NRR-PMDAPEm Resource

From: Klett, Audrey
Sent: Wednesday, January 15, 2014 2:03 PM
To: Tomonto, Bob (Bob.Tomonto@fpl.com); 'Hanek, Olga' (Olga.Hanek@fpl.com); 'Mihalakea, Stavroula' (Stavroula.Mihalakea@fpl.com)
Subject: Request for Additional Information - Turkey Point 4 - 2013 Steam Generator Inspections (TAC MF2886)

Hi Bob, Olga, Stavy,

By letter dated September 19, 2013 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML13277A358), Florida Power & Light Company (the licensee) submitted information summarizing the results of the 2013 steam generator (SG) tube inspections performed at Turkey Point Nuclear Generating Unit No. 4 (Turkey Point 4) during Refueling Outage 27. In order to complete its review of the document listed above, the staff requests the following additional information by February 28, 2014. Olga Hanek of the licensee's staff confirmed this due date on January 15, 2014.

REQUEST FOR ADDITIONAL INFORMATION

1. It was indicated that the SGs had accumulated 23.05 effective full power years of operation at the completion of cycle 26 (fall 2012 outage). Please provide the number of effective full power years the SGs had accumulated at the time of the first refueling outage following replacement (1984). In addition, please provide the number of effective full power years the SGs had accumulated for the last several refueling outages.

2. In Table 1:

    a. It was indicated that the bobbin probe examination included tubes with low-voltage U-bend offsets. Please clarify how many tubes per SG have been characterized as having these offsets. Does this category of tubes only include tubes in "high-row" tubes (i.e., tubes that were not stress-relieved following bending)? Are there any "low-row" tubes that have an eddy current offset? If so, please distinguish between the low-voltage offset tubes (which the staff infers are tubes that are commonly referred to as "-2-sigma tubes") and tubes that have been stress relieved that have an eddy current offset.

    b. For the rotating probe inspection of the dings in the U-bend and of hot-leg dents/dings at structures, please clarify whether this included all dents/dings regardless of their amplitude as determined from the bobbin coil probe or whether only dents/dings that exceeded certain amplitudes were inspected.

    c. For the rotating probe inspections of the U-bend dings and the hot-leg dents/dings at structures, it was indicated that these inspections included tubes/locations not inspected in the prior inspection. The NRC staff was under the impression that the prior inspections included inspecting 100% of these locations. As a result, please clarify the "not inspected in prior inspection" phrase.

3. The tube in row 17, column 74 in SG B was stabilized and plugged because of wear associated with a possible foreign object. Please discuss whether the presence of the part was confirmed through visual examinations. If not, please discuss how it was determined that the wear was a result of a loose part (e.g., based on eddy current inspection data indicating the presence of a possible loose part). Although no qualified sizing technique exists for this degradation mechanism, please confirm that this tube had adequate integrity. Was the depth of this indication estimated to be 5 percent through-wall (as indicated in Attachment 3 in the "Util 1" field)?

4. In item 4 of Table 5, there is reference to a small hard pile. Please clarify the nature of this small hard pile (since it seems to be distinguished from deposits, scale, sludge pile, and sludge rocks as used in other descriptions in this table).

5. To facilitate an understanding of some of the responses to the above questions, please clarify the following with respect to the design of the SGs:

    a. Tube outside diameter (0.875-inches)
    b. Tube wall thickness (0.050-inches)
    c. Number of tubes per SG (3,214)
    d. Tube pitch
    e. Tubesheet thickness
    f. Tube support material (405 stainless steel)
    g. Shape of holes (broached quatrefoil for tube support plates and round holes for flow distribution baffle)
    h. The tubes that were stress relieved following bending (rows 1-8).

6. In section "i" of the licensee's report, conclusions regarding meeting the licensee's accident induced leakage performance criteria for the prior operating cycle are presented (i.e., condition monitoring assessment). In the last sentence, however, there is a conclusion that neither the normal operating leakage limit nor the accident induced leakage limit will be challenged during the next operating period. Although the conclusion regarding the future operating period may be correct, it is not clear how this conclusion is drawn from the prior two paragraphs (it appears that past trends in operating primary-to-secondary leakage are being used to infer future trends). Please clarify.

7. It appears that the number of new wear indications is increasing. Please discuss any insights on this trend.

8. Besides the cracking observed in 2012, and the pitting observed in 2000, please clarify whether any other corrosion related degradation has been detected.

9. Eleven indications of possible primary water stress corrosion cracking indications were identified near the tube end during the 2012 inspections. Although these indications were in a region in the tube not required to be inspected, please discuss whether the licensee assessed the orientation of these indications (axial, circumferential) and whether they were new (not present in prior inspections) or were present in prior inspections and not reported (since they were below the region required to be inspected). Were the 11 indications in 11 tubes, or were there multiple indications in a tube or tubes? What is the hot-leg operating temperature at Turkey Point 4?

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