

August 30, 2005

MEMORANDUM TO: Richard J. Laufer, Chief, Section 1
Project Directorate I
Division of Licensing Project Management

FROM: Patrick D. Milano, Sr. Project Manager, Section 1 /RA/
Project Directorate I
Division of Licensing Project Management

SUBJECT: SUMMARY OF TELEPHONE CONFERENCE ON MARCH 7, 2005,
REGARDING STEAM GENERATOR TUBE INSPECTIONS, CALVERT
CLIFFS NUCLEAR POWER PLANT, UNIT NO. 2

On March 7, 2005, the Nuclear Regulatory Commission (NRC) staff participated in a telephone conference call with representatives of Calvert Cliffs Nuclear Power Plant, Inc. (the licensee) regarding the inspection of the steam generator (SG) tubes at Calvert Cliffs Nuclear Power Plant, Unit No. 2 (Calvert Cliffs 2). In particular, the NRC staff was concerned about the finding of several loose part indications during the inspection. A summary of the information provided during the call is provided below.

Calvert Cliffs 2 has two SGs designed and fabricated by Babcock and Wilcox International. The SGs were installed in 2003 and are fabricated with thermally-treated Alloy 690 tubes that have an outside diameter of 0.750-inch and a nominal wall thickness of 0.042-inch. The tubes are expanded for the full depth of the tubesheet at each end and are supported by a number of stainless steel lattice grids and fan bars. The tubes are arranged in a triangular pitch.

During the 2005 refueling outage ! the first following SG replacement at Calvert Cliffs 2, 100% of the tubes in each of the two SGs were inspected for the full length with a eddy current testing (ECT) bobbin coil. In addition, a rotating probe was used to inspect any bobbin coil indications. As a result of these inspections, several indications of wear at the fan bars were identified and several possible loose part indications were found.

In SG no. 22, a visual examination confirmed the presence of one possible loose part on the cold-leg side of the SG. The loose part was retrieved and identified as a 5.25-inch long, 0.045-inch diameter wire. The part is believed to have entered the SG through the secondary side of the plant. Further analysis of the part is planned. A visual inspection of neighboring tubes did not identify any additional loose parts. A rotating probe equipped with a +Point™ ECT coil was used to inspect 14 surrounding tubes from the top of the tubesheet to the first lattice grid tube support (approximately 35-inches in length). Three tubes were identified with wear. The wear on these tubes was estimated to be 5% through-wall (1 tube) and 6% through-wall (2 tubes). No other possible loose part indications were found in this region. Two pictures of the loose part (Attachment 1 with the part in the SG, and Attachment 2 after the part was removed from the SG) were provided in support of the phone call. The tubes will be left in service.

In another location on the cold-leg side of SG no. 22, several (2 or 3) non-quantifiable indications were identified by the bobbin coil. These indications were in the same general vicinity. A rotating probe equipped with a +Point™ coil was used to inspect a number of tubes surrounding these indications and resulted in identifying 15 tubes with possible loose part indications. The extent of these rotating probe exams was from the top of the tubesheet to the first lattice grid tube support (approximately 35 inches in length). A one-tube buffer zone was established around the 15 possible loose part indications (i.e., the rotating probe examination was extended to neighboring tubes until at least 1 tube did not have an indication of a possible loose part). Of these 15 tubes with possible loose part indications, 4 tubes had wear indications. The wear in these tubes measured 3%, 4%, 6%, and 11% through-wall. The tubes were not next to each other and are not in the periphery of the tube bundle (i.e., the indications start to appear 6 tubes into the tube bundle). The location of the indications on the affected tubes varied from tube-to-tube. Some of the indications were located at 1 inch above the top of the tubesheet while other indications were located as high as 8 inches above the tubesheet. The relative orientation of the indications (e.g., were they all on the same side of the tube or were they facing each other) was not determined. There was one additional wear indication in the vicinity of these 15 tubes; however, there was no evidence of the part still being present at this location. This tube had a wear scar measuring 9% through-wall.

Given the location of the tubes with indications, attempts to visually inspect the location of these indications were unsuccessful (see attached tubesheet map and the list of tubes with indications, Attachments 3 and 4, respectively). Since the presence of a part (or parts) could not be confirmed visually and the part (or parts) could not be removed, the licensee plans to plug and stabilize the 15 tubes and several tubes surrounding these 15 tubes including one tube downstream of these tubes. A total of 29 tubes are planned to be plugged and stabilized as a result of these indications.

To investigate the cause of these indications, previous ECT data (i.e., from the preservice inspection) were reviewed. The preservice inspection included rotating probe inspections near the top of the tubesheet. No indications of a possible loose part or wear were present. In addition to the historical review of the ECT data, a visual inspection of several secondary side internals was performed including various lattice grid locations. No degradation of the SG secondary side internals was identified.

There were no plans to sludge lance the SGs during this outage given the low levels of sludge. There are no filters on the J-tubes that would limit the size of the parts entering the SG. There is no loose part monitor on the secondary side of the SG; however, there are primary side loose part monitors.

R. Laufer

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The plans for future inspections of the SG were not discussed; however, the NRC staff indicated that the licensee's assessment of the operating time between inspections would be a challenge given the limited information on these indications.

Docket No. 50-318

Attachments: As stated

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Docket No. 50-318

Attachments: As stated

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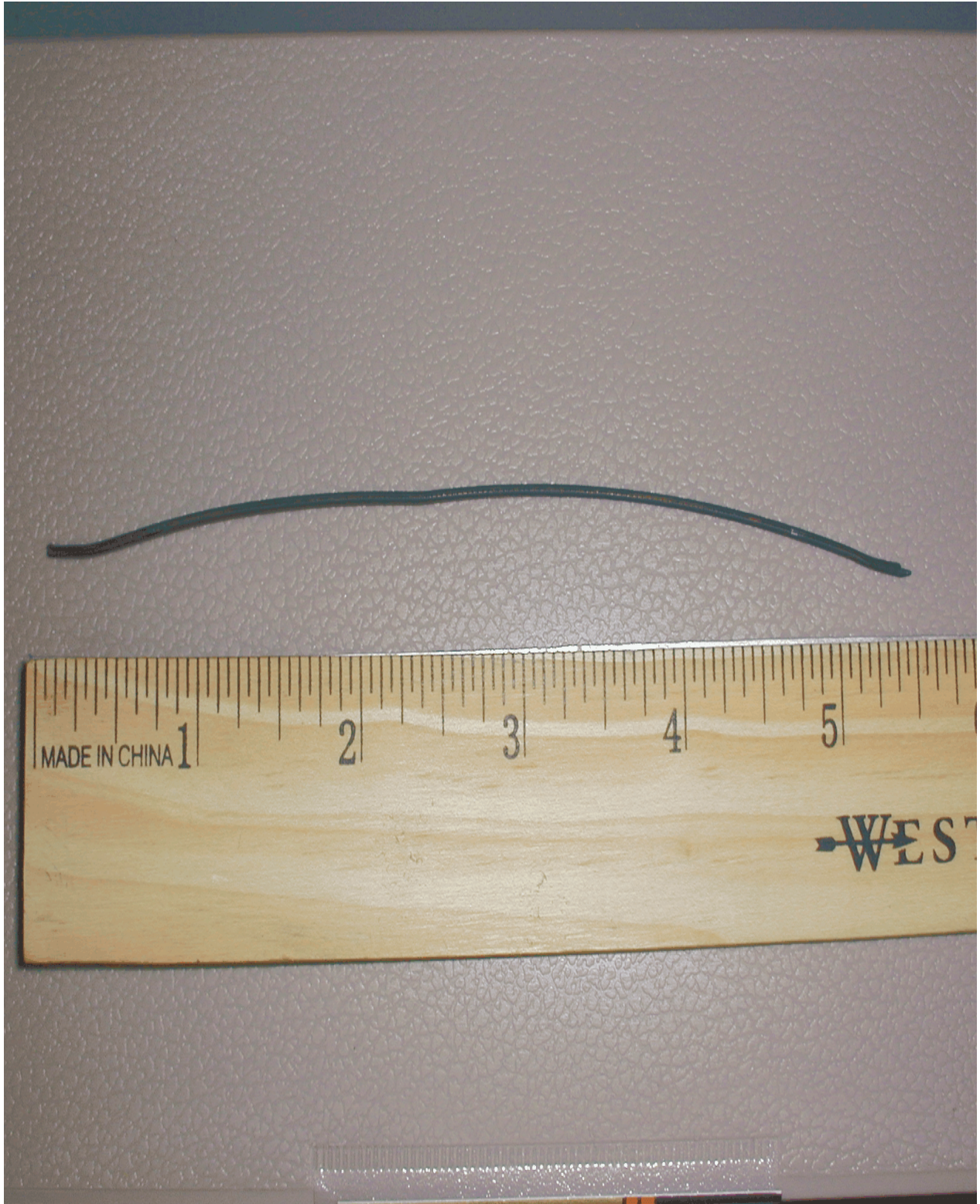
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Attachment 1

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Tube Sheet Inspection

HH-# 2

AREVA

CCNPP U2R15

SG 22

31

11

2

22

Cold Leg
Preiphery Annulus