

October 20, 2005

Mr. Gene St. Pierre, Site Vice President  
c/o James M. Peschel  
Seabrook Station  
FPL Energy Seabrook, LLC  
PO Box 300  
Seabrook, NH 03874

SUBJECT: SUMMARY OF THE NUCLEAR REGULATORY COMMISSION'S REVIEW OF  
SEABROOK STATION, UNIT 1 STEAM GENERATOR TUBE INSPECTION  
REPORT FOR THE FALL 2003 REFUELING OUTAGE (TAC NO. MC4907)

Dear Mr. St. Pierre:

By letters dated November 3, 2003, as supplemented by letters dated October 12, 2004 and August 4, 2005, FPL Energy Seabrook, LLC (FPLE) submitted reports on its steam generator tube inspections performed at Seabrook Station, Unit No.1 (SS1) during the Fall 2003 refueling outage. Additional information concerning this outage was summarized by the Nuclear Regulatory Commission (NRC) staff in a letter dated December 29, 2003.

As discussed in the enclosed evaluation, NRC staff concluded that FPLE provided the information required by the Technical Specifications for SS1, and the NRC staff did not identify any technical issues that warranted follow-up action at this time. If you have any questions, please contact me at (301) 415-1484.

Sincerely,

***/RA by G. Edward Miller for/***

Victor Nerses, Senior Project Manager, Section 2  
Project Directorate I  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket No. 50-443

Enclosure: As stated

cc w/encl: See next page

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UNITED STATES NUCLEAR REGULATORY COMMISSION

EVALUATION OF 2003 REFUELING OUTAGE

STEAM GENERATOR TUBE INSPECTION RESULTS

SEABROOK STATION, UNIT NO. 1

DOCKET NO. 50-443

By letters dated November 3, 2003, October 12, 2004 and August 4, 2005, FPL Energy Seabrook, LLC (the licensee) submitted reports on their steam generator tube inspections for the Fall 2003 outage (refueling outage (RFO) 9) at the Seabrook Station, Unit No. 1 (SS1). Additional information concerning this outage was summarized by the Nuclear Regulatory Commission (NRC) staff in a letter dated December 29, 2003.

SS1 has four Westinghouse Model F steam generators. There are 5626 thermally-treated Alloy 600 tubes in each steam generator. The tubes have an outside diameter of 0.688-inches, a wall thickness of 0.040-inches, and are supported by stainless steel tube supports with quatrefoil-shaped holes and V-shaped chrome plated Alloy 600 anti-vibration bars. The tubes in the first ten rows were stress relieved to reduce residual stresses and improve corrosion resistance.

The licensee provided the scope, extent, methods and results of their steam generator tube inspections in the documents referenced above. In addition, the licensee described corrective actions (i.e., tube plugging) taken in response to the inspection findings.

In steam generator D, the licensee defined a "critical area" as those tubes identified in RFO 8 (2002) with absolute drift signals. These tubes are considered to have elevated residual stresses that may cause them to be more susceptible to outside diameter stress corrosion cracking (ODSCC). During the bobbin examination of these tubes, seven indications were detected in three tubes. Rotating pancake coil examination of these seven locations identified a total of nine indications of ODSCC (i.e., two locations had two ODSCC indications each). All ODSCC indications were located at intersections with tube support plates in low row tubes.

The licensee used Electric Power Research Institute (EPRI) TR-107261, "Steam Generator Integrity Assessment Guidelines: Revision 1" for their operational assessment of ODSCC at the tube support plate elevations. These guidelines are industry documents. As a result, they have neither been reviewed nor approved by the NRC. For example, the NRC staff has not approved the use of a 90/50 probability/confidence level in assessing structural integrity. In fact, in instances where structural and leakage integrity analysis have been approved by the staff, they are frequently performed at a 95/95 probability/confidence level. Although the staff did not perform a detailed review of the licensee's operational assessment, a cursory qualitative review did not reveal any significant concern with respect to whether the tube integrity will continue to be met. This qualitative review considered the conservatism in the licensee's analysis and past inspection results (in which all tubes had adequate tube integrity following either one or two cycles of operation between inspections).

During RFO 8, a wear indication was reported in one tube above the 5<sup>th</sup> tube support plate on the hot leg side. Further eddy current examination indicated the presence of a foreign object at this location. Eddy current examinations of an adjacent tube also revealed the presence of a foreign object. Both of these tubes were plugged. The licensee performed an eddy current examination of the six surrounding tubes and no indication of foreign objects were found, but all six tubes were plugged during RFO 8 to provide a buffer area. The foreign object could not be visually observed nor removed due to limited access to this location. None of these tubes were stabilized. The licensee qualitatively assessed the potential for the affected tubes to sever as a result of continued wear from the foreign object and concluded that any continued wear would be insufficient to represent a risk of tube separation. With respect to continued operation with the part in service until the next tube inspection, the NRC staff did not identify any issues; however, the staff notes that attempts to project the behavior of a foreign object for multiple cycles without knowing the nature of the foreign object (size, mass, etc.) is challenging and may need to be followed up with further analyses or inspections (given that the tubes are not stabilized).

The licensee identified two bulges and one overexpansion indication in steam generator D. Rotating probe examinations of these indications showed no degradation. The three indications were reported at prior inspections, and a comparison with previous inspection data showed that these indications have not changed.

Based on a review of the information provided, the NRC staff concludes that the licensee provided the information required by their technical specifications. In addition, the NRC staff concludes that there are no technical issues that warrant follow-up action at this time since the inspections appear to be consistent with the objective of detecting potential tube degradation and the inspection results appear to be consistent with industry operating experience at similarly designed and operated units.

Seabrook Station, Unit No. 1

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