

United States GovernmentNational Nuclear Security Administration (NNSA)  
Savannah River Field Office (SRFO)

# Memorandum

DATE: **May 6, 2014**

REPLY TO

ATTN OF: NA-00-SV (Pyram, 803-208-1122)

SUBJECT: National Nuclear Security Administration-Savannah River Field Office (NNSA-SRFO) Fiscal Year (FY) 2015-2024 Ten Year Site Plan (TYSP)

TO: Jefferson G. Underwood, Director of Office for Infrastructure and Capital Planning (NA-00-20)

REF: Memorandum from James J. McConnell, *Requirements Modification to Create Resources for Laboratories Operating Board Infrastructure Assessments*, dated March 27, 2014

Attached is the National Nuclear Security Administration-Savannah River Field Office (NNSA-SRFO) Ten Year Site Plan (TYSP) for Fiscal Years 2015-2024 for the NNSA Facilities at the Savannah River Site (SRS) for your acceptance. This document deviates from past TYSPs in that it is only a brief update from the plan submitted for FYs 2014-2023. This change is per the memorandum referenced above.

If you have any questions or comments, please contact S. Pyram of my staff at (803) 208-1122.

Sincerely,

  
for Douglas J. Dearolph  
Manager

SV:SP:ark

COR-SRSOFP-4.28.2014-573214

Attachment:

NNSA-SRFO TYSP FY 2015-2024

cc:

L. Bridges, NA-00-20

# NNSA-SRFO Ten-Year Site Plan Update FY 2015 – FY 2024

Revision 1  
May 2014

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National Nuclear Security Administration (NNSA)

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SRS Tritium Facilities

**UNCLASSIFIED**

DOES NOT CONTAIN  
UNCLASSIFIED CONTROLLED  
NUCLEAR INFORMATION

Reviewing

Official: Susan Arnold, Mgr, Trit Project Integration  
(Name and Title)

Date: 5/5/2014



SRS Nuclear Nonproliferation Facilities  
Under Construction (January 2013)

## Summary

The NNSA Ten-Year Site Plan (TYSP) prepared for FY 2015-FY 2024 is intended to be a brief update from the previous TYSP issued in 2013. Also, the Infrastructure Data Analysis Center (IDAC) that normally accompanies the TYSP will not be updated at this time. Therefore, this document is an update of significant changes from SRNS-RP-2013-00185, with FY 2013 accomplishments, an abbreviated update on Current State and Future Plans, and other specifically requested information being the only sections included.

## FY 2013 Accomplishments

### Savannah River Tritium Enterprise

For over half a century, excellent performance in the supplying of tritium, a radioactive hydrogen gas that is an integral part of our nation's nuclear defense, has been central to the Savannah River Site's identity. The Savannah River Tritium Enterprise (SRTE) continued that proud tradition in 2013, with service to four main missions: tritium supply, nuclear stockpile maintenance, nuclear stockpile evaluation, and helium-3 recovery.

Notable Tritium Programs accomplishments for FY 2013 include:

- Completed 100 percent of the FY 2013 mission deliverables on schedule - including reservoirs, gas transfer systems, and function tests – despite a long-planned outage that rendered the Tritium Facilities unavailable for production for several weeks during the year.
- Successfully completed the final stages of an initiative that began in 2006: implementation of the replacement Automated Reservoir Management System (ARMS II), a major undertaking that required a five-week facility outage and coordination across the U.S. Nuclear Security Enterprise.
- Used the ARMS II implementation outage as an opportunity to complete a wide assortment of needed upgrades, replacements and maintenance in the Tritium Facilities, successfully completing the complex array of activities without injury, radiation dose, or escape of contamination.
- Safely and effectively operated the newly installed system for recovery and bottling of helium-3, filling four cylinders with this scarce and valuable resource utilized by the federal government; conducted preparatory work for adding to the U.S. supply via the innovative use of spent process beds that had been slated for disposal.
- Added new tritium to the nation's supply by extracting tritium from the Cycle 10b Tritium Producing Burnable Absorber Rods (TPBARs), and received and stored the Cycle 11a and 11b TPBARs for future extraction.
- Provided excellent support for NNSA's B83 Alt 353 Program, overcoming several emergent technical issues and funding challenges.
- Continued to execute the strategic Tritium Responsive Infrastructure Modifications (TRIM) Program to relocate and right-size functions from Cold War legacy facilities into more modern facilities, reducing cost and footprint:
  - Centralized control of SRTE operations into a single control room
  - Moved personnel into the new Tritium Engineering and Process Support buildings, which provide modern space for personnel from trailers and allow legacy facilities to be deactivated.
  - Completed gaseous de-inventory and safe shutdown of the obsolete Helium-3 Facility, and prepared the facility to initiate deactivation.
  - Developed Scoping Studies involving relocation of ten processes
  - Developed eleven Class 5 cost estimates (low and high range), which serve as a planning basis to facilitate continued TRIM Program development.

- Installed the new Tritium Instrument Demonstration Station in a Tritium Facilities glovebox to promote the development of instrumentation for tritium processing and to improve the understanding of process conditions.
- Leveraged SRTE personnel's expertise in Quality Management to assist other Nuclear Security Enterprise sites.

### Fissile Materials Disposition

To reduce the threat of nuclear weapons proliferation, the U.S. Department of Energy (DOE) is engaged in a program to disposition U.S. surplus plutonium in a safe, secure, and environmentally sound manner, by converting such plutonium into proliferation-resistant forms that cannot be readily used in nuclear weapons. NNSA is responsible for implementing this nonproliferation approach which commits the U.S. and Russia each to render at least 34 metric tons (MT) of weapons-grade plutonium unsuitable for use in nuclear weapons. The facilities across the U.S. DOE complex that may have a role in this approach include the Pantex Facility (Texas), Los Alamos National Laboratory (New Mexico): SRS-H Canyon/HB-Line Facility, K-Area Facility, the Waste Solidification Building (WSB), and the Mixed Oxide Fuel Fabrication Facility (South Carolina).

In FY 2013, SRS accomplished the following in support of the Fissile Materials Disposition Program:

- Completed development of the FMD Preliminary Program Execution Plan.
- Completed updates of all the FMD interface control documents and developed two new ones.
- Completed actions resulting in the placement of H-Area on the MFFF Approved Suppliers List for Feed Materials.
- Assisted LANL on refinement of the prompt-gamma method for qualitative characterization of plutonium feed impurities.
- Completed major facility safety basis upgrade, operator training, procedures, software upgrades, and cold demonstration runs to support start-up readiness in HB-Line at SRS for production of plutonium oxide.
- Completed dissolution of three batches of non-pit plutonium (AFS-2) in H-Canyon to prepare for conversion in HB-Line upon start-up.
- For the MFFF project completed 97% design and 58% of total construction including completion of the MFFF Structure.
- Earned Leadership in Energy and Environmental Design (LEED) Gold certification for the MFFF project Technical Support Building.
- Earned Star status in the Occupational Safety and Health Administration's (OSHA) Voluntary Protection Program (VPP).
- Completed 95% of total construction for the WSB project including the installation of the cementation glovebox.
- Completed the Documented Safety Analysis for the WSB project and continued preparation of start-up, operations, and maintenance procedures.

## **Current State and Future Plans**

The current state and future plans for the Savannah River Tritium Enterprise (SRTE) are relatively unchanged from the last TYSP. The vision for the next ten years continues to be expedited relocation and right-sizing of functions from older facilities into the more modern facilities via an initiative known as the Tritium Responsive Infrastructure Modifications (TRIM) program. A line item project that would complete the TRIM program scope, Tritium Centric Operations Project, is preauthorized by the Construction Working Group (CWG) to start in FY 2017. A second line item project is planned for FY 2023 – FY 2027 that addresses risk reduction associated in the H-Area New Manufacturing (HANM) facility amid a growing deferred maintenance problem.

Two emerging items may have an impact on the Fissile Materials Disposition Program. NNSA provided direction to complete construction on the Waste Solidification Building (WSB) and then place in lay-up for a period of not less than five years. Also President's FY 2015 Budget Request for NNSA "...reflects a decision to place the MOX project in cold standby to further study more efficient options for plutonium disposition." However, no formal approvals have been received nor has contract direction been given to commence cold standby as of this report.

**Table #1 – Proposed Real Property Investments**  
(NOTE: Sorted & Prioritized by Funding Program)

Description	Project No.	Funding Program	Type	Cost (\$000)		
				2014	2015	2016
Environmental Conditioning PLC Replacement		DSW	GPP		\$1,500	
Function Testing DAS Upgrade Project		DSW	GPP			\$2,000
Replace GTS Unloading Laser		DSW	GPP		\$2,500	\$2,500
Modify Unloading B	Y554	DSW	GPP		\$1,500	\$3,000
Replace Film Radiography		DSW	GPP			\$3,000
High Flux Thermal Neutron Source	Y684	DSW	GPP		\$1,200	
Direct Stacking Capability	Y608	Readiness Campaign	GPP		\$2,900	
Enhanced Fracture Toughness Tester		Readiness Campaign	GPP			\$7,500
Replace Worker Protection System		Readiness Campaign	GPP			\$1,800
Fabricate Single Point Wireless Tritium Air Monitors		Readiness Campaign	GPP			\$4,000
TEF Wireless Network	Y611	Readiness Campaign	GPP	\$9		
Replace TCAP Feed Beds A&B, Recovery Beds A&B	Y702	RTBF-MRR	GPP	\$1,400	\$1,200	
Replace Leaking Safety Significant Z-Bed Recovery Water Traps		RTBF-MRR	GPP			\$1,800
Replace Leaking Catalyst System		RTBF-MRR	GPP		\$1,300	\$2,000
Replace TCAP Recovery Bed C&D		RTBF-MRR	GPP		\$300	\$1,350
Replace HT-TCAP Prod Bed 300, 400, 500		RTBF-MRR	GPP			\$350
Replace TCAP Prod Bed B & Columns A&B		RTBF-MRR	GPP			\$400
SS GB Oxygen Monitor	Y686	RTBF-OCF	GPP	\$909		
Relocate VTR Storage (TRIM GPP)		RTBF-RECAP	GPP		\$2,000	\$2,800
Site Prep and Electrical Substation Installation (TRIM GPP)	Y701	RTBF-RECAP	GPP	\$2,600		
234-7H AHU Transformation (TRIM GPP)		RTBF-RECAP	GPP	\$5,000	\$2,300	
Hydroburst (NOTE: Partially funded by RTBF-OCF)	Y607	RTBF-RECAP	GPP	\$200	\$2,500	
General Network Repair (TEB)	Y689	RTBF-RECAP	GPP	\$840		
Replace obsolete PS, GB, and MS Glovebox Oxygen Monitors		RTBF-RECAP	GPP		\$800	\$1,800
PSB General Network Repairs and Upgrade		RTBF-RECAP	GPP	\$650	\$1,000	
Finishing MANM (TRIM GPP)		RTBF-RECAP	GPP		\$1,200	\$4,000
Replace obsolete I2, L3, LA, and LS Glovebox Oxygen Monitors		RTBF-RECAP	GPP			\$800
Grab Sample Capability (TRIM GPP)		RTBF-RECAP	GPP			\$1,100
Analytical Lab (TRIM GPP)		RTBF-RECAP	GPP		\$400	\$800
Replace obsolete P1, P2, & Z-Bed Rec Glovebox Oxygen Monitors		RTBF-RECAP	GPP			\$800
Hot Calibration Lab (TRIM GPP)		RTBF-RECAP	GPP			\$400
Fabricate Two TUMS Calorimeters	Y703	RTBF-CBI(now Recap)	CE	\$881	\$0	
				\$12,489	\$22,600	\$42,200

**Table #2 – Freeze the Footprint Projections**

**Freeze the Footprint Projections - NNSA Facilities**

Fiscal Year	Office GSF	Office GSF Added	Office GSF Removed	Warehouse GSF	Warehouse GSF Added	Warehouse GSF Removed	Total FTF GSF
2012 (Baseline per FIMS)	39584			16341			55925
2013 (per FIMS)	55709	16125	0	30341	14000	0	86050
2014	53960	0	1749	30341	0	0	84301
2015	52221	0	1739	30341	0	0	82562
2016	52221	0	0	30341	0	0	82562