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UNIVERSITY OF MISSOURI RESEARCH REACTOR  
 OPERATIONS MONTHLY SUMMARY

50-186

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JUNE 1998

Prepared by:  
 Operations Staff

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AUG 04 1998

June 1998

The reactor operated continuously in June with the following exceptions: nine shutdowns for scheduled maintenance, refueling and/or sample changes; two unscheduled shutdowns.

On June 15, a manual scram was initiated when the operators noted sudden changes in the indications for Gamma-Metrics nuclear instrument channels #1 (source range), #2 (intermediate range), and #4 (power range). Electronics technicians replaced a failed Gamma-Metrics wide range amplifier pre-amplifier. The nuclear instruments were tested satisfactorily and a normal reactor startup was commenced. While the reactor was at 5 MW in manual control, the operators again noted sudden changes in the Gamma-Metrics nuclear instruments and immediately shutdown the reactor by manual scram. Electronics technicians eventually traced the problem to the Gamma-Metrics detector and cabling. These were replaced and tested satisfactorily and no further problems of this type have recurred.

Major maintenance items for the month included: replacing the Gamma-Metrics fission chamber detector and cabling (twice); replacing the meter for core discharge (delta) pressure transmitter 929; removing the scram and rod run-in safety system trip functions from the (original installation) General Electric wide range monitor and installing them on the (recent installation) Gamma-Metrics power range monitor--designated channel #4; replacing the Gamma-Metrics wide range monitor amplifier pre-amplifier (twice); replacing the piston seals and rod seal on the actuator for pool isolation valve 509; shipping 16 spent fuel elements to the Department of Energy's Savannah River Site in South Carolina.

#### UNSCHEDULED SHUTDOWNS

<u>Date</u>	<u>No.</u>	<u>Type</u>	<u>Cause</u>
6/15/98	1084	Manual Scram	Gamma-Metrics detector/cable/ pre-amplifier failure.
6/15/98	1085	Manual Scram	Gamma-Metrics detector/cable/ pre-amplifier failure.

## OPERATIONS SUMMARY

HOURS OPERATED THIS PERIOD	605
TOTAL HOURS OPERATED	212,605
HOURS AT FULL POWER THIS PERIOD	601
TOTAL HOURS AT FULL POWER	209,502
INTEGRATED POWER THIS PERIOD	251 MWD
TOTAL INTEGRATED POWER	81,445 MWD

## MAINTENANCE ACTIVITIES

06/01/98 Refueled - removed core 98-27, loaded core 98-28. Replaced Gamma-Metrics fission chamber detector and cabling.

06/08/98 Refueled - removed core 98-28, loaded core 98-29.

06/15/98 Refueled - removed core 98-29, loaded core 98-30. Replaced delta pressure transmitter 929 meter. Moved the scram and rod run-in safety system trip functions from the General Electric wide range monitor to the Gamma-Metrics power range monitor. Replaced the Gamma-Metrics wide range amplifier pre-amplifier (twice).

06/16/98 Replaced the Gamma-Metrics fission chamber detector and cabling.

06/22/98 Refueled - removed core 98-30, loaded core 98-31. Replaced the piston seals and rod seal on the actuator for pool discharge isolation valve 509.

06/23/98 Refueled - removed core 98-31, loaded core 98-32.

06/29/98 Refueled - removed core 98-32, loaded core 98-33.