

July 28, 2000

Dr. Michael D. Slaughter  
Director of CENTER  
122 S. Central Campus Drive, Room. 104  
University of Utah  
Salt Lake City, UT 84112

SUBJECT: NRC INSPECTION REPORT NO. 50-407/2000-201

Dear Dr. Slaughter:

This letter refers to the inspection conducted on July 17-20, 2000 at your TRIGA Research Reactor facility. The enclosed report presents the results of that inspection.

Areas examined during the inspection are identified in the report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations of activities in progress.

Based on the results of this inspection, no safety concerns or violations of NRC requirements were identified. No response to this letter is required.

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/NRC/ADAMS/index.html>

Should you have any questions concerning this inspection, please contact Mr. Craig Bassett at 404-562-4712.

Sincerely,

***/RA by L. Howell Acting For/***

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. 50-407  
License No. R-126

Enclosure: NRC Inspection Report No.50-407/2000-201

cc w/enclosure:  
Please see next page

cc:

Dr. James J. Thompson  
Director, U of U Radiological Health  
100 OSH, University of Utah  
Salt Lake City, UT 84112

Dr. Ronald J. Pugmire  
Assoc. Vice President for Research  
210 Park, University of Utah  
Salt Lake City, UT 84112

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

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

Docket No: 50-407

License No: R-126

Report No: 50-407/2000-201

Licensee: University of Utah

Facility: Center for Excellence in Nuclear Technology, Engineering, and Research  
(CENTER), University of Utah

Location: Merrill Engineering Building  
Salt Lake City, Utah

Dates: July 17-20, 2000

Inspector: Craig Bassett

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 consisted of review of selected conditions and records in the areas of radiation protection, material control and accountability, security, and transportation of radioactive materials. The inspection also included discussions with licensee personnel.

### Organization and Staffing

- The licensee's organization and staffing remain in compliance with requirements specified in the Technical Specifications.

### Review and Audit Functions

- Audits were being conducted by the Reactor Safety Committee in compliance with requirements specified in the Technical Specifications.

### Radiation Protection Program

- Surveys were being completed and documented acceptably to permit evaluation of the radiation hazards present.
- Postings met regulatory requirements.
- Personnel dosimetry was being worn as required, and doses were well within the licensee's procedural action levels and NRC's regulatory limits.
- Radiation monitoring equipment was being maintained and calibrated as required.
- The radiation protection and ALARA programs satisfied regulatory requirements.
- Radioactive effluents released from the facility were being evaluated and reported as required.

### Physical Security

- The licensee had implemented and was maintaining an adequate physical security program.

### Material Control and Accountability

- No deficiencies were identified in the licensee's material control and accounting program.

### Transportation of Radioactive Materials

- The licensee did not ship any radioactive material from the facility under the reactor license.

## Report Details

### Summary of Plant Status

The licensee continued to operate the reactor in support of research, reactor operator training and educational demonstrations, as well as performing preventive maintenance and operational surveillance required by the Technical Specifications (TS).

#### 1. ORGANIZATIONAL STRUCTURE AND FUNCTIONS (69001)

##### a. Scope

The inspector reviewed selected aspects of:

- organization and staffing
- management responsibilities
- administrative controls

##### b. Observations and Findings

The organizational structure and staffing had not changed since the last inspection. The organizational structure and staffing observed at the facility and reported in the Annual Report was as required by TS. Review of records verified that management responsibilities were administered as required by TS and applicable procedures.

##### c. Conclusions

The organizational structure and functions were consistent with TS requirements.

#### 2. REVIEW AND AUDIT (69001)

##### a. Scope

The inspector reviewed selected aspects of:

- Reactor Safety Committee (RSC) meeting minutes
- safety review records
- audit records
- responses to safety reviews and audits

##### b. Observations and Findings

Records showed that safety reviews and audits were conducted at the TS required frequency. The audits were completed by the RSC or a subcommittee as required. Topics of these reviews and audits were also consistent with TS requirements to provide guidance, direction, and oversight, and to ensure acceptable use of the reactor.

The inspector noted that the safety reviews and audits and the associated findings were acceptably detailed and that the licensee responded and took corrective actions as needed.

c. Conclusions

The review and audit program satisfied TS requirements.

3. RADIATION PROTECTION (69001)

a. Scope

The inspector reviewed selected aspects of:

- the radiation protection program
- radiological signs and posting
- routine surveys and monitoring
- dosimetry records
- maintenance and calibration of radiation monitoring equipment
- as low as reasonably achievable (ALARA) reviews

b. Observations and Findings

The radiation protection program had not changed since the last inspection. The licensee reviewed the radiation protection program at least annually in accordance with 10 CFR 20.1101(c). The review included all areas and no weaknesses were reported.

NRC Form 3, "Notice to Employees," was posted in accordance with 10 CFR 19.11. Caution signs, postings and controls to radiation areas were as required in 10 CFR Part 20, Subpart J. Licensee personnel observed the indicated precautions for access to the radiation areas.

Radiation monitoring and survey activities were performed as required. Equipment used for these activities had been maintained, calibrated and used acceptably.

Use of dosimeters was in accordance with radiation protection requirements. The licensee used a National Voluntary Laboratory Accreditation Program (NVLAP) accredited vendor to process dosimetry. Radiological exposure records showed that occupational doses and doses to the public were within 10 CFR Part 20 limitations. Training records indicated that personnel were acceptably trained in radiation protection practices.

The licensee had evaluated and confirmed that the air emissions of radioactive material to the environment met the 10 millirem constraint specified in 10 CFR 20.1101(d). Radioactive effluents released from the facility were being evaluated and reported as required.

ALARA reviews were acceptably performed as required.

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

c. Conclusions

The radiation protection program satisfied NRC requirements. Surveys were being completed and documented acceptably to permit evaluation of the radiation hazards present. Postings met the regulatory requirements. Personnel dosimetry was being worn as required, and doses were well within the licensee's procedural action level and NRC's regulatory limits. Radiation monitoring equipment had been maintained and calibrated as required. The radiation protection and ALARA programs satisfied regulatory requirements. Radioactive effluents released from the facility were being evaluated and reported as required.

4. MATERIAL CONTROL AND ACCOUNTING (85102)

a. Scope

The inspector reviewed selected aspects of:

- nuclear material inventory and locations
- accountability records

b. Observations and Findings

Records indicated that special nuclear material (SNM) was adequately controlled and that physical inventories had been conducted at least annually as required by 10 CFR 70.51(d). Nuclear Material Transaction Reports (DOE/NRC Form 741) and Material Status Reports (DOE/NRC Form 742) were being submitted by the licensee as required by 10 CFR 74.13(a)(1).

c. Conclusions

SNM was acceptably controlled and inventoried.

5. SECURITY (81401, 81402, 81431)

a. Scope

The inspector reviewed selected aspects of:

- the physical security plan (PSP)
- security systems, equipment and instrumentations
- implementation of the PSP

b. Observations and Findings

The PSP maintained at the facility was the latest revision approved by the NRC. Physical protection systems (barriers and alarms), equipment and

instrumentation were as required by the PSP. Access control was implemented as required, and keys to access doors were held and controlled only by designated personnel. Implementing procedures were consistent with the PSP. Acceptable security response and training was demonstrated through alarm response and drill response in accordance with procedures.

c. Conclusions

Security activities and systems satisfied PSP requirements.

6. TRANSPORTATION (86740)

a. Scope

The inspector reviewed selected aspects of:

- radioactive materials shipping procedures
- radioactive materials transportation and transfer records

b. Observations and Findings

Records indicated that radioactive material designated for disposal was transferred to the University's broad scope license in accordance with license requirements. This program for radioactive material transfer is consistent with license requirements. Actual transportation of the material was done under the broad scope license and was not included in this inspection of the reactor license.

c. Conclusions

The licensee did not ship any radioactive material from the facility under the reactor license.

7. EXIT MEETING SUMMARY

The inspection scope and results were summarized on July 20, 2000, with licensee representatives. The inspector discussed the findings for each area reviewed. The licensee did identify as proprietary some of the material provided to or reviewed by the inspector during this inspection. However, this report does not contain any proprietary material.

## **PARTIAL LIST OF PERSONS CONTACTED**

### **Licensee**

D. Choe, Senior Reactor Operator  
M. Krahenbuhl, Reactor Supervisor  
R. Pugmire, Associate Vice President for Research  
D. Slaughter, Reactor Administrator  
J. Wilde, Senior Reactor Operator

### **Other Personnel**

R. Bronson, Dispatcher, Public Safety  
A. Penman-Morgan, Alarms System Coordinator, Public Safety  
J. Thompson, Radiation Safety Officer, Radiological Health Department

## **INSPECTION PROCEDURE (IP) USED**

IP 69001: Class II Non-Power Reactors  
IP 81401: Plans, Procedures, and Reviews  
IP 81402: Reports of Safeguards Events  
IP 81431: Fixed Site Physical Protection of Special Nuclear Material of Low Strategic Significance  
IP 85102: Material Control and Accounting - Reactors  
IP 86740: Inspection of Transportation Activities

## **ITEMS OPENED, CLOSED, AND DISCUSSED**

### **Opened**

None

### **Closed**

None

## **PARTIAL LIST OF ACRONYMS USED**

ALARA As Low As Reasonably Achievable  
CFR Code of Federal Regulations  
DOE Department of Energy  
NRC Nuclear Regulatory Commission  
NVLAP National Voluntary Laboratory Accreditation Program  
PSP Physical Security Plan  
RPP Radiation Protection Program  
RSC Reactor Safety Committee  
SNM Special Nuclear Material  
TS Technical Specifications