

September 5, 2002

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

SUBJECT: NRC INSPECTION REPORT NO. 50-225/2002-201 AND NOTICE OF VIOLATION

Dear Dr. Steiner:

This letter refers to the inspection conducted on May 28-31, 2002, at the L. David Walthousen Critical Experimental Facility in Schenectady, New York. The enclosed report presents the results of that inspection.

Various aspects of your reactor operations and security programs were inspected, including selective examinations of procedures and representative records, interviews with personnel, and observations of the facility.

Based on the results of this inspection, the Nuclear Regulatory Commission (NRC) has determined that a violation of NRC requirements occurred. The violation is cited in the enclosed Notice of Violation (Notice) and the circumstances surrounding them are described in detail in the subject inspection report. The violation is of concern because it suggests a lack of compliance with the requirements stipulated in your Emergency Plan.

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 and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at (the Public Electronic Reading Room) <http://www.nrc.gov/reading-rm/adams.html>. Should you have any questions concerning this inspection, please contact Mr. Stephen Holmes at 301-415-8583.

Sincerely,

/RA/

William D. Beckner, Program Director
Operating Reactor Improvements Program
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Docket No. 50-225

Enclosures: 1) Notice of Violation

2) NRC Inspection Report No. 50-225/2002-201

cc w/enclosure: Please see next page

Rensselaer Polytechnic Institute
L. David Walthousen Critical Experimental Facility

Docket No. 50-225

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. 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

Test, Research, and Training
Reactor Newsletter
University of Florida
202 Nuclear Sciences Center
Gainesville, FL 32611

September 5, 2002

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

SUBJECT: NRC INSPECTION REPORT NO. 50-225/2002-201 AND NOTICE OF VIOLATION

Dear Dr. Steiner:

This letter refers to the inspection conducted on May 28-31, 2002, at the L. David Walthousen Critical Experimental Facility in Schenectady, New York. The enclosed report presents the results of that inspection.

Various aspects of your reactor operations and security programs were inspected, including selective examinations of procedures and representative records, interviews with personnel, and observations of the facility.

Based on the results of this inspection, the Nuclear Regulatory Commission (NRC) has determined that a violation of NRC requirements occurred. The violation is cited in the enclosed Notice of Violation (Notice) and the circumstances surrounding them are described in detail in the subject inspection report. The violation is of concern because it suggests a lack of compliance with the requirements stipulated in your Emergency Plan.

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 and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at (the Public Electronic Reading Room) <http://www.nrc.gov/reading-rm/adams.html>. Should you have any questions concerning this inspection, please contact Mr. Stephen Holmes at 301-415-8583.

Sincerely,

/RA/

William D. Beckner, Program Director
Operating Reactor Improvements Program
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Docket No. 50-225

Enclosures: 1) Notice of Violation

2) NRC Inspection Report No. 50-225/2002-201

cc w/enclosure: Please see next page

DISTRIBUTION:

| | | | | | |
|-------------------------|---------------|----------|---|-------------------|---------|
| PUBLIC | RORP/R&TR r/f | AAdams | CBassett | WBeckner | LBerg |
| PDoyle | TDragoun | WEresian | FGillespie | SHolmes | DHughes |
| EHylton | Plsaac | PMadden | MMendonca | AVelazquez-Lozada | |
| BDavis (Ltr.only O5-A4) | | | NRR enforcement coordinator (Only for IRs With NOV's, O10-H14) | | |

ACCESSION NO.: ML022390589

TEMPLATE #: NPR-106

| | | | | |
|--------|-------------|------------|------------|------------|
| OFFICE | RORP:RI | RORP:LA | RORP:SC | RORP:PD |
| NAME | SHolmes:rdr | EHylton | PMadden | WBeckner |
| DATE | 08/ 30 /02 | 08/ 30 /02 | 09/ 03 /02 | 09/ 04 /02 |

C = COVER

E = COVER & ENCLOSURE
OFFICIAL RECORD COPY

N = NO COPY

NOTICE OF VIOLATION

Rensselaer Polytechnic Institute
L. David Walthousen Critical Experimental Facility

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

During an NRC inspection conducted on May 28-31, 2002, a violation of NRC requirements was identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," NUREG-1600, the violation is listed below:

10 CFR 50.54(q) requires in part that, "A licensee authorized to possess and/or operate a research reactor or a fuel facility shall follow and maintain in effect emergency plans which meet the requirements in appendix E to this part."

Section 10 of the L. David Walthousen Critical Experimental facility's emergency plan requires that emergency drills be held annually.

Contrary to the above, during the period April 2000 to May 2002, a period of twenty-five months, only one emergency drill had been held.

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

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 with a copy to the responsible inspector, 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, with the basis for your denial, to the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, D.C. 20555-0001.

Because your response will be made available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS), to the extent possible, it should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the public without redaction. ADAMS is accessible from the NRC Web site at (the Public Electronic Reading Room) <http://www.nrc.gov/reading-rm/adams.html>. 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 5th day of September, 2002

U. S. NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION

Docket No: 50-225

Report No: 50-225/2002-201

Licensee: Rensselaer Polytechnic Institute

Facility: L. David Walthousen Critical Experimental Facility

Location: Schenectady, New York

Dates: May 28-31, 2002

Inspector: Stephen W. Holmes, Reactor Inspector

Approved by: William D. Beckner, Program Director
Operating Reactor Improvements Program
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

EXECUTIVE SUMMARY

Rensselaer Polytechnic Institute
L. David Walthousen Critical Experimental Facility
Report No: 50-225/2002-201

The primary focus of this routine, announced inspection was the on-site review of selected activities at the Rensselaer Polytechnic Institute L. David Walthousen Critical Experimental Facility Research Reactor. This facility is a 100-Watt Class II critical facility. The activities audited during this inspection included: organization and staffing; review and audit functions; plant operations; procedures; maintenance and surveillance; radiation protection program; effluent and environmental monitoring; the shipment of radioactive material; emergency preparedness; the safeguards and security program; the material control and accounting program; and training.

Organizational and Staffing

- The operations organizational structure and functions were consistent with Technical Specification Section 6.0, Administrative Controls, Amendment No. 9, dated June 10, 1991.

Review and Audit Functions

- Nuclear Safety Review Board membership, meeting schedule, and conduct of their audit and review functions were in accordance with Technical Specification Sections 6.1.5 and 6.3, Amendment No. 9, dated June 10, 1991.

Plant Operations

- Reactor operations, and logs were acceptable.
- The control and performance of experiments were being performed in accordance with procedural requirements.
- Fuel handling activities and documentation were in accordance with procedural and Technical Specification requirements.

Procedures

- Based on the procedures and records reviewed and observations of staff during the inspection, the procedural control and implementation program satisfied Technical Specification 6.2 requirements.

Maintenance and Surveillance

- The licensee's program for surveillance and limiting conditions for operation confirmations satisfied Technical Specification requirements.
- The maintenance program was being carried out as required by L. David Walthousen Critical Experimental Facility Research Reactor procedures.

Radiation Protection Program

- The radiation protection program satisfied the requirements of 10 CFR Part 19.12 and 10 CFR Part 20.1101.
- Surveys were performed and documented as required by 10 CFR Part 20.1501(a), Technical Specifications, and licensee procedures.
- Radiological postings satisfied regulatory requirements.
- The personnel dosimetry program was acceptably implemented and doses were in conformance with licensee and 10 CFR Part 20 limits.
- Portable survey meters, radiation monitoring, and counting lab instruments were being maintained according to Technical Specifications, industry/equipment manufacturer standards, and licensee procedures.

Effluent and Environmental Monitoring

- The effluent monitoring and release program satisfied NRC requirements.
- Environmental monitoring program satisfied the Radiation Protection Program requirements.

Transportation of Radioactive Materials

- Transportation of byproduct material by the licensee satisfied the applicable NRC and Department of Transportation regulations and L. David Walthousen Critical Experimental Facility Research Reactor procedures.

Emergency Preparedness

- With the exception of one level IV Violation, the emergency preparedness program was conducted and implemented in accordance with the Emergency Plan.

Security

- Security facilities, equipment, and procedures satisfied the Physical Protection Plan requirements.

Material Control and Accountability

- The licensee was in compliance with the possession and use limits specified by the facilities license condition and demonstrated effective control over this material.

Training

- The 10 CFR Part 19 training was performed in accordance with established procedures.

- The Requalification program was being implemented satisfactorily and the Requalification plan requirements were being met.

REPORT DETAILS

Summary of Plant Status

During the conduct of this inspection, the L. David Walthousen Critical Experimental Facility's one hundred watt (100W) critical facility was operated a few days a week.

Activities observed included operator training, critical experiments, and Technical Specification (TS) and surveillance requirements.

1. Changes, Organization, and Staffing

a. Inspection Scope (Inspection Procedure [IP] 69001)

The inspector reviewed selected aspects of:

- organizational structure
- staffing requirements for safe operation of the research reactor facility
- qualifications
- administrative controls

b. Observations and Findings

Although the operations organizational structure had not functionally changed since the last inspection, (NRC Inspection Report No. 50-225/2000-201, conducted April 17-21, 2000), the previous Reactor Director had resigned and a retired former Director had returned to fill the position. Additionally, two new operators have been licensed. The inspector verified that the reactor staff satisfied the training and experience required by TS Section 6.1.4. Operation logs and records confirmed that shift staffing met the duty and on-call personnel required by TS Section 6.1.3.

The health physics (HP) organizational structure and personnel had changed since the last inspection. A new radiation safety officer (RSO) had been hired to replace the former contract RSO and the position of assistant RSO, vacant since November 1999, had been abolished. The Director of Environmental Health and Safety (EH&S) stated that functions performed by the previous assistant radiation safety officer were now done by other staffs including the reactor staff and that this reduction in HP staffing would not affect safety.

Review of records verified that management responsibilities were administered as required by TSs, applicable procedures, and transitions in the staff were properly managed.

c. Conclusions

The operations organizational structure and functions were consistent with TS Section 6.0, Administrative Controls, Amendment No. 9, dated June 10, 1991.

2. Review and Audit Functions

a. Inspection Scope (IP 69001)

The inspector reviewed selected aspects of:

- Nuclear Safety Review Board (NSRB) minutes
- safety review records
- audit records
- responses to safety reviews and audits
- review and audit personnel qualifications

b. Observations and Findings

Review of the NSRB membership and semiannual meeting schedule confirmed that they met TS Sections 6.1.5.1 and 6.1.5.2 and the Committee's charter. The inspector reviewed the minutes of the NSRB and determined that they provided guidance, direction, and operations oversight. The NSRB reviewed and approved experiments and 10 CFR 50.59 requests as required.

Committee minutes and audit records since April 2000, show that safety reviews and audits were conducted as required by TS Section 6.1.5.4 and the Committee's charter. The contents of the safety reviews were found by the inspector to be consistent with the TS. These reviews provided guidance, direction, and oversight to ensure satisfactory use of the reactor.

By examining the committee's minutes and their audits of the operations and training programs, the inspector determined that the safety reviews, audits, and associated findings and corrective actions were satisfactory and consistent with the TS.

c. Conclusions

NSRB membership, meeting schedule, and conduct of their audit and review functions were in accordance with TS Sections 6.1.5 and 6.3, Amendment No. 9, dated June 10, 1991.

3. Plant Operations

a. Inspection Scope (IP 69001)

The inspector reviewed selected aspects of:

- operational logs and records
- staffing for operations
- selected operational, startup, or shutdown activities
- experimental program requirements
- experiment approval and operations procedures
- experiment logs and records

- approved reactor experiments
- NSRB minutes
- reactor critical facility (RCF) fuel handling procedure 4-G
- fuel handling equipment and instrumentation
- fuel handling and examination records

b. Observations and Findings

(1) Reactor Operations

The inspector reviewed the operations logs for the past two years. Additionally, the inspector observed selected reactor startups, shutdowns, and steady state operations. Reactor operations were carried out following written procedures as required by TS Section 6.2. Information on operational status of the facility was recorded clearly in log books and/or checklists as required by RCF operation procedures, providing a record of operational activities and events. Scrams were identified in the logs and records, and were reported and resolved as required before the resumption of operation. Operation logs and records confirmed that shift staffing met the minimum requirements for duty and on-call personnel as required by TS Section 6.1.3. Violation 50-225/2000-201-01, Operation of the reactor without a licensed Senior Reactor Operator on call is closed.

The operating logs and records were satisfactory and provided an indication of operational activities. Logs and records also showed that operational conditions and parameters were consistent with license and TS Sections 2.0, 3.0, and 6.6 requirements.

(2) Experiments

The inspector's review of selected experiment authorizations confirmed that experiments were approved by the operations supervisor or referred to the NSRB as required by TS Section 6.3. Review of current experiment authorizations, procedures, and related reactor log book entries by the inspector, along with interviews of two experimental investigators, confirmed that experiments were installed, performed, and removed as outlined in the approved experiment authorizations.

(3) Fuel Handling

The inspector reviewed Reactor Critical Facility Reference Manual (RCFRM) procedure 4-G, Fuel Handling, Revision 2.0, issued 2000, and TS Section 5.6 requirements as well as fuel movement logs and inspection records. The fuel related procedures were found to be part of sufficient detail to ensure appropriate fuel handling operations. Fuel movement, inspection, log keeping, and data recording followed licensee procedures and met TS Section 6.6 requirements. Data recorded for fuel movement were concise and log entries clearly identified, as required by procedure and TS Section 5.6, that fuel transfers were conducted under the direction of a Senior Reactor Operator.

c. Conclusions

Based on the procedures and records reviewed and the observations made during the inspection, the inspector determined that reactor operations and logs; the control and performance of experiments; and fuel handling activities and its documentation were acceptable and in accordance with procedural and TS requirements.

4. Procedures

a. Inspection Scope (IP 69001)

The inspector reviewed selected aspects of:

- administrative controls
- records for changes and temporary changes
- procedural implementation
- logs and records
- RCF Reference Manual (RCFRM) dated 2000, version 2.0

b. Observations and Findings

The inspector confirmed that written HP and operations procedures were available for those tasks and items required by TS Section 6.2. The procedures were routinely updated as needed. Temporary changes to the procedures that did not change the original intent were made with the approval of the operations supervisor as outlined in TS Section 6.2. These changes were subsequently reviewed by the NSRB as required.

During the inspector's tours of the facility, it was observed that personnel performing radiation surveys, conducting instrument checks, issuing dosimetry, and operating the reactor were doing so in accordance with applicable procedures.

c. Conclusions

Based on the procedures and records reviewed and observations of staff during the inspection, the inspector determined that the procedural control and implementation program was acceptably maintained and satisfied TS Section 6.2 requirements.

5. Maintenance and Surveillance

a. Inspection Scope (IP 69001)

The inspector reviewed selected aspects of:

- maintenance procedures
- equipment maintenance records
- surveillance and calibration procedures
- surveillance, calibration, and test data sheets and records
- reactor operations, periodic checks, tests, and verifications were observed

- facility design changes and records
- facility configuration

b. Observations and Findings

(1) Maintenance

Maintenance was recorded in the console log. The console log also recorded equipment failures and the need for additional maintenance.

The inspector reviewed the reactor log for maintenance items. This review showed that routine/preventive maintenance was documented with follow-up information consistent with the TS and licensee procedures. Verifications and operational systems checks were performed to ensure system operability before return to service.

(2) Surveillance

Since the last NRC inspection (refer to NRC Inspection Report No. 50-225/2000-201 dated June 1, 2000), management developed and implemented a surveillance tracking checklist to track surveillance checks, and required system/component inspections. The checklist was found to provide adequate control over the reactor operational tests and surveillance checks.

The inspector reviewed records of all TS required surveillances and Limiting Conditions for Operations (LCO) verifications performed since April 2000. This review showed that the periodic checks, tests, and verifications for TS required LCOs were completed in accordance with and at the intervals required by TS 4.1. The results of these surveillances were within prescribed TS limits and procedure parameters and in close agreement with the previous surveillance results.

Based on the above findings, Violation 50-225/2000-201-02, failure to conduct surveillances at the intervals required by TS 4.1 is closed.

(3) Design Control

No changes have been made to the facility since the last NRC inspection.

c. Conclusions

The licensee's program for surveillance and limiting conditions for operation confirmations satisfied TS requirements. The licensee's maintenance and design change programs were in place as required by the RCFRM.

6. Radiation Protection

a. Inspection Scope (IP 69001)

The inspector reviewed selected aspects of the radiation protection program (RPP):

- the RPP
- As Low As Reasonably Achievable (ALARA) reviews
- radiation protection training
- radiological signs and posting
- facility and equipment during tours
- routine surveys and monitoring
- RCF contamination and area radiation survey procedures
- RCF personnel dosimetry records
- maintenance and calibration of radiation monitoring equipment
- periodic checks, quality control, and test source certification documentation

b. Observations and Findings

(1) Radiation Protection Program

Although individual procedures had been revised, the RPP had not appreciably changed since the last NRC inspection. The licensee reviewed the RPP at least annually in accordance with 10 CFR 20.1101(c). This review and oversight was provided by the RSO.

Review of procedure change records, experiment authorizations, and HP records confirmed that the RSO reviewed and approved RPP changes, experiments, and radiation protection related events/conditions as required by TS 6.1.1 and Section 5 of the Rensselaer Radiation Safety Regulations and Procedures (RSRP) manual, February 2002, Revision.

(2) Radiation Protection Postings

The inspector observed that caution signs, postings and controls to radiation areas at the RCF were acceptable for the hazards involved radiation, high radiation, and contaminated areas and were being implemented as required by 10 CFR Part 20, Subpart J. The inspector observed licensee personnel and verified that they complied with the indicated precautions for access to radiation areas. The inspector confirmed that current copies of NRC Form-3 and notices to workers were posted in appropriate areas in the facility as required by 10 CFR Part 19.

(3) Radiation Protection Surveys

The inspector audited the weekly, monthly, quarterly, and other periodic contamination and radiation surveys, including water analyses. They were performed and documented as required by RSRP Section 13.1 and RCF procedures. Results were evaluated and corrective actions taken and documented

when readings/results exceeded set action levels. The inspector's review of the survey records since April 2000 confirmed that contamination in the facility was infrequent and well below RSRP limits. The inspector determined that the survey program satisfied 10 CFR 20.1501(a) requirements.

(4) Dosimetry

The dosimetry program requirements and procedures had not changed since the last NRC inspection. A National Voluntary Laboratory Accreditation Program-accredited vendor was used to provide dosimetry for personnel, environmental, and area monitoring. The inspector confirmed that dosimetry was being issued to staff and visitors as outlined in RSRP Section 8. Although personnel were issued dosimetry, it was for unofficial monitoring of individual 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.

(5) Radiation Monitoring Equipment

The calibration and periodic checks of the portable survey meters, radiation monitoring, and counting lab instruments were performed by the licensee's staff, Rensselaer calibration facilities, or by certified contractors. The inspector confirmed that the licensee's calibration procedures and frequencies satisfied TS Section 4.3, Radiation Monitoring and 10 CFR 20.1501(b) requirements, and the American National Standards Institute N323 "Radiation Protection Instrumentation Test and Calibration" or the instrument manufacturers' recommendations. The inspector verified that the calibration and check sources used were traceable to the National Institute of Standards and Technology and that the sources' geometry and energies matched those used in actual detection/analyses.

The inspector reviewed the facility calibrations performed since April 2000, and confirmed that the calibration for the portable survey meters in use had been performed. Additionally, the calibrations for the Tennelec 5900 low background alpha/beta counter, the liquid scintillation counter, and the multichannel analyzer were reviewed and determined to be acceptable. All instruments checked had current calibrations appropriate for the types and energies of radiation they were used to detect and/or measure.

c. Conclusions

The inspector determined that, because: 1) surveys were being completed and documented as required by 10 CFR Part 20.1501(a), TS, and licensee procedures; 2) postings met regulatory requirements; 3) the personnel dosimetry program was acceptably implemented and doses were in conformance with licensee and 10 CFR Part 20 limits; and 4) Portable survey meters, radiation monitoring, and counting lab instruments were being maintained and calibrated as required, the RPP being implemented by the licensee satisfied regulatory requirements.

7. Effluent and Environmental Monitoring

a. Inspection Scope (IP 69001)

The inspector reviewed selected aspects of:

- liquid release records
- counting and analysis program
- maintenance and calibration records
- TS Section 6.5 annual reports
- environmental dosimetry records
- RCFRM Section 9.0 procedures

b. Observations and Findings

The inspector verified that radioactive liquid releases were infrequent and when performed they were analyzed to ensure they were below 10 CFR 20.2003 and 10 CFR Part 20, Appendix B limits. There were no liquid releases since the last NRC inspection.

The Environmental monitoring program consists of direct quarterly radiation measurements at selected locations at the RCF boundary as described in Safety Analysis Report dated June 1996. These direct radiation measurements resulted in readings being statistically the same as 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 Environmental Protection Agency COMPLY computer program. This dose was well below the constraint limit specified in 10 CFR 20.1101(d).

Gaseous discharges were not directly monitored due to the low reactor power levels. However, since the results from the COMPLY code indicated that doses were below 10 CFR 20.1101(d) limits, the inspector determined that gaseous effluents would also meet 10 CFR Part 20, Appendix B limits for this facility.

c. Conclusions

Effluent monitoring satisfied license and regulatory requirements and releases were within 10 CFR 20.1101(d), 10 CFR 20.2003, and 10 CFR Part 20, Appendix B limits.

8. Transportation of Radioactive Materials

a. Inspection Scope (IP 86740)

The inspector reviewed selected aspects of:

- radioactive materials shipping procedures
- radioactive materials transportation and transfer records for 2000-2002

- interviewed staff

b. Observations and Findings

No radioactive material was transferred from or to the reactor since the last inspection in April 2000.

c. Conclusions

Based on the records reviewed, the inspector found the transportation of byproduct material by the licensee satisfied NRC 10 CFR Part 71 and Department of Transportation 49 CFR 173, Subpart I requirements.

9. Emergency Preparedness

a. Inspection Scope (IP 69001)

The inspector reviewed selected aspects of:

- the RCF Emergency Plan (E-Plan), dated May 1994
- RCFRM Section 7.0 implementing procedures
- emergency response facilities, supplies, equipment and instrumentation
- RCF and Public Safety training records
- offsite support agreements
- emergency drills and exercises

b. Observations and Findings

The inspector reviewed the E-Plan and confirmed that it was the same as the version most recently approved by the NRC. The E-Plan was audited annually and reviewed biennially by the licensee. The licensee also reviewed the implementing procedures annually and revised them as needed to ensure the effectiveness of the E-Plan.

Through random checks of the emergency supplies, decontamination facilities, and portable detection instrumentation, the inspector determined they were being maintained as required by the E-Plan. Through reviews of training and drill records and interviews with RCF personnel, the inspector confirmed that emergency response training was given as required by the E-Plan and that emergency responders were knowledgeable of the proper actions to take in case of an emergency.

The notification procedures and phone numbers in use by the Public Safety dispatch were current. The qualification program for dispatchers was comprehensive. Current E-Plan support agreements with off-site response organizations (i.e., County Fire and Sheriff departments, local ambulance services, and medical services) were reviewed by the inspector and found to be adequate.

The last drill, May 2002, involved an injury with radiological contamination and resulted in interaction with off-site police, ambulance and fire services. The drill provided a

practical, reasonable, and an effective test of the participants. Critiques were held following the drills to discuss the strengths and weaknesses identified during the exercise and to develop possible solutions to any problems identified.

10 CFR 50.54(q) requires in part that, a licensee authorized to possess and/or operate a research reactor (the RCF is considered such for this criteria) or a fuel facility shall follow and maintain in effect emergency plans which meet the requirements in appendix E to this part. Section 10 of the L. David Walthousen Critical Experimental facility's emergency plan requires that emergency drills be held annually. Contrary to this only one drill, as noted above, had been held since the last inspection in April 2000, a period of twenty-five months. This is a level IV violation (VIO 50-225/2002-201-01).

c. Conclusions

Based on the audit of the E-Plan and the emergency planning drill, the inspector confirmed that, except for the above referenced violation, the licensee's emergency preparedness program was being satisfactorily implemented.

10. Security

a. Inspection Scope (IPs 81401 and 81431)

The inspector reviewed selected aspects of:

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

b. Observations and Findings

The Physical Protection Plan (PPP) dated July 18, 2000, was the same as the latest approved by the NRC. The inspector toured the facility and confirmed that the physical protection systems (barriers and alarms), equipment, and instrumentation were as required by the PPP. Access and key control was implemented in accordance with licensee implementing procedures and as required by the plan. The inspector also confirmed that the security checks, tests, verifications, and periodic audits, with one exception, were performed and tracked as required by the PPP. Corrective actions were taken when required.

The inspector interviewed the Director of Public Safety (PS) and two officers who do security checks of the reactor facility. The officers were knowledgeable of their response responsibilities.

Since early 2000, periodic checks and verifications of the RCF security systems had been performed by PS officers at more frequent intervals than required by the PPP. Although the RCF alarm system was checked at least once during every required interval, during three intervals an individual set of the alarms was not tested as required

by the PPP. The inspector noted that this set of alarms had been found operative during checks made before and after each of these specific intervals and therefore, would have performed its intended function during these periods. Subsequently, PS has made corrective actions to verify all of the alarm system components will be checked during each inspection interval as required by the PPP. As a violation of minor significance not subject to enforcement action, the corrective actions to check all alarm system components will be reviewed during a subsequent NRC inspection. This item will be tracked as an inspector Follow-up item (IFI 50-225/2002-201-01).

c. Conclusions

Based on the observations, the inspector found that the physical protection features, equipment, and procedures of the RCF facility satisfied the PPP requirements.

11. Material Control and Accountability

a. Inspection Scope (IP 85102)

The inspector reviewed selected aspects of:

- Special Nuclear Material accountability program
- inventory and locations
- accountability records and reports

b. Observations and Findings

The inspector reviewed the semiannual inventory of special nuclear material (SNM). The inspector confirmed that the material control and accountability program tracked locations and content of SNM against the operating license possession limits. Fuel burn-up and related measurements/calculations were found by the inspector to be acceptable and properly documented. The SNM control and accountability forms (DOE/NRC Forms 741 and 742) were properly prepared and fuel inventory and movement records were cross referenced and matched to operations logbooks.

c. Conclusions

Based on the inspector's review of the RCF safeguards program, the possession and use of SNM were limited to the locations and purposes authorized under the license and effective control over this material was maintained by the licensee.

12. Training

a. Inspection Scope (IP 69001)

The inspector reviewed selected aspects of:

- radiation protection training records and rosters
- radiation protection training procedures

- the operator requalification program
- operator licenses
- operator training records
- operator physical examination records
- operator examination records
- operator active duty status

b. Observations and Findings

(1) Radiation Protection

The inspector's review of RCF staff's HP training records for the last three years confirmed that 10 CFR Part 19, RSRP Section 16 and specific training appropriate to individual status and work requirements had been provided to staff and visitors. The inspector confirmed by interviewing and observing the staff performing reactor operations, experiments, calibrations, and surveys, that the training had been effective. Additionally, the inspector verified the initial training of the two newest facility employees. All training records reviewed were current.

At the beginning of the inspection, the RSO identified that the records of the university required annual HP refresher training for 2001, could not be found. The inspector's review of training records confirmed that this training had been given regularly up to 2001, and again in 2002. The RSO stated that records of HP training would be appropriately filed and ready for inspection in the future. This non-repetitive, licensee-identified and corrected violation is being treated as a Non-Cited Violation, consistent with Section VI.A.8 of the NRC Enforcement Policy. (NCV 50-225/2002-201-01)

(2) Operator Requalification

The inspector reviewed the NRC Approved Requalification plan and performed an individual review of four operator requalification records.

The requalification record check sheet showed that all currently licensed senior reactor operators (SRO) had successfully completed their emergency procedure and abnormal events training, the reactivity manipulations, and were participating in the ongoing training as required by the requalification plan. The inspector reviewed training records and confirmed that licensed operators attended lectures on the appropriate subject material required by the program and that competence evaluations, annual operator performance exams, and biennial comprehensive requalification exams had been given as required by the plan. The inspector confirmed that; 1) past test questions covered the subject matter specified by the program and demonstrated technical depth; 2) Required quarterly operation hours for SROs was being recorded, and; 3) Training was provided to the reactor operators on maintenance operations and 10 CFR 50.59 design changes and evaluations.

All the licensed operators had received annual medical exams through their employer or personal physician that should meet the requirements of 10 CFR 55.21. However completed and signed NRC-396 forms, required by 10 CFR 55.23 certifying the medical examinations, could not be found. This will be followed up on a subsequent inspection as an unresolved item. (URI 50-225/2002-201-01)

c. Conclusions

The 10 CFR Part 19 training was performed in accordance with established procedures. The Requalification program was being acceptably implemented.

13. Exit Meeting Summary

The inspector presented the inspection results to members of licensee management at the conclusion of the inspection on May 31, 2002. The licensee acknowledged the findings presented and did not identify as proprietary any of the material provided to or reviewed by the inspector during the inspection.

PARTIAL LIST OF ACRONYMS USED

| | |
|--------|--|
| ALARA | As Low As Reasonably Achievable |
| E-Plan | Emergency Plan |
| EH&S | Environmental Health and Safety |
| HP | Health Physics |
| LCO | Limiting Conditions for Operations |
| NRC | Nuclear Regulatory Commission |
| NSRB | Nuclear Review Safety Board |
| PPP | Physical Protection Plan |
| PS | Public Safety |
| RCF | Reactor Critical Facility |
| RCFRM | Reactor Critical Facility Reference Manual |
| RPP | Radiation Protection Program |
| RSO | Radiation Safety Officer |
| RSRP | Rensselaer Radiation Safety Regulations and Procedures |
| SNM | Special Nuclear Material |
| SRO | Senior Reactor Operator |
| TS | Technical Specifications |