February 14, 2013

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 – NRC ROUTINE INSPECTION REPORT NO. 50-602/2013-201

Dear Dr. Biegalski:

From January 14 to 17, 2013, the U.S. Nuclear Regulatory Commission (NRC or the Commission) completed an inspection at your University of Texas Nuclear Engineering Teaching Laboratory facility. The enclosed report documents the inspection results, which were discussed on January 17, 2013, with P. Michael Whaley, Associate Director, University of Texas Nuclear Engineering Teaching Laboratory; Michael Krause, Reactor Supervisor; and other 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, 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 (Agency 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 Mike Morlang at 301-415-4092 or electronic mail at Gary.Morlang@nrc.gov.

Sincerely,

/RA/
Gregory T. Bowman, 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. 50-602/2013-201
cc w/encl: 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

P. Michael Whaley, Associate Director
Nuclear Engineering Teaching
Laboratory
The University of Texas at Austin
10100 Burnet Road
Austin, TX 78758

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

February 14, 2013

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 – NRC ROUTINE INSPECTION REPORT NO. 50-602/2013-201

Dear Dr. Biegalski:

From January 14 to 17, 2013, the U.S. Nuclear Regulatory Commission (NRC or the Commission) completed an inspection at your University of Texas Nuclear Engineering Teaching Laboratory facility. The enclosed report documents the inspection results, which were discussed on January 17, 2013, with P. Michael Whaley, Associate Director, University of Texas Nuclear Engineering Teaching Laboratory; Michael Krause, Reactor Supervisor; and other 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, 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 (Agency 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 Mike Morlang at 301-415-4092 or electronic mail at Gary.Morlang@nrc.gov.

Sincerely,
/RA/
Gregory T. Bowman, 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. 50-602/2013-201
cc w/enclosure: Please see next page

DISTRIBUTION:

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

ACCESSION NO.: ML13043A503 **TEMPLATE #: NRC-002**

OFFICE	PROB:RI	PRPB:LA	PROB:BC
NAME	GMorlang	GLappert	GBowman
DATE	2/12/2013	2/12/2013	2/14/2013

OFFICIAL RECORD COPY

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

Docket No:	50-602
License No:	R-129
Report No:	50-602/2013-201
Licensee:	University of Texas
Facility:	Nuclear Engineering Teaching Laboratory
Location:	Austin, TX
Dates:	January 14–17, 2013
Inspector:	Mike Morlang
Approved by:	Gregory T. Bowman, Chief Research and Test Reactors Oversight Branch Division of Policy and Rulemaking Office of Nuclear Reactor Regulation

EXECUTIVE SUMMARY

The primary focus of this routine, announced inspection included onsite review of selected aspects of the University of Texas (the licensee's) 1.1 megawatt Class II research reactor safety program including: (1) operations logs and records, (2) operator requalification, (3) surveillance testing and limiting conditions for operation, (4) experiments, (5) emergency preparedness, (6) maintenance, and (7) fuel handling since the last U. S. Nuclear Regulatory Commission inspection of these areas. The licensee's programs were acceptably directed toward the protection of public health and safety. No violations or deviations were noted.

Operations Logs and Records

- Reactor operations and logs were being maintained acceptably and operations were carried out in accordance with procedural and Technical Specification requirements.

Operator Requalification

- The operator requalification program was up-to-date and being acceptably maintained.
- Medical examinations were being completed biennially as required.

Surveillance Testing and Limiting Conditions for Operation

- The program for surveillance testing, including checks, tests, and calibration of equipment, was being implemented in accordance with requirements specified in Sections 3 and 4 of the Technical Specifications.

Experiments

- The program for the review, approval, and control of experiments satisfied Technical Specifications and other regulatory requirements.

Emergency Preparedness

- The emergency plan and implementing procedures were being audited and reviewed biennially as required.
- Letters of agreements documenting emergency support to be provided by offsite agencies were being maintained and updated as required.
- Annual drills were being held and documentation was maintained concerning the follow-up critiques and subsequent corrective actions taken as needed.
- Emergency preparedness training for staff personnel was being conducted as stipulated in the emergency plan.

Maintenance

- The facility maintenance program was being implemented as required by facility procedures.

Fuel Handling

- Reactor fuel movements and inspections were made and documented in accordance with procedure.

- The fuel elements were being inspected on a biennial basis as required by the Technical Specifications.

REPORT DETAILS

Summary of Plant Status

The University of Texas (UT or the licensee) continued to operate the 1.1 megawatt TRIGA Mark-II research reactor in support of education, laboratory experiments, service work, reactor surveillance testing, and operator training. During the inspection, the reactor was started up, operated at varying power levels, and shut down as required and in accordance with applicable procedures to support control system interlock checks and scram setting checks as part of recovery from an annual maintenance outage.

1. Operations Logs and Records

a. Inspection Scope (IP 69001)

The inspector reviewed selected aspects of the following to verify operation of the reactor in accordance with Technical Specification (TS) Sections 3 through 5 and TS 6.1.3:

- TS through Amendment 4, dated May 10, 2001
- Maintenance log for 2011 through the present
- Selected monthly checklists for 2011 through the present
- Selected prestart check sheets for 2011 through the present
- Selected UT-TRIGA instrumentation and control system (ICS) console operation log sheets for 2011 and 2012
- Selected startup-shutdown check sheets and the associated experiment startup-shutdown check sheets and heat exchanger startup-shutdown check sheets for 2011 through the present
- Scram log sheets and startup reactivity calculation records from January 2011 to the present
- Nuclear Engineering Teaching Laboratory (NETL) Operation Procedure, OPER-1, “Startup - Shutdown Checks,” Version (Ver.) 1.00, approved April 4,
- NETL Operation Procedure, OPER-2, “Reactor Startup and Shutdown,” Ver. 1.00, approved April 4, 2002,
- NETL Operation Procedure, OPER-3, “Reactor Operation Modes,” Ver. 1.00, approved April 4, 2002
- NETL Operation Procedure, OPER-4, “Operation of Reactor Water Systems,” Ver. 1.00, approved April 4, 2002
- NETL Operation Procedure, OPER-5, “Operation of Air Confinement System,” Ver. 1.00, approved April 4, 2002
- NETL Operation Procedure, OPER-6, “Reactor Bay Systems,” Ver. 1.00, approved April 4, 2002
- The University of Texas at Austin, Nuclear Engineering Teaching Laboratory, 2010 Annual Report, submitted March 31, 2011
- The University of Texas at Austin, Nuclear Engineering Teaching Laboratory, 2011 Annual Report, submitted March 31, 2012

b. Observations and Findings

The inspector reviewed selected operations records from January 2011 through the present. These records included daily startup-shutdown checklists, log sheets, experiment startup and shutdown checklists, weekly checklists, monthly checklists, and other associated forms. Information on the operational status of the facility was recorded accurately on the log sheets and/or the checklists as required by procedure

The inspector observed the performance of reactor startups, shutdowns, and steady state operations. The inspector also observed maintenance performed as part of the recovery from the annual maintenance outage. Reactor operations were carried out in accordance with written procedures as required by TS 6.3.

Through interviews with operators and review of logs and records, the inspector confirmed that shift staffing met the minimum requirements for duty and on-call personnel as required by TS 6.1.3. This was noted on the log sheets by listing the names of the individuals designated as the reactor operator (RO) and the senior reactor operator (SRO).

c. Conclusion

Reactor operations and logs were being maintained acceptably and operations were conducted in accordance with procedural and TS requirements.

2. Operator Requalification

a. Inspection Scope (IP 69001)

To determine that operator requalification activities and training were conducted as required by the UT-TRIGA requalification plan and that medical requirements were met, the inspector reviewed:

- Active license status of all current operators (three SROs and three ROs)
- Medical examination records for selected operators
- Training lectures and records for the training cycle (2011–2012)
- UT-TRIGA Requalification Plan, Revision (Rev.) 1, dated November 1990
- Written examinations given during 2011 and 2012
- Logs and records of reactivity manipulations for the requalification cycle (2011–2012)
- NETL Administrative Procedure, ADMN-3, “Procedures for Personnel and Operator Qualifications,” Rev. 0, approved January 24, 1992

b. Observations and Findings

As noted above, there were three qualified SROs and three qualified ROs at the facility. A review of all of the operators’ licenses showed that they were current. The inspector also noted that there were two students who were in training.

A review of the logs and records showed that training was being conducted in accordance with the licensee's requalification and training program. Records of quarterly reactor operations, reactivity manipulations, and SRO/RO activities indicating operator proficiency were being maintained. Documentation indicating the completion of semiannual change and procedure reviews by the operators and annual supervisory evaluations of the operators were also maintained. Annual written examinations were being completed as required or credit was taken by the licensee for the SRO/RO exams administered by the NRC to satisfy the requalification cycle exam requirements when applicable.

The inspector verified that operators were receiving the required biennial medical examinations as well. As of the date of the inspection, one operator was due for a physical exam by the end of January 2013. The licensee indicated that the physical examination would be scheduled shortly.

c. Conclusion

The requalification program was up-to-date and being acceptably maintained. Medical examinations were being completed biennially as required.

3. Surveillance Testing and Limiting Conditions for Operation

a. Inspection Scope (IP 69001)

To determine that maintenance and surveillance activities and calibrations were being completed as required by TS Sections 3 and 4, the inspector reviewed:

- TS through Amendment 4, dated May 10, 2001
- System maintenance log for 2011 through the present
- Weekly-monthly surveillance log for 2011 through the present
- Selected UT-TRIGA ICS console operation log sheets from January 2011 through the present
- NETL Maintenance Procedure, MAIN-1, "Interlock and SCRAM Features," Ver. 3.00, approved July 26, 2000
- NETL Maintenance Procedure, MAIN-2, "Instrument System Features," Ver. 3.00, approved July 26, 2000
- NETL Maintenance Procedure, MAIN-3, "Support System Features," Ver. 3.00, approved July 26, 2000
- NETL Maintenance Procedure, MAIN-6, "Rod and Drive Maintenance, Inspection," Ver. 3.00, approved July 26, 2000
- NETL Operation Procedure, OPER-6, "Reactor Bay Systems," Ver. 1.00, approved April 4, 2002
- NETL Surveillance Procedure, SURV-1, "Fuel Temperature Calibration," Rev. 0, approved January 24, 1992
- NETL Surveillance Procedure, SURV-2, "Reactor Pool Power Calibration," Rev. 1, approved March 2, 2009

- NETL Surveillance Procedure, SURV-3, "Excess Reactivity and Shutdown Margin," Ver. 2.00, approved April 4, 2002
- NETL Surveillance Procedure, SURV-4, "Reactor Water Systems Surveillance," Rev. 1, approved December 11, 1990
- NETL Surveillance Procedure, SURV-5, "Air Confinement System Surveillance," Rev. 2, approved April 1, 2002
- NETL Surveillance Procedure, SURV-6, "Control Rod Calibration," Rev. 1, approved March 2, 2009
- NETL Surveillance Procedure, SURV-7 "Pulse Characteristic Comparison," Rev. 0, approved January 24, 1992
- The University of Texas at Austin, Nuclear Engineering Teaching Laboratory, 2010 Annual Report, submitted March 31, 2011
- The University of Texas at Austin, Nuclear Engineering Teaching Laboratory, 2011 Annual Report, submitted March 31, 2012

b. Observations and Findings

The inspector reviewed selected surveillance procedures and records including the weekly-monthly surveillance log. The inspector determined that selected weekly, monthly, semiannual, and annual checks, tests, and/or calibrations for TS-required surveillances were completed as stipulated. The tests and calibrations reviewed were completed on schedule and in accordance with licensee procedures. The appropriate records and logs reviewed were being maintained as required.

c. Conclusion

The program for surveillance testing, including checks, tests, and calibration of equipment was being carried out in accordance with TS Section 3 and 4 requirements.

4. Experiments

a. Inspection Scope (IP 69001)

In order to verify that experiments were being reviewed, approved, and conducted within the guidelines specified in TSs 3.4, 4.4, and 6.4, the inspector reviewed:

- UT-TRIGA ICS console operation log sheets from 2011 through the present
- Selected experiment authorization forms documenting the experiments as routine or special experiments and as Class A or B
- Selected operation request forms for 2011 to date
- NETL Administrative Procedure, ADMN-6, "Authorization of Experiments," Rev. 1, approved January 15, 1993
- NETL Fuel Procedure, FUEL-2, "Movement of Experiments," Rev. 0, approved July 30, 1991

- NETL Experiment Procedure, EXP-PTS, “Pneumatic Transfer System,” Ver. 2.00, approved August 20, 1998
- NETL Experiment Procedure, EXP-B3.1, “Neutron Activation Analysis,” Rev. 0, approved January 15, 1993
- NETL Operation Procedure, OPER-1, “Startup - Shutdown Checks,” Ver. 1.00, approved April 4, 2002
- NETL Operation Procedure, OPER-2, “Reactor Startup and Shutdown,” Ver. 1.00, approved April 18, 2012
- The University of Texas at Austin, Nuclear Engineering Teaching Laboratory, 2010 Annual Report, submitted March 31, 2011
- The University of Texas at Austin, Nuclear Engineering Teaching Laboratory, 2011 Annual Report, submitted March 31, 2012

b. Observations and Findings

Through discussions with licensee personnel and records review, the inspector determined that there had been no new experiments proposed since the last inspection. The inspector noted that the majority of the experiments conducted at the facility were well-established procedures that had been in place for several years. These were generally the type of experiments known as routine experiments and were authorized for repeat applications. A few experiments were specified as special experiments and were those that were typically authorized for one particular application. The current experiments were also classified as either Class A or Class B experiments. Class A experiments were those that were required to be conducted or supervised by an SRO. Class B experiments were those of less significance or hazard and required the presence of an RO with an SRO available as needed.

The inspector verified that the experiments in use at the facility had been reviewed and approved by the facility’s Reactor Oversight Committee. It was also noted that all the experiments had been analyzed to provide such information as physical effects, including reactivity, thermal hydraulic potential, and mechanical stress, as well as a material evaluation, including radioactivity and material hazards.

The inspector noted that experiments and typical sample loading data were documented on operation request and material evaluation forms, experiment startup/shutdown check forms, UT-TRIGA ICS console operation log forms, and 3-L irradiation facility forms. The sample unloading and radiological results were typically documented on central thimble facility forms, rotating sample rack loading forms, 3-L irradiation facility forms, and sample (in-core) forms as required. The records and forms were subsequently forwarded to the facility administrative assistant for billing purposes and then filed as required by procedure.

Noteworthy was that 62 percent of all reactor operations in 2011 were for neutron activation analysis. A total of 3,500 samples were run at all nine experimental stations.

c. Conclusion

The license's program for reviewing, approving, and conducting experiments satisfied TS and other regulatory requirements.

5. Emergency Preparedness

a. Inspection Scope (IP 69001)

The inspector reviewed selected aspects of the following to verify compliance with the NETL emergency response plan:

- Emergency Plan, Rev. 3, dated December 3, 2009
- Training records for the past 2 years
- Emergency response facilities, supplies, equipment, and instrumentation
- Documentation of emergency drills and exercises held during 2011 and 2012
- Letters of Agreement with support organizations including the Austin - Travis County Emergency Medical Services, City of Austin Fire Department, and the Brackenridge Hospital
- NETL Administrative Procedure, ADMN-5, "Protection Programs," Rev. 0, approved January 24, 1992
- NETL Implementing Procedure, PLAN-0, "Call and Notification," Ver. 2.00, approved November 9, 2000, with local permanent change (Emergency Call List) dated April 10, 2012
- NETL Implementing Procedure, PLAN-E, "Emergency Response," Ver. 3.00, approved November 2, 2006, which specified the emergency equipment and supplies required to be available at the facility
- NETL Security Procedure, PLAN-S, "Physical Security," Ver. 5.00, approved November 2, 2006
- Reactor Operations Committee Audit of Emergency Plan, dated November 28, 2012
- Emergency drill critiques dated January 20, 2011, and January 17, 2012

b. Observations and Findings

The emergency plan (E-Plan) in use at the reactor and emergency facilities was the same as the version most recently submitted to the NRC for approval. The inspector verified that the E-Plan and implementing procedures were being audited and reviewed biennially as required and revised as needed. The inspector verified that emergency response facilities, supplies, instrumentation, and equipment were being maintained and controlled as required in the E-Plan.

Through records review and interviews with licensee personnel, the inspector determined that emergency responders were knowledgeable of the proper actions to take in case of an emergency. Letters of agreement (LOAs) with outside response organizations were being maintained and updated biennially as required. At the time of the inspection, the licensee was in the process of

renewing/updating the LOAs that had been established with the Brackenridge Hospital – Seton Healthcare Network, the Austin – Travis County Emergency Medical Services, and the Austin Fire Department.

Emergency drills had been conducted annually as required by the E-Plan. Records indicated that off-site support organizations had participated in the facility drills at least every 2 years as required. Critiques were held following the drills to discuss the strengths and weaknesses identified during the exercises and to develop possible solutions to any problems identified. The results of these critiques were documented. Emergency preparedness and response training for reactor staff personnel was being conducted and documented as stipulated in the E-Plan. The emergency call list was updated at least annually as stipulated in the E-Plan. The latest emergency call list was dated April 10, 2012.

c. Conclusion

The emergency preparedness program was being conducted in accordance with the emergency plan.

6. Maintenance

a. Inspection Scope (IP 69001)

To determine that maintenance activities were being completed as required by TS and procedures, the inspector reviewed:

- TS through Amendment 4, dated May 10, 2001
- System maintenance log for 2011 through the present
- Weekly-monthly surveillance log for 2011 through the present
- Selected UT-TRIGA ICS console operation log sheets from January 2011 through the present
- NETL Maintenance Procedure, MAIN-1, “Interlock and SCRAM Features,” Ver. 3.00, approved July 26, 2000
- NETL Maintenance Procedure, MAIN-2, “Instrument System Features,” Ver. 3.00, approved July 26, 2000
- NETL Maintenance Procedure, MAIN-3, “Support System Features,” Ver. 3.00, approved July 26, 2000
- NETL Maintenance Procedure, MAIN-4, “Area Radiation Monitors,” Ver. 3.00, approved July 26, 2000
- NETL Maintenance Procedure, MAIN-5, “Fuel Inspection and Measurement,” Ver. 3.00, approved July 26, 2000
- NETL Maintenance Procedure, MAIN-6, “Rod and Drive Maintenance, Inspection,” Ver. 3.00, approved July 26, 2000
- NETL Operation Procedure, OPER-6, “Reactor Bay Systems,” Ver. 1.00, approved April 4, 2002
- NETL Surveillance Procedure, SURV-1, “Fuel Temperature Calibration,” Rev. 0, approved January 24, 1992

- NETL Surveillance Procedure, SURV-2, “Reactor Pool Power Calibration,” Rev. 1, approved March 2, 2009
- NETL Surveillance Procedure, SURV-3, “Excess Reactivity and Shutdown Margin,” Ver. 2.00, approved April 4, 2002
- NETL Surveillance Procedure, SURV-4, “Reactor Water Systems Surveillance,” Rev. 1, approved December 11, 1990
- NETL Surveillance Procedure, SURV-5, “Air Confinement System Surveillance,” Rev. 2, approved April 1, 2002
- NETL Surveillance Procedure, SURV-6, “Control Rod Calibration,” Rev. 1, approved March 2, 2009
- NETL Surveillance Procedure, SURV-7 “Pulse Characteristic Comparison,” Rev. 0, approved January 24, 1992
- The University of Texas at Austin, Nuclear Engineering Teaching Laboratory, 2010 Annual Report, submitted March 31, 2011
- The University of Texas at Austin, Nuclear Engineering Teaching Laboratory, 2011 Annual Report, submitted March 31, 2012

b. Observations and Findings

The inspector reviewed selected maintenance procedures and maintenance records, including the system maintenance log. The log contained maintenance information on various systems, including the reactor coolant system, the radiation monitoring system, the ICS control system computer, the ICS data acquisition control system, the ICS neutron monitoring (power channel) system, and the ICS rod drive system. The logs and records showed that routine and preventive maintenance was controlled and documented in the maintenance and/or operations logs consistent with licensee procedures and within the time frame specified.

The inspector noted that following a maintenance outage in January 2012, fuel temperature channel 1 had failed. This condition continued for two periods of reactor operation over a time span of 3 days before facility staff identified the condition during a review of auto log recorder data. The cause of the failure was determined to be missing insulation on the thermocouple wire which allowed the wire to come in contact with the reactor pool liner, causing a short and resulting in the thermocouple indicating ambient temperature. The wire was repaired and protective braiding installed to prevent further wear. Additional corrective actions were initiated to prevent recurrence. The incident was reported to the NRC by telephone and a written report was submitted as required by TS. Because of the short duration of the condition and because the redundant fuel temperature channel was operable, the inspector determined that this issue represented a violation of minor significance.

c. Conclusion

The licensee’s maintenance program was being implemented as required by NETL procedures.

7. Fuel Handling and Movement

a. Inspection Scope (IP 69001)

In order to verify adherence to fuel handling and inspection requirements specified in TSs 3.1.4, 4.1.4, 5.3, and 5.4, the inspector reviewed:

- Selected NETL pool configuration forms
- UT-TRIGA fuel movement log and selected log sheets
- Selected core arrangement forms and fuel pin inventory forms
- Selected UT-TRIGA ICS console operation log sheets from January 2009 through the present
- The NETL core configuration map on the control room wall, dated June 2010
- NETL Fuel Procedure, FUEL-1, "Movement of Fuel," Ver. 1.00, approved February 17, 2005, with local permanent change Ver. 1.01, approved March 4, 2009, and associated forms
- NETL Fuel Procedure, FUEL-2, "Movement of Experiments," Rev. 0, approved July 30, 1991
- NETL Maintenance Procedure, MAIN-5, "Fuel Inspection and Measurement," Ver. 3.00, approved July 26, 2000, with the latest change approved April 30, 2003

b. Observations and Findings

The inspector determined that the licensee was maintaining the required records of the various fuel movements that had been completed. The inspector also determined that the fuel was being moved in compliance with procedure and the moves were being tracked and documented on the appropriate forms. The inspector checked the locations of selected fuel elements listed on the forms and cross-referenced their locations with those listed on the core configuration map in the fuel movement log notebook, as well as with those listed on the core map located on the control room wall.

The inspector also verified that the reactor fuel was being inspected biennially as required by TS 4.1.4. The most recent fuel inspection had been completed in January 2012. During this inspection the licensee used a new, improved inspection technique consisting of an underwater camera for fuel inspection vice visual inspection that had been done previously. While conducting the inspection, the licensee determined that fuel elements 5196 and 5198 had been inadvertently swapped in 1991 when the reactor was moved from another building. However, the licensee had maintained complete and accurate data on

fuel burn-up and fuel movement and was able to accurately correct the records for these two fuel elements.

c. Conclusion

Reactor fuel movements and inspections were completed and documented in accordance with procedure and the fuel elements were being inspected biennially as specified by TS.

8. Exit Interview

The inspection scope and results were reviewed with the licensee on January 17, 2013. The inspector discussed the findings for each area reviewed. The licensee acknowledged the findings and did not identify as proprietary any of the material provided to or reviewed by the inspector during the inspection.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

S. Biegalski	Director, NETL
A. Davis	Reactor Operator
M. Krause	Reactor Supervisor/Manager Operations and Maintenance
L. Patterson	Senior Reactor Operator
T. Tipping	Reactor Health Physicist and Laboratory Manager
L. Welch	Engineering Research Associate and Reactor Operator
M. Whaley	Associate Director, NETL
N. Mohammed	Reactor Operator
U. Chatterjee	Reactor Operator Trainee

INSPECTION PROCEDURE USED

IP 69001 Class II Research and Test Reactors

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

None

Discussed

50-602/2011-201-1 IFI Radiation Protection Office Survey Records

PARTIAL LIST OF ACRONYMS USED

ADAMS	Agencywide Document Access and Management System
10 CFR	Title 10 of the *Code of Federal Regulations*
E-Plan	Emergency Plan
ICS	Instrumentation and Control System
IP	Inspection Procedure
LOA	Letter of Agreement
NETL	Nuclear Engineering Teaching Laboratory
No.	Number
NRC	U.S. Nuclear Regulatory Commission
Rev.	Revision
RO	Reactor Operator
SRO	Senior Reactor Operator
TS	Technical Specification
UT	University of Texas
Ver.	Version