



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

April 12, 2010

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

SUBJECT: ARKANSAS NUCLEAR ONE, UNIT NO. 1 - SUMMARY OF TELEPHONE
CONFERENCE CALL REGARDING THE 2010 STEAM GENERATOR TUBE
INSPECTIONS (TAC NO. ME3586)

Dear Sir or Madam:

On March 29, 2010, U.S. Nuclear Regulatory Commission (NRC) staff participated in a conference call with representatives of Entergy Operations, Inc. (the licensee), regarding its ongoing steam generator (SG) tube inspection activities at Arkansas Nuclear One, Unit 1. To facilitate this conference call, the licensee provided supplemental material (Agencywide Documents Access and Management System (ADAMS) Accession No. ML100880205) regarding the scope and results of its SG tube inspection activities.

Enclosed is a summary of the conference call. The NRC staff did not identify any issues that would warrant immediate follow-up action.

If you have any questions, please contact me at (301) 415-1480 or send an e-mail to Kaly.Kalyanam@nrc.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Kaly Kalyanam", with a horizontal line underneath.

N. Kalyanam, Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-313

Enclosure:
Conference Call Summary

cc w/encl: Distribution via ListServ

SUMMARY OF MARCH 29, 2010, CONFERENCE CALL WITH
ENTERGY OPERATIONS, INC. REGARDING THE 2010
STEAM GENERATOR TUBE INSPECTION RESULTS
ARKANSAS NUCLEAR ONE, UNIT 1
DOCKET NO. 50-313

On March 29, 2010, U.S. Nuclear Regulatory Commission (NRC) staff participated in a conference call with representatives of Entergy Operations, Inc. (the licensee), regarding its ongoing steam generator (SG) tube inspection activities at Arkansas Nuclear One, Unit 1 (ANO-1). To facilitate this conference call, the licensee provided supplemental material (Agencywide Documents Access and Management System (ADAMS) Accession No. ML100880205) regarding the scope and results of its SG tube inspection activities.

The two SGs at ANO-1 are AREVA once-through steam generators (OTSG). Each OTSG contains approximately 15,597 thermally treated Alloy 690 tubes. Each tube has a nominal diameter of 0.625-inch and a nominal wall thickness of 0.037-inch. Each tube is hydraulically expanded for the full length of both tubesheets in a sequence designed to produce a tensile pre-load on the tubes. The SG tube support plates are 1.18-inch-thick heat-treated 410 stainless steel with broached trefoil holes. The tube support plates are held in place with stay rods. Additional information concerning the design of the replacement OTSGs is available in the NRC staff letter summarizing a conference call for ANO-1 replacement steam generator discussions, dated March 9, 2006 (ADAMS Accession No. ML060590367), and the licensee's letter regarding the December 2005 ANO-1 SG tube inspection report, dated June 14, 2006 (ADAMS Accession No. ML061730358).

During the March 29, 2010, conference call, the licensee provided additional clarifying information, or information not included in the supplemental material, which is summarized below:

- The scope of the inspection was the tubes immediately surrounding the 52 tie rods in SG A and B. There are 52 tie rods per SG.
- At the time of the call, all eddy current data had been acquired.
- The licensee was initially going to use the +Point coil to inspect tubes in close proximity, but elected to use the X-Probe since the X-Probe was used during the last outage.
- All plugs in SG A and B were verified to be in the correct tubes, intact, and not leaking.
- Of the wear indications detected in 2010, 59 indications in SG A and 21 indications in SG B were present in the prior outage (i.e., repeat indications). The growth rates reported in the supplemental material are "per cycle."

Enclosure

- There are certain areas in the SG with more wear than other areas (e.g., near the aspirator port).
- The operational assessment performed after the last outage bounded the 2010 inspection results.
- The bowing of the tie rods increased by approximately 0.1 inch.
- No appreciable bowing has been observed in SG B.
- In SG B, the bounding growth rate for wear was 16 percent per cycle (the indication was near the 10th span (aspirator port)).
- For both SGs, the deepest wear indication was 34 percent through wall. This wear scar was present in the prior outage (i.e., it was not a new indication).
- In SG A, 10 tie rods were in contact with tubes and 2 additional tie rods were in close proximity to the neighboring tubes, but were not in contact (on west-side of SG).
- At the time of the call, the acceptance criteria for the tie rod bowing issue were not exceeded including the acceptance criteria for the amount of wear on the tubes due to the bowing. Analysis of the data in the second ring of tie rods in the first span and the upper most span was still ongoing.
- No freespan wear was noted in either SG.
- In the 8th span of both SGs, deposits were detected. The deposits start just below the 7th tube support plate (TSP) and extend through the 8th TSP. In the original SGs, the deposits tended to form in the 5th and 6th span. The deposits are forming throughout the 8th span (i.e., 360 degrees). This condition was entered into the corrective actions program. Full flow polishers are used at ANO-1 (although one is bypassed). Iron oxide transport to the SGs is approximately 1 part per billion. At this time, the licensee concluded there is no operability issue.
- The maximum bowing is occurring in the outermost ring of tie rods in the first span. The bowing increased from approximately 1.2 inches in 2008 to approximately 1.3 to 1.4 inches in 2010. In the prior cycles (2007 to 2008), the bowing increased by approximately 0.3 inches.
- Fatigue testing of the tie rods indicates the tie rods can sustain 2.3 inches of lateral bow and still meet the design criteria (accounts for 140 startups and shutdowns).

The NRC staff did not identify any issues that required follow-up action at this time; however, the staff asked to be notified in the event that any unusual conditions were detected during the remainder of the outage.

April 12, 2010

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

SUBJECT: ARKANSAS NUCLEAR ONE, UNIT NO. 1 - SUMMARY OF TELEPHONE
CONFERENCE CALL REGARDING THE 2010 STEAM GENERATOR TUBE
INSPECTIONS (TAC NO. ME3586)

Dear Sir or Madam:

On March 29, 2010, U.S. Nuclear Regulatory Commission (NRC) staff participated in a conference call with representatives of Entergy Operations, Inc. (the licensee), regarding its ongoing steam generator (SG) tube inspection activities at Arkansas Nuclear One, Unit 1. To facilitate this conference call, the licensee provided supplemental material (Agencywide Documents Access and Management System (ADAMS) Accession No. ML100880205) regarding the scope and results of its SG tube inspection activities.

Enclosed is a summary of the conference call. The NRC staff did not identify any issues that would warrant immediate follow-up action.

If you have any questions, please contact me at (301) 415-1480 or send an e-mail to Kaly.Kalyanam@nrc.gov.

Sincerely,
/RA/

N. Kalyanam, Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-313

Enclosure:
Conference Call Summary

cc w/encl: Distribution via ListServ

DISTRIBUTION:

PUBLIC	RidsNrrDoriDpr Resource	RidsOgcRp Resource
LPLIV Reading	RidsNrrDoriLpl4 Resource	RidsRgn4MailCenter Resource
RidsAcrsAcnw_MailCTR Resource	RidsNrrLAJBurkhardt Resource	KKarwoski, NRR/DCI/CSGB
RidsNrrDciCsgb Resource	RidsNrrPMANO Resource	EWong, NRR/DCI/CSGB

ADAMS Accession No. **ML100960402** * Editorial changes only to staff-provided summary

OFFICE	DORL/LPL4/PM	DORL/LPL4/LA	DCI/CSGB/BC*	DORL/LPL4/BC	DORL/LPL4/PM
NAME	NKalyanam	JBurkhardt	RTaylor*	MMarkley	NKalyanam
DATE	4/12/10	4/9/10	4/2/10	4/12/10	4/12/10

OFFICIAL RECORD COPY