

June 15, 2010

Mr. R. J. Agasie, Reactor Director
Nuclear Reactor Laboratory
University of Wisconsin - Madison
1513 University Avenue, Room 1215
Madison, WI 53706-1687

SUBJECT: UNIVERSITY OF WISCONSIN – NRC ROUTINE INSPECTION REPORT
NO. 50-156/2010-201

Dear Mr. Agasie:

On May 17 - 20, 2010, the U.S. Nuclear Regulatory Commission (NRC, the Commission) completed an inspection at your University of Wisconsin Nuclear Reactor Laboratory (Inspection Report No. 50-156/2010-201). The enclosed report documents the inspection results, which were discussed on May 20, 2010, with you and members of your staff.

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.

Sincerely,

/RA By Patrick Isaac Acting For/
Johnny H. Eads, Jr., Chief
Research and Test Reactors Oversight Branch
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

Docket No. 50-156
License No. R-74

Enclosure: NRC Inspection Report No. 50-156/2010-201
cc w/encls: See next page

University of Wisconsin Docket No. 50-156

cc:

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

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ACCESSION NO.: ML101600070 TEMPLATE #: NRC-002

OFFICE	PROB:RI *	PRPB:LA	PROB:BC
NAME	CBassett	GLappert	JEads (Pisaac for)
DATE	5/26/2010	6/15/2010	6/15/2010

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

Docket No: 50-156

License No: R-74

Report No: 50-156/2010-201

Licensee: University of Wisconsin

Facility: Nuclear Reactor Laboratory

Location: Madison, WI

Dates: May 17 - 20, 2010

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

University of Wisconsin - Madison
Nuclear Reactor Laboratory
Report No: 50-156/2010-201

The primary focus of this routine, announced inspection was the onsite review of selected aspects of the University of Wisconsin (the licensee's) one megawatt (1 MW) Class II research reactor safety program including: 1) organizational structure and staffing; 2) review and audit and design change functions; 3) procedures, 4) radiation protection, 5) environmental monitoring; and 6) transportation of radioactive material since the last NRC inspection of these areas. The licensee's program was acceptably directed toward the protection of public health and safety, and in compliance with the U.S. Nuclear Regulatory Commission (NRC) requirements. No violations or deviations were identified.

Organizational Structure and Staffing

- The facility organization and staffing were in compliance with the requirements specified in the Technical Specifications.

Review and Audit and Design Control Functions

- The review and audit program was being conducted acceptably by the Reactor Safety Committee.
- The latest changes completed at the facility were reviewed by licensee personnel using the criteria specified in Title 10 of the *Code of Federal Regulations* Section 50.59 "Changes, test, and experiments," then reviewed by the Reactor Safety Committee and implemented when determined to be acceptable.

Procedures

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

Radiation Protection

- Surveys were being completed and documented acceptably.
- Postings met the regulatory requirements.
- Personnel dosimetry was being worn as required and doses were well within NRC regulatory limits.
- Radiation monitoring equipment was being maintained and calibrated as required.
- Acceptable radiation protection training was being provided to staff members.
- The Radiation Protection Program and the As Low As Reasonably Achievable Program were being acceptably implemented.

Effluent and Environmental Monitoring

- Effluent monitoring satisfied license and regulatory requirements.
- Releases were within the specified regulatory and Technical Specifications limits.

Transportation of Radioactive Materials

- Radioactive material produced in the reactor was transferred to the campus broad scope license and shipped under the auspices of that license, transferred to other authorized users on campus, or maintained at the reactor facility for use in labs in accordance with procedure.
- The recent shipment of spent fuel from the facility was completed in compliance with the applicable regulations.

REPORT DETAILS

Summary of Plant Status

The University of Wisconsin (UW, the licensee) continued to operate the one megawatt (1 MW) TRIGA Conversion as needed (typically on Tuesdays and Thursdays) in support of laboratory and lecture courses, research in the area of neutron irradiation, and the Reactor Sharing Program. During this inspection, the reactor was operated on two separate days at various power levels up to 1 MW for physics experiments and to support research and training.

1. Organizational Structure and Staffing

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

To verify that the organization and staffing requirements specified in Section 6.1 of the facility Technical Specifications (TS), as implemented by License Amendment Number (No.) 17, dated June 11, 2009, and associated procedures were being met, the inspector reviewed:

- Management responsibilities stipulated in the TS
- Organizational structure for the Nuclear Reactor Laboratory
- Selected Operations Log Sheets, checklists, and associated forms and records for 2009 and to date in 2010
- University of Wisconsin Nuclear Reactor (UWNR) Procedure No. 001, "Standing Operating Instructions," Revision (Rev.) 14, Reactor Safety Committee approval dated May 14, 2009
- American National Standards Institute/American Nuclear Society (ANSI/ANS) Standard 15.4, "Standards for Selection and Training of Personnel for Research Reactors," dated June 9, 1988
- "The University of Wisconsin Nuclear Reactor Laboratory Fiscal Year 2007 – 2008 Annual Operating Report," for the period from July 2007 through June 2008," submitted to the U. S. Nuclear Regulatory Commission (NRC) on July 31, 2008
- "The University of Wisconsin Nuclear Reactor Laboratory Fiscal Year 2008 – 2009 Annual Operating Report," for the period from July 2008 through June 2009," submitted to the NRC on August 10, 2009

b. Observations and Findings

Through discussions with licensee representatives, the inspector determined that management responsibilities and the organization at the UWNR Laboratory had not changed since the previous NRC inspection in the area of health physics in June 2008 (Inspection Report No. 50-156/2008-201). However it was noted that, since that inspection, the individual designated in the TS as the University Health Physicist had retired. Before the University health Physicist left the individual had trained a replacement to complete the tasks outlined in the TS.

Through review of records and logs and through discussions with licensee personnel, the inspector determined that the staffing at the facility was acceptable

to support the current workload and ongoing activities. The staffing met the requirements of the TS.

c. Conclusion

The licensee's organization and staffing remain in compliance with the requirements specified in the TS.

2. Review and Audit and Design Control Functions

a. Inspection Scope (IP 69001)

The inspector reviewed the following to ensure that the audits and reviews stipulated in the requirements of TS Sections 6.1 and 6.2 were being completed:

- Monthly Operation Summary Reports for 2008 through the present
- TS duties specified for the safety committee including review and audit functions
- Health Physics Monthly Nuclear Reactor Audit and Report for 2008 through the present
- Reactor Safety Committee (RSC) meeting minutes from November 2007 to the present Audits and reviews completed by the Radiation Safety Section of the UW Environmental Health and Safety (EH&S) Department and operations staff personnel
- UWNR Laboratory Procedure No. 005, "UWNR Administrative Guide," Rev. 51, RSC approval dated May 14, 2009
- UWNR Laboratory Procedure No. 020, "UWNR Modification Checklist," Rev. 2, RSC approval dated May 14, 2009
- UWNR Laboratory Procedure No. 030, "Experiment Review Questionnaire Outline - Facility Familiarization," Rev. 6, RSC approval dated May 14, 2009
- "The University of Wisconsin Nuclear Reactor Laboratory Fiscal Year 2007 – 2008 Annual Operating Report," for the period from July 2007 through June 2008," submitted to the NRC on July 31, 2008
- "The University of Wisconsin Nuclear Reactor Laboratory Fiscal Year 2008 – 2009 Annual Operating Report," for the period from July 2008 through June 2009," submitted to the NRC on August 10, 2009

b. Observations and Findings

(1) Review and Audit Functions

The inspector reviewed the RSC meeting minutes from November 2008 to the present. The meeting minutes showed that the committee met at the semiannual frequency required by the TS with a quorum being present. The inspector also noted that the RSC had considered the types of topics outlined by the TS. Review of the committee meeting minutes indicated the RSC provided appropriate guidance and direction for reactor operations, and ensured suitable use and oversight of the reactor.

It was noted that personnel from the Radiation Safety Section of the UW EH&S Department, along with licensee staff personnel, completed audits and reviews of the operations, radiation protection, and security programs.

The audits were completed within the timeframe stipulated by TS. These audits and reviews were submitted to the RSC for review as required.

The inspector noted that the audits and reviews, and the resulting findings, were acceptable. If the findings identified issues to be corrected or contained recommendations for possible changes, the licensee responded and took corrective actions as necessary.

(2) Design Change

Records and observations showed that the changes that had been proposed during 2008 through the present at the facility were acceptably reviewed in accordance with applicable administrative controls. Two of the most recent changes involved: 1) "Addition of a Programmable Evacuation Countdown Timer," and 2) "Addition of Individual Blade SCRAM Switches to Blade Drive Magnet Power Supplies." The licensee determined that the changes did not meet any of the criteria specified in Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.59(c)(2) Paragraphs (i) – (viii).

UWNR Laboratory Modification Checklists were followed and completed for each as required. The changes were then reviewed by the RSC, found to be acceptable, and approved on May 14, 2009, and July 15, 2009, respectively. None of the changes reviewed constituted a safety question or required a change to the TS. The change review and approval process appeared to be acceptable.

c. Conclusions

The review and audit program was being conducted acceptably by the RSC. The latest changes completed by the licensee were reviewed using the criteria specified in 10 CFR 50.59, reviewed by the RSC, and determined to be acceptable.

3. 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 Section 6.5:

- Records for procedure changes and temporary changes
- Selected administrative and standard operating procedures
- Related logs and records documenting procedure implementation
- UWNR Laboratory Procedure No. 001, "Standing Operating Instructions," Rev. 14, RSC approval dated May 14, 2009

- UWNR Laboratory Procedure No. 005, "UWNR Administrative Guide," Rev. 51, RSC approval dated December 16, 2009

b. Observations and Findings

Procedures were available for those tasks and items required by the TS and facility directives. Written changes were reviewed and approved by the RSC as required. The procedures were reviewed annually as required by procedure with the last review being completed on May 14, 2009, for procedures numbered 001 – 149 and on November 21, 2007, for procedures numbered 150 - 200. It was noted that Special Orders, which were similar to Temporary Instructions or Procedures, continued to be used to provide instructions that did not have permanent applicability.

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

c. Conclusion

Procedural review, revision, control, and implementation satisfied TS requirements.

4. Radiation Protection

a. Inspection Scope (IP 69001)

The inspector reviewed the following to verify compliance with 10 CFR Parts 19 and 20, and TS Sections 3.4, 4.2.3, 5.4, 6.6, and 6.7.2:

- Health physics survey records
- UWNR dosimetry records for 2008 through the present
- Radiological signs and posting in various areas of the facility
- Annual Radiation Safety Audit - UW Reactor for 2008 and 2009
- Monthly Operation Summary Reports for 2008 through the present
- Calibration and periodic check records for radiation monitoring instruments
- Health Physics Monthly Nuclear Reactor Audits and Reports for 2008 through the present
- Radiation Protection and As Low As Reasonable Achievable (ALARA) Program documents
- UWNR Laboratory Form No. 031, "Procedure for Facility Familiarization," Rev. 3, RSC approval dated May 14, 2009
- UWNR Laboratory Form No. 100, "Surveillance Activities," Rev. 48, RSC approval dated December 16, 2009

- UWNR Laboratory Procedure No. 117, "Air Monitor Operating Procedure," Rev. 21, RSC approval dated May 14, 2009
- UWNR Laboratory Procedure No. 118, "Area Radiation Monitor Operating Checks," Rev. 1, RSC approval dated May 14, 2009
- UWNR Laboratory Procedure No. 171, "Air Monitor Calibration and Records," Rev. 28, RSC approval dated December 16, 2009
- UWNR Laboratory Procedure No. 172, "Sampling and Calculation Procedure - Air Particulate Activity Samples," Rev. 15, RSC approval dated December 16, 2009
- UWNR Laboratory Procedure No. 177, "Procedure for Use and Calibration of Health Physics Instruments," Rev. 23, RSC approval dated December 16, 2009
- "The University of Wisconsin Nuclear Reactor Laboratory Fiscal Year 2007 – 2008 Annual Operating Report," for the period from July 2007 through June 2008," submitted to the NRC on July 31, 2008
- "The University of Wisconsin Nuclear Reactor Laboratory Fiscal Year 2008 – 2009 Annual Operating Report," for the period from July 2008 through June 2009," submitted to the NRC on August 10, 2009

The inspector also toured the licensee's facility and observed the use of dosimetry and radiation monitoring equipment. Licensee personnel were interviewed as well.

b. Observations and Findings

(1) Surveys

The inspector reviewed monthly radiation and contamination surveys of licensee controlled areas completed by UW EH&S Department personnel.

The inspector also reviewed various weekly monitor checks and monthly general area radiation and contamination surveys conducted by reactor staff personnel. The surveys were of the Reactor Bay and other controlled and uncontrolled areas at the facility for the period from 2008 to the present. The various periodic contamination and radiation surveys had been completed within the prescribed time frame required by procedure. Survey results were evaluated to ensure that established action levels had not been exceeded. When readings or results were above these set levels, the licensee took adequate corrective actions.

During the inspection, the inspector accompanied a staff member during a routine radiation and contamination survey of the Reactor Bay and other laboratory and storage areas and conducted an independent radiation survey of those areas. The readings detected by the inspector were compared with those found by the licensee. The results were comparable to those of the licensee and no anomalies were noted.

(2) Postings and Notices

During tours of the facility, the inspector observed that caution signs and postings in place and controls established for the controlled areas were acceptable for the hazards involving radiation, high radiation, and contamination and were posted as required by 10 CFR 20(J). Through observations of and interviews with licensee staff, the inspector confirmed that personnel complied with the signs, postings, and controls. 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 were posted in various areas in the facility. Radiological signs were typically posted at the entrances to controlled areas. Other postings also characterized the industrial hygiene hazards that were present in the areas as well. The copies of NRC Form-3, "Notice to Employees," noted at the facility were the latest issue and were posted in various areas throughout the facility as required by 10 CFR 19.11. These locations included on the bulletin board by the main entrance to the Reactor Bay, in classroom near the Reactor Control Room, and in various labs in the facility.

(3) Dosimetry

The inspector determined that the licensee used thermoluminescent dosimeters (TLDs) for whole body monitoring of beta and gamma radiation exposure with an additional component to measure neutron radiation. The dosimetry was supplied and processed by a vendor accredited through the National Voluntary Laboratory Accreditation Program (Mirion Technologies (GDS) Inc.). The licensee also used vendor-supplied finger ring TLDs to monitor exposure to the extremities. (The extremity monitoring vendor was Landauer.) An examination of the TLD results, indicating exposure to radiation at the facility for the past two years, showed that the highest occupational doses, as well as doses to the public, were within 10 CFR Part 20 limits. The records showed that the highest annual whole body exposure received by a single individual for 2008 was 26 millirem (mr) deep dose equivalent (DDE) and 26 mr shallow dose equivalent (SDE). The highest annual extremity exposure for 2008 was 117 mr SDE. The highest annual whole body exposure received by a single person for 2009 was 55 mr DDE and 55 mr SDE. The highest annual extremity exposure for 2009 was 100 mr SDE.

The inspector verified that NRC Form-5 reports would be completed and provided to each employee who had received exposure at the facility above the established limit specified in the regulations.

(4) Radiation Monitoring Equipment

The calibration of portable survey meters, as well as area radiation monitors, was typically completed by reactor staff personnel. About half of

the portable instruments were required to be taken to a high range facility, maintained by the UW Radiation and Calibration Laboratory, for calibration of the instruments' upper ranges. Calibration frequency met procedural and/or TS requirements and records were maintained as required. The inspector verified that the instruments that were stationed for use in the Reactor Bay and in adjacent labs had been calibrated and were within the allowed calibration interval. It was noted that they were due for calibration by the end of June 2010.

The inspector visited and observed the high range calibration facility on campus. It appeared to be properly posted, with adequate precautions and interlocks installed to provide for personnel safety during instrument calibration.

(5) Radiation Protection Program

The licensee's Radiation Protection Program was set forth in the UW EH&S Department manual entitled "Radiation Safety for Radiation Workers," Rev. dated August 2005 which was available in hard copy form but was also being maintained and readily on-line. The program included requirements that all personnel who performed work in association with radioactive material were to receive training in radiation protection, policies, procedures, requirements, and facilities. The program appeared to be acceptable and was being reviewed annually as required. The inspector also verified that the UWNR Laboratory Radiation Protection Program was being reviewed annually as well.

(6) ALARA Program

The ALARA Program was also outlined and established in the UW EH&S Department manual, "Radiation Safety for Radiation Workers," and in various UWNR Laboratory guidance documents and procedures. The ALARA program provided guidance for keeping doses ALARA and was consistent with the guidance in 10 CFR Part 20.

(7) Radiation Protection Training

As noted above, people who handled radioactive material, including licensee personnel, were required to receive training in radiation protection. This was accomplished by staff members attending a class, reading the manual, and successfully passing a written examination. The class consisted of a one-hour lecture, a two-hour demonstration/laboratory, and a one-hour open-book multiple-choice test. Those who successfully completed the course were given a certificate by the UW EH&S Department. Completion of this training by reactor staff personnel was verified by EH&S Department personnel as well as by the Reactor Director and/or the Reactor Supervisor.

The inspector reviewed documentation of the training provided to licensee staff members. The documents indicated that all current staff members had received the required training. The inspector determined that the personnel training program satisfied requirements in 10 CFR 19.12. It was also noted that some type of radiation protection refresher training was provided on an annual basis.

(8) Facility Tours

The inspector toured the Control Room and Reactor Bay, as well as adjacent laboratories and support areas. Control of radioactive material and control of access to radiation areas was acceptable. As noted above, the inspector also conducted an independent radiation survey in various areas of the facility and determined that radiation levels recorded on licensee survey maps were representative and accurate.

c. Conclusion

The inspector determined that the Radiation Protection and ALARA Programs satisfied regulatory requirements 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, 4) radiation monitoring equipment was being maintained and calibrated as required, and, 5) acceptable radiation protection training was being provided.

5. 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 3.4, 4.2.3, 5.4, 6.6, and 6.7.2:

- Liquid release records for the period from 2008 through the present
- Airborne release records documented in the UWNR Laboratory Monthly Operations Summary Reports provided to the RSC for the period from November 2007 to the present
- UWNR Laboratory Form No. 100, "Surveillance Activities," Rev. 48, RSC approval dated December 16, 2009
- UWNR Laboratory Procedure No. 100C, "Procedure for Gross Gamma Counting of Water Samples," Rev. 19, RSC approval dated May 14, 2009
- UWNR Laboratory Procedure No. 109, "Procedure for Liquid Waste Disposal," Rev. 24, RSC approval dated May 14, 2009
- UWNR Laboratory Procedure No. 117, "Air Monitor Operating Procedure," Rev. 21, RSC approval dated May 14, 2009
- UWNR Laboratory Procedure No. 118, "Area Radiation Monitor Operating Checks," Rev. 1, RSC approval dated May 14, 2009
- UWNR Laboratory Procedure No. 171, "Air Monitor Calibration and Records," Rev. 28, RSC approval dated December 16, 2009

- UWNR Laboratory Procedure No. 172, "Sampling and Calculation Procedure - Air Particulate Activity Samples," Rev. 15, RSC approval dated May 14, 2009
- "The University of Wisconsin Nuclear Reactor Laboratory Fiscal Year 2007 – 2008 Annual Operating Report," for the period from July 2007 through June 2008," submitted to the NRC on July 31, 2008
- "The University of Wisconsin Nuclear Reactor Laboratory Fiscal Year 2008 – 2009 Annual Operating Report," for the period from July 2008 through June 2009," submitted to the NRC on August 10, 2009

b. Observation and Findings

The inspector reviewed the calibration records of the area radiation monitors and the stack monitoring system. These systems had been calibrated annually according to procedure. The weekly start-up check records for the monitoring equipment were also reviewed. Corrective actions were taken if there were problems with the monitoring system noted during the start-up checks.

The inspector also reviewed the records documenting liquid releases to the sanitary sewer for the past two years. The inspector determined that liquid releases were approved by a Senior Reactor Operator after analyses indicated that the releases would meet regulatory requirements for discharge into the sanitary sewer. This was in accordance with procedure and the results of the releases were acceptably documented in the operating log records as well as in the Annual Operating Reports.

The inspector determined that particulate and gaseous effluent releases from the facility stack continued to be monitored as required, tracked and totaled, and were acceptably documented in the annual reports. The airborne concentrations of the gaseous releases were within the concentrations stipulated in 10 CFR Part 20, Appendix B, Table 2. Also, the dose rate to the public, as a result of the gaseous releases, was well below the dose constraint specified in 10 CFR 20.1101(d) of 10 millirem per year. Observation of the facility by the inspector indicated no new potential release paths.

On-site and off-site gamma radiation monitoring was accomplished using various environmental optically stimulated luminescent (OSL) dosimeters (provided by Landauer) in accordance with the applicable procedures. The OSL dosimetry data indicated that there were no doses in excess of any regulatory limits. These results were also acceptably reported in the Annual Operating Reports for Fiscal Years 2007-2008 and 2008-2009.

c. Conclusion

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

6. Transportation

a. Inspection Scope (IP 86740)

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

- Selected records of radioactive material transfers for 2008 and to present
- UWNR Laboratory Procedure No. 005, "UWNR Administrative Guide," Rev. 51, RSC approval dated December 16, 2009
- UWNR Laboratory Procedure No. 023, "Procedure for Receipt of Radioactive Material Shipments," Rev. 6, RSC approval dated December 16, 2009
- UWNR Laboratory Form No. 130, "Request for Isotope Production," Rev. 17, RSC approval dated May 14, 2009
- UWNR Laboratory Procedure No. 131, "Production of Radioisotopes in Nuclear Reactor," Rev. 21, RSC approval dated May 14, 2009
- UWNR Laboratory Form No. 134, "Request and Authorization for Services of the UW Reactor," Rev. 3, RSC approval dated May 14, 2009
- UWNR Laboratory Form No. 144, "Load NAC LWT Cask for Shipment of Spent Fuel," Rev. 0, RSC approval dated May 14, 2009, which referenced various NAC International, Inc. documents and procedures including the NAC-LWT Shipping Container Certificate of Compliance (CoC) No. 9225
- Secured Transportation Services (STS) Straight Bill of Lading, Shipper No. UNIV0528, Carrier No. 27211168, for the spent fuel shipment

b. Observations and Findings

Records showed that radioactive material produced in the reactor and destined to be shipped off site was typically transferred to UW Central Ordering, Receiving, and Distribution Office (CORD) through the UW EH&S Department. Material transfers were documented on UWNR Laboratory Form No. 130, "Request for Isotope Production." This radioactive material was then shipped by CORD under the campus' state broad scope license, State of Wisconsin Department of Health and Family Services, Radioactive Materials License No. 25-1323-01, Amendment No. 22, expiration date July 31, 2013.

Radioactive material to be used by UW authorized personnel was also transferred to the broad scope license and distributed by CORD. A list of UW authorized personnel was maintained by the licensee and documented on UWNR Laboratory Form No. 134, "Request and Authorization for Services of the UW Reactor." The program for radioactive material transfer and transport was consistent with license and procedural requirements. The documents indicated the transfer of material had been signed for by UW EH&S personnel and distributed to authorized individuals as required. The other radioactive material produced in the reactor was maintained under the reactor license for use in laboratories and used for re-irradiation or held for decay.

The inspector noted that the licensee occasionally shipped radioactive material directly from the facility to others licensed to receive it instead of transferring the material to CORD. Various licensee personnel had been trained and were qualified as radioactive material "shippers." The most recent hazardous material shipping refresher training for licensee staff had been conducted in March 2009.

The inspector reviewed the documentation of a shipment of spent fuel the licensee had made during 2009. The records indicated that the radioisotope types and quantities were calculated and dose rates measured as required. The records also indicated that the shipping container was appropriate and had been labeled as required. The proper notifications had been made and the shipment was tracked as required. All records reviewed by the inspector had been completed in accordance with Department of Transportation (DOT) and NRC regulatory requirements.

c. Conclusion

Radioactive material produced in the reactor was typically transferred to the campus broad scope license and shipped under the auspices of that license, transferred to other authorized users on campus, or maintained at the reactor facility for use in laboratories in accordance with procedure. The recent shipment of spent fuel from the facility was completed in compliance with the applicable regulations.

7. Exit Meeting Summary

The inspection scope and results were summarized on May 20, 2010, with licensee representatives. The inspector discussed the findings for each area reviewed. No dissenting comments were received from the licensee.

PARTIAL LIST OF PERSONS CONTACTED

Licensee Personnel

R. Agasie	Reactor Director
K. Austin	Research Reactor Manager
M. Blanchard	Reactor Supervisor
Z. Bundies	Reactor Operator Trainee
C. Edwards	Nuclear Reactor Technician/Electronics Technician
S. Grutzik	Reactor Operator

Other Personnel

L. DeWerd	Director, UW Medical Radiation Research Center
J. Micka	Technical Director, UW Medical Radiation Research Center
B. Timilsina	Health Physicist, UW Environmental Health and Safety Department

INSPECTION PROCEDURES USED

IP 69001	Class II Research and Test Reactors
IP 86740	Inspection of Transportation Activities

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

None

LIST OF ACRONYMS USED

ALARA	As low as reasonably achievable
10 CFR	Title 10 of the <i>Code of Federal Regulations</i>
CORD	Central Ordering, Receiving, and Distribution Office
DDE	Deep Dose Equivalent
IP	Inspection Procedure
mr	millirem
No.	Number
NRC	U. S. Nuclear Regulatory Commission
NVLAP	National Voluntary Laboratory Accreditation Program
Rev.	Revision
RSC	Reactor Safety Committee
SDE	Shallow Dose Equivalent
SRO	Senior Reactor Operator
TS	Technical Specifications
UW	University of Wisconsin
UWNR	University of Wisconsin Nuclear Reactor