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May 24, 1985

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Ms. E. G. Adensam, Chief
Licensing Branch No. 4

Subject: McGuire Nuclear Station
Docket Nos. 50-369, - 370

Dear Mr. Denton:

Please find attached Duke responses to two NRC requests for information concerning Generic Letter 83-28 and the results of a review conducted in response to an item in this Generic Letter. Attachment 1 provides a response to the NRC request dated February 22, 1985 and concerns the reactor trip breaker maintenance program (Items 4.2.1, 4.2.2 of Generic Letter 83-28). Attachment 2 provides a response to the NRC request dated May 1, 1985 concerning Items 1.2, 2.2, and 4.5 of Generic Letter 83-28. Attachment 3 provides the results of Duke's review of Westinghouse Technical Bulletins and Data Letters (Item 3.1.2 of Generic Letter 83-28).

Very truly yours,

H.B. Tucker /RLG

Hal B. Tucker

RLG/mjf

Attachments

cc: Dr. J. Nelson Grace, Regional Administrator
U. S. Nuclear Regulatory Commission
Region II
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

Mr. W. T. Orders
NRC Resident Inspector
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Mr. Darl Hood, Project Manager
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Washington, D. C. 20555

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Attachment 1

DUKE POWER COMPANY

McGuire Nuclear Station

Response to Request for Information

GL 83 - 28 - Items 4.2.1 & 4.2.2

NRC Letter dated February 22, 1985

1. Item 4.2.1 - Periodic Maintenance Program for RTBs

Because McGuire Nuclear Station, Units 1 and 2 Reactor Trip Systems utilize Westinghouse DS-416 circuit breakers, the primary criteria for an acceptable maintenance program are contained in Westinghouse Maintenance Manual for the DS-416 Reactor Trip Circuit Breaker, Revision 0, October 1984. We have reviewed this manual and endorse the maintenance program described in it. Moreover, we have used the criteria from this manual to evaluate McGuire's compliance with those items that relate to the safety function of the breaker, and have supplemented this by those measures that must be taken to accumulate data for trending.

Your response states that "Preventive maintenance is performed on the McGuire Reactor Trip Breakers in accordance with the current manufacturer's recommendations as described in the technical manual. This maintenance is currently performed once per 6 months as required by McGuire Unit 2 operating license. This frequency is under review and changes may be proposed later."

We find that the McGuire Nuclear Station, Units 1 and 2 Periodic Maintenance Program for the RTBs should include, on a six-month basis, or when 500 breaker operations have been counted, whichever comes first:

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. The retaining rings inspection, including those on the under-voltage trip attachment (UVTA) and shunt trip attachment (STA);

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. 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.

We also find that the McGuire Nuclear Station, Units 1 and 2 Periodic Maintenance Program for the RTBs should include, on a refueling interval basis or when 500 breaker operations have been counted, whichever comes first:

8. Pre-cleaning insulation resistance measurement and recording;

9. RTB dusting and cleaning;

10. Post-cleaning insulation resistance measurement and recording, as specified by the Westinghouse Maintenance Manual;

11. Inspection of main and secondary disconnecting contacts, bolt tightness, secondary wiring, mechanical parts, cell switches, instruments, relays and other panel mounted devices;

12. UVTA trip force and breaker load check as specified by the Westinghouse Maintenance Manual;

13. Measurement and recording RTB response time for the undervoltage trip;

14. Functional test of the breaker prior to returning to service as specified by the Westinghouse Maintenance Manual.

In summary, we request that you confirm that the periodic maintenance program includes the above fourteen items at the specified intervals or that you commit to such inclusion within a specified reasonable time period.

We also recommend that the maintenance procedure include a caution to the maintenance personnel against undocumented adjustments or modifications to RTBs.

Response:

Duke has discussed this NRC item with Westinghouse and believes that NRC has not correctly interpreted the periodic maintenance program requirements contained in the manual. The following paragraphs are provided to clarify the requirements of the manual.

Items 1 through 7 of the NRC letter are currently included in the RTB Program. Operation and Maintenance experience, Westinghouse concurrence, and a clean operating environment for the RTBs has shown that the frequencies as proposed in the Westinghouse Maintenance Manual are sufficient to adequately assure breaker reliability.

Items 8 through 11 of the NRC letter correspond to Group B activities 15 through 19 of the Maintenance Manual and are not considered related to the safety function of the breaker, and are not part of the required maintenance program.

Item 12 of the NRC letter is included in the McGuire RTB Program.

Item 13 of the subject letter addresses measurement and recording of the RTB response time for the U.V. trip on a refueling interval basis or when 500 breaker operations have been counted, whichever comes first. Due to McGuire license commitments we presently measure and record the time response for each main RTB on a monthly basis and also measure and record the time response of each breaker before and after six month breaker maintenance. All data is recorded by procedure and can be made available for analysis by recall under our work request system. RTB time response testing is being performed as identified in the subject NRC letter.

Item 14 addresses a functional test of the breaker prior to returning It to service after breaker maintenance is performed either on a refueling basis or when 500 breaker operations have been counted, whichever comes first. This activity is currently performed in conjunction with the time response verification and includes a verification of the U.V. trip independent of the shunt trip and vice-versa.

The addition of a caution step in the maintenance procedure against undocumented adjustments or modifications to the RTBs will be added to the procedure.

The Westinghouse Owner's Group and Westinghouse may consider revising the manual to reflect the clarifications provided herein.

2. Item 4.2.2 - Trending of RTB Parameters to Forecast Degradation of Operability.

Your response identifies four parameters as trendable and these are included in the criteria for evaluation. The four parameters are (a) undervoltage trip attachment dropout voltage, (b) trip force, (c) breaker response time for undervoltage trip, and (d) breaker insulation resistance.

You state that "Trending of parameters is not currently recommended by the manufacturer." We understand this statement no longer reflects the manufacturer's recommendation and, therefore, should be updated. You also indicate that the cyclic life testing program "will provide information to determine the need for trending of parameters."

The NRC requires trending data associated with the four parameters to forecast the RTBs degradation of operability. We request that you commit to inclusion of trip force, breaker response time and dropout voltage for undervoltage trip and breaker insulation resistance as trending parameters. We also request that you identify the organization which will perform trend analysis, how often the analysis will be performed, and how the information derived from the analysis will be used to affect periodic maintenance.

Response:

McGuire currently records the data for (a) undervoltage trip attachment dropout voltage, (b) trip force, and (c) breaker response time for undervoltage trip. This data can be recalled from procedure data sheets which are permanently recorded in the station work request system. Breaker insulation resistance (d) is not being measured at this time. Duke questions the need to measure breaker insulation resistance and the correlation between the bus insulation resistance and breaker reliability/operability.

The recently issued "Maintenance Manual for the DS-416 Reactor Trip Circuit Breaker" by Westinghouse provides the guidance to adequately maintain the RTB's through periodic maintenance procedures, performance tests and checks as well as performance tolerance measurements to detect a degraded condition. It is Duke's position, supported by a review of Westinghouse test data, that a formal trending program of the RTB parameters (a through d) is not necessary or beneficial to predict degradation of operation. This position is based on operating and maintenance experience at McGuire and the results contained in "Report of the DS-416 Reactor Trip Breaker Undervoltage and Shunt Trip Attachments Life Cycle Tests" soon to be released by the Westinghouse Owners Group.

Attachment 2

DUKE POWER COMPANY

McGuire Nuclear Station

Response to Request for Information

GL 83-28 - Items 1.2,2.2.2, and 4.5.3

NRC Letter dated May 1, 1985

1. Item 1.2 - Sufficient analog and digital parameters do not appear to be recorded for use in the post-trip review. Revise your response to add recorders for the parameters/signals which are circled in the attached Table 1.2-1 or provide further justification why these are not needed.

   Your submittal also does not seem to indicate that the recorded data will be output in a readable and meaningful format; nor that the data retention procedures will ensure that the information recorded for the post-trip review is maintained in an accessible manner for the life of the plant.

   It is possible that the current data and information capabilities at McGuire are adequate to meet the intent of these review criteria, but were not completely described. Under these circumstances, you should provide an updated, more complete, description to show in more detail the data and information capabilities at McGuire. If the information provided accurately represents all current data and information capabilities, then you should either show that the present data and information capabilities meet the intent of the criteria or detail future modifications that would enable you to meet the intent of the evaluation criteria.

   Response:

   The response to this item was discussed during a telephone conference call on May 23, 1985.

   The format of the recorded data was discussed in our submittal of November 4, 1983 and clarified during the conference call. Duke considers that the output is readable and of a meaningful format.

   Information recorded for the post-trip review is maintained in an accessible manner. However, a period of retention has not yet been established. Typically, reports of non-routine events are retained for 6 years in accordance with ANSI 45.2.9.

   Attached is Table 1.2-1 provided by NRC as revised to reflect the data and information capabilities of McGuire. One note of explanation: For containment isolation, the actuation setpoint is recorded as well as the position of virtually all automatic isolation valves. For those valves not recorded, (typically solenoid valves) the operator is required by procedure to verify proper valve positioning and to record and respond to any deviations. Thus, a full record of all containment valve positions is available for post-trip review.

Table 1.2-1

SOE Recorder	Time History Recorder	Parameter / Signal	DUKE Comments
(1) x		Reactor Trip	
(1) x		Safety Injection	
x		Containment Isolation	Actuation Signal & Valve Position
(1) x		Turbine Trip	
x		Control Rod Position	CRD Breakers Open
(1) x	x	Neutron Flux, Power	
x		Containment Pressure	Alarm setpoint only
(2)	x	Containment Radiation	
	x	Containment Sump Level	
(1) 3		Primary System Pressure (Vessel Pressure, Pressurizer Pressure)	Pressurizer pressure Setpts. and Pressure History
(1) x	x	Primary System Temperature	
(1) x		Pressurizer Level	
(1) x		Reactor Coolant Pump Status	
(1) x	x	Primary System Flow	
4		Safety Inj.; Flow, Pump/Valve Status	Pump/Valve Status
x		MSIV Position	
x	x	Steam Generator Pressure	
(1) x	x	Steam Generator Level	
(1) x	x	Feedwater Flow	Not a Reactor Trip
(1) x	x	Steam Flow	Not a Reactor Trip
(4)		Auxiliary Feedwater System; Flow,Pump/Valve Status	
x		AC and DC System Status	
x		Diesel Generator Status	
x		PORV Position	

NRC Notes:

(1): Trip parameters: pressurizer or primary pressure is a trip parameter (depending on plant).

(2): Parameter may be monitored by either an SOE or time history recorder.

(3): Acceptable recorder options are: (a) reactor vessel pressure recorded on both an SOE and time history recorder, or (b) pressurizer pressure recorded on both an SOE and time history recorder.

(4): Acceptable recorder options are: (a) system flow recorded on an SOE recorder, (b) system flow recorded on a time history recorder, or (c) equipment status recorded on an SOE recorder.

2. Item 2.2.2 - Present your evaluation of the NUTAC program and describe how it will be implemented at McGuire 1 & 2. The staff find that the NUTAC program fails to address the concern about establishing and maintaining an interface between all vendors of safety-related equipment and the utility. Accordingly, supplement your response to address this concern. This additional information should describe how current procedures will be modified and new ones initiated to meet the elements of this concern.

Response:

The vendor equipment technical information program (VETIP) as defined in the March 1984 NUTAC Document is considered a valid response to Section 2.2.2 of the NRC Generic Letter 83-28. Duke Power Company has implemented the program as described therein. Accordingly, it is requested that NRC reanalyze and reconsider your request for additional information.

3. Item 4.5.3 - Submit a description of the specific implementation plan for McGuire 1 and 2 within 90 days after completion of NRC review of WCAP-10271 and its Supplement 1.

Response:

Duke plans to submit a proposed Technical Specification revision consistent with the model Technical Specification contained in WCAP-10271 and the Westinghouse Owners Group Generic Guidance Document during July 1985.

Attachment 3

DUKE POWER COMPANY

McGUIRE NUCLEAR STATION

Response to Generic Letter 83-28

Item 3.1.2

Review of Vendor Recommendations

(Reactor Trip System Components)

WESTINGHOUSE

TECHNICAL BULLETINS

73-24 Rev. 1	The potential for RF I&C interference as a result of the use of radio equipment within the station has already been addressed in response to IE Information Notice 83-83. McGuire Nuclear Station has established administrative controls on areas where transmitter use will not be allowed.
74-12	No action is necessary for McGuire Nuclear Station, as construction of both units has been completed.
75-2	The inspections required by this Technical Bulletin have been performed for the Unit 1 DS breakers. No problems were found.
77-10	The actions recommended by this Technical Bulletin have been completed.
80-4	McGuire Nuclear Station was alerted to the possibility of the subject voltage oscillations occurring, and was instructed to notify both Westinghouse and Nuclear Maintenance I&E if any such oscillations are observed. None have been seen to date.
80-5	McGuire Nuclear Station uses a reference power level of 100%, which has been incorporated into appropriate I&E and Performance procedures. Since 100% is the reference power level used, no other action is necessary.
80-6	This bulletin is not applicable, since McGuire Nuclear Station does not utilize 10-50 mA transmitters.
80-8	The McGuire Operations procedure group has been asked to add the appropriate steps to their Source Range Malfunction procedure to ensure that the channel is immediately deenergized if high voltage is inadvertently applied to the detector at power. If this should ever occur, McGuire I&E will perform the testing recommended by this Technical Bulletin.
81-11	Action on this Technical Bulletin has been completed for McGuire Nuclear Station.
81-13	Action on this Technical Bulletin has been completed for McGuire Nuclear Station.

80-3 The Amphenol 52975-1051 jacks are currently in stock at McGuire, and are utilized on the field cable at the detector. Maintenance on the detector plug, which is an Amphenol 53175-1053 plug, is not performed by I&E at the current time. However, this plug number will be included in maintenance procedures should this situation change.

80-8 The Barton 763/764 series transmitters are calibrated by means of procedure IP/O/A/3204/05. This procedure was revised to include "exercising" the zero and span potentiometers if needed. Additionally, the following loop procedures were revised in the same way:

IP/O/A/3000/01A	NC System W/R Pressure Cal.
IP/O/A/3000/09	Pressurizer Pressure Protection Cal.
IP/O/A/3000/09A	Pressurizer Level Protection Cal.
IP/O/A/3050/05	Containment Pressure Protection Cal.
IP/O/A/3000/01	NC System Flow Cal.

These instrumentation loops include all uses of the subject transmitters at McGuire as indicated by the McGuire Equipment Data Base. The McGuire I&E procedures group has been alerted to this potential problem for any future applications.

71-20 This Data Letter probably describes the Barton Model 396 electronic transmitter, which is now obsolete (this is the only electronic transmitter manufactured by Barton in 1971 that we are aware of). No action is necessary, as any defective transmitters would have been noticed by now. Additionally, these transmitters are scheduled for replacement by Rosemount transmitters (see NSM #MG-974 for Unit 1). None of the Model 396 transmitters are used in safety applications at McGuire.

73-8 Breakers at McGuire Nuclear Station were originally sized based on manufacturer's specifications on the electrical loads, as well as on Design Engineering calculations of the maximum motor starting current through each breaker. Any incorrectly sized breakers would be noticed during periodic breaker testing and preventative maintenance.

74-4 No action by Duke Power Company is required - This Data Letter was transmitted for our information.

77-2 McGuire I&E already uses the Keithley Model #602 electrometer for testing. Any references to a "Keithley 600B or equivalent" electrometer (McGuire does not have a Keithley 600B) in McGuire procedures will be changed to "Keithley 602" electrometer. No further action is necessary.

77-3 All of the subject SSPS extender boards at McGuire Nuclear Station were inspected visually and found to have proper solder connections at the stand-off terminals. Also, the continuity between the connector pins on each end of the boards was proven satisfactory by an ohmmeter check.

78-4 The material transmitted by this Data Letter has been incorporated into the McGuire Nuclear Station Source Range Calibration Procedure, IP/0/A/3207/01K.

79-4 After <u>every</u> reactor trip at McGuire Nuclear Station, a P-4 signal verification is performed before the Reactor Trip Breakers may be reclosed. This verification is performed by means of procedure IP/0/A/3010/09. Voltage measurements are obtained at the Reactor Trip Switchgear for both breaker open and breaker closed conditions in order to confirm proper P-4 permissive operation. The P-4 permissive is also tested every month by means of procedures PT/0/A/4601/08A,08B,09A, and 09B.

Since the P-4 permissive is tested after every reactor trip (and not just after Safety Injection reactor trips), no action is necessary.

63-2 Nuclear Maintenance I&E agrees with Design Engineering and McGuire Nuclear Station I&E that appropriate noise reduction techniques were utilized in the design and construction of McGuire Nuclear Station. In addition, Design Engineering will soon issue an installation specification on grounding. This specification will include many of the techniques recommended by this Data Letter.

63-5 Vendor supplied, prefabricated cables are installed in all applications where mineral insulated instrumentation cables are used at McGuire Nuclear Station. Since these cables and the corresponding connectors are already assembled when purchased, this Data Letter does not affect McGuire. However, as a precaution the station was notified that any mineral insulated cable which is formed by site personnel for any future application should be heat dried just before sealing.

64-4 The use of any item containing lead within the primary system is controlled by a Materials Guide and by Station Directives.

68-14 This Data Letter was originally written by Westinghouse with reference to their old 7100 series equipment, and is therefore not applicable to McGuire Nuclear Station.

68-25 The Vital Bus is never used to supply non-vital loads at any time.

68-31 QA inspects the Narrow Range (fast response) RTD's upon receipt. Also, time response testing is performed on new RTD's prior to their installation in order to verify proper operability.

68-36 No action is necessary at McGuire Nuclear Station. The terminal lugs are cut off of the Narrow Range RTD's, and the wires are butt-spliced to the instrument cable.

70-18 Triaxial cable used at McGuire Nuclear Station was tested before and after installation. McGuire I&E also performed post installation cable resistance checks on the Nuclear Instrumentation cables. Any faulty cable would have already been discovered, so no further action is necessary.