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SUBJECT: Provides steam generator tube plugging & repair 30 day rept  
 & category C-3 examination results, as specified in 921231  
 ltr & requested during NRC telcon on 930106.

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**DUKE POWER**

February 11, 1993

U.S. Nuclear Regulatory Commission  
Attention Document Control Desk  
Washington, DC 20555

Subject: Duke Power Company  
Oconee Nuclear Station  
Docket No. 50-269  
Unit 1, EOC 14 Refueling Outage  
Steam Generator Tube Plugging and Repair 30 Day Report

Pursuant to Oconee Technical Specification 4.17.6(a), the following is the report on the number of tubes plugged or repaired during the Unit 1, EOC 14 Refueling Outage. In addition, information specified in our letter dated December 31, 1992 for the notification to NRC of Category C-3 examination results and as requested by NRC during the telephone conference on January 6, 1993, is also provided.

One hundred thirty-nine (139) tubes were removed from service by plugging in the "A" OTSG. Four hundred seventy-three (473) were removed from service by plugging in the "B" OTSG. No tubes were sleeved in either OTSG. The plugging of these tubes was completed January 13, 1993.

The higher than normal numbers of tubes plugged during this outage were attributed to an inspection transient resulting from not using a 5 to 1 signal to noise ratio which had been used during past examinations. This was concluded by normalizing bobbin eddy current data between EOC-13 and EOC-14 of the 40% or greater through wall calls from EOC-14. These were then compared on the basis of voltage change, phase angle change, and a combination of both. The result of these comparisons are as follows:

- 1) The majority of voltage increases were 0.5 volts or less (Figures 1 and 2). The average growth was 0.383 volts for OTSG "A" and 0.134 volts for OTSG "B". This growth rate is within the error for the eddy current signal calibration method used. Indications having a voltage increase of 1 volt or more was 4.0% for OTSG "A" and 3.7% for OTSG "B". The average growth for this population was 5.79 volts for "A" and 3.46 volts for "B".

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- 2) The phase component of the signal did not prove to be a reliable indicator of growth for the majority of the population. This is attributed to the influence of signal noise on the phase of the signal. No meaningful patterns could be identified.
- 3) The number of tubes showing an increase in voltage in combination with a decrease in phase angle was small compared to the total population. One tube in OTSG "A" and eight in OTSG "B" met this criteria.

The comparisons addressed above show the growth for the bobbin coil signal components was within expected bounds and typical of past inspections.

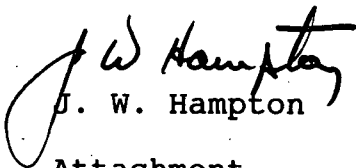
Motorized Rotating Pancake Coil (MRPC) confirmed the presence of 40% of those bobbin indications inspected in OTSG "A" and 55.6% of the indications inspected in OTSG "B".

MRPC sizing was performed and showed 69 or 16% of the indications in OTSG "A" and 129 or 12.7% of the indications in OTSG "B" had an axial length of greater than 1/2". The number of indications with an axial extent greater than 1/2" and a circumferential extent greater than 30 degrees were 41 in OTSG "A" and 98 in OTSG "B". The complete results of the MRPC sizing study are included as attachments to this report.

As supported from the data above, the signals are typical of degradation we have seen in past examinations. The growth rate for this degradation is still small and typical of past examinations. Based on the above and historical data which indicates tube leaks in the Oconee OTSGs have occurred predominately in the lane and wedge regions as a result of high cycle fatigue, no corrective actions will be taken. The future OTSG examinations will be performed using our normal examination sampling plan.

If you have any questions or need further information you may contact M. E. Patrick at (803) 885-3292.

Very truly yours,

  
J. W. Hampton

Attachment

U. S. Nuclear Regulatory Commission  
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