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DEC 16 1976

NOTE TO: D. G. Eisenhut, Assistant Director for Operational Technology

FROM: [illegible] C. Shao, Chief, Engineering Branch, DOR

SUBJECT: OCONEE UNITS 1 & 2 STEAM GENERATOR TUBE LEAK OCCURRENCES

Pursuant to the items reported in the Weekly Highlight on the steam generator tube leakage incidents at Oconee Units 1 & 2, we have made a conference call, on December 13, 1976, to Duke Power Company to obtain additional details on the occurrence. Participants in the conversation are F. Almeter, B. Liaw and Don Neighbors, of NRC and Dave Holt and Bill Haller of Duke Power. The Oconee Units are Babcock & Wilcox designed plants. The steam generators are once through vertical design with tube sheets at top and bottom and approximately 16,000 Inconel 600 tubes.

Details of the conversation and the discussion are summariced as follows:

1. Incidents - A 1.5 gpm leak was detected on 12/4/76 at Unit 1, and a 2.0 gpm was detected at Unit 2 on 12/9/76. Both units were subsequently shutdown following each leak incident.

2. Locations of Leaks - Both leaks were found at locations about 1/2 inch below the top tube sheet in the superheating region. In Unit 2, the leak is in the center of the N-E quadrant, while in Unit 1 it was near the periphery of B generator.

3. Type of Cracks - By both fiber optics and ECT, the crack in the B generator of Unit 2 was found to be in circumferential direction. The location of crack initiation; whether from ID or OD, has not been determined. Two tubes are to be pulled and examined at the B&W laboratory.

   The type of crack associated with the leak in Unit 1 has not been determined.

4. Operational Cycles - Oconee Unit 1 has gone through about 40 to 50 heatup and shutdown cycles, while Unit 2 has about 25 cycles. The number of operational cycles may be important in the attemtp to define a failure or crack initiation mechanism. The ΔT is about 60°F, and ΔP is about 1350 psi from primary to secondary side of the tubing.

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5. Conclusions - There are not enough data to substantiate any mechanism to initiate the leakage. We specifically asked them to find out the location of possible crack initiations (ID or OD), the clearance between tube and tube sheet and the operational history with respect to the secondary water chemistry.

The licensee has indicated that they will report to us as soon as they complete the investigation with their NSSS.

L. C. Shao, Chief
Engineering Branch
Division of Operating Reactors

cc: V. Stello
A. Schwencer
J. D. Neighbors
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