



Research Reactor Center

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June 14, 2001

Mr. Alexander Adams, Jr.
U.S. Nuclear Regulatory Commission
Mail Stop O12-D3
Washington, DC 20555-0001

SUBJECT: Monthly Operations Summary

Enclosed is a copy of MURR's monthly operations summary for May 2001. Also, per your request, a report of the May 21, 2001 bomb threat at the Research Reactor is enclosed.

Please call me at 573 882-5264 if you have any questions regarding this information.

Sincerely,

Paul S. Hobbs, PE
Reactor Manager

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UNIVERSITY OF MISSOURI RESEARCH REACTOR

OPERATIONS MONTHLY SUMMARY

May 2001

Prepared by:
Operations Staff

May 2001

The reactor operated continuously in May with the following exceptions: five shutdowns for scheduled maintenance and refueling; three unscheduled shutdowns.

On May 3, a reactor loop low flow scram occurred due to an undetermined cause. No actual low flow condition was indicated or noted on any chart recorders or any other instrumentation. Extensive troubleshooting and testing failed to duplicate the scram condition or pinpoint a problem or failure. It is possible that air in the primary system affected the flow transmitter, producing a spurious scram. The suspected flow transmitter (912 E) was tested and vented, the primary loop was vented, and a primary flow compliance check was completed satisfactorily. The reactor was subsequently refueled and returned to normal operation. The primary flow transmitter electronic signal was (additionally) monitored with a multi-meter for the next week. No anomalies were indicated and no further problems of this type have occurred.

On May 15, a reactor scram occurred when one of the monitoring leads on the green leg white rat scram monitor was inadvertently bumped and became unplugged and shorted against a nearby alarm unit chassis. This momentary short caused power supply 2PSI to trip, which interrupted power to nuclear instrument channel #6 (power range monitor) causing a nuclear instrument anomaly scram. The 2PSI power supply was reset and all affected electronic systems were tested satisfactorily. A Reactor Short Form Precritical Checksheet was performed and a hot reactor startup was completed. Operators were cautioned to be careful while working near sensitive equipment and the white rat was repositioned to reduce the possibility of a recurrence of this type of incident. As a corrective action, Modification 75-16 Addendum 1 will permanently mount the white rat equipment in the reactor control panel.

On May 25, a reactor scram occurred due to the momentary loss of site electrical power during a thunderstorm. The University Power Plant interrupted the power. The reactor was subsequently refueled and returned to normal operation.

Major maintenance items for the month included: replacing the reactor temperature elements 980 A and 980 B with identical specification – but longer – units. The new seven and one-half inch RTD's should provide a more representative temperature; replacing the meter relay unit for RTD 980 B; placing a synthetic metal compound patch on the secondary side of primary heat exchanger 503 A; replacing primary pump 501 A bypass valve 538 A diaphragm; replacing nitrogen bank A solenoid valve N-22; replacing the overload, relay coil, and control transformer on secondary coolant pump #2 (SP-2) breaker; replacing the solenoid operated acid addition

UNSCHEDULED SHUTDOWNS

<u>Date</u>	<u>#</u>	<u>Type</u>	<u>Cause</u>
5/3/01	1127	Scram	Spurious Reactor low flow
5/15/01	1128	Scram	Breaker tip on 2PSI due to short
5/25/01	1129	Scram	Momentary loss of site electrical power

MAINTENANCE ACTIVITIES

<u>Date</u>	
05/03/01	Refueled - removed core 01-21, loaded core 01-22.
05/07/01	Refueled – removed core 01-22, loaded core 01-23. Replaced 980 A and B RTD's. Replaced 980 B meter relay unit. Placed epoxy resin patch on primary heat exchanger 503 A secondary side.
05/10/01	Refueled – removed core 01-23, loaded core 01-24. Replaced diaphragm on valve 538 A.
05/14/01	Refueled – removed core 01-24, loaded core 01-25.
05/16/01	Replaced overload and relay coil on Secondary pump (P-2) breaker.
5/17/01	Replaced overload (again) on P-2 breaker. Replaced P-2 control transformer.
5/18/01	Replaced acid addition solenoid valve.
05/21/01	Refueled – removed core 01-25, loaded core 01-26. Replaced blade D control unit and photoelectric sensor.
5/25/01	Refueled – removed core 01-26, loaded core 01-27.
5/28/01	Refueled – removed core 01-27, loaded core 01-28.

OPERATIONS SUMMARY

HOURS OPERATED THIS PERIOD	662	
TOTAL HOURS OPERATED	235,189	
HOURS AT FULL POWER THIS PERIOD	656	
TOTAL HOURS AT FULL POWER	231,983	
INTEGRATED POWER THIS PERIOD	274	MWD
TOTAL INTEGRATED POWER	90,855	MWD

Bomb Threat Event Report – May 21, 2001
University of Missouri Research Reactor

Introduction

At 3:05 pm on May 21, 2001 the University of Missouri Research Reactor Control Room received a call from the University Police Department indicating that the FBI in Kansas City had received notification of a phone call bomb threat directed toward the reactor. The FBI had indicated that the threats were credible and should be taken seriously.

An Unusual Event was declared at 3:20 pm in accordance with Site Emergency Procedures and evacuation of all unnecessary personnel was immediately carried out. The NRC was notified of the Unusual Event at 3:40 pm.

A thorough search of the Research Reactor facility was conducted by members of the Facility Emergency Organization, University Police and members of the State Fire Marshall's Bomb and Arson Unit. No explosive devices were found. The Unusual Event was terminated at 7:00 pm and the Research Reactor facility was returned to normal operating status.

The reactor was shutdown for weekly routine maintenance at the time of the notification. Maintenance activities were completed and the reactor was returned to full power at 1:16 am on May 22, 2001

Event Description

At 3:05 pm on May 21, 2001 the Reactor Manager answered a telephone call in the University of Missouri Research Reactor Control Room. The call was from the Associate Director of University Police. He informed the Reactor Manager that he had received a call from the Kansas City FBI and stated that the FBI said they had received a call from ATF indicating that there were bombs planted in the Research Reactor in Columbia, and in the Stowers Research Center in Kansas City. The message from the FBI was that the threats were credible and should be taken seriously.

The Reactor Manager turned the telephone over to the Assistant Reactor Manager, Physics, who handles reactor security matters. The Lead Senior Reactor Operator was informed and then the Reactor Manager went immediately to inform the Research Reactor Director of the call and to recommend evacuation of the facility. The Director was informed at approximately 3:10 pm. The evacuation was started immediately by going office to office and lab to lab verbally informing facility personnel that they were to secure their work and to leave the facility. Shortly after the majority of facility personnel had left, an announcement was made over the public address system for all unnecessary personnel to evacuate the facility immediately. The evacuation was completed at approximately 3:20 pm. The Operations crew and several members of the Facility Emergency Organization remained at the facility to assist in procedural activities.

At approximately 3:05 to 3:10 pm Campus Police officers arrived at the facility and entered the lobby. MURR personnel, including the Director, Reactor Manager and Health Physics Manager discussed the situation with the police to develop a plan of action. At approximately 3:45 pm officers from the Missouri State Fire Marshall's Bomb and Arson Unit arrived. These officers brought along a trained dog and after a short briefing commenced a search of the facility. The Containment building was the first area to be searched. Another officer and a second dog arrived sometime later.

A facility map was colored in to document and track areas that were searched. Facility personnel were also assigned to help with the search and to walk down certain areas.

Implementing the Emergency Procedures

Shortly after receipt of the call, under the direction of the Lead Senior Reactor Operator (LSRO), Control Room personnel entered Site Emergency Procedure SEP – 1, *Activation of Facility Emergency Organization*, and Reactor Emergency Procedure REP – 22, *Bomb Threat or Other Overt Threats*. At 3:20 pm, an Unusual Event was declared based upon a "Threat to or breach of security" in accordance with SEP – 2, *Unusual Event Procedure*.

The Emergency Director position was assumed by the Reactor Manager, and the Emergency Coordinator position was assumed by the LSRO. The Assistant Reactor Manager, Physics was assigned the Communicator role.

Worksheet C of the Site Emergency Procedures was completed and at 3:40 pm, the event was reported to the NRC Operations Office. The State Emergency Management Agency (SEMA) was also notified and was informed that no action was required on their part at this time.

Reactor status at the time of the emergency

At the time the phone call was received, the reactor had been shutdown for approximately 11 ½ hours for routine maintenance.

The LSRO and other Operators had begun the startup checks in preparation for reactor startup and were in the mechanical equipment room starting up systems. The startup checks were terminated and the LSRO and other Operators were called back to the Control Room.

Operators pointed out that several new samples had been loaded into the flux trap sample holder, but it had not yet been inserted into the reactor. The Senior Research Lab Technician responsible for the samples was called to determine the origin of the new samples. It was determined that two of these new samples had been received from off site, the others were prepared in MURR laboratories. The Senior Research Lab Technician was asked to return to the facility to assist in verifying sample contents. The two samples that had been prepared off site were removed from the sample holder in the

pool and taken out for X-ray by the State Fire Marshall's Bomb and Arson personnel. The X-rays of these samples showed no abnormalities.

Terminating the Emergency

At approximately 6:45 pm, the University Police and State Fire Marshall's officers had completed the search of the facility. An unidentified black suitcase was found in the inner corridor near the ice machine. This suitcase was X-rayed and showing nothing abnormal, was removed from the facility and opened. It was later identified as a Health Physics instrument case containing foam packing material.

At 7:00 pm the Emergency Director terminated the Unusual Event and authorized the return to normal operations. At 7:05 pm the NRC was notified of the event termination, and SEMA was notified at 7:15 pm.

Recovery actions

The Reactor Manager directed the night shift LSRO to perform an additional walk through/search of the mechanical equipment room. This was completed at 7:36 pm.

Prior to starting up the reactor, at 8:30 pm the Reactor Manager contacted the Kansas City FBI office to inquire about the findings at the Stowers Research Center, the other facility that was named in the bomb threat. The FBI officer on duty stated that the search of that facility turned up nothing abnormal.

The Reactor Manager discussed the situation with the Chairman and two members of the Reactor Safety Committee. The assessment of the Chairman and members was that calling a meeting of the Safety Committee would add no additional information with regard to reactor safety and starting the reactor. Therefore, the Reactor Safety Committee was not called into session.

Startup preparations were recommenced and the reactor was started up and reached full power at 1:16 am on May 22.

Additional observations

At 6:05 pm a conference call from several NRC personnel was received in the Control Room. They requested and were given an update regarding the activities and findings thus far in the Unusual Event.

The Emergency Procedures functioned smoothly with very few difficulties and the evacuation of the facility was completed in a timely, efficient manner. The effectiveness of the emergency procedures and the evacuation methods will be evaluated to capture lessons learned, and opportunities for improvement.

The response of the University Police and the State Fire Marshall's Bomb and Arson unit was timely and professional. The search of the Research Reactor facility was conducted very methodically and completely.

A handwritten signature in cursive script, appearing to read "Paul Hobbs".

Paul Hobbs,
Reactor Manager
University of Missouri Research Reactor