WPI

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U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Stop O-5 C12
Washington, DC 20555-0001

Re: Docket No. 50-134
License R-61
Annual Report for 2000

In accordance with the technical specifications for the WPI Nuclear Reactor Facility (License R-61), I am submitting the Annual Operating Report for 2000.

The WPI reactor is a non-power, university-based, teaching reactor. It continues to be used primarily in the academic mission of Worcester Polytechnic Institute, for the instruction of students, and in occasional scholarly research.

Please contact me if further information is required.

Sincerely,

Stephen J. LaFlamme,
Director, Nuclear Reactor Facility

Cc: U.S. Nuclear Regulatory Commission
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2000 Annual Operating Report

Worcester Polytechnic Institute
Nuclear Reactor Facility

License R-61
Docket No. 50-134

I. Operations Summary

(a) changes in facility design

There were no changes in facility design during 2000 other than replacement of the Building Evacuation Alarm Control Panel discussed under Section IV, Maintenance.

(b) performance characteristics

The operation of all reactor safety system components was normal during 2000, with the only exception being a sluggish period channel response during start-up surveillance testing in October of 2000. The sluggish indication delayed reactor core loading. Maintenance of the detector, and normal calibration of the instrument channel, were required to improve the response of the indication.

Performance of the fuel was normal.

(c) changes in operating procedures

There were no changes made to operating procedures during 2000.

(d) abnormal results of surveillance tests and inspections

There were no unusual findings from the performance of surveillance tests and inspections.

(e) personnel changes in reactor facility director, health physicist, or radiation, health, and safety committee members

One new member was added to the Radiation Health and Safeguards Committee, a faculty member from the Department of Chemistry & Biochemistry, effective in April of 2000. The number of members on the Committee now stands at seven.

II. Power Generation (kilowatt-hours)

2000 Output:	141.2
Total LEU-Fuel:	1908.0
Total Reactor:	9322.0

III. Unscheduled Shutdowns

There were ten unscheduled shutdowns during 2000. Of these, seven were due to electrical transients caused by inadvertent disturbance of signal cables above the reactor during fuel movement. Future consideration will be given to modifying the fuel handling procedure to minimize this nuisance factor. One was due to an apparent electrical transient while operating the regulating blade control switch. Wiring connections on the switch were tightened to minimize the possibility of future electrical transients. The ninth unscheduled shutdown was caused by an electrical transient when starting a one-minute count on the start-up channel. The NIM-BIN timer module was later removed for maintenance. The switch contacts were cleaned and a relay was reseated, and there have been no further recurrences. The tenth unscheduled shutdown was caused by operator error in exceeding the overpower trip setpoint on one Nuclear Instrumentation Channel during startup. None of the scrams had any safety significance given the scope of the facility and all were related to activities involving its teaching and training mission.

IV. Maintenance

The AC to DC power supply within the Building Evacuation Alarm Control Panel failed during the last quarter of 1999. It was necessary to replace the entire panel with a new panel of improved design, and the replacement was completed and tested during February of 2000.

The high voltage electrical connections on the log-N period channel compensated ion chamber were cleaned and reattached to the cables due to sluggish period response during start-up testing in October of 2000. Aluminum oxide apparently affected the resistance of the connections, and the cleaning greatly improved the response of the channel at low signal levels.

V. Changes, Tests, and Experiments Pursuant to 10CFR 50.59

The replacement of the Building Evacuation Alarm Control Panel required a safety evaluation determination pursuant to 10CFR 50.59. The evaluation found that the change did not result in an unreviewed safety question primarily because the new panel met or exceeded the design capabilities of the original panel. The change also was found to not violate any existing Technical Specifications.

VI. Radioactive Effluents Release

There have been no measurable releases of radioactivity above background for liquid effluent releases. Gaseous Ar-41 has been released in trace amounts that are conservatively calculated to be well within 10CFR 20 release limits, and we have verified level 1 compliance using the EPA COMPLY Code.

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