August 19, 2003

Dr. David Vasbinder, Director
Buffalo Materials Research Center
State University of New York
Rotary Road
Buffalo, NY 14214-3096

SUBJECT: NRC INSPECTION REPORT NO. 50-57/2003-201

Dear Dr. Vasbinder:

This letter refers to the inspection conducted on July 22-24, 2003, at your Buffalo Materials Research Center research reactor. 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 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 2.790 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 Stephen Holmes at 301-415-8583.

Sincerely,

/RA/

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

Docket No. 50-57
License No. R-77

Enclosure: NRC Inspection Report No. 50-57/2003-201

cc w/encl.: Please see next page

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

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U. S. NUCLEAR REGULATORY COMMISSION

Docket No:	50-57
License No:	R-77
Report No:	50-57/2003-201
Licensee:	State University of New York at Buffalo
Facility:	Buffalo Materials Research Center
Location:	Rotary Road, South Campus Buffalo, New York
Dates:	July 22 to 24, 2003
Inspector:	Stephen W. Holmes
Approved by:	Patrick M. Madden, Section Chief Research and Test Reactors Section New, Research and Test Reactors Program (RNRP) Division of Regulatory Improvement Programs Office of Nuclear Reactor Regulation

EXECUTIVE SUMMARY

This routine, announced inspection included onsite review of various aspects of the licensee's programs concerning operations, emergency preparedness, security and safeguards, radiation protection, material control and accounting, and transportation of radioactive material as they relate to the licensee's 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

- Organization and Staffing met the requirements specified in Technical Specifications Sections 11 and 15.

Review, Audit, and Design Change Functions

- The Reactor Decommissioning Safety Committee performed their review and oversight functions as required by Technical Specification Section 11.5. Design changes were performed in accordance with 10 CFR 50.59.

Operation and Maintenance Activities

- The operational and maintenance activities were consistent with applicable Technical Specifications and procedural requirements.

Fuel Handling and Movement

- Fuel handling activities and documentation were as required by Technical Specifications and facility procedures.

Surveillance

- The program for Surveillance and Limiting Conditions for Operations confirmations was being implemented in accordance with Technical Specifications Sections 3, 4, 5, and 8 requirements.

Emergency Preparedness

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

Radiation Protection Program

- The Radiation Protection Program being implemented by the licensee satisfied regulatory requirements.

Transportation

- No radioactive material was transferred from or to the reactor since the last inspection.

Material Control and Accounting

- Special Nuclear Materials were being controlled and inventoried as required.

Physical Safeguards and Protection

- The physical protection features, equipment, and procedures of the Buffalo Materials Research Center satisfied the Physical Protection Plan requirements.

Effluents

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

REPORT DETAILS

Summary of Plant Status

The reactor is held under a Possession Only license amendment. Reactor fuel remains in storage on site. The containment building and adjacent shops, laboratories, and offices are unoccupied. Facilities are routinely entered for campus police tours, radiation surveys, calibrations, and surveillances on equipment. Shops and laboratories are occasionally used.

1. Organization

a. Inspection Scope (Inspection Procedure [IP] 40755)

To verify staffing, reporting, and record keeping requirements specified in Technical Specifications (TS) Sections 11 and 15 were being met, the inspector reviewed:

- organization and staffing for the Buffalo Materials Research Center (BMRC)
- TS for the State University of New York at Buffalo (UB), BMRC , Amendment No. 25, dated March 17, 1999
- administrative controls and management responsibilities specified in the TS Section 11
- BMRC 1. Operating Procedures, updated July 26, 2002
- BMRC 2. Maintenance and Calibration Procedures, updated July 26, 2002
- UB, Radiation Safety Division 2002 Calendar Year Operating Report , dated May 6, 2003
- UB, BMRC 2000 Annual Report, dated March 29, 2001
- UB, BMRC 2001 Annual Report, dated March 28, 2002
- UB, BMRC 2002 Annual Report, dated March 27, 2003

b. Observations and Findings

The reactor staff and line management had been reassigned to other positions within the University organization and relocated to other areas on campus. Personnel continue to have collateral responsibility for the reactor program and thereby satisfy the minimum staffing requirements specified by TS 11.2.

The licensee's current operational organization structure and assignment of responsibilities were consistent with those specified in the TS Section 11.1 and figure 1. All positions were filled with qualified personnel. Through discussions with licensee representatives the inspector determined that no functional changes had occurred in the organization since last inspected during NRC Inspection No. 50-57/1999-201 August 1999 (ADAMS Accession No. 9908240135). Review of records verified that management responsibilities were administered as required by TS Section 11 and applicable procedures.

The annual reports summarized the required information and were issued at the frequency specified in TS Section 15.

c. Conclusions

Organization and Staffing met TS Sections 11, and 15 requirements.

2. Review, Audit, and Design Change Functions

a. Inspection Scope (IP 40755)

To verify that the licensee had established and conducted reviews and audits as required in TS Section 11.5 and to determine whether modifications to the facility, if any, were consistent with 10 CFR 50.59, the inspector reviewed:

- TS for the State University of New York at Buffalo, BMRC, Amendment No. 25, dated March 17, 1999
- Reactor Decommission Safety Committee (RDSC) meeting minutes from September 1999 through the present
- completed audits and reviews from 2000 through 2002
- 10 CFR 50.59 design change, Temporary Modification to BMRC Power Supply, dated October 26, 1999
- 10 CFR 50.59 design change, Modification to BMRC Power Supply, dated October 27, 1999
- 10 CFR 50.59 design change, Modification to BMRC Emergency Power Circuit Supply, dated February 2, 2001

b. Observations and Findings

The inspector reviewed minutes of the last nine RDSC meetings. The minutes showed that the committee met at least twice per calendar year as required by TS Section 11.5.1.5 and that a quorum was present at each meeting. The topics considered during the meetings were appropriate and as stipulated in TS Section 11.5.1.7. The RDSC conducted audits and reviews of the emergency preparedness plan and the licensee's conformance of decommissioning, maintenance, operations, and surveillance activities, as required by TS Section 11.5.3. Results of the audits were discussed with the licensee and recommendations for improvement were made. The inspector's review of the committee's audit of licensee response and corrective actions for previous TS administrative violation and its review of a liquid effluent incident confirmed they were fulfilling their duties as required by TS Section 11.5.

The inspector reviewed the three 10 CFR 50.59 design changes approved by the RDSC since the last inspection (NRC Inspection No. 50-57/1999-201 August 1999, ADAMS Accession No. 9908240135). The 50.59 reviews were concise but thorough and adequately addressed the requirements of 10 CFR 50.59(c)(2).

c. Conclusions

The RDSC performed their review and oversight functions as required by TS Section 11.5. Design changes were performed in accordance with 10 CFR 50.59.

3. Operations and Maintenance Activities

a. Inspection Scope (IP 69001)

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

- TS for the UB, BMRC, Amendment No. 25, dated March 17, 1999
- reactor console logs and maintenance logs for 2000 through the present
- BMRC Operating Procedure (OP) No. 8, Reactor Data and Record Keeping, dated August 1992
- BMRC OP No. 11, Security and Equipment Checklist, dated January 1995
- BMRC OP No. 27, Air-Locks and Truck Door, dated August 1992
- BMRC OP No. 28, Containment Ventilation System, dated August 1989
- BMRC OP No. 57, Facility Security, dated July 16, 1998
- BMRC OP No. 77, Quarterly Checks, dated July 25, 2002
- BMRC form OP No. 11, Weekly Security and Equipment Checklist, dated September 28, 1999 - January 2000 to present
- BMRC form Attachment 2 to OP No. 11, Weekly Security and Equipment Checklist, dated September 28, 1999 - January 2000 to present
- BMRC Reactor Logs 100 and 101, July 25, 1993, to present
- staffing for operations as recorded on the reactor log sheets
- UB, BMRC 2000 Annual Report, dated March 29, 2001
- UB, BMRC 2001 Annual Report, dated March 28, 2002
- UB, BMRC 2002 Annual Report, dated March 27, 2003

b. Observations and Findings

Under the POL no power operations are authorized. All operations were focused on maintaining the integrity and security of the facility, monitoring fuel storage, performing required health physics operations, and fulfilling TS maintenance and monitoring requirements. These operations were carried out following written procedures. Information on the operational status of the facility was recorded in log books and on checklists as required by TS Section 14 and licensee procedures. Use of maintenance and repair logs satisfied procedural requirements.

c. Conclusions

The operational and maintenance activities were consistent with applicable TS and procedural requirements.

4. Fuel Handling and Movement

a. Inspection Scope (IP 69001)

To verify adherence to TS Sections 8, 10, 11, and licensee fuel handling and inspection requirements the inspector reviewed:

- TS for the UB, BMRC, Amendment No. 25, dated March 17, 1999
- BMRC OP # 2, Fuel Handling and Storage, dated March 17, 1997
- BMRC OP # 3, Pre-Check: In-Pool Fuel Movements, dated March 17, 1997
- BMRC OP # 4, Securing From Fuel Handling Operations, dated March 17, 1997
- BMRC OP # 8, Reactor Data and Record Keeping, dated August 1992
- BMRC Health Physics Procedure (HPP) No. 4, Radiation Work Permits, dated November 2000
- BMRC Reactor Logs 100 and 101, July 25, 1993, to present
- fuel handling equipment and instrumentation

b. Observations and Findings

Fuel moment has been limited to latching, lifting, lowering, and unlatching individual fuel elements in an individual grid plate location. These activities provide practice in fuel movement activities to maintain staff proficiency for future fuel shipments.

Procedures for refueling, fuel movement, and TS Section 8 required surveillances ensured controlled operations for the reactor core. All fuel movements were recorded in the reactor log and individual fuel element log sheets.

The inspector noted 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 Senior Reactor Operator as required by TS Section 11.4. Through records review and interviews with licensee personnel, the inspector determined that fuel movements were conducted in accordance with TS Section 10.3.5 and licensee procedures. Through records review and interviews with licensee personnel, the inspector confirmed that acceptable radiological and criticality controls were established and implemented for fuel movements as required by TS Section 10.3.4.

The inspector verified by records review and direct visual inspection that fuel storage in the reactor tank was as required by TS Section 10.3.1.

c. Conclusions

The fuel handling activities and documentation were as required by facility TS and procedures.

5. Surveillance

a. Inspection Scope (IP 40755)

To determine that surveillances and Limiting Conditions for Operations (LCO) verifications were being completed as required by TS Sections 3, 4, 5, and 8, the inspector reviewed:

- TS for the UB, BMRC, Amendment No. 25, dated March 17, 1999
- BMRC OP No. 11, Security and Equipment Checklist, dated January 1995
- BMRC OP No. 21, Primary Water System and the Cleanup and Makeup Demineralizer Systems, dated March 19, 1997
- BMRC OP No. 22, Pool Level Annunciator Testing, dated June 22, 1998
- BMRC OP No. 26A, Area Radiation Monitor System, dated August 1989
- BMRC OP No. 26B, Effluent and Primary Coolant Monitor Systems, dated May 1995
- BMRC OP No. 26C, Continuous Air Monitors, dated May 1990
- BMRC OP No. 28, Containment Ventilation System, dated August 1989
- BMRC OP No. 76, Temperature Measuring System, dated August 1989
- BMRC OP No. 77, Quarterly Checks, dated July 25, 2002
- BMRC HPP No. 3, Primary Water Analysis and Gross Beta/Suspended Solids Analysis, dated November 2000
- BMRC HPP No. 7, Continuous Air Monitors, dated June 1993
- BMRC 2003 Operations Master Task List, revised July 24, 2003
- BMRC 2003 Radiation Safety Task List, revised January 8, 2003
- BMRC Reactor Logs 100 and 101, July 25, 1993, to present
- associated surveillance and calibration data and records for 2000-2003
- BMRC Memorandum - Technical Specification Violation - Primary Water Analysis Frequency, From David R. Vasbinder to the Operating Committee, dated September 18, 2002

b. Observations and Findings

These surveillances for the reactor control, radiation monitoring, and engineered safety systems are to maintain the reactor in a safe, subcritical mode and to protect the safety of the reactor staff and the public.

The inspector determined that selected daily, monthly, annual, other periodic checks, tests, verifications, and calibrations for TS-required surveillances and LCOs were completed as stipulated. With one exception, surveillances, LCOs, and calibrations reviewed were completed on schedule and performed in accordance with licensee procedures. All 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 inspector satisfied the limits/parameters listed in the procedure or checklist.

TS Section 8.5.2 requires that gamma spectroscopy of the system water shall be conducted three times per year at intervals not to exceed five months. The basis for this specification is to ensure that fuel leakage or excessive corrosion may be detected. Although this analysis was performed at least three times per year, none was performed from December 18, 2001, to June 28, 2002, a period greater than five months. The licensee identified this error in a memorandum to the Operating Committee (a sub-committee of the RDSC) on September 18, 2002. The licensee revised the BMRC Radiation Safety Task List to ensure the surveillance would be performed as required.

The inspector noted that throughout this period gross beta analyses of the system water were performed weekly. These analyses would have detected fuel leakage or excessive corrosion if present. The inspector verified that all subsequent analyses had been performed as required. 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 50-57/2003-201-01)

c. Conclusions

The program for surveillance and LCOs confirmation was being implemented in accordance with TS Sections 3, 4, 5, and 8 requirements.

6. Emergency Preparedness

a. Inspection Scope (IP 40755)

The inspector reviewed selected aspects of:

- TS for the UB, BMRC, Amendment No. 25, dated March 17, 1999
- BMRC Emergency Plan (E-Plan), Revision 2, dated November 21, 1988
- BMRC Emergency Manual: “Emergency Plan and Emergency Procedures”, updated February 22, 1996
- BMRC Emergency Procedure (EP) No. 1, Staff General Emergency Procedure, dated May 1987
- BMRC EP No. 2 Medical Emergency Procedure, dated July 1995
- BMRC EP No. 10 Building Evacuation Procedure, dated February 1993
- BMRC EP No. 13 Emergency Notification by Public Safety: Emergency at the Nuclear Facility, dated January 1994
- BMRC EP No. 17, Emergency Notification Procedure, dated November 1993
- RDSC meeting minutes from September 1999 through the present
- Confidential - Facilitator Use Only, BMRC February 3 and 4, 2003, drill memo, dated January 28, 2003
- emergency drills and exercises for 2000 through February 2003

- emergency response facilities, supplies, equipment and instrumentation
- training records

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 RDSC audited and reviewed the E-Plan at least annually as required by E-Plan Section 2. Implementing procedures were reviewed as required by TS 11.5 and 13.2 and revised as needed to effectively execute the E-Plan.

Through reviews of training and drill records and interviews with BMRC and UB Police Department personnel, the inspector confirmed that emergency response training was given as required by E-Plan Section 13 and that emergency responders were knowledgeable of the proper actions to take in case of an emergency.

The notification procedures and phone numbers in use by the UB Police dispatch were current. The dispatchers were knowledgeable of their response to BMRC emergences.

Emergency facilities, instrumentation, and equipment were being maintained and controlled as required by E-Plan Section 9 and supplies were being inventoried semiannually as required by E-Plan Section 9.4.

The inspector reviewed documentation of the latest emergency drill. The 2002 annual drill required by the E-Plan had been conducted on February 3, 2003. (The drill was delayed from November 2002 due to scheduling key responders/participants) The drill was designed to exercise a section of the BMRC Fuel Failure Accident Procedure. Both BMRC and Environment Health and Safety (EH&S) staffs participated in the response. Critiques were held following the drills to discuss the strengths and weaknesses identified during the exercise and to develop possible solutions to any problems identified. The results of these critiques were documented.

The inspector verified that emergency preparedness and response training was being completed as required and that training for off-site and reactor staff personnel was conducted and documented as stipulated by the E-Plan.

c. Conclusions

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

7. Radiation Protection Program

a. Inspection Scope (IPs 40755 and 69001)

The inspector reviewed the following regarding the licensee's radiation protection program (RPP) to ensure that the requirements of 10 CFR Part 20 were being met:

- EH&S Radioactive Materials Safety Manual (RMSM), revised October 2001
- BMRC 2003 Radiation Safety Task List, revised January 8, 2003
- BMRC Health Physics Procedures Manual, undated
- BMRC HPP No. 3, Primary Water Analysis and Gross Beta/Suspended Solids Analysis, dated November 2000
- BMRC HPP No. 5, Building Survey, dated June 1993
- BMRC HPP No. 7, Continuous Air Monitors, dated June 1993
- BMRC HPP No. 8, Portable Radiation Survey Meter Calibration, dated August 1992
- RDSC meeting minutes from September 1999 through the present
- RDSC completed audits and reviews from 2000 through 2003
- UB, BMRC 2000 Annual Report, dated March 29, 2001
- UB, BMRC 2001 Annual Report, dated March 28, 2002
- UB, BMRC 2002 Annual Report, dated March 27, 2003
- Personnel dosimetry records for 2000 to 2003
- selected EH&S instrument calibration records for 2000 to 2003

b. Observations and Findings

(1) Radiation Protection Program

The licensee's RPP is a combination of HPPs specific to the BMRC and the UB's RPP.

Although individual procedures had been revised, the RPP had not appreciably changed since the last NRC inspection. The licensee and the UB reviewed the RPP at least annually as required by 10 CFR 20.1101(c). This review and oversight was provided by the Operating Committee (a sub-committee of the RDSC) and the campus Radioisotope Safety Committee respectively.

The inspector's review of procedure change records and HP records confirmed that the RSO and RDSC reviewed RPP changes, experiments, and radiation protection related events/conditions thus carrying out the RPP as required by TS Sections 11.1.4 and 11.5.1

(2) Postings and Notices

During tours, 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 implemented 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 properly posted. No unmarked radioactive material was detected in the facility. The inspector confirmed that current

copies of NRC Form-3 and notices to workers were posted in appropriate areas in the facility as required by 10 CFR Part 19.

(3) Surveys

The inspector audited selected monthly, quarterly, and other periodic contamination and radiation surveys and water analyses since January 2000. They were performed and documented as required by BMRC procedures. Results were evaluated and corrective actions taken and documented when readings/results exceeded the licensee's limits of 30 dpm /100cm^2 for skin, personal clothing, and telephones, and 200 dpm /100cm^2 for all other areas. The inspector's review of the survey records since January 2000, confirmed that contamination in the facility was infrequent. The inspector determined that the survey program satisfied 10 CFR 20.1501(a) requirements.

(4) Dosimetry

The dosimetry program requirements and procedures had not changed since the last inspection. A National Voluntary Laboratory Accreditation Program-accredited vendor was used to provide dosimetry for personnel, environmental, and area monitoring. The inspector confirmed that dosimetry was being issued to staff and visitors as required by the RMSM. All exposures were well within NRC limits specified in 10 CFR 20.1201. and licensee action levels. Most records showed no exposure above background.

(5) Radiation Monitoring Equipment

The calibration and periodic checks of the portable survey meters and radiation monitoring instruments were performed by the licensee's staff, campus calibration facilities, or certified contractors. The inspector confirmed that the licensee's calibration procedures and frequencies satisfied RMSM, licensee procedural, and 10CFR20.1501(b) requirements, and the American National Standards Institute N323 "Radiation Protection Instrumentation Test and Calibration" 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 and that the sources' geometry and energies matched those used in actual detection/analyses.

The inspector reviewed the BMRC calibrations done since January 2000, and confirmed that the calibration for the portable survey meters and laboratory instruments had been done. 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 continuous air

monitors were completed in accordance with requirements specified in TS Section 8.2.

c. Conclusions

The inspector determined that, because: 1) surveys were being completed and documented as required by 10 CFR Part 20.1501(a), TS, and licensee procedures; 2) postings met regulatory requirements; 3) the personnel dosimetry program was acceptably implemented and doses were in conformance with licensee and 10 CFR Part 20 limits; 4) portable survey meters and radiation monitoring and laboratory instruments were being maintained and calibrated as required, the RPP being implemented by the licensee satisfied regulatory requirements.

8. Inspection of Transportation Activities

a. Inspection Scope (IP 86740)

The inspector reviewed selected aspects of:

- RMSM, revised October 2001
- BMRC Health Physics Procedures Manuel, undated
- BMRC 1. Operating Procedures, updated July 26, 2002
- BMRC HPP No. 12, Radioactive Material Receipt and Inventory Control, dated November 1993
- radioactive materials transportation and transfer records for 2000-2003
- accountability records and fuel storage locations

b. Observations and Findings

No radioactive material was transferred from or to the reactor since the last inspection. If required, material would be passed to the university license and then packaged and shipped by EH&S personnel under the state license.

c. Conclusions

Based on the records reviewed, the inspector found the transportation of byproduct material by the licensee satisfied NRC 10 CFR 71 and Department of Transportation 49 CFR 173, Subpart I requirements.

9. Material Control and Accounting

a. Inspection Scope (IP 85102)

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

- Accountability Manual for BMRC, UB - RIS:ZYL, Amendment No. 2, dated January 1990
- nuclear material inventories (DOE/NRC Forms 741 and 742) for the past three years
- accountability records and fuel storage locations

- SNM Database physical inventory data for period ending March 31, 2003
- ICN Security Seals printout, dated April 15, 2003
- Megawatt hours of operation data documented in logbooks 100 and 101

b. Observations and Findings

The material control and accountability protocol established by the licensee tracked locations and content of fuel and fission detectors under the research reactor license.

A physical inventory of all SNM on site was conducted semiannually by the licensee. The inspector reviewed and verified that the semiannual material inventories had been performed as required.

Fuel burn-up-related measurements and calculations were acceptably performed and documented. The possession and use of SNM were limited to the locations and purposes authorized under the license. The material control and accountability forms (DOE/NRC Forms 741 and 742) were prepared and transmitted as required. Fuel inventory and movement records were cross referenced and matched.

c. Conclusions

SNM was being controlled and inventoried as required.

10. Physical Safeguards and Protection

a. Inspection Scope (IPs 81401 and 81431)

The inspector reviewed selected aspects of:

- TS for the UB, BMRC, Amendment No. 25, dated March 17, 1999
- the License R-77, Docket 50-57, Security Plan (SP) for the Protection of special Nuclear Material of Low Strategic Significance, Revision No. 7, dated February 1, 1998
- BMRC form OP No. 11, Security and Equipment Checklist, dated September 28, 1999 - January 2000 to present
- BMRC form Attachment 2 to OP No. 11, Weekly Security and Equipment - January 2000 to present
- BMRC OP No. 11, Security and Equipment Checklist, dated January 1995 Checklist, dated September 28, 1999
- BMRC OP No. 57, Facility Security, dated July 16, 1998
- BMRC OP No. 77, Quarterly Checks, dated July 25, 2002
- RDSC meeting minutes from September 1999 through the present
- UB Police Department Security history report for July 23 to 24, 2003
- BMRC Reactor Logs 100 and 101, July 25, 1993 to present
- security systems, equipment and instrumentations
- implementation of the SP

b. Observations and Findings

The SP was the same as the latest approved by the NRC.

The inspector reviewed the implementation of the licensee's SP. The inspector toured the facility and confirmed that the physical security systems (barriers and alarms), equipment, and instrumentation were as required by the SP. Keys to access doors were held and controlled only by designated personnel. Access and key control was implemented in accordance with licensee procedures and as required by the plan. The facility was patrolled by campus police as required. The inspector also confirmed that the security checks, tests, verifications, and the biennial audits were performed and tracked as required by the SP. Corrective actions were taken when required. The inspector verified that there had been no safeguards events since the last security inspection.

The inspector interviewed the UB Police Department Director, a dispatcher, and several officers. The Director, dispatcher, and officers were knowledgeable of their response responsibilities.

c. Conclusions

Based on the observations, the inspector found that the physical security features, equipment, and procedures of the BMRC satisfied the SP requirements.

11. Effluents

a. Inspection Scope (IP 69001)

The inspector reviewed the following to verify compliance with the requirements of 10 CFR Part 20 and TS Sections 3.7, 4.7, and 6.6:

- TS for the UB, BMRC, Amendment No. 25, dated March 17, 1999
- BMRC HPP No. 2, Radioactive Waste Water Analysis for Discharge to the Sanitary Sewer, dated November 2000
- Rad Waste Water Log - Transfer Data Sheets for 2000 to present
- counting and analysis records associated with releases
- UB, BMRC 2000 Annual Report, dated March 29, 2001
- UB, BMRC 2001 Annual Report, dated March 28, 2002
- UB, BMRC 2002 Annual Report, dated March 27, 2003
- BMRC Incident Report - Buffalo Materials Research Center March 12, 2003

b. Observation and Findings

BMRC averages two liquid effluent releases to the sanitary sewer per year. The inspector confirmed that the storage, analysis, and release of liquid radioactive effluents was done in accordance with TS Section 7, 10 CFR 20.2003, and

licensee requirements. Releases were less than two percent of 10 CFR Part 20 Appendix B, Table 3 limits.

Since the reactor is shutdown, the only radioactive release, other than natural radon and its daughter products, was Krypton-85 used to calibrate the building air effluent monitor (required by TS Section 8.2). The inspector determined that these gaseous releases were calculated according to established protocol, and were acceptably documented in the annual reports. The airborne concentrations of the gaseous releases were less that two ten-thousands of TS Section 6 and 10 CFR Part 20, Appendix B, Table 2 concentration limits. The dose to the public, as a result of these gaseous releases, was calculated using the COMPLY Code and was well below the dose constraint of 10 millirem per year specified in 10 CFR 20.1101 (d).

On March 12, 2003, while adding water to the 10,000 gallon underground waste tank, a break in a vent pipe that runs along the outside of the containment building released liquid effluent to the environment. The licensee secured the waste system and started cleanup and evaluation of the release.

Samples were collected of the tank water and soil/mud samples directly below the pipe break. Additional soil and mud samples were taken in the surrounding vicinity.

Soil samples directly below the break showed the presence of Silver-108m and Cobalt-60 commensurate with that in the tank water. Tank water analysis showed 1.85×10^{-7} μCi/ml of Silver-108m and 2.45×10^{-7} μCi/ml of Cobalt-60, less than ten percent of the regulatory limit for continuous release to the environment. All other soil and mud samples showed no radioactivity above background levels.

The licensee remove the contaminated soil below the vent pipe (approximately four inches) until no radioactivity above background was detected.

The licensee repaired the break in the vent line and ceased use of the underground waste tank. Subsequently the water in the tank was transferred to their above ground waste system. The licensee is investigating either removing or stabilizing in place the underground waste system.

The inspector verified the licensee's analyses and calculations regarding this release and confirmed their conclusion that the release did not exceed 10 CFR Part 20 or TS requirements. Although the licensee notified the NRC of this event the inspector determined that it was not reportable under either TS Section 15.2 or 15.3. Licensee response and corrective actions for this event were acceptable.

c. Conclusion

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

12. Follow-up on Previously Identified Issues

a. Inspection Scope

The inspector followed up on one NCV and one Violation (VIO) as identified and documented in Inspection Report No. 50-57/1999-201. The inspector reviewed these issues with the licensee to determine what actions, if any, had been taken.

b. Observations and Findings

1) NVC 50-57/1999-201-01 (Closed): Follow-up on the licensee's failure to conduct gamma spectroscopy of the system water at intervals not to exceed five months as required by TS Section 8.5.2.

The inspector verified that the licensee had modified its tag-out procedure to make the procedure less onerous to use by allowing a technician to independently post a warning of abnormal conditions. Additionally, the procedure was modified to expand the use of caution and warning tags for abnormal operating conditions as well as other conditions for which additional instructions might be needed. This item is considered closed.

6) VIO 50-252/1999-201-01 (Closed): Follow-up on licensee's failure to submit an annual technical report to the NRC as required by TS Section 15.1 for calendar years 1997 and 1998.

The licensee increased staffing, refocused management oversight, and consolidated staff closer to the BMRC facility. The required annual reports for 1997 and 1998 were submitted to the NRC October 29, 1999. Reports for 1999 through present have been submitted as required. This item is considered closed.

b. Observations and Findings

One NCV and one VIO identified during a previous inspection were reviewed and both were closed during this inspection.

13. Exit Interview

The inspection scope and results were summarized on July 24, 2003, with licensee representatives. The inspector discussed the findings for each area reviewed. The licensee acknowledged the findings.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

*M.Adams	Operations Manager, BMRC
*M.Herbst	Radiation Safety Specialist, Environmental Health and Safety
*H.Miller	Senior Reactor Operator
*J.Raab	Director, Environment Health and Safety
D.Schroeder	Senior Reactor Operator
*D.Vasbinder	Assistant Director, Environment Health and Safety (Reactor Director)

* attended exit interview

INSPECTION PROCEDURE USED

IP 40755	Class III Non-power Reactors
IP 69001	Class II Non-Power Reactors
IP 81401	Plans, Procedures, and Reviews
IP 81431	Fixed Site Physical Protection of Special Nuclear Material of Low Strategic Significance
IP 85102	Material Control and Accounting
IP 86740	Inspection of Transportation Activities

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

NCV 50-57/2003-201-01	Failure to perform gamma spectroscopy of the system water at intervals not to exceed five months

Closed

NCV 50-57/2003-201-01	Failure to perform gamma spectroscopy of the system water at intervals not to exceed five months
VIO 50-57/1999-201-01	Failure to submit an annual technical report to the NRC as required by TS Section 15.1 for calendar years 1997 and 1998.

Discussed

None

LIST OF ACRONYMS USED

BMRC	Buffalo Materials Research Center
CFR	Code of Federal Regulations
DEH	Department of Environmental Health
EH&S	Environment Health and Safety
EP	Emergency Procedure
E-Plan	Emergency Plan
HPP	Health Physics Procedure
IP	Inspection Procedure
LCO	Limiting Condition for Operations
NCV	Non-Cited Violation
NRC	Nuclear Regulatory Commission
RMSM	EH&S Radioactive Materials Safety Manual
RPP	Radiation Protection Program
RSO	Radiation Safety Officer
RDSC	Reactor Decommissioning Safety Committee
SNM	Special Nuclear Materials
SP	Security Plan
SRO	Senior Reactor Operator
TS	Technical Specifications
UB	State University of New York at Buffalo
VIO	Violation