SRS UPDATE

NEWS FROM THE SAVANNAH RIVER SITE • MARCH 2005

# FB Line Operations complete; security moves out

After more than 50 years of protecting information and materials, security forces have moved out of FB Line.

F Canyon and FB Line are chemical processing facilities that together have provided one third of the United States' weapons-grade plutonium.

FB Line produced its last item of plutonium nearly two years ago, at about the same time as F Canyon finished its PUREX operations. However, operations continued in other parts of the facility to stabilize and package legacy materials for long-term storage elsewhere on site, until the Mixed Oxide Fuel Fabrication Facility is ready.

Members of the media interview Bob McQuinn, Manager, F Area Closure Projects, regarding the deactivation work taking place in FB Line.

In February, those operations were completed, and the final shipment left F Area in mid-February. Since then, crews have been working to finish cleaning up residues and verify the absence of nuclear materials in FB Line. That work is now complete, and security guards have left the facility.

WSI Officers (from left) Bill Frischman, Johnny Chivers and Jason Frommer departing from FB Line for the last time.

"It's a historic time in F Area," says Bob McQuinn, Manager, F Area Closure Projects. "I'm so proud of these workers. In 1954, our predecessors began this critical work, and now we have completed the mission."

FB Line deactivation work is already under way in areas where missions have been completed. FB Line's workers are being released to other facilities on site or to deactivation teams.

**"It's a historic time in F Area."**

**– Bob McQuinn, Manager, F Area Closure Projects.**

FB Line, located on top of F Canyon at the Savannah River Site, was constructed in the early 1960s to receive plutonium-239 nitrate solution produced in F Canyon and convert it to a solid form. This process continued until March 2002, when all scheduled operations to stabilize plutonium-bearing materials from the SRS production era were completed successfully and ahead of schedule.

## Last transfer done, F Canyon tanks out of service

F Canyon chemical makeup tanks.

After 51 years of operation, F Canyon personnel have completed the last flush of the last tank in F Canyon, and the last transfer of liquid waste to F Tank Farm. All tanks have been removed from service in both the warm and hot canyons.

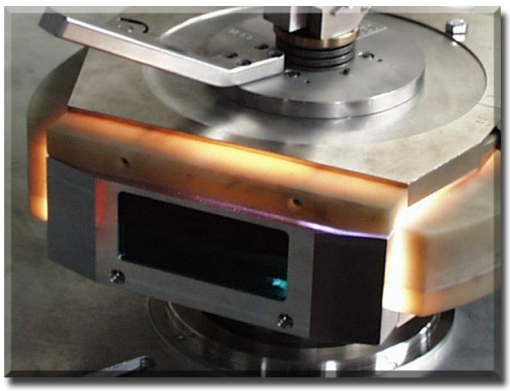
The program successfully flushed 82 process tanks in the canyon, to ensure that RCRA limits were met for each vessel. Process solutions in all vessels had to be processed and dispositioned prior to starting flushes.

The flush process consisted of full volume acid flushes, followed by a water flush. Solutions were cascaded from vessel to vessel when applicable. Numerous changes and modifications to piping routes, procedures and processes had to be performed to support these activities.

When requirements were met, each vessel was physically isolated to ensure that the integrity of the flushes could not be compromised. Isolations have been completed.

## Inventions ensure safe long-term storage of plutonium

F Area's announcement that it had produced the last bagless transfer can and welded the last outer 3013 container marked a huge accomplishment for the Savannah River National Laboratory (SRNL).



Shown is the weld head for the Outer Can Welder.

SRNL designed, built and installed the first Bagless Transfer System (BTS) unit in FB Line in 1997. Because FB Line is very cramped, SRNL designed the first BTS to fit under a glove box.

The patented BTS transfers nuclear material from a glove box directly into a stainless steel container without the use of plastic bags (hence the name "bagless"). Plastic is not used because it degrades over time. Stainless steel cans won't degrade over time, and will ensure a long-term, safe storage system. This inner can is then placed within an outer can. The entire package is called a 3013 storage package.

SRNL also developed the Outer Can Welder to weld the stainless steel double-canned system shut. The system is adaptable to existing glove box lines at many DOE sites.

After welding, the cans are sent to a Digital Radiography System built by SRNL. This system screens the weld to measure pressure buildup, ensure quality and provide can integrity. It also takes a baseline image of the can. SRNL also developed the Automatic Leak Detector that checks the weld for leaks.

In addition to these inventions, SRNL assisted in the design of the M9 furnace that "roasts" the plutonium and drives off water before it is stored in the can. SRNL's success in meeting these challenges has resulted in interest from other sites throughout the DOE complex and more work for the Savannah River National Laboratory.

## SRS Technology Days: An adventure in science

Dan Krementz, an engineer with SRNL, is explaining the benefits of pipe-crawling robots.

Each year over 3,000 people visit SRS Technology Days events.

This enrichment program was recently held at Augusta's Fort Discovery National Science Center. The primary purpose of this effort is to expose area middle-school students to interactive science and engineering exhibits.

"The large variety of fascinating exhibits that we offer provides a wonderful opportunity for these kids to discover that science and engineering can be fun and rewarding," says Tim Smail, SRS Technology Days Chairperson. "Many of the students visiting these events will eventually be the scientists and engineers who return from college to work in our communities. Technology Days is an investment in these kids that will, in the long run, benefit SRS, local industry and most importantly, the students themselves."

During the first evening of this two-day event, the facility and all of the exhibits were opened to SRS employees and the public.

"SRS has invested a lot of time and manpower into making this a beneficial resource for area students. While we have this wonderful facility, exciting exhibits and terrific volunteers in place, why not ask the public to visit with us as well," adds Smail.

## Weapon Interns visit SRS

SRS's Defense Programs hosted the next generation of nuclear weapons specialists as part of an intense program that gives the young scientists and engineers a broad and in-depth understanding of nuclear weapons and the entire weapons complex. The interns are a select group of nuclear weapons complex professionals from the National Nuclear Security Administration labs and production sites, along with a few from the Department of Defense.

The Weapon Intern Program prepares the future generation of experts for critical positions in the nuclear weapons stewardship program by ensuring that they acquire the basic skills necessary to assume stewardship of the stockpile.

While at SRS, the group toured several Tritium facilities. They also participated in presentations about the Pit Disassembly and Conversion Facility, Savannah River National Laboratory's new Hydrogen Lab, pit manufacturing and SRS closure activities.

The Weapon Intern Program is a one-year work-study program conducted in partnership with line organizations. The program uses a combination of on-the-job applications of principles and adult-learning processes through course work, project assignments, mentors, site visits throughout the nuclear weapons community and rotations into aligned fields.

# SRNL scientists introduce students to hydrogen technology

Student teams recently dazzled spectators with their innovative car designs during the Hydrogen Fuel Cell Model Car Challenge.

The teams designed and built hydrogen fuel cell model cars for speed race competitions using energy provided by hydrogen. WSRC provided students with Thames and Kosmos® Hydrogen Fuel Cell Car Kits for the competition.

Savannah River National Laboratory scientists who conducted the race and provided guidance to the students were impressed with their efforts. One volunteer, Paul Cloessner, said "The teams that participated were outstanding and put a lot of thought into their designs. It was clear that they understood basic engineering and physics that could optimize the speed of the cars."

Team captain William Pierce races his team's car to victory during the Hydrogen Fuel Cell Model Car Challenge.

Winning teams were: First place, Dutch Fork High School, Columbia, SC; Second place, Irmo High School, Irmo, SC; and Third place, Academy of Richmond County, Augusta, Ga.

Who knows? One day in the not too distant future, we could be riding in vehicles designed by one of these students.

The SRS Update is published monthly by Westinghouse Savannah River Company.
If you have questions or comments about any of the articles, call 803.952.9583.
Change of Address? Notify the WSRC Service Center: service-center@srs.gov or PSSC Bldg. 703-47A, Aiken, SC 29808

Westinghouse Savannah River Company
P. O. Box 616
Aiken, SC 29802

PRSRT STD
US Postage
Paid
Aiken SC
Permit 79