

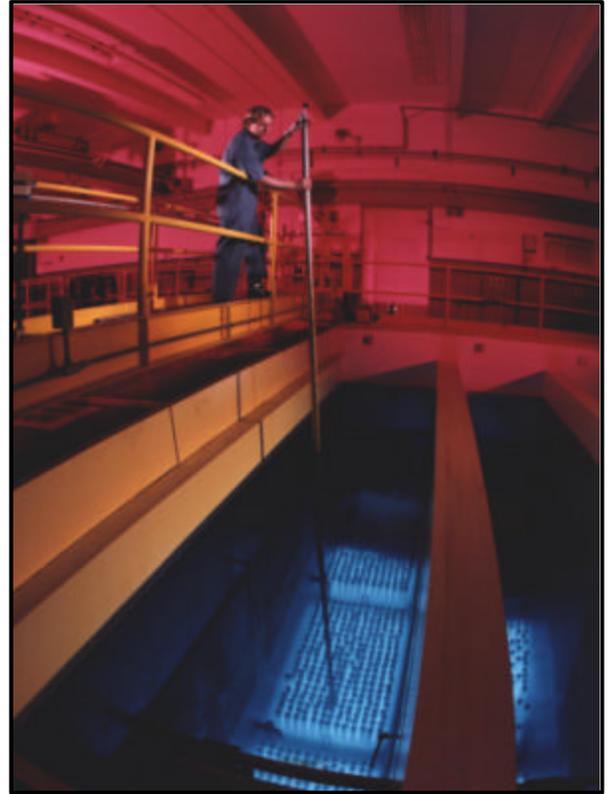


# Waste Encapsulation and Storage Facility

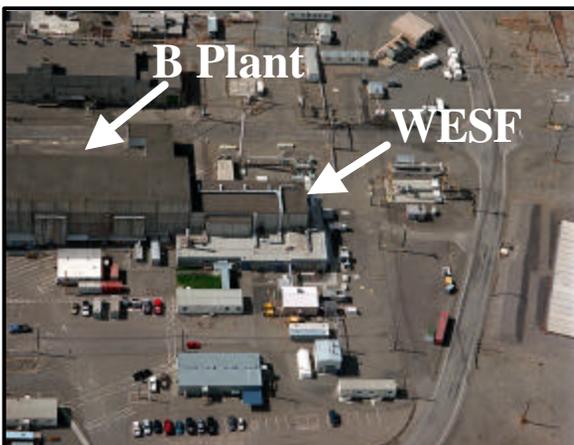
*U.S. Department of Energy • Richland Operations Office*

The 225-B Waste Encapsulation and Storage Facility at Hanford provides safe storage and monitoring of radioactive cesium and strontium capsules. DOE-RL's Waste Management Division has programmatic responsibility for WESF; the operating contractor is Fluor Hanford, Inc. WESF operated from 1974 to 1985 to encapsulate cesium and strontium separated from high level waste in the adjoining B Plant. Separation of these radionuclides reduced heat generation in the tank farm wastes, and provided an opportunity to explore beneficial uses of the separated radionuclides. Some cesium capsules were used in several offsite tests and demonstrations, including sewage sludge sterilization, fruit and pork disinfestation and sterilization of medical devices. Strontium was considered as a heat source for thermoelectric generators. All of the capsules shipped offsite have been returned for storage at WESF or are being disposed of via other programs. Several of the cesium capsules were overpacked to ensure their integrity. The final overpacked capsule was placed in pool storage in January 2000.

The stored capsules contain about 37 percent of the total radioactivity of Hanford Site wastes. Advanced surveillance technologies are being pursued to further enhance capsule monitoring capabilities. Also, extensive activities are



*Above: Highly radioactive cesium and strontium capsules are stored under 13 feet of water. Bottom Left: WESF, adjoining B Plant and auxiliary facilities. B Plant was deactivated in 1998, and transferred to the Environmental Restoration Program.*

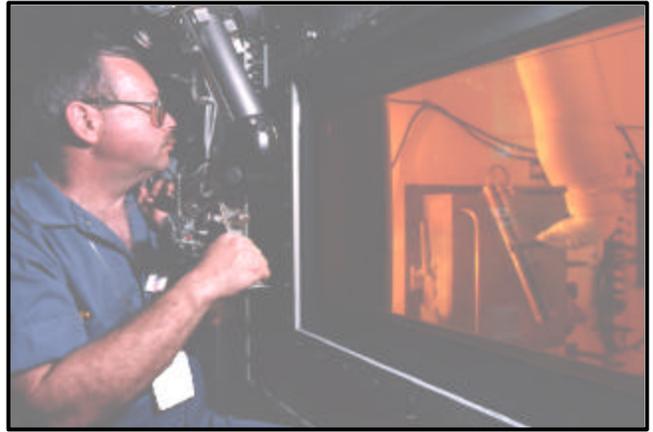


## Quick Facts

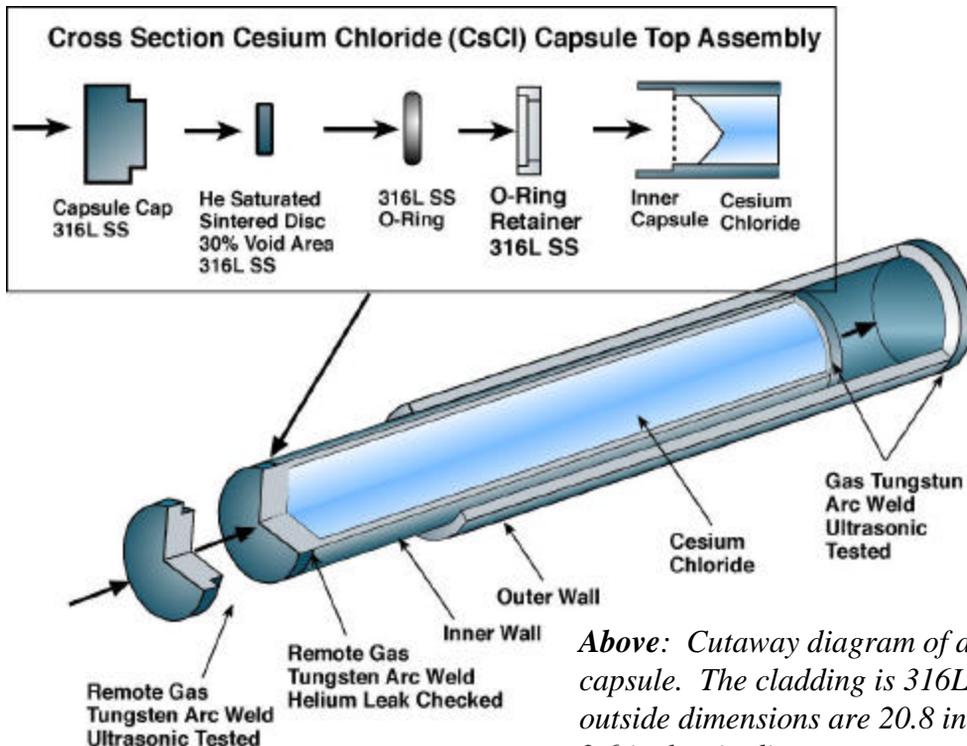
Original Production:	1577 cesium capsules 640 strontium capsules
Current Inventory:	1312 cesium capsules 23 overpacked cesium capsules 601 strontium capsules
Radioactivity: (as of 8/1/01)	Cesium, 47 MCi Strontium, 20 MCi Total, 67 MCi; (131 including daughter products)
Heat generation (as of 8/1/01)	355 kilowatts (1.2 million BTU/hour)
Special features	7 hot cells 12 storage/transfer pools

underway to reduce potential facility hazards, including characterization and cleanout of the hot cells, reduction of radiological zones, and reduction of the chemical inventory.

Long-range plans call for turnover of the capsules to the High Level Waste Disposal Program beginning in 2013. This will be followed by deactivation of WESF by 2019.



*Above: Capsule inspection in a WESF hot cell. Left: Closed Loop Cooling System removes heat generated by the capsules stored in the WESF pools.*



*Above: Cutaway diagram of a typical cesium capsule. The cladding is 316L stainless steel; outside dimensions are 20.8 inches long and 2.6 inches in diameter.*

#### Historical Note

The U. S. Department of Energy's Richland Operations Office owns the Hanford Site in southeastern Washington State. Hanford was established during World War II as part of the top secret Manhattan Project to produce plutonium for nuclear weapons. Weapons material production was halted in the late 1980's. The Hanford Site is now engaged in the world's largest cleanup effort to deal with the legacy of radioactive and hazardous wastes that resulted from the plutonium production era. Hanford's cleanup program is regulated by the U. S. Environmental Protection Agency and the Washington Department of Ecology under a long term compliance contract called the Tri-Party Agreement. This agreement sets the framework and timelines on the cleanup work so that Hanford meets current environmental standards. The Waste Encapsulation and Storage Facility has an important role in meeting these environmental standards.

