



University at Buffalo
The State University of New York

Environment, Health & Safety Services

March 30, 2011

Docket 50-57
License R-77

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Dear Sir or Madam:

Enclosed please find a copy of the 2010 Annual Facility Technical Report for the Buffalo Materials Research Center (BMRC) at the State University of New York at Buffalo. This report is submitted pursuant to Facility Technical Specification Requirement 15.1.

If you have any questions or wish further information, please contact me at (716) 829-3301.

Sincerely,

David R. Vasbinder
Director, Buffalo Materials Research Center

Cc: Ted Smith, U.S.N.R.C. Project Manager
Judith Joustra, U.S.N.R.C. Region 1
Kevin Thompson, Reactor Decommissioning Safety Committee Chair
Joseph Raab, EH&S Director
Mike Dupre, Associate Vice President for University Facilities
Jeff Slawson, BMRC Radiation Safety Officer
Mark Adams, BMRC Operations Manager

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STATE UNIVERSITY OF NEW YORK AT BUFFALO

BUFFALO MATERIALS RESEARCH CENTER

ANNUAL TECHNICAL
REPORT

License R-77

Docket 50-57

Calendar Year 2010

Submitted by:

David R. Vasbinder
Director

March 30, 2011

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1. INTRODUCTION

This report is submitted to the United States Nuclear Regulatory Commission (NRC) pursuant to section 15.1 of Appendix A, of the Technical Specifications (License R-77) for the Buffalo Materials Research Center (BMRC) located at the State University of New York at Buffalo. It summarizes changes to the facility, major maintenance activities, surveillance tests and inspections, radiation surveys, and radioactive effluents for the 2010 calendar year. All required surveillance was completed.

In 2010, the University hired a Decommissioning Project Design Consultant, ENERCON Services, to serve as consultant and to guide the University through the Decommissioning Process. Pre-decommissioning related activities undertaken in 2010 included:

- Development of a Historical Site Assessment (HSA).
- Performed a Building Hazard Assessment - detailed room by room evaluation of items such as energy sources, building materials, as-built drawing reviews, etc. that will impact the safe dismantlement of the building. Information that will be provided to the D & D Contractor when contract is awarded to successful bidder.
- Began performance of information gathering, sampling, and analysis for Site Characterization to support eventual development of Decommissioning Plan.
- Hired contractor (WMG Inc.) to perform Reactor Activation Analysis and Segmentation Plan in support of Site Characterization and development of Decommissioning Plan.

2. MAJOR MAINTENANCE

Predominantly routine maintenance activities were undertaken within the BMRC. The only activity undertaken that would qualify as major maintenance was the replacement of the steam heating servicing the building with an electrically based system. This new system was installed in the fall of 2010.

3. 10CFR 50.59 CHANGES

There were no 50.59 reviews performed during the 2010 calendar year.

4. RADIOACTIVE EFFLUENTS

4.1 Controlled Discharges to the Sanitary Sewer

There were two controlled discharges to the sanitary sewer system in 2010. The total volume of water released was 64,649 liters, containing a total of approximately 0.0171 millicuries of radioactivity. Both releases were from the 10,000 gallon above ground waste storage tank (referred to as 10K Tank).

Tables 1 and 2 contain the discharge information specific to the releases including comparisons to the monthly average concentration in 10 CFR Part 20, Appendix B, Table 3 "Releases to Sewers" and the sum of the fractions.

4.2 Airborne Releases

No airborne radioactive releases, other than natural background resulting from radon and its daughter products, occurred during 2010.

5. ENVIRONMENTAL RADIOLOGICAL SURVEYS

5.1 Routine Surveys

The direct radiation levels outside the BMRC reactor building are routinely monitored adjacent to the "truck door" access area and on the roof of the liquid waste holding tank vault.

Global Dosimetry Solutions dosimeters were used to monitor integrated radiation levels in five exterior areas around the facility and four locations within the building itself. These dosimeters are replaced with a new badge every month and the previous month's badge is sent to the dosimetry vendor for processing. The vendor is NVLAP certified. The minimum photon sensitivity for the dosimeters is 5 mrem.

Table 3 lists the cumulative annual summary of the environmental radiation dose equivalent from the environmental badges located around the facility. The maximum cumulative annual deep dose equivalent reading was 3 mRem on the dosimeter (# 2116) located on the roof of the vault containing the above ground waste holding tank.

Table 4 lists cumulative annual summary of the radiation dose equivalent from the area dosimetry badges located within the building. The maximum cumulative annual deep dose equivalent reading was 34 mRem on the dosimeter (# 1624) located on the bridge located directly above the reactor pool.

6. RADIATION EXPOSURES

6.1 External Dosimetry

External dosimetry records were maintained for a total of four BMRC staff members, eight employees of the Decommissioning Project Design Consultant, and other authorized facility entrants. Film dosimeters provide x-ray, beta, and gamma exposure monitoring. Thermoluminescent dosimeter (TLD) rings are used to measure extremity dose for selected personnel. Also, a TLD for neutron detection is available when necessary. All dosimeters are processed by Global Dosimetry Solutions, a NVLAP certified vendor. These dosimeters are replaced on a bi-monthly basis. The film dosimeters have a minimum sensitivity of 10 mrem for both beta and photon radiation.

During 2010 no monitored individual received a measurable whole body deep dose equivalent or extremity dose.

University Police Department officers perform routine security tours of the building. The patrol officers wear a University Police dosimeter pack when they perform these walkthroughs. These dosimeters did not record any dose equivalent during 2010.

Four visitor dosimeter packs are also available. These dosimeters are issued to visitors who may need to enter into areas requiring exposure monitoring. None of these visitor dosimeters recorded any measurable dose equivalent in 2010.

Tables 5 and 6 provide summaries of personnel whole body and extremity dose for 2010.

7. RADIATION AND CONTAMINATION SURVEYS

7.1 Exit Monitoring

Exit monitoring is required as part of each egress from the reactor containment building and other radioactive materials areas within the BMRC. These surveys occasionally detect radioactive contamination, allowing rapid correction of contamination problems.

7.2 Routine Surveys

The BMRC staff performs monthly radiation and contamination surveys of the BMRC building. In calendar year 2010, very low levels of contamination were occasionally detected during these surveys. This radioactivity was detected in areas and on items previously known to be contaminated.

8. MISCELLANEOUS

- The Reactor Decommissioning Safety Committee convened twice during calendar year 2010. This meets the annual requirement in Facility Technical Specifications for a minimum of two committee meetings. The meetings were held on August 27th and November 5th, 2010.

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Table 1 -- Waste Tank Release to Sanitary Sewer

Release Number: 2010-01
 From: 10K Tank
 Month: May

Volume Released: 9513 gal.
 3.61 E+07 ml
 Date of Release: 5/5/10

Nuclide	Tank ($\mu\text{Ci/ml}$)	Monthly Limit ($\mu\text{Ci/ml}$)	Release ($\mu\text{Ci/ml}$)	Percent of Monthly Limit
Ag-108m	1.9 E -07	9 E-05	5.9 E-09	6.6 E-03
Unidentified Beta	1.54 E-07	2E-08	4.8 E-09	2.4 E+01

TOTAL 3.44 E-07 $\mu\text{Ci/ml}$
 CONCENTRATION

Total of Limit Released: 24.04 %

Total of Activity Released: 12.43 μCi

Year to Date Activity Released: 12.43 μCi

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Table 2 -- Waste Tank Release to Sanitary Sewer

Release Number: 2010-02
From: 10K Tank
Month: December

Volume Released: 7500 gal.
2.85E+07 ml
Date of Release: 12/17/10

Nuclide	Tank ($\mu\text{Ci/ml}$)	Monthly Limit ($\mu\text{Ci/ml}$)	Release ($\mu\text{Ci/ml}$)	Percent of Monthly Limit
Unidentified Beta	1.65 E-07	2E-08	4.1 E-09	2.0 E+01

TOTAL
CONCENTRATION 1.65 E-07 $\mu\text{Ci/ml}$

Total of Limit Released: 20.33 %

Total of Activity Released: 4.70 μCi

Year to Date Activity Released 17.12 μCi

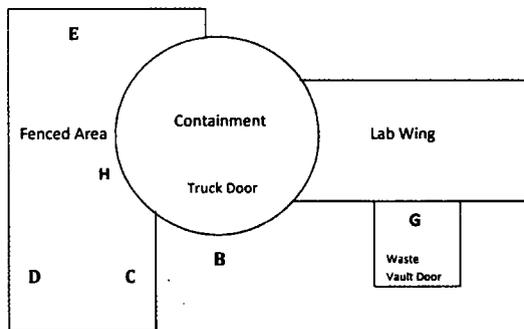
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Table 3 -- 2010 Cumulative Summary of Environmental Radiation Dose Equivalent (mrem)

Monthly Monitoring Period	B	C	D	E	G	H	Control Average
	Truck Door Outside 2118	Fence 1 2120	Fence 2 2121	Fence 3 2122	Waste Vault 2116	Containment Wall	
January	0	0	0	0	0	0	16
February	0	0	0	0	0	0	16
March	0	0	0	0	0	0	18
April	0	0	0	0	0	0	14
May	0	0	0	0	0	0	13
June	0	0	0	0	0	0	17
July	0	0	0	0	1	0	14
August	0	0	0	0	0	0	12
September	0	0	0	0	0	0	15
October	0	0	0	0	1	0	12
November	0	0	0	0	0	0	16
December	0	0	1	0	1	2	18
Total	0	0	1	0	3	2	

Dose equivalent reported is subtracted from control average.



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Table 4 -- 2010 Cumulative Summary of BMRC Area Dosimeter Results

Monthly Monitoring Period	Truck Door 335	1624 Bridge	Building Air Area 357	Stack Gas Area 356	Control Average
January	0	3	0	0	16
February	0	4	0	0	16
March	0	4	0	0	18
April	0	1	0	0	14
May	0	2	0	0	13
June	0	4	0	0	17
July	0	3	0	0	14
August	0	3	0	0	12
September	0	2	0	0	15
October	0	4	0	1	12
November	0	2	0	0	16
December	0	2	0	0	18
Total	0	34	0	1	

Dose equivalent reported is subtracted from control average.

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Table 5 -- 2010 Whole Body Deep Dose Equivalent Summary

Deep Dose Equivalent (rem)	BMRC Staff	University Police	Visitor	Consultant Staff	Fuel Handler Dosimeter
None Measurable	4	1	4	8	1

Table 6 -- 2010 Extremity Shallow Dose Equivalent Summary

Extremity Shallow Dose (rem)	BMRC Staff	Consultant Staff
None Measurable	4	8