



March 12, 2008
L-2008-042
10 CFR 50.36

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington D. C. 20555

Re: Turkey Point Unit 4
Docket No. 50-251
Response to Request for Additional Information Regarding the
2006 Steam Generator Tube Inspections (TAC NO. MD6875)

By letter L-2006-248, dated November 21, 2006, Florida Power & Light (FPL) submitted the Turkey Point Unit 4 steam generator tube plugging 15-day special report pursuant to Technical Specification (TS) 4.4.5.5.a requirements at that time. Additionally, by letter L-2007-140, dated September 25, 2007, FPL submitted the Turkey Point Unit 4 steam generator tube plugging inservice inspection 12-month special report. The special report was submitted pursuant to TS 4.4.5.5.b requirements at that time, and documented the results of the Turkey Point Unit 4 End of Cycle 22 steam generator tube inspections performed from November 8, 2006, through November 14, 2006.

On February 21, 2008, the NRC issued a request for additional information regarding the referenced reports. Attachment 1 documents FPL's response to the request for additional information.

Should there be any questions, please contact Paul Infanger at (305) 246-6632.

Sincerely,

A handwritten signature in black ink, appearing to read "W. Jefferson, Jr.", written over a horizontal line.

William Jefferson, Jr.
Vice President
Turkey Point Nuclear Plant

OIH

Attachments

cc: Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, Turkey Point Plant

**Response to NRC Request for Additional Information
2006 Steam Generator Tube Inspections
Turkey Point Nuclear Power Station, Unit 4
Docket Number 50-251**

1. In Florida Power & Light Company letter dated March 8, 2007, the top table in NIS-BB indicates that six tubes in steam generator A had indications greater than 40-percent through-wall. Presumably these six tubes are the tubes with indications of wear near the top of the tubesheet on the cold-leg side of the steam generator. Please discuss why the six tubes in the top table were not listed as preventively plugged (see related question below).

FPL Response

The six tubes listed in the top table in form NIS-BB under "Total Tubes \geq 40%, SVI" are the tubes with indications of wear near the top of the tubesheet on the cold-leg side of SG 4A. The intent of the discussion on the first page of the NIS-BB Report (item 3) is that the EPRI technique (21998 Rev. 3) used to size these six indications limits sizing for service to freespan locations (i.e., the expansion transition is not considered freespan). Sizing uncertainty is quantified, however, and the technique may be used to size the indications for the purpose of condition monitoring assessment. Based on sizing for condition monitoring, two of the indications were greater than the plugging limit and the remaining four indications were less than the plugging limit. Based on the above discussion, two of the indications were plugged because they exceeded the 40% tube plugging limit and four were preventatively plugged. In addition, based on the calibration standard used for this technique, the sizing results are expected to be conservative (also see reply to RAI #3).

2. It was noted that a foreign object search and retrieval (FOSAR) and secondary side inspection (SSI) established that a foreign object was no longer present at the location where six tubes had experienced wear. Please discuss the scope and results of any secondary side inspections including FOSAR.

FPL Response

SSI and FOSAR is conducted in the tubesheet annulus and blow down regions of each SG following sludge lancing. Inner bundle regions at the tubesheet are also viewed to assess cleanliness and for evidence of foreign objects. SSI and FOSAR results are coordinated with eddy current test results to ensure that potential foreign objects from either effort are adequately addressed. For example, if SSI/FOSAR retrieves a foreign object, the location is provided to lead eddy current personnel who review the inspection techniques used in that area to ensure that a technique qualified for detecting degradation in that location was used. During these inspections, three new objects were found in SG 4A that could not be removed (0.06" x 2" wire, 0.03" x 1" wire and a 0.06" x 2" weld rod) and bounding wear calculations were completed, which supported our operational goal of two cycles until the

next eddy current inspection. Six additional small metallic objects (e.g., flex gasket and wire) were retrieved. No wear degradation was present based on visual and eddy current for these objects.

Additionally, high volume bundle flushing was completed in all three SGs to rinse deposits from upper bundle regions prior to sludge lancing the tubesheet. After bundle flushing, visual inspections were also completed for the upper tube bundle, tube supports and for the feedring and steam separation equipment in SG 4B. Such upper bundle inspections are completed in at least one SG on a rotating basis and continue to show very low deposit accumulations, and that tube support flow holes are free of blockage.

3. It was indicated that the wear signals in six tubes were in close proximity to the expansion transition and as such did not allow sizing using a qualified technique; therefore, all six tubes were “conservatively (preventively)” plugged and none of the indications required in situ pressure testing. If the indications could not be reliably sized due to their proximity to the expansion transition (and presumably the top of the tubesheet), discuss how it was concluded that in situ testing was not required and that the indications’ depths were less than the plugging limit (i.e., since the tubes were “conservatively (preventively)” plugged).

FPL Response

The intent of the discussion in the NIS-BB Report (item 3) is that the EPRI technique (21998 Rev. 3) used to size these six indications limits sizing for service to freespan locations (i.e., the expansion transition is not considered freespan). Sizing uncertainty is quantified, however, and the technique may be used to size the indications for the purpose of condition monitoring assessment. EPRI technique 21998.1, Rev. 3 is considered conservative because it utilizes small flat bottom holes on the calibration standard and is expected to overestimate the depth of the wear in the SG. Based on this sizing effort, two of the indications were greater than the plugging limit and the remaining four indications were less than the plugging limit. The indication that was initially reported was greater than the plugging limit and also exceeded the initial in situ test screening limit, which required further evaluation. Subsequent profiling and structural analysis was completed to determine a burst pressure. The calculated lower 95% burst pressure, taking into account material strength, sizing, and relational uncertainties, is 5098 psi. This value exceeds the 3xNODP pressure of 4542 psi. Therefore, no ISPT was required for this indication. Based on the above discussion, two of the indications were plugged because they exceeded the 40% tube plugging limit and four were preventatively plugged.

4. Please discuss how the six tubes with wear scars near the top of the tubesheet on the cold-leg side of the steam generator were identified (bobbin probe, rotating probe, both probes). If the indications were not detected with the bobbin probe, please discuss the scope (and results) of any rotating probe examinations performed near the top of the tubesheet on the cold leg side of the steam generator (or why such examinations were not performed).

FPL Response

One of the six indications (i.e., the indication with the greatest through-wall depth) was initially reported using a bobbin probe Turbomix technique. The Turbomix does not meet industry standards for detection or sizing of degradation at the top of tubesheet and, thus is neither qualified nor required. However, industry OE has shown that it can sometimes be effective if degradation is significant. Therefore, the Turbomix technique is used by some licensees as a pro-active measure in regions where rotating probes are not routinely used (e.g., the cold leg top of tubesheet). A rotating probe technique confirmed the initial indication (which was the most severe indication) as wear and the surrounding tubes were subsequently inspected, which led to detection of the five additional indications. Tubes surrounding each of the additional indications were also inspected with rotating probes to ensure the degradation was bounded. Additional rotating probe inspections were completed for all Turbomix indications reported, all possible loose part (PLP) indications reported by eddy current inspections and all locations where small foreign objects were reported by visual inspection. In addition, a review of the Turbomix data at the cold leg top of tubesheet was performed for the periphery tubes in SG 4A. Approximately 12 additional peripheral tube locations were tested with rotating probes and no additional wear was detected. Visual inspections during this inspection confirmed that no loose part was present in the region where degradation was detected, and a review of prior visual inspection efforts determined that there have been no foreign objects observed in this region. Thus, there have been no occurrences of foreign objects in the region where degradation was observed that may have suggested the potential for wear damage to be present.

5. The staff could not locate the 15-day report that was previously required to be submitted by Technical Specification 4.4.5.5.a. Please submit another copy of this report.

FPL Response

Attachment 2 provides the requested report originally submitted to the NRC by FPL letter L-2006-248, dated November 21, 2006.

**ATTACHMENT 2
TO L-2008-042**

FPL Letter L-2006-248



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L-2006-248
10 CFR 50.36

William D. Travers
Regional Administrator
U. S. Nuclear Regulatory Commission
Atlanta Federal Center
61 Forsyth Street, S. W., Suite 23T85
Atlanta, GA 30303

Re: Turkey Point Unit 4
Docket No. 50-251
Steam Generator Tube Plugging 15-Day Special Report

In accordance with Turkey Point Technical Specification 4.4.5.5.a, the subject Special Report is submitted pursuant to Technical Specification 6.9.2 for Turkey Point Unit 4, as a result of the End of Cycle 22 steam generator tubes inservice inspection.

The Turkey Point Unit 4 steam generators were inspected between November 8, 2006, and November 14, 2006. A total of six tubes required plugging in the 4A steam generator. All six tubes were plugged as the result of foreign object wear at the cold leg tubesheet expansion transition. The foreign object is no longer present. There were no tubes plugged in the 4B or 4C steam generators as a result of these examinations.

Should there be any questions, please contact James Connolly at 305-246-6632.

Very truly yours,

A handwritten signature in black ink, appearing to read "Terry O. Jones", is written over a light-colored background.

Terry O. Jones
Vice President
Turkey Point Nuclear Plant

OIH

cc: USNRC, Document Control Desk, Washington, D.C.
Senior Resident Inspector, USNRC, Turkey Point Plant