Florida Power & Light Company, 6501 S. Ocean Drive, Jensen Beach, FL 34957

August 29, 2006

L-2006-199
10 CFR 50.4

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

RE: St. Lucie Unit 2
Docket No. 50-389
Response to Request for Additional Information on
SL2-15 Steam Generator Inspection Reports

Via FPL letters L-2005-030 dated February 11, 2005, and L-2005-237 dated November 28, 2005, FPL submitted the St. Lucie Unit 2 Technical Specification Special Reports for the refueling outage SL2-15 steam generator tube inservice inspection results and steam generator tube plugging results. Subsequent interactions with the Staff resulted in a Request for Additional Information (RAI) via the NRC letter from Brendan T. Moroney to J. A. Stall dated June 16, 2006, titled "St. Lucie Unit 2 – Request for Additional Information 2005 Steam Generator Tube Inspections (TAC No. MC9192)."

This letter forwards the responses to the RAI.

Please contact Ken Frehafer at (772) 467-7748 if there are any questions about this submittal.

Very truly yours,

Gordon L. Johnston
Site Vice President
St. Lucie Plant

GLJ/KWF

Attachment

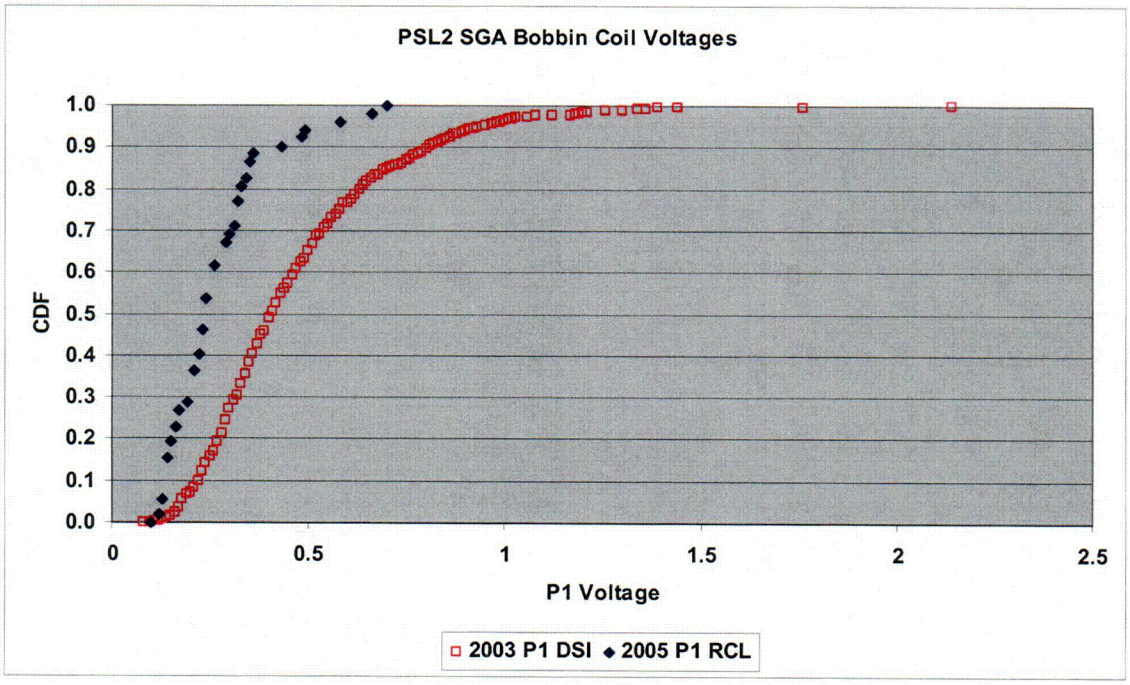
A047

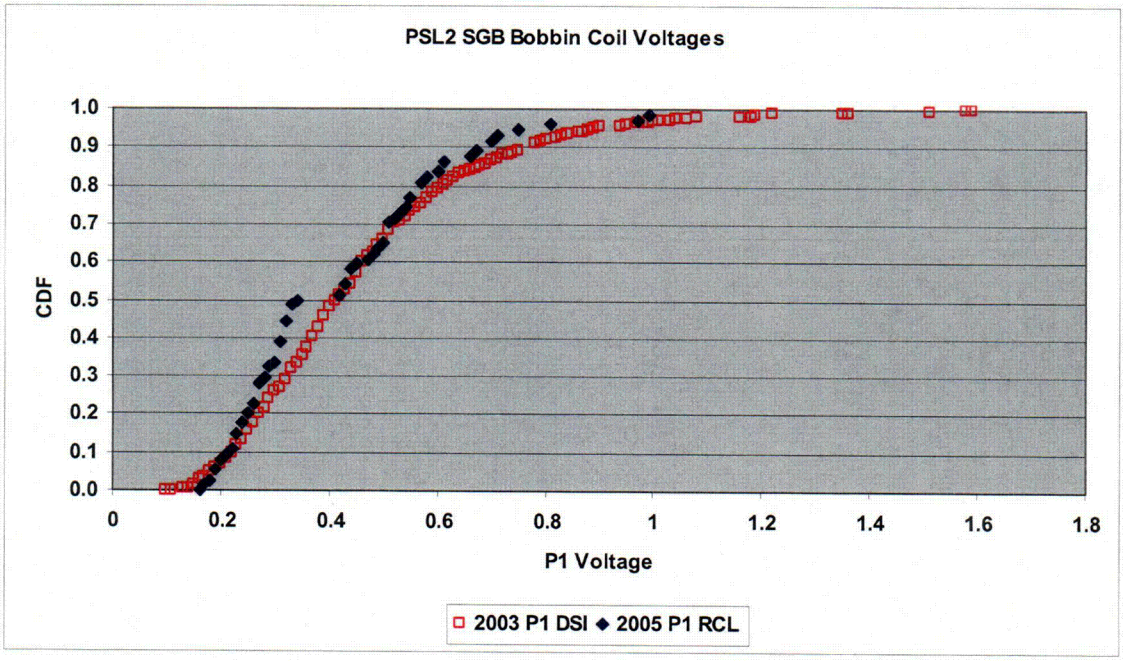
1. During the 2005 steam generator tube inspections a number of indications were coded as retest for clarification (RCL) because they were identified with a rotating probe as it was being removed from the tube at a rate greater than the rate at which the probe is qualified. The indications in question had not been identified during bobbin coil inspection. The Nuclear Regulatory Commission staff discussed these indications with representatives from St. Lucie during conference calls at the time of the outage. During the call the staff made several observations concerning the disposition of these flaws (refer to pages 5 and 6 of the conference call summary dated, April 8, 2005 (ML50730197)). In light of these observations, summarize your basis for the approach taken to disposition the RCLs during your 2005 inspections.

[The NRC staff's observations as summarized in their conference call summary dated, April 8, 2005 (ML50730197) are repeated below]

Observation a. - The RCL indications were attributed to probability of detection associated with the bobbin coil. Rather than comparing the outcome of the multicycle computer algorithm to the depth/voltage of the RCLs in making this determination, a more direct comparison may be to look at the bobbin voltage associated with the 2005 RCLs and compare it to the 2003 bobbin voltage associated with the 2005 confirmed DSIs. The distributions should be similar. Since the bobbin data is used to determine the growth rates (based on look-back analysis) such an analysis should be consistent with the growth rate methodology.

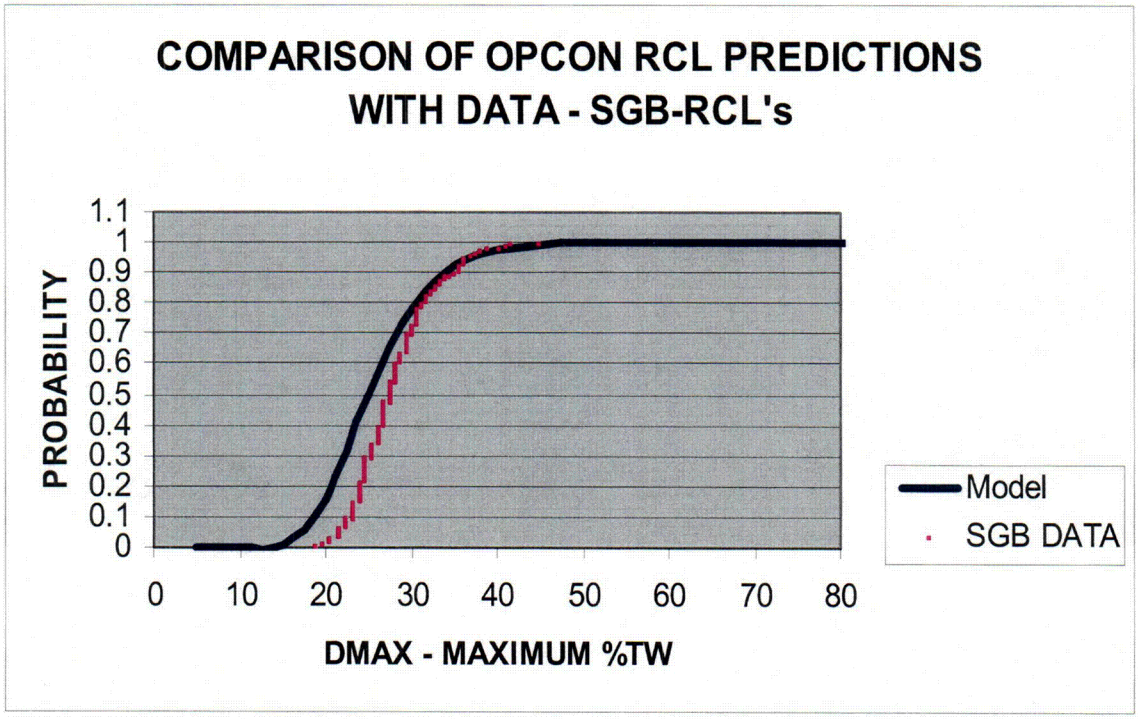
Reply to Observation a. - Comparison of voltages for 2005 RCL bobbin coil indications and 2003 bobbin coil associated with 2005 confirmed DSI indications are shown in the following 2 figures. Note that the bobbin coil voltages for the 2005 RCL indications fall to the left of the look back bobbin coil voltages (i.e., 2003 voltage) for the confirmed DSI indications identified in 2005. The smaller voltages for the RCLs supports the probability of detection used in the OPCON model for axial ODSCC eggcrate degradation.


PSL2 SGA Bobbin Coil Voltages
CDF
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0
0.5
1
1.5
2
2.5
P1 Voltage
2003 P1 DSI
2005 P1 RCL


PSL2 SGB Bobbin Coil Voltages
CDF
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
P1 Voltage
2003 P1 DSI
2005 P1 RCL

Observation b. - For probabilistic analysis, both the number of indications and the size of the indications are important. The number of RCLs/DSIs should also be consistent with your models. If the number of RCLs is larger than expected (i.e., the undetected population is underpredicted), additional inspections may be needed in 2005 to ensure condition monitoring limits are met in 2005 and for justifying a full cycle of operation.

Reply to Observation b. – A comparison between observed RCL's and OPCON model predictions for the 2005 outage is shown in the figure below. The depth distribution for RCL's predicted by OPCON agrees well with the data, particularly in the more critical upper region. The estimated number of RCL's predicted by the model is approximately 220. This is somewhat conservative by comparison with the 200 observed in the 2005 outage for SG-B. The 220 flaws predicted by the model are based on a limited inspection corresponding to the number of 2005 DSI pull-out scans.



Observation c. - A few of the indications are greater than 2-inches in length. It would be useful to assess how many, if any, of the indications are growing outside the eggcrate support.

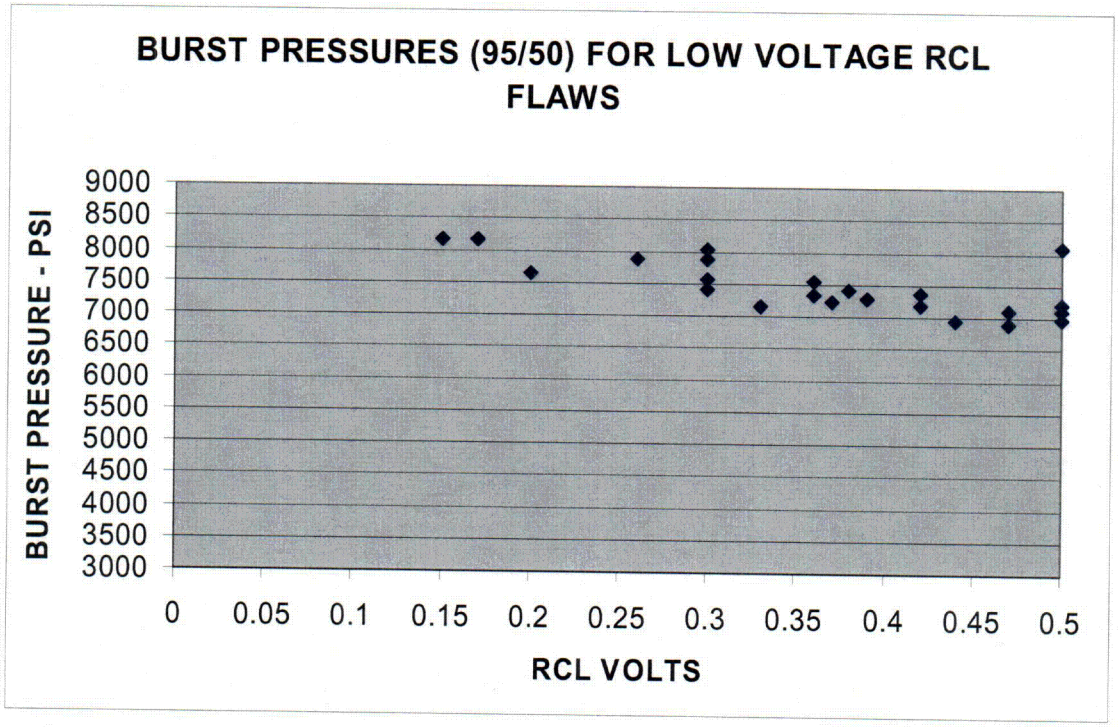
Reply to Observation c. – A review of detailed profile sizing results for the end of cycle 15 inspection shows approximately eight indications with a length greater than 2.0 inches. The longest profile length in SG A and B was sized at 2.17 and 2.07 inches respectively. The length sizing for rotating probe examinations, however, is considered to be slightly conservative due to the eddy current field extension around the test coil. In any event, no credit is taken for the presence of the eggcrate support in the tube integrity assessment work. Therefore, there is no impact from considering the potential for some indications to extend slightly beyond the support. Further, freespan cracking has not been widely observed at St. Lucie Unit 2.

Observation d. - It would be useful to evaluate all chemical excursions for the prior operating cycle to ascertain whether this could have resulted in the increased amounts (number and severity) of indications.

Reply to Observation d. – FPL has evaluated plant response to chemical excursions in the recent past to determine if improvements in the chemistry program are appropriate. The results of these evaluations have shown that the St. Lucie Unit 2 chemistry program has performed well with respect to maintaining impurity levels low and responding to excursions to protect SG health. The St. Lucie Unit 2 chemistry program implements the EPRI water chemistry guidelines, including all action level and shutdown requirements associated with impurity level increases. The St. Lucie Unit 2 SGs are scheduled for replacement after the next cycle of operation.

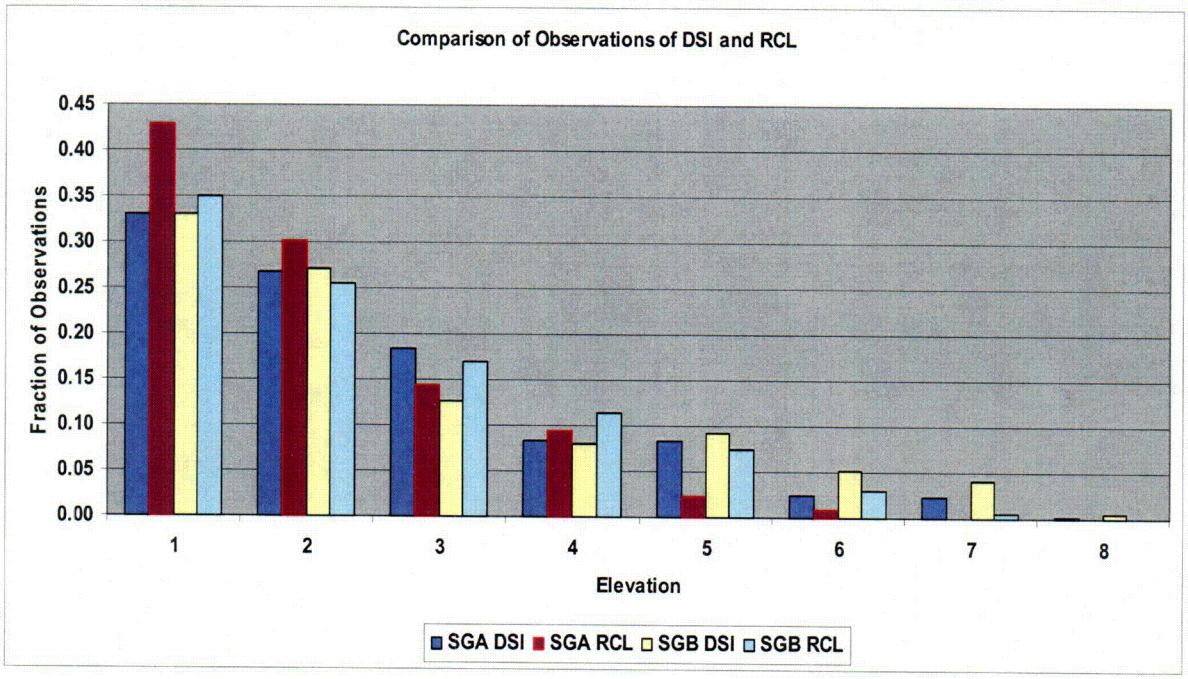
Observation e. - To confirm the adequacy of the screening criteria for determining when RCLs should be inspected with a qualified technique, it would be useful to look at the burst pressures associated with the RCLs to see if they support the 0.35 volt screening criteria (i.e., do any of the lower voltage RCLs have low burst pressures).

Reply to Observation e. - Computed burst pressures for lower voltage RCL's are shown in the following figure. It can be clearly seen from the figure that RCL's with voltages less than 0.35 volts do not challenge the structural limit.



Observation f. - If the RCLs are a result of the probability of bobbin coil detection, then it should be confirmed that the distribution of RCL indications at various tube support elevations are consistent with the distribution of DSIs.

Reply to Observation f. - The frequency of occurrence of DSI and RCL per elevation are shown in the following figure. Note that the distributions are quite similar, reinforcing the impact of the Probability of Detection function.



2. A freespan axial indication was identified in the square bend region of steam generator B (R44C130). Has freespan cracking been identified in areas other than the square bend? If so, discuss the locations of the indications and the number of tubes affected.

Reply to RAI #2 – One additional tube (SG A, R45 C65) was identified by the bobbin probe during end of cycle 13 inspections (4/03) with a freespan crack approximately 4" above the first hot leg support. Rotating probe inspection characterized the indication at 0.49" in axial length, 0.23 volts and a maximum depth of 31% through-wall, which is well below the screening threshold for in situ pressure testing. Additional analysis determined that the indication faced toward an adjacent carbon steel tie rod. This condition is indicative of a crevice condition that can result in concentration of contaminants. A full length inspection of the hot leg straight section of this tube was completed with the rotating probe and no additional indications were detected. Further, no other tubes located adjacent to tie rods contained any similar indications.

3. Please discuss whether any crack-like indications were identified in the u-bend region of the low row tubes. If so, discuss the location and orientation of the indications and the basis for not expanding the scope of the inspection.

Reply to RAI #3 – There have been no crack-like indications reported in the u-bend region of the low row tubes.

4. Please discuss whether any crack-like indications were identified in dents or dings? If so, discuss the size, location, and orientation of the flaw and the voltage amplitude of the dent/ding.

Reply to RAI #4 – One crack-like indication was identified in a ding in the January 2005 inspection. The ding was 0.89 inches above the hot leg tubesheet in a periphery tube (SG 2B R137 C67) and was 5.01 volts in amplitude. A single axial indication (SAI) was present in the ding and was 0.21 inches in length and 0.68 volts in amplitude. The depth of the indication was not quantifiable due to the influence from the ding. This indication was in situ pressure tested to 4950 psi and passed without leakage or burst. This tube was plugged after in situ testing.

5. It is the staff's understanding that axial cracks have been identified in wear scars at St. Lucie 2. Please discuss whether there are any trends associated with the development of these cracks. For example, are the cracks more prevalent in the hot-leg or cold-leg side of the steam generator? Are the cracks associated with deeper wear scars?

Reply to RAI #5 – No axial cracks have been identified in wear scars (i.e., coincident with) at St. Lucie 2.

6. Please discuss whether any crack-like indications were identified on the cold-leg side of the steam generator other than those identified at the eggcrate support and the diagonal strap.

Reply to RAI #6 – No crack-like indications have been identified on the cold-leg side of the steam generator other than those identified at the eggcrate support and the diagonal strap.