

April 30, 2008

Vice President, Operations
Arkansas Nuclear One
Entergy Operations, Inc.
1448 S.R. 333
Russellville, AR 72802

SUBJECT: ARKANSAS NUCLEAR ONE, UNIT NO. 1 - EVALUATION OF THE
2007 STEAM GENERATOR TUBE INSPECTIONS (TAC NO. MD7235)

Dear Sir or Madam:

By letters dated May 11, 2007 and November 1, 2007, Entergy Operations, Inc., (the licensee), submitted information summarizing the results of its 2007 steam generator (SG) tube inspections at Arkansas Nuclear One, Unit No. 1 (ANO-1). The 2007 tube inspections were performed during refueling outage 20 (1R20) in April/May 2007. In addition to this report, the licensee and the U.S. Nuclear Regulatory Commission (NRC) staff held a Category 1 public meeting on August 29, 2007, to discuss the SG inspection results. The licensee's non-proprietary version of the presentation material provided for the meeting are in the Agencywide Documents Access and Management System (ADAMS) Accession No. ML072420379. The NRC staff summarized additional information concerning the 2007 SG tube inspections at ANO-1 in letters dated May 11, 2007 and August 24, 2007.

The NRC staff has completed its review of this information and the information provided during the August 29, 2007, meeting and concludes that the licensee has provided the information required by its technical specifications and that no additional follow-up is required at this time. The NRC staff's review of the reports is enclosed.

This completes our review of the preliminary results for the 2007 SG tube inspections at ANO-1.

If you have any questions regarding this matter, please contact me at (301) 415-1445.

Sincerely,

/RA/

Alan B. Wang, Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-313

Enclosure: Summary of 2007 Steam Generator Tube Inspections

cc w/encl: See next page

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ADAMS Accession No.: ML081000363

NRR-106

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SUMMARY OF STAFF REVIEW OF
2007 STEAM GENERATOR TUBE INSPECTIONS AT
ARKANSAS NUCLEAR ONE, UNIT NO. 1
PREPARED BY THE OFFICE OF NUCLEAR REACTOR REGULATION
DOCKET NO. 50-313

By letters dated May 11, 2007 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML071420160), and November 1, 2007 (ADAMS Accession No. ML073120010), Entergy Operations, Inc., (the licensee), submitted information summarizing the results of their 2007 steam generator (SG) tube inspections at Arkansas Nuclear One, Unit No. 1 (ANO-1). In addition to this report, the licensee and the U.S Nuclear Regulatory Commission (NRC) staff held a Category 1 public meeting on August 29, 2007, to discuss the SG inspection results. The licensee's non-proprietary version of the presentation material provided for the meeting are in the Agencywide Documents Access and Management System (ADAMS Accession No. ML072420379). The NRC staff summarized additional information concerning the 2007 steam generator tube inspections at ANO-1 in letters dated May 11, 2007 (ADAMS Accession No. ML071310446), and August 24, 2007 (ADAMS Accession No. ML072270581).

The replacement SGs for ANO-1 are Enhanced Once-Through Steam Generators (EOTSG) manufactured by AREVA. The EOTSGs are a straight shell and tube type heat exchanger installed in a vertical position. The tubing is Alloy 690 thermally treated tubing has a 5/8-inch diameter and a 0.037-inch wall thickness. The tubes were expanded hydraulically for the full depth of the tubesheet. There are 15 tube support plates (TSP) that are constructed of SA 240 type 410 stainless steel. These supports have a trefoil-shaped hole design.

The 2007 inspections were performed during refueling outage 20 (1R20). The 2007 inspections were the first inservice inspections of these EOTSGs. The licensee provided the scope, extent, methods, and results of its SGs tube inspections in the documents referenced above. In addition, the licensee described corrective actions (i.e., tube plugging) taken in response to the inspection findings.

As a result of the review of the reports, the NRC staff has the following comments/observations:

- Tie rod bowing due to one or more locked TSP is suspected in EOTSG A. The possible causes, consequences, and corrective actions were discussed in detail in the public meeting on August 29, 2007.
- There is a disproportionate number of wear indications at TSP 8 in EOTSG A.
- There are 690 indications of wear in EOTSG A and 512 indications of wear in EOTSG B at the TSPs. The average depth of these indications is less than 10 percent through wall (TW).

Enclosure

- One tube in EOTSG B was preventatively plugged and stabilized due to an indication of wear that measured 28 percent TW at TSP 10S. This was the only tube plugged this outage.
- The licensee is planning to re-inspect both EOTSGs during the next refueling outage to confirm the apparent root cause and analysis inputs.

Based on a review of the information provided, the NRC staff concludes that the licensee provided the information required by its 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. The NRC staff will continue to monitor the licensee's assessment of the tie rod bowing issue.

Arkansas Nuclear One

(2/25/08)

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