January 31, 2007

Mr. Mark B. Bezilla
Site Vice President
FirstEnergy Nuclear Operating Company
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Oak Harbor, OH 43449-9760

SUBJECT: DAVIS BESSE - SUMMARY OF CONFERENCE TELEPHONE CALL REGARDING THE SPRING 2006 STEAM GENERATOR INSPECTIONS (TAC NO. MD0529)

Dear Mr. Bezilla:

On March 21, 2006, the Nuclear Regulatory Commission (NRC) participated in a conference call with Davis Besse Nuclear Power Station representatives regarding the ongoing steam generator (SG) tube inspection activities conducted during the spring 2006 outage. The NRC follows the results of the industry's steam generator inspections in order to maintain an awareness of the condition of the steam generators and the types of tube degradation mechanisms that are active.

The enclosed documentation of the phone call is provided to FirstEnergy Nuclear Operating Company (FENOC) for information. Also, included is a copy of the information provided by FENOC in support of the conference call. If there are any questions, please contact me at 301-415-4037.

Sincerely,

/RA/

Thomas J. Wengert, Project Manager
Plant Licensing Branch III-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-346

Enclosure: Conference Call Summary

cc w/encls: See next page

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DAVIS-BESSE NUCLEAR POWER STATION, UNIT 1
2006 STEAM GENERATOR TUBE INSPECTION ACTIVITIES
CONFERENCE CALL SUMMARY

On March 21, 2006, the Nuclear Regulatory Commission (NRC) staff conducted a phone call with representatives from Davis-Besse Nuclear Power Station, Unit 1 (Davis-Besse) to discuss their on-going steam generator (SG) tube inspections during their 14th refueling outage. Davis-Besse has two Babcock and Wilcox once-through SGs. The tubes are sensitized Alloy 600 in the mill annealed condition. The last inspection of the SG tubes was performed in January and February 2005, during a mid-cycle outage. The mid-cycle outage was performed as a result of an extended shutdown.

In support of the phone call, Davis-Besse provided a table summarizing the SG tube inspections performed during the 2006 outage. This table, along with five other tables summarizing the results of the inspections, are attached to this summary. Additional clarifying information and information not included in the documents is summarized below:

The plant has operated approximately 380 effective full power days since the last examination.

In the "2A" SG, there are 569 tubes plugged, 199 Alloy 690 sleeves installed, and 108 tubes repaired by re-rolling. In the "1B" SG, there are 237 tubes plugged, 212 Alloy 690 sleeves installed, and 8 tubes repaired by re-rerolling.

All sleeves were installed in the 1994-1996 timeframe in the lane/wedge region as a preventive measure against high-cycle fatigue. All sleeves are manufactured from Alloy 690 thermally-treated material. The licensee has no plans to install sleeves this outage.

There was no measurable primary-to-secondary leakage during the prior cycle. The detection limit for primary-to-secondary leakage is approximately $3x10^{-3}$ gallons per day. As a result of not observing any leakage, no secondary side pressure test was performed.

The periphery gap analysis is performed to confirm that the stabilized auxiliary feedwater header remains at least 0.25-inch from the tube tubing. There was no evidence of movement of the header. The technique used for performing this examination was qualified.

The full length bobbin examination for the sleeved tubes were from the lower tube end to the bottom of the sleeve.

The +Point™ examination performed on 67 percent of the sleeved tubes included not only 6-inches past the sleeve but also included the lower roll joints of the sleeve. The inspections below the sleeve roll (and below the sleeve) are for the purposes of detecting any potential parent tube defects in this region since the sleeve interferes with the ability to detect degradation in the parent tube with the bobbin probe.

Enclosure

Approximately 21 percent of the tubes were examined with a +Point™ probe from the upper tube end to the upper tubesheet secondary face.

There is only one tube that has a non-stress relieved lower tubesheet roll expansion. This tube was inspected with a rotating probe during the 2006 inspections.

The +Point™ and pancake coil examinations of the tubes bordering the sleeve region were performed at the 15th tube support and at the upper tubesheet secondary face.

Regarding the dent examinations, 100 percent of the dents greater than 2.5 volts and located below the 14th tube support plate were inspected with a rotating probe; 100 percent of the dents greater than 0.5 volts and located at or above the 14th tube support plate and located in the periphery of the tube bundle were inspected with a rotating probe; and 100 percent of the dents greater than 1.0 volt and located at or above the 14th tube support plate and located in the center of the tube bundle were inspected with a rotating probe. There are approximately 17 dents in each SG that are greater than 0.5 volts, located at or above the 14th tube support plate, and located in the periphery of the tube bundle.

Approximately 20 percent of the tubes in the sludge pile region were inspected with a rotating probe from the top of the sludge pile (typically approximately 3-inches above the lower tubesheet secondary face with a maximum of approximately 5-inches above the lower tubesheet secondary face) to 3-inches below the top of the lower tubesheet secondary face. These examinations focused on dented tubes and tubes with higher sludge pile heights. Automated data screening of the bobbin coil data is used to determine the sludge pile height. The region of the tube bundle where the sludge height for the majority of the tubes is in excess of 0.5-inches is designated as the sludge pile. There are approximately 4000 tubes in the “sludge pile region” in each SG.

A +Point™ probe examination will be performed at the following locations exhibiting wear in order to monitor for the initiation of cracking: (1) all wear indications measuring greater than 20 percent through-wall, (2) all new indications classified as wear, and (3) indications of wear whose depth estimate has changed by more than 5 percent through-wall since the last inspection. There are approximately 300 wear indications in SG 1B and 485 wear indications in SG 2A.

There are 39 sleeves that were scored during installation. These sleeves are in SG 1B and are referred to as “gross mean distortions.” There are an additional three non-sleeved tubes that have ferrous deposits on the inside diameter of the tube. The deposits are a result of wire bristles that inadvertently entered these tubes in 2000 and subsequently oxidized to the point that only the corrosion products from the wire bristles remain. These tubes are also referred to as "gross mean distortions," although the licensee may rename them in the future with a more descriptive name.

All hot-leg rolled plugs at Davis Besse are made from Alloy 690.

The visual inspection of the welded plugs is performed since some welded plugs had indications in 2002.

The visual inspection of the plugs in the upper and lower channel head includes looking for foreign material and tube-end damage.

Axial outside diameter stress corrosion cracking and intergranular attack (IGA) associated with grooves were found in several tubes. None of these indications are structurally significant and the number of indications were consistent with expectations. All of these indications were found with the bobbin probe. Most of these indications are low voltage indications, located near the 15th tube support plate, and in the periphery of the tube bundle. This degradation mechanism (groove IGA) was first found in the 13th refueling outage in 2002 (approximately 3 or 4 indications were found in each SG). The indications found in the 2006 inspection are shallower than those found in 2002 in terms of the depth of degradation. The lengths of the indications found in 2006 are longer than those found in prior inspections. The results of these inspection are consistent with the expected probability of detection for this degradation mechanism.

Approximately 12 tubes in each SG will be repaired by re-rolling. This process will be employed to address indications in the upper tube end and in the roll transition in the upper tubesheet. Tubes will be stabilized, as necessary and all other crack indications (not repaired by re-rolling) will be plugged.

The number of indications in the tube ends was less than expected.

There were no potential loose part indications identified by eddy current examination in 2006. This is consistent with past inspections. No loose parts were found on the primary side of the SG and no evidence of new tube end damage was identified.

There were no secondary side inspections performed in 2006. The secondary side of the SG was maintained in wet layup during the outage. The last foreign object search and retrieval was performed in 2000, when chemical cleaning was performed.

The largest primary water stress corrosion crack indication at the roll transition measured 2.25 volts. This tube was last inspected in 2002. The accident induced leak rate for this indications is estimated at approximately 0.12 gallons per minute. Roll transition primary water stress corrosion cracking was first observed during the mid-cycle outage in 2005.

The circumferential indications found during this outage were located near the tube-to-tubesheet weld in the upper tubesheet or in the secondary shop roll in the lower tubesheet. Based on a preliminary evaluation, none of these circumferential indications are expected to structurally fail under the loads imposed during a large break loss of coolant accident and no leakage is expected from these indications. This information was provided in accordance with License Condition 2.C(7).

The volumetric indication that initiated from the outside diameter in the upper tubesheet is similar to indications detected previously.

The 2006 depth estimates for several wear indications were less than the 2005 depth estimates. This was attributed to technique and analyst variability.

No tube plugs are near their service-life limit as a result of tubesheet hole dilation.

Actions taken in response to NRC Information Notice 2002-02 (including supplement 1) were completed in the 2005 mid-cycle outage.

The replacement of the SGs is being pursued with a targeted installation date of 2014.

At the time of the call, Davis-Besse expected to be complete with the inspections and repairs in the SGs by March 25, 2006.

ATTACHMENT 1

Information provided by the Licensee regarding RFO14 Steam Generator Tube Inspections.

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