



Leslie C. Wilbur
Nuclear Reactor Facility

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U.S. Nuclear Regulatory Commission
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Washington, DC 20555-0001

Re: Docket No. 50-134
License R-61
Annual Report for 2003

In accordance with the Technical Specifications for the WPI Leslie C. Wilbur Nuclear Reactor Facility (License R-61), I am submitting the Annual Operating Report for 2003.

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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2003 Annual Operating Report

Worcester Polytechnic Institute
Leslie C. Wilbur 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 2003.

(b) performance characteristics

The operation of all reactor safety system components was normal during 2003, with the only exception being a sluggish period channel response during start-up surveillance testing in March 2003, and again in October 2003. In March, it was eventually determined that a coaxial cable for the compensated ion chamber (CIC) was loose within the HV-N connector on the splice block on the reactor bridge. During reactor maintenance in September, all eighteen HV-N connectors on the reactor bridge were disassembled and cleaned to improve all CIC detector connections. In October, the problem appeared to have been caused by either moisture or aluminum oxide within the connections at the top of the detector. Maintenance of the detector, and normal calibration of the instrument channel, was required to improve the response of the indication. The sluggish indication delayed reactor core loading.

Performance of the fuel was normal.

(c) changes in operating procedures

There were no changes made to operating procedures during 2003.

(d) abnormal results of surveillance tests and inspections

There were no unusual findings from the performance of surveillance tests and inspections, other than those described above in (b).

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

There were no personnel changes in 2003.

II. Power Generation (kilowatt-hours)

2003 Output:	154.9
Total LEU-Fuel:	2616.0
Total Reactor:	10030.0

III. Unscheduled Shutdowns

There was one unscheduled shutdown during 2003 due to the reactor neutron source passing too close to a compensated ion chamber. The source was being replaced in the core position following a criticality check during the core reloading. All control blades were fully withdrawn but not all of the fuel was loaded into position, and the reactor was subcritical. The scram did not have any safety significance given the scope of the facility, and was related to activities involving its teaching and training mission.

IV. Maintenance

In March 2003, it was eventually determined that a coaxial cable for the compensated ion chamber (CIC) was loose within the HV-N connector on the splice block on the reactor bridge, causing a sluggish period channel response during start-up surveillance testing. During reactor maintenance in September, all eighteen HV-N connectors on the reactor bridge were disassembled and cleaned to improve all CIC detector connections. In October 2003, the high voltage electrical connections on the log-N period channel CIC were cleaned and reattached to the cables due to sluggish period response during start-up testing. Moisture or 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

There have been no changes to facility design, or new tests and experiments, requiring evaluations pursuant to 10CFR 50.59.

VI. Radioactive Effluents Release

Liquid effluent releases have been near background and well within 10CFR20 release limits. Gaseous Ar-41 has been released in trace amounts that are conservatively calculated to be well within 10CFR20 release limits, and we have verified level 1 compliance using the EPA COMPLY Code.

End