

Duke Power Company  
P.O. Box 33198  
Charlotte, N.C. 28242

Hal B. Tucker  
Vice President  
Nuclear Production  
(704)373-4531



**DUKE POWER**

October 9, 1990

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D.C. 20555

Subject: McGuire Nuclear Station, Unit 2  
Docket Number 50-370  
Change in Commitment to  
Perform Eddy-Current Testing

NRC Bulletin 88-09 requested that Licensees establish and implement inspection programs to periodically confirm incore neutron monitoring system thimble tube integrity. Accordingly, Duke performed eddy current testing (ECT) at McGuire Unit 2 during the end-of-cycle (EOC) 5 refueling outage (July, 1989), and committed (Reference: letter, September 7, 1989, from H. B. Tucker to USNRC) to perform ECT again during the EOC 6 outage (October, 1990). At that time Westinghouse, who performed the ECT, applied a 10% uncertainty on the ECT process. This uncertainty was a factor in the decision to reexamine the thimble tubes at EOC 6.

Westinghouse has been working on an Owners Group Project which will yield more facts about the actual wear and its measurement. Based on the preliminary results of this study, Westinghouse has determined that the method they use to eddy current is always conservative in this particular application. This information allowed Duke Power to remove the 10% uncertainty in its calculation for reexamination. Based on this information, Duke has recalculated the McGuire 2 wear prediction (see attachment). Due to the varying lengths of a fuel cycle, this new prediction used days of reactor coolant pump operation (Modes 1-4) to estimate wear instead of the number of cycles of operation. This will be more accurate since the wear only occurs when the pumps are operating. The new prediction shows that the thimbles should be reexamined at the EOC-8 (first quarter of 1993) instead of at the EOC-6. This prediction may be updated again once the Westinghouse Owners Group Report is released. The number of days of operation at Mode 4 (or higher) will be verified each cycle to be conservative with respect to the estimated values in the attachment.

If there are any questions, please call Scott Gewehr at (704) 373-7581.

Very truly yours,

A handwritten signature in cursive script that reads "Hal B. Tucker".

Hal B. Tucker

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cc: Mr. S. D. Ebnetter, Regional Administrator  
U. S. Nuclear Regulatory Commission - Region II  
101 Marietta Street, NW - Suite 2900  
Atlanta, Georgia 30323

Mr. Tim A. Reed, Project Manager  
Office of Nuclear Reactor Regulation  
U. S. Nuclear Regulatory Commission  
One White Flint North, Mail Code 9H3  
Washington, D.C. 20555

Mr. P. K. VanDoorn  
Senior Resident Inspector  
McGuire Nuclear Station



ATTACHMENT

McGUIRE UNIT 2  
TIMING FOR NEXT ECT

The first Eddy Current Test (ECT) was performed at McGuire Unit 2 at EOC 5; a total of 2128 days of operation in Modes 1-4 (reactor coolant pumps operating). The maximum wear accumulated during that time was 33% through wall wear. This results in an average wear rate (WR) of .01551%/day.

The table below relates the number of days of operation in Modes 1-4 to the number of effective full-power days (EFPD) in each cycle.

| <u>Cycle</u> | <u>No. of Days<br/>In Modes 1-4</u> | <u>EFPD</u> | <u>Ratio</u> |
|--------------|-------------------------------------|-------------|--------------|
| 1            | 653                                 | 378         | 1.7          |
| 2            | 358                                 | 248         | 1.4          |
| 3            | 362                                 | 268         | 1.4          |
| 4            | 368                                 | 308         | 1.2          |
| 5            | 387                                 | 322         | 1.2          |

Cycle 1 can be discounted as having an abnormally high ratio of days in Modes 1-4 to EFPD. The average ratio of Cycles 2-5 is 1.3. Therefore, to calculate the number of days of operation which may be expected, for the purpose of estimating thimble tube wear, the design cycle length (EFPD) is multiplied by the historically-derived ratio (1.3).

| <u>Cycle</u> | <u>Design<br/>EFPD*</u> | <u>EFPD x 1.3</u> | <u>Cumulative Days</u> |
|--------------|-------------------------|-------------------|------------------------|
| 6            | 340                     | 442               | 442                    |
| 7            | 370                     | 481               | 923                    |
| 8            | 402                     | 523               | 1446                   |
| 9            | 402                     | 523               | 1969                   |

\*Including + 10-Day Window

To determine at what point the wear will exceed the maximum wall-loss acceptance criterion given in Duke's response to Bulletin 88-09 (60% through-wall):

$$\frac{60\% - 33\%}{.01551 \%/Day} = 1740.8 \text{ Days}$$

Comparing this number to the "Cumulative Days" column in the table above, it can be determined that the next ECT should be performed during the EOC 8 outage, unless the ratio of days of operation in Modes 1-4 to EFPD increases. The number of actual days of Modes 1-4 operation will be verified after each cycle.