DECOMMISSIONING OF A FACILITY IN A HISTORICAL REACTOR AT SRS: ACHIEVING BOTH HISTORICAL SIGNIFICANCE PRESERVATION AND EFFECTIVE IN-SITU DECOMMISSIONING - 15275

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OBJECTIVES

- Prevent migration of radionuclides from the structure, water, and/or sludges to groundwater at concentrations that exceed regulatory standards.
- Prevent worker exposure to risk thresholds exceeding 1E-06 for the industrial worker and 1E-03 for Principal Threat Source Material.
- Eliminate or control all routes of human exposure to radiological and chemical contamination.
- Prevent animal intruder exposure to radioactive and hazardous contamination.
- ***PREVENT ADVERSE IMPACT TO THE HISTORICAL SIGNIFICANCE OF THE FACILITY/STRUCTURE BY PRESERVING ITS ORIGINAL CONFIGURATION TO THE EXTENT PRACTICABLE.***

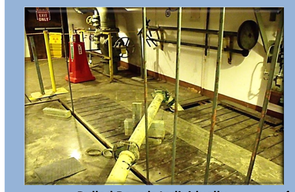
HOW WE WORKED WITH HISTORIANS

Worked collaboratively with SC Historical Preservation Office (SHPO) to balance closure and preservation needs:

- Conducted walkdowns and conference calls
- Received SHPO concurrence on proposed undertaking
- Selected remedy least disruptive to facility and protective of environment and workers
- Included efforts to photograph undertaking before/after to support future interpretive displays

HOW WE ADDRESSED OBJECTIVES

- Minimized impact to basin structure
- Left handrails in place and intact
- Left hangers in place
- Installed evaporators in shelter external to basin
- Minimized core drills
- Pulled wood walk-boards intact and reinstalled at completion of grouting
- Installed dry area grout to -10 centimeter level


Pulled Boards Individually

{or}

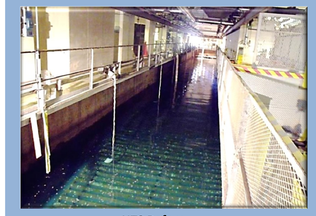

As a Unit

Evaporate water to -4.88 meter level

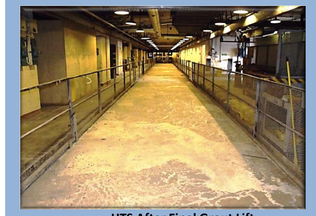

Machine Basin at -4.88 meter level


Monitor Basin at -4.88 meter level

Installed dry area grout to -10 centimeter level

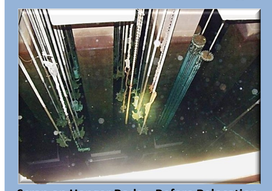

HTS Before

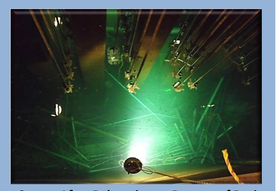

Encasing floatation devices in Machine Basin in grout


HTS After Final Grout Lift

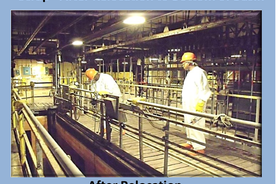

Machine Basin After Final Grout Lift

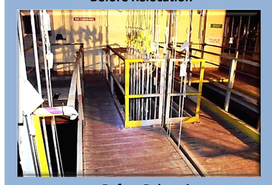
Relocated all irradiated scrap from handrails, hangers, etc. to -9.144 meter level – kept hangers and handrails intact


Scrap on Hanger Rods – Before Relocation


Scrap –After Relocation to Bottom of Basin

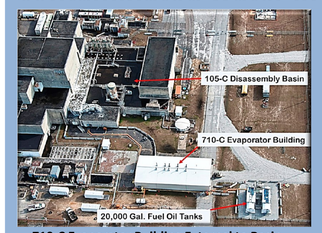

Before Relocation


After Relocation


Before Relocation


After Relocation

Installed evaporator shelter and 10 evaporators external to basin, 2 – 75,700 liter fuel oil tanks, and all hoses, pumps, etc. to evaporate 9.1 million liters of radiologically contaminated water in the Disassembly Basin



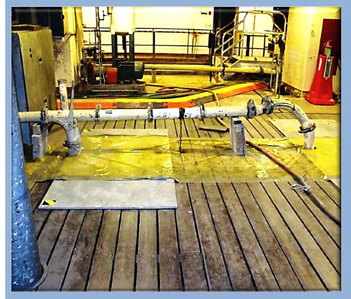
710-C Evaporator Building External to Basin


Evaporators in 710-C Evaporator Building


Evaporator Supply Water Hoses


Pump Floatation Devices in Machine Basin

Minimized Impact to Basin Structure


Machine Basin During Grouting


Machine Basin After Grouting


Installed underwater grout to -4.88 meter level


Completed evaporation of water

Demobilization Activities

Remove Evaporator Building, Fuel Oil Tanks & Clean-up Site


Demolish Evaporator Shelter


105-C Site After Final Clean-up

Conclusions:

- ISD did not adversely impact the historical significance
- Both special hybrid grout materials (underwater and dry area) met all requirements
- All compressive strength values far exceeded the 0.34 MPa (50 psi) minimum requirement
- Grout materials resulted in considerable labor, cost, and schedule savings versus conventional materials
- The CO_2 footprint of 105-C was minimized by using a small amount of cement and byproduct material to produce the structural fill materials