June 1, 2000

Dr. Donald Steiner, Department Chair
Department of Environmental and Energy Engineering
Rensselaer Polytechnic Institute
Troy, NY 12180-3590

SUBJECT: NRC INSPECTION REPORT NO. 50-225/2000201 AND NOTICE OF VIOLATION

Dear Dr. Steiner:

This refers to the inspection conducted on April 17-21, 2000 at the L. David Walthousen Critical Experimental facility in Schenectady, New York. The enclosed report presents the results of this inspection.

Based on the results of this inspection, the NRC has determined that violations of NRC requirements occurred. These violations are cited in the enclosed Notice of Violation (Notice) and the circumstances surrounding them are described in detail in the subject inspection report.

You are required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing your response. The NRC will use your response, in part, to determine whether further enforcement action is necessary to ensure compliance with regulatory requirements.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter, its enclosure(s), and your response will be placed in the NRC Public Document Room.

Should you have any questions concerning this inspection, please contact Mr. Thomas Dragoun at (610) 337-5373.

Sincerely,

/RA/
Ledyard B. Marsh, Chief
Events Assessment, Generic Communications
and Non-Power Reactors Branch
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Docket No. 50-225
License No. CX-22

Enclosures: Notice of Violation
NRC Inspection Report No. 50-225/2000201

cc w/enc:
Mr. Bernard Drobnicki, Director, Public Safety
Mr. Paul Lawler, Vice President of Finance
Dr. William Vernetson, TRTR
Dr. George Xu, Radiation Safety Officer
State of New York

cc:

Mayor of the City of Schenectady
Schenectady, NY 12305

Dr. Paul J. Merges, Director
Bureau of Pesticides and Radiation
NYS Department of Environmental
Conservation
50 Wolf Road, Room 498
Albany, NY 12233-7255

Mr. Brian S. Craig
Department of Nuclear Engineering
and Science
Rensselaer Polytechnic Institute
Troy, NY 12181

Mr. John P. Spath
NYS Energy Research and Development
Authority
Corporate Plaza West
286 Washington Avenue Extension
Albany, NY 12203-6399

New York City Department of Health
Public Health Library
125 Worth Street
New York, NY 10013

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State of New York
Distribution: w/enclosure

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BDavis	TDragoun	DMatthews	LMarsh
PDoyle	TMichaels	SNewberry	WEresian
PIsaac	EHylton	AAdams	SHolmes
CBassett	MMendonca	MSatorius, OEDO (O16-E15)	

DOCUMENT NAME: ML003717908 **TEMPLATE #: NRR-056**

OFFICE	REXB:RI	REXB:PM	REXB:LA	REXB:BC
NAME	TDragoun:rdr	TMichaels	EHylton	LMarsh
DATE	05/ 26 /2000	05/ 26 /2000	05/ 31 /2000	05/ 31 /2000

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NOTICE OF VIOLATION

Rensselaer Polytechnic Institute
Reactor Critical Facility

Docket No. 50-225
License No. CX-22

During an NRC inspection conducted on April 17-21, 2000, violations of NRC requirements were identified. In accordance with the NRC Enforcement Policy dated May 1, 2000, (65 FR 25368) the violations are listed below:

> Technical Specification 6.1.3(a)(2) Staffing requires that, in addition to the control operator, a licensed senior operator shall be present or readily available on call when the reactor is not shutdown.
>
> Contrary to the above, for reactor operations on January 6, January 11 and January 14 to 20, 2000, the license of the person filling this position had been terminated on December 31, 1999.

This is a Severity Level IV violation (Supplement I).

> Technical Specification 4.1 requires semiannual measurement of control rod drop time, magnet release time, and moderator-reflector water dump time. All instrument channels are required to be calibrated annually.
>
> Contrary to the above, these surveillances were not completed during calender year 1999.

This is a Severity Level IV violation (Supplement I)

Pursuant to the provisions of 10 CFR 2.201, Rensselaer Polytechnic Institute is hereby required to submit a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555 within 30 days of the date of the letter transmitting this Notice of Violation (Notice). This reply should be clearly marked as a "Reply to a Notice of Violation" and should include for each violation: (1) the reason for the violation, or, if contested, the basis for disputing the violation or severity level, (2) the corrective steps that have been taken and the results achieved, (3) the corrective steps that will be taken to avoid further violations, and (4) the date when full compliance will be achieved. Your response may reference or include previous docketed correspondence, if the correspondence adequately addresses the required response. If an adequate reply is not received within the time specified in this Notice, an order or a Demand for Information may be issued as to why the license should not be modified, suspended, or revoked, or why such other action as may be proper should not be taken. Where good cause is shown, consideration will be given to extending the response time.

If you contest this enforcement action, you should also provide a copy of your response to the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

Under the authority of Section 182 of the Act, 42 U.S.C. 2232, this response shall be submitted under oath or affirmation.

Because your response will be placed in the NRC Public Document Room (PDR), to the extent possible, it should not include any personal privacy, proprietary, or safeguards information so that it can be placed in the PDR without redaction. If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request withholding of such material, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim of withholding (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.790(b) to support a request for withholding confidential commercial or financial information). If safeguards information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21.

In accordance with 10 CFR 19.11, you may be required to post this Notice within two working days.

Dated at Rockville, Maryland
this 1st day of June 2000.

U.S. NUCLEAR REGULATORY COMMISSION

Docket No:	50-225
License No:	CX-22
Report No:	2000201
Licensee:	Rensselaer Polytechnic Institute
Facility:	L. David Walthousen Critical Experimental Facility
Location:	Schenectady, New York
Dates:	April 17-21, 2000
Inspector:	Thomas F. Dragoun, Reactor Inspector

Approved by: Ledyard B. Marsh, Chief
Events Assessment, Generic Communications and
Non-Power Reactors Branch
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

EXECUTIVE SUMMARY

This routine, announced inspection included onsite review of selected aspects of the organizational structure and functions program, operations program, review and audit program, radiation protection program, environmental protection program, operator requalification program, maintenance program, surveillance program, emergency preparedness program, and security program since the last NRC inspection of this program.

ORGANIZATIONAL STRUCTURE AND FUNCTIONS
New personnel assumed positions at several levels within the organization. The organizational structure and functions were consistent with Technical Specification requirements.

OPERATIONS
An apparent violation of staffing requirements was observed. An on-call SRO was not provided during reactor operation.

REVIEW AND AUDIT
The review and audit program satisfied Technical Specification requirements.

RADIATION PROTECTION
The radiation protection program satisfied NRC requirements.

ENVIRONMENTAL PROTECTION
The environmental protection program satisfied NRC requirements.

OPERATOR REQUALIFICATION
Operator requalification was conducted as required by the Requalification Program.

MAINTENANCE
The maintenance program required technician support.

SURVEILLANCE
The surveillance program was unsatisfactory. An apparent violation was cited for failure to perform surveillances on schedule.

EMERGENCY PREPAREDNESS
The emergency preparedness program was conducted in accordance with the Emergency Plan.

SECURITY
Security activities and systems satisfied Physical Protection Plan requirements.

Report Details

Summary of Plant Status

During the inspection, the reactor was fueled but remained shut down.

1. ORGANIZATIONAL STRUCTURE AND FUNCTIONS

a. Scope (IP 69001)

The inspector reviewed selected aspects of:

- organization and staffing
- qualifications
- management responsibilities
- administrative controls

b. Observations and Findings

The staffing had changed since the last inspection. The President of the Institute and Dean of Engineering were new. A similar situation occurred during the last inspection. The Reactor Facility Director and Operations Supervisor were also new. Both new personnel satisfied the qualification requirements specified in TS 6.1.4. The previous Director had retired but continues to teach. The new Director, who assumed the position on March 1, 2000, was highly qualified and motivated. Three new SRO recently received licenses. The RSO indicated an intention to vacate his position in a few weeks to concentrate on research. The previous RSO, who had retired a few years ago, returned as acting RSO until the position could be permanently refilled. The Assistant RSO left in November 1999 and replacement candidates have been identified. Qualifications of the reactor staff met Technical Specification requirements. The Institute's Risk Management and Internal Auditing group, which includes the RSO, was reorganized to eliminate collateral duties. The Director of Environmental Health and Safety was new.

The Department Chairman indicated that a firm decision regarding the future of the facility, that is, to continue operations or decommission, was on hold. Tentatively, facility management plans to renew the reactor license which expires in December 2003.

Review of records verified that management responsibilities were administered as required by Technical Specifications and applicable procedures. Transitions in the staff were properly managed.

c. Conclusions

The organizational structure and functions were consistent with Technical Specification requirements.

2. OPERATIONS

a. Scope (IP 69001)

The inspector reviewed selected aspects of:

- operational logs and records
- staffing for operations
- selected operational, startup, or shutdown activities

b. Observations and Findings

The operating logs and records were satisfactory and provided an indication of operational activities. However, log keeping was inconsistent and indicated the need for guidance to the operators. The new Director stated that he was planning to implement a policy to improve log keeping. For the most part the logs and records indicated that shift staffing included a licensed senior operator on call as required by Technical Specification 6.1.3. However, for reactor operations on January 6, 11, and 14 to 20, 2000, records indicated that the individual filling the senior operator on call position had sent a letter to the NRC requesting that his license be terminated as of December 31, 1999. The NRC confirmed that the license was terminated in a letter dated January 10, 1999, to the individual. Operation of the reactor during the period described above without a licensed senior operator on call constitutes an apparent violation of Technical Specification requirements (VIOLATION 50-225/2000201-01).

Logs and records also showed that operational conditions and parameters were consistent with license and Technical Specification requirements.

c. Conclusions

An apparent violation of staffing requirements was observed.

3. REVIEW AND AUDIT

a. Scope (IP 69001)

The inspector reviewed selected aspects of:

- safety review records
- audit records
- review and audit personnel qualifications

b. Observations and Findings

Records showed that the Nuclear Safety Review Board conducted safety reviews and meetings at the Technical Specification required frequency. Topics of these reviews were consistent with Technical Specification requirements to provide guidance, direction, and oversight, and to ensure acceptable use of the reactor.

NSRB membership and meeting quorums satisfied requirements. During the December 1999 meeting of NSRB, the members expressed concern regarding the status of the reactor surveillances. This matter is discussed further in Section 8 of this report.

c. Conclusions

The review and audit program satisfied Technical Specification requirements.

4. RADIATION PROTECTION

a. Scope (IP 69001)

The inspector reviewed selected aspects of:

- the Radiation Protection Program
- radiological signs and posting
- routine surveys and monitoring
- maintenance and calibration of radiation monitoring equipment
- personnel indoctrination

b. Observations and Findings

The radiation protection program requirements and procedures had not changed since the last inspection. The dosimetry program changed. Previously the licensee used a locally processed TLD dosimetry system to unofficially monitor personnel doses. This was acceptable since facility records showed that personnel did not enter high radiation areas and did not receive exposures in excess of criteria provided in 10 CFR 20.1502. As of April 1, 2000, a NVLAP certified vendor (ICN) was used to provide dosimetry for personnel, environmental, and area monitoring. However, the licensee stated that this change was due to workload considerations and the unofficial status of the personnel dosimetry remains the same.

During the previous inspection, the inspector noted inconsistent results between the routine survey results and the area dosimeters placed inside the reactor room. The RSO stated that each of the four TLD chips in the area dosimeter holder is manually unloaded and placed into the TLD reader. It was possible that a personnel error occurred during this handling. This problem should not recur since area dosimetry is now processed by the vendor who provides the personnel dosimetry. This action is complete and satisfactory. Inspector follow-up item 50-225/1998201-01 is closed.

Caution signs, postings and controls to radiation areas were as required in 10 CFR 20, Subpart J. Licensee personnel observed the indicated precautions for access the radiation areas.

Training records showed that personnel were acceptably trained in radiation protection practices.

Radiation monitoring and survey activities were as required. Equipment used for these activities were maintained, calibrated and used acceptably. The incoming RSO indicated that the reactor operators will be trained to assist with some routine surveys.

The licensee did not require a respiratory protection program or planned special exposure program.

c. Conclusions

The radiation protection program satisfied NRC requirements.

5. ENVIRONMENTAL PROTECTION

a. Scope (IP 69001)

The inspector reviewed selected aspects of:

- the environmental monitoring program
- public dose calculations

b. Observations and Findings

Environmental TLD data indicated that there were no measurable dose above background. Observation of the facility found no new potential release paths. Estimates of the annual dose to the public from air emissions were calculated using the EPA COMPLY computer program. This dose was well below the constraint limit specified in 10 CFR 20.1101(d).

Conclusions

The environmental protection program satisfied NRC requirements.

6. OPERATOR REQUALIFICATION

a. Scope (69001)

The inspector reviewed selected aspects of:

- the Requalification Program
- operator licenses
- operator training records
- operator examination records
- operator active duty status

b. Observations and Findings

Three licensed operators participated in the requalification program. Individual personnel records were incomplete but the console log indicated that the required reactivity manipulations were performed. Written examinations were completed two years ago and were due for the current cycle.

c. Conclusions

Operator requalification was conducted as required by the Requalification Program.

7. MAINTENANCE

a. Scope (69001)

The inspector reviewed selected aspects of:

- facility changes
- equipment maintenance records

b. Observations and Findings

There were no facility changes. Maintenance was recorded in the console log. The console log also recorded equipment failures and the need for additional maintenance. Equipment problems had a negative impact on the conduct of surveillances as discussed in Section 8. The new Director stated that the operators had verbally provided additional information on maintenance needs. Management is addressing this issue.

c. Conclusions

The maintenance program required technician support.

8. SURVEILLANCE

a. Scope (IP 69001)

The inspector reviewed selected aspects of:

- surveillance and calibration procedures,
- surveillance, calibration and test data sheets and records

b. Observations and Findings

Certain surveillance, test and LCO verifications and calibrations were not completed on schedule. The measurement of control rod drop time, magnet release time, moderator-reflector water dump time, and calibration of instrument channels were not performed during 1999. The channel test of safety system channels, visual inspection of the reactor, rod drive permit interlock, and

moderator-reflector water height were checked during reactor start ups in 1999. A water dump time was tested on January 12, 2000 and was found to be within specification. Rod drop timing tests on January 16 were aborted due to equipment malfunctions during testing on rod #4. A March 6 entry in the console log by the Operations Supervisor noted that surveillances were late. The Operations Supervisor discussed the equipment problems with the inspector by telephone in November 1999 and March 2000. The previous Director had a similar conversation with the inspector in September 1999. The failure to conduct surveillances at the required interval constitutes an apparent violation of the requirements in Technical Specification 4.1 (VIOLATION 50-225/2000201-02)

c. Conclusions

The surveillance program was generally acceptable except for the apparent violation noted.

9. EMERGENCY PREPAREDNESS (69001)

a. Scope

The inspector reviewed selected aspects of:

- the Emergency Plan
- emergency response facilities
- offsite support
- emergency drills and exercises

b. Observations and Findings

The Emergency Plan (E-Plan) in use at the reactor and emergency facilities were unchanged. The notification procedures and phone numbers in use by the Public Safety dispatch were current. The qualification program for dispatchers was comprehensive. Requests for renewal of offsite support were mailed in April 2000 and verbal affirmations were received. The inspector reviewed a video tape of the full scale exercise with offsite agency response that was held in August 1995. The scenario involved contaminated injured personnel and no program weaknesses were reported during the critique. The Director of Public Safety stated that a similar drill may be proposed for the near future as training for the new reactor staff and management.

c. Conclusions

The emergency preparedness program was conducted in accordance with the Emergency Plan.

10. SECURITY

a. Scope (IP 81431)

The inspector reviewed selected aspects of:

- the Physical Protection Plan
- security systems, equipment and instrumentations
- implementation of the Physical Protection Plan

b. Observations and Findings

The Physical Protection Plan was the same as the latest revision approved by the NRC. Physical protection systems (barriers and alarms), equipment and instrumentation were as required by the Physical Protection Plan. Access control was as required. A new, improved security system was installed in December 1999. Records indicated that tours of the facility by Public Safety Officers were conducted as required.

c. Conclusions

Security activities and systems satisfied Physical Protection Plan requirements.

11. EXIT MEETING

The inspector presented the inspection results to members of licensee management at the conclusion of the inspection on April 21, 2000. The licensee acknowledged the findings presented.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

F. DuBois, Reactor Critical Facility Director
J. Jacquin, Senior Director, Risk Management and Internal Auditing
R. Ryan, Radiation Safety Officer (incoming)
D. Steiner, Chairman, Department of Environmental and Energy Engineering
A. Strollo, Lt., Department of Public Safety
G. Xu, Radiation Safety Officer (outgoing)

NRC Foreign Assignee:

T. Ikeda, Science and Technology Agency, Japan

INSPECTION PROCEDURES USED

IP 69001	CLASS II NON-POWER REACTORS
IP 81431	FIXED SITE PHYSICAL PROTECTION OF SPECIAL NUCLEAR MATERIAL OF LOW STRATEGIC SIGNIFICANCE

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-225/2000201-01	VIO	Failure to provide on-call SRO during reactor operations.
50-225/2000201-02	VIO	Failure to perform TS required surveillances.

Closed

50-225/1998201-01	IFI	Resolve discrepancy between area TLD results and routine surveys.

LIST OF ACRONYMS USED

CFR	Code of Federal Regulations
IFI	Inspector Follow-up Item
LCO	Limiting Conditions for Operations
NRC	Nuclear Regulatory Commission
NSRB	Nuclear Safety Review Board
NVLAP	National Voluntary Laboratory Accreditation Program
RSO	Radiation Safety Officer
SRO	Senior Reactor Operator
TLD	Thermoluminescent dosimeter
T.S.	Technical Specifications
VIO	*Vmmmm*