

DUKE POWER COMPANY

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October 22, 1982

Mr. James P. O'Reilly, Regional Administrator  
U. S. Nuclear Regulatory Commission  
Region II  
101 Marietta Street, Suite 3100  
Atlanta, Georgia 30303

Re: McGuire Nuclear Station Unit 1  
Docket No. 50-369

Dear Mr. O'Reilly:

Please find attached Reportable Occurrence Report RO-369/82-71. This report concerns a loss of motor control center IEMXD and resultant loss of various systems required by Technical Specifications 3.6.5.6, 3.6.4.2, 3.6.1.8, 3.3.3.9, 3.3.3.1, 3.4.5, and 3.6.4.3. This incident was considered to be of no significance with respect to the health and safety of the public.

Very truly yours,

*Hal B. Tucker*

Hal B. Tucker

*by P. R. Bemis*

PBN:jfw  
Attachment

cc: Director  
Office of Management and Program Analysis  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

INPO Records Center  
1100 Circle 75 Parkway, Suite 1500  
Atlanta, Georgia 30339

Mr. P. R. Bemis  
Senior Resident Inspector-NRC  
McGuire Nuclear Station

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USNRC REGION II  
ATLANTA, GEORGIA

DUKE POWER COMPANY  
MCGUIRE NUCLEAR STATION  
REPORTABLE OCCURRENCE REPORT NO. 82-71

REPORT DATE: October 22, 1982

FACILITY: McGuire Unit 1, Cornelius, NC

IDENTIFICATION: Loss of Motor Control Center (MCC) 1EMXD and Resultant Loss of Various Required Systems

DESCRIPTION: On September 22, 1982, Unit 1 MCC 1EMXD lost power due to an automatic overcurrent trip of its feeder breaker, 1ELXD Compartment 4C. The unit was operating at 75% reactor power; however, the power loss did not affect operation of the unit.

The loss of 1EMXD resulted in the following essential systems/components being temporarily inoperable due to loss of power (applicable Technical Specifications are given): Containment Air Return Fan 1B and Hydrogen Skimmer Fan 1B (T.S.3.6.5.6); Hydrogen Recombiner 1B (T.S.3.6.4.2); Annulus Ventilation Fan 1B (T.S.3.6.1.8); Unit Vent Radiation Monitors (1EMF 35, 36, 37 - particulate, iodine, gaseous) (T.S.3.3.3.9); Fuel Building Ventilation Rad. Monitor (1EMF 42)(T.S.3.3.3.1); Control Room Air Intake B Rad. Monitor (1EMF 43B)(T.S.3.3.3.1); Pressurizer PORV Isolation Valves 1NC31B and 1NC35B (T.S.3.4.5); Hydrogen Distributed Ignition 'B' Train Circuits (T.S.3.6.4.3). The feeder breaker was reset and closed within 8 minutes, restoring power to 1EMXD. Subsequent measurements of the feeder breaker load currents revealed no cause for the overcurrent trip, and a spurious trip is suspected.

EVALUATION: MCC 1EMXD is part of the 600 VAC Essential Auxiliary Power system and provides circuit protection to various 'B' train components. Incoming power is obtained from distribution center 1ELXD compartment 4C. Overcurrent protection for breaker 4C is provided by an I.T.E. Imperial Corporation "Power Shield" solid state trip device, model number SS4G. This device was set up to trip on either a short time current of 2400 amps or a long time current of 600 amps.

On September 22, 1982, investigation of "ELXD supply to 1EMXD-open" and "Motor Control Center Bus 1EMXD Voltage-Lo" alarms found the Power Shield trip device of 1ELXD breaker 4C tripped (AUTO TRIP indicator popped out). The breaker was reset and closed. Technicians measured currents of 255 amps on each phase of breaker 4C, well below the overcurrent trip setpoints. Discussions with the Operators on duty and a review of the Alarm Typer printout for the period revealed no equipment operation that could have caused the trip. The trip appears to have been spurious and may have been caused by voltage spikes affecting the solid state Power Shield.

Prior to Unit 1 startup, sporadic tripping problems had been identified on some breakers using I.T.E. Power Shields. Part of the problem was attributed by the manufacturer to defective silicon controlled rectifiers (SCR's) in the Power Shield. These SCR's were replaced on all Unit 1 devices prior to startup. Additionally, the manufacturer has recommended adding a capacitor to the trip terminals of the Power Shield to protect the SCR from transients.

Although it is possible that a manufacturing deficiency contributed to this trip, this cannot be ascertained.

SAFETY ANALYSIS: The Containment Air Return Fan, Hydrogen Skimmer Fan, Hydrogen Recombiner, and Annulus Ventilation Fan are redundant and all 'A' train components of these systems were operable. The Hydrogen Distributed Ignition system is also redundant in that at each strategic igniter location, two igniters are present - one powered from 'A' train and one powered from 'B' train. Thus, the minimum requirements of Technical Specification 3.6.4.3 were met.

Power was restored to 1EMXD and all systems were again operable before any other Tech. Spec. Actions were necessary. If the loss of power had been lengthy, Control Room Air Intake 'B' would have been closed and Air Intake 'A' used; alternate means of sampling the Unit Vent activity were also available.

The most significant aspect of the incident was the loss of control power to Pressurizer PORV Isolation valves INC31B and INC35B. The valves failed in the 'as is' position - open in this case (normal operation). Failure of the Isolation valves require unit shutdown if operability is not soon restored (T.S.3.4.5).

The purpose of the Power Operated Relief Valves is to minimize the undesirable opening of the spring loaded pressurizer code safety valves (code safety valves were never compromised during the incident) by relieving Reactor Coolant system pressure during all design transients. The PORV Isolation valves function to provide positive cutoff should a PORV become inoperable. Had the PORV's opened due to a high pressurizer pressure condition, all paths to the Pressurizer Relief Tank would have been available. Conversely, in the event of inadvertent automatic opening of the PORV's, no method of closing the PORV Isolation valves would have been readily available to terminate the release. In this case the PORV's themselves could have been closed from the Control Room, thus, terminating the undesirable release (PORV's fail closed). Therefore, safe operation of the pressurizer was assured during this incident.

The health and safety of the public were not affected by this incident.

CORRECTIVE ACTION: Immediately after receiving the "ELXD Supply to 1EMXD - OPEN" and "MCC Bus 1EMXD Voltage - Lo" alarms, a Nuclear Equipment Operator (NEO) was dispatched to reset the breaker. This action resulted in power being restored to 1EMXD within 8 minutes. Technicians then verified that loading of the breaker circuit was normal. No problems were encountered when breaker 4C was reset.

A modification will be performed to install a capacitor to the trip terminals of the Power Shields on the 600 VAC Essential Auxiliary Power system, including 1ELXD breaker 4C. This should protect the SCR from transients.

Unit 2 breakers that have had their Power Shields modified with the new SCR and the capacitor addition have experienced no sporadic trips.