

REACTOR EVENT REPORT

RER-P-1862

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RECORDS ADMINISTRATION



R0986140

August 10, 1989

**REACTOR EVENT REPORT**

**RER-P-1862**

**TITLE:** Inadequate Neutron Flux Monitoring (N)

**SIGNIFICANCE:** Reactor Safety

|                     |              |
|---------------------|--------------|
| Actual Condition    | = Category D |
| Potential Condition | = Category D |
| Recurring Event     | = No         |

**DATE/TIME OF EVENT:** Discovered June 7, 1989/8-4 Shift

**BRIEF DESCRIPTION:**

Reactor shutdown operations were outside the requirements of Technical Specification DPST-TS-105-2.1, Scram Instrumentation, and Technical Standard DPSTS-105-4.02, Subcritical Operations, when data was not recorded per DPSOL 105-1223B, Neutron Flux Control Monitoring During Shutdown - External Fission Counter Normal Mode. DPSOL 105-1223B, Data Sheet 2, requires operations personnel to record External Fission Counter (EFC) data at 15 minute intervals. Reactor Technology Department surveillance on 6/7/89 identified that data were not recorded for three consecutive intervals on 6/6/89.

Technical Specification DPST-TS-105-2.1 and Technical Standard DPSTS-105-4.02 require that the neutron flux be monitored continuously whenever moderator and fissionable material are in the reactor. The 15 minute interval for data collection established in DPSOL 105-1223B is commensurate with the existing reactor condition to ensure that the neutron flux is being monitored properly.

Moderator and unirradiated Mark 22 assemblies were in the reactor at the time of the event. Review of fission counter stripchart recorders confirmed that no abnormal reactivity changes occurred during the time period in which data readings were not recorded.

**CAUSE:**

Personnel Error - Procedure Deviation

Operations personnel failed to take data per the frequency required in DPSOL 105-1223B. The time period that this event occurred was during shift change; the three missed readings should have been recorded at 7:15 a.m., 7:30 a.m., and 7:45 a.m.. Operations personnel were seated at the external fission counter desk and

maintained audio/visual monitoring of the flux while conducting the turnover.

Root Cause - Monitoring alertness of personnel was less than adequate. Monitoring requirements for the external fission counters are set per DPSOL 105-1223B. Personnel inadvertently failed to take data per the frequency required in DPSOL 105-1223B.

**SIGNIFICANCE:**

The fission counter systems provide neutron flux monitoring during reactor startup, charge and discharge, and shutdown when moderator and fissionable materials are in the reactor. The external fission counter monitoring and periodic data collecting are procedurally required to ensure safe operations. Rapid detection and termination of a neutron flux increase prevents an unplanned criticality accident.

Technical Specification 2.1 and Technical Standard 4.02 require continuous monitoring of the neutron flux when moderator and fissionable material are in the reactor tank. The Basis section of Technical Standard 4.02 states "Continuous surveillance of the instrumentation is not required; the frequency at which data are taken shall be commensurate with the operations in progress." DPSOL 105-1223B states that the required frequency for the shutdown status of the reactor at the time of the event is 15 minutes.

At the time of the event, the external fission counters were the only qualified neutron flux instrumentation online, the log-Ns and High Level Flux Monitors have been declared inoperable because of low count rates from the fresh P-11.1 MK22 charge. Upon reviewing the EFC's stripchart recorder, it was verified that the reactor was in a stable condition throughout the event and that no abnormal reactivity increases occurred.

The event significance for actual conditions was classified as Category D because operations were outside the requirements of Technical Standards (Significance Table 2 - RTR-2509). The neutron flux was inadequately monitored per the required frequency stated in DPSOL 105-1223B. However, upon reviewing the EFC's stripchart recorder, it was verified that the reactor was in a stable condition throughout the event and that no abnormal reactivity increases occurred.

The event significance for potential conditions was classified as Category D (Significance Table 2 - RTR-2509). No increase in significance to that determined for the event actual conditions is justified.

This event does meet UOR criteria and a report will be issued.

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**RECOMMENDATIONS:**

- 1) Supervision should emphasize to the operators the importance of maintaining proper monitoring of essential equipment. (ROD, Complete)

**RER Committee Review and Formal Follow-up Required:**

Yes   X   (Yes, mandatory for having A through E  
significance categories.)

NO \_\_\_\_\_

**RER CODE: B35A211DD000A3**

**SIMILAR RER'S:** None

**AUTHOR:**

G.A. Rubio / KH Lee  
G. A. RUBIO

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The following members of the Reactor Event Review Committee reviewed this report and approved the recommendations during the committee meeting held on 7/20/89.

L E Weiner by J Long  
Manager, Reactor Maintenance

J S Peterson / H F Allen 7/20/89  
Manager, Reactor Training and Procedures

[Signature] 7/20/89  
Manager, Reactor Operations

David T. O'Rean for JR Yanick 7/20/89  
Manager, Reactor Quality

A.M. Civalica 7/20/89  
Manager, Reactor Assessment

H F Allen 7-20-89  
Manager, Reactor Technology

A.D. Curry 7/20/89  
Manager, Reactor Systems Engineering

F. Beranek / H Allen 7-20-89  
Manager, Reactor Engineering

[Signature] 7/20/89  
Manager, Safety Analysis and Risk Management

This report has been reviewed and the corrective actions recommended by the Reactor Event Review Committee are authorized.

C P Robinson 6/3/89  
Deputy General Manager, Reactor Operations