Purpose

• To provide an update on the SRS Cold War Preservation Program and to fulfill a Strategic & Legacy Management (S&LM) 2014 Work Plan topic.
Driven by the National Historic Preservation Act

Fostered the system by which federal agencies...

survey and identify
districts, sites, buildings, structures, and objects significant in American history, architecture, archeology, engineering, and culture, and

use this information to plan projects so that, where possible, historic places are preserved.

President Lyndon B. Johnson signs NHPA, 1966
Preservation of Modern History 1950 to 1989

Program developed as part of the Site’s Fiftieth Anniversary

SRS recognized the Site’s Cold War facilities and equipment as potentially significant and began its Cold War inventory as required under the NHPA.
Programmatic Agreement

Developed with State Historic Preservation Office, Advisory Council, and local stakeholders

For the identification and treatment of resources and artifacts that date from the Site’s selection to the end of the Cold War.

- We identify facilities for preservation
- We write histories
- We collect and manage artifacts
- We provide public outreach
Program Objectives – Resource Identification 2014

220 Cold War resources identified as significant as well as the Site Layout

Considered a National Register-eligible Cold War historic district

No new Cold War resources such as buildings or structures were identified in 2014

A Area Conceptual Plan Created by Voorhees, Walker, Foley & Smith, 1952

Administration Building after Completion
Program Objectives – Documentation 2014

Separations study titled “Bringing it to Form” finalized and accepted by SHPO in September 2014

Research and development study just starting.

Thematic studies available at University of SC Aiken Government document Library or online at http://shpo.sc.gov/research/Pages/conreps.aspx
Program Objectives: **Curation 2014**

**315-M = Curation!**

- Accepted 12 new artifacts, five pending
- Over 50 boxes of artifacts, re-inventoried
- Installed “new” shelving
- Currently assessing conditions and creating priority list of artifacts for conservation
Program Objectives: Public Outreach in 2014

- Partnered with SRNS Communications Team to share historic photographs through social media program, “Throwback Thursdays”

- Hosted seven tours of Curation Facility (75 visitors) Included the Veterans Curation Lab, SRS Mentoring groups and SRS interns

- Organized four Heritage Tourism meetings for preservation community within the CSRA

- Arranged tour of Plant Vogtle for Historic Preservation group
Program Objective: Compliance 2014

- Ensure DOE is in compliance with NHPA in terms of current undertakings
- Maintain up to date training in safety and security
- Maintain Historic Preservation Advisory Team Meetings on a Quarterly basis
- Working on Cultural Resources Management Plan update
HOW BUILDINGS, PHOTOGRAPHS AND ARTIFACTS TELL STORIES – “BREAKING STORY” 217-F’s VAULT DOORS
It served the F and H areas as a storage magazine for plutonium and tritium in final packaged form prior to shipment from the plant.
What Goes in, Must Come Out

WE DON’T DIG URANIUM OUT OF THE GROUND, AND WE DON’T MAKE BOMBS

PLANT PROCESSES

Before being charged to the reactor, fuel and target materials are formed into aluminum-clad cylindrical elements. The aluminum cladding minimizes corrosion and seals radionuclide products within the elements.

FUEL AND TARGET FABRICATION

"First forge the fuel...."

Savannah River's large production reactors are moderated and cooled by circulating heavy water. In the stainless steel reactor tanks, long cylindrical assemblies of fuel and target elements are positioned in a precise geometrical pattern to form the reactor lattice. Remotely-controlled machines for charging and discharging reactor elements are shown above the reactor top.

REACTOR IRRADIATION

"...put the heat where it's needed...."

Chemical processing of irradiated materials produces radioactive liquid waste. This material is concentrated and stored in large underground tanks to prevent contamination of the plant environs. Safe management of wastes requires continuous surveillance.

WASTE MANAGEMENT

"We make practically all of the feed used in the heavy water plant...."

Heavy water (D₂O) used in moderation the reactor is extracted from natural water in a gas-liquid extraction process, which concentrates the light isotope (0.017%) of heavy water in the Savannah River to about 95% D₂O. Almost distillation stage yields extremely pure D₂O at a concentration greater than 99%

HEAVY WATER EXTRACTION

"...then mix judiciously with D₂O...."

After irradiation, fuel and target materials are chemically processed in remotely-controlled shielded facilities to remove radioactive byproducts, to purify the desired product, and to recover the valuable unbaked nuclear fuel. A mockup of one of the process vessels designed for remote operation and maintenance is shown above.

SEPARATIONS

LABORATORY GOALS

Today, we direct the Laboratory’s resources increasingly toward peaceful aims — electric power from heavy water reactors, the chemical processing of spent power fuels, the recovery of specific fission products, and the manufacture of special radioisotopes.

PRODUCTS

PLUTONIUM-239
Produced by neutron irradiation of uranium-238, a byproduct of uranium reprocessing. Valuable for its high energy capacity.

CERIUM-244
Properties and applications similar to those of cerium.

PLUTONIUM-239
Used as a nuclear explosive, as a breeder reactor fuel, and as the starting target material for production of heavier radioisotopes.

TANTALUM-180
A non-intense isotope of hydrogen, component of interstellar dust, and a potential fuel for thermonuclear fusion power generation.

COBALT-60
Known radiation source and has long been used for medical therapy.

CALIFORNium-252
One of the rare non-radioactive isotopes, has great potential value in medicine, industry, research, and education.

HEAVY WATER (D₂O)
Important nonradioactive product of the Savannah River Plant. It occurs at a concentration of 99.5% in natural water and must be concentrated to 99.5% for use as a neutron moderator.

AND OTHER RADIOACTIVE ISOTOPES

...and lastly, squeeze out the goodness....

Excerpted from Brochure “Savannah River Laboratory” published circa 1962
Nuclear Weapons Manufacturing Process

Savannah River Plant

Map of the DOE Weapons Complex – “The Bomb Plant”

History and Description

- Constructed in 1953 in F area.
- Separated by a double fence and had its own guard house.
- One of the few buildings on Site that was under Atomic Energy Commission (AEC) control.
- It was a delivery point where finished products were transferred to the AEC.
FEATURES

- Blast Resistant
- Divided into two unequal sized vaults
- Six-inch thick metal doors
- “All Over the World it’s a Safe Name”
- Large vertical concrete visual barriers
Documentation Views

Both vaults meet the specifications established by the National Surety and Underwriters Codes for Class IV bank vaults. Neither contained any specialized equipment.
Guard Shack and Entry
Note: Criticality panel in right background. It was collected as an artifact.
How did the transfer work?

Who were the couriers?

What vehicles were used?

Photos in Site Archives show manipulated car interiors associated with couriers? Are they related to the transfer process?

Initial research suggest that the building was used for its historic function through the early 1970s.

Later used for other purposes?
Research and Preservation Leads to a Great SRS Story and One That Is Little Known

- 217-F’s history links the site to the national complex.

- Its size and anonymity belied that importance.

- The building and its vault doors are at odds with the scale of the Site’s processes.

- The preserved vault doors are a significant and ironic reminder of the Site’s Cold War history.

- Our intention is to create a visible storage exhibit space in the Curation Facility for the vault doors where it can tell that story.