

Docket Nos.: 50-369
and 50-370

FEB 17 1986

Mr. H. B. Tucker, Vice President
Nuclear Production Department
Duke Power Company
422 South Church Street
Charlotte, North Carolina 28242

Dear Mr. Tucker:

Subject: Interim Report Regarding Maintenance and Trending for Reactor
Trip Breakers - McGuire Nuclear Station, Units 1 and 2

By letters dated November 4, 1983 and May 24, 1985, you responded to
Items 4.2.1 and 4.2.2 of NRC Generic Letter 83-28 for McGuire Nuclear
Station, Units 1 and 2. These items regard preventive maintenance and
parameter trending associated with reactor trip breaker operation.

The NRC staff has reviewed your responses to Items 4.2.1 and 4.2.2
with the technical assistance of Idaho National Engineering Laboratory
(INEL). Enclosed is our combined report in which we find your re-
sponses unacceptable and request additional information or other
actions.

You reply to Sections 3.1 and 3.2 of the enclosed report is requested
within 60 days of this letter. Contact your Project Manager, Darl
Hood, at (301) 492-8060 if you have questions.

Sincerely,

151
B. J. Youngblood, Director
PWR Project Directorate #4
Division of PWR Licensing-A

Enclosure: As stated

cc: See next page

Distribution:

Docket File

NRC PDR
Local PDR
PRC System
NSIC
PWR#4 Rdg
MDuncan
DHood

DJH
PWR#4/DPWR-A
DHood/mac
02/12/86

OELD
ACRS (10)
JPartlow
BGrimes
EJordan
BJYoungblood Rdg
NRomney
JBradfute

PWR#4/DPWR-A
MDuncan
02/14/86

GBagchi
RBallard

DJH/m
PWR#4/DPWR-A
BJYoungblood
02/12/86

8602240047 860217
PDR ADOCK 05000369
P PDR

Mr. H. B. Tucker
Duke Power Company

McGuire Nuclear Station

cc:

Mr. A. Carr
Duke Power Company
P. O. Box 33189
422 South Church Street
Charlotte, North Carolina 28242

Dr. John M. Barry
Department of Environmental Health
Mecklenburg County
1200 Blythe Boulevard
Charlotte, North Carolina 28203

Mr. F. J. Twogood
Power Systems Division
Westinghouse Electric Corp.
P. O. Box 355
Pittsburgh, Pennsylvania 15230

County Manager of Mecklenburg County
720 East Fourth Street
Charlotte, North Carolina 28202

Mr. Robert Gill
Duke Power Company
Nuclear Production Department
P. O. Box 33189
Charlotte, North Carolina 28242

Chairman, North Carolina Utilities
Commission
Dobbs Building
430 North Salisbury Street
Raleigh, North Carolina 27602

J. Michael McGarry, III, Esq.
Bishop, Liberman, Cook, Purcell
and Reynolds
1200 Seventeenth Street, N.W.
Washington, D. C. 20036

Mr. Dayne H. Brown, Chief
Radiation Protection Branch
Division of Facility Services
Department of Human Resources
P.O. Box 12200
Raleigh, North Carolina 27605

Senior Resident Inspector
c/o U.S. Nuclear Regulatory Commission
Route 4, Box 529
Huntersville, North Carolina 28078

Regional Administrator, Region II
U.S. Nuclear Regulatory Commission,
101 Marietta Street, N.W., Suite 2900
Atlanta, Georgia 30323

L. L. Williams
Operating Plants Projects
Regional Manager
Westinghouse Electric Corporation - R&D 701
P. O. Box 2728
Pittsburgh, Pennsylvania 15230

INTERIM REPORT
McGUIRE NUCLEAR STATION, UNITS 1 AND 2
REACTOR TRIP SYSTEM RELIABILITY
ITEMS 4.2.1 AND 4.2.2 OF GENERIC LETTER 83-28

1. INTRODUCTION

On July 8, 1983, the Nuclear Regulatory Commission (NRC) issued Generic Letter (GL) 83-28. This letter addressed intermediate-term actions to be taken by licensees and applicants aimed at assuring that a comprehensive program of preventive maintenance and surveillance testing is implemented for the reactor trip breakers (RTBs) in pressurized water reactors. In particular, Item 4.2 of the letter required licensees and applicants to submit a description of their preventive maintenance and surveillance program to ensure reliable reactor trip breaker operation. The description of the submitted program was to include the following:

- | | |
|----------------|--|
| GL, Item 4.2.1 | A planned program of periodic maintenance, including lubrication, housekeeping, and other items recommended by the equipment supplier. |
| GL, Item 4.2.2 | Trending of parameters affecting operation and measured during testing to forecast degradation of operation. |

Duke Power Company, the licensee for McGuire 1 and 2, submitted responses to the Generic Letter on November 4, 1983, and May 24, 1985. This report presents an evaluation of the adequacy of the licensee's responses and of his preventive maintenance and surveillance programs for RTBs.

2. EVALUATION CRITERIA

2.1 Periodic Maintenance Program

The primary source for periodic maintenance program criteria is Westinghouse Maintenance Program Manual for DS-416 Reactor Trip Circuit Breakers, Rev. 0. This document was prepared for the Westinghouse Owners Group and is the breaker manufacturer's recommended maintenance program for the DS-416 breaker. It provides specific direction with regard to schedule, inspection and testing, cleaning, lubrication, corrective maintenance and record keeping. The document was reviewed to identify those items that contribute to breaker trip reliability consistent with the generic letter. Those items identified for maintenance at six month intervals (or when 500 breaker operations have been counted, whichever comes first) that should be included in the licensee's RTB maintenance program are:

1. General inspection to include checking of breaker's cleanliness, all bolts and nuts, pole bases, arc chutes, insulating link, wiring and auxiliary switches;
2. Retaining rings inspection, including those on the undervoltage trip attachment (UVTA);
3. Arcing and main contacts inspection as specified by the Westinghouse Maintenance Manual;
4. UVTA check as specified by the Westinghouse Maintenance Manual, including replacement of UVTA if dropout voltage is greater than 60% or less than 30% of rated UVTA coil voltage;
5. Shunt Trip Attachment (STA) check as specified by the Westinghouse Maintenance Manual;
6. Lubrication as specified by the Westinghouse Maintenance Manual;

7. Functional check of the breaker's operation prior to returning it to service.

The licensee's RTB periodic maintenance should also include, on a refueling interval basis:

1. Pre-cleaning insulation resistance measurement and recording;
2. RTB dusting and cleaning;
3. Post-cleaning insulation resistance measurement and recording, as specified by the Westinghouse Maintenance Manual;
4. Inspection of main and secondary disconnecting contacts, bolt tightness, secondary wiring, mechanical parts, cell switches, instruments, relays and other panel mounted devices;
5. UVTA trip force and breaker load check as specified by the Westinghouse Maintenance Manual;
6. Measurement and recording of RTB response time for the undervoltage trip;
7. Functional test of the breaker prior to returning to service as specified by the Westinghouse Maintenance Manual.

2.2 Trending of Parameters

Generic Letter Item 4.2.2 specifies that the licensee's preventative maintenance and surveillance program is to include trending of parameters affecting operation and measured during testing to forecast degradation of operation. The parameters measured during the maintenance program described above which are applicable for trending are undervoltage trip attachment dropout voltage, trip force, response time for undervoltage trip and breaker insulation resistance. The staff position is that the above

parameters are acceptable and recommended trending parameters to forecast breaker operation degradation or failure. If subsequent experience indicates that any of these parameters is not useful as a tool to anticipate failures or degradation, the licensee may, with justification and NRC approval, elect to remove that parameter from those to be tracked.

3. EVALUATION

3.1 Evaluation of the Licensee Position on Item 4.2.1

The licensee states that his periodic maintenance program for RTBs includes those six-month interval items listed above, but does not specify whether they are performed at six-month intervals or during refueling outages, nor does he provide any justification for an interval longer than six months.

The responses also indicate that the licensee performs UVTA trip force and breaker load check, RTB response time for undervoltage trip and functional test on at least a refueling interval basis. However, the licensee's periodic maintenance program does not include pre-cleaning insulation resistance measurement, RTB cleaning and dusting, post-cleaning insulation resistance measurement, or inspection of main and secondary contacts. The licensee contends that these items are not related to the safety function of the breaker and that Westinghouse "may consider revising" their maintenance manual for the DS-416 RTBs to "reflect the clarification provided" by the licensee. The staff finds the licensee's justification inadequate in view of the lack of substantiation and concurrence by Westinghouse.

The staff considers the licensee position on Item 4.2.1 to be unacceptable. The licensee must specify the frequency with which he performs that maintenance recommended for six-month intervals, and provide justification if that interval is greater than six months. The licensee must also include pre- and post-cleaning insulation resistance measurements, RTB cleaning and dusting, and inspection of

main and secondary contacts in his maintenance program. If the licensee declines to include these maintenance procedures in his program, he must provide written technical justification.

3.2 Evaluation of the Licensee's Position on Item 4.2.2

The licensee has stated that McGuire currently records data for (a) undervoltage trip dropout voltage, (b) trip force, and (c) breaker response time for undervoltage trip. McGuire does not measure or record insulation resistance. The licensee has not identified the organization which will perform trend analysis, how often it will be performed or how the information derived from the analysis will be used to affect periodic maintenance. Rather, the licensee has taken the position that a formal trending program of the RTB parameters is not necessary or beneficial to predict degradation of operation. This position is based on operating and maintenance experience at McGuire and the results of life cycle tests soon to be released by the Westinghouse Owners Group.

The staff finds the licensee position on Item 4.2.2 to be unacceptable without additional justification. The licensee must implement a formal trending program as described in Section 2.2. of this SER and provide the staff with a description of his trending program. Alternatively, the licensee must demonstrate that a parametric trending program is of no value in predicting degradation or failure of RTBs due to both aspects of component life, cycling and aging.

4. CONCLUSIONS

Based on a review of the licensee responses, the staff finds the licensee positions on Items 4.2.1 and 4.2.2 of Generic Letter 83-28 to be unacceptable.