

From: [Kalyanam, Kaly](#)
To: [CLARK, ROBERT W](#)
Cc: [Lent, Susan](#)
Subject: Request for Additional Information - TAC No. ME8279
Date: Monday, March 11, 2013 10:47:28 AM

Susan,

When you get a chance, could you please include this email in ADAMS?

Thanks

Kaly

The SUNSI information as follows:

Plant: Arkansas Nuclear One, Unit
Docket No.: 50/313
Subject: RAI on the Steam Generator Tube Inspection Inservice Inspections for the Fall
2011 Refueling Outage
TAC NO. ME8279
SUNSI Review Done: Yes. Normal Release, Non-sensitive,
From: N. Kalyanam
To: Robert Clark

R. Clark:

By letter dated March, 22, 2012, Entergy, the licensee, submitted information summarizing the results of the fall 2011 steam generator (SG) tube inspections performed at Arkansas Nuclear One, Unit 1. The licensee discussed the progress and initial findings of the outage with the U.S. Nuclear Regulatory Commission (NRC) staff in a teleconference summarized in a memorandum dated October 12, 2012. Additionally, the licensee participated in a category 1 public meeting on January 26, 2012 to discuss tube-to-tube wear indications observed during the outage.

The NRC has reviewed the information submitted by the licensee and determined the following additional information is required to complete the evaluation. Entergy is requested to provide the response to this request within 45 days of the receipt of this e-mail. If for some reason, additional time is needed, please let us know in advance.

Thanks

Kaly N. Kalyanam

ARKANSAS NUCLEAR ONE UNIT 1
REQUEST FOR ADDITIONAL INFORMATION REGARDING
THE STEAM GENERATOR TUBE INSERVICE INSPECTIONS FOR THE FALL 2011
REFUELING OUTAGE
TAC NO. ME8279
DOCKET No. 50-313

By letter dated March, 22, 2012, (Agencywide Documents Access and Management Systems Accession Number [ADAMS] ML12086A294), Entergy Operations, Inc., the licensee, submitted information summarizing the results of the fall 2011 steam generator (SG) tube inspections performed at Arkansas Nuclear One, Unit 1. The licensee discussed the progress and initial findings of the outage with the U.S. Nuclear Regulatory Commission (NRC) staff in a teleconference summarized in a memorandum dated October 12, 2012 (ADAMS Accession Number ML12276A301). The licensee participated in a category 1 public meeting on January 26, 2012 to discuss tube-to-tube wear indications observed during the outage. The meeting summary can be found in ADAMS under Accession Number ML120270400.

In order for the staff to complete its review of the fall 2011 SG tube inspections, please provide the following:

1. For the last several inspection outages, please provide the effective full power years that the SGs had operated at the time of the inspection.
2. The tube in row 43, column 8 could not be stabilized. Please discuss the reason that the tube could not be stabilized. If it was because of bowing, please discuss if it would be expected that the tube could not be stabilized given the measured extent of bowing (given the size/stiffness of the stabilizing cable).
3. The bowing in the upper spans of SG B appears to be larger than for SG A. In SG B, one tube was plugged for bowing in the upper portion of the SG (upon initial discovery of this phenomenon).
 - a. Please discuss if this experience is similar to what has been observed in SG A. If the experience is different, please discuss any insights on the nature of the difference.
 - b. Please discuss any insights on why the tie rod bowing in SG B manifested itself after several cycles of operation (i.e., what changed in the steam generator that would cause the tube supports to "lock up" after several cycles of operation).
4. In Section 3.7 of your report, you indicate that there were five new tube-to-tube proximity indications. In Table 3.7.1, there appears to only be three new tube-to-

tube proximity indications (outermost ring in 14th (row 128) and 15th (row 12) span; third outermost ring in 1st span (row 85)). Similarly, for SG B, it was indicated that there were seven locations of tie-rod-to-tube contact, but the table only appears to list six locations (also, for SG A, 11 locations in text and 9 locations in Table for 1R20). Please clarify.

5. Please discuss any insights on the nature of the new pattern of “appreciable” wear at tube support plate 6 in SG A.
 - a. Is there any correlation of this wear with the tie rod bowing issue (even in light of the fact that the bowing occurs during shutdown periods)?
 - b. Has anything occurred operationally (e.g., power uprate, significant change in SG operating parameters (e.g., feedwater temperature)) that would explain the significant increase in the number of new wear indications at the tube support plates?
 - c. Has the number of new wear indications increased or decreased (per outage) since SG replacement?
 - d. Has the growth rate of the wear indications increased or decreased with time?
6. One tube had three indications of wear attributed to tube-to-tube contact. In order for this to occur, the tubes involved would have to move in different directions to affect the tube in the middle.
 - a. Is this information being considered in your root cause assessment?
 - b. Has the extent of movement of the tubes been considered in evaluating the inspection findings (assume that the affected tube moved in one direction then a neighboring tube would have to move considerably more to come into contact with the “affected” tube – is there any concern with the extent of movement on tube integrity)?