



**Facility Preparation Work Plan
University at Buffalo
Buffalo Material Research Center
Decommissioning Project**

**UB-WCD-OP-01
Rev 0
November 29, 2012**

**Prepared by
LVI Environmental Services, Inc.
120 Elmgrove Park
Rochester, NY 14624**

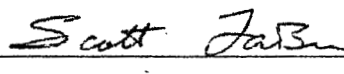
**Prepared for
The University at Buffalo**

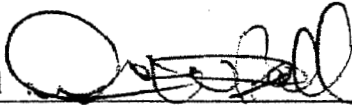


**UB Project Number 2005-082
LVI Project Number 2120064**

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Buffalo Material Research Center Decommissioning Project**

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Prepared by: Scott LaBuy 
Work Planner

Reviewed by: David Ball 
LVI Construction Superintendent

Approved by: Dustin Miller 
ENERCON DOC Project Manager

Accepted by: 
BMRC Operating Committee

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1.0 INTRODUCTION

LVI Environmental Services Inc. (LVI) has contracted with the State University of New York (SUNY) to decontaminate and decommission (D&D) the University at Buffalo (UB) Buffalo Material Research Center (BMRC). LVI is the "Demolition Contractor" (DC). Enercon Services, Inc., (ENERCON) will serve as the "Design and Oversight Contractor" (DOC).

2.0 SCOPE OF WORK

The BMRC Decommissioning Project will consist of the dismantlement and removal of reactor assembly components, systems, as well as all contaminated and activated materials. All radioactive material will be packaged and shipped to appropriate disposal sites according to the Waste Management and Transportation Plan.

This Facility Preparation Work Plan describes the methodology to prepare the facility for decommissioning activities. These tasks include the inspection of the existing ten (10) ton overhead crane, electrical isolations, removal of Bioshield interferences (conduits, piping, debris, hot cell components, etc.) as a prerequisite to Bioshield wire saw cutting, setup of materials and equipment, install boundary fence, and miscellaneous preparation activities.

Follow-on decommissioning activities will be addressed in separate work plans. These activities include removal of the reactor components, concrete wire sawing to remove the Bioshield and Hot Cell, activated materials removal, auxiliary system removal, demolition, and site restoration.

Work Control

Work with radioactive materials will be performed following the guidelines specified in the Radiation Control Plan and project procedures.

The project team will be required to adhere to the project plans throughout the performance of the project. All plans and procedures will be approved internally by LVI, and then submitted to the DOC Project Manager for approval prior to implementation.

No task will be performed in support of the project unless an approved procedure addresses the activity. Workers performing that activity must be briefed on the procedure prior to performing work. The procedures will be maintained in the on-site project records and controlled by the DOC Project Manager.

The procedures for specific D&D tasks will identify the potential safety and health hazards associated with the activity; the specific controls associated with each potential hazard, the task-specific equipment to be used in performing the activity; and the associated monitoring requirements. Additional procedures will be developed, reviewed, and approved as necessary to address new or changing field conditions.

3.0 WORK ACTIVITIES

3.1 Prerequisites

1. Staff and workers trained per Health and Safety Plan and Radiological Protection Plan requirements.
2. Workers are briefed on this Work Plan.
3. Materials delivered and ready for construction or use.
4. Tooling and PPE are staged for use.
5. Spill kit, first aid kit, fire extinguisher, and supplies are present.
6. Radiological instruments are calibrated and ready for use.
7. Installation of temporary construction fencing.
8. RWPs issued as necessary.

3.2 Hazard Overview

A number of hazards will be encountered during the BMRC decommissioning activities. The primary radiological hazard is exposure from activated materials in the reactor core region. Radiological contamination is also present on various surfaces that present a hazard of internal contamination. This hazard, as well as appropriate controls, will be re-emphasized through pre-job briefs and routine oversight.

A significant number of physical and industrial hazards exist, due to the nature of decommissioning work. Physical hazards include torch cutting, crane operation, working at heights, energy sources, heavy loads, and heavy equipment operation. Personnel shall exercise caution when working over the pool, to avoid fall hazards. Additionally, use precautions to avoid dropping tooling and items in the pool. This list of hazards is not all-inclusive; therefore, all work shall be in compliance the project Health and Safety Plan.

Housekeeping and waste material management will be performed to avoid congestion and to reduce the safety hazard of clutter.

3.3 Facility Preparation Operations

3.3.1 Inspect Overhead Crane

1. Perform inspection of existing 10 ton facility crane.
2. Perform any necessary repairs to existing 10 ton facility crane.
3. Confirm approval to utilize existing 10 ton facility crane.

3.3.2 Setup Boundary Fence and Prepare Yard

Install a boundary fence on the south and east sides of the building.

Scab a 6 ft fence to the existing fence on the south side.

Install gates and a new fence along the east side in accordance with Fence Specification DD-009A. Note that the concrete bases are not required for fence posts, but the posts shall be 3 ft deep.

Call 811 Dig Safely New York prior to any digging.

3.3.3 Setup Temporary Systems

Temporary ventilation equipment will be setup to control/mitigate the spread of airborne dust and contaminant. Temporary ventilation will consist of a minimum of one or more 2,000 CFM HEPA filtered negative air machines. The HEPA filtered negative air machines will be utilized for local ventilation control (torch cutting, mechanical sawing, decontamination activities, etc.). Note: The containment building structure ventilates through HEPA filters to the building roof.

This approach is beneficial to protect workers, minimize the potential for contaminant releases to clean areas of the facility or the environment. HEPA filtered vacuum(s) will also be staged for use during dismantlement activities.

Electrical/Power needs will be acquired by utilizing existing power outlets throughout the containment structure. Electrical outlets associated with the bioshield will be terminated as soon as practical to help facilitate removal of Bioshield interferences and prepare for concrete removal.

Setup water cleanup skid, underwater lighting, and underwater camera per the Superintendent instructions.

Install 480V, 60 amp pigtails, to facilitate pending Bioshield wire saw equipment. The pigtails will be installed by the University on either the 480V Power Distribution Panel or Motor Control Panel #2, located on the Gamma Deck.

3.3.4 Electrical Isolations

Electrical isolations will be performed prior to removal of the reactor bridge, reactor instrumentation, and bioshield interferences. These isolations mainly consist of bioshield receptacles, lights, reactor console, pneumatic tube blower, and receptacles.

The tables below reflects the location of each electrical panel and the corresponding breakers to isolate each feed, these utility isolations will be coordinated with University personnel.

Perform a physical air gap whenever possible; identify isolated lines, conduits, and equipment with spray paint, surveyor ribbon, or other methods.

Verify electrical isolations with tic tracer voltage detector before removing. Voltage testing of live exposed circuits must be performed by qualified personnel using proper PPE per NFPA 70E requirements contained in the University Construction Safety Manual.

LO/TO the following:

120 V Power Panel (Lighting Cubicle) Located in Electrical Room	
Breaker to be Locked and Tagged (Or Removed)	Loads / Location
Experimental Panel (breaker located on side of panel)	The EP is located on the Neutron Deck. It supplied experimental outlets on the side of Bioshield.

480V POWER DISTRIBUTION PANEL Located on Gamma Deck near Air Lock Door		
Breaker to be LO/TO or removed	Load	System/Location
3	3 phase pump	Hot cell
4	Crane – hot cell	Hot cell
6	Welder	

The following loads on this panel shall remain active: 1) Truck door, 2) thermal column door, 5) 10-ton crane, and 8) Motor Control Panel #2.

MOTOR CONTROL PANEL #2		
Located on Gamma Deck near Air Lock Door		
Breaker to be LO/TO or removed	Load	System/Location
2	Hot Chem Lab	Lab 108 Hot Chem Lab
3	AA Lab	
4	Unknown	
5	AA Lab	
7	Hood Booster Fan	Lab 108 Hot Chem Lab
8	AA Lab	

The following loads on this panel shall remain active: 1) Building Air Exhaust Fan #1, and 6) 36" Duct Pratt Damper.

120V POWER PANEL #2 -		
Located on Gamma Deck near Air Lock Door		
Lockout the entire panel by opening the main supply breaker located at the bottom of the panel. Power Panel #2 cannot be isolated from the source. The source is the 120V Power Panel (Lighting Cubicle) located in the Electrical Room. One breaker on that panel supplies LP2, LP4, and PP2. The lighting panels need to remain active. The loads off Power Panel #2 are as follows:		
Breaker	Load	System/Location
1	Exhaust Fan #3	Lab Exhaust, Control Deck
2	Exhaust Fan #5	Hot Chem Lab Exh. Neutron Deck
3	Exhaust Fan #6	Hot Cell Exh. Neutron Deck
4	Exhaust Fan #7	Change Room Exh. Neutron Deck
5	Receptacle - Bridge Pool Lights	Bridge
6	Exhaust Fan #9	Thermal Column Exh. Neutron Deck
7	Water Pump #6	Reheat for ventilation
8	Water Pumps #7, 8,9	Reheat for ventilation Gamma Deck, Neutron Deck
9	Rabbit Blower	Pneumatic System, Neutron Deck near Bioshield
10	Temp Power - Heater	
11 & 13 & 15	Air Lock Doors	Doors will remain open
12 & 14	Temp Power - Bridge	
16	Tank and Hotcell Interlock	Hotcell valve
17 & 19	220V single	
18	Refrigerant Accelerator	
20	Receptacle by Truck Door	
21	Accelerator	

LIGHTING PANEL #2 Located on Gamma Deck near Air Lock Door		
Breaker to be LO/TO or removed	Load	System/Location
23	Overhead lights	Mercury Lights – Hot Cell
31, 33, 35	Receptacles in Room 105	Conduits require removal in hot cell viewing room prior to wire saw operations on hot cell.

LIGHTING PANEL #4 Located on Control Deck in Lab near Air Lock Door		
Breaker to be LO/TO or removed	Load	System/Location
TBD	Lighting 16, 17	Lab lighting
TBD	Lighting 20,21	Lab lighting
TBD	Intercom	On Bioshield
TBD	Reactor On Signs	On Bioshield

REACTOR CONSOLE POWER SUPPLY Required to be isolated to deactivate reactor bridge terminal boxes. The reactor console is no longer required.		
Breaker to be LO/TO or removed	Load	System/Location
Disconnect Switch	Reactor Console	Console and bridge terminal boxes.

3.3.5 Bioshield and Hot Cell Wire Saw Interference Removal

The Bioshield wire saw effort will be covered in a separate work plan. Preparation efforts for wire sawing include removal of interferences.

Bioshield interferences will be removed prior to concrete removal to help assist in concrete removal. Interferences are comprised of conduits, piping, equipment, ventilation, outlets, lighting, and other items.

Before any interferences are removed from the reactor bio shield, all utilities to the Bioshield will be confirmed isolated by electrical detection devices (tic tracers), air gaps, LO/TO devices, and other means.. Once a conduit/system is deemed isolated, it will be marked w/ spray paint, surveying ribbon, or other means to clearly show what line(s) have

been isolated. Interferences can be removed utilizing hand tools, sawzalls, torches, wrecking bars, etc.,

All items will be surveyed and released or packaged as radioactively contaminated waste.

A list of items to be removed may include the following:

1. Electronics Room located on Control Deck, above Hot Cell Service Room
2. Hot cell window inspection and preparation for removal
3. Hot cell manipulator arms
4. Hot cell crane
5. Hot cell ventilation
6. Hot cell lead shutter handwheel and frame.
7. Rabbit blower
8. Loose low dose rate items from the reactor pool
9. Miscellaneous ducting, conduits, and piping in the vicinity of the Bioshield.
10. Remove wall partitions and ceilings for rooms 206 and 207 on the Control Deck.
11. Removed cinder block wall partitions for rooms 106, 108, and 109.

The following items may be removed AFTER the reactor tank is drained, which will be performed following reactor component removal. These tasks will be addressed in a separate work plan(s).

1. Emergency fill line
2. Coolant piping supply and return (located on neutron deck south side).
3. Hot Cell transfer pipe and valve (located in Hot Cell)
4. Hot Cell lead shutter.

3.3.6 Plug Floor Drains

Plug all containment floor drains to prevent introduction of contaminants from decommissioning operations. Water generated from wire saw operations will be controlled locally.

Work Plan Hazard Analysis

SECTION A, RADIOLOGICAL PROTECTION - TO BE COMPLETED BY RPM OR DESIGNEE

Identify engineering/administrative controls or PPE as required, keyed to the following checklist items.

Item	Exist?			Comments, Controls, Methods of Compliance
	Y	N	N/A	
Preliminary or in-process characterization	X			See Site Characterization Report. Job coverage per RWP.
TEDE ALARA Evaluation		X		No dose rates expected during facility preparation activities.
Respiratory Protection		X		No airborne or loose radioactivity expected.
Anti-contamination clothing		X		
Supplemental dosimetry		X		
Shielding		X		
Air Flow Studies		X		
Administrative Controls	X			RWP(s) to be issued for facility preparation activities when cutting on potentially contaminated equipment or piping.
Engineering Controls		X		
Air Monitoring	X			No airborne expected, however, GA samplers are to be used.
Other		X		

Work Plan Hazard Analysis

SECTION B, INDUSTRIAL SAFETY - TO BE COMPLETED BY SAFETY MANAGER OR DESIGNEE

Identify engineering/administrative controls or PPE as required, keyed to the following checklist items. Insert any required special actions to be taken because of a particular hazard (i.e. lead compliance plans, confined space plans, hearing conservation programs, etc)

Item	Exist?			Comments, Controls, Methods of Compliance
	Y	N	N/A	
Confined Space		X		
Equipment Operations		X		
Crane Operations	X			Review AHA 11 Moving items from the top deck to the Gamma Deck
Hoisting and Rigging	X			Review AHA 29 Moving items from the top deck to the Gamma Deck
Fall Protection	X			Review AHA 14 Required if working above 6 feet
Elevated Work	X			Review AHA 21 For the use of ladders and stairs
Excavations		X		Not planned for this activity
Penetrations		X		
Scaffold		X		Not planned for this activity
Electrical Hazards	X			Review AHA 23 Energized lights and electrical sockets
LO/TO • Electrical • Mechanical	X			Review AHA 23 Energized lights and electrical sockets
Overhead /underground Utilities	X			Review AHA 23 Conduit traveling along ceiling
Outages Required		X		
Hot Work Activities		X		Not planned for this activity
Repetitive Work		X		
Chemicals (List)		X		No use planned for this activity
Powder-actuated tools		X		
Compressed Gas Cylinders (List)		X		No use planned for this activity
Flammable Liquids		X		
Structural Modifications		X		Not planned for this activity
Tool Operations	X			Review AHA 19 For the use of electric hand tools
Other		X		

Work Plan Hazard Analysis

SECTION C, INDUSTRIAL HYGIENE - TO BE COMPLETED BY EH&S MANAGER OR DESIGNEE

Identify engineering/administrative controls or PPE as required, keyed to the following checklist items. Insert any required special actions to be taken because of a particular hazard (i.e. lead compliance plans, confined space plans, hearing conservation programs, etc.).

Item	Exist?			Comments, Controls, Methods of Compliance
	Y	N	N/A	
Asbestos	X			Review AHA 9 Non Friable
Lead		X		
Mercury		X		
Noise in excess of 85 dBA	X			Hearing Protection as needed
Biological Hazard		X		
Confined Space Evaluation			X	
Chemical Monitoring (List)		X		
Welding, Brazing, or Thermal Cutting Operations		X		
Air Monitoring	X			Rad monitoring when removing items from pool
Engineering Controls	X			HEPA ventilation as needed
Administration Controls	X			Radiation Work Permit
Personnel Protection Equipment (PPE)	X			Gloves, Hard hat, Eye protection, and Steel toed boots during demolition activities
Bulk Samples (Type / Number Taken)		X		
Other			X	



SHIFT
AM

"DAILY HUDDLE" - PROJECT SAFETY MEETING REPORT

Date: 12/5/12

Job No: 2120064

Supervisor: David Ball

Job Name: University of Buffalo

Attendant's Names:

DAVID BALL		
Michael Anzures		
ADAM BALL		
Bill Toarnet		
Scott LaBuy		
RANDY H BOZAR		
Jeremy Hunsinger		
Kate Croft		
TJ KEANE		

BY SIGNING I AGREE TO ABIDE BY ALL LVI STANDARD OPERATING PROCEDURES (JSA's etc.)
I AGREE TO WEAR ASSIGNED PERSONAL PROTECTIVE EQUIPMENT AND REPORT ALL ACCIDENTS.

Activities / REMOVE DRYWALL ROOM ON OPERATING DECK

JSA #'s REMOVE BIOSHIELD INTERFERENCES

Target "0" Program

Of The Day PERFORM LO/TO ACTIVITIES FOR BIOSHIELD

DAY
7

INTERFERENCE REMOVAL

BRIEF RWP'S + AHA'S/RWPS: 12, +3

WORKING TO RWP # 1, 2, +3 (12-5-12)

WORKING TO AHA'S: 14, 18, 21, 23, 19

Activity

Safety UNPLUG POWER TOOLS WHEN CHANGING BLADES, BITS ETC.

Reminders: FOLLOW APPLICABLE AHA'S

FOLLOW APPLICABLE RWP'S

BUDDY SYSTEM AT ALL TIMES

EVERYONE HAS STOP WORK AUTHORITY

UTILIZE TIC TRAILERS TO CONFIRM LINES HAVE BEEN DE-ENERGIZED

Accidents

Discussed:

Total Project Mandays: _____ Mandays Used to Date: _____ Mandays Remaining: _____

Comments (Inspections, Field Changes, etc): _____