September 30, 2011

Dr. Steven Biegalski
Director, Nuclear Engineering Teaching Laboratory
The University of Texas at Austin
Pickle Research Campus, Building 159
Mail Code R9000
Austin, TX 78712-1024

SUBJECT: UNIVERSITY OF TEXAS AT AUSTIN – NRC ROUTINE INSPECTION REPORT NO. 50-602/2011-201

Dear Dr. Biegalski:

On August 29 – September 1, 2011, the U.S. Nuclear Regulatory Commission (NRC, the Commission) completed an inspection at your University of Texas at Austin (UT) Nuclear Engineering Teaching Laboratory facility (Inspection Report No. 50-602/2011-201). The enclosed report documents the inspection results, which were discussed on September 1, 2011, with P. Michael Whaley, Associate Director, University of Texas Nuclear Engineering Teaching Laboratory, Michael Krause, Reactor Supervisor, and other members of your staff, as well as Howard Liljestrand, Chair of the Reactor Oversight Committee.

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 inspectorss reviewed selected procedures and records, observed various 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/

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

Docket No. 50-602
License No. R-129

Enclosure: NRC Inspection Report No. 50-602/2011-201
cc: Please see next page

cc:

Governor's Budget and
Planning Office
P.O. Box 13561
Austin, TX 78711

Bureau of Radiation Control
State of Texas
1100 West 49th Street
Austin, TX 78756

Dr. William Powers, Jr., President
University of Texas at Austin
Nuclear Engineering teaching Laboratory
Austin, TX 78758

Mr. Roger Mulder
Office of the Governor
P.O. Box 12428
Austin, TX 78711

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

September 30, 2011

Dr. Steven Biegalski
Director, Nuclear Engineering Teaching Laboratory
The University of Texas at Austin
Pickle Research Campus, Building 159
Mail Code R9000
Austin, TX 78712-1024

SUBJECT: UNIVERSITY OF TEXAS AT AUSTIN – NRC ROUTINE INSPECTION REPORT NO. 50-602/2011-201

Dear Dr. Biegalski:

On August 29 – September 1, 2011, the U.S. Nuclear Regulatory Commission (NRC, the Commission) completed an inspection at your University of Texas at Austin (UT) Nuclear Engineering Teaching Laboratory facility (Inspection Report No. 50-602/2011-201). The enclosed report documents the inspection results, which were discussed on September 1, 2011, with P. Michael Whaley, Associate Director, University of Texas Nuclear Engineering Teaching Laboratory, Michael Krause, Reactor Supervisor, and other members of your staff, as well as Howard Liljestrand, Chair of the Reactor Oversight Committee.

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 inspectorss reviewed selected procedures and records, observed various 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/
Johnny H. Eads, Jr., Chief
Research and Test Reactors Oversight Branch
Division of Policy and Rulemaking
Office of Nuclear Reactor Regulation

Docket No. 50-602
License No. R-129
Enclosure: NRC Inspection Report No. 50-602/2011-201
cc: Please see next page

DISTRIBUTION:

PUBLIC	PRTB r/f	RidsNrrDprPrta Resource
RidsNrrDprPrtb Resource	MNorris (MS T3B46M)	MCompton (Ltr only O5-A4)
GLappert, NRR	CBassett, NRR	LTran, NRR

ACCESSION NO.: ML112650046 ***concurrence via e-mail** **TEMPLATE#: NRC-002**

OFFICE	PRTB:RI	PRT:LA	PRTB:BC
NAME	CBassett (*)	GLappert	JEads
DATE	09/16/2011	09/22/2011	9/30/2011

OFFICIAL RECORD COPY

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

Docket No:	50-602
License No:	R-129
Report No:	50-602/2011-201
Licensee:	The University of Texas at Austin
Facility:	Nuclear Engineering Teaching Laboratory
Location:	Pickle Research Campus, Bldg. 159 10100 Burnet Road Austin, TX 78758
Dates:	August 29 - September 1, 2011
Inspector:	Craig Bassett
Accompanied by:	Taylor Lichatz, Inspector Trainee
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

The University of Texas at Austin
Nuclear Engineering Teaching Laboratory
Report No.: 50-602/2011-201

The primary focus of this routine, announced inspection included onsite review of selected aspects of the University of Texas at Austin (the licensee's) Nuclear Engineering Teaching Laboratory TRIGA Mark II research and test reactor safety program including: 1) organizational structure and staffing, 2) review and audit and design change functions, 3) radiation protection, 4) environmental protection, 5) health physics procedures, and 6) transportation of radioactive material since the last NRC inspection in these areas. The licensee's program was 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

- The organizational structure, functions, and staffing were consistent with Technical Specification requirements.
- Staff qualifications satisfied Technical Specification requirements.

Review and Audit and Design Change Functions

- The review and audit program satisfied Technical Specification requirements.
- The changes made at the facility since the last NRC inspection had been reviewed using the Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.59 safety evaluation process and had been reviewed and approved by the Reactor Oversight Committee as required.

Radiation Protection

- Periodic surveys were completed and documented as required by 10 CFR Part 20, the Technical Specifications, and licensee procedures.
- Postings and signs met regulatory requirements.
- Personnel dosimetry was being worn as required and recorded doses were within the NRC's regulatory limits of 10 CFR Part 20.
- Portable survey meters, radiation monitoring equipment, and laboratory counting instruments were being calibrated and maintained as required.
- The Radiation Protection and ALARA Programs satisfied the requirements of 10 CFR 19.12 and 10 CFR 20.1101.
- Radiation protection training was being conducted as required.

Environmental Protection

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

Procedures

- Procedural control and implementation satisfied Technical Specification requirements.
- Procedural compliance was acceptable.

Transportation of Radioactive Materials

- Radioactive material was being shipped in accordance with campus and licensee procedures and the applicable regulatory requirements.
- Staff personnel assigned to ship radioactive material had received the proper training as required.

REPORT DETAILS

Summary of Plant Status

The University of Texas at Austin (UT, the licensee) 1.1 megawatt (MW) TRIGA Mark II research and test reactor continued normal, routine operations. The reactor was operated in support of laboratory experiments, maintenance and surveillance, and operator training. During the inspection, the reactor was operated on several occasions at power levels up to 950 kilowatts (kW) to support ongoing experiments, research, and training, as well as for a tour.

1. Organizational Structure and Staffing

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

The inspectors reviewed the following regarding the licensee's organizational structure and functions to ensure that the requirements of Sections 6.1 and 6.6.1 of Technical Specifications (TS), Revision (Rev.) 1, as implemented through Amendment Number (No.) 4 to the Facility Operating License, No. R-129, dated, May 10, 2001, were being met:

- Qualifications of Health Physics personnel
- Management responsibilities and administrative controls
- The UT Nuclear Engineering Teaching Laboratory (NETL) organizational structure and staffing
- Administrative controls outlined in NETL Procedure No. ADMN-3, "Personnel and Operator Qualifications," Rev. 0, approval dated January 31, 1992
- The University of Texas at Austin, Nuclear Engineering Teaching Laboratory, 2009 Annual Report, submitted December 31, 2009
- The University of Texas at Austin, Nuclear Engineering Teaching Laboratory, 2010 Annual Report, submitted December 31, 2010
- American National Standards Institute (ANSI/ANS) Standard 15.4-1988, "Selection and Training of Personnel for Research Reactors," dated June 9, 1988, and reaffirmed July 12, 1999

b. Observations and Findings

Through records review and interviews with licensee personnel, the inspectors noted that the health physics (HP) organizational structure had changed since the last inspection in this area (see NRC Inspection Report No. 50-602/2009-201). The NETL Reactor Health Physicist (RHP) had left the facility and found other employment. The new RHP had previously worked for the UT Campus Environmental Health and Safety Department. The reactor HP staff currently was comprised of the RHP and a part-time HP technician (a student). The inspectors verified that the people filling these positions were qualified to do so. Structure, responsibilities, and staffing were as required by TS Section 6.1. Through review of various records and discussions with personnel, the inspectors determined that the NETL staff satisfied the TS qualification requirements and outlined in ANSI/ANS-15.4, "Selection and Training of Personnel for Research Reactors."

Some of the HP functions at the reactor were performed by operations staff members. Coordination of HP activities between the two groups was acceptable. UT campus Radiation Protection (RP) technical staff personnel also provided support to the reactor as needed. It was noted that the UT campus RP organization and staffing remained unchanged and consisted of the Radiation Safety Officer (RSO) and three staff members. It was noted that the RSO was a member of the UT Reactor Oversight Committee.

c. Conclusion

The organizational structure, functions, and staffing were consistent with TS requirements. Staff qualifications satisfied TS requirements.

2. Review and Audit and Design Change Functions

a. Inspection Scope (IP 69001)

In order to ensure that the audits and reviews stipulated in the requirements of TS Section 6.2 were being completed and to ensure that facility changes were reviewed and approved in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.59, the inspectors reviewed the following:

- Responses from the licensee to safety reviews and audits
- UT Reactor Oversight Committee (UT-ROC) meeting minutes and records for March 2009 through the present
- UT-ROC safety review and audit records from March 2009 to the present
- "Reactor Oversight Committee Charter," charter reviewed and reaffirmed October 22, 2007
- NETL Procedure No. ADMN-1, "NETL Procedure Control," Version 3, approval dated April 14, 2010
- NETL Procedure No. ADMN-2, "Procedures for Design Features and Quality Assurance," Rev. 1, approval dated January 31, 1992
- The University of Texas at Austin, Nuclear Engineering Teaching Laboratory, 2009 Annual Report, submitted December 31, 2009
- The University of Texas at Austin, Nuclear Engineering Teaching Laboratory, 2010 Annual Report, submitted December 31, 2010

b. Observations and Findings

(1) Review and Audit Functions

UT-ROC meeting minutes and records from March 2009 through the present were reviewed. The committee was meeting at the required frequency and a quorum was present at each meeting. The inspectors verified that the membership of the committee satisfied TS Section 6.2 and that reviews and audits were being completed. The records showed that safety reviews and audits were conducted by various members of the UT-ROC or other designated persons and were completed at the TS required frequency. The topics covered by these reviews were consistent with the TS requirements and were sufficient to provide guidance,

direction, and oversight, and to ensure acceptable use of the reactor and appropriate implementation of the radiation protection program. The inspectors noted that the safety reviews and audits and the associated findings were acceptably detailed and that the licensee responded and took corrective actions as needed.

(2) Design Change Functions

Through review of applicable records and interviews with licensee personnel, the inspectors determined that, during 2009, 2010, and to date in 2011, various changes had been initiated and/or completed at the facility. Evaluations of the changes were completed and a safety analysis was performed if needed. The inspectors verified that the changes had been evaluated using the licensee's Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.59 review process outlined in NETL Procedure Nos. ADMIN-1 and ADMN-2. The licensee evaluations were then reviewed and approved by the UT-ROC as required. It was noted that none of the changes required NRC approval prior to implementation.

c. Conclusion

The review and audit program satisfied TS requirements. The changes made at the facility since the last NRC inspection had been reviewed using the 10 CFR 50.59 safety evaluation process and had been reviewed and approved by the UT-ROC as required.

3. Radiation Protection Program

a. Inspection Scope (IP 69001)

The inspectors reviewed selected aspects of the following to verify compliance with 10 CFR Parts 19 and 20 and TS Sections 3.3.3, 4.3.3, and 6.6.1:

- Radiation Work Permit (RWP) Log and various RWPs
- Dosimetry/exposure records for 2009 through the present
- As Low As Reasonably Achievable (ALARA) reviews to date
- Radiological barriers, signs, and posting in various areas of the facility
- Routine periodic surveys and results documented on the appropriate survey forms and/or maps
- Maintenance and calibration records of selected portable survey meters, radiation area monitoring equipment, and laboratory counting equipment
- "The Radioactive Materials License Commitments for the University of Texas at Austin," (the campus Radiation Safety Manual) effective date August 2010
- NETL Procedure No. ADMN-4, "Radiation Protection Program," Rev. 0, approval dated November 2, 2006
- NETL Procedure No. HP00-1, "Radiation Monitoring - Personnel," Version 2.00, approval dated November 9, 2000, with change 2.01 dated October 7, 2010

- NETL Procedure No. HP00-2, “Radiation Monitoring Facility,” Version 2.00, approval dated November 9, 2000, with change 2.01 dated October 30, 2006
- NETL Procedure No. HP00-3, “NETL ALARA Program,” Version 2.00, approval dated November 9, 2000, with change 2.01 dated October 30, 2006
- NETL Procedure No. HP00-4, “Radiation Protection Training,” Version 2.00, approval dated November 9, 2000
- NETL Procedure No. HP00-5, “Radiation Monitoring Equipment,” Version 2.00, approval dated April 24, 2001, with change 2.01 dated February 10, 2010
- NETL Procedure No. HP00-6, “Radioactive Material Control,” Version 2.00, approval dated November 9, 2000, with pen and ink changes dated February 13, 2003
- NETL Procedure No. HP00-7, “Radiation Work Permits (RWPs),” Version 2.00, approval dated April 24, 2001, with change 2.01 dated February 10, 2010
- NETL Procedure No. MAIN-4, “Area Radiation Monitor Systems,” Version 3, approval dated July 26, 2000, with change 3.01 dated January 6, 2003, and pen and ink changes dated February 13, 2003
- NETL HP00-1 Form-A, “Daily Exposure Logsheet,” form revision dated November 1, 2000
- NETL HP00-1 Form, “Visitor Dosimeter Record,” form revision dated October 7, 2010
- NETL HP00-4 Form, Staff and Personnel Training Record, form revision dated November 9, 2000
- NETL HP00-5 Form A, “Bicron Frisk-Tech Calibration,” form revision dated April 24, 2001
- NETL HP00-5 Form B, “Bicron Micro-Rem Calibration,” form revision dated April 24, 2001
- NETL HP00-5 Form C, “Eberline RO-2A Calibration,” form revision dated April 24, 2001
- NETL HP00-5 Form D, “Eberline RM-14S Calibration,” form revision dated April 24, 2001
- NETL HP00-5 Form E, “Pocket Dosimeter Calibration,” form revision dated April 24, 2001
- NETL HP00-5 Form P, “Generic Frisker Calibration,” form revision dated April 24, 2001
- NETL HP00-5 Form O, “Generic Ratemeter Calibration,” form revision dated April 24, 2001
- NETL MAIN-4 Form, Area Monitors Weekly response check forms, form revision dated January 6, 2003
- The University of Texas at Austin, Nuclear Engineering Teaching Laboratory, 2009 Annual Report, submitted December 31, 2009
- The University of Texas at Austin, Nuclear Engineering Teaching Laboratory, 2010 Annual Report, submitted December 31, 2010

b. Observations and Findings

(1) Surveys

Selected weekly, monthly, quarterly, and other periodic radiation and/or contamination surveys for 2010 and 2011 were reviewed by the inspectors. The inspectors verified that the surveys for this time period had been completed by HP staff members as required. However, through the review of logs, survey records, and interviews with the RHP, it was determined that there were various apparent problems with the records documenting weekly and monthly surveys. It was noted that the survey results of two consecutive weekly surveys completed earlier this year and the survey results of two consecutive monthly surveys completed last year were almost identical. The weekly surveys had been completed on April 29, 2011 and May 2, 2011. The monthly surveys with almost identical results had been completed on September 17, 2010 and October 5, 2010. In addition to a problem with swipe test results, the vast majority of the swipes were counted several days, and in some instances several weeks, after the date that the surveys were performed. After much deliberation it was determined that the problem was apparently that of poor record keeping and/or lack of attention to detail. The inspectors discussed the issue with the RHP, as well as the Associate Director. The licensee was informed that this issue and the corrective actions taken will be designated as an Inspectors Follow-up Item (IFI) and will be reviewed during subsequent inspections (IFI 50-602/2011-201-01).

(2) Postings and Notices

Copies of current notices to workers were posted in appropriate areas in the facility. Radiological signs and survey maps were typically posted at the entrances to controlled areas. Other postings also showed 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 (August 2011) and were posted in various areas throughout the facility. These locations included the bulletin board in the hallway by the front office and in the corridor leading to the Reactor Control Room.

Caution signs, postings, and controls for radiation areas were as required in 10 CFR Part 20. Licensee personnel observed the precautions for access to radiation and other controlled areas.

(3) Dosimetry

The licensee used optically stimulated luminescent (OSL) dosimeters for whole body monitoring of beta and gamma radiation exposure with an additional component to measure neutron radiation. The licensee used thermoluminescent dosimeter (TLD) finger rings for extremity monitoring. Dosimetry was issued to staff and visitors as outlined in licensee procedures. The issuing criteria met or exceeded the requirements of

10 CFR 20.1502 for individual monitoring. The dosimetry was supplied and processed by a National Voluntary Laboratory Accreditation Program (NVLAP) accredited vendor, Landauer. Through direct observation the inspectors determined that dosimetry was acceptably used by facility personnel and exit frisking practices were in accordance with radiation protection requirements.

An examination of the OSL and TLD monitoring results indicating radiological exposures 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 limitations. The records showed that the highest annual whole body exposure received by a single facility employee for 2009 was 50 millirem (mrem) deep dose equivalent (DDE). The highest annual skin dose for a single individual for 2009 was 59 mrem shallow dose equivalent (SDE). The highest annual extremity exposure for 2009 was 180 mrem SDE. The highest annual whole body exposure received by a single facility employee for 2010 was 24 mrem DDE. The highest annual skin dose for a single individual for 2010 was 19 mrem SDE. The highest annual extremity exposure for 2010 was 510 mrem SDE. The highest annual whole body exposure received by a facility employee through July 2011 was 57 mrem DDE. The highest annual skin dose for a single individual through July 2011 was 59 mrem SDE. The highest annual extremity exposure through July 2011 was 120 mrem SDE.

(4) Radiation Monitoring Equipment

Examination of selected radiation monitoring equipment in service at the facility indicated that the instruments had the acceptable up-to-date calibration sticker attached. The instrument calibration records reviewed by the inspectors indicated that the calibration of portable survey meters was typically completed by licensee staff personnel. However, some instruments were shipped to vendors for calibration. When an instrument did not meet the calibration criteria, it was tagged out of service. Calibration frequency met procedural requirements and records were maintained as required. Area Radiation Monitors, Constant Air Monitors, and stack monitors were also being calibrated as required. These monitors were also typically calibrated by licensee staff personnel.

During the inspection the inspectors observed the set-up and preparation for the calibration of a portable survey meter at the NETL. It was noted that the licensee used the Neutron Generator Room for calibrating instruments. The licensee's preparations and set up appeared to be adequate. Proper precautions had been established to maintain doses ALARA.

(5) Radiation Protection Program

The licensee's Radiation Protection and ALARA programs were established and described in two NETL procedures, Procedure Nos. ADMN-4 and HP00-3. The campus radiation safety manual entitled, "The

Radioactive Materials License Commitments for the University of Texas at Austin," effective date August 2010, was also referenced in the licensee's programs. The Radiation Protection and ALARA programs contained instructions concerning organization, training, monitoring, personnel responsibilities, audits, record keeping, and reports. The programs, as established, appeared to be acceptable. The ALARA program provided guidance for keeping doses as low as reasonably achievable, which was consistent with the guidance in 10 CFR Part 20.

The inspectors determined that the licensee had completed an annual review of the radiation protection program in accordance with 10 CFR 20.1101(c) for 2009 and 2010 as required. This was accomplished through the annual ALARA Committee meetings and/or the ROC meetings. No program deficiencies were identified but various suggestions were made for program improvement. It was noted that personnel from the UT Campus Environmental Health and Safety Department also conducted an audit of the radiation safety program at the facility.

It was noted that the licensee did not require or have a respiratory protection program or planned special exposure program.

(6) Radiation Work Permits (RWPs)

The inspectors reviewed selected RWPs that had been written and used to date in 2011 as stipulated in NETL Procedure No. HP00-7. RWPs were designated as either fixed or temporary. Fixed (or permanent) RWPs typically were in effect for an entire year and were written for an area that was permanently established for a specific job or for a task that was routinely performed. Temporary RWPs were prepared for specific work evolutions of shorter duration. It was noted that the controls specified in the RWPs were acceptable and applicable for the type of work being done.

It was noted that the licensee was in the process of reviewing the RWP program with the intent of converting some of the fixed RWPs into Experiment or General NETL Standard Operating Procedures (SOPs). The ROC had reviewed and agreed with this action. The new Experiment or General SOPs had not yet been issued.

(7) Radiation Protection Training

The inspectors reviewed the radiation worker (rad worker) training given to NETL facility faculty and staff members and to students and student assistants. The licensee indicated that initial rad worker training was given when an individual first arrived at the facility and refresher training was given every two years thereafter. Training records showed that personnel were acceptably trained in radiation protection practices. The inspectors verified that the training received was in compliance with 10 CFR Part 19. The training program was acceptable.

(8) Facility Tours

On various occasions during the week, the inspectors toured the Reactor Bay, the Coolant Treatment room, the Auxiliary Equipment room, and selected support laboratories with licensee representatives. The inspectors noted that facility radioactive material storage areas were properly posted. No unmarked radioactive material was noted.

c. Conclusion

The inspectors determined that the Radiation Protection and ALARA Programs, as implemented by the licensee, satisfied regulatory requirements because: 1) surveys were generally completed and documented acceptably to permit evaluation of the radiation hazards present; 2) postings met regulatory requirements; 3) personnel dosimetry was being worn as required and recorded doses were within the NRC's regulatory limits; 4) radiation survey and monitoring equipment was being maintained and calibrated as required; 5) the Radiation Protection and ALARA Programs satisfied regulatory requirements; and, 6) radiation protection training was being conducted.

4. Environmental Protection Program

a. Inspection Scope (IP 69001)

To determine that the licensee was complying with the regulations in 10 CFR Part 20 and the requirements stipulated in TS Sections 3.3.3, 4.3.3, and 6.6.1, the inspectors reviewed selected aspects of:

- NETL environmental monitoring program
- Environmental monitoring release records
- NETL MAIN-004 Form-A, "Eberline RMS II Calibration" forms, form revision dated May 30, 2000
- NETL MAIN-004 Form-C, "PRM AR1000 Calibration" forms, form revision dated May 30, 2000
- NETL MAIN-004 Form-D, "PRM AR1000 (Gas) Calibration" forms, form revision dated May 30, 2000
- NETL MAIN-004 Form, "Area Monitors – Weekly," response check forms, form revision dated January 6, 2003
- NETL MAIN-004 Form, "Air Monitors Week-Month," response check forms, form revision dated May 30, 2000
- NETL Procedure No. HP00-2, "Radiation Monitoring Facility," Version 2.00, approval dated November 9, 2000, with change 2.01 dated October 30, 2006
- NETL Procedure No. HP00-3, "NETL ALARA Program," Version 2.00, approval dated November 9, 2000, with change 2.01 dated October 30, 2006
- NETL Procedure No. MAIN-4, "Area Radiation Monitor Systems," Version 3.00, approval dated July 26, 2000, with change 3.01 dated January 6, 2003, and pen and ink changes dated February 13, 2003

- NETL Procedure No. NETL-2, "Liquid Radioactive Waste System," Rev. 0, approval dated January 27, 1993
- The University of Texas at Austin, Nuclear Engineering Teaching Laboratory, 2009 Annual Report, submitted December 31, 2009
- The University of Texas at Austin, Nuclear Engineering Teaching Laboratory, 2010 Annual Report, submitted December 31, 2010

b. Observations and Findings

The program for the monitoring, storage, and release of radioactive liquid and gas was consistent with 10 CFR Part 20. Gaseous releases were monitored by the licensee as required and the results were used to calculate the total activity released using a facility procedure. Records, which were being maintained as required, showed that gaseous releases were well within the annual dose constraint stipulated in 10 CFR 20.1101(d) and the 10 CFR Part 20, Appendix B concentrations, as well as TS 3.3.3 limits. The licensee also demonstrated compliance in this area by using EPA COMPLY code calculations. These calculations indicated an effective dose equivalent to the public of 3.0 mrem/year for the year 2008 and 6.8 mrem/year for the year 2009. It was noted that the calculations had not been completed to date for the year 2010. Observation of the facility by the inspectors indicated no new potential release paths.

Radioactive liquid releases were infrequent and were monitored as required. Liquids were only released when below 10 CFR Part 20, Appendix B limits. Records reviewed by the inspectors confirmed that no radioactive liquid had been released from the facility in 2009 or 2010. ALARA principles were acceptably implemented to minimize radioactive releases. Monitoring equipment was acceptably maintained and calibrated.

The environmental monitoring program also included six TLD dosimeters placed at selected locations adjacent to the NETL building and read quarterly. Dosimetry results since the last inspection were typically near or below the vendor's minimum reportable levels for x- and gamma rays and energetic beta particles.

c. Conclusions

Based on the records reviewed, the effluent monitoring and release program satisfied NRC requirements.

5. Procedures

a. Inspection Scope (IP 69001)

The inspectors reviewed selected aspects of the following to verify compliance with TS Section 6.3 requirements:

- Procedural implementation
- Records of changes to NETL procedures
- Records of UT-ROC review and approval

- Administrative controls documented in NETL Procedure No. ADMN-1, "NETL Procedure Control," Version 3.00, approval dated April 14, 2010
- NETL Procedure No. SURV-2, "Reactor Power Calibration," Version 1.00, approval dated March 2, 2009
- NETL Procedure No. SURV-6, "Control Rod Calibration," Version 1.00, approval dated March 2, 2009

b. Observations and Findings

Procedures were available for those tasks and items required by TS Section 6.3. The licensee controlled minor and significant changes to procedures, and the associated review and approval processes, by use of administrative procedures. The procedures reviewed by the inspectors had been reviewed and approved by the ROC as required.

Training of personnel on procedures and any changes to procedures was acceptable. Through observation of various activities during the week, the inspectors determined that licensee personnel used and followed facility procedures as required. Procedural compliance was acceptable.

c. Conclusion

The procedural control and implementation program satisfied TS requirements. Procedural compliance was acceptable.

6. Transportation of Radioactive Material

a. Inspection Scope (IP 86740)

To verify compliance with regulatory and procedural requirements for the transfer or shipment of licensed radioactive material, the inspectors reviewed the following:

- Selected records of various radioactive material shipments
- Training records of staff members responsible for shipping licensed radioactive material
- Selected licenses of consignee groups or organizations which were authorized to receive radioactive material
- NETL Procedure No. HP00-6, "Radioactive Material Control," Version 2.00, approval dated November 9, 2000, and pen and ink changes dated February 13, 2003

b. Observations and Findings

The shipment and transport of radioactive material was reviewed. Through records review and discussions with licensee personnel, the inspectors determined that the licensee had made various shipments of radioactive material since the previous inspection in this area. The records indicated that the radioisotope types and quantities were calculated and dose rates measured as required. The records also indicated that the shipping containers used were appropriate and had the appropriate markings as required. All radioactive

material shipment records reviewed by the inspectors had been completed in accordance with Department of Transportation and NRC regulatory requirements.

The inspectors verified that the licensee maintained copies of the licenses of the various shipment consignees which authorized them to receive and possess radioactive material. The licensee verified that the licenses were current or in timely renewal prior to initiating a shipment. Licensee personnel designated as "shippers" had been properly trained to do so and the appropriate documentation was on file.

c. Conclusion

Radioactive material was shipped in accordance with licensee procedures and the applicable regulations. Staff personnel assigned to ship radioactive material had received the proper training as required.

7. Exit Meeting

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on September 1, 2011. The licensee acknowledged the findings presented. The licensee did not identify as proprietary any material reviewed as part of this inspection.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

M. Krause	Reactor Supervisor/Manager Operations and Maintenance
J. Simms	Health Physics Technician
T. Tipping	Reactor Health Physicist and Laboratory Manager
L. Welch	Engineering Research Associate and Reactor Operator
M. Whaley	Associate Director, NETL

Other Personnel

H. Liljestrand	Chair, Reactor Oversight Committee

INSPECTION PROCEDURE USED

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

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-602/2011-201-01	IFI	Follow-up on the licensee's corrective actions taken in response to the problem of poor record keeping and/or lack of attention to detail.

Closed

None

PARTIAL LIST OF ACRONYMS USED

10 CFR	Title 10 of the *Code of Federal Regulations*
ALARA	As Low As Reasonably Achievable
DDE	Deep Dose Equivalent
HP	Health Physics
NETL	Nuclear Engineering Teaching Laboratory
NRC	U.S. Nuclear Regulatory Commission
OSL	Optically stimulated luminescent (dosimeter)
Rev.	Revision
ROC	Reactor Oversight Committee
RSO	Radiation Safety Officer
RPP	Radiation Protection
RWP	Radiation Work Permit
SDE	Shallow Dose Equivalent
TLD	Thermoluminescent dosimeter
TS	Technical Specifications
UT	University of Texas at Austin