



August 12, 2022

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington D C 20555-0001

RE: Turkey Point Nuclear Generating Station, Unit 3
Docket No. 50-250
Subsequent Renewed Facility Operating License DPR-31

Response to Request for Additional Information Regarding Turkey Point Unit 3 Cycle 32 Steam Generator Tube Inspection Report

Reference:

1. FPL Letter L-2022-072, **Steam Generator Tube Inspection Report, May 6, 2022 (ADAMS Accession No. ML22126A104)**
2. NRC E-mail Capture, Request for Additional Information - Turkey Point U3 SGTIR (L-2022-LRO-0070), June 30, 2022 (**ADAMS Accession No. ML2218A056**)

In Reference 1, Florida Power & Light Company (FPL) submitted the Turkey Point Unit 3 Cycle 32 Refueling Outage Steam Generator Tube Inspection Report following completion of the inspections performed in accordance with Technical Specification 6.8.4.j, Steam Generator (SG) Program. In Reference 2, the NRC requested additional information determined necessary to complete the review.

The enclosure to this letter provides FPL's response to the request for additional information (RAI).

This letter contains no new regulatory commitments.

Should you have any questions regarding this submittal, please contact Michael Davis, Fleet Licensing Manager, at (319) 851-7032.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on the 12 day of August 2022.

Sincerely,

A handwritten signature in black ink, appearing to read 'D. Strand', is written over a horizontal line.

Dianne Strand
General Manager, Regulatory Affairs
Enclosure
Attachments

cc: USNRC Regional Administrator, Region II
USNRC Project Manager, Turkey Point Nuclear Generating Station
USNRC Senior Resident Inspector, Turkey Point Nuclear Generating Station
Ms. Cindy Becker, Florida Department of Health

Enclosure
Response to RAI on the TP3-32 SG Tube Inspection Report

Background: By letter dated May 6, 2022 (ML22126A104), Florida Power & Light Company (the licensee) submitted information summarizing the results of the fall 2021 steam generator (SG) inspections performed at Turkey Point Nuclear Generating Unit 3 (Turkey Point Unit 3). These inspections were performed during refueling outage 32 (TP3-32). Technical Specification (TS) Section 6.9.1.8 requires that a report be submitted within 180 days after the initial entry into hot shutdown (MODE 4) following completion of an inspection of the SGs performed in accordance with TS Section 6.8.4.j, which requires that a SG Program be established and implemented to ensure SG tube integrity is maintained.

To complete its review of the inspection report, the U.S. Nuclear Regulatory Commission staff requests the following additional information:

RAI-1

Tubes Row 33, Column 43 (R33C43) and R34C31 in SG-C were plugged due to “unusually high” anti-vibration bar (AVB) wear growth during TP3-32. The wear indications at AVB 2 (AV2) and AV3 in tube R33C43 appear to have grown in depth by 5 percent through-wall (TW) and 7 percent TW, respectively, since TP3-27 (spring 2014, ML14302A079). In addition, the wear indications at AV2 and AV3 in Tube R34C31 appear to have both grown in depth by 3 percent TW since TP3-27. Therefore, it is unclear to the staff on how AVB wear growth is classified as “unusually high.”

Tube R35C49 in SG-C was plugged due to AVB wear greater than the 40 percent TW plugging criterion in the TS during TP3-32. The wear indications at AV3 and AV4 in this tube appear to have grown in depth by 24 percent TW and 19 percent TW, respectively, since TP3-27.

Please provide the following:

- a. The parameters used for classifying AVB wear growth as “unusually high.” In addition, include the AVB growth rates (i.e., the means and standard deviations of the AVB growth rates) in the three SGs.
- b. Any insights on what may have contributed to the AVB wear growth, such as deposit loading or thermal hydraulic behavior, in Tube R35C49.
- c. A comparison of the observed AVB wear growth rates for Tubes R33C43, R34C31, and R35C49 with the 95th percentile AVB wear growth rate assumed in the Cycles 30 and 31 operational assessments; and whether adjustments were required to the projected AVB wear growth rates for the upcoming operating period.

FPL Response to RAI-1:

- a. The AVB wear indications in tubes R33C43 and R34C31 of SG-C were plugged to provide additional margin until the next full-scope SG inspection (as stated in the inspection report). The AVB wear indications reported in these tubes had grown in depth since the TP3-27 SG inspections. Now, the preventive plugging of these tubes is better attributed to the tubes having growth potential (instead of unusually high growth) based on their trend in the last few inspections since TP3-27. This clarification is editorial and does not change the tubes selected for preventive plugging in SG-C. The individual apparent wear rates for the AVB indications in tube R33C43 also showed high wear rates compared to the prior inspection results (TP3-29) and to historical 95-50 wear rates. Preventive tube plugging in TP3-32 was performed to achieve a 3-cycle inspection interval. Pre-operational assessment calculations indicated that

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Response to RAI on the TP3-32 SG Tube Inspection Report

plugging at 37%TW would meet that goal. Therefore, tubes R33C43 and R34C31 were preventively removed from service.

By comparing inspection data from TP3-32 with data from the same indications during the prior inspection at TP3-29 (ML17325A998), the average wear rate for each indication is computed by taking the difference and dividing by the operating period length (4.12 EFPY) for Cycles 29, 30, and 31. Using a normal distribution fitted to the observed average AVB wear rates, the respective mean, standard deviation and AVB wear growth rate in each SG are summarized in the Table below: (all units are in %TW/EFPY)

SG	Mean	Standard Deviation	AVB wear rate (95 th percentile)
A	-0.121	0.720	1.06
B	-0.431	0.893	1.04
C	0.187	1.027	1.88

- b. It is not known what may have contributed to the AVB wear growth observed in tube R35C49 at AV3/4 in SG-C. The AVB wear growth could potentially be influenced by uncertainties in sizing for the repeat measurements which can cause unrealistic extreme values. There were also no possible loose parts (PLPs) in proximity to the indications in R35C49 or at the uppermost tube support plate (TSP), so the AVB wear growth experienced was unlikely due to the presence of a foreign object. Upper bundle flush activities were conducted prior to starting full-length ECT exams on SG-C; therefore, any suspected debris buildup in the U-bend close to these indications would likely have been cleared during bundle flush activities and prior to ECT inspection on the tube. Therefore, any contribution from deposit loading or thermally hydraulic behavior is not suspected.
- c. In the Table below, the observed AVB wear growth rates for each indication in the requested tubes are computed using the growth observed between the indications reported in TP3-32 and the ones reported in the prior inspection in TP3-29. For each indication, the AVB wear growth rate is calculated by dividing the growth observed by the inspection interval (4.12 EFPY).

Indication Location		TP3-29	TP3-32	AVB wear rate (%TW/EFPY)
R33C43	AV2	23%TW	32%TW	2.18
	AV3	27%TW	37%TW	2.43
R34C31	AV2	29%TW	30%TW	0.24
	AV3	36%TW	37%TW	0.24
R35C49	AV3	26%TW	46%TW	4.85
	AV4	32%TW	48%TW	3.88

For the current and past operational assessments (OAs), a conservative wear rate of 3.3%TW per EFPY has been used as the 95-50 upper bound to include additional margin for projecting wear growth to the next inspection. Benchmarking of the CM data showed conservative agreement with the maximum wear depths predicted by the last OA. Therefore, no adjustments were required to the AVB wear rate for the next operating period.

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Response to RAI on the TP3-32 SG Tube Inspection Report

RAI-2

Tube R18C87 in SG-B was preventively plugged due to a volumetric (VOL) indication in the freespan. This VOL indication was reported to be 23 percent TW, which fell below the condition monitoring limit curve, and met the acceptance criteria for burst and leakage integrity. The fall 2021 report states that eddy current analysis code "VOL" is "used to report freespan wear in TP3-32." No indication was reported in Tube R18C87 during TP3-29 (spring 2017, ML17325A998), and the fall 2021 report states that the newly identified foreign object (small-grade wire) was removed from SG-B.

Please provide any insights on what may have contributed to the VOL indication in the freespan of Tube R18C87.

FPL Response to RAI-2:

The indication in tube R18C87 at 02H+3.15 is likely a small imperfection on the outside diameter of the tube or could potentially have been caused by a transient foreign object. It is unlikely that the indication was caused by the small-grade wire found in SG-B since the location of the wire (in the CL, in-bundle at the TTS) was not in proximity to the indication. A lookback review performed on the bobbin data at the indication location showed a small discernable signal in the 2004 data (earliest data available in digital format). Since the indication was present over several past inspections and had shown no significant change over a long period of time, it met the definition for the DFH (differential freespan history) reporting code. The indication was sized with ETSS 21998.1 in TP3-32 and assigned a VOL reporting code based on the +Point™ probe exam. The tube was preventively removed from service.