



U.S. DEPARTMENT OF
ENERGY

Savannah River Site

A Presentation to the
Facilities Disposition and Site Remediation Committee
Savannah River Site
Citizens Advisory Board

Heavy Water Components Test Reactor (HWCTR) Update

Presentation By

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Agenda

- **Heavy Water Components Test Reactor (HWCTR)
Background**
- **Completion Objectives / Key Performance Parameters**
- **Scope**
- **Current Status**
- **Path Forward**





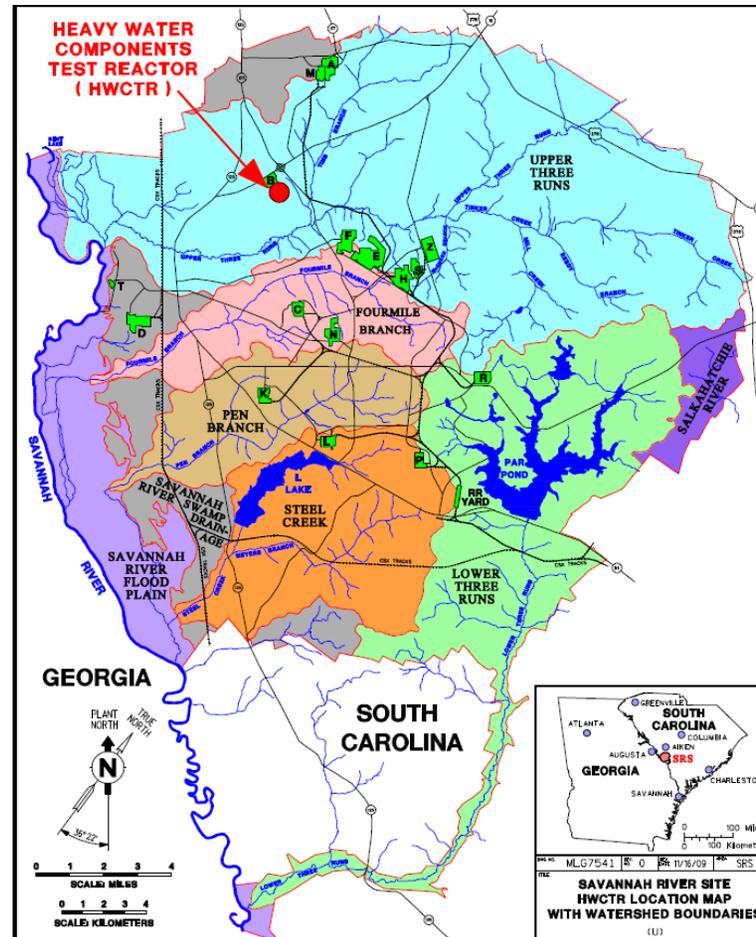
List of Acronyms

- **ARRA** **American Recovery and Reinvestment Act**
- **D&D** **Deactivation and Decommissioning**
- **EE/CA** **Engineering Evaluation/Cost Analysis**
- **HWCTR** **Heavy Water Components Test Reactor**
- **KPP** **Key Performance Parameters**
- **M** **Million**
- **RSER** **Removal Site Evaluation Report**





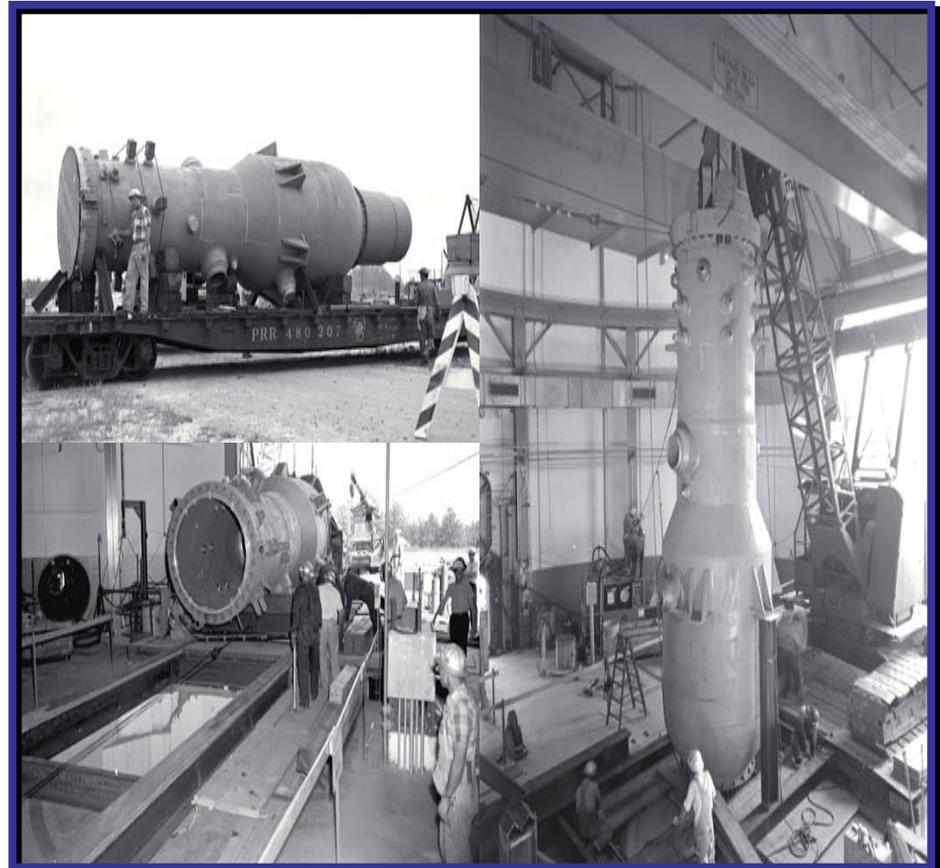
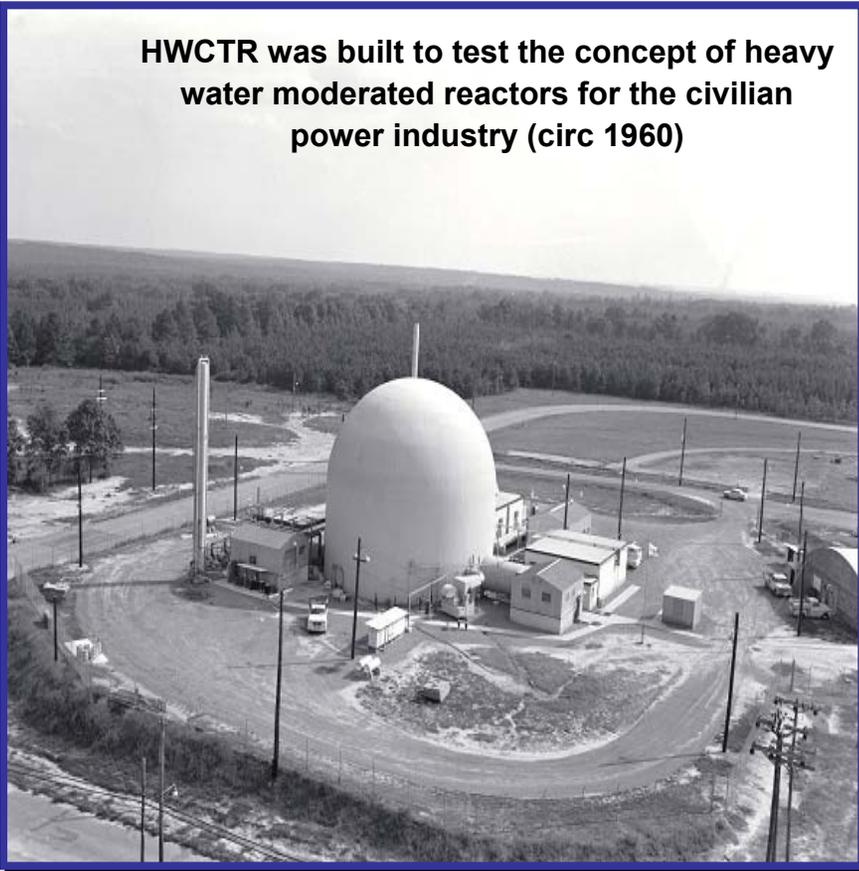
HWCTR Location on the Savannah River Site





Background *continued*

HWCTR was built to test the concept of heavy water moderated reactors for the civilian power industry (circ 1960)





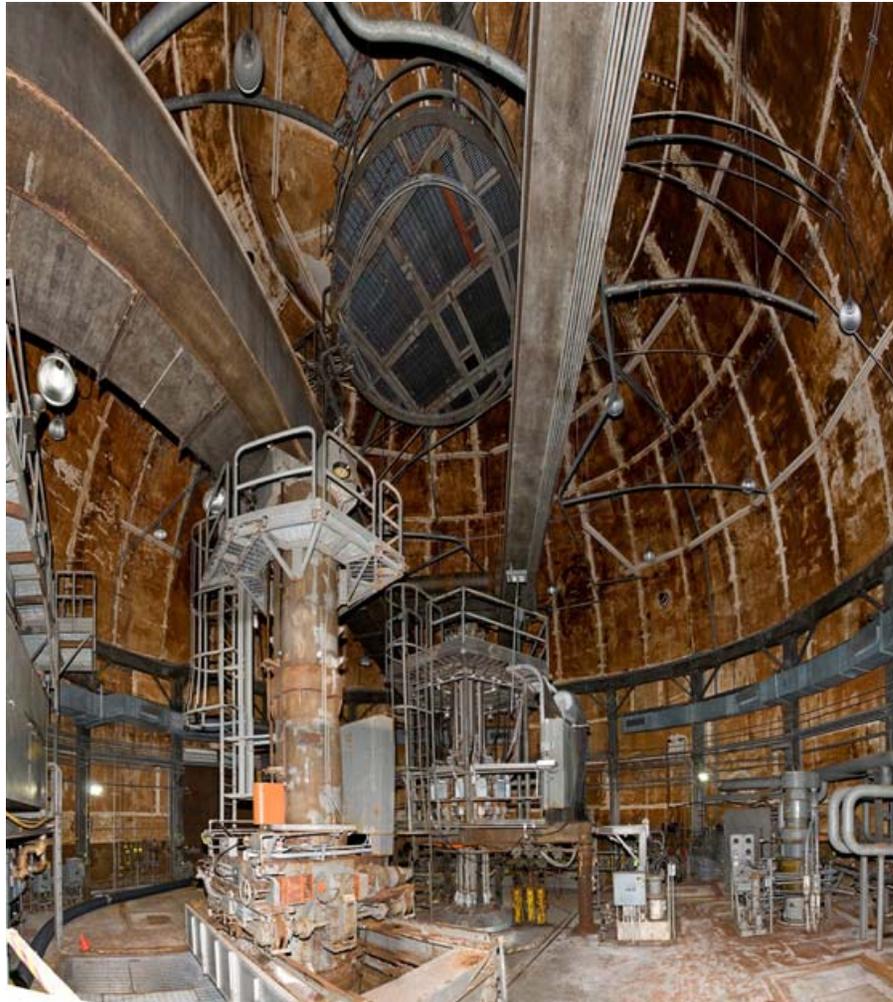
Background *continued*

- **1965**
 - retired in place with controlled access
- **1975-1976**
 - decommissioning plans considered
 - postponed due to budget constraints
- **1994-1997**
 - Second attempt to D&D
 - budget constraints again
 - Auxiliary buildings removed
 - placed in extended surveillance mode





Background - Panorama view showing inside of HWCTR at zero elevation





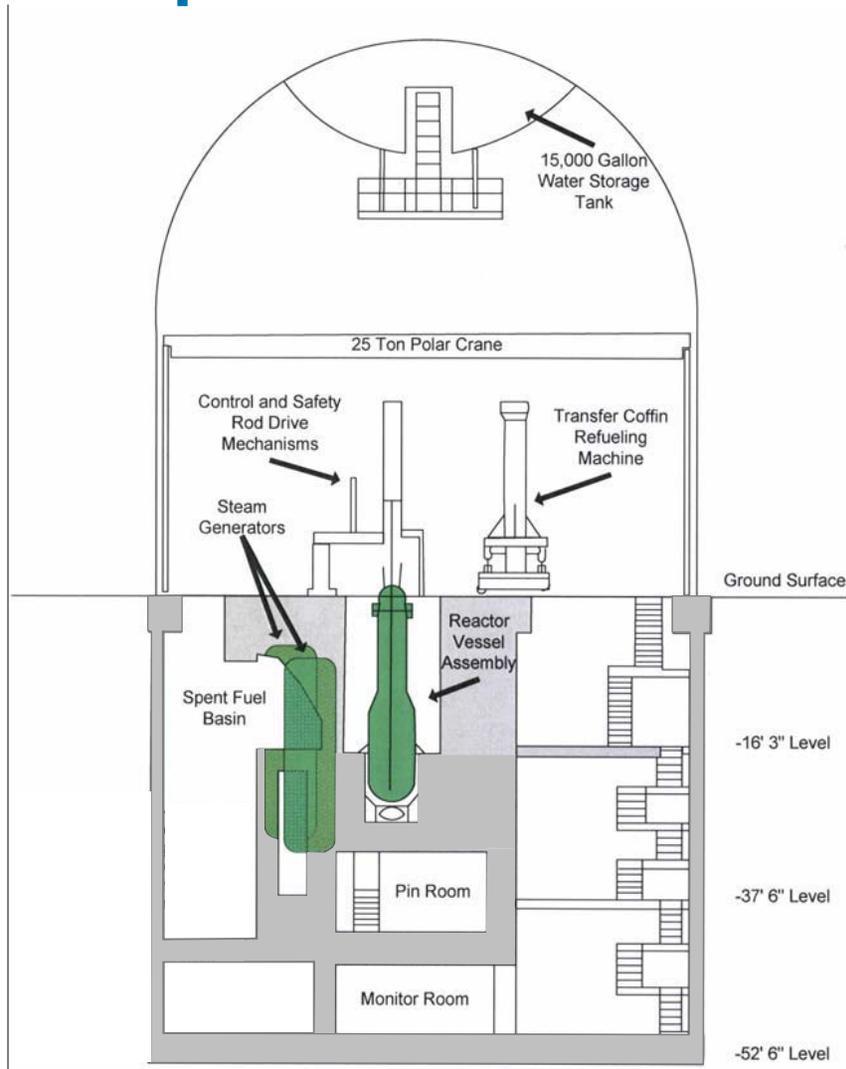
Completion Objectives / Key Performance Parameters

- ❖ **Achieve Human Health and Environmental Protectiveness by removing approximately 99% contamination**
 - Meets standards for industrial worker
- ❖ **Final Decommissioned End State**
 - Achieve Mechanical Completion
 - Final walk-down inspection is completed, including close-out of punch list
 - Regulatory acceptance is documented





Scope



- ❖ Project being performed as part of Recovery Act funding for \$10.7M
- ❖ End State: *In Situ* Decommissioning with Reactor Vessel and 2 Steam Generators removed

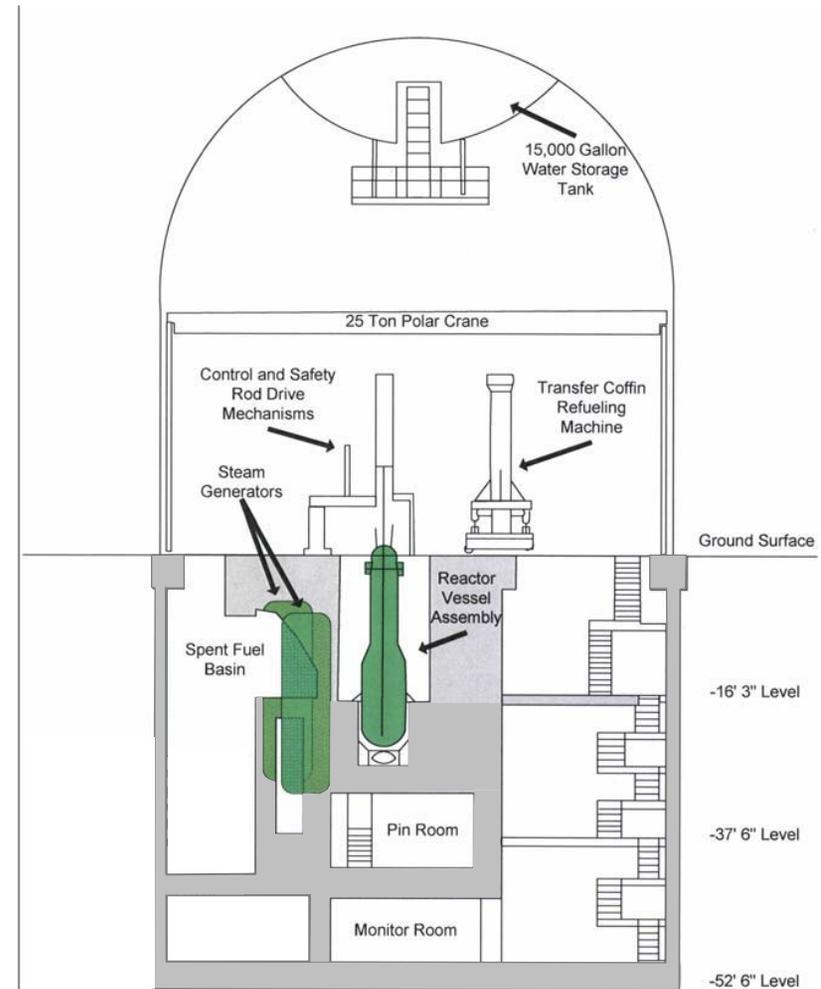




Scope continued

❖ Major Work Activities

- Drain all liquids and isolate all hazardous energy
- Remove and dispose the metal dome
- Remove and dispose the reactor vessel
- Remove and dispose the two steam generators
- Grout the spent fuel pool
- Grout the below-grade areas of the building, including remaining piping and equipment
- Install a concrete cover over the remaining grouted structure





Current Status





Current Status - Cutting of two access doors





Path forward

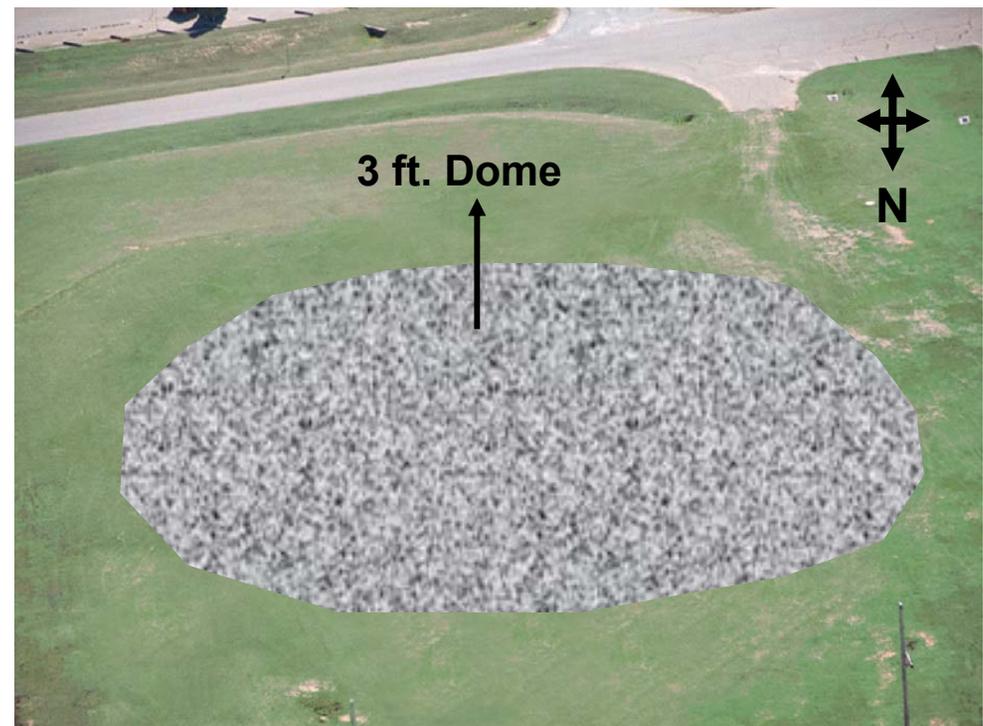
- ❖ **Asbestos Abatement (June 10, 2010)**
- ❖ **Start removal of concrete blocks and cutting piping around Reactor Vessel (August 10, 2010)**
- ❖ **Cut and remove dome for heavy lifts (December, 2010)**
- ❖ **Rig and remove Polar Crane and Trolley (January, 2011)**
- ❖ **Remove Reactor Vessel and load on transport frame (January, 2011)**
- ❖ **Remove and disposition 2 Steam Generators (January, 2011)**
- ❖ **Move Fuel Transfer Vessel Coffin to Reactor Vessel void (February, 2011)**





Path Forward – continued

- ❖ Grout below grade building areas (March 2011)
- ❖ Concrete cover over remaining grouted area (May, 2011)
- ❖ Decommissioning complete (July 2011)





Back up





HWCTR Background

- **Constructed 1959-1961 at a cost of \$8.9M**
 - 70 feet in diameter
 - Steel dome rises 65 feet above ground
 - Reinforced concrete extends 60 feet below grade
 - Heavy water moderated and cooled
 - Pressurized loop and boiling water loop to test fuel assemblies
 - Control room, auxiliary service equipment, and emergency power equipment in separate buildings (D&D in 90's)
 - Fuel Basin capacity for 36 fuel assemblies
- **Operated March 1962 to December 1964**
 - Nominal reactor power of 50 megawatts (thermal)
 - Total power history of 13,882 megawatt-days
 - 36 different fuel assemblies tested; 10 cladding failures experienced
- **Shutdown December 1964**

