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SUBJECT: Responds to NRC 940217 ltr re violations noted in insp repts 50-269/94-01, 50-270/94-01 & 50-287/94-01. Corrective actions: problem investigation process rept initiated to investigate problem w/rolled plug installation process. D
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DUKE POWER

April 20, 1994

U.S. Nuclear Regulatory Commission
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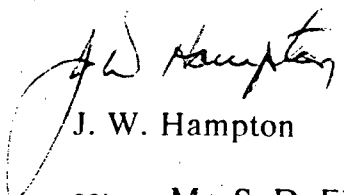
Subject: Oconee Nuclear Site
Docket Nos. 50-269, -270, -287
Inspection Report 50-269, -270, -287/94-01
Reply to Notice of Violation - Revised

Dear Sir:

By letter dated February 17, 1994 the NRC issued a Notice of Violation (NOV) as described in Inspection Report No. 50-269/94-01, 50-270/94-01, and 50-287/94-01. On March 21, 1994, Duke Power Company submitted a response to the NOV.

Additional information concerning oversight of vendor activities was requested by the NRC in correspondence dated March 25, 1994. Attached is Duke's revised response to the violation identified in the above Inspection Report.

Very truly yours,


J. W. Hampton

cc: Mr. S. D. Ebnetter, Regional Administrator
U. S. Nuclear Regulatory Commission, Region II

Mr. L. A. Wiens, Project Manager
Office of Nuclear Reactor Regulation

Mr. P. E. Harmon
Senior Resident Inspector
Oconee Nuclear Site

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Violation 269,270,287/94-01-02, Severity Level IV

Technical Specification (TS) 6.4.1.e requires that approved written procedures with appropriate check-off lists and instructions shall be provided for preventive or corrective maintenance which could affect nuclear safety.

Contrary to the above, Babcock & Wilcox Procedure 1154835A, Revision 26, the Site approved procedure for steam generator tube plug installations for the August 1992, Unit 3 refueling outage was inadequate. The procedure was inadequate due to insufficient acceptance criteria for determining if proper torque-out of the tube plug rolling device had occurred during steam generator tube plug installation. Additionally, there was no procedural requirement for independent verification that proper torque out had occurred. This inadequate procedure resulted in the installation of 33 steam generator tube plugs in the 3B steam generator without proper rolling of the plugs into the tubes. At some time during the ensuing operating cycle, 14 of these improperly installed tube plugs became detached from the steam generator tubes and were deposited in the reactor vessel.

RESPONSE:

1. The reason for the violation, or if contested, the basis for disputing the violation:

The Steam Generator (SG) tube plugging process was not performed properly by the vendor. Two simultaneous problems occurred which caused the plugs not to be properly installed. First, the roll tool being utilized failed due to a software problem. Second, the operator failed to properly interpret flow verification readings and therefore did not recognize the tool failure.

In addition, the B&W Nuclear Technologies (BWNT) procedure used for installation of the rolled plugs in the steam generators was inadequate in that it did not provide sufficient acceptance criteria for determining proper torque-out of the rolled plug being installed. The procedural inadequacy was not detected during Duke's review of the BWNT procedure.

2. The corrective steps that have been taken and the results achieved:

The problem with the rolled plug installation process was first identified when the loose Unit 3 plugs were found in the reactor vessel. This occurred prior to SG tube plugging for the Unit 3 refueling outage in progress at the time. Therefore, appropriate corrective actions were taken prior to commencement of plugging during the outage.

Problem Investigation Process (PIP) Report No. 3-O94-0027 was initiated to investigate the problems surrounding this event; a Station Investigation Report was prepared.

Duke Power Company's Steam Generator Maintenance (SGM) Organization evaluated the interface between BWNT and Duke. This evaluation included how vendor procedures are reviewed and how quality controls are implemented. It was agreed by the group that a working knowledge, but not a detailed engineering knowledge, of vendor procedures is needed by the SGM group.

BWNT Engineering performed an evaluation to ensure other reactor coolant system components were not damaged by the loose SG plugs. BWNT concluded that loose plugs or plug fragments would not cause damage to the reactor coolant system which could affect the safe operation of the plant.

A BWNT review of SG plug installations using the Remotely Operated Generator Examination and Repair (ROGER) roll tool for the prior two calendar years revealed several tube plugging locations in which the proper installation of the plugs could not be confirmed by review of records. Some of these locations were on both Unit 1 and Unit 2 Steam Generators. One location in the upper channelhead of the Unit 2 'B' OTSG is known to be installed improperly. The plugs in Units 1 and 2 that do not have confirmation of proper installation will be dispositioned during the unit's next refueling outage by either rerolling or removal and replacement of the plugs.

A BWNT engineering review concluded that unscheduled plant shutdowns to inspect for/and retrieve potentially loose OTSG tube sheet plugs is not required since continued plant operations with such loose parts will not endanger the health and safety of the public. The exception would be in the case where continuous loose part noise is detected during plant operation. Such a condition would be promptly evaluated and appropriate corrective actions taken.

The following generic actions have been taken within BWNT to avoid improper plug installations in the future similar to those described in the violation. These actions include additional training of plugging operators, shift leaders, task leaders, and QC personnel; and revisions to plugging procedures and plugging control software.

Plug Installation Procedures

The BWNT procedures which cover SG rolled tube plugging have been revised to add the following features:

- Requirements for proper plug installation feedback relative to the "flow verification assembly" have been further explained.
- Independent QC review and verification of the "flow verification assembly" video tapes prior to task closeout has been added.
- A check-off list which identifies important points to be reviewed by the Task/Shift Leader during the plugging task has been incorporated.

Plugging Control Software

The plugging control system logic has been reviewed and modified. This modification requires that the operator review the flow verification assembly for proper torque out prior to turning the air off to the motor. Based on this control configuration, the computer is prevented from shutting off the process prior to an acceptable roll expansion of the plug.

Plugging Operator Training

All BWNT personnel performing the plugging process were trained on the importance of the flow verification assembly feedback and the possible problems encountered during plugging. The BWNT operator shall monitor and evaluate the flow verification assembly feedback to identify when a problem occurs. It is necessary for the operator to notify the shift leader that a reroll is needed per the plugging field procedure when the roll expander does not torque-out properly. Training of BWNT personnel for future SG plugging evolutions is an on-going process. In addition, training was provided to operators on the revised procedures and software changes described above.

3. The corrective steps that will be taken to avoid further violations:

The above listed corrective actions have been implemented by BWNT generically for their rolled plugging process. These actions will ensure that the event addressed by this violation does not occur again.

The SG plugs with inadequate installation records for Oconee Units 1 and 2 will be dispositioned (rerolled or removed/replaced) during the upcoming refueling outages:

Unit 1 End of Cycle 15 Refueling Outage (currently scheduled to begin 04/28/94)
Unit 2 End of Cycle 14 Refueling Outage (currently scheduled to begin 09/09/94)

For steam generator maintenance performed by a vendor, Duke's Steam Generator Maintenance (SGM) group will review vendor procedures and verify that adequate QC controls are in place. This will include the Site SGM personnel jointly reviewing any new or revised procedures with the vendor task leader and vendor QC inspector prior to use.

The SGM group will also work with Duke's Supplier Verification Section to evaluate quality controls and surveillance of work performed by vendors on site for steam generator maintenance. This will be completed by July 30, 1994.

4. The date when full compliance will be achieved:

Full compliance will be achieved following dispositioning of SG plugs on Unit 1 and Unit 2 during each upcoming refueling outage.