October 1, 2002

Dr. S. Gottfredson
Executive Vice Chancellor
University of California, Irvine
Irvine, CA 92697-2025

SUBJECT: NRC INSPECTION REPORT NO. 50-326/2002-201 AND NOTICE OF VIOLATION

Dear Dr. Gottfredson:

This letter refers to the inspection conducted on September 16-19, 2002, at the University of California, Irvine (UCI) Nuclear 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, the Nuclear Regulatory Commission (NRC) has identified a violation of NRC requirements. The violation is cited in the enclosed Notice of Violation (Notice). The circumstances surrounding it are described in detail in the subject inspection report. The violation is of concern because it shows a weakness in the transportation of radioactive material program.

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 accordance with its policies 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 enclosures 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 Craig Bassett at (404) 562-4712.

Sincerely,

/RA by Terrence Reis Acting for/

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

Docket No. 50-326
License No. R-116
Enclosures: 1. Notice of Violation
2. NRC Inspection Report No. 50-326/2002-201

cc w/ enclosures: Please see next page

University of California at Irvine Docket No. 50-326

cc:

Dr. Richard Chamberlain, Chair
Department of Chemistry
University of California, Irvine
Irvine, CA 92697-2025

Mr. Steve Hsu
Radiological Health Branch
State Department of Health Services
P.O. Box 9442732
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Dr. George E. Miller
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516 Physical Sciences 1
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Irvine, CA 92697-2025

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

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ACCESSION NO.: ML022690754 **TEMPLATE #: NRR-106**

OFFICE	RORP:RI		RORP:LA		RORP:SC		RORP:PD	
NAME	CBassett:rdr		EHylton		PMadden		WBeckner	

DATE	10/ 01 /2002	09/ 30 /2002	10/ 01 /2002	10/ 01 /2002

ENCLOSURE 1

NOTICE OF VIOLATION

University of California, Irvine (UCI) Docket No. 50-326
UCI Nuclear Reactor Facility License No. R-116

During an NRC inspection conducted on September 16-19, 2002, a violation of NRC requirements was identified. In accordance with the "General Statement of Policy and Procedures for NRC Enforcement Actions," NUREG-1600, the violation is listed below:

1. Title 10 of the Code of Federal Regulations (CFR) Section 71.5(a) requires that a licensee who delivers licensed material to a carrier for transport comply with the applicable requirements of the regulations appropriate to the mode of transport of the Department of Transportation (DOT) in 49 CFR Parts 171-189.

2. Section 171.2(a) of 49 CFR prohibits any person from offering hazardous material for transportation unless, among other requirements, the hazardous material is properly classified, described, packaged, marked, labeled, and in condition for shipment required or authorized under the Hazardous Material Regulations (49 CFR 171-177).

Contrary to the above, various items of information and/or signatures were not present on some of the licensee's shipping papers, there was no documentation concerning radiation and contamination levels on certain packages, and one package was labeled incorrectly as follows:

1. The shipping papers for shipments made on the following dates in 2001 did not list the chemical or physical form of the radioactive material being shipped as required by 49 CFR 172.203(d)(3): January 18 and 19; February 1 and 14; March 2, 16, and 27; April 24; May 3 and 22; June 14, 26, and 27; July 11; and August 23.

2. The shipping papers for shipments made on the following dates in 2001 (and on one date in 2002 as indicated) did not list the name of each radionuclide and the activity contained in each package of radioactive material being shipped as required by 49 CFR 172.203(d)(2) and (4): January 18 and 19; February 1 and 14; March 2, 16, and 27; April 24; May 3 and 22; June 14, 26, and 27; July 11; August 23; and March 26, 2002.

3. The shipping papers for shipments made on the following dates in 2001 (and on one date in 2002 as indicated) did not list the activity contained in each package of radioactive material being shipped as required by 49 CFR 172.203(d)(4): January 10; May 22 (a second shipment - different from the shipment mentioned in 2. above); December 4; and June 25, 2002.

4. Documentation of shipments made on the following dates in 2001 did not indicate that the contamination levels present on the external surfaces of the packages offered for transport were below the acceptable levels indicated in 49 CFR 173.443: January 18; February 1; March 27; April 24; May 3 and 22; June 14, 26, and 27; July 11; and August 23.

5. The shipping papers for shipments made on the following dates in 2001 did not list the Transport Index (TI) of the radioactive material being shipped as required by 49 CFR 172.203(d)(6): January 10; May 3 and 22; June 14; November 15; and December 4.

6. The shipping papers for shipments made on the following dates were not signed or certified by anyone to indicate or verify that the shipments were acceptable for shipment as required by 49 CFR 172.204: January 19, 2001 and June 25, 2002.

7. The shipping papers for shipments made on the following dates in 2001 did not list an Emergency Telephone number on the form as required by 49 CFR 172.202 and 172.604: July 12 and November 15.

8. Documentation of the shipment made on November 15, 2001, did not indicate that the radiation levels at any point on the external surface of the package offered for transport were within the acceptable levels indicated in 49 CFR 173.441.

9. The shipping papers for the shipment made on June 25, 2002, indicated that a Yellow II label had been used for the shipment instead of a Yellow III label, which would have been the correct label according to the TI listed as required by 49 CFR 172.403.

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

Pursuant to the provisions of 10 CFR 2.201, the University of California, Irvine, 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 cognizant 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, U.S. 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 (PDR) or from the Publicly Available Records (PARS) component of the NRC's Agencywide Documents Access and Management 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 1st day of October, 2002

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

Docket No:	50-326
License No:	R-116
Report No:	50-326/2002-201
Licensee:	The Regents of the University of California
Facility:	UCI Nuclear Reactor Facility
Location:	Department of Chemistry, UCI Irvine, CA
Dates:	September 16-19, 2002
Inspector:	Craig Bassett
Approved by:	William D. Beckner, Program Director Operating Reactor Improvements Program Division of Regulatory Improvement Programs Office of Nuclear Reactor Regulation

ENCLOSURE 2

EXECUTIVE SUMMARY

University of California, Irvine
UCI Nuclear Reactor Facility
NRC Inspection Report No. 50-326/2002-201

The primary focus of this routine, announced inspection was the onsite review of selected activities at the UCI Nuclear Reactor Facility. The facility is a two hundred and fifty kilowatt (250 kW) research reactor facility. The activities audited during this inspection included aspects of the following: organizational structure and staffing, review and audit functions, radiation protection program, environmental protection program, procedures, emergency preparedness program, transportation of radioactive materials, security, and material control and accounting.

The licensee's programs were found to be acceptably directed toward the protection of public health and safety, and, with one exception, in compliance with NRC requirements.

Organizational Structure and Staffing

- The operations organizational structure and responsibilities were consistent with Technical Specification requirements, but, currently, two reactor operator positions are vacant.

- Shift staffing met the minimum requirements for current operations.

Review and Audit

- The review and audit program was being conducted acceptably by the Reactor Operations Committee.

Radiation Protection Program

- Surveys were being completed and documented acceptably to permit evaluation of the radiation hazards present.

- Postings met the regulatory requirements specified in 10 CFR Parts 19 and 20.

- 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 Program being implemented by the licensee satisfied regulatory requirements.

Effluent and Environmental Monitoring

- Effluent monitoring satisfied license and regulatory requirements and airborne releases were within the specified regulatory and Technical Specification limits.

Procedures

- Facility procedural review, revision, and implementation satisfied Technical Specification requirements.

Emergency Preparedness

- The emergency response program was conducted in accordance with the requirements stipulated in the Emergency Preparedness Plan.

Transportation of Radioactive Materials

- A violation was noted for failure to comply with the program for transportation of radioactive material with respect to preparing packages for shipment and completing shipping papers.

Security

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

Material Control and Accounting

- Special nuclear material was acceptably controlled and tracked as required by 10 CFR Part 70.

REPORT DETAILS

Summary of Plant Status

The licensee's TRIGA Mark I research reactor, licensed to operate at a maximum steady-state thermal power of two hundred and fifty kilowatts (250 kW), continues to be operated in support of education, operator training, surveillance, and sample irradiations. However, during this inspection, the reactor was not operated.

1. Organizational Structure and Staffing

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

The inspector reviewed the following regarding the licensee's organization and staffing to ensure that the requirements of Section 6.1 of Technical Specifications (TS), Amendment No. 6, dated November 17, 2000, were being met:

- University of California, Irvine Nuclear Reactor Facility (UCINRF) organizational structure and staffing
- staff qualifications
- management responsibilities
- staffing requirements for the safe operation of the facility
- selected portions of the operations log for the past year through the present
- UCINRF Standard Operating Procedure (SOP) Number (No.) 3, "Personnel," Revision (Rev) 3, approved March 2000

b. Observations and Findings

The licensee's organizational structure and staffing had not functionally changed since the last inspection. The reactor staff consisted of one permanent half-time staff member (who was the Reactor Supervisor and also a licenced Senior Reactor Operator), one licenced Senior Reactor Operator (who only provided coverage during routine reactor operations), and support staff consisting of a series of quarter-time temporary students. Because all the aforementioned individuals have various ongoing duties and activities besides those related to the reactor, the time dedicated to reactor operation and maintenance is quite limited.

The campus health physics (HP) staff consisted of the Radiation Safety Officer, two Health Physicists, and three technical staff members. In addition to having responsibility for the University's broad scope byproduct state license and other material licenses, they provided support to the reactor staff when requested and performed specific monthly and quarterly inspections/surveys of the reactor conforming to the campus safety program. The reactor staff performed most HP functions at the reactor. Coordination of radiation protection activities between the HP staff and the reactor staff was acceptable.

The reactor operations staff satisfied the training and experience requirements stipulated in the TS. The operations log and associated records confirmed that shift staffing met the minimum requirements for duty and on-call personnel. However, the

inspector noted that the licenced reactor staff, together with current health physics support, appeared significantly challenged for the present operation workload, even though that workload was limited. Consideration should be given to hiring one or two part-time individuals who could augment support for the operation and, perhaps, eventually assume the responsibilities of the current Reactor Supervisor and the Senior Reactor Operator.

c. Conclusions

The organizational structure and functions were consistent with TS requirements.

2. Review and Audit

a. Inspection Scope (IP 69001)

The inspector reviewed the following regarding the licensee's organization and staffing to ensure that the requirements of TS Section 6.2 and UCINRF SOP No. 1 were being met:

- Reactor Operations Committee (ROC) meeting minutes from December 2000 to date
- safety review and audit records for the past two years
- UCINRF SOP No. 1, "Introduction," Rev 3, approved March 2000

b. Observations and Findings

The ROC membership satisfied TS requirements and the licensee's procedural rules. The ROC had semiannual meetings as required with a quorum being present at those meetings. Review of the committee meeting minutes indicated the ROC provided appropriate guidance and direction for reactor operations, and ensured suitable use and oversight of the reactor.

The review function of the ROC stipulated in TS Section 6.2 was fulfilled by Office of Environmental Health and Safety (EH&S) personnel as they conducted their surveys and walk through tours of the facility. This was reported to the ROC through the EH&S Report given during the semiannual ROC meetings. Since the last inspection, all required audits of reactor facility activities and reviews of programs, procedures, and facility operations had been completed and documented.

c. Conclusions

The review and audit program was being conducted acceptably by the ROC.

3. Radiation Protection Program

a. Inspection Scope (IP 69001)

The inspector reviewed the following to verify compliance with 10 CFR Parts 19 and 20 and TS Sections 3.3 and 4.5 requirements:

- radiation and contamination survey records documented on the forms in accordance with the guidance contained in UCINRF SOP No. 5, “Radiological Safety Program”
- radiation and contamination surveys completed by EH&S personnel and documented on the forms in accordance EH&S procedures
- Nuclear Reactor Facility dosimetry records for 2000 through the first six months of 2002
- calibration and periodic check records for radiation monitoring instruments documented on the applicable nuclear reactor facility (NRF) and EH&S forms
- UCINRF SOP No. 5, “Radiological Safety Program,” Rev 3, approved March 2000

The inspector also toured the facility, conducted a radiation survey using NRC equipment, and observed the use of dosimetry and radiation monitoring equipment. Licensee personnel were interviewed and radiological signs and postings were observed as well.

b. Observations and Findings

(1) Surveys

The inspector reviewed monthly radiation and contamination surveys of the licensee-controlled areas conducted by the licensee staff and monthly radiation and quarterly wipe surveys completed by campus Office of Environmental Health and Safety HP personnel. The inspector also reviewed the triennial gamma and neutron surveys of the interior and exterior of the facility with the reactor operating at full power. The surveys had been completed in accordance with UCINRF SOP No. 5. The results were documented on the appropriate forms, evaluated as required, and corrective actions taken when readings or results exceeded set action levels.

(2) Postings and Notices

The inspector reviewed the postings at the entrances to the facility-controlled areas including the Control Room, the Reactor Room, and the two laboratories in the NRF. The postings were acceptable and indicated the radiation hazards present. Other postings also showed the industrial hygiene hazards present in the areas. The facility’s radioactive material storage areas were noted to be properly posted. No unmarked radioactive material was detected in the facility. Copies of current notices to workers required by 10 CFR Part 19 were posted on the bulletin board in the Outer Office/Counting Room leading to the Control Room.

(3) Dosimetry

The licensee used a National Voluntary Laboratory Accreditation program-accredited vendor (Radiation Detection Company) to process personnel dosimetry. Through direct observation, the inspector determined that dosimetry was acceptably used by facility personnel.

An examination of the records for the past two years, through June of 2002, showed that all exposures were well within NRC limits and within licensee action levels. Extremity monitoring, accomplished through the use of finger rings, also showed

relatively low doses to the hands of staff members. The highest annual whole body exposure received by a single individual for the past two years was less than 130 millirem. The highest annual extremity exposure for the past two years was less than 470 millirem.

(4) Radiation Monitoring Equipment

The calibration of portable survey meters and friskers was typically completed by EH&S personnel while fixed radiation detectors and air monitoring instruments were generally calibrated by licensee personnel. The calibration records of portable survey meters, friskers, fixed radiation detectors, and air monitoring equipment in use at the facility were reviewed. Calibration frequency met the requirements established in the applicable SOPs and records were being maintained as required.

(5) Radiation Protection Program

The licensee's Radiation Protection Program was established in the UCI Nuclear Reactor Facility SOP No. 5, "Radiological Safety Program," Rev 3, approved March 2000. The program was further explained in the campus document entitled, "UCI Radiation Safety Handbook," dated 1987, Revised 1995, as well as in the campus document "UCI Radiation Safety Manual," Rev 3.2, dated December 1997. The program required that all personnel who had unescorted access to work in a radiation area or with radioactive material receive training in radiation protection, policies, procedures, requirements, and facilities prior to entry. The inspector verified that licensee staff had received the required radiation protection ("rad worker") training given by the UCI Office of Environmental Health and Safety.

The inspector also verified that the UCI NRF radiation protection program was being reviewed annually as required.

(6) ALARA Policy

The ALARA Policy was also outlined and established in the UCI Nuclear Reactor Facility SOP No. 5, "Radiological Safety Program," Rev 3, approved March 2000, and in the other campus documents. The ALARA program provided guidance for keeping doses as low as reasonably achievable and was consistent with the guidance in 10 CFR Part 20.

(7) Facility Tours

The inspector toured the Control Room, the Reactor Room, the Pneumatic Tube Laboratory and the Preparation Laboratory within the NRF. Control of radioactive material and control of access to radiation and high radiation areas were acceptable. The postings and signs for these areas were appropriate.

As noted above, during a tour of the facility the inspector conducted a radiation survey of the Reactor Room and the two adjacent laboratories and compared the readings noted with those found by the licensee. The results detected by the

inspector were comparable to those found by the licensee. No discrepancies were noted.

c. Conclusions

The inspector determined that, because: (1) surveys were being completed and documented acceptably, (2) postings met regulatory requirements, (3) personnel dosimetry was being worn as required and doses were well within the NRC's regulatory limits, and (4) radiation monitoring equipment was being maintained and calibrated as required, the Radiation Protection Program being implemented by the licensee satisfied regulatory requirements.

4. Effluent and Environmental Monitoring

a. Inspection Scope (IP 69001)

The inspector reviewed the following to verify compliance with the requirements of 10 CFR Part 20 and TS Sections 3.3 and 3.5:

- airborne release records documented in the UCINRF Annual Reports for the period from July 1, 2000 through June 30, 2001, and July 1, 2001 through June 30, 2002
- liquid release records also documented in the UCINRF Annual Reports for the period from July 1, 2000 through June 30, 2001, and July 1, 2001 through June 30, 2002
- reactor pool water sample analyses documented on the applicable NRF forms
- UCINRF SOP No. 5, "Radiological Safety Program," Rev 3, approved March 2000

b. Observation and Findings

Gaseous releases were monitored as required by TS, calculated as prescribed by procedure, and acceptably documented. The results indicated that the releases were well within 10 CFR Part 20 Appendix B, Table 2 concentrations, and TS limits. To demonstrate compliance with the annual dose constraints of 10 CFR 20.1101(d), the licensee used the computational method specified in UCINRF SOP No. 5, Section 5.6. The highest calculated dose that could be received as a result of gaseous emissions from reactor operations was less than 0.33 millirem for the period from July 1, 2000 through June 30, 2001, and less than 0.5 millirem for the period from July 1, 2001 through June 30, 2002. These doses were well below the limit set in 10 CFR 20.1101(d) of 10 millirem per year.

The licensee had released liquid from the facility, but only by transferring it to the Campus EH&S Office under the State of California Radioactive Material License. Solid radioactive waste was also released to the Campus EH&S Office. The liquid and solid waste was then stored, handled, and/or disposed of in accordance with the State license requirements.

c. Conclusion

Effluent monitoring satisfied license and regulatory requirements and airborne releases were within the specified regulatory and TS limits.

5. Procedures

a. Inspection Scope (IP 69001)

The inspector reviewed selected aspects of the following to verify that the licensee was complying with the requirements of TS Sections 6.2, 6.3, and 6.7:

- records of procedure changes
- observation of procedure implementation
- administrative controls as outlined in UCINRF SOP No. 1, “Introduction,” Rev 3, approved March 2000

b. Observations and Findings

Operations procedures were available for those tasks and items required by the TS and facility directives. Written changes were reviewed and approved by the ROC as required. The SOPs were reviewed as necessary with the last review dated March 2000.

Training of personnel on procedures and changes was acceptable. Through observation of surveys and experiment handling, the inspector verified that personnel conducted TS activities in accordance with applicable procedures. Records showed that procedures for potential malfunctions (e.g., radioactive releases, contaminations, and reactor equipment problems) had been developed and were implemented as required.

c. Conclusions

Procedural review, revision, and implementation satisfied TS requirements.

6. Emergency Preparedness

a. Inspection Scope (IP 69001)

The inspector reviewed selected aspects of the following to ensure that the licensee was following the requirements stipulated in the Emergency Plan of the UCINRF, Rev 3.0, dated May 2000:

- emergency response facilities, supplies, equipment, and instrumentation
- training records for licensee staff and support personnel
- offsite support as documented in Letters of Agreement
- emergency drills and exercises for the past two years
- UCINRF SOP No. 6, “Emergency Procedures,” Rev 3, approved March 2000

b. Observations and Findings

The Emergency Plan (E-Plan) in use at the NRF was the same as the version most recently approved by the NRC. Implementing procedures were reviewed and revised as needed to effectively implement the E-Plan. Emergency facilities, instrumentation, and equipment were being maintained and controlled, and supplies were being checked weekly, but documentation of an inventory conducted on a routine basis as required by Section 8.6 of the E-Plan was not available. This is an area for improvement.

Section 10.0 of the E-Plan states that a meeting of senior personnel shall be held each year to review the plan and establish a schedule for training and exercises. The licensee acknowledged that no meetings of senior personnel had been held during the past several years, but that an annual drill was held and a planning meeting was held for that purpose. The E-Plan was being audited and reviewed as needed. The licensee was informed that the lack of documented meetings of senior personnel to review the E-Plan and schedule training is an area for improvement.

Through records review and through interviews with licensee and EH&S personnel, emergency responders were determined to be knowledgeable of the proper actions to take in case of an emergency. An agreement letter had been updated and maintained as required with the Western Medical Center for medical support in case of a major emergency. Communications capabilities were acceptable with these support groups and had been tested as stipulated in the E-Plan. Off-site support for the NRF was verified to be in accordance with the E-Plan.

Emergency drills had been conducted as required by the E-Plan. Critiques were written following the drills and the event to document the strengths and weaknesses identified during the exercises and to develop possible solutions to any problems noted.

The inspector verified that emergency preparedness and response training for reactor staff was being completed and documented. The inspector also visited the Orange County Fire Authority, Station No. 4, to observe the support that was available in the event of a fire at the NRF.

c. Conclusions

The emergency response program was conducted in accordance with the requirements stipulated in the Emergency Preparedness Plan.

7. Transportation

a. Inspection Scope (IP 86740)

The inspector reviewed the following to verify compliance with regulatory requirements for shipping licensed material:

- records of radioactive material shipments for 2001 and to date
- UCINRF SOP No. 5, “Radiological Safety Program,” Rev 3, approved March 2000

The inspector also interviewed licensee personnel.

b. Observations and Findings

Title 10 CFR Section 71.5(a) requires that a licensee who delivers licensed material to a carrier for transport comply with the applicable requirements of the regulations appropriate to the mode of transport of the Department of Transportation (DOT) in 49 CFR Parts 171-189.

Section 171.2(a) of 49 CFR prohibits any person from offering hazardous material for transportation unless, among other requirements, the hazardous material is properly classified, described, packaged, marked, labeled, and in condition for shipment required or authorized under the Hazardous Material Regulations (49 CFR 171-177).

The inspector reviewed the various documents prepared in support of shipments made during 2001 through the date of the inspection. Many of the shipping papers and some of the supporting documentation lacked necessary and required items of information as required by 49 CFR Parts 171 through 177. Other problems were noted as well. The problems noted with the shipping papers and/or the supporting documentation included: (1) failure to list the chemical and physical form of the radioactive material, (2) failure to list the major isotopes and the total activity present in the packages of radioactive material being shipped, (3) failure to indicate that the shipping packages complied with the requirements for external radiation and contamination levels, (4) failure to note the Transport Index (TI) for certain shipments, (5) failure to sign the shipping papers and certification, (6) failure to list an Emergency Telephone number on the shipping papers, and (7) placing the wrong label on a shipment.

The details for each of the above problems are as follows:

(1) The shipping papers for shipments made on the following dates in 2001 did not list the chemical or physical form of the radioactive material being shipped as required by 49 CFR 172.203(d)(3): January 18 and 19; February 1 and 14; March 2, 16, and 27; April 24; May 3 and 22; June 14, 26, and 27; July 11; and August 23.

(2) The shipping papers for shipments made on the following dates in 2001 (and on one date in 2002 as indicated) did not list the name of each radionuclide and the activity contained in each package of radioactive material being shipped as required by 49 CFR 172.203(d)(2) and (4): January 18 and 19; February 1 and 14; March 2, 16, and 27; April 24; May 3 and 22; June 14, 26, and 27; July 11; August 23; and March 26, 2002.

(3) The shipping papers for shipments made on the following dates in 2001 (and on one date in 2002 as indicated) did not list the activity contained in each package of radioactive material being shipped as required by 49 CFR 172.203(d)(4): January 10; May 22 (a second shipment on this date - different from the shipment mentioned in (2) above), December 4; and June 25, 2002.

(4) Documentation of shipments made on the following dates in 2001 did not indicate that the contamination levels present on the external surfaces of the packages

offered for transport were below the acceptable levels indicated in 49 CFR 173.443: January 18; February 1; March 27; April 24; May 3 and 22; June 14, 26, and 27; July 11; and August 23.

(5) The shipping papers for shipments made on the following dates in 2001 did not list the TI of the radioactive material being shipped as required by 49 CFR 172.203(d)(6): January 10; May 3 and 22; June 14; November 15; and December 4.

(6) The shipping papers for shipments made on the following dates were not signed or certified by anyone to indicate or verify that the shipments were acceptable for shipment as required by 49 CFR 172.204: January 19, 2001 and June 25, 2002.

(7) The shipping papers for shipments made on the following dates in 2001 did not list an Emergency Telephone number on the form as required by 49 CFR 172.202 and 172.604: July 12 and November 15.

(8) Documentation of the shipment made on November 15, 2001, did not indicate that the radiation levels at any point on the external surface of the package offered for transport were within the acceptable levels indicated in 49 CFR 173.441.

(9) The shipping papers for the shipment made on June 25, 2002, indicated that a Yellow II label had been used for the shipment instead of a Yellow III label. The Yellow III label would have been the correct label according to the TI listed on the shipping papers, as required by 49 CFR 172.403.

The licensee was informed that failure to include the required information and/or signatures on the shipping papers, failure to demonstrate that certain packages were in compliance with the radiation and contamination levels required for shipment, and failure to label one shipment correctly were examples of an apparent violation (VIO) of 10 CFR 71.5(a) (VIO 50-326/2002-201-01).

c. Conclusions

One violation was identified for failure to comply with the requirements on 10 CFR 71.5(a) regarding shipments of radioactive material.

8. Security

a. Inspection Scope (IPs 81402 and 81431)

To verify compliance with the licensee's NRC-approved Physical Security Plan (PSP) and to assure that changes, if any, to the plan had not reduced its overall effectiveness, the inspector reviewed:

- security systems, equipment and instruments
- logs, records, and reports concerning security
- alarm system checks documented on UCINRF Monthly Maintenance Checklists

- access and key control
- UCINRF SOP No. 4, "Normal Operating Procedures," Rev 3, approved March 2000
- UCINRF SOP No. 7, "Security Response Procedures," Rev 3, approved March 2000

b. Observations and Findings

The PSP in effect at the facility, the revision dated May 2000, was the same version as the one approved for use by the NRC. UCI Police Department (UCIPD) personnel provided security as required by the plan. Physical protection systems (barriers, alarms, equipment, and instrumentation) were as required by the PSP. Security checks, tests, and verifications were performed at the required frequencies and tracked as required. Corrective actions were taken when problems with security or the equipment were noted. Access controls were implemented as required by the PSP and licensee procedures. Periodic training was provided to the NRF staff and familiarization tours were given to UCIPD personnel. Response rosters were current and posted as required in the NRF. The inspector also verified that the UCIPD had the most current roster for reference. Communication between the reactor staff and the UCIPD was acceptable and checked periodically.

c. Conclusions

Security facilities, equipment, training, and procedures satisfied PSP requirements.

9. Material Control and Accounting

a. Inspection Scope (IP 85102)

To verify compliance with 10 CFR Part 70, the inspector reviewed:

- control of Special Nuclear Material (SNM) storage areas
- Semiannual fuel inventory results documented on the UCINRF "Fuel Inventory Checklist" forms
- Nuclear Material Transaction Reports for the time period from October 2000 through March 2002
- UCINRF SOP No. 4, "Normal Operating Procedures," Rev 3, approved March 2000

b. Observations and Findings

Through records review and direct observation, the inspector verified that licensed SNM was stored only in designated areas and that the licensee was maintaining control of those storage areas as required. Records also showed that physical inventories were 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) had been completed semi-annually and submitted by the licensee to the appropriate regulatory agencies in a timely manner and as required by 10 CFR 74.13(1).

c. Conclusions

The licensee was acceptably controlling and tracking SNM as required by 10 CFR Part 70.

10. Follow-up on Previously Identified Issues

a. Inspection Scope

The inspector reviewed the actions taken by the licensee following identification of an Inspector Follow-up Item (IFI) during an inspection in May 2001, and documented in NRC Inspection Report No. 50-326/2001-201, dated August 10, 2001.

b. Observations and Findings

IFI 50-326/2001-201-02 - Written procedures would be updated to match present practices or activities would be performed as in current procedures.

During the inspection in May 2001, it was noted that there were a number of mismatches between certain written procedures and the manner and frequencies in which required operations/surveillance activities were performed. It appeared that some older (pre-1990) licensee procedures had not been formally updated when newer practices were implemented. When this issue was brought up, the Reactor Supervisor and the Dean of Physical Science stated that the written procedures would be updated to match actual practices or the activities would be performed as outlined in the written procedures.

During this inspection the inspector verified that the procedures had been updated and now reflect current practices as performed. This issue is considered closed.

c. Conclusions

One IFI identified during an inspection in May 2001 was closed.

11. Exit Interview

The inspection scope and results were summarized on September 19, 2002, with members of licensee management. The inspector described the areas inspected and discussed in detail the inspection findings. No dissenting comments were received from the licensee. The Physical Security Plan, and related subject matter, were identified as proprietary information.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

G. Miller	Reactor Supervisor
W. Parker	Vice Chancellor for Research
P. Rogers	Senior Reactor Operator
J. Stern	Dean, Physical Sciences
K. Wolonsky	Associate Dean, Physical Sciences

Other Personnel

L. Ferrari-McCoy	Dispatcher, UCIPD
R. Freight	Supervisor, UCI Key Shop
F. Gallagher III	Radiation Safety Officer, UCI EH&S
K. Harkness	Principal Health Physics Technologist, UCI EH&S
S. Quan	Sargent, UCIPD

INSPECTION PROCEDURES USED

IP 69001	Class II Research and Test Reactors
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

50-326/2002-201-01	VIO	Failure to include the required information and/or signatures on the shipping papers, failure to demonstrate that certain packages were in compliance with the radiation and contamination levels required for shipment, and failure to label one shipment correctly as required.

Closed

50-326/2001-201-02	IFI	Written procedures to be updated to match present survey practices or the surveys would be performed as outlined in the written procedures.

PARTIAL LIST OF ACRONYMS USED

ALARA	As Low As Reasonably Achievable
CFR	Code of Federal Regulations
EH&S	(Office of) Environmental Health and Safety
HP	Health Physics
IFI	Inspector Follow-up Item
IP	Inspection Procedure
NRC	Nuclear Regulatory Commission
NRF	Nuclear Reactor Facility
PD	Police Department
PSP	Physical Security Plan
ROC	Reactor Operations Committee
SNM	Special Nuclear Material
SOP	Standard Operating Procedure
SRO	Senior Reactor Operator
TI	Transport Index
TLD	Thermoluminescent dosimeter
TS	Technical Specifications
UCI	University of California, Irvine
UCINRF	University of California, Irvine Nuclear Reactor Facility
UCIPD	University of California, Irvine Police Department