



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

February 26, 2001

LICENSEE: Entergy Operations, Inc.

FACILITY: Arkansas Nuclear One, Unit 1

SUBJECT: ARKANSAS NUCLEAR ONE, UNIT 1 (ANO-1), MEETING SUMMARY
REGARDING MEETING ON JANUARY 22, 2001, TO DISCUSS ALTERNATE
REPAIR CRITERIA FOR STEAM GENERATOR TUBES WITH INDICATIONS
OF OUTER DIAMETER INTERGRANULAR ATTACK (ODIGA)
(TAC NO. MA9879)

On January 22, 2001, representatives of the Nuclear Regulatory Commission (NRC) met with Entergy Operations, Inc. (the licensee) to discuss a proposed amendment to allow an alternate repair criteria for steam generator tubes with indications of ODIGA within the upper tube sheets of the ANO-1 steam generators. The license amendment request is available in the NRC's Agencywide Documents Access and Management System (ADAMS), Accession No. ML003746989. Enclosure 1 provides a list of the participants.

The staff provided the licensee with preliminary questions (via e-mail) prior to the meeting. The questions are provided as Enclosure 2. The participants discussed the questions and related issues associated with the condition of steam generator tubes at ANO-1. The staff will include the enclosed questions and possibly additional questions in a request for additional information that will be transmitted via a letter to the licensee. The licensee will respond to the staff's questions in a future submittal.

William D. Reckley, Project Manager, Section 1
Project Directorate IV & Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-313

Enclosures: As stated

cc w/encls: See next page

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ATTENDANCE LIST

PUBLIC MEETING HELD ON JANUARY 22, 2001

ALTERNATE REPAIR CRITERIA FOR STEAM GENERATOR TUBES WITH INDICATIONS OF
OUTER DIAMETER INTERGRANULAR ATTACK (ODIGA) AT ARKANSAS NUCLEAR ONE, UNIT 1

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PRELIMINARY QUESTIONS FOR JANUARY 22, 2001 MEETING
STEAM GENERATOR TUBES WITH ODIGA INDICATIONS
ARKANSAS NUCLEAR ONE, UNIT 1

Question Set (1) - E-mailed to licensee on December 20, 2000

1. Entergy plugged four tubes in 1R15, listed in Table 8 on page 8 of 1CAN010001 [Once Through Steam Generator (OTSG) Inspection Report dated January 3, 2000], because the tubes exceeded the individual flaw growth repair limit for upper tubesheet IGA. For each tube, what repair limit was exceeded?
2. What was the population size for IGA in each SG for 1R14 (and 1R13), compared with 1R15?
3. From the 10/4/99 SE approving the ARC [alternate repair criteria] for ODIGA, the following statement was made:

“The staff notes that the leakage through ODIGA degradation is calculated using a computer code that has not been reviewed and approved for use by the NRC. In particular, the code needs to be benchmarked against actual leakage data for flawed test specimens representative of the ODIGA flaws at ANO-1. Therefore, uncertainties associated with the leak rate estimates need to be quantified and taken into consideration to ensure they are conservative.”

How was KRAKFLO benchmarked against actual leakage data for ODIGA flaws?
4. Page 25 of the 8/29/00 Entergy submittal stated that “... and any patch of IGA with crack-like characteristics are repaired.” Please provide details of ANO-1 experience with crack-like characteristics in ODIGA patches.

Question Set (2) - E-mailed to the licensee on January 19, 2001

1. On page 6 of their October 4, 1999 report, 1CAN109905, Entergy discussed their 1R15 inspection findings in the rerolls performed during 1R14. Both volumetric and axial/mixed mode indications were detected. The report stated that the volumetric indications were likely small IGA patches. I would like Entergy to discuss their ability to detect ODIGA in areas of the tube selected for possible rerolls.
2. In the SE for License Amendment 202, the staff stated that the licensee had evaluated the data per the proposed growth rate criteria and concluded that growth was not occurring. If small IGA patches not detected by ECT [eddy current testing] are present in the areas of the tube selected for possible rerolls, how will the growth of the IGA patches be affected by reroll operations?
3. I would like Entergy to discuss any plans for continued monitoring of degradation morphology (i.e., tube pulls).

4. In the 8/29/00 Entergy submittal, 1CAN080005, a POD [probability of detection] curve for IGA is provided as Figure 25 on page 56. It appears that this is the same POD curve presented in the Entergy 9/7/99 submittal, 1CAN099901 (BAW-10235P, Rev. 1). The 9/7/99 report states that the POD is based solely on ODIGA defects in tubes removed from various OTSG plants. How does the POD for ODIGA detected at ANO-1 compare with that from the other OTSG plants represented in this analysis?
5. I would also like to discuss the results of a comparison of reevaluated field bobbin depth calls with destructive examination measured OD depth, found in "ANO Unit 1 Steam Generator Tube Examination", Westinghouse report 97-8TC5-ANOTE-R1 dated 9/23/97.

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/RA/

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