

July 8, 2011

Dr. Melinda Krahenbuhl, PhD, Director  
Reed Reactor Facility  
Reed College  
3203 S.E. Woodstock Boulevard  
Portland, OR 97202-8199

SUBJECT: REED COLLEGE – NRC NON-ROUTINE INSPECTION REPORT NO.  
50-288/2011-202

Dear Dr. Krahenbuhl:

On June 5-9, 2011, the U.S. Nuclear Regulatory Commission (NRC, the Commission) conducted an inspection at your Reed Reactor Facility (Inspection Report No. 50-288/2011-202). The enclosed report documents the inspection results which were discussed with you on June 9, 2011.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspector reviewed selected procedures and records, observed activities, and interviewed personnel. Based on the results of this inspection, no findings of significance were identified. No response to this letter is required.

In accordance with Title 10 of the *Code of Federal Regulations* Section 2.390, "Public inspections, exemptions, and requests for withholding," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (Agencywide Documents Access and Management System (ADAMS)). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Should you have any questions concerning this inspection, please contact Craig Bassett at (301) 466-4495 or by electronic mail at [Craig.Bassett@nrc.gov](mailto:Craig.Bassett@nrc.gov).

Sincerely,

**/RA/**

Johnny H. Eads, Jr., Chief  
Research and Test Reactors Oversight Branch  
Division of Policy and Rulemaking  
Office of Nuclear Reactor Regulation

Docket No. 50-288  
License No. R-112

Enclosure: NRC Inspection Report 50-288/2011-202  
cc w/encl.: Please see next page

Reed College Docket No. 50-288

cc:

Mayor of the City of Portland  
1220 Southwest 5<sup>th</sup> Avenue  
Portland, OR 97204

Reed College  
ATTN: Dr. Ellen Stauder  
Dean of Faculty  
3203 S.E. Woodstock Boulevard  
Portland, OR 97202-8199

Reed College  
ATTN: Dr. Colin Diver  
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3203 S.E. Woodstock Boulevard  
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Oregon Department of Energy  
ATTN: David Stewart-Smith, Director  
Division of Radiation Control  
625 Marion Street, N.E.  
Salem, OR 97310

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

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**ACCESSION NO.:** ML111810021 \* via e-mail

**TEMPLATE #:** NRC-002

OFFICE	PRTB:RI*	PRT:LA	PRTB:BC
NAME	CBassett	GLappert	JEads
DATE	6/15/2011	6/30/2011	7/8/2011

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

Docket No: 50-288

License No: R-112

Report No: 50-288/2011-202

Licensee: Reed College

Facility: Reed Reactor Facility

Location: 3203 S.E. Woodstock Boulevard  
Portland, OR

Dates: June 5-9, 2011

Inspector: Craig Bassett

Approved by: Johnny H. Eads, Jr., Chief  
Research and Test Reactors Oversight Branch  
Division of Policy and Rulemaking  
Office of Nuclear Reactor Regulation

## EXECUTIVE SUMMARY

Reed College  
TRIGA Mark-I Research Reactor  
Report No: 50-288/2011-202

The primary focus of this non-routine, announced inspection was the onsite review of selected aspects of the Reed College (the licensee's) Class II two hundred and fifty-kilowatt (250 kW) research and test reactor safety program including: 1) organization and staffing, 2) review and audit functions, 3) radiation protection; 4) procedures, 5) transportation of radioactive material, and 6) material control and accounting of special nuclear material. During the inspection the activities associated with the shipment of spent fuel from the facility were also reviewed. These activities included preparations to ship the fuel, cask and fuel handling, and security during these operations. The licensee's safety program and fuel shipment activities were acceptably directed toward the protection of public health and safety and in compliance with U.S. Nuclear Regulatory Commission (NRC) requirements. No violations or deviations were identified.

### Organizational Structure and Staffing

- Facility organization and staffing was in compliance with the requirements specified in Section I of the Technical Specifications.
- The current Reactor Director was about to retire but his replacement was on site to assume control of the operation.
- Reed Research Reactor staff members were assisted by government and contract personnel during the shipment of the fuel from the facility.

### Review and Audit Functions

- Reviews and audits were being conducted by the Reactor Operations Committee and the Radiation Safety Committee in compliance with the requirements specified in the Technical Specifications.

### Radiation Protection Program

- Signs, notices and postings met the 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.
- Surveys were completed and documented acceptably to permit evaluation of the radiation hazards present.
- Radiation survey and monitoring equipment was being maintained and calibrated acceptably.
- Radiation protection training was acceptable and was being conducted as required.

- The Radiation Protection and the As Low As Reasonably Achievable Programs satisfied regulatory requirements.

#### Procedures

- Facility procedures and document reviews satisfied Technical Specification Section I.5 requirements.

#### Transportation of Radioactive Materials / Shipment of Spent Fuel

- The licensee and contractor personnel made adequate preparations for shipping the fuel.
- The cask and fuel handling operations were conducted in an efficient and professional manner and in accordance with established procedures.
- The security program for cask and fuel handling was adequate.
- The program for shipping radioactive material satisfied regulatory requirements.

#### Material Control and Accounting

- Special nuclear material was acceptably controlled and tracked as required by Title 10 of the *Code of Federal Regulations* Part 70.

## REPORT DETAILS

### **Summary of Plant Status**

The Reed College (the licensee's) two hundred and fifty-kilowatt (250 kW) Class II TRIGA Mark-I research and test reactor (RTR) is normally operated in support of undergraduate instruction, laboratory experiments, reactor operator training, and various types of research. During the inspection, the reactor was not operated because the licensee was in the midst of completing a shipment of spent fuel from the facility.

### **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 the Technical Specification (TS), Section I, Amendment No. 8, dated January 4, 2011, were being met:

- Current facility organization and staffing
- Reed Research Reactor (RRR) Administrative Procedures, latest revision (Rev.) dated November 2009

#### b. Observations and Findings

The organizational structure had not changed since the last routine U. S. Nuclear Regulatory Commission (NRC) inspection which occurred in December 2010 (Inspection Report No. 50-288/2010-201). The organizational structure and staffing at the facility were as required by the TS. Review of records verified that management and staff responsibilities were carried out as required by the TS and applicable procedures.

The inspector did note that the current Reactor Director, who has been at the facility for 17 years, was retiring and a new person had been selected to assume the position and the associated responsibilities. During the inspection the new Reactor Director was on site to receive a turnover from the retiring Director and for familiarization with the facility and staff. It was noted that the new Reactor Director had previously held that position at the DOW Chemical RTR facility and also at the University of Utah research reactor. The inspector interviewed the Reed College Dean of Faculty and reviewed the measures that were in place to ensure an efficient and effective turnover of responsibilities.

It was also noted during the inspection that RRR staff members were assisted in shipping spent fuel from the facility by government and contract personnel from various organizations. These included CH2M•WG Idaho, LLC; Idaho National Laboratory (INL) Department of Energy (DOE); Nuclear Assurance Corporation (NAC) International; and, Secured Transportation Services, LLC (STS).

#### c. Conclusion

The licensee's organization and staffing were in compliance with the requirements specified in the TS, Section I. The former Reactor Director was in

the process of retiring and a new Reactor Director was on site to assume control of the operation. RRR staff members were assisted by government and contract personnel during the shipment of the fuel from the facility.

## 2. Review and Audit Functions

### a. Inspection Scope (IP 69001)

In order to ensure that the audits and reviews stipulated in the requirements of TS Sections I.2 and I.3 were being completed, the inspector reviewed the following:

- Reactor Safety Committee (RSC) meeting minutes for November 4, 2010, and March 10, 2011
- Reactor Operations Committee (ROC) meeting minutes for November 4, 2010, and March 10, 2011
- TS responsibilities specified for the ROC and the RSC
- RRR Administrative Procedures, latest Rev. dated November 2009

### b. Observations and Findings

The inspector reviewed the meeting minutes of joint meetings of the RSC and ROC which occurred on November 14, 2010, and March 10, 2011. The meeting minutes showed that the committees met as required by the TS with a quorum being present. Records showed that safety reviews which were required to be conducted by the committees were completed. On November 14, 2010, the committees held an extensive discussion concerning the receipt of fuel at the facility, what controls would be required, and the characteristics of the fuel itself. On March 10, 2011, the shipment of spent fuel was discussed including the preparations that were being undertaken to ensure that the project proceeded according to schedule and plan.

### c. Conclusion

Review and oversight functions required by TS Section 6.2 were acceptably completed by the ROC and the RSC.

## 3. Radiation Protection Program

### a. Inspection Scope (IP 69001)

The inspector reviewed the following to verify compliance with Title 10 of the *Code of Federal Regulations* (10 CFR) Parts 19 and 20 and TS Section G requirements:

- Radiological signs and posting
- Radiation Work Permit No. 13, dated June 2, 2011
- Personnel dosimetry records for the shipment of the spent fuel
- Surveys and monitoring records for the shipment of the spent fuel
- RRR Administrative Procedures, latest Rev. dated November 2009



- Reed Reactor Facility (RRF) Radiation Protection Plan, latest Rev. dated August 2006
- As Low As Reasonably Achievable (ALARA) Program as described in the RRF Radiation Protection Plan and in the Radioisotope and RSC ALARA Policy Statement dated July 17, 1990
- RRR Standard Operating Procedure (SOP) 23, "Weekly Checklist," latest Rev. dated January 11, 2011
- RRR SOP 23, "Weekly Checklist Form," latest Rev. dated April 15, 2011
- RRR SOP 44, "Dosimetry," latest Rev. January 11, 2011
- RRR SOP 50, "Health Physics," latest Rev. dated January 11, 2011
- RRR SOP 51, "Wipe Tests," latest Rev. dated January 11, 2011
- RRR SOP 53, "Radiation Work Permits," latest Rev. dated January 11, 2011

The inspector also observed the use of dosimetry and radiation monitoring equipment during the inspection.

b. Observations and Findings

(1) Postings and Notices

The inspector verified that copies of current notices to workers were posted at the facility as required. It was noted that the various notices were posted inside the Reactor Control Room. The inspector also observed that radiological signs were typically posted at the entrances to controlled areas as well. The posted copies of NRC Form-3, "Notice to Employees," observed at the facility were the latest issue, as required by 10 CFR 19.11, and were posted in the main hallway of the reactor facility, in the Reactor Bay, and in the Laboratory Room.

Caution signs, postings, and controls for radiation areas were as required in 10 CFR Part 20, Subpart J. The inspector verified that licensee and contractor personnel observed the precautions for access to radiation areas.

(2) Dosimetry

The inspector determined that the licensee used optically stimulated luminescent (OSL) dosimeters for whole body monitoring beta and gamma radiation exposure of staff members. The licensee also used thermoluminescent dosimeter (TLD) finger rings for monitoring beta and gamma radiation exposure of the extremities. The dosimetry was supplied and processed by a National Voluntary Laboratory Accreditation Program (NVLAP) accredited vendor (Landauer).

In addition, the licensee used electronic personal dosimeters (EPDs) to track the exposure received by staff and contractor personnel during the fuel shipment operation. These EPDs gave an immediate read out of the dose received by each individual and did not need to be sent to a vendor for processing. Through direct observation the inspector determined that

dosimetry was acceptably used by facility and contract personnel and exit frisking practices were in accordance with facility radiation protection requirements.

According to the EPD results, the highest whole body exposure received by a single person during the fuel shipment and cask handling operation was 13.5 millirem and the total cumulative exposure for the entire project was 25.4 millirem.

(3) Surveys

The inspector reviewed the Console Log and associated survey records completed during the shipping and cask handling operation. The records documented the radiation and contamination surveys conducted during movement and shipment of the spent fuel, including cask and fuel handling operations. The surveys were completed by staff members as required. Any contamination that was detected in concentrations above the established action levels was noted and the item(s) or area(s) were decontaminated. Results of the surveys were documented as required.

(4) Radiation Monitoring Equipment

Examination of selected radiation monitoring equipment indicated that the instruments used had an acceptable up-to-date calibration sticker attached. The instrument calibration records indicated that the calibration of portable survey meters was typically completed by reactor staff personnel and/or the Reactor Health Physicist (RHP). Fixed location radiation area monitors (RAMs) and stack monitors were also being calibrated as required. These RAMs and stack monitors were also typically calibrated by reactor staff personnel and/or the RHP.

(5) Radiation Work Permits (RWPs)

The licensee determined that an RWP was required during handling and shipping of the casks and fuel. RWP No. 13 was generated for that purpose. It was noted that the controls specified in the RWP were acceptable and applicable for the type of work being done. The RWP had been initiated, reviewed, and approved as required by RRR SOP 53.

(6) Radiation Protection Training

The inspector verified that radiation worker (or rad worker) training had been given to the RRF staff members involved in the fuel shipping operation. The training provided appeared to be acceptable. The inspector also verified that the contractor personnel had received the appropriate training and were qualified rad workers.

(7) Facility Tours and Inspector Observations

The inspector toured the Control Room and Reactor Bay. Control of radioactive material was acceptable, as was control of access to radiation areas.

During the inspection the inspector observed licensee representatives during the completion of a survey of the shipping and transfer casks and the associated equipment. It was noted that appropriate survey techniques were used. The inspector conducted an independent radiation survey as the loaded shipping cask as well. The radiation levels noted by the inspector were comparable to those found by the licensee and no anomalies were noted.

Appropriate survey techniques, contamination control and ALARA practices were used by both licensee and contractor personnel during cask movement and fuel handling operations.

c. Conclusion

The inspector determined that the Radiation Protection and ALARA Programs, as implemented by the licensee, satisfied regulatory requirements because:

- 1) postings met regulatory requirements; 2) personnel dosimetry was being worn as required and recorded doses were well within the NRC's regulatory limits; 3) surveys and associated checks were completed and documented acceptably to permit evaluation of the radiation hazards present; 4) radiation survey and monitoring equipment was being maintained and calibrated as required; and 5) appropriate ALARA techniques were used during the operation.

**4. Procedures**

a. Inspection Scope (IP 69001)

The inspector reviewed selected aspects of the following to verify compliance with TS Section I.5:

- Selected facility procedures
- Procedural implementation and compliance
- RRR Procedure "NAC-LWT Cask Un-Loading," which referenced various NAC Procedures including:
  - NAC Document No. 315-P-02, "NAC-LWT Cask Generic Operating Procedure," Rev. 15, dated October 2010
  - NAC Document No. 315-P-12, "Helium Leakage Testing of the NAC-LWT Cask," Rev. 2, dated June 2010
  - NAC Document No. 315-P-15, "NAC-LWT TRIGA Fuel Basket Loading Procedure," Rev. 2, dated June 2010
  - NAC Document No. 432-P-01, "Dry and Intermediate Transfer System Operating Procedure," Rev. 6, dated April 19, 2006
- RRR SOP 61, "Procedure Writing and Use," Rev. dated November 3, 2010

- RRR SOP 61, Appendix A, "Document Structure," Rev. dated February 24, 2009
- RRR SOP 61, Appendix B, "Document Locations," Rev. dated January 4, 2010
- RRR SOP 61, Appendix C, "Temporary Procedure Changes," Rev. dated April 7, 2010

b. Observations and Findings

The inspector verified that facility procedures were being reviewed biennially as required and upgraded/revised as needed. Administrative control of changes to procedures, and the associated review and approval process, were as stipulated by RRR SOP 61. Training of personnel on procedures and changes was acceptable.

Through observation of activities in progress, the inspector verified that licensee personnel conducted operations and radiological surveys in accordance with applicable procedures. Contractor personnel complied with their procedures as well.

c. Conclusion

Facility procedures were acceptably reviewed, approved, and implemented.

**5. Transportation/Shipment of Spent Fuel**

a. Inspection Scope (IP 86740)

To verify compliance with 10 CFR 71.5 and procedural requirements for the transfer or shipment of licensed radioactive material, the inspector reviewed the following:

- Records of the radioactive material shipment associated with the spent fuel
- RRR Administrative Procedures, latest Rev. dated March 2008
- RRR SOP 38, "Crane," Rev. dated April 30, 2009
- RRR SOP 67, "Shipping Radioactive Material," latest Rev. dated October 6, 2009
- RRR SOP 80, "Reactor Bay Doors," Rev. dated January 6, 2011
- RRR Procedure "NAC-LWT Cask Un-Loading," which referenced various NAC Procedures including:
  - NAC Document No. 315-P-02, "NAC-LWT Cask Generic Operating Procedure," Rev. 15, dated October 2010
  - NAC Document No. 315-P-12, "Helium Leakage Testing of the NAC-LWT Cask," Rev. 2, dated June 2010
  - NAC Document No. 315-P-15, "NAC-LWT TRIGA Fuel Basket Loading Procedure," Rev. 2, dated June 2010
  - NAC Document No. 432-P-01, "Dry and Intermediate Transfer System Operating Procedure," Rev. 6, dated April 19, 2006

- NAC-LWT Cask Safety Analysis Report, Rev. 14, with Certificate of Compliance, No. 9225, Rev. 55
- NRC Form 618, Certificate of Compliance for Radioactive Material Packages, Certificate No. 9225, Rev. 55, Package Identification No. USA/9225/B(U)F-96, dated March 23, 2010
- Reed Research Reactor Quality Assurance Program for use of the NAC-LWT Cask, dated December 22, 2010
- Quality Assurance Program Limited Condition Approval For Radioactive Material Packages No. 0949, Rev. 0, dated January 2, 2011

b. Observations and Findings

(1) Preparations for Fuel Shipment

The inspector reviewed the actions taken by the licensee to prepare for shipping the spent fuel. The licensee had completed various actions prior to shipping the fuel including:

- Moving various items of equipment in the Reactor Bay using proper contamination control techniques to facilitate the handling of spent fuel.
- Taking the appropriate actions to open the double doors leading from the Reactor Bay to the exterior of the building so that the fuel transfer cask could be moved in and out of the building.
- Calibrating the RAMs and the Continuous Air Monitor (CAM) used in the Reactor Bay.
- Arranging for a temporary fence to be erected to enclose the work area for the project and provide increased security.
- Arranging for a security guard to be present 24/7 for the duration of the project until the cask left the licensee's site.

The inspector noted and reviewed the contractor's preparations for shipping the fuel. The contractor had also completed various actions prior to the fuel shipment including:

- Setting up a cask handling area for the shipping and transfer casks.
- Arranging for an 80 Ton crane to be located in the work area near the RRR facility for handling all the casks and equipment.
- Off loading equipment in the fenced area and placing the transfer casks inside the security area.
- Attaching a hoist to the licensee's crane inside the Reactor Bay to allow for handling the transfer cask and lowering it to (and raising it from) the bottom of the reactor pool. (The hoist was removed following completion of the fuel transfer.)
- Contracting for a forklift to transfer the cask from outside the Reactor Bay to inside the doors and back.

(2) Shipping Paperwork and Preparations to Release the Shipment

The inspector observed as the appropriate markings and labels were placed on the cask and observed the placarding on the transport vehicle. The shipping paperwork contained the appropriate information and was signed off by the licensee as required. It was noted that contractor personnel from the Secured Transportation Services (STS) had helped complete the paperwork used for the shipment. The contractor had also generated and affixed the markings and labels to the cask and the placards to the vehicle. The inspector reviewed the shipping paperwork for the spent fuel shipment and only very minor problems were noted. These were immediately corrected by the STS shipping coordinator.

The inspector also observed as a representative from the State of Oregon Department of Transportation completed an extensive survey and inspection of the transport vehicle and all the paperwork involved including documentation of the vehicle drivers' credentials. No problems were noted.

The inspector also attended the briefing given to the vehicle drivers before the vehicle was released to proceed to the final destination. Appropriate aspects of the regulations were reviewed as were the various safety and safeguards precautions. The transport drivers were knowledgeable of the proper actions to take in case of an emergency.

(3) Security for the Project

The inspector reviewed the licensee's actions relative to providing security for the fuel transfer and shipment project. The actions appeared to be adequate and no security incidents occurred. It was noted that the licensee had received the appropriate communication from DOE and the various contractors to ensure that all those personnel at the facility handling fuel and providing assistance had received the proper background checks and were approved as reliable and trustworthy.

c. Conclusion

The tasks completed by the licensee and the contractor prior to the shipment appeared to be adequate. The cask and fuel handling operations were conducted in an efficient and professional manner, and security for the project appeared to be adequate. The program for shipping radioactive material satisfied regulatory requirements.

**6. Material Control and Accounting**

a. Inspection Scope (IP 85102)

The inspector reviewed selected aspects of the licensee's material control and accountability program including:

- Control of Special Nuclear Material (SNM) storage areas
- RRR SOP 35, "Fuel and Core," Rev. dated March 11, 2011
- Reed College License Amendment Request to increase the possession limit for U-235 at the facility dated May 28, 2010
- Requests for Additional Information (RAIs) from the NRC to the licensee dated September 27, 2010, November 15, 2010, and December 6, 2010
- Licensee responses to the RAIs dated October 21, 2010, December 6, 2010, and electronic mail dated December 17, 2010, and January 3, 2011
- License Amendment No. 8 to Facility License No. R-112 for RRR issued January 4, 2011

b. Observations and Findings

Through records reviewed during a previous inspection the inspector verified that the licensee accounted for all SNM maintained under the R-112 license. Material Status Reports (DOE/NRC Form 742 and 742C), documenting licensee SNM transactions had been completed and submitted to the appropriate regulatory agencies in a timely manner and as required by 10 CFR 74.13(1). Physical inventories were conducted annually as required by 10 CFR 70.51(d).

During the current inspection, the inspector toured the facility, observed the SNM and fuel storage areas, and verified that the licensee was using and storing SNM in the designated areas. Through records review, the inspector verified that the total amount of SNM in use or in storage at the facility was within the possession limits specified in the license.

c. Conclusion

SNM was acceptably stored, controlled, and inventoried.

**10. Exit Interview**

The inspection scope and results were summarized on June 8, 2011, with licensee management. The inspector described the areas inspected and discussed in detail the inspection findings. No dissenting comments were received from the licensee. No proprietary material was reviewed by the inspector during the inspection. Additional information was exchanged on June 9, 2011, concerning the status of the fuel shipment.

## **PARTIAL LIST OF PERSONS CONTACTED**

### **Licensee Personnel**

S. Frantz	(Retiring) Director, Reed Reactor Facility
M. Krahenbuhl	(Incumbent) Director, Reed Reactor Facility
R. Lazarus	Associate Director, Reactor Facility
K. Linthicum	Reactor Operator
E. McManis	Senior Reactor Operator
M. Reichert	Reactor Operator
E. Stauder	Dean of Faculty

### **Other Reed College Personnel**

K. Fisher	Radiation Safety Officer and Campus Environmental Director
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### **Other Personnel**

J. Brown	Hazardous Materials Transportation Specialist, Safety Enforcement, Oregon Department of Transportation
D. Luke	Project Manager, INTEC Fuel Group, CH2M●WG Idaho, LLC
M. Miles	Project Engineer, Nuclear Assurance Corporation (NAC) International
D. Morrell	Project Manager, Research Reactor Infrastructure, Idaho National Laboratory, DOE
K. Niles	Assistant Director, Oregon Department of Energy
A. Robb	Fuel Receipt Project Engineer, INTEC Fuel Group, CH2M●WG Idaho, LLC
D. Schroeder	Project Engineer, Nuclear Assurance Corporation (NAC) International
B. Williams	President, Secured Transportation Services (STS), LLC
W. Yauch	Project Engineer, Nuclear Assurance Corporation (NAC) International

## **INSPECTION PROCEDURES USED**

IP 69001:	Class II Non-Power Reactors
IP 86740:	Inspection of Transportation Activities

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

### **Opened**

None

### **Closed**

None





**LIST OF ACRONYMS USED**

10 CFR	Title 10 of the <i>Code of Federal Regulations</i>
ALARA	As low as reasonably achievable
CAM	Continuous Air Monitor
DOE	Department of Energy
DTS	Dry Transfer System
EPD	Electronic Personal Dosimeters
IP	Inspection Procedure
ITS	Intermediate Transfer System
kW	kilowatt
NAC	Nuclear Assurance Corporation, International
NRC	U. S. Nuclear Regulatory Commission
NVLAP	National Voluntary Laboratory Accreditation Program
OSL	Optically stimulated luminescent (dosimeter)
RAI	Request for Additional Information
RAM	Radiation Area Monitors
Rev.	Revision
RHP	Reactor Health Physicist
ROC	Reactor Operations Committee
RRF	Reed Reactor Facility
RRR	Reed Research Reactor
RSC	Radiation Safety Committee
RTR	Research and Test Reactor
RWP	Radiation Work Permit
SDE	Shallow dose equivalent
SNM	Special Nuclear Material
SOP	Standard Operating Procedure
STS	Secured Transportation Services, LLC
TLD	Thermoluminescent dosimeter
TS	Technical Specification
UA	University of Arizona