



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

March 27, 2013

LICENSEE: Florida Power & Light Co.  
FACILITY: St. Lucie Power Plant, Unit No. 2  
SUBJECT: SUMMARY OF JULY 27, 2011, CONFERENCE CALL WITH FLORIDA  
POWER & LIGHT COMPANY REGARDING THE FINDINGS OF THE  
SPRING 2011 STEAM GENERATOR TUBE INSPECTIONS AT  
ST. LUCIE, UNIT NO. 2 (TAC NO. ME6757)

On July 27, 2011, a Category 1 conference call was held between the U.S. Nuclear Regulatory Commission (NRC) and representatives of Florida Power & Light Company at NRC Headquarters, One White Flint North, 11555 Rockville Pike, Rockville, Maryland. The purpose of the call was to discuss the findings of the steam generator tube inspection activities performed at St. Lucie Plant, Unit No. 2 during spring 2011. A list of attendees is provided as Enclosure 1 and a summary of the discussion is provided in Enclosure 2.

Members of the public were not in attendance. Public meeting feedback forms were not received during the conference call.

Please direct any inquiries to me at 301-415-2788, or e-mail me at [Tracy.Orf@nrc.gov](mailto:Tracy.Orf@nrc.gov).

A handwritten signature in black ink, appearing to read "Tracy J. Orf".

Tracy J. Orf, Project Manager  
Plant Licensing Branch II-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-389

Enclosures:

Enclosures:

1. List of attendees
2. Summary of Conference Call

cc w/encls: Distribution via Listserv

LIST OF ATTENDEES

JULY 27, 2011

CONFERENCE CALL WITH FLORIDA POWER AND LIGHT CO.

SPRING 2011 STEAM GENERATOR TUBE INSPECTIONS AT ST. LUCIE, UNIT NO. 2'

<b>Name</b>	<b>Organization</b>
Kenneth Karwoski	NRC
Tracy J. Orf	NRC
Louis Lake	NRC
Rudy Gil	FPL
Jack Hoffman	FPL
Ed Korkowski	FPL
Russ Cipolla	Intertec
Allen Brown	AREVA

SUMMARY OF CONFERENCE CALL  
WITH ST. LUCIE PLANT UNIT NO. 2 REGARDING  
THE SPRING 2011 STEAM GENERATOR TUBE INSPECTION RESULTS  
DOCKET NO. 50-389

On July 27, 2011, the staff of the Steam Generator Tube Integrity and Chemical Engineering Branch of the Division of Component Integrity participated in a conference call with representatives of Florida Power & Light Company (the licensee) regarding findings from the steam generator (SG) tube inspection activities performed at Saint Lucie Plant, Unit No. 2 (St. Lucie 2) in spring 2011. The licensee provided this information, in part, to support the staff's review of an extended power uprate (EPU) license amendment request.

St. Lucie 2 has two Model 86/19TI replacement SGs, which were manufactured by AREVA and installed in December 2007. Each SG has 8,999 thermally treated Alloy 690 tubes with a nominal outside diameter of 0.75 inches and a nominal wall thickness of 0.043 inches. During manufacturing, all tubes were hydraulically expanded at both ends over the full depth of the tubesheet. The tubesheet was drilled on a triangular pitch with 1.0-inch spacing, center-to-center. The radius of the row 1 U-bends is 4.134 inches. The U-bends in rows 1 through 15 were stress relieved after bending. Seven Type 410 stainless steel support plates (each 1.181 inches thick), which have broached trefoil holes, support the vertical section of the tubes, and four sets of anti-vibration bars (AVBs) (each 0.112 inches thick) made from Type 405 stainless steel support the U-bend section of the tubes.

Additional clarifying information or information not included in the document provided by the licensee is summarized below:

- The following abbreviations were used by the licensee in the attachment:
  - AVB – anti-vibration bar
  - EFPY – effective full power years
  - EOC – End-of-Cycle
  - NDE – non-destructive examination
  - %TW – percent through-wall
  - PSL-2 – St. Lucie Plant, Unit 2
  - SG or S/G – steam generator
  
- The first refueling outage after SG replacement took place in spring 2009. During that outage, the licensee detected a significant number of wear indications at the AVBs. In the spring 2011 outage, the wear rate of previous AVB wear indications was noted by the licensee to have decreased. The area of greatest wear is occurring in tubes with the largest radii and some of these tubes contact the AVBs in eight places. The next scheduled inspection is during Refueling Outage 19 (RFO19), which was scheduled for June of 2012.

- The root cause analysis performed by AREVA revealed that some of the AVBs are out of position by a few mils (thousandths of an inch), as a result of the specific manufacturing process that was used on the SGs. Because these SGs contain the largest tube bundle that has been manufactured by AREVA, and because they also have the thinnest AVB material used by AREVA (~0.1 inch thick by 0.5 inches wide), the AVBs were plastically deformed (slightly) when the tube bundle was moved by the turnaround tool during assembly (the SG is rotated 180 degrees after approximately half of the tubes are installed). This was identified through finite element modeling, which also confirmed that the largest bend radii should be most affected (which is where the most significant wear condition exists).
- After completion of the inspections in RFO 19 (June 2012), the licensee plans to implement an EPU of between 10 and 12 percent. Using a finite element model, the licensee predicts a 20 to 22 percent increase in growth rates for operating Cycle 20, when compared to what has been predicted for operating Cycle 19.
- The AVB wear indications were not preferentially located at any subset of the AVBs (i.e., the wear indications were located at all AVBs).
- The licensee indicated that they believed the distribution of new wear indications detected in RFO 18 (2011) was bounded by the new wear indications detected in RFO 17 (2009).
- In response to a staff inquiry, the licensee indicated they had not reviewed the reliability of other licensee's projections for the effects of a power uprate.

The staff did not identify any issues that required followup action at this time.

March 27, 2013

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FACILITY: St. Lucie Power Plant, Unit No. 2

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Tracy J. Orf, Project Manager  
Plant Licensing Branch II-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

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