

January 7, 2010

Dr. Kenneth Hall, Deputy Director  
Texas Engineering Experiment Station  
Texas A&M University  
203 Jack E Brown Bldg., MS 3122  
College Station, TX 77843-3122

SUBJECT: NRC ROUTINE INSPECTION REPORT NO. 50-128/2009-201

Dear Dr. Hall:

This letter refers to the inspection conducted on December 7-10, 2009, at the Texas A&M University Nuclear Science Center Reactor Facility. The inspection included a review of activities authorized for your facility. The enclosed report presents the results of that inspection.

Areas examined during the inspection are identified in the report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observation of activities in progress.

Based on the results of this inspection, the NRC has determined that a Severity Level IV violation of NRC requirements occurred. This violation is being treated as a Non-Cited Violation (NCV), consistent with Section VI.A of the Enforcement Policy. The NCV is described in the subject inspection report. If you contest the violation or significance of the NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001, with copies to: the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington DC 20555-0001.

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 made available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of 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).

K. Hall

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Should you have any questions concerning this inspection, please contact Mr. Craig Bassett at (404) 358-6515 or by electronic mail at [Craig.Bassett@nrc.gov](mailto:Craig.Bassett@nrc.gov).

Sincerely,

***/RA/***

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

Docket No. 50-128  
License No. R-83

Enclosure: NRC Inspection Report No. 50-128/2009-201  
cc w/encl: Please see next page

K. Hall

- 2 -

Should you have any questions concerning this inspection, please contact Mr. Craig Bassett at (404) 358-6515 or by electronic mail at [Craig.Bassett@nrc.gov](mailto:Craig.Bassett@nrc.gov).

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**ACCESSION NO.: ML100070002 \* via e-mail**

**TEMPLATE #: NRC-002**

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Texas A&M University System

Docket No. 50-128

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

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

Docket No: 50-128

License No: R-83

Report No: 50-128/2009-201

Licensee: Texas A&M University

Facility: Nuclear Science Center Reactor

Location: College Station, TX

Dates: December 7-10, 2009

Inspector: Craig Bassett

Accompanied by: Mike Morlang

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

## EXECUTIVE SUMMARY

Texas A&M University  
Nuclear Science Center Reactor  
Inspection Report No. 50-128/2009-201

The primary focus of this routine, announced inspection included onsite review of selected aspects of the Texas A & M University (the licensee's) Class II research and test reactor safety programs including: organization and staffing, operations logs and records, requalification training, surveillance and limiting conditions for operation, experiments, design changes, committees, audits and reviews, emergency preparedness, maintenance logs and records, fuel handling and movement, and follow-up on previous open items.

The licensee's programs were acceptably directed toward the protection of public health and safety, and in compliance with U. S. Nuclear Regulatory Commission requirements.

### Organization and Staffing

- The licensee's organization and staffing and assignment of responsibilities remained in compliance with the requirements specified in Technical Specification Section 6.

### Operations Logs and Records

- Operational activities were consistent with applicable Technical Specification and procedural requirements.

### Requalification Training

- The Requalification Program was generally being completed as required and records were being maintained.

### Surveillance and Limiting Conditions for Operation

- The program for Surveillance and Limiting Conditions for Operations was implemented in accordance with Technical Specifications Sections 3.0 and 4.0 requirements.

### Experiments

- The approval and control of experiments met Technical Specification and applicable regulatory requirements.

### Design Changes

- Based on the records reviewed, the inspectors determined that the licensee's design change program was being implemented as required.

#### Committees, Audits, and Reviews

- The Reactor Safety Board partially completed the review, oversight, and audit functions required by Technical Specification Section 6.2.

#### Emergency Preparedness

- The emergency preparedness program was conducted in accordance with the Emergency Plan.

#### Maintenance Logs and Records

- Maintenance was being completed as required.

#### Fuel Handling and Movement

- The fuel handling activities and documentation were conducted in accordance with the facility Technical Specifications.

#### Follow-up on Previous Open Items

- The issues identified in previous inspection reports were closed.





## **REPORT DETAILS**

### **Summary of Plant Status**

The Texas A & M University (the licensee's) TRIGA research reactor, licensed to operate at a maximum steady-state thermal power of one megawatt (1 MW), continues to be operated in support of operator training, surveillance, research, and utilization involving neutron activation analysis. During the inspection the reactor was operated each day at full power to conduct sample irradiations.

#### **1. Organization and Staffing**

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

To verify that the licensee's organization and staffing were as stated in Section 6.1 of the Technical Specifications (TS) for the Texas Engineering Experimental Station (TEES), Texas A&M University (TAMU) System Nuclear Science Center Reactor (NSCR) Facility, Amendment No 17, dated September 1, 2006, the inspectors reviewed:

- Organization and staffing for the TAMU Nuclear Science Center (NSC)
- Administrative controls and management responsibilities specified in the NSC TS Section 6
- Annual Report for the Texas A&M University Nuclear Science Center for 2007, dated March 30, 2008
- Annual Report for the Texas A&M University Nuclear Science Center for 2008, dated March 30, 2009
- NSC Standard Operating Procedure (SOP), Section I, Procedure C, "Administration," Revision (Rev.) 0, dated March 6, 1990

##### **b. Observations and Findings**

The structure and functions of the licensee's organization at the TEES, NSCR Facility had not functionally changed since the last NRC inspection (refer to NRC Inspection Report No. 50-128/2008-201). Although various individuals who had previously worked at the facility had found other employment, the licensee's current organizational structure and assignment of responsibilities, as reported in the Annual Reports, were consistent with those specified in the TS Section 6.1.1. All positions reviewed were filled with qualified personnel. Review of records verified that management responsibilities were generally administered as required by TS Section 6.1.2 and applicable procedures.

##### **c. Conclusions**

Despite personnel losses, the licensee's organization and staffing were in compliance with the requirements specified in TS Section 6.

## 2. Operations Logs and Records

### a. Inspection Scope (IP 69001)

The inspectors reviewed selected aspects of the following to verify compliance with TS Sections 2, 3, and 6 and the applicable procedures:

- Scram Log
- Staffing for operations as recorded on the reactor log sheets
- NSCR Operations Log Books Numbers 205-208, dated from February 13, 2009 to present
- Selected entries on the following facility forms:
  - NSC Form 531, entitled “Morning Facility Checklist - Daily,” latest revision dated November 14, 2008, from December 30, 2008 to present
  - NSC Form 532, entitled “TRIGA Reactor Pre-startup Checklist,” latest revision dated August 6, 2008, from December 30, 2008 to present
  - NSC Form 533, entitled “Reactor Operations Facility Checklist - Daily Surveillance,” latest revision dated November 14, 2008, from December 30, 2008 to present
  - NSC Form 534, entitled “Facility Security Shutdown Checklist - Daily Surveillance,” latest revision dated June 26, 2006, from December 30, 2008 to present
  - NSC Form 573, entitled “Irradiation Cell Entry Log,” latest revision dated August 2, 2001
  - NSC Form 574, entitled “Irradiation Cell Operations Checklist,” latest revision dated September 14, 2006
  - NSC Form 590, entitled “Unscheduled Scram Recovery Checklist,” latest revision dated October 5, 2004
- Selected TAMU NSC Daily SRO Checklists for 2008 and 2009
- NSC SOP, Chapter II, “Reactor Operations,” Section II-A, “General Organization and Responsibilities,” Rev. 1, dated February 9, 2000
- NSC SOP, Chapter II, “Reactor Operations,” Section II-B, “Operations Records,” Rev. 3, dated February 9, 2000
- NSC SOP, Chapter II, “Reactor Operations,” Section II-C, “Reactor Startup,” Rev. 5, dated August 19, 2003
- NSC SOP, Chapter II, “Reactor Operations,” Section II-D, “Steady State Mode Operation,” Rev. 1, dated September 3, 1999
- NSC SOP, Chapter II, “Reactor Operations,” Section II-F, “Reactor Shutdown,” Rev. 0, dated December 15, 1993
- NSC SOP, Chapter II, “Reactor Operations,” Section II-G, “Movement of Reactor Bridge,” Rev. 1, dated March 17, 1997
- NSC SOP, Chapter II, “Reactor Operations,” Section II-M, “Response to Alarms,” Rev. 1, dated February 9, 2000

- NSC SOP, Chapter II, "Reactor Operations," Section II-E, "Pulsing Operations," Rev. 3, dated September 3, 1999
- Memorandum from W. D. Reece, Director, to M. Spellman, Associate Director, "Change to Minimum Staff Requirements for Reactor Start-Up (SOP II-C)," dated April 24, 2003

b. Observations and Findings

Reactor operations were carried out following written procedures and TS requirements. Information on the operational status of the facility was recorded in log books and on checklists as required by procedure. Use of maintenance and repair logs satisfied procedural requirements. Operational problems and events noted in the appropriate logs were reported, reviewed, and resolved as required. The inspectors verified that required items were logged and cross referenced with other logs and forms, as required, and that TS Sections 2 and 3 operational limits had not been exceeded. Operations logs and records also documented that shift staffing met the minimum requirements for duty and on-call personnel.

The inspectors conducted observations of the reactor staff performing pre-startup checks and a startup to 1 MW on December 9, 2009. The inspectors noted that the licensed reactor operator and trainee were knowledgeable and competent. Observation of operational activities also confirmed that reactor operations were carried out in accordance with written procedures and TS requirements.

c. Conclusions

Operational activities were consistent with applicable TS and procedural requirements.

**3. Operator Licenses, Requalification, and Medical Activities**

a. Inspection Scope (IP 69001)

To verify that operator requalification activities and training were conducted as required in the licensee's "Senior Reactor Operator and Reactor Operator Requalification Program," Rev. 4, dated April 1997, and to verify that medical requirements were met, the inspectors reviewed:

- Medical examination records
- Active license status of all current operators
- Written examinations given to operators for 2007, 2008, and 2009
- Selected portions of NSC Reactor Operations Log Books for 2007 through the present
- Logs and records of reactivity manipulations for 2007 through the present
- Training lectures and records for selected individuals for the current and previous training cycles documented on:

- NSC Form 521, “Reactor Operations Two-Year Training Cycle,” latest revision dated August 19, 1999
- NSC Form 522, “Reactor Operator Two-Year Training Records,” latest revision dated January 31, 2005
- NSC Form 523, “NSC Reactor Operator Requalification/Training Lecture,” latest revision dated February 3, 2005
- NSC Form 524, “SRO and RO Requalification Exam Cover Sheet,” latest revision dated July 17, 2001
- Radiation Safety Board Reactor Requalification Program Audits dated April 27, 2006, April 27, 2007, and December 7, 2009
- NSC SOP, Chapter X, “Reactor Operator Requalification Program,” Rev. 2, dated March 2, 2001

b. Observations and Findings

(1) Operator Licenses, Requalification, and Medical Activities

The facility had six qualified, licensed SROs, two Reactor Operators (ROs), and a number of trainees on staff at the facility. As of the date of the inspection, all of the operators’ licenses were current.

A review of the logs and requalification records showed that annual operational examinations were being administered as required. Written examinations were administered within the time frame as required. The inspectors noted that the licensee was tracking and documenting hours and reactor manipulations to ensure that the operators met the requalification program requirements and those stipulated in 10 CFR 55.53(e) to maintain operating licenses in an active status. In order to comply with the requirement for actively performing their operator functions for a minimum of four hours per calendar quarter, the licensee included time spent on the reactor console, supervisory functions, and maintenance, as appropriate. This was consistent with 10 CFR Part 55 requirements.

(2) Licensee Identified Violations Concerning Requalification Training

TAMU “Senior Reactor Operator and Reactor Operator Requalification Program,” Rev. 4, dated April 1997, requires in Section 2.1 that one or more lectures will be scheduled within a four month interval to cover a topic (i.e., Theory and Principles of Operation, Reactor Regulations, Reactor Design, Reactor Support Systems, Radiation Control and Safety, Emergency Plan, and Security Plan.). The lecture sequence over all topics will take two years to complete and will then be repeated. Self-study or individual tutoring may substitute for each missed lecture, however, examinations given after each lecture must be taken or an alternate examination taken within a month after the lecture. Lectures on the Emergency Plan and Security Plan will be given annually.

A review of the training records showed that training had been conducted in the areas outlined in the licensee's NRC approved requalification program except as follows.

- a) Training on the Security Plan (required annually) for 2008 was conducted in a timely manner but no examination was given.
- b) Training for Reactor Regulations (required biennially) was completed in September 2006. The next training in this area was scheduled for September 2008 but was not completed until September 2009.
- c) Biennial training in the area of Theory and Principles of Operation was completed in December 2006. The next training was scheduled for December 2008 but not completed until August 2009.
- d) Biennial training in the area of Radiation Control and Safety was completed in April 2007. The next training was scheduled for April 2009 but not completed until December 2009.
- e) Annual training in the area of Security Plan was completed in July 2008 (but no test was given). The next training was scheduled for July 2008 but was not completed until December 2009.

Although this issue should be corrected, it constitutes a violation of minor significance that is not subject to enforcement action in accordance with Section IV of the Enforcement Policy.

(3) Licensee Identified Violations Concerning Medical Examinations

Regulation 10 CFR 55.21 states in part that, in order for a reactor operator to maintain an active NRC license, each reactor operator must have a satisfactory medical examination every two years.

A review of the medical records for the various operators who maintained an active license at the facility, the inspector noted that biennial medical examinations had been completed for each operator except as follows.

- a) One operator had had a medical examination on February 16, 2005, but the next examination was not completed until March 30, 2007, a period greater than two years.
- b) A second operator had had a medical examination on August 2, 2006, but the next examination was not completed until August 18, 2008, a period greater than two years.

- c) A third operator had had a medical examination on February 1, 2007, but the next examination was not completed until August 17, 2009, a period greater than two years

Although this issue should be corrected, it constitutes a violation of minor significance that is not subject to enforcement action in accordance with Section IV of the Enforcement Policy.

c. Conclusions

Required records documenting the Requalification Program were being maintained. Various examples of licensee-identified minor violations were noted involving various training lectures and medical examinations that had not been completed within the required time frame.

**4. Surveillance and Limiting Conditions for Operation**

a. Inspection Scope (IP 69001)

To determine that surveillances and Limiting Conditions for Operations (LCOs) verifications were being completed as required by TS Sections 3.0 and 4.0, the inspectors reviewed:

- NSC Reactor Operations Log Books Numbers 205-207 (November 12, 2008 thru October 13, 2009)
- Surveillance and calibration data and records for 2008 and 2009 documented on the following facility forms:
  - NSC Form 557, entitled “Annual Reactor Maintenance and Surveillance,” dated May 20, 2008, for 2008 and 2009
  - NSC Form 546, entitled “Semiannual Fuel Element Temperature Measuring Channel Maintenance,” dated July 15, 2008, from April 19, 2007 to June 26, 2009
  - NSC Form 539, entitled “Weekly Ventilation and Scram Surveillance,” dated April 3, 2007, from January 2, 2008 to present
  - NSC Form 541, entitled “Quarterly Transient Rod Drive Maintenance,” dated October 4, 1999, from February 6, 2008 to present
  - NSC Form 547, entitled “Semiannual Linear Power Measuring Channel Maintenance and Surveillance,” dated February 16, 2000, from February 20, 2008 to present
  - NSC Form 546, entitled “Semiannual Fuel Element Temperature Measuring Channel Maintenance,” dated July 15, 2008, from April 19, 2007 to June 26, 2009

- NSC Form 549, entitled “Semiannual Reactor Pulse Power Surveillance,” dated October 15, 1999, from September 10, 2007 to July 22, 2009
- NSC Form 550, entitled “Semiannual Transient Rod Drive Maintenance,” dated October 4, 1999, from July 24, 2008 to June 23, 2009
- NSC Form 551, entitled “Semiannual Scram Circuit Surveillance,” dated July 9, 2005, from August 15, 2007 to June 12, 2009
- Texas A&M University NSC 2008 Annual Report, dated March 30, 2009

b. Observations and Findings

A memo had been placed in the NSC Form 547 file for the Semi Annual Linear Power Measuring Channel Maintenance. The memo allowed the operators to deviate from the procedure and leave the compensating voltage at -13.7 volts vice the normal -15 volts. This produced a more conservative reading and was only to be used while a new calibration procedure is being written.

The inspectors determined that selected daily, monthly, annual, other periodic checks, tests, verifications, and calibrations for TS-required surveillances and LCOs were completed as stipulated. Surveillances, LCOs, and calibration reviews were completed on schedule and performed in accordance with licensee procedures. The recorded results were within the TS and procedurally prescribed parameters and in close agreement with the previous surveillance results. The records and logs reviewed were accurate, complete, and being maintained as required. All values checked by the inspectors satisfied the limits/parameters listed in the procedure or checklist.

c. Conclusions

The program for Surveillance and LCO confirmations was implemented in accordance with Technical Specifications Sections 3.0 and 4.0 requirements.

**5. Experiments**

a. Inspection Scope (IP 69001)

The inspectors reviewed selected aspects of the following in order to verify that experiments were being conducted consistent with TS Sections 3.6 and 6.4:

- Potential hazards identification
- Selected portions of NSC Reactor Operations Log Books for 2007 through the present
- NSC SOP, Section IV, Procedure A, “Experiment Review and Approval,” latest revision dated January 25, 2002
- NSC SOP, Section IV, Procedure B, “Sample Handling Procedures,” latest revision dated July 14, 1988

- NSC SOP, Section IV, Procedure C, "Pneumatic System Operation," latest revision dated February 8, 1991
- NSC SOP, Section IV, Procedure D, "Beam Port Experiments," latest revision dated September 3, 1999
- NSC SOP, Section IV, Procedure E, "Irradiation Cell Experiments," latest revision dated March 2, 2001
- NSC SOP, Section IV, Procedure F, "Neutron Radiography Beam Port #4," latest revision dated March 22, 1990
- NSC SOP, Section IV, Procedure G, "In-Pool Irradiations," latest revision dated May 2, 1984
- NSC SOP, Section IV, Procedure H, "Thermal Column Film Irradiations," latest revision dated February 14, 1996
- Various Request For Service forms completed for In-Pool and Irradiation Cell irradiations and experiments
- Annual Report for the Texas A&M University Nuclear Science Center for 2007, dated March 30, 2008
- Annual Report for the Texas A&M University Nuclear Science Center for 2008, dated March 30, 2009

b. Observations and Findings

The inspectors reviewed the various experiments that had been approved for the reactor facility. All had been approved and signed as required. No new experiments had been initiated, reviewed, or approved since the last inspection.

The inspectors observed an in-pool irradiation experiment which was approved and authorized by the NSCR Director and the Chairman of the RSB in accordance with TS 6.4(a) and SOP, Section IV, Procedure A. The observed experiment was a routine experiment, denoted as in-pool irradiation #2009-0084. The in-pool irradiation experiment had been reviewed and approved by the Duty Health Physicist and SRO on duty as required and was conducted under the cognizance of the Reactor Supervisor. The licensee estimated the reactivity worth of the experiment and recorded it on the appropriate sheet. The inspectors observed that the experiment was positioned and constrained as required. The results of the experiments were documented on the NSC Reactor Operations Log Book sheets and on the irradiation request forms.

c. Conclusions

The approval, conduct, and control of experiments met TS and applicable regulatory requirements.

**6. Review and Audit, and Design Change Functions**



a. Inspection Scope (IP 69001)

To verify that the licensee had established and conducted reviews and audits as required in TS Section 6.2 and to determine whether modifications to the facility, if any, were consistent with 10 CFR 50.59, the inspector reviewed:

- Completed audits and reviews from 2006 through 2009
- Reactor Safety Board (RSB) meeting minutes from 2007 through the present (RSB meeting numbers 160 – 163)
- Modification Authorization (MA) Number (No.) M-58, "Safety Evaluation for the Facility Air Monitoring Channels – Modification and Upgrade," RSB review and approval dated May 7, 2007
- MA No. M-59, "Safety Evaluation for the Area Radiation Monitors – Modification and Upgrade," RSB review and approval dated May 7, 2007
- MA No. M-60, "Replacement of Heating, Ventilation, and Air Conditioning System," RSB review and approval dated May 7, 2007
- Annual Report for the Texas A&M University Nuclear Science Center for 2007, dated March 30, 2008
- Annual Report for the Texas A&M University Nuclear Science Center for 2008, dated March 30, 2009
- NSC SOP, Section I, Procedure H, "Reactor Safety Board," dated August 19, 2003

b. Observations and Findings

(1) Review Functions

The inspector reviewed minutes of the last four Reactor Safety Board (RSB) meetings. The minutes showed that the committee met once per calendar year as required by TS Section 6.2.2.a and that a quorum was present for each meeting. The topics considered during the meetings were appropriate and as stipulated in TS Section 6.2.3.

(2) Licensee Reported TS Violation Concerning Audits

TS Section 6.2.4 requires that the RSB or a subcommittee thereof shall audit reactor operations and the radiation protection programs at least quarterly, but at intervals not to exceed four months. Audits shall include but are not limited to the following:

- a) Facility operations, including radiation protection, for conformance to the TS, applicable license conditions, and SOPs at least once per calendar year (interval between audits not to exceed 15 months).

- b) The retraining and requalification program for the operating staff at least once per calendar year (interval between audits not to exceed 15 months).
- c) The facility security plan and records at least once per calendar year (interval between audits not to exceed 15 months).
- d) The reactor facility emergency plan and implementing procedures at least once per calendar year (interval between audits not to exceed 15 months).

The inspector reviewed the documentation and results of the audits that had been conducted by the RSB from 2006 through the present. The licensee had identified, and the inspector confirmed, that an audit of the conformance of facility operations and the radiation program to the TS had been conducted on December 21, 2006, and on March 28, 2008 (for the year 2007), but no audit had been conducted for the year 2008. An audit of the requalification and retraining program had been conducted on April 27, 2006, on and April 27, 2007, but no audit had been conducted for 2008. An audit of the emergency plan had been conducted on January 17, 2006, and on March 30, 2007, but no audit had been conducted for the year 2008. An audit of the security plan had been conducted on August 30, 2006, and on October 30, 2007, but no audit had been conducted for the year 2008.

When the licensee determined that these audits had not been completed, an investigation into the cause was initiated. The licensee determined that management inaction or lack of attention to detail was the problem. As immediate corrective action, an audit of the conformance of facility operations and the radiation program to the TS was completed on December 1, 2009; an audit of the requalification and retraining program was completed on December 7, 2009; an audit of the emergency plan was completed on December 3, 2009; and, an audit of the security plan was conducted on December 10, 2009.

Also, the oversight of the completion of the audits and various other functions was delegated to other administrative personnel at the facility. These actions appear to have corrected the problem. The licensee was informed that this non-repetitive, licensee-identified and corrected violation is being treated as a Non-Cited Violation (NCV), consistent with Section VI.A.8 of the NRC Enforcement Policy (NCV 50-128/2009-201-01).

(3) Design Change

The inspector determined that design changes at the NSC Reactor facility required a facility staff review followed by an RSB review and subsequent approval. No design changes and no MAs had been processed during the past two years. The inspector reviewed the records of three previous changes, including the related MAs, and determined that the staff reviews had been performed as required and the proposed modifications had been reviewed and approved by the RSB. The systems affected were checked out prior to resumption of reactor operations. From the inspector's review, it was also determined that 10 CFR 50.59 reviews and approvals were focused on safety and met licensee program requirements. No safety significant issues were noted during the review and the modifications completed by the licensee did not involve a change to the TS.

c. Conclusions

The RSB acceptably completed review and oversight functions required by TS Section 6.2. Some required audits were not completed as required by TS. The licensee's design change program was being implemented as required.

**7. Emergency Preparedness**

a. Inspection Scope (IP 69001)

To verify compliance with TS Section 6.2 and the licensee's Emergency Plan (E-Plan) for the TEES, Texas A&M University System NSCR Facility, Revision 2, dated December 14, 1999, the inspectors reviewed selected aspects of:

- Annual training records for the College Station Fire Department, the Texas A&M Environmental Health and Safety Department, and the College Station Medical Center
- Offsite support and annual reconfirmation of letters of agreement between NSC and the College Station Medical Center and the annual agreement letter between NSC and the College Station Fire Department (dated June 25, 2008 and July 8, 2009)
- Emergency drills and exercises for 2008 and 2009
- Emergency response facilities, supplies, equipment and instrumentation
- Summary of emergency drill conducted on January 8, 2007 and August 28, 2008 involving off-site participation
- Radiation Safety Board Emergency Plan Audit, dated April 2, 2007
- Texas A&M University NSC 2008 Annual Report, dated March 30, 2009

b. Observations and Findings

The E-Plan in use at the reactor and emergency facilities was the same as the version most recently submitted to the NRC. The licensee staff and the RSB audited and reviewed the E-Plan and Implementing procedures to effectively execute the E-Plan at least annually.

Through records review, and interviews with licensee and fire department personnel, the inspectors determined that emergency responders were knowledgeable of the proper actions to take in case of an emergency. The inspectors met with the local Fire Chief and the firemen on duty at the Fire Station. The on-duty fireman provided a tour of the on-site apparatus and equipment to demonstrate recent upgrades. Agreements with outside response organizations had been updated and maintained as necessary. Based on a review of training records, it is evident that the College Station Fire Department continues to support facility operations. During the month of September 2009, 88 personnel from the fire department participated in training. Additionally, 8 personnel from the College Station Medical Center participated in training in February 2009.

Communications capabilities with emergency support groups were tested during the biennial off-site drill January 8, 2007 and August 28, 2008, and were acceptable. Emergency facilities, instrumentation, and equipment were being maintained and inventoried as required by E-Plan Sections 10.4 and 10.5. To ensure appropriate emergency response personnel are notified in the event of an emergency, the emergency notification roster was updated and verified quarterly as required by E-Plan Section 8.5.

c. Conclusions

The emergency preparedness program was conducted in accordance with the E-Plan.

**8. Maintenance Logs and Records**

a. Inspection Scope (IP 69001)

To determine that maintenance was being completed as required by the TS and applicable procedures, the inspectors reviewed:

- NSC Reactor Operations Log Books Numbers 205-208, dated from February 13, 2009 to present
- Surveillance and calibration data and records for 2008 and 2009 documented on the following facility forms:
  - NSC Form 546, entitled "Semiannual Fuel Element Temperature Measuring Channel Maintenance," dated July 15, 2008, from April 19, 2007 to June 26, 2009

- NSC Form 539, entitled "Weekly Ventilation and Scram Surveillance," dated April 3, 2007, from January 2, 2008 to present
- NSC Form 541, entitled "Quarterly Transient Rod Drive Maintenance," dated October 4, 1999, from February 6, 2008 to present
- NSC Form 547, entitled "Semiannual Linear Power Measuring Channel Maintenance and Surveillance," dated February 16, 2000, from February 20, 2008 to present
- NSC Form 546, entitled "Semiannual Fuel Element Temperature Measuring Channel Maintenance," dated July 15, 2008, from April 19, 2007 to June 26, 2009
- NSC Form 549, entitled "Semiannual Reactor Pulse Power Surveillance," dated October 15, 1999, from September 10, 2007 to July 22, 2009
- NSC Form 550, entitled "Semiannual Transient Rod Drive Maintenance," dated October 4, 1999, from July 24, 2008 to June 23, 2009
- NSC Form 551, entitled "Semiannual Scram Circuit Surveillance," dated July 9, 2005, from August 15, 2007 to June 12, 2009
- Texas A&M University NSC 2008 Annual Report, dated March 30, 2009

b. Observations and Findings

A review of the reactor console and maintenance logs showed that they were being maintained as required and problems, if any, were being documented. This review also demonstrated that maintenance was being conducted consistent with the TS and applicable procedures. Maintenance activities ensured that equipment remained consistent with the Safety Analysis Report and TS requirements.

c. Conclusions

Maintenance was completed as required.

**9. Fuel Handling and Movement**

a. Inspection Scope (IP 69001)

To verify adherence to TS Sections 3.1.4, 3.3.1.b, 5.1, 5.2, and 5.5, the inspectors reviewed:

- Fuel handling equipment and instrumentation
- NSC Reactor Operations Log Book Number 205-208, dated from February 13, 2009 to present
- Fuel bundle movement records for June 2009
  - NSC Form 576, entitled "LEU Fuel Log Vol. I," dated July 18, 2008

- NSC Form 578, entitled "LEU Fuel Log Vol. II-A In Service Element Data," dated July 23, 2006
- NSC Form 575, entitled "LEU Fuel Log Vol. II-B Fuel Element Elongation Data Sheets by Bundle," dated July 23, 2006

b. Observations and Findings

The inspectors reviewed selected records for the June 2009 core offload and reload for fuel inspection and control rod maintenance and inspection. The inspectors also verified that fuel locations were consistent with records. Records showed that TS required surveillances for refueling and fuel movement were completed to ensure controlled operations for the reactor core. All fuel movements were recorded in the reactor log and in the individual fuel element log sheets. Data for fuel bundles 70 and 71 had not been transferred to the individual fuel element data sheets as required by procedure. This omission was corrected by the licensee.

The inspectors observed that the data recorded for fuel was acceptable and was cross referenced in the operations logs. Log entries verified that fuel movements were completed under the direct supervision of an SRO as required. Through records review and interviews with licensee personnel, the inspectors determined that fuel movements were conducted in accordance with TS to authorized locations. Through records review and interviews with licensee personnel, the inspectors confirmed that acceptable radiological and criticality controls were established and implemented for fuel movements as required.

c. Conclusions

The fuel handling activities and documentation were conducted in accordance with the facility TSs.

**10. Follow-up on Previous Open Items**

a. Inspection Scope (IP 69001)

The inspectors reviewed the actions taken by the licensee following identification of IFIs, during previous inspections.

b. Observations and Findings

- (1) IFI 50-128/2007-201-01-Followup to verify the licensee evaluates whether one of the licensed operators requires additional conditions on the individuals operator license. Required records documenting the Requalification Program were being maintained. All training and medical records were up to date. This issue is considered closed.

- (2) IFI 50-128/2007-201-02 - Followup to verify the licensee updates the offsite support letter of agreement with the College Station Fire Department. The licensee has a signed letter with the CSFD dated June 25, 2008 and July 8, 2009. Through interviews with licensed personnel and Fire Department personnel, it is clear that there is a very good working relationship between these two organizations. This issue is considered closed.

c. Conclusions

The issues identified in previous inspection reports were closed.

**11. Exit Interview**

The inspectors presented the inspection results to licensee management at the conclusion of the inspection on December 10, 2009. The inspectors described the areas inspected and discussed in detail the inspection observations. No dissenting comments were received from the licensee. The licensee acknowledged the findings presented and did not identify as proprietary any of the material provided to or reviewed by the inspectors during the inspection.

## **PARTIAL LIST OF PERSONS CONTACTED**

### Licensee Personnel

|              |                                  |
|--------------|----------------------------------|
| D. Reece     | Director, Nuclear Science Center |
| J. Remlinger | Associate Director               |
| L. Vasudevan | Radiation Safety Officer         |
| J. Newhouse  | Reactor Supervisor               |

## **INSPECTION PROCEDURES USED**

|           |                             |
|-----------|-----------------------------|
| IP 69001: | Class II Non-Power Reactors |
| IP 92701  | Follow-up                   |

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

### Opened

|                    |     |   |
|--------------------|-----|---|
| 50-128/2009-201-01 | NCV | The licensee had numerous audits which were not completed as required by technical specification. |
|--------------------|-----|---|

### Closed

|                    |     |   |
|--------------------|-----|---|
| 50-128/2007-201-01 | IFI | Followup to verify the licensee evaluates whether one of the licensed operators requires additional conditions on the individuals operator license. |
| 50-128/2007-201-02 | IFI | Followup to verify the licensee updates the offsite support letter of agreement with the College Station Fire Department                            |
| 50-128/2009-201-01 | NCV | The licensee had numerous audits which were not completed as required by technical specification.   |



**LIST OF ACRONYMS USED**

|        |                                      |
|--------|--------------------------------------|
| CFR    | Code of Federal Regulations          |
| E-Plan | Emergency Plan                       |
| IFI    | Inspection Follow-up Item            |
| IP     | Inspection Procedure                 |
| LCO    | Limiting Condition for Operations    |
| MA     | Modification Authorization           |
| MW     | Megawatt                             |
| NCV    | Non Cited Violation                  |
| NSC    | Nuclear Science Center               |
| NSCR   | Nuclear Science Center Reactor       |
| NRC    | Nuclear Regulatory Commission        |
| Rev.   | Revision                             |
| RSB    | Reactor Safety Board                 |
| RO     | Reactor Operator                     |
| SOP    | Standard Operating Procedure         |
| SRO    | Senior Reactor Operator              |
| TAMU   | Texas A&M University                 |
| TEES   | Texas Engineering Experiment Station |
| TS     | Technical Specifications             |
| URI    | Unresolved Item                      |
| VIO    | Violation                            |