



Rensselaer Polytechnic Institute Troy, New York 12181

March 1, 1984

Director, Region I  
Office of Inspection and Enforcement  
U. S. Nuclear Regulatory Commission  
631 Park Avenue  
King of Prussia, PA 19406

Re: Annual Operating Report  
License CX-22  
Docket 50-225

Dear Sir:

This report is submitted as required by the Technical Specifications for the Rensselaer Polytechnic Institute Critical Experiments Facility for the period March 1, 1983 to March 1, 1984.

Through periods January, 1983 to May, 1983 and July 1983 to August 1983, the Facility was used to conduct a graduate level course on reactor experiments for classes of 15 to 7 students, respectively. The Facility was also used for 2 weeks in August to conduct an operational reactor physics and engineering course for 3 engineers from Rochester Gas and Electric Company. Further, one student was involved in project work at the Facility to satisfy degree requirements. The reactor experiments course is currently being taught to 10 students and one student is working on a Master's project. Two students were working on projects to complete degree requirements.

Routine scheduled maintenance was performed in June, January and February.

The experiments, operations, and topics covered in association with the use of the Facility remain the same as described in previous reports.

All activities and experiments have been conducted in accordance with our NRC reactor license CX-22. CX-22 was relicensed on December 2, 1983, for a twenty-year period. The Technical Specifications were modified. The maximum allowable excess reactivity is now .60\$. Safety Evaluation Report (NUREG-1023) issued October, 1983 related to the renewal.

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Specific references to Technical Specifications Section 6.6.1 are as follows:

a.1 The reactor parameters affecting reactor performance remain within the license limits for the new core configuration. Each of the reactor parameters has changed in a conservative direction from the standpoint of the Design Basis Accident.

a.2 Required tests and inspections were completed with satisfactory results.

a.3 There have been no changes, tests, or experiments which required authorization from the NRC pursuant to 10CFR50.59(a).

a.4 The Nuclear Safety Review Board includes: Dr. R. T. Lahey, Jr., Dr. D. R. Harris, D. F. E. Wicks, Dr. M. Z. Podowski, Dr. M. Becker, Dr. O. C. Jones, Jr., Dr. R. C. Block and Mr. R. M. Ryan.

b. Power Generation

Power level is generally controlled to less than 10 watts at steady-state. Critical operation is generally conducted less than 2 hours per day. The reactor was operated less than 45 days during the report period. Therefore, a conservative overestimate of the integrated reactor thermal power for this report period is 0.9 kilowatt hours.

c. Shutdowns

1. Linear Power Channel 1 - total 10

- (a) Range high level exceeded - operator action - 3
- (b) Instrument malfunction - 7

2. Linear Power Channel 2 - total 4

- (a) Range high level exceeded - operator action 2
- (b) Instrument malfunction - 2

3. Log N and Period Channel 1 - total 0

- (a) High Range - operator action - 0
- (b) Instrument malfunction - 0

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- 4. Log N Period Channel 2 - total 0
  - (a) High Range - operator action - 0
  - (b) Instrument malfunction - 0

- 5. Door Bypass - total 0
  - (a) Operator error - 0
  - (b) Malfunction - 0

d. Maintenance

- 1. Repaired air monitor amplifier
- 2. Repaired heating system
- 3. Replaced safety amplifier with functionally equivalent safety interrupt circuit
- 4. Repaired 2 area gamma monitors by replacing tube
- 5. Replaced source channel A voltage supply and counter
- 6. Replaced source channel A audio driver
- 7. Replaced control rod #7 control rod drive assembly to correct burned-out solenoid for clutch

e. There were no changes, tests or experiments carried out without prior NRC approval.

f. There were no radioactive effluents released or discharged to the environs.

g. Radiation Monitoring

The environmental monitoring program yielded the following summary of TLD doses taken at the exclusion area boundary and the site boundary.

<u>Station No.</u>	<u>Dose (Rem)</u>
3 Exclusion Area Boundary	.050
4 " " "	.054
5 " " "	.046
6 Site Boundary	.034
7 Control (GE Guard Station)	.040

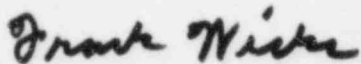
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h. Radiation Exposure

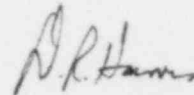
Facility personnel exposures were all less than 500 mRem for the report period.

All activities and experiments were conducted in accordance with License CX-22.

Sincerely yours,



Dr. Frank Wicks, Supervisor  
Critical Experiments Facility  
L. David Walthouse Laboratory



Dr. Donald R. Harris, Director  
Critical Experiments Facility  
L. David Walthousen Laboratory

FW:mb

cc: R. T. Lahey, Jr.  
R. E. Scammell