P.O. Box 14000, Juno Beach, FL 33408-0420

FPL

OCT 29 2004

L-2004-227
10 CFR 50.54(f)

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
11555 Rockville Pike
Rockville, Maryland 20852

RE: Florida Power and Light Company
St. Lucie Units 1 and 2
Docket Nos. 50-335 and 50-389
Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251

FPL Energy Seabrook, LLC
Seabrook Station
Docket No. 50-443

NRC Generic Letter 2004-01
Requirements for Steam Generator Tube Inspections

On August 30, 2004, the NRC issued Generic Letter 2004-01, "Requirements for Steam Generator Tube Inspections." Florida Power & Light Company (FPL), the licensee for the St. Lucie Nuclear Plant, Units 1 and 2, and the Turkey Point Nuclear Plant, Units 3 and 4, and FPL Energy Seabrook, LLC (FPL Energy Seabrook) the licensee for Seabrook Station hereby submit their response to the Generic Letter.

Licensees for pressurized-water nuclear power reactors (PWRs) are requested to submit a description of the steam generator tube inspections performed at their plants, including an assessment of whether these inspections ensure compliance with the technical specification requirements in conjunction with 10 CFR Part 50, Appendix B. Licensees who conclude they are not in compliance with the steam generator tube inspection requirements contained in their technical specification in conjunction with 10 CFR Part 50, Appendix B, are to propose plans for coming into compliance with these requirements. In addition, licensees are requested to submit a tube structural and leakage integrity safety assessment that addresses any differences between their practices and the NRC's position regarding the requirements of the technical specification in conjunction with 10 CFR Part 50, Appendix B.

Attachments 1 and 2 provide the requested information for St. Lucie Unit 1 and Unit 2, respectively. Attachment 3 provides the requested information for Turkey Point Units 3 and 4, and Attachment 4 provides the requested information for FPL Energy Seabrook.

FPL/FPL Energy Seabrook conclude that the tube inspection methods employed at FPL/FPL Energy Seabrook plants meet the technical specification requirements in conjunction with Criteria IX, XI and XVI of 10 CFR Part 50, Appendix B. However, due to the on-going degradation in the St. Lucie Unit 2 steam generators, FPL will submit a license amendment request, consistent with the Generic Letter attachment, to ensure that inspection methods continue to meet these requirements.

A115

The attached information is provided pursuant to the requirements of Section 182a of the Atomic Energy Act of 1954, as amended, and 10 CFR 50.54(f).

Please contact Rajiv S. Kundalkar at (561) 694-4848 if you have any additional questions regarding these responses.

Sincerely yours,

Rajiv S. Kundalkar

for J. A. Stall
Senior Vice President, Nuclear and
Chief Nuclear Officer

Attachments (4)

STATE OF FLORIDA)
)ss.
COUNTY OF PALM BEACH)

R. S. Kundalkar being first duly sworn, deposes and says:

That he is Vice President, Nuclear Engineering of Florida Power & Light Company and FPL Energy Seabrook, LLC, the Licensees herein;

That he has executed the foregoing document; that the statements made in this document are true and correct to the best of his knowledge, information and belief, and that he is authorized to execute the document on behalf of said Licensees.

Rajiv S. Kundalkar
R. S. Kundalkar

Subscribed and sworn to before me this
29th day of October, 2004

Judith Ann Creasman
Name of Notary Public (Type or Print)

OFFICIAL NOTARY SEAL
JUDITH ANN CREASMAN
NOTARY PUBLIC STATE OF FLORIDA
COMMISSION NO. CC980677
MY COMMISSION EXP. DEC. 5,2004

R. S. Kundalkar is personally known to me.

ATTACHMENT 1

NRC GENERIC LETTER 2004-01: REQUIREMENTS FOR STEAM GENERATOR TUBE INSPECTIONS, RESPONSE FOR ST. LUCIE UNIT 1

On August 30, 2004, the Nuclear Regulatory Commission (NRC) issued Generic Letter 2004-01: "Requirements for Steam Generator Tube Inspections." The NRC requested that specific information be provided within 60 days of the date of the Generic Letter. Florida Power and Light Company (FPL) hereby responds to the 60-day information request set forth in the Generic Letter with respect to St. Lucie Unit 1.

NRC Requested Information: Within 60 days of the date of this generic letter, addressees are requested to provide the following information to the NRC:

NRC Request 1: Addressees should provide a description of the SG tube inspections performed at their plant during the last inspection. In addition, if they are not using SG tube inspection methods whose capabilities are consistent with the NRC's position, addressees should provide an assessment of how the tube inspections performed at their plant meet the inspection requirements of the TS in conjunction with Criteria IX and XI of 10 CFR Part 50, Appendix B, and corrective action taken in accordance with Appendix B, Criterion XVI. This assessment should also address whether the tube inspection practices are capable of detecting flaws of any type that may potentially be present along the length of the tube required to be inspected and that may exceed the applicable tube repair criteria.

St. Lucie Unit 1 Response to Request 1: Steam generator tube inspections performed at St. Lucie Unit 1 met or exceeded the Technical Specification requirements in conjunction with Criteria IX, XI and XVI of 10CFR Part 50 Appendix B, and the NRC's position regarding tube inspections.

St. Lucie Unit 1 has two Babcock and Wilcox International replacement steam generators. The tubing material in each steam generator is high temperature Inconel Alloy 690 Thermally Treated. The tubes are hydraulically expanded through the full depth of the tubesheet. The tube bundle is supported by stainless steel lattice type supports comprised of horizontal lattice supports for the vertical portion and fan bars in the U-bends. All tube rows are U-bends (i.e., none contain square bends).

In the last refueling outage, March 2004, Florida Power & Light performed the following tube inspection scope in both steam generators:

Visual Inspections

- All installed tube plugs
- Foreign object search and retrieval of tubesheet annulus and blowdown lane

Bobbin Probe Inspections

- Full length of all active tubes in odd numbered columns except for row 3 tubes
- Hot leg and cold leg straight sections of row 3
- Full-length examination of all active periphery tubes
- All tubes identified with imperfections (1-39% through-wall wear)
- Additional tubes with manufacturing anomalies
- Additional tubes identified from loose parts monitoring
- Additional tubes as required to bound existing wear indications
- All tubes adjacent to plugged tubes
- Screening of dings less than 5 volts in straight sections

+Point™ Probe Inspections

- Approximately 50% of the active hot leg expansion transitions (+3" to –2").
- Approximately 50% of the U-bend regions in row 3
- At least 50% of hot leg straight section dings equal to or greater than 3.0 volts
- Bobbin probe indications that were new or showed change

St. Lucie Unit 1 uses tube inspection methods that are capable of detecting all flaw types that may be present based on St. Lucie Unit 1 and industry operating experience. Prior to each inspection, a degradation assessment, which includes operating experience, is performed to identify degradation mechanisms that may be present, and a technique validation assessment is performed to verify that the eddy current techniques are capable of detecting those degradation mechanisms identified in the degradation assessment.

NRC Request 2: If addressees conclude that full compliance with the TS in conjunction with Criteria IX, XI and XVI of 10 CFR Part 50, Appendix B, requires corrective actions, they should discuss their proposed corrective actions (e.g., changing inspection practices consistent with the NRC's position or submitting a TS amendment request with the associated safety basis for limiting the inspections) to achieve full compliance. If addressees choose to change their TS, the staff has included in the attachment suggested changes to the TS definitions for a tube inspection and for plugging limits to show what may be acceptable to the staff in cases where the tubes are expanded for the full depth of the tubesheet and where the extent of the inspection in the tubesheet region is limited.

St. Lucie Unit 1 Response to Request 2: Steam generator tube inspections performed at St. Lucie Unit 1 met or exceeded the Technical Specifications requirements in conjunction with Criteria IX, XI and XVI of 10CFR Part 50 Appendix B, and the NRC's position regarding tube inspections. Therefore this question does not apply.

NRC Request 3: For plants where SG tube inspections have not been or are not being performed consistent with the NRC's position on the requirements in the TS in conjunction with Criteria IX, XI, and XVI of 10 CFR Part 50, Appendix B, the licensee should submit a safety assessment (i.e., a

justification for continued operation based on maintaining tube structural and leakage integrity) that addresses any differences between the licensee's inspection practices and those called for by the NRC's position. Safety assessments should be submitted for all areas of the tube required to be inspected by the TS where flaws have the potential to exist and inspection techniques capable of detecting these flaws are not being used, and should include the basis for not employing such inspection techniques. The assessment should include an evaluation of (1) whether the inspection practices rely on an acceptance standard (e.g., cracks located at least a minimum distance of x below the top of the tube sheet, even if these cracks cause complete severance of the tube) which is different from the TS acceptance standards (i.e., the tube plugging limits or repair criteria), and (2) whether the safety assessment constitutes a change to the "method of evaluation" (as defined in 10 CFR 50.59) for establishing the structural and leakage integrity of the joint. If the safety assessment constitutes a change to the method of evaluation under 10 CFR 50.59, the licensee should determine whether a license amendment is necessary pursuant to that regulation.

St. Lucie Unit 1 Response to Request 3: Steam generator tube inspections performed at St. Lucie Unit 1 are consistent with the Technical Specifications in conjunction with Criteria IX, XI and XVI of 10CFR Part 50 Appendix B, and the NRC's position regarding tube inspections. Therefore this question does not apply.

ATTACHMENT 2
NRC GENERIC LETTER 2004-01:
REQUIREMENTS FOR STEAM GENERATOR TUBE INSPECTIONS,
RESPONSE FOR ST. LUCIE UNIT 2

On August 30, 2004, the Nuclear Regulatory Commission (NRC) issued Generic Letter 2004-01: "Requirements for Steam Generator Tube Inspections." The NRC requested that specific information be provided within 60 days of the date of the Generic Letter. Florida Power and Light Company (FPL) hereby responds to the 60-day information request set forth in the Generic Letter with respect to St. Lucie Unit 2.

NRC Requested Information: Within 60 days of the date of this generic letter, addressees are requested to provide the following information to the NRC:

NRC Request 1: Addressees should provide a description of the SG tube inspections performed at their plant during the last inspection. In addition, if they are not using SG tube inspection methods whose capabilities are consistent with the NRC's position, addressees should provide an assessment of how the tube inspections performed at their plant meet the inspection requirements of the TS in conjunction with Criteria IX and XI of 10 CFR Part 50, Appendix B, and corrective action taken in accordance with Appendix B, Criterion XVI. This assessment should also address whether the tube inspection practices are capable of detecting flaws of any type that may potentially be present along the length of the tube required to be inspected and that may exceed the applicable tube repair criteria.

St. Lucie Unit 2 Response to Request 1: Steam generator tube inspections performed at St. Lucie Unit 2 are consistent with the Technical Specifications in conjunction with Criteria IX, XI and XVI of 10CFR Part 50 Appendix B, and the NRC's position regarding tube inspections.

St. Lucie Unit 2 has two Combustion Engineering Model 3410 steam generators (S/G). The tubing material in each steam generator is high temperature mill annealed (HTMA) Inconel Alloy 600. The tubes were expanded through the full depth of the tube sheet using an explosive process. The tube bundle is supported by carbon steel lattice type supports comprised of horizontal eggcrate supports, vertical straps and diagonal straps. Tube rows 1-18 are u-bends and rows 19-140 are square bends.

The last inspection in April 2003 (SL2-14) included the following scope in both steam generators:

Visual Inspections

- All installed tube plugs
- Foreign object search and retrieval of the tubesheet annulus and blowdown lane

Bobbin Probe Inspection

- Full length of all active tubes in rows 3-140
- Hot and cold leg straight lengths of all active tubes in rows 1-2
- Screening of dings less than 5 volts in straight lengths

+Point™ Probe Inspection

- 100% hot leg top of tubesheet (+3"/-8")
- 20% cold leg top of tubesheet (+3"/-5")
- 25% row 1-2 U-bends
- 100% wear scars at the hot leg diagonal support (Bat Wing)
- 100% wear scars at eggcrate supports
- 20% wear scars in U-bends
- All dings hot leg tubesheet to first support
- All dings equal to or greater than 5 volts first support to hot leg bend
- All dings in the hot and cold leg square bend rows 19-140
- All dings equal to or greater than 5 volts in horizontal run rows 19-140
- All dings in U-bend region rows 1-18
- 20% of dings equal to or greater than 5 volts from the cold leg tubesheet to cold leg bend
- All bobbin probe indications that were new or showed change

St. Lucie Unit 2 uses tube inspection methods that are capable of detecting all flaw types that may be present. Prior to each inspection, a degradation assessment, which includes operating experience, is performed to identify degradation mechanisms that may be present, and a technique validation assessment is performed to verify that the techniques are capable of detecting those degradation mechanisms identified in the degradation assessment.

The Generic Letter discusses steam generator tube inspections in general and expresses a specific concern regarding inspections within the tubesheet. Degradation identified within the tubesheet at St. Lucie Unit 2 has been limited to a maximum depth of two inches below the top of tubesheet, whereas the inspection zone for the tubesheet extended to a depth of eight inches at the last inspection (SL2-14). Thus, the results did not challenge the depth of inspection and did not indicate a potential for degradation to occur deeper into the tubesheet beyond the region inspected with the specialized probes. Further, degradation below the top of tubesheet has been limited to axial flaws (i.e., not circumferential), and is limited in severity and frequency with only 7 of 16,822 tubes affected through SL2-14. Therefore, the scope of past inspections, including inspections within the tubesheet, is sufficient to bound potential degradation and to be in compliance with Technical Specifications and 10CFR Part 50, Appendix B requirements.

For the next inspection at St. Lucie Unit 2 (SL2-15), the preliminary degradation assessment concludes that there is a potential for degradation in the tubesheet region to extend below the depth of inspections completed at SL2-14. This conclusion is based on recent inspection results from steam generators of similar design. Therefore, FPL will submit a license amendment request consistent with the Generic Letter attachment to ensure future inspections remain in compliance with Technical Specification and 10CFR Part 50, Appendix B requirements. The license amendment will provide the safety basis for limiting the depth of inspections within the tubesheet. This limitation will be based on a joint industry testing program [1] that has shown that flaws below a defined inspection distance within the tubesheet are not a safety concern. This license amendment will be similar to the license amendment [2] submitted to the NRC prior to the last St. Lucie Unit 2 S/G inspection as a contingency measure in the event SL2-14 inspection results challenged the depth of inspections within the tubesheet. The contingency license amendment request was withdrawn, with NRC

concurrence, based on the results of the SL2-14 inspections and the Staff's desire to obtain a generic approach to this issue.

Table 1 provides a summary of the tube inspections performed at the last inspection (SL 2-14), describes the capability of detecting flaws that may have been present and that exceeded the applicable tube repair criteria, and provides the basis for how they met Technical Specifications in conjunction with 10CFR50, Appendix B.

References 3 and 5 are steam generator tube inspection reports that provide the number of tubes plugged and the associated indication listings for the last inspection (SL2-14). Reference 4 submits condition monitoring assessment results, including results of tube pulls and in situ testing as required by NEI 97-06 [1] when greater than 1% of the inspected tubes in each steam generator exceed the repair criteria. Reference 6 provides the NRC summary of a conference call with FPL regarding the SL2-14 inspections in which the Staff identified no follow up issues. Reference 7 provides the FPL response to a NRC request for additional information regarding the SL2-14 steam generator tube inspection reports (Reference 3, 4 and 5). Reference 8 provides the NRC summary of their review of the reports and discussions with respect to SL2-14 inspections, which states, "the NRC staff concludes that FPL provided the information required by St. Lucie Unit 2 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".

NRC Request 2: If addressees conclude that full compliance with the TS in conjunction with Criteria IX, XI and XVI of 10 CFR Part 50, Appendix B, requires corrective actions, they should discuss their proposed corrective actions (e.g., changing inspection practices consistent with the NRC's position or submitting a TS amendment request with the associated safety basis for limiting the inspections) to achieve full compliance. If addressees choose to change their TS, the staff has included in the attachment suggested changes to the TS definitions for a tube inspection and for plugging limits to show what may be acceptable to the staff in cases where the tubes are expanded for the full depth of the tubesheet and where the extent of the inspection in the tubesheet region is limited.

St. Lucie Unit 2 Response to Request 2: As discussed in the response to Question 1, FPL is in compliance with the St. Lucie Unit 2 Technical Specifications and Criteria IX, XI and XVI of 10CFR Part 50, Appendix B requirements. To ensure continued compliance with those requirements in future inspections with a limited tubesheet inspection depth, FPL concludes that a license amendment request is necessary. This license amendment request will be submitted in accordance with the suggested changes provided in the attachment to the Generic Letter.

NRC Request 3: For plants where SG tube inspections have not been or are not being performed consistent with the NRC's position on the requirements in the TS in conjunction with Criteria IX, XI, and XVI of 10 CFR Part 50, Appendix B, the licensee should submit a safety assessment (i.e., a justification for continued operation based on maintaining tube structural and leakage integrity) that

1 Nuclear Energy Institute, NEI 97-06, Steam Generator Program Guidelines, Revision 1, January 2001.

addresses any differences between the licensee's inspection practices and those called for by the NRC's position. Safety assessments should be submitted for all areas of the tube required to be inspected by the TS where flaws have the potential to exist and inspection techniques capable of detecting these flaws are not being used, and should include the basis for not employing such inspection techniques. The assessment should include an evaluation of (1) whether the inspection practices rely on an acceptance standard (e.g., cracks located at least a minimum distance of x below the top of the tube sheet, even if these cracks cause complete severance of the tube) which is different from the TS acceptance standards (i.e., the tube plugging limits or repair criteria), and (2) whether the safety assessment constitutes a change to the "method of evaluation" (as defined in 10 CFR 50.59) for establishing the structural and leakage integrity of the joint. If the safety assessment constitutes a change to the method of evaluation under 10 CFR 50.59, the licensee should determine whether a license amendment is necessary pursuant to that regulation.

St. Lucie Unit 2 Response to Request 3: As discussed in the response to Question 1, St. Lucie Unit 2 is in compliance with Technical Specification and Criteria IX, XI and XVI of 10CFR Part 50, Appendix B requirements. The SL2-14 inspection results did not challenge the depth of inspections within the tubesheet (i.e., eight inches below the top of tubesheet). The preliminary degradation assessment for SL2-15, however, concludes that there is a potential for degradation to exist below the depth of inspections completed in the tubesheet during SL2-14. This conclusion is based on recent inspection results from steam generators of similar design, which contrast with St. Lucie Unit 2 inspection results. Therefore, FPL will submit a license amendment request consistent with the Generic Letter attachment. These actions will ensure that the steam generators will continue to be inspected in accordance with the NRC position described in the Generic Letter. In addition, a safety assessment is provided with this response that concludes the steam generators are safe for continued operation.

References:

1. WCAP-16208-P October 2004, Revision 0 NDE Inspection Length for CE Steam Generator Tubesheet Region Explosive Expansions.
2. FPL letter L-2003-002, January 23, 2003, St. Lucie Unit 2 Docket No. 50-389 Proposed License Amendment, Contingency Change to the Definition of Steam Generator Tube Inspection.
3. FPL Letter L-2003-252, November 21, 2003, St. Lucie Unit 2 Docket No. 50-389, Refueling Outage SL2-14, Steam Generator Tube Inservice Inspection Special Report.
4. FPL Letter L-2003-180, July 21, 2003 St. Lucie Unit 2 Docket No. 50-389, NEI 97-06 Steam Generator Report.
5. FPL Letter L-2003-132, May 26, 2003 St. Lucie Unit 2 Docket No. 50-389 Special Report Steam Generator Tube Plugging Report.
6. NRC Letter, June 23, 2003, St. Lucie Nuclear Plant, Unit 2 - Summary of Conference Call With Florida Power and Light Company Regarding The 2003 Steam Generator Inspections (TAC No. MB8134).
7. FPL Letter L2004-140, June 25, 2004, St. Lucie Unit 2 Docket No. 50-389, Request for

Additional Information, SL2-14 Steam Generator Tube Inspection Reports.

8. NRC Letter, August 16, 2004, St. Lucie Unit 2 – Review of the St. Lucie Unit 2 Steam Generator Tube Inspection Reports for the Spring 2003 Outage (TAC No. MC1401).

Safety Assessment for St. Lucie Unit 2 for Potential Degradation within the Steam Generator Tubesheet

This assessment addresses operability for the St. Lucie Unit 2 steam generators (SG) for Cycle 14 operation. The St. Lucie Unit 2 SG tube inspection methods for inspections through SL2-14 met the Technical Specification requirements in conjunction with Criteria IX, XI and XVI of 10CFR Part 50, Appendix B. The preliminary degradation assessment for the next inspection (SL2-15), however, concludes that there is a potential for degradation to exist below the depth of inspections completed in the tubesheet during SL2-14. This conclusion is based on recent inspection results from steam generators of similar design, which contrast with St. Lucie Unit 2 inspection results. This assessment conservatively assumes that degradation is present below the depth of inspections completed in the tubesheet during SL2-14, and addresses operability for the remainder of Cycle 14 operation.

Degradation within the tubesheet at St. Lucie Unit 2, as measured using +Point™ probe inspection, has been limited to a depth of two inches below the top of tubesheet, whereas the inspection zone using this technique extended to a depth of eight inches at the last inspection (SL2-14). All tubes in which degradation was identified were plugged. Thus, the inspection results did not challenge the depth of inspections, and did not indicate a potential for degradation to occur deeper into the tubesheet, beyond the region inspected with specialized +Point™ probes. Degradation below the top of tubesheet has been limited to axial flaws (i.e., not circumferential), and is limited in severity and frequency with only seven tubes affected through SL2-14. Therefore, the scope of past inspections, including inspections within the tubesheet and associated tube plugging, is considered to have been appropriate and sufficient to bound potential degradation.

The basis for the inspection depth in the tubesheet at SL2-14 was derived from WCAP-15975-P [2], which concluded that a depth of five inches would satisfy both tube pullout and leakage under postulated accident conditions. This depth was voluntarily extended to seven inches below the bottom of the expansion transition to more rigorously bound leakage data in WCAP-15975-P. To address uncertainty associated with the location of the expansion transition relative to the top of the tubesheet, an inspection depth of eight inches below the top of the tubesheet was chosen. This ensured that the minimum tube-to-tubesheet joint engagement length inspected was 7.25 inches.

The inspection depth within the tubesheet for SL2-15 will be based on WCAP-16208-P [3], which supercedes WCAP-15975-P (used for SL2-14). Either WCAP is sufficient to address the potential for pullout of the tubesheet assuming a tube is severed at the inspection depth. The new WCAP provides a conservative and more rigorous evaluation and concludes that a minimum inspection depth (joint engagement length) of 10.1 inches will satisfy both pullout and leakage under postulated accident conditions. The inspection depth as referenced from the top of tubesheet will be greater to ensure that this joint engagement length is inspected. Since the minimum inspection depth recommended by the new WCAP is 10.1 inches, and the minimum joint engagement length

2 WCAP-15975-P November 2002, NDE Inspection Strategy for the Tubesheet Region in St. Lucie Unit 2 Rev. 0.
3 WCAP-16208-P October 2004, Revision 0, NDE Inspection Length for CE Steam Generator Tubesheet Region Explosive Expansions.

inspected within the tubesheet at SL2-14 was 7.25 inches, postulated accident leakage must be addressed for the length of tubing below the 7.25 inch depth inspected at SL2-14. This postulated accident leakage is addressed as follows:

- WCAP-16208-P concludes that the total postulated accident leakage from an assumed circumferential severance of all tubes below the inspection distance of 10.1 inches would be limited to 0.1 gpm/SG. This postulated accident leakage is well below the primary to secondary leakage limit of 0.5 gpm/SG for Cycle 14 operation.
- The minimum inspection depth completed for SL2-14 is 7.25 inches, and the minimum inspection depth proposed for Sl2-15 is 10.1 inches below the expansion transition. This results in a "gap region" of 2.85 inches for which postulated accident leakage also must be addressed. Using the leakage data provided in WCAP-16208-P, a leakage value of 0.00156 gpm/tube is derived for a depth of 7.25 inches. Conservatively assuming that the number of tubes that may be defective in this gap region is equal to all of the tubes detected with degradation below the expansion transition to date, this would be equal to seven tubes. On this basis, postulated accident leakage would be 0.011 gpm/SG (7 x 0.00156 gpm = 0.011 gpm). This additional leakage is well below the remaining margin of 0.4 gpm/SG for Cycle 14 operation. Further, using the leakage value per tube at 7.25 inches of 0.00156 gpm/tube, approximately 256 tubes could be severed at this depth and the postulated accident leakage would be within the remaining margin of 0.4 gpm/SG (0.4 gpm/SG ÷ 0.00156 gpm/tube = 256 tubes). The total number of tubes that are potentially defective in the gap region is expected to be significantly below this number based on St. Lucie Unit 2 inspection experience through SL2-14 in April 2003.

Based on the foregoing discussion, the St. Lucie Unit 2 steam generators are expected to meet the current licensing basis limits and the structural integrity and accident performance criteria of NEI 97-06 and are, therefore, considered operable.

TABLE 1

SL2-14 Tube Inspection Methods	Flaw Detection Capability	Basis for Meeting Technical Specifications & 10CFR Part 50 Appendix B
Bobbin Probe Inspections • Full tube length • Dings less than 5 volts	Bobbin probe techniques are qualified for flaw detection in accordance with Industry guidance. These qualifications may not be valid for tube regions where geometric variation is a dominant factor such as the tube expansion transition and expanded portion of tubing within the tubesheet, and dings/dents equal to or greater than 5 volts.	The extent of Bobbin probe examinations completed at SL2-14 meet or exceeds Technical Specification and 10CFR Part 50 Appendix B requirements. Bobbin probe inspections at SL2-14 were extensively supplemented by specialty probes (i.e., +Point™) for regions where geometric change is a dominant factor.
+Point™ Inspections • Tube Expansion Transition (Top of Tubesheet) and Expanded Tube Section within the Tubesheet • Row 1-2 U-bends • Dings • Characterization of Indications from Bobbin inspections	+Point™ probe techniques are qualified for flaw detection in accordance with Industry guidance. These qualifications are valid for tube regions where geometric variation is a dominant factor such as the tube expansion transition and expanded portion of tubing within the tubesheet, rows 1-2 U-bends and dings/dents.	Generally, the extent of +Point™ examinations completed at SL2-14 meets or exceeds Technical Specification and 10CFR Part 50 Appendix B requirements. Areas where the bobbin is not effective are either inspected 100% or sampled in accordance with industry guidance and plant technical specifications. Degradation specifically within the tubesheet has been limited to the upper two inches of this region. Thus, the depth of inspections within the tubesheet (i.e., eight inches below the top of tubesheet) for the last inspection was not challenged.

ATTACHMENT 3

NRC GENERIC LETTER 2004-01: REQUIREMENTS FOR STEAM GENERATOR TUBE INSPECTIONS, RESPONSE FOR TURKEY POINT UNITS 3 AND 4

On August 30, 2004, the Nuclear Regulatory Commission (NRC) issued Generic Letter 2004-01, "Requirements for Steam Generator Tube Inspections." The NRC requested that specific information be provided within 60 days of the date of the Generic Letter. Florida Power and Light Company (FPL) hereby responds to the 60-day information request set forth in the Generic Letter with respect to Turkey Point Units 3 and 4.

NRC Requested Information: Within 60 days of the date of this generic letter, addressees are requested to provide the following information to the NRC:

NRC Request 1: Addressees should provide a description of the SG tube inspections performed at their plant during the last inspection. In addition, if they are not using SG tube inspection methods whose capabilities are consistent with the NRC's position, addressees should provide an assessment of how the tube inspections performed at their plant meet the inspection requirements of the TS in conjunction with Criteria IX and XI of 10 CFR Part 50, Appendix B, and corrective action taken in accordance with Appendix B, Criterion XVI. This assessment should also address whether the tube inspection practices are capable of detecting flaws of any type that may potentially be present along the length of the tube required to be inspected and that may exceed the applicable tube repair criteria.

Turkey Point Unit 3 and 4 Response to Request 1: Steam generator tube inspections performed at Turkey Point Units 3 and 4 were consistent with the Technical Specifications in conjunction with Criteria IX, XI and XVI of 10CFR Part 50 Appendix B and the NRC's position regarding tube inspections.

Turkey Point Units 3 and 4 each have three Westinghouse Model 44F replacement steam generators. The tubing material in each steam generator is Inconel Alloy 600 Thermally Treated. The tubes were hydraulically expanded through the full depth of the tubesheet. The tube bundle is supported by stainless steel broached tube supports in the vertical portion of the bundle and anti-vibration bars in the U-bends. The first tube support above the tubesheet is a flow distribution baffle. All tube rows are U-bends (i.e., none contain square bends), and the first eight rows are stress relieved after bending.

At Turkey Point Unit 3, the last inspection was conducted in October 2004 and included the following scope in all steam generators:

Visual Inspections

- All installed tube plugs
- Foreign object search and retrieval of the tubesheet annulus and blowdown lane

Bobbin Probe Inspections

- Full length of all active tubes in rows 3 and higher.
- Hot leg and cold leg straight lengths of all active tubes in rows 1 and 2
- Screening of dings less than 5 volts in straight sections

+Point™ Probe Inspections

- 100% of active hot leg expansion transitions (+3" to –2")
- 50% of active row 1 and 2 U-bends
- 50% of hot leg dings equal to or greater than 5 volts
- 50% of hot leg dings in the U-bend regions equal to or greater than 3 volts
- Bobbin indications that were new or showed change

At Turkey Point Unit 4, the last inspection was conducted in October 2003 and included the following scope in all steam generators:

Visual Inspections

- All installed tube plugs
- Foreign object search and retrieval of the tubesheet annulus and blowdown lane

Bobbin Probe Inspections

- Full length of all active tubes in rows 3 and higher.
- Hot leg and cold leg straight lengths of all active tubes in rows 1 and 2
- Screening of dings less than 5 volts in straight sections

+Point™ Probe Inspections

- 100% of active hot leg expansion transitions (+3" to –2")
- 30% of active row 1 and 2 U-bends
- 30% of hot leg dings equal to or greater than 5 volts
- 30% of hot leg dings in the U-bend regions equal to or greater than 3 volts
- Bobbin indications that were new or showed change

Turkey Point Units 3 and 4 use tube inspection methods that are capable of detecting all flaw types that may be present based on Turkey Point and industry experience. Prior to each inspection a degradation assessment, which includes operating experience, is performed to identify degradation mechanisms that may be present, and a technique validation assessment is performed to verify that the scheduled eddy current techniques are capable of detecting those degradation mechanisms identified in the degradation assessment.

NRC Request 2: If addressees conclude that full compliance with the TS in conjunction with Criteria IX, XI and XVI of 10 CFR Part 50, Appendix B, requires corrective actions, they should discuss their proposed corrective actions (e.g., changing inspection practices consistent with the NRC's position or submitting a TS amendment request with the associated safety basis for limiting the inspections) to achieve full compliance. If addressees choose to change their TS, the staff has included in the attachment suggested changes to the TS definitions for a tube inspection and for plugging limits to show what may be acceptable to the staff in cases where the tubes are expanded for the full depth of the tubesheet and where the extent of the inspection in the tubesheet region is limited.

Turkey Point Unit 3 and 4 Response to Request 2: Steam generator tube inspections performed at Turkey Point Units 3 and 4 are consistent with the Technical Specifications in conjunction with Criteria IX, XI and XVI of 10CFR Part 50 Appendix B, and the NRC's position regarding tube inspections. Therefore this question does not apply.

NRC Request 3: For plants where SG tube inspections have not been or are not being performed consistent with the NRC's position on the requirements in the TS in conjunction with Criteria IX, XI, and XVI of 10 CFR Part 50, Appendix B, the licensee should submit a safety assessment (i.e., a justification for continued operation based on maintaining tube structural and leakage integrity) that addresses any differences between the licensee's inspection practices and those called for by the NRC's position. Safety assessments should be submitted for all areas of the tube required to be inspected by the TS where flaws have the potential to exist and inspection techniques capable of detecting these flaws are not being used, and should include the basis for not employing such inspection techniques. The assessment should include an evaluation of (1) whether the inspection practices rely on an acceptance standard (e.g., cracks located at least a minimum distance of x below the top of the tube sheet, even if these cracks cause complete severance of the tube) which is different from the TS acceptance standards (i.e., the tube plugging limits or repair criteria), and (2) whether the safety assessment constitutes a change to the "method of evaluation" (as defined in 10 CFR 50.59) for establishing the structural and leakage integrity of the joint. If the safety assessment constitutes a change to the method of evaluation under 10 CFR 50.59, the licensee should determine whether a license amendment is necessary pursuant to that regulation.

Turkey Point Unit 3 and 4 Response to Request 3: Steam generator tube inspections performed at Turkey Point Units 3 and 4 are consistent with the Technical Specifications in conjunction with Criteria IX, XI and XVI of 10CFR Part 50 Appendix B, and the NRC's position regarding tube inspections. Therefore this question does not apply.

ATTACHMENT 4

NRC GENERIC LETTER 2004-01: REQUIREMENTS FOR STEAM GENERATOR TUBE INSPECTIONS, RESPONSE FOR SEABROOK STATION

On August 30, 2004, the Nuclear Regulatory Commission (NRC) issued Generic Letter 2004-01: "Requirements for Steam Generator Tube Inspections." The NRC requested that specific information be provided within 60 days of the date of the Generic Letter. FPLE Seabrook, LLC hereby responds to the 60-day information request set forth in the Generic Letter with respect to Seabrook Station.

NRC Requested Information: Within 60 days of the date of this generic letter, addressees are requested to provide the following information to the NRC.

NRC Request 1: *Addressees should provide a description of the SG tube inspections performed at their plant during the last inspection. In addition, if they are not using SG tube inspection methods whose capabilities are consistent with the NRC's position, addressees should provide an assessment of how the tube inspections performed at their plant meet the inspection requirements of the TS in conjunction with Criteria IX and XI of 10CFR Part 50, Appendix B, and corrective action taken in accordance with Appendix B, Criterion XVI. This assessment should also address whether the tube inspection practices are capable of detecting flaws of any type that may potentially be present along the length of the tube required to be inspected and that may exceed the applicable tube repair criteria.*

FPLE Response to Request 1: Steam generator tube inspections performed at Seabrook Station are consistent with the Technical Specifications in conjunction with Criteria IX, XI and XVI of 10CFR Part 50 Appendix B, and the NRC's position regarding tube inspections.

Seabrook Station has four Westinghouse model F steam generators. The tubing material in each of the steam generators is Inconel Alloy 600 thermally treated. In addition, the first 10 rows had the U-bend area stress relieved after bending. The tubes are fully hydraulically expanded into the tube sheet. The tube bundle is supported by stainless steel broached tube supports in the vertical portion of the bundle and anti-vibration bars in the U-bends. The first support above the tubesheet is a flow distribution baffle.

In the last refueling outage, October 2003, Seabrook Station performed the following tube inspection scope in all steam generators:

Visual Inspections

- All installed tube plugs
- Foreign object search and retrieval of tubesheet annulus and blowdown lane

Bobbin Probe Inspections

- Full length of all active tubes in rows 3 and higher
- Hot and cold leg straight lengths of all active tubes in rows 1 and 2
- Screening of dings less than 5 volts in straight sections

+Point™ Probe Inspections

- 20% of hot leg expansion transition (+3" to – 3")
- 20% of small radius (Row 1 and Row 2) U-bends
- 20% sample of hot leg straight section dings and dents equal to or greater than 5 volts
- Bobbin probe indications that were new or not resolved after history review

Seabrook Station uses tube inspection methods that are capable of detecting all flaw types that may be present based on Seabrook and industry operating experience. Prior to each inspection, a degradation assessment, which includes operating experience, is performed to identify degradation mechanisms that may be present, and a technique validation assessment is performed to verify that the eddy current techniques are capable of detecting those degradation mechanisms identified in the degradation assessment.

NRC Request 2: If addressees conclude that full compliance with the TS in conjunction with Criteria IX, XI and XVI of 10 CFR Part 50, Appendix B, requires corrective action, they should discuss their proposed corrective actions (e.g., changing inspection practices consistent with the NRC's position or submitting a TS amendment request with the associated safety basis for limiting the inspections) to achieve full compliance. If addressees choose to change their TS, the staff has included in the Attachment suggested changes to the TS definitions for a tube inspection and for plugging limits to show what may be acceptable to the staff in cases where the tubes are expanded for the full depth of the tube sheet and where the extent of the inspection in the tube sheet region is limited.

FPLE Response to Request 2: Steam generator tube inspections performed at Seabrook Station are consistent with the Technical Specifications in conjunction with Criteria IX, XI and XVI of 10CFR Part 50 Appendix B, and the NRC's position regarding tube inspections. Therefore this question does not apply.

NRC Request 3: For plants where SG tube inspections have not been or are not being performed consistent with the NRC's position on the requirements in the TS in conjunction with Criteria IX, XI, and XVI of 10 CFR Part 50, Appendix B, the licensee should submit a safety assessment (i.e., a justification for continued operation based on maintaining tube structural and leakage integrity) that addresses any differences between the licensee's inspection practices and those called for by the NRC's position. Safety assessments should be submitted for all areas of the tube required to be inspected by the TS, where flaws are not being used, and should include the basis for not employing such inspection techniques. The assessment should include an evaluation of (1) whether the inspection practices rely on an acceptance standard (e.g., cracks located at least a minimum distance of x below the top of tube sheet, even if these cracks cause complete severance of the tube) which is different from the TS acceptance standards (i.e., the tube plugging limits or repair criteria), and (2) whether the safety assessment constitutes a change to the "method of evaluation" (as defined in 10CRF50.59) for establishing the structural and leakage integrity of the joint. If the safety assessment constitutes a change to the method of evaluation under 10 CFR 50.59, the licensee should determine whether a license amendment is necessary pursuant to that regulation.

FPLE Response to Request 3: Steam generator tube inspections performed at Seabrook Station are consistent with the Technical Specifications in conjunction with Criteria IX, XI and XVI of 10CFR Part 50 Appendix B, and the NRC's position regarding tube inspections. Therefore this question does not apply.