



FACTS

ABOUT THE SAVANNAH RIVER SITE

Tritium Facility Modernization and Consolidation Project

The Savannah River Site Tritium Facilities now consist of four main active process buildings that house a number of key operations, including reclamation of previously used tritium reservoirs; receipt, packaging and shipping of reservoirs; recycling, extraction, and enrichment of tritium gas; and several important laboratories. One of these process buildings was built in the 1950s. A second was built in the late 1960s. The third building, originally called the Replacement Tritium Facility (RTF), began operations in 1994. The fourth and newest process building, the Tritium Extraction Facility incorporating new tritium extraction technology, became fully operational in early 2007.

The purpose of the Tritium Facility Modernization and Consolidation (TFM&C) Project, completed in August 2004, was to consolidate the tritium processing and handling activities, to improve safety, reduce environmental releases, improve productivity and significantly reduce future operating costs. Among other advantages, this consolidation essentially expanded RTF to take over the now deactivated 50-year-old 232-H process building functions. This upgrade and consolidation project employed:

- Several new hydrogen gas processing technologies – hydride tritium stripping technology, next generation hydrogen solid storage beds and advanced hydrogen isotope separation technology
- A 3-D computer-aided design and drafting model used extensively during design and construction to lessen installation impacts and ensure a workable design
- A new strategy to fabricate and install equipment in a clean fabrication shop before transportation to the construction site, allowing the opportunity to fine-tune the process

Project Objectives

- New tritium processing equipment was sized to accommodate the new tritium source – the Commercial Light Water Reactor/Tritium Extraction Facility combination.
- The Materials Test Facility, a laboratory that performs reservoir surveillance operations and tests tritium effects on materials, has been relocated and houses life storage equipment, contaminated material examination equipment and motor control center equipment.
- Support services and utilities were modernized to support the relocated processes.

Technology Improvements

New tritium processing equipment continues to use technology advances to improve safety, health and environmental protection. These advances include tritium confinement in gloveboxes, glovebox cleanup systems to minimize tritium releases to the environment, metal hydride beds for tritium storage in a safe, solid form, and dry pump systems to eliminate use of oils and mercury (hazardous and mixed wastes).

In addition to the existing technologies, getter beds technology was used in the TFM&C project. Getter beds replace the former oxidation-absorption technology of stripping small amounts of tritium from gas streams. Getters are designed to remove tritium and other elemental hydrogen isotopes from the gas stream onto a metallic material such as a metal hydride/tritide.

The new Material Test Facility used computer-controlled environmental chambers for tritium reservoir temperature conditioning. Also, the facility employed a new generation commercially available ion chamber to detect tritium in the room and hoods.

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