

ANNUAL REPORT

August 1, 1981 - August 1, 1982

ILLINOIS LOPRA REACTOR

Facility License R-117

I. SUMMARY OF OPERATING EXPERIENCE

The LOPRA was scheduled for operation a total of 44 hours and was in actual operation a total of 26.1 hours. Scheduled operations average 3.7 hours/month and actual operation 2.2 hours/month. The only present usage of the facility, except for surveillance checks, is an 'Approach to Critical' experiment in which the Advanced TRIGA is used as the source of neutrons. This experiment is conducted as part of a one-week training program for nuclear power plant operations. Nuclear Engineering students may also complete this experiment as well as operating the facility to complete surveillance checks on control rod calibration and power calibration. The types and percentages of usage for the above period were:

Operator Training	54%
Student Experiments	32%
Surveillance Requirements	14%

There were no new experiments or changes in facility design, performance characteristics, and operating procedures during this period.

II. TABULATION OF OPERATION

Hours Critical\* and Energy

Steady-State Operation	26.1 hours	0.0043 MW-hrs
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\*This includes time for loading fuel elements during the approach to critical experiments. The actual critical time was 6.2 hours or 24% of the above time.

II.1. EMERGENCY SHUTDOWNS and INADVERTENT SCRAMS

There were two (2) inadvertent scrams during this period. One resulted from a switching error with the linear recorder. The second came from a gamma monitor that is located above the assembly. On this occasion a substitute power supply was being used for the compensated ion chamber that records the power level. One of the connections to the power supply had not been completed which caused a higher power level than the indicated value. When the actual power reached a value slightly over 1 kW, the gamma monitor which was set at 20 mr/hr caused a scram. It should be noted that for operations from 1-10 kW, the scram set point for the gamma monitor is typically at 500 mr/hr.

IV. MAINTENANCE

During a power calibration problems were experienced with the high voltage supply to the chamber that indicates the power level. For this surveillance, the LOPRA is operated from 1 kW to 9 kW and the loss of reactivity due to the fuel temperature coefficient is determined. These are correlated to determine the actual power level. In this operation, erratic behavior in the indicated power level was noted at about 5 kW. A check on the high voltage to the chamber revealed that as the power level was increased above this level, the high voltage to the chamber would decrease in value. Apparently the current drawn by the chamber, about 0.5 milliamperes at this power level caused one of the components in the power supply to malfunction. Batteries were then substituted for the regulated supply and will be used for this purpose until the normal supply can be fixed.

V. CONDITIONS UNDER SECTION 50.59 of 10 CFR 50

As indicated in the first section, there were no changes to the system, procedures, or new experiments during this period.

VI., VII., VIII. RADIOACTIVITY

Because of the low power and infrequent use of the LOPRA, its operation does not contribute to the release of effluents. Personnel records for the laboratory are given in the Annual Report for the Advanced TRIGA Reactor, License No. R-115, dated February 26, 1982 (Docket No. 50-151).