0
Hot Leg 384" Stabilizers Installed During RFO17*	0	0
Cold Leg 54" Stabilizers Installed During RFO17*	0	0
Cold Leg 268" Stabilizers Installed During RFO17*	0	0
Cold Leg 384" Stabilizers Installed During RFO17*	0	0
Cold Leg Total Tubes Deplugged and Replugged During RFO17	0	0
Hot Leg Total Tubes Deplugged and Replugged During RFO17	0	2
Total Repair	SG - 31	SG - 32
Total Stabilizers Installed - RFO17	2	1
Total Tubes Plugged - Post RFO17	1468	1282
Total SG % Plugged - Post RFO17	15.7%	13.7%
Note: * Denotes Includes Deplugged tubes		