

March 1, 2005

Dr. Patrick D. Gallagher, Director
NIST Center for Neutron Research
National Institute of Standards and Technology
U. S. Department of Commerce
Gaithersburg, MD 20899

SUBJECT: NRC INSPECTION REPORT NO. 50-184/2005-201

Dear Dr. Gallagher:

This letter refers to the inspection conducted on February 7-10, 2005, at the National Bureau of Standards Reactor. The inspection included a review of activities authorized for the 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 observations of activities in progress. Based on the results of this inspection, no safety concerns or noncompliances of NRC requirements were identified. No response to this letter is required.

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 report, please contact Craig Bassett at 404-562-4712.

Sincerely,

/RA/

Patrick M. Madden, Section Chief
Research and Test Reactors Section
New, Research and Test Reactors Program
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Docket No. 50-184
License No. TR-5

Enclosure: NRC Inspection Report No. 50-184/2005-201
cc w/enclosure: Please see next page

cc:

Montgomery County Executive
County Office Building
Rockville, MD 20858

Director
Department of State Planning
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Dr. Seymour H. Weiss, Chief
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Test, Research, and Training
Reactor Newsletter
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U.S. Department of Commerce
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TEMPLATE #: NRR-106

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

Docket No: 50-184

License No: TR-5

Report No: 50-184/2005-201

Licensee: U. S. Department of Commerce

Facility: National Bureau of Standards Reactor

Location: National Institute of Standards and Technology
Gaithersburg, Maryland

Dates: February 7-10, 2005

Inspector: Craig Bassett

Approved by: Patrick M. Madden, Section Chief
Research and Test Reactors Section
Operating Reactor Improvements Program
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

EXECUTIVE SUMMARY

National Institute of Standards and Technology (NIST)
NIST Center for Neutron Research
National Bureau of Standards Reactor
Inspection Report No.: 50-184/2005-201

This routine, announced inspection included onsite review of various aspects of the licensee's programs concerning radiation protection, material control and accounting, and transportation of radioactive material as they relate to the licensee's 20 Megawatt Class 1 Research Reactor. The licensee's programs were directed toward the protection of public health and safety and were in compliance with NRC requirements. No safety concerns or violations of regulatory requirements were identified.

Organization and Staffing

- The licensee's organization and staffing were in compliance with the requirements specified in the Technical Specifications Section 7.1.

Review and Audit Functions

- Reviews of facility operations were being conducted by the Safety Evaluation Committee in compliance with requirements specified in the Technical Specifications Sections 7.2.
- Annual audits were being completed by the Safety Audit Committee as required by Technical Specifications Sections 7.3.
- No changes had been made to systems or equipment related to radiation protection.

Procedures

- Licensee Health Physics procedure changes were being reviewed and approved as required.

Radiation Protection

- Surveys were being completed and documented as needed.
- Postings met the regulatory requirements specified in 10 CFR Parts 19 and 20.
- Personnel dosimetry was being worn as required and recorded doses were within the NRC's regulatory limits.
- Radiation monitoring equipment was being maintained and calibrated as required.
- Radiation Work Permits were generated as needed to provide guidance and precautionary requirements for on-going and emergent work at the facility.
- The radiation protection training program being implemented by the licensee satisfied regulatory requirements.

Environmental Protection Program

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

Transportation of Radioactive Materials

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

Report Details

Summary of Plant Status

The licensee's 20 megawatt Test Reactor continued to be operated in support of laboratory work and numerous experiments. During the inspection, the reactor was operated continuously in support of various experiments and ongoing research.

1. Organization and Staffing

a. Inspection Scope (Inspection Procedure (IP) 69006)

The inspector reviewed the following regarding the licensee's organization and staffing to ensure that the requirements of Technical Specification (TS) Section 7.1, dated March 31, 1997, were being met:

- C organizational structure and staffing at the NIST Center for Neutron Research (NCNR)
- C management responsibilities specified in the TS
- C staffing requirements for safe operation of the facility

b. Observations and Findings

Through discussions with licensee representatives, the inspector determined that management responsibilities and the organizational structure at the facility had not changed since the previous NRC inspection in the area of radiation protection (refer to NRC Inspection Report No. 50-184/2004-201 issued July 20, 2004). Although personnel changes have occurred, the organizational structure and staffing at the facility were as required by TS and there has been good continuity with minimum impact on operations during the personnel transition periods.

With respect to health physics support for facility operations, the inspector reviewed various Health Physics (HP) records and logs and discussed facility staffing with licensee personnel, including the Senior Health Physicist (SHP). It was noted that the Reactor (HP) Group reported to the NIST Safety, Health, and Environment (SH&E) Division through a Chief Health Physicist. In the past, some positions in the Reactor (HP) Group had been vacant but currently all positions were filled. The inspector determined that both operations and HP staffing at the NCNR was acceptable to support the ongoing activities at the facility.

c. Conclusions

The licensee's organization and staffing remained in compliance with the requirements specified in the TS Section 7.1.

2. Review, Audit, and Design Change Functions

a. Inspection Scope (IP 69007)

The inspector reviewed the following to ensure that the reviews and audits stipulated in TS Sections 7.2 and 7.3 were being completed:

- C Safety Evaluation Committee (SEC) meeting minutes for 2004 to date
- C results of the 2004 Safety Audit Committee (SAC) audit
- C Health Physics Instruction 1-2, "Health Physics Skills, Duties, and Audits," dated March 2001
- C TS duties specified for the SEC and the SAC
- C Quarterly Audits conducted by the Reactor Health Physics Group for 2004

b. Observations and Findings

(1) Review and Audit Functions

The inspector reviewed the SEC meeting minutes from January 2004 to the present. These meeting minutes showed that the SEC met as required by the TS with a quorum being present. The inspector also noted that, during the meetings, the SEC had considered the types of topics outlined by the TS. Review of the committee meeting minutes indicated the SEC provided appropriate guidance and direction for reactor operations, and ensured suitable use and oversight of the reactor. It was noted that charters were being developed for various facility committees including the SEC. This is a positive step and will further clarify the functions of, and interactions among, these facility entities.

It was noted that the SAC completed annual audits of the facility operations and the performance of the SEC. The inspector reviewed the SAC audit conducted during September 30 and October 1, 2004. The inspector noted that the audit report appeared to be thorough and the resulting findings and recommendations were acceptable. During the inspection, the inspector noted that the licensee was in the process of responding to the recommendations made by the SAC.

The inspector also verified that the licensee had completed annual reviews of the Radiation Protection Program as required by 10 CFR 20.1101(c) and quarterly audits required by procedure. The annual review, coupled with quarterly audits conducted by Reactor HP personnel, were sufficient to ensure that all aspects of the program were being reviewed. As a result of the audit and reviews, areas were noted where improvements could be made. Commitments made by the licensee following these reviews and audits were reviewed and progress was noted. The reviews and audits were acceptable.

(2) Design Change Functions

Through interviews with the licensee, the inspector determined that no design changes had been made to systems or equipment related to radiation protection.

c. Conclusions

Reviews were being conducted by the SEC and an annual audit was being completed by the SAC according to the requirements specified in the TS. No changes had been made to systems or equipment related to radiation protection.

3. Procedures

a. Inspection Scope (IP 69008)

The inspector reviewed the following to ensure that the requirements of TS Section 7.4 were being met concerning written procedures:

- C the process used to revise, review, and approve facility procedures
- C Health Physics Instruction (HPI) 1-0, "Health Physics Policies," dated March 2001
- C HPI 1-2, "Health Physics Skills, Duties, and Audits," dated March 2001
- C HPI 3-2, "Radiation Work Permit," dated March 2001
- C HPI 3-3, "Reactor Survey Operations," dated March 2001
- C HPI 3-8, "Contaminated Materials at NBSR," dated March 2001
- C HPI 4-9, "Transfer of Exempt Quantities," dated June 2004
- C Health Physics Procedure for the NBSR (HPP), HPP 1.1-1.8, "General Health Physics Procedures: Introduction," date issued September 24, 1996

b. Observations and Findings

The inspector noted that two sets of procedures were used by the Reactor (HP) Group at NCNR. One set was the Health Physics Instructions (HPIs) which were general guidance documents developed by the SH&E Division to implement the radiation safety program for the entire NIST campus. Certain HPIs were written specifically for monitoring reactor operations. When these procedures needed to be revised, the revisions were reviewed and approved by the Chief Health Physicist of NIST and by the two Senior Health Physicists who headed the Laboratory (HP) Group and the Reactor (HP) Group. While some of the HPIs had been updated more recently, most were generally issued in the 1993-1996 time frame.

The second set of procedures, the Health Physics Procedures for the NBSR, were issued by the reactor facility. These procedures applied only to the NCNR and the work conducted there. Changes to these procedures were required to be reviewed by the SEC and approved in writing by the Chief, Reactor Operations of his Deputy. It was noted that the last major revision to these procedures was issued September 24, 1996.

The inspector determined that the licensee's written procedures and instructions concerning radiation and radioactive contamination control activities were being reviewed and revised as needed. As noted above, new HP procedures and major changes were required to be reviewed and approved by the SEC. None had been proposed since the last inspection. Minor changes did not require SEC approval but were reviewed and approved by the Chief of the Occupational Health and Safety Division and/or the Deputy Chief, Reactor Operations and Engineering.

c. Conclusions

Licensee HP procedure changes were being reviewed and approved as required.

4. Radiation Protection

a. Inspection Scope (IP 69012)

The inspector reviewed selected aspects of the following to verify compliance with 10 CFR Part 20, TS Section 5.7, and procedural requirements:

- C copies of completed Radiation Work Permits for 2004
- C selected health physics survey records documented on "Duty HP Weekly Data Summary" sheets and "Swipe Survey" analysis results data sheets
- C Reactor Operator Running Quarterly Dose Record
- C National Institute of Standards and Technology (NIST) Personal Dosimetry Summary records for facility personnel through October 2004
- C calibration and periodic check records for portable radiation monitoring instruments documented on "NIST HP Survey Instrument Calibration" forms
- C calibration records for Area Radiation Monitors documented on the form "NBSR Instrument Test Procedure," IP:RM - 1-1 - 1-10, dated March 1, 2004
- C ALARA Policy stated in various Health Physics Procedures and Health Physics Instructions
- C HPI 1-0, "Health Physics Policies," dated March 2001
- C HPI 1-4, "Radiological Safety Training," dated December 1993
- C HPI 2-2, "Personnel Monitoring Issuance/Return," dated December 1993
- C HPI 3-1, "Reactor Inplant Monitoring Summary," dated December 1993
- C HPI 3-2, "Radiation Work Permit," dated March 2001
- C HPI 3-3, "Reactor Survey Operations," dated March 2001
- C HPI 7-4, "Survey Instrument Calibration (beta/gamma)" dated October 1995
- C HPI 7-4, "Survey Instrument Calibration (neutron)" dated January 1990
- C HPP 1.1-1.8, "General Health Physics Procedures: Introduction," date issued September 24, 1996
- C HPP 2.2, "General Health Physics Procedures: Personnel Monitoring," date issued July 29, 1994
- C HPP 2.3, "General Health Physics Procedures: Area Access Controls," date issued July 29, 1994
- C HPP 2.4, "General Health Physics Procedures: Radiation Work Permit (RWP)," date issued July 29, 1994
- C HPP 2.7, "General Health Physics Procedures: Contamination Control," date issued July 29, 1994

The inspector also observed the use of dosimetry and radiation monitoring equipment during tours of the facility and accompanied a licensee Health Physicist during a radiation survey of various portions of the facility including the C-100 area, the C-200 area, and selected basement areas.

b. Observations and Findings

(1) Surveys

The inspector reviewed the results of selected daily general area radiation surveys of work areas, weekly contamination surveys of controlled areas at the facility, and monthly general area radiation surveys of the interior uncontrolled areas and the area around the exterior of the NCNR for 2004. The surveys had been completed as stipulated by procedure and the results were documented on the appropriate forms. Areas found to be contaminated were decontaminated and then surveyed again to verify the contamination-free status.

As noted above, during the inspection the inspector accompanied a licensee Health Physicist and conducted a radiation survey using an NRC survey meter. Various areas of the facility were surveyed and the readings compared with those found by the licensee. The results were comparable and no anomalies were noted.

Also during this inspection the inspector noted that exit frisking was completed by facility personnel using hand and shoe monitors or portal monitors. Frisking practices were acceptable.

(2) Postings and Notices

The inspector reviewed the postings at the entrances to various controlled areas including the C100 area, the basement area, and radioactive material storage areas. The postings were acceptable and indicated the radiation hazards present. Other postings also showed the industrial hygiene hazards present in the areas. The facility's radioactive material storage areas were noted to be properly posted. No unmarked radioactive material was found in the facility. Copies of current notices to workers, required by 10 CFR Part 19, were posted in the main hallways of the facility near or above the racks where personnel dosimeters were stored.

(3) Dosimetry

The licensee's thermoluminescent dosimeters (TLDs) were processed by the Navy as stipulated in a Memorandum of Understanding between NIST and the National Naval Medical Center Hospital in Bethesda, dated December 1983. An examination of the records for the past year (through October 2004) showed that all exposures were within NRC limits. The highest annual whole body exposure received by a single individual for the past year was 560 millirem (mr) Total Effective Dose Equivalent (TEDE). It was also noted that,

of the 744 individuals monitored during 2004, 332 people received zero (0) mr and over ninety percent (90%) received less than 50 mr TEDE.

Through direct observation of licensee staff and guest researchers working at NCNR, the inspector determined that dosimetry was acceptably worn by facility personnel. And even though activities with significant radiation levels were conducted during the year, the overall exposure for NCNR staff and users was less than the previous two years.

(4) Calibration of Radiation Monitoring Equipment

The calibration of portable survey meters was typically completed by NIST SH&E Division personnel. Calibration of fixed radiation detectors, air monitoring instruments, and other instrumentation associated with the reactor was completed by the Reactor Engineering Group. The calibration records of selected portable survey meters, friskers, and area radiation monitors (ARMs) in use at the facility were reviewed. The portable instruments were being calibrated semi-annually and records were being maintained as required. The ARMs were checked monthly and calibrated annually.

(5) Radiation Work Permit Program

The inspector reviewed selected Radiation Work Permits (RWPs) that had been written and used during 2004. There were five "standing" RWPs that remained in effect for the entire year due to the repetitive nature of the work they covered. Other RWPs were generated as needed. It was noted that the controls specified in the RWPs were acceptable and applicable for the work being done. Also, the RWPs had been reviewed, approved, and properly terminated when applicable as required.

(6) Radiation Protection Program

The Radiation Protection Program was established and described in various licensee documents including: 1) U.S. Department of Commerce, NIST, Administrative Manual, Chapter 12, "Safety," Subchapter 12.03, "Radiation Safety," dated October 13, 1989, 2) Health Physics Procedures for the NBSR, current as of September 13, 2001, 3) Health Physics Instructions, the most recent revision dated June 2002, and 4) Good Work Practice Guides. These documents were revised as needed and were approved by the appropriate organizations. The inspector noted that the documents contained acceptable instructions concerning audits, safety, training, and personnel responsibilities. As noted above, the Radiation Protection Program was reviewed each year as required by 10 CFR 20.1101(c).

The ALARA Policy was also outlined and established in the aforementioned documents. The ALARA program provided guidance for keeping doses as low as reasonably achievable and was consistent with the guidance in 10 CFR Part 20.

(7) Radiation Protection Training

The training program was set up so that authorized radioisotope users and all radiation workers, including NIST staff, received radiation protection training. The inspector noted that individuals who required unescorted access to the research reactor facility and/or who worked with radioactive material completed a Radiation Safety Principles course or provided evidence that they had received such training at another facility. Refresher training was given every two years and completion thereof was tied to a person's facility access authorization which was also renewed biennially. The initial and refresher training was conducted by the Reactor (HP) Group and the program was determined to be acceptable. The licensee was working to develop a web-based radiation protection training program for NIST staff, guest researchers, and emergency responders. The inspector verified, through records review and licensee interviews, that facility employees, guest researchers, and emergency responders had received the required training at the required frequency.

(8) Facility Tours

The inspector toured the C100 area or Experimental Floor, the C200 area which included the Control Room, portions of the basement area including the new fuel and spent fuel storage areas, the Guide Hall, and other selected support laboratories and offices. Control of radioactive material and control of access to radiation and high radiation areas was acceptable. As noted earlier, the postings and signs for these areas were appropriate.

c. Conclusions

The inspector determined that the Radiation Protection and ALARA Programs being implemented by the licensee satisfied regulatory requirements because: 1) surveys were being completed as stipulated; 2) postings met regulatory requirements; 3) personnel dosimetry was being worn as required and doses were within the NRC's regulatory limits; 4) radiation monitoring equipment was being maintained and calibrated as required; and 5) radiation protection training was provided to facility employees and guests.

5. Environmental Protection Program

a. Inspection Scope (IP 69004)

The inspector reviewed selected aspects of the following to ensure that the requirements in 10 CFR Part 20 were being met and the calibrations and monitoring required in TS Sections 5.7.2 and 5.9 were being conducted:

- C Gaseous Release Log
- C Tritium release data sheets
- C Argon-41 release data sheets
- C Other Beta-Gamma emitter release data sheets

- C Building 235 Environmental Survey sheets
- C licensee COMPLY Code calculations for 2004
- C TLD results for Environmental Stations for 2003 through the date of the inspection
- C calibration records for stack monitors documented on the form "Building Exhaust High Activity Alarm (Normal Air)," RM - 3-5, dated April 4, 1991
- C calibration records for gas monitors documented on the form "Helium Sweep Gas Monitor," RM - 3-2, dated March 9, 1995
- C National Institute of Standards and Technology Reactor (NBSR) Operations Report No. 56 (Annual Report) for the period from January 1, 2003, through December 31, 2003
- C HPI 8-1, "Liquid Radioeffluent Release," dated November 2000
- C HPI 8-2, "Environmental Sampling," dated December 1993
- C HPI 8-4, "Reactor Stack Monitoring," dated December 1993
- C HPI 8-5, "Environmental Thermoluminescent Dosimetry," dated December 1993
- C HPI 8-6, "Environs Radiation Surveys," dated December 1993

b Observations and Findings

Environmental soil and vegetation samples were collected and prepared for analysis using generally accepted techniques in accordance with HPI 8-2. The results of the analyses were acceptably documented and the results, which showed no significant changes when compared with the past year, were outlined in the licensee's Annual Report.

The inspector reviewed the records documenting liquid and airborne releases to the environment for the past two years. The inspector determined that liquid and gaseous releases continued to be calculated as required by procedure and were acceptably documented. Calculations using the COMPLY Code indicated an annual dose to members of the public of 0.7 mr for 2003 and 0.7 mr for 2004. The releases were determined to be within the annual dose constraints of 10 CFR 20.1101(d), 10 CFR Part 20, Appendix B concentrations, and TS limits.

On-site gamma radiation monitoring was completed using the reactor facility stack effluent monitor and various environmental TLDs in accordance with the applicable procedures. The data indicated that there were no measurable doses above any regulatory limits. These results were also reported in the facility Annual Report for 2003. Review of the data for last year indicated similar results for 2004. Through observation of the facility, the inspector found no new potential release paths.

The inspector reviewed the calibration records of the gas and stack monitoring systems. These systems had been calibrated annually according to procedure.

c. Conclusions

The environmental monitoring program satisfied TS requirements.

6. Shipment of Radioactive Material

a. Inspection Scope (IP 86740)

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

- C radioactive waste shipment records for 2003
- C spent fuel shipment records for 2003
- C HPI 4-2, "Receiving of Radioactive Material," dated December 1994
- C HPI 4-13, "Shipping Radioactive Material," dated March 1996
- C HPI 8-3, "Disposal of Radioactive Waste," dated December 1993

The inspector also interviewed licensee personnel.

b. Observations and Findings

Records of shipments of radioactive material made during 2004 were reviewed. Through records review and discussions with licensee personnel, the inspector determined that the licensee had shipped radioactive waste since the previous inspection in this area. The records indicated that the radioisotope types and quantities of these materials were calculated and dose rates measured as required. The records also indicated that the shipping containers were appropriate and had been labeled as required. All radioactive material shipment records reviewed by the inspector had been completed in accordance with Department of Transportation (DOT) and NRC regulatory requirements.

The inspector verified that the licensee was maintaining copies of consignees' radioactive material possession licenses as required. The licensee also maintained on file the Certificates of Compliance pertaining to those shipping containers that were used to ship radioactive material as required. The inspector also verified that the licensee staff member designated to conduct the shipments was trained and that refresher training was being completed at least biennially as required.

c. Conclusions

The program for transportation of radioactive materials satisfied DOT and NRC requirements.

7. Follow-up on Previously Identified Issues

a. Inspection Scope

The inspector reviewed the actions taken by the licensee following identification of an Inspector Follow-up Item (IFI) during a previous inspection in 2004 and documented in NRC Inspection Report Nos. 50-184/2004-201.

b. Observations and Findings

IFI 50-184/2004-201-01 - Review the licensee's actions concerning ARM calibration values that exceeded the specified limits.

During a previous inspection, the inspector noted that the calibration sheets used during ARM calibrations gave specific upper and lower limits for the detectors. The recorded values obtained during certain calibration attempts were noted to be outside the specified limits. The issue was discussed with personnel from the Reactor Engineering Group but the individual who typically conducted the calibrations was not present during the week of that inspection. Consequently, the apparent anomaly could not be explained.

The inspector reviewed this issue during the current inspection. It was noted that the calibration method used for the ARMs involved placing a source in a fixture which was then placed on top of the detector housing and the response of the electronics was recorded. Although a fixture was used, the repeatability of the method was not precise. Also, the values obtained from one year were adjusted for source decay and then the tolerances were calculated and those values listed on the data sheets for the next year. Since each detector was unique and the source fixture placement somewhat imprecise, the same source could produce somewhat different results in each case. By adjusting the data from year to year, based on the previous year's data, the performance of each detector was verified. The licensee indicated that the tolerances were for instrument shop use to assist in identifying a detector that was potentially beginning to fail and were not set limits. Because the system was quite sensitive, slight variations in source position, fixture position, settling time, and even ambient temperature, could cause the values to vary from year to year. As noted above, the values from this process were used to get an indication of the proper functioning of the ARM, sometimes slightly higher and sometimes slightly lower, but were not meant to be limiting values. A value that involved a great variation from the tolerances listed would indicate that the ARM was about to or had failed. The ARM would be changed out and the new ARM calibrated.

This explanation was determined to be reasonable and acceptable. This item is considered closed.

c. Conclusions

The licensee had explained their actions regarding the previously identified IFI and it was closed.

8. Exit Interview

The inspection scope and results were summarized on February 10, 2005, with members of licensee management. The inspector described the areas inspected and discussed in detail the inspection findings. No dissenting comments were received from the licensee.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

J. Caudle, Electrical Engineer, Reactor Engineering Group
P. Gallagher, Director, NIST Center for Neutron Research
T. Myers, Deputy Chief, Reactor Operations and Engineering
W. Richards, Senior Nuclear Engineer
M. Suthar, Chief, Reactor Engineering
S. Weiss, Chief, Reactor Operations and Engineering

Other Personnel

D. Brown, Senior Health Physicist, Reactor Group Leader, SH&E Division
J. Clark, Health Physicist, Reactor Group, SH&E Division
K. Consani, Health Physicist, Reactor Group, SH&E Division
T. O'Brien, Health Physicist, Reactor Group, SH&E Division

INSPECTION PROCEDURES USED

IP 69004: Class 1 Research and Test Reactor Effluent and Environmental Monitoring
IP 69006: Class 1 Research and Test Reactor Organization, Operations, and Maintenance Activities
IP 69007: Class 1 Research and Test Reactor Review and Audit and Design Change Functions
IP 69008: Class 1 Research and Test Reactor Procedures
IP 69012: Class 1 Research and Test Reactor Radiation Protection
IP 86740: Inspection of Transportation Activities

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

50-184/2004-201-01 IFI Review the licensee's actions concerning ARM calibration values that exceeded the specified limits.

LIST OF ACRONYMS USED

ARM Area Radiation Monitor
CFR Code of Federal Regulations
DOT Department of Transportation
HP Health Physics/Physicist

HPI	Health Physics Instruction
HPP	Health Physics Procedure
IFI	Inspector Follow-up Item
IP	Inspection procedure
mr	millirem
NBSR	National Bureau of Standards Reactor
NCNR	NIST Center for Neutron Research
NIST	National Institute of Standards and Technology
NRC	Nuclear Regulatory Commission
RWP	Radiation Work Permit
SAC	Safety Audit Committee
SEC	Safety Evaluation Committee
SH&E	Safety, Health, and Environment (Division)
SHP	Senior Health Physicist
TEDE	Total Effective Dose Equivalent
TLD	Thermoluminescent Dosimeter
TS	Technical Specifications