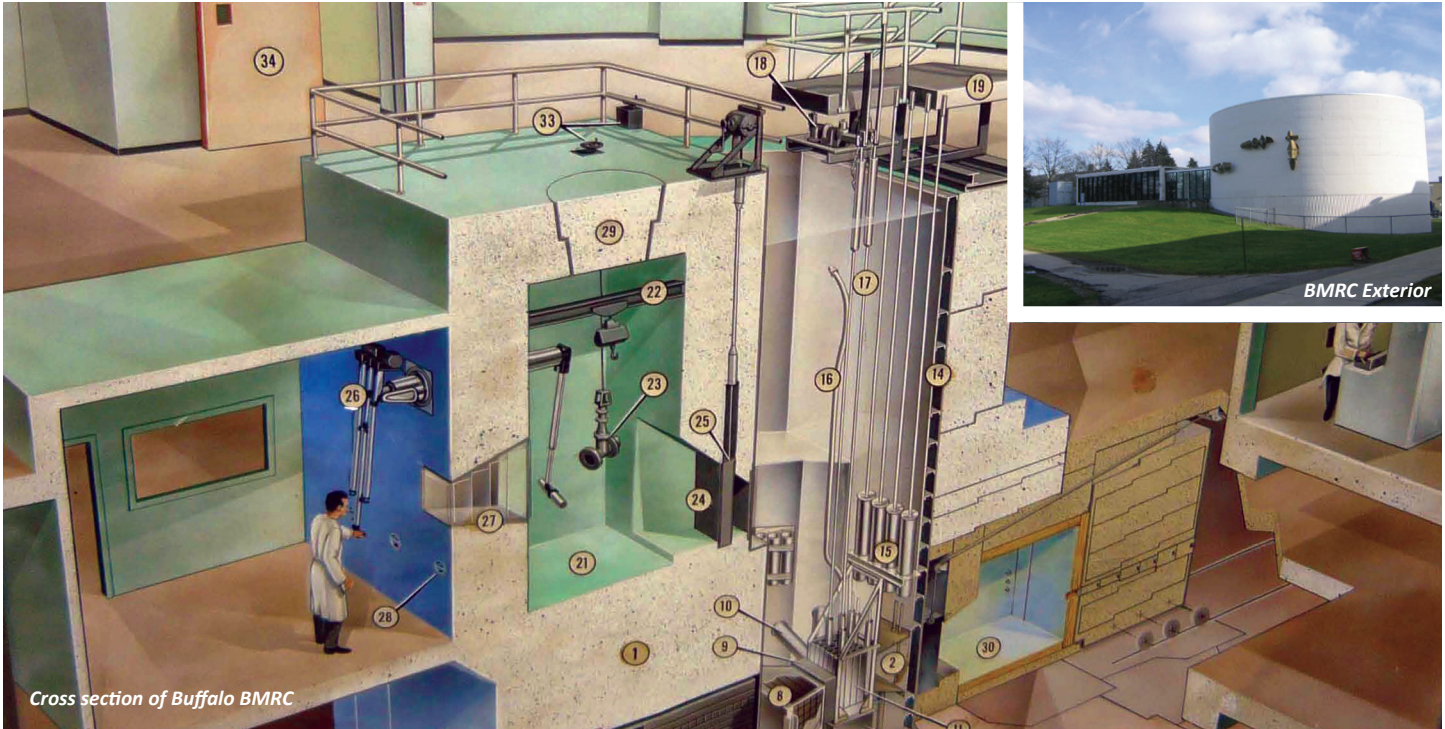


**UNIVERSITY AT BUFFALO MATERIAL RESEARCH CENTER D&D**  
**BUFFALO, NY**



Cross section of Buffalo BMRC

BMRC Exterior



High Dose Rate Nuclear Reactor



October 2012 - December 2013



\$6,024,176



State University of New York



Nuclear Decontamination & Decommissioning (D&D)



Demolition & Concrete Cutting



Radiological Waste Disposal



Hazardous Material Removal



Zero NRC Violations or OSHA Recordable Injuries (as of 4/13)

LVI is performing the decontamination and decommissioning (D&D), complete demolition, disposal and site restoration of the University at Buffalo’s Material Research Center (BMRC), which houses a high dose rate nuclear research and test reactor.

The BMRC was a research and test reactor facility with a pool-type reactor designed and constructed by AMF Atomics between 1959 and 1961. The reactor operated at power levels up to 2 MWt until 1994. Fuel was shipped from the facility in 2005. The facility is comprised of a 75 ft diameter tri-level containment building and a 5,500 square foot tri-level laboratory wing.

**RADIOLOGICAL WASTE REMOVAL AND MANAGEMENT**

Working within the regulatory framework of the Nuclear Regulatory Commission, EPA, OSHA, DOL, and NY State DOH, contaminants will be removed and include neutron-activated aluminum, steel, concrete, fission products, and laboratory radiological nuclides used in various experiments..

**REACTOR COMPONENT REMOVAL**

LVI removed the control blade drive mechanisms, control blade guide tubes, irradiation and experimental standpipes and devices, reactor bridge, fuel racks, reactor in-



**ZERO NRC VIOLATIONS OR OSHA RECORDABLE INJURIES TO DATE**

strumentation, reactor tank ancillary items, such as lighting and miscellaneous items that were stored in the tank. The reactor components were removed in phases.

The 500 R/hr control blades were loaded, underwater, into a specially fabricated, shielded, storage container, which reduced the dose rate to less than 200 mR/hr. After being placed into a shipping box and grout macro-encapsulated to “treat” the mixed waste, was ready for disposal.

The reactor grid plate, with a dose rate of 40 R/hr, was unbolted and packaged into a specially-fabricated shielded container, placed in temporary storage, and is awaiting final packaging. LVI also removed several components and bolts measuring up to 8 R/hr and placed those items in shielded packaging and temporary storage.

LVI then removed remaining fuel storage racks, thermal column nosepiece, dry chamber nose piece, the core support plenum, and ancillary components. The 28 ft deep pool was drained in phases, dependent upon dose rate levels. LVI will remove thermal column graphite, several ton lead shutter plates, hot cell interferences, and ancillary systems.

All reactor tank and cutting recycle water was containerized, filtered, sampled, and released.

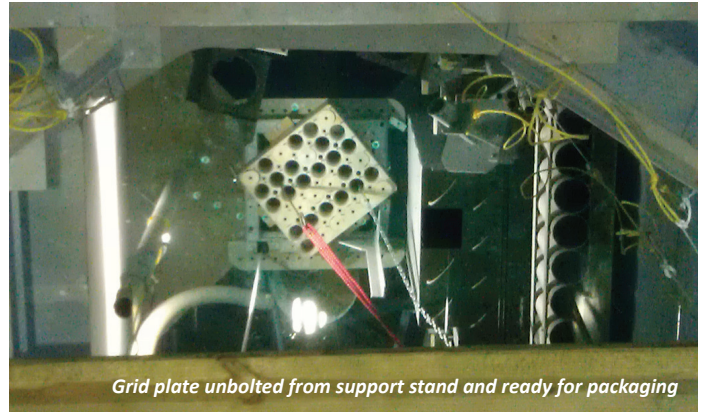
**ACTIVATED & CONTAMINATED CONCRETE REMOVAL**

Cutting Edge Services will perform wire saw cutting to remove the surface contaminated Hot Cell concrete, the upper portions of the Bioshield, and the lower portions of the Bioshield to remove activated concrete. Approximately 600 tons of concrete will be cut and removed in 10 ton maximum size blocks. The blocks will be segregated into 3 different waste streams, dependent upon radioactivity levels. The cutting water will be recycled to minimize waste volume.

Following Bioshield removal, a remotely-operated BROKK, equipped with an impact hammer, will be used to break and remove the activated concrete from the tank bottom, below the reactor. A containment, portable HEPA ventilation, and a light water mist will be used to control dust levels. Once it is determined that all concrete and steel have been removed that requires packaging and disposal as low-level radioactive waste, the remainder of the facility concrete will be released in place.

**FACILITY SYSTEMS REMOVAL**

LVI will remove the remaining contaminated systems from the



*Grid plate unbolted from support stand and ready for packaging*

building structure, including the primary and secondary coolant piping, drain lines, several large liquid waste tanks, several underground waste storage tanks, radioactive exhaust ventilation systems, hot cell components, and other items.

**FACILITY DECONTAMINATION**

The reactor room floor, pipe trenches, tank vaults, and other facility surfaces will be decontaminated. LVI will also perform asbestos abatement and hazardous material removal prior to facility demolition.

**RADIOLOGICAL WASTE TRANSPORTATION AND DISPOSAL**

LVI will disposition approximately 21,000 cubic feet of radiologically contaminated waste as BSFR and LLRW. In addition, LVI will package, transport, and dispose of the 500 R/hr Class B, mixed low-level radiological waste control blades and the depleted uranium (DU) at the Nevada National Security Site.

**FACILITY DEMOLITION AND SITE RESTORATION**

LVI will demolish and remove the 10,000 square foot footprint structure, foundations, and tank vaults. The building debris will be radiologically released and 5,000 cubic yards of debris will be appropriately dispositioned.

A radiological Final Status Survey will be performed on the excavation to verify that the endpoint criteria had been met to satisfy license termination with the NRC. After a confirmatory survey is completed, the site will be restored by backfilling with 13,000 cubic yards of material and grading the site.

**Project Managed By** LVI Environmental Services Inc., a subsidiary of LVI Services Inc. | **Client Contact** Rob Weller, Project Manager, Facilities Planning & Design, University at Buffalo North Campus, 119 John Beane Center, Buffalo, NY 14260, 716-645-5887, [rweller@buffalo.edu](mailto:rweller@buffalo.edu)