

MIT NUCLEAR REACTOR LABORATORY

AN MIT INTERDEPARTMENTAL CENTER

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

Subject: Item of Information Concerning UOR 2005-2, "Failure of Automatic Emergency Power Transfer Function," License No. R. 37, Docket No. 50-20

Dear Sir or Madam:

Enclosed as item of information is a copy of an internal MIT report concerning the failure of an emergency power transfer switch. Please note that there was no safety significance to the failure of the switch.

Sincerely,


John A. Bernard
Director of Reactor Operations

A620

Unusual Occurrence Report 2005-2

Title: Failure of Automatic Emergency Power Transfer Function

Date of Occurrence: 1 April 2005

Conditions Prior to Occurrence: The reactor was shut down for maintenance. It had previously been operating routinely for an extended period.

Identification of Occurrence: MITR technical specification #3.7.3 states that:

“Emergency power with capacity to operate the equipment listed in Table II shall be available whenever the reactor is operating and shall be capable of operation for at least one hour following a loss of normal power to the facility.”

Verification of this specification is done quarterly during maintenance outages by means of PM 6.1.3.11, Emergency Power Transfer Test. The protocol is to secure normal electrical power and observe: 1) the availability of emergency power; and 2) the transfer of essential loads to that power. For the test conducted on 1 April 2005, the transfer of essential loads did not occur automatically.

Background information: PM 6.1.3.11 is conducted quarterly. With the exception of the test for the immediate past quarter, all test results have been normal. For the immediate past quarter, the test was performed as scheduled. Results were normal (i.e., emergency power available, all loads transferred). The test was then repeated for observation of various reactor UPS units. During the repeat, loads failed to transfer. An outside consultant was retained to examine the switch, and a need for lubrication was found. This was done, and the switch was judged by the consultant to be in excellent working condition. Subsequent tests (PM 6.1.3.11) confirmed this. Nevertheless, a new switch was ordered.

Cause of Occurrence: On 4 April 2004, additional testing was performed. The failure of the switch to transfer automatically was confirmed. This time a faulty relay was identified as sticking intermittently and not providing enough force to move the switch.

Analysis of Occurrence: There was no safety significance to this occurrence. Six of the eight loads listed in Table II of TS 3.7.3 are served by battery backup or are otherwise self-powered. So, only two loads were without power, and alternatives existed for these. The involved loads were:

- a) Intercom: Alternative is telephone system which has its own dedicated emergency power supply.
- b) Decay Heat Removal Pump: Alternative is core cooling by natural circulation. (Note: Use of this mode of decay heat removal is discussed in the Safety Analysis Report and it is one of the approved methods for decay heat removal.)

In addition, the possibility exists for manual transfer of loads to the emergency bus. This is not routine and would require direction from MITR instrumentation personnel.

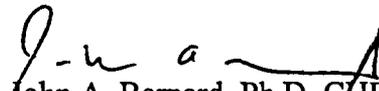
Corrective Action: The new switch that was ordered after the original problem was received in March 2005, and was installed and tested satisfactorily prior to resumption of reactor operation. It has only one moving part compared to more than seven in the old one. The new switch will also facilitate manual transfer.

Failure Date: None other than as described above.

Sincerely,



Edward S. Lau
Reactor Superintendent



John A. Bernard, Ph.D, CHP, PE,
Director of Reactor Operations