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Subject: Oconee Nuclear Station, Unit 2
Docket No. 50-270
Steam Generator Inservice Inspection
Steam Generator Tube Plugging and Repair 30-day Report

As required by Technical Specification 5.6.8.a, this letter provides the number of tubes plugged or repaired during the Steam Generator (SG) Tube Inservice Inspection for the Unit 2 Cycle 19 refueling outage. In addition to the above information, the enclosure provides information requested by members of the Staff in a conference call on October 30, 2002.

One hundred percent (100%) of the Unit 2 SG Tubes were inspected with bobbin coil eddy current testing (ECT) probes, and tubes with indications were subsequently inspected with Motorized Rotating Pancake Coil (MRPC) probes.

There were no tubes repaired by sleeving in either steam generator. There were some tubes repaired by reroll in the upper tubesheet of Steam Generator B. The tables below identify the number of tubes removed from service by plugging and the number of tubes repaired by rerolling in the upper tubesheet.

Steam Generator	Number of Tubes Plugged
A	414 - for ECT indications 16 - to capture non-stabilized plugged tube locations
B	544 - for ECT indications 16 - to capture non-stabilized plugged tube locations

Steam Generator	Number of Tubes Rerolled
A	0
B	38 (34 of these remain in service, 4 were plugged).

A047

If there are any questions you may contact R. C. Douglas at (864) 885-3073.

Very Truly Yours,

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Enclosure

cc: Mr. L. A. Reyes
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ENCLOSURE

Oconee Nuclear Station, Unit 2
Summary Response to Request for Information

NOTE: The following is a summary of a conference call discussion between the NRC Staff and Duke Energy Corporation on October 30, 2002. The numbered items in bold are information requests provided in an NRC letter to Duke Energy Corporation dated September 13, 2002.

1. ***Discuss any primary to secondary leakage prior to shutdown.***

   Response: Primary to secondary leakage prior to shutdown was < 0.5 GPD.

2. ***Discuss results of secondary side pressure tests.***

   Response: No secondary side pressure tests were conducted.

3. ***Provide general description of areas examined, including expansion criteria, type of probe's used. Discuss inspection of the tube within the tubesheet, particularly the portion below the expansion/transition region.***

   Response: The inspection scope is shown on Attachment A to this enclosure. The expanded region of the tube is inspected with qualified Plus-Point from the roll transition to the tube end.

4. ***Discuss the actions taken in response to Framatome's notification of the effect of tubesheet hole dilation on the service life of B&W welded plugs.***

   Response: Framatome ANP analyzed the allowed heatup/cooldown cycles for each plug type. It was verified that the service life limits would not be exceeded prior to SG replacements, which are scheduled for the next refueling on each unit. All repair products used, except those listed below, are fully qualified for original 40 year operating life.

Plug Type	# Plugs	Allowed Cycles	Current Cycles
OEM Welded Plugs	16	205	120
Remote Welded Plugs	52	33	13
Taper Welded	13	205	74

   In addition, each welded plug was visually inspected for any signs of leakage or cracking. No leakage or cracking was identified.

5. ***Describe the inspection/plugging plans with respect to industry identified severed tube issue.***

Response: All plugged tubes that met the following criteria with rolled plugs in the primary inlet, were removed, tube dewatered if necessary, and then inspected and replugged.

a. Tubes with a rolled plug in the primary inlet tubesheet that were replaced without being dewatered and also having a welded plug in primary outlet.
b. Tubes with an I-600 rolled plug inlet and having a repair welded plug in primary outlet.
c. Tubes with rolled plug replaced in the inlet and having an explosive plug in outlet.
d. Tubes with ribbed plugs in the inlet that had been replaced with I-690 rolled plugs without being dewatered and also having a ribbed plug in primary outlet.
e. Tubes with rolled plugs in the inlet that had been replaced that also had an original plug in the outlet.

Deplugging Results:

A OTSG	13 Removed	None found with water in tube.	
B OTSG	25 Removed	4 water < 70%	1 water >70%*

* Tube B 32-8 water level was 87% and was swollen by approx. 0.030" to 0.040" along entire length of tube. This tube was initially plugged in 1993. The primary inlet plug was found missing in 1994. The cause of the missing plug was an installation torque issue. The inlet plug was replaced without dewatering in 1994. Tube B 31-7, immediately downstream, did not show indications of wear and eddy current verified that tube B 32-8 was not severed. Tube B 32-8 was replugged with a full length stabilizer installed.

A&B OTSG

Eleven (11) tubes have welded or ribbed plugs in the inlet that are very difficult to remove. These tubes were captured by surrounding with stabilized plugged tubes in flow direction.

6. ***Provide summary of number of indications to date of each degradation mode and axial location. Provide voltage, depth and length for most significant.***

Response: The number of tubes plugged for each category is shown below:

	2A OTSG	2B OTSG
Capture Locations	16	16
Tube Defects	414	522
IGA	7	10
Wear	1	0
Freespan SCC/IGA	380	491
RollTransition PWSCC	12	9
Impingement	0	1
Dent SCC	0	8
Misc.	8	3
Dent/Vol. Combination	6	22
Total Plugged - EOC-19*	430	560
Total Cumulative Plugged	1,300	1,688
	8.4%	10.9%

* End-Cycle 19

Details of the depth, length and voltage will be provided in the report of inspection findings required by Technical Specification 5.6.8, b three months following completion of the inspection.

7. ***Describe the repair/plugging plans for SG tubes that meet the repair/plugging criteria.***

Response: For hot leg roll transitions that meet criteria for reroll repair, rerolls will be performed and the tube left in service. For all other degradation that meets the plugging criteria, the tube will be removed from service by installation of I-690 rolled plugs in inlet and outlet.

Reroll repairs A OTSG: 0* B OTSG: 38

* <10 locations identified for reroll repair, tubes were plugged and included in the response for the above item 6.

8. ***Discuss the previous history of SG tube inspection results, including any "look backs" performed for significant indications where used for dispositioning (MBM's)***

Response: All bobbin indications will receive a Plus-Point exam and are dispositioned based on this result. Past history bobbin data is not used to determine special interest locations for augmented inspections (i.e., plus point exam),

9. Discuss new inspection findings.

Response: No new degradation mechanisms were seen. Current active mechanisms for ONS-2:

a. Tube Support Plate Fretting Wear
b. Impingement
c. OD IGA in tubesheet crevice and freespan
d. PWSCC in upper tubesheet rolls and dents above 9th TSP.
e. OD SCC in dents above 9th TSP and freespans above the 7th TSP
f. Sleeve OD IGA/SCC in expansion transitions and parent tube adjacent to sleeve end

Freespan indications have increased in number from previous inspections. The prediction of freespan cracking based on Weibul distribution indicates that a significant increase was expected. It's difficult to establish when the increase will begin to occur but this data indicates that significant increases would be expected in future inspections. However, this is the last cycle of operation for these SGs prior to replacement. The number of freespan defects is within the worse case projections previously performed.

10. For I-600 plants discuss actions taken based on Seabrook's recent findings.

Response: No additional actions have been identified for ONS units as a result of what is known of the Seabrook results to date. The ONS SG tubing is I-600 HTMA and would not be expected to perform similar to the I-600TT tubing at Seabrook.

11. Discuss any use of inspection probes other than bobbin and typical rotating probes.

Response: Probes used are typical designs. 0.510 mid-frequency bobbin, 0.460 Plus-Point for RPC for tubes and 0.410 bobbin, 0.400 Plus-Point for sleeves.

12. Discuss in-situ pressure test plans and results.

Response: Following is the number of tubes identified for in-situ testing. All testing followed EPRI guidelines for hold times. The maximum pressure was approx. 4300 psig, which represents 3 times normal ΔP plus adjustments for testing.

	2A OTSG	2B OTSG
Number Tested	10 (Axial)	11
Results	No leakage	Tube 37-27 leaked at 3900 psig

13. Describe tube pull plans and preliminary results.

Response: No tube pulls were performed during EOC-19.

Attachment A

The OTSG eddy current inspection scope planned for the Oconee Unit 2 EOC-19 Refueling Outage:

Bobbin Coil (0.510 dia. MF)	100% A-OTSG 100% B-OTSG
Lane and Wedge MRPC (0.460 dia. Plus Point)	Two Rows Around Sleeved Tubes A and B OTSG
MRPC Upper Tubesheet Roll (0.460 dia. Plus Point)	100% A-OTSG 100% B-OTSG
MRPC Re-rolls Upper Tubesheet (0.460 dia. Plus Point)	100% A-OTSG 100% B-OTSG
MRPC Lower Tubesheet Roll (0.460 dia. Plus Point)	100% Original Re-expansion
Bobbin Sleeve Exam (0.410 dia.)	100% Sleeves A-OTSG 100% Sleeves B-OTSG
Sleeve Upper and Lower Rolls (0.400 dia Plus Point)	100% Sleeve Rolls A-OTSG 100% Sleeve Rolls B-OTSG
Kidney Region (Sludge Pile) (0.460 dia. Plus Point)	100% A-OTSG 100% B-OTSG The inspection covers minimum 12 inches into the tubesheet

RPC Special Interest (0.460 dia. Plus Point)

1) 100% Bobbin indications regardless of location
2) 100% of all dents regardless of size or location