

Duke Power Company  
McGuire Nuclear Generation Department  
12700 Hagers Ferry Road (MG01A)  
Huntersville, NC 28078-8985

T. C. McMEEKIN  
Vice President  
(704)875-4800  
(704)875-4809 FAX



DUKE POWER

April 13, 1992

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

Subject: McGuire Nuclear Station  
Docket Nos. 50-369, -370  
Inspection Report No. 50-369, -370/92-05

Gentlemen:

Pursuant to 10CFR 2.201, please find attached Duke Power Company's response to Violation 369/92-05-01 for McGuire Nuclear Station.

Should there be any questions concerning this matter, contact Larry Kunka at (704)875-4032.

Very truly yours,

T. C. McMeekin

LJK

Attachment

xc: Mr. S. D. Ebnetter  
Administrator, Region II  
U.S. Nuclear Regulatory Commission  
101 Marietta St., NW, Suite 2900  
Atlanta, GA 30323

Mr. Tim Reed  
U.S. Nuclear Regulatory Commission  
Office of Nuclear Reactor Regulation  
Washington, D.C. 20555

Mr. P. K. Van Doorn  
NRC Resident Inspector  
McGuire Nuclear Station

9204210280 920413  
PDR ADDCK 05000369  
Q PDR

LEO  
11

Document Control Desk  
Page 3  
April 13, 1992

McGUIRE NUCLEAR STATION  
RESPONSE TO VIOLATION 369/92-05-01

VIOLATION 369/92-05-01

Technical specifications 4.4.5.3 and 4.4.5.4 require that steam generator tubes with wall degradation equal to or greater than 40 percent of nominal wall thickness be plugged.

Contrary to the above, on October 1, 1991, tube R47-C46 in steam generator D, was examined and analyzed as having a potential defect of approximately 85 percent through wall depth, but was returned to service on December 8, 1991. The subject tube developed a through wall leak and caused the plant to shut down on January 16, 1992.

This is a Severity Level IV violation (Supplement I).

Response to Violation 369/92-05-01

Reason for violation

During the Unit 1 End of Cycle 7 (EOC7) refueling outage, the primary reviewer reviewing eddy current bobbin coil data for steam generator (SG) 1D, flagged an indication on tube R47-C46. The same indication was independently flagged by a secondary reviewer.

The primary reviewer classified the indication as signal to noise (S/N) and as a manufacturing burnishing mark (MBM). The primary reviewer classified the indication as an MBM based on the characteristics of the signal and his opinion that the phase angle was not a true representation of the depth of the indication.

A classification of S/N means there is an indication of degradation, but the signal to noise ratio is too low to be accurately sized as to tube through wall depth (TWD). The characterization as an MBM implies that there is present an imperfection in the tube related to the tube buffing or polishing during the manufacturing process.

The secondary reviewer classified the indication as 85 percent through wall depth. As a result of the differing classifications, the indication was sent for evaluation by a resolution team.

The resolution team misclassified the indication as an MBM. This call was an error, and not in compliance with the analysis guidelines in place during this inspection ("Eddy Current Analysis Guidelines, McGuire Nuclear Station, Unit 1, Rev. 1 dated 7/10/91"). The appropriate call for this indication, with a S/N

ratio greater than 8/1, was 85% TWD, as identified by the secondary reviewer.

The analysis guidelines state "For indications with a S/N ratio less than or equal to 5, only the location and type of flaw (if possible) shall be recorded with an accompanying note of "S/N" in the % TW column.

For indications with a S/N ratio greater than 5, the location, type (if appropriate), and % TW shall be recorded."

Further, they state "The S/N requirements specified may be superseded by the data analyst and the indication assigned a % TWD on a "best effort basis" if steam generator history, flaw growth history, expected flaw type or geometry, multiple flaws, flaw signal amplitude, or any other pertinent information warrants this action."

These statements allow flexibility to the analyst to use his/her judgement in making a call. This may be interpreted as insufficiently direct and potentially nonconservative. To rectify this, suggested S/N limits will be deleted from the analysis guidelines.

When the Support Engineer received the tube results 1.3% from the data analysts, he requested additional examination of the indication using the motorized rotating pancake coil (MRPC) test technique. The MRPC data provides the shape of an indication but does not give the depth. The MRPC data was evaluated by primary, secondary and resolution analysts and recorded as an outside diameter indication (ODI). These results were sent to the Support Engineer for disposition. The information received on the indication did not receive the appropriate evaluation by the Support Engineer and was therefore not identified for plugging.

#### Corrective steps taken and results achieved

1. Operations Control Room personnel commenced an orderly shutdown of Unit 1 on January 16, 1992.
2. The leaking tubes were identified by Maintenance personnel as being in S/G 1D.
3. All of the bobbin coil eddy current data from Unit 1 End of Cycle (EOC) 7 outage was reevaluated using a revised conservative criteria. This reevaluation revealed no other miscalls, or substantial errors in the application of the analysis guidelines. However, as a result of the reevaluation, additional tubes were removed from service.

Document Control Desk  
Page 5  
April 13, 1992

4. The revised conservative eddy current criteria was used to analyze the bobbin coil data acquired during the Unit 2 EOC 7 inspections.

Corrective steps to be taken to avoid further violations

1. The eddy current analysis guidelines will be revised to delete the "S/N" limits of 5 to 1 that may lead to a lack of conservatism in the eddy current results. This will require that a signal influenced by noise will receive further evaluation or tests.
2. The eddy current guidelines will be revised to clarify the use of "MBM" and other discontinuity codes.
3. Administrative controls will be developed to address the manner in which information on tubes is conveyed to engineering for tube disposition.
4. Administrative controls will be developed to address engineering's role and authority in the tube disposition process.
5. A Human Performance Enhancement System evaluation will be performed to address the human factors affecting this event.
6. Eddy current analysis management personnel will conduct a review of eddy current procedures and make enhancements as necessary.

Date when full compliance will be achieved

McGuire is in full compliance