May 6, 2004

Dr. David C. Hyland, Deputy Director
Texas Engineering Experiment Station
Texas A&M University
1095 Nuclear Science Road
College Station, TX 77843-3575

SUBJECT: NRC INSPECTION REPORT NO. 50-128/2004-201 AND NOTICE OF VIOLATION

Dear Dr. Hyland:

This letter refers to the inspection conducted on April 12-15, 2004, at your 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.

Based on the results of this inspection, the NRC has identified a violation of NRC requirements. The violation is cited in the enclosed Notice of Violation (Notice). The circumstances surrounding it are described in detail in the subject inspection report. The violation is of concern because it was identified by the NRC and not by your own internal review.

You are required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing your response. The NRC will use your response in accordance with its policies to determine whether further enforcement action is necessary to ensure compliance with regulatory requirements.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at (the Public Electronic Reading Room) http://www.nrc.gov/reading-rm/adams.html.

Should you have any questions concerning this inspection, please contact Craig Bassett at (404) 562-4712.

Sincerely,

/RA/

James E. Lyons, Program Director
New, Research and Test Reactors Program
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

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

Enclosures: 1. Notice of Violation
2. NRC Inspection Report No. 50-128/2004-201

cc w/encl.: Please see next page

cc:

Mayor, City of College Station
P.O. Box Drawer 9960
College Station, TX 77840-3575

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

Texas A&M University System
ATTN: Dr. Warren D. Reece, Director
Nuclear Science Center
Texas Engineering Experiment Station
F. E. Box 89, M/S 3575
College Station, Texas 77843

Texas State Department of Health
Radiation Control Program Director
Bureau of Radiation Control
Dept. of Health
1100 West 49th Street
Austin, Texas 78756-3189

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

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ACCESSION NO.: ML041140249 **TEMPLATE #: NRR-106**

OFFICE	RNRP:RI		RNRP:LA		RNRP:SC		RNRP:PD	
NAME	CBassett:rdr		EHylton:rdr		PMadden		JLyons	
DATE	04/ 29 /2004		04/ 28 /2004		05/ 03 /2004		05/ 05 /2004	

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ENCLOSURE 1

NOTICE OF VIOLATION

Texas A&M University
Texas A&M Nuclear Science Center Research Reactor

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

During an NRC inspection conducted on April 12-15, 2004, a violation of NRC requirements was identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," NUREG-1600, the violation is listed below:

Section 6.3.f of the Technical Specifications requires that the licensee have written and approved procedures to assure the safe operation of the reactor.

Nuclear Science Center Standard Operating Procedure Section VII-C-12, "Facility Radiation Survey," Revision 3, dated August 19, 2003, requires in Step C.1 that a facility radiation survey shall be performed each calendar month; and in Step C.2 that the survey data be recorded in appropriate radiation units (microrem per hour or millirem per hour) on the floor plan of the area being surveyed, HP Forms 824A-O.

Nuclear Science Center Standard Operating Procedure Section VII-C-14, "Facility Contamination Surveys," Revision 3, dated December 4, 1997, requires in Step A that a smear survey of the Nuclear Science Center facility will be performed each month.

Contrary to the above, during the year 2003: (1) no radiation or contamination survey was completed of the Bridge (Upper Research Level) during August; and, (2) four instances were noted when no radiation survey data was recorded on the floor plan of the area being surveyed.

This is a Severity Level IV violation (Supplement IV).

Pursuant to the provisions of 10 CFR 2.201, Texas A&M University is hereby required to submit a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555-0001 with a copy to the responsible inspector, within 30 days of the date of the letter transmitting this Notice of Violation (Notice). This reply should be clearly marked as a "Reply to a Notice of Violation" and should include for each violation: (1) the reason for the violation, or, if contested, the basis for disputing the violation or severity level, (2) the corrective steps that have been taken and the results achieved, (3) the corrective steps that will be taken to avoid further violations, and (4) the date when full compliance will be achieved. Your response may reference or include previous docketed correspondence, if the correspondence adequately addresses the required response. If an adequate reply is not received within the time specified in this Notice, an order or Demand for Information may be issued as to why the license should not be modified, suspended, or revoked, or why such other action as may be proper should not be taken. Where good cause is shown, consideration will be given to extending the response time.

If you contest this enforcement action, you should also provide a copy of your response, with the basis for your denial, to the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, D.C. 20555-0001.

Because your response will be made available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of the NRC's document system (ADAMS), to the extent possible, it should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the public without redaction. ADAMS is accessible from the NRC Web site at (the Public Electronic Reading Room) http://www.nrc.gov/reading-rm/adams.html. If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request withholding of such material, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim of withholding (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390 (b) to support a request for withholding confidential commercial or financial information). If safeguards information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21.

In accordance with 10 CFR 19.11, you may be required to post this Notice within two working days.

Dated at Rockville, Maryland
this 6th day of May 2004.

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

Docket No:	50-128
License No:	R-83
Report No:	50-128/2004-201
Licensee:	Texas A&M University
Facility:	Texas Engineering Experiment Station Nuclear Science Center
Location:	College Station, TX
Dates:	April 12-15, 2004
Inspector:	Craig Bassett
Approved by:	James E. Lyons, Program Director New, Research and Test Reactors Program Division of Regulatory Improvement Programs Office of Nuclear Reactor Regulation

EXECUTIVE SUMMARY

Texas A&M University
Texas Engineering Experiment Station
Inspection Report No. 50-128/2004-201

The primary focus of this routine, announced inspection was the onsite review of selected aspects of the licensee's Class II research reactor safety programs including: organization and staffing, review and audit and design change functions, procedures, radiation protection, environmental protection, security, material control and accounting, and transportation of radioactive material since the last NRC inspection in these areas. The licensee's programs were directed toward the protection of public health and safety and were generally in compliance with NRC requirements. One apparent violation was identified for failure to follow Health Physics procedures.

Organization and Staffing

- The licensee's organization and staffing met requirements specified in Technical Specification Section 6.0.

Review and Audit, and Design Change Functions

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

- The licensee's design change program was in accordance with 10 CFR 50.59 and was being implemented as required.

Procedures

- The procedural control and implementation program was determined to be satisfying Technical Specification requirements.

Radiation Protection

- Periodic surveys were generally completed and documented as required by procedure with the exception that an apparent violation was identified for failure to follow procedure for completing monthly contamination and radiation surveys.

- Postings and signs met regulatory requirements.

- Personnel dosimetry was being worn as required and recorded doses were within the NRC's regulatory limits.

- Radiation survey and monitoring equipment was being maintained and calibrated as required.

- The Radiation Protection and ALARA Programs satisfied regulatory requirements.

- Radiation protection training was acceptable.

Environmental Protection

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

Security

- The Nuclear Science Center security system equipment, tests, and procedures satisfied the Physical Protection Plan requirements.

Material Control and Accounting

- Special Nuclear Material was being acceptably controlled and inventoried as required.

Transportation

- Radioactive material was being shipped in accordance with the applicable regulations.

REPORT DETAILS

Summary of Plant Status

The licensee's one megawatt, pool-type TRIGA research and test reactor continued to be operated in support of education, operator training, irradiation of various materials, laboratory experiments, and various types of research. During the inspection, the reactor was started, operated, and shut down as required and in accordance with applicable procedures to support these ongoing activities.

1. Organization and Staffing

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

The inspector reviewed selected aspects of the following regarding the licensee's organization and staffing to ensure that the requirements specified in Section 6.1 of Technical Specifications (TS), Amendment No.15, dated November 1, 1999, were being met:

- organization and staffing for the Texas A&M Nuclear Science Center (NSC)
- administrative controls and management responsibilities specified in the TS Section 6.0
- 2003 Annual Report for the Texas A&M University Nuclear Science Center
- NSC Standard Operating Procedure (SOP), Section I-C, "Administration," Revision (Rev.) 0, dated March 6, 1990

b. Observations and Findings

The organizational structure and functions of the Texas Engineering Experimental Station (TEES), NSC Reactor Facility had not functionally changed since the last inspection (refer to NRC Inspection Report No. 50-128/2003-201). The licensee's current operational organization structure and assignment of responsibilities, as reported in the Annual Report, were consistent with those specified in the TS Section 6.1.1. All positions were filled with qualified personnel. Review of records verified that management responsibilities were administered as required by TS Section 6.1.2 and applicable procedures.

However, there had been changes in the staffing. The Associate Director had left the organization, as had a Health Physics (HP) Technician. No one had been hired to replace the Associate Director but a person was in training to replace the technician. The workload of the Associate Director had been divided among other staff members, principally the Manager of Reactor Operations and the Radiation Safety Officer (RSO).

c. Conclusions

The licensee's organization and staffing were in compliance with the requirements specified in TS Section 6.

2. 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:

- Reactor Safety Board meeting minutes from 2001 through the present
- completed audits and reviews from 2002 through 2003
- design changes reviewed under 10 CFR 50.59 for 2002 and 2003
- 2003 Annual Report for the Texas A&M University Nuclear Science Center
- Modification Authorization Number M-54, "Safety Channel and Scram Circuit Replacement," dated May 24, 2001, and final approval dated December 10, 2001
- NSC SOP, Section I-H, "Reactor Safety Board," dated March 6, 1990

b. Observations and Findings

(1) Review and Audit Functions

The inspector reviewed minutes of the last five Reactor Safety Board (RSB) meetings. The minutes showed that the committee met more frequently than 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. The RSB conducted audits and reviews of the ALARA program, the emergency preparedness and security plans, and the licensee's conformance of operations and maintenance items to the TS, as required by TS Section 6.2.4 and 6.2.5. Results of the audits were reviewed and recommendations for improvement were made. The inspector determined that the audit findings and licensee actions taken in response to the findings were acceptable.

(2) 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. Only one design change had been processed during the past several years. It involved replacing the old Safety Power Measuring Channel with a functionally equivalent new one. The inspector reviewed the records and determined that the staff review had been performed as required and also that it had been reviewed and approved by the RSB. Training was conducted on the modification and the system was checked out prior to resumption of reactor operations. From the review, the inspector 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 modification did not involve a change to the TS.

c. Conclusions

The RSB acceptably completed review, oversight, and audit functions required by TS Section 6.2. Based on the records reviewed, the inspector determined that the licensee's design change program was being implemented as required.

3. Procedures

a. Inspection Scope (IP 69001)

The inspector reviewed selected aspects of the following to verify compliance with TS Section 6.3 concerning facility procedures:

- RSB meeting minutes from 2001 through the present
- NSC SOP, Section I-D, "Format," Rev. 3, dated February 25, 2002
- NSC SOP, Section I-E, "Origination," Rev. 1, dated February 25, 2002
- NSC SOP, Section I-F, "Review and Approval," Rev. 1, dated February 25, 2002
- NSC SOP, Section I-G, "Distribution and Binding," Rev. 0, dated July 31, 1986
- NSC SOP, Section I-I, "Software Controls," Rev. 0, dated March 17, 1997
- NSC SOP Section VII-A-5, "Annual Review of SOP Section VII (HP Procedures)," Revision 2, dated October 3, 1990
- NSC Form 595, "Procedure Change Notice (PCN)," form dated June 10, 2003

b. Observations and Findings

The inspector reviewed various NSC SOP Sections and selected procedures. These SOP Sections and procedures provided guidance for the administrative, operations, and health physics functions of the facility. The inspector confirmed that written procedures were available for those tasks and items required by TS Section 6.3. The licensee controlled changes to procedures and the RSB conducted the review and approval process as required.

After review of the 2003 training records and interviews with staff, the inspector determined that the training of personnel on procedures was adequate. During tours of the facility, the inspector observed that personnel performed facility operations and tasks in accordance with applicable procedures.

c. Conclusions

Based on the procedures and records reviewed and observations of staff during the inspection, the inspector determined that the procedural control and implementation program was acceptably maintained.

4. Radiation Protection Program

a. Inspection Scope (IP 69001)

The inspector reviewed selected aspects of the following to verify compliance with 10 CFR Parts 19 and 20 and TS Sections 3.5, 4.5, 5.4, and 6.6 requirements:

- RSB meeting minutes from June 1, 2002, through the present
- RSB completed audits and reviews from 2002 through the present
- Personnel dosimetry records for 2001 to 2003
- 2003 Annual Report for the Texas A&M University Nuclear Science Center
- various forms associated with the procedures mentioned below from 2003 to 2004
- NSC SOP Section VII-A-1, "Radiation Protection Program," Rev. 3, dated December 4, 1997
- NSC SOP Section VII-A-6, "ALARA," Rev. 0, dated February 25, 2002
- NSC SOP Section VII-B-3, "Daily Building Integrity Check," Rev. 3, dated December 4, 1997
- NSC SOP Section VII-B-6, "Monthly Facility Air Monitoring," Rev. 3, dated August 25, 1984
- NSC SOP Section VII-B-7, "Area Radiation Monitor," Rev. 3, dated August 25, 1984
- NSC SOP Section VII-B-13, "Portable Survey Instrument Calibration and Operability Check," Rev. 4, dated September 3, 1999
- NSC SOP Section VII-B-14, "Personnel Dosimeters," Rev. 6, dated October 15, 1999
- NSC SOP Section VII-C-6, "Radioactive Material Storage," Rev. 2, dated December 19, 1997
- NSC SOP Section VII-C-10, "Radioactive Materials Handling," Rev. 2, dated December 19, 1997
- NSC SOP Section VII-C-11, "Site Survey," Rev. 2, dated September 3, 1999
- NSC SOP Section VII-C-12, "Facility Radiation Survey," Rev. 3, dated August 19, 2003
- NSC SOP Section VII-C-13, "Special Radiation or Activity Surveys," Rev. 3, dated December 19, 1997
- NSC SOP Section VII-C-14, "Facility Contamination Surveys," Rev. 3, dated December 4, 1997
- NSC SOP Section VII-D-1, "Health Physics Training," Rev. 0, dated October 3, 1990
- NSC SOP Section VII-E-1, "Personnel Dosimetry," Rev. 0, April 13, 1995

b. Observations and Findings

(1) Surveys

The inspector reviewed selected monthly and other contamination and radiation surveys since January 2003. The surveys had generally been completed by HP staff members as required and were documented as required by procedures except as noted in the following paragraph. Results were evaluated and corrective actions taken when readings/results exceeded the licensee's established limit of three times background. During the inspection the inspector conducted a radiation survey along

side a licensee representative in the Upper Research Level of the Reactor Building. Proper techniques were used during the survey. The radiation levels noted by the inspector were comparable to those found by the licensee and no anomalies were noted.

Section 6.3.f of the Technical Specifications requires that the licensee have written and approved procedures to assure the safe operation of the reactor.

Nuclear Science Center Standard Operating Procedure Section VII-C-12, "Facility Radiation Survey," Revision 3, dated August 19, 2003, requires in Step C.1 that a facility radiation survey shall be performed each calendar month; and in Step C.2 that the survey data be recorded in appropriate radiation units (microrem per hour or millirem per hour) on the floor plan of the area being surveyed, HP Forms 824A-O.

Nuclear Science Center Standard Operating Procedure Section VII-C-14, "Facility Contamination Surveys," Revision 3, dated December 4, 1997, requires in Step A that a smear survey of the NSC facility will be performed each month.

During a review of the radiation and contamination surveys conducted during 2003 the inspector noted various discrepancies. A review of surveys of the Bridge (Upper Research Level) in the Reactor Building, documented on HP Form 824H, indicated that no radiation or contamination survey was completed of that area during August.

Further, a review of surveys conducted during 2003 of the Upper Research Level (South) in the Reactor Building, documented on HP Form 824B, indicated that no radiation survey data was recorded on the floor plan of this area during surveys conducted on June 23 and December 8. Also, a review of surveys of the Upper Research Level Mezzanine in the Reactor Building, documented on HP Form 824D, indicated that no radiation survey data was recorded on the floor plan of this area during surveys conducted on September 3 and October 9.

The licensee was informed that, during 2003: 1) not completing a radiation or contamination survey of the Bridge (Upper Research Level) during August; and, 2) not recording survey data on the floor plan of the area being surveyed on four occasions were examples an apparent violation of TS Section 6.3 for failure to follow procedures (VIO 50-128/2004-201-01).

(2) Postings and Notices

During tours of the facility, the inspector observed that caution signs, postings and controls in the controlled areas were acceptable for the hazards involving radiation, high radiation, and contaminated areas and were posted as required by 10 CFR 20, Subpart J. Through observations of and interviews with licensee staff, the inspector confirmed that personnel complied with the signs, postings, and controls. The facility's radioactive material storage areas were noted to be properly posted. No unmarked radioactive material was detected in the facility.

Copies of current notices to workers were posted in appropriate areas in the facility. Radiological signs were typically posted at the entrances to controlled areas. Other postings also characterized the industrial hygiene hazards that were present in the areas as well. All but one of the copies of NRC Form-3, "Notice to Employees," noted at the facility were the latest issue, as required by 10 CFR Part 19.11, and were posted in various areas throughout the facility. These locations included the bulletin board in the hallway by each entrance to the facility, in the hallway of the Upper Research Level in the Reactor Building, and in the Lower Research Level of the Reactor Building. (The out-dated Form-3 was immediately replaced by the licensee.) Caution signs, postings, and controls for radiation areas were as required in 10 CFR Part 20.

(3) Dosimetry

The inspector determined that the licensee used Optically Stimulated Luminescence (OSL) dosimeters for whole body monitoring of beta and gamma radiation exposure with an additional component to measure fast/thermal neutron radiation. The licensee used thermoluminescent dosimeter (TLD) finger rings for extremity monitoring. The inspector confirmed that dosimetry was being issued to staff and visitors as required by NSC SOP Section VII-E, "Personnel Dosimetry." The dosimetry was supplied and processed by a National Voluntary Laboratory Accreditation Program accredited vendor. An examination of the OSL and TLD results indicating exposures to radiation at the facility for the past two years showed that the highest occupational doses, as well as doses to the public, were within 10 CFR Part 20 limitations. The records showed that the highest annual whole body exposure received by a single individual for 2002 was 927 millirem (mr) deep dose equivalent (DDE). The highest annual extremity exposure for that year was 3260 mr shallow dose equivalent (SDE). For 2003, the highest annual whole body exposure received by a single individual was 779 mr DDE and the highest annual extremity exposure was 2750 mr SDE.

Through direct observation the inspector determined that dosimetry was acceptably used by facility personnel and exit frisking practices were in accordance with facility radiation protection requirements.

(4) Radiation Monitoring Equipment

The calibration and periodic checks of the portable survey meters and radiation monitoring instruments were performed by the licensee's staff, Texas A&M calibration facilities, or certified contractors. The inspector confirmed that the licensee's calibration procedures and frequencies satisfied TS Section 4.3 and 10 CFR 20.1501(b) requirements, or the instrument's manufacturers' recommendations. The inspector verified that the calibration and check sources used were traceable to the National Institute of Standards and Technology.

The inspector reviewed the NSC instrument calibrations done since January 2003, and confirmed that the calibration of the portable survey meters in use had been completed as required. All instruments checked had current calibrations appropriate

for the types and energies of radiation they were used to detect and/or measure. Calibrations of the permanently installed radiation area monitors and the facility air monitors were completed in accordance with requirements specified in TS Section 4.5 and the applicable procedures.

During the inspection the inspector observed the calibration range at the facility. The calibration range appeared to be adequate. During a demonstration of an instrument calibration, the appropriate techniques were followed as outlined in the applicable procedures.

(5) Radiation Protection Program

The licensee's Radiation Protection and ALARA programs were established in NSC SOP Section VII-A-1, "Radiation Protection Program," NSC SOP VII-A-6, "ALARA," and through various related HP procedures. The programs had been reviewed and approved as required. The Radiation Protection and ALARA programs contained instructions concerning organization, training, monitoring, personnel responsibilities, audits, record keeping, and reports. The ALARA program provided specific objectives for keeping doses as low as reasonably achievable which was consistent with the guidance in 10 CFR Part 20. The programs, as established, appeared to be acceptable.

It appeared that the programs had not appreciably changed since the last NRC inspection. The licensee reviewed the programs at least annually as required by 10 CFR 20.1101(c). Review and oversight was provided by the RSO with the assistance of the RSB.

The licensee did not require or have a respiratory protection program.

(6) Radiation Protection Training

The inspector reviewed the radiation worker (or rad worker) training given to staff members, to those who are not on staff but who are authorized to use the experimental facilities of the reactor, and to part-time assistants such as students. Training, and refresher training, for reactor staff and other rad workers, including students, was given annually generally in conjunction with the Reactor Operator Requalification training program.

The initial and refresher training covered the topics specified in 10 CFR Part 19 as required. Training records showed that personnel were acceptably trained in radiation protection practices. The training program was acceptable.

c. Conclusions

The inspector 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 Program satisfied regulatory requirements, and 6) the radiation protection training program was being acceptably implemented. However, one apparent violation was identified for failure to follow procedure for completing monthly contamination and radiation surveys.

5. Environmental Protection

a. Inspection Scope (IP 69001)

The inspector reviewed the following to verify compliance with the requirements of 10 CFR Part 20 and TS Sections 3.5, 3.7, 4.5, 5.4, and 6.6:

- 2003 Annual Report for the Texas A&M University Nuclear Science Center with the effluent monitoring program results for that period
- counting and analysis records associated with airborne releases
- various forms associated with the procedures mentioned below from 2003 to 2004
- NSC SOP Section VII-B-8, "Stack Particulate Monitor," Rev. 3, dated October 15, 1999
- NSC SOP Section VII-B-9, "Stack Gas (Ar-41) Monitor," Rev. 3, dated September 3, 1999
- NSC SOP Section VII-B-9A, "Stack Gas (Xe-125) Monitor," Rev. 0, dated May 10, 2000
- NSC SOP Section VII-B-10, "Reactor Building Particulate Monitor," Rev. 5, dated October 15, 1999
- NSC SOP Section VII-B-11, "Reactor Building Gas Monitor," Rev. 4, dated September 3, 1999
- NSC SOP Section VII.B.18, Environmental Surveillance Program, Rev. 2, dated September 3, 1999
- NSC SOP Section VII-C-8, "Radioactive Liquid Waste System," Rev. 3, dated May 10, 2000
- NSC SOP Section VII-C-9, "Radioactive Liquid Waste Disposal," Rev. 3, dated May 10, 2000

b. Observation and Findings

On-site and off-site gamma radiation monitoring was completed using the reactor facility stack effluent monitor and area monitors, and various environmental monitoring TLDs, in accordance with the applicable procedures. Data indicated that there were no measurable doses above any regulatory limits.

The inspector determined that gaseous releases continued to be monitored as required, were calculated according to established protocol, and were acceptably documented in the annual reports. The airborne concentrations of the gaseous releases were well within the annual dose constraints of 10 CFR 20.1101 (d), Appendix B concentrations, and TS limits. COMPLY code calculations indicated an effective dose equivalent to the

public of 0.3 mr for 2002 and 0.077 mr for 2003. Observation of the facility by the inspector indicated no new potential release paths.

The licensee had released liquid from the Radioactive Liquid Waste Holding Tank on various occasions during the past two years. The Radiological Safety Officer reviewed and approved the releases after analysis proved that the releases met regulatory requirements for discharge. The principles of ALARA were acceptably implemented to minimize radioactive releases. Monitoring equipment was acceptably maintained and calibrated. Records were current and acceptably maintained.

c. Conclusion

Effluent monitoring satisfied TS and regulatory requirements and releases were within the specified regulatory limits. The environmental monitoring program was acceptable.

6. Physical Security

a. Inspection Scope (IPs 81401, 81402, 81403, 81431, and 81810)

To verify that the licensee was complying with security requirements specified in TS Section 5.8, the inspector reviewed selected aspects of:

- RSB meeting minutes 2001 through the present
- key and code controls
- security system including equipment, intruder detection system, and physical barriers
- facility access controls and procedures
- security audits and responses
- listing of individuals authorized unescorted access to the facility documented on NSC Form 116, form dated March 25, 1997
- completed alarm testing documented on the appropriate forms
- Key Notebook documenting physical inventories of keys and the list of individuals authorized to possess security keys and codes
- Security System Log Notebook and Security Incidents Report Folder
- NSC SOP, Section VIII-D, “NSC Access Control Procedure,” Rev. 2, dated March 2, 2001
- NSC SOP, Section VIII-G, “Protection of Reactor Safeguards Information,” Rev. 0, dated April 13, 1995
- NSC SOP, Section VIII-H, “Self-Protection Program,” Rev. 0, dated April 13, 1995

b. Observations and Findings

The licensee’s Physical Security Plan (PSP) entitled, “Texas A&M University System, Nuclear Science Center Reactor Security Plan,” Rev. 1, dated January 1995 , was the same as the latest revision approved by the NRC. The inspector noted that the plan was being reviewed annually as required. It was also noted that the licensee was properly controlling and protecting the PSP and other safeguards information as required by the regulations.

The inspector toured the facility and scrutinized the physical protection systems (barriers and alarms), equipment, and instrumentation that were installed for security. The inspector confirmed that the security checks, tests, verifications, and periodic audits were performed and tracked as required by the PSP. Access control was implemented as required by the PSP through the applicable procedures. Response rosters were current and posted as required.

Through records review and interviews with licensee personnel, the inspector verified that there had been no safeguards events at the facility since the last inspection. Also, when new fuel recently was received by the licensee, proper controls were established to protect the fuel and other Special Nuclear Material.

Members of the Texas A&M Police Department typically provided periodic patrols and initial response to incidents at the reactor. The inspector met with the Texas A&M Police Department Associate Director, the Interim Assistant Director for CID, a Lieutenant, and a dispatcher. They were very knowledgeable of the reactor and of their responsibilities in case of an emergency at the NSC. The inspector also noted an excellent working relationship between the NSC and Police Department staff members.

c. Conclusions

Based on observations and the records reviewed, the inspector found that the physical security system equipment and procedures of the NSC satisfied the PSP requirements.

7. Material Control and Accounting

a. Inspection Scope (IP 85102)

To verify compliance with 10 CFR Part 70, the inspector reviewed:

- nuclear material inventories (DOE/NRC Forms 741 and 742) for the past two years
- accountability records and fuel storage locations
- Special Nuclear Material inventory data documented on NSC Form 500, 501, and 502
- Megawatt hours of operation data
- NSC SOP Section III-Q, “Special Nuclear Materials (SNM) Accountability,” dated October 31, 1984

The inspector also participated in a physical inventory of an irradiated fuel bundle being maintained in storage.

b. Observations and Findings

The inspector determined that possession and use of SNM was limited to those areas and purposes authorized by the license. The inspector verified that the licensee maintained an amount of SNM that was equal to or less than that authorized by the license. Fuel burn-up and related measurements and calculations were found to be acceptable and properly documented. Fuel inspection and movement forms maintained

in the NSC Fuel Notebooks were properly prepared. The records also showed that the licensee was maintaining control of SNM storage areas as required.

Physical inventories were conducted at least annually as required by 10 CFR 70.51(d). Nuclear Material Transaction Reports (DOE/NRC Form 741) and Material Status Reports (DOE/NRC Form 742) had been completed semiannually and submitted by the licensee to the appropriate regulatory agencies in a timely manner and as required by 10 CFR 74.13(1).

During the inspection, the inspector toured the facility, examined the SNM and fuel storage areas, and verified that the licensee was using and storing SNM in those areas designated for such use in the PSP. The inspector also observed an inventory and verified the serial number of an irradiated fuel bundle that was maintained in storage. This demonstrated that the fuel and other SNM were in the locations specified and that records documenting the storage and transfers of SNM were accurate.

c. Conclusions

SNM was being acceptably controlled and inventoried as required.

8. Inspection of Transportation Activities

a. Inspection Scope (IP 86740)

The inspector interviewed licensee personnel and reviewed the following records to verify compliance with regulatory and procedural requirements for shipping licensed radioactive material:

- selected records of various types of radioactive material shipments documented on various forms including NSC Form 514, 852, and 854
- training records of those qualified to ship radioactive material
- NSC SOP, Section VII-C-1, “Radioactive Material Inventory,” Rev. 3, dated September 3, 1999
- NSC SOP, Section VII-C-2, “Radioactive Materials Released Off-Site,” Rev. 2, dated December 20, 1994
- NSC SOP, Section VII-C-3, “Radioactive Materials Released From the NSC License,” Rev. 2, dated December 12, 1997
- NSC SOP, Section VII-C-5, “Radioactive Material Received,” Rev. 3, dated December 19, 1997
- NSC SOP, Section VII-C-7, “Radioactive Solid Waste Sorting,” Rev. 4, dated May 10, 2000

b. Observations and Findings

Through records review and discussions with licensee personnel, the inspector determined that the licensee had shipped various types of radioactive material since the previous inspection in this area. A review of the records of selected shipments indicated that the radioisotope types and quantities were calculated and dose rates measured as

required. All radioactive material shipment records reviewed by the inspector had been completed in accordance with the applicable Department of Transportation (DOT) and NRC regulations.

The inspector verified that the licensee maintained copies of shipment recipients' licenses to possess radioactive material as required and that the licenses were verified to be current prior to initiating a shipment. The training of the staff members responsible for shipping the material was also reviewed. The inspector verified that the shippers' training met DOT requirements. The training program appeared to be extensive and conducted properly.

c. Conclusions

Radioactive material was being shipped in accordance with the applicable regulations.

9. Exit Interview

The inspection scope and results were summarized on April 15, 2004, with licensee representatives. The inspector discussed the findings for each area reviewed. The licensee acknowledged the findings presented and did not identify as proprietary any of the material provided to or reviewed by the inspector during the inspection except the Physical Security Plan.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

B. Asher	Senior Reactor Operator
D. Bagley	Reactor Supervisor
T. Fisher	Supervisor, Reactor Maintenance
B. Pack	Health Physics Technician
D. Reece	Director, Nuclear Science Center
J. Remlinger	Manager, Reactor Operations
L. Vasudevan	Radiation Safety Officer

Other Personnel

A. Beamer	Lieutenant, Texas A&M University Police Department
B. Kretzschmar	Interim Director for CID, Texas A&M University Police Department
E. Schneider	Associate Director for Security, Texas A&M University Police Department

INSPECTION PROCEDURE USED

IP 69001	Class II Research and Test Reactors
IP 81401	Plans, Procedures, and Reviews
IP 81402	Report of Safeguards Events
IP 81403	Receipt of New Fuel at Reactor Facilities
IP 81431	Fixed Site Protection of Special Nuclear Material of Low Strategic Significance
IP 81810	Protection of Safeguards Information
IP 85102	Material Control and Accounting - Reactors
IP 86740	Inspection of Transportation Activities

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-128/2004-201-01	VIO	Failure to follow procedures during 2003 in that: 1) no radiation or contamination survey was completed of the Bridge (Upper Research Level) during August; 2) survey data was not recorded on the floor plan of the area being surveyed on four occasions.

Closed

None

LIST OF ACRONYMS USED

ALARA	As low as reasonably achievable
CFR	Code of Federal Regulations
DDE	Deep dose equivalent
HP	Health Physics
IP	Inspection Procedure
NSC	Nuclear Science Center
NRC	Nuclear Regulatory Commission
mr	millirem
OSL	Optically stimulated luminescence
PSP	Physical Security Plan
RSO	Radiation Safety Officer
RSB	Reactor Safety Board
SDE	Shallow dose equivalent
SNM	Special Nuclear Materials
SRO	Senior Reactor Operator
TLD	Thermoluminescence dosimeter
TS	Technical Specifications
TEES	Texas Engineering Experiment Station
VIO	Violation