



U.S. DEPARTMENT OF
ENERGY

OFFICE OF
ENVIRONMENTAL
MANAGEMENT

Environmental Management Cleanup Program Performance Measures Targets for Fiscal Year 2015

Rich Olsen

Planning Analyst

Department of Energy-Savannah River

Savannah River Site Citizens Advisory Board
January 27, 2015

Purpose

- Fulfill a Strategic & Legacy Management (S&LM) Committee Work Plan requirement to periodically provide Environmental Management (EM) performance updates.
- Provide: - Fiscal Year (FY) 2014 actual performance results
- Fiscal Year (FY) 2015 targets and year to date actuals (through December)

Acronyms

ARP	Actinide Removal Process
D&D	Deactivation & Decommission
DWPF	Defense Waste Processing Facility
HEU	Highly Enriched Uranium
LLW	Low Level Waste
MCU	Modular Caustic Side Solvent Unit
MLLW	Mixed Low level Waste
Pu	Plutonium
SNF	Spent Nuclear Fuel
SRE	Sodium Reactor Experiment
SWPF	Salt Waste Processing Facility
TRU	Transuranic Waste
WIPP	Waste Isolation Pilot Plant

Savannah River Site Cleanup Program - Background

- **The Environmental Management (EM) Cleanup Program for the SRS started in the 1990's.**
 - Current Lifecycle Estimate (scope, cost, schedule) indicates Environmental Management (EM) cleanup completion by 2065.
- **Performance Measures have been developed to track progress towards end state targets.**

Savannah River Site Cleanup Program – Major Areas

**Radioactive
Liquid
Waste**

**Solid
Waste**

**Nuclear
Materials**

**Soil,
Water
& Facilities**

**Insoluble
Waste
(Sludge)**

**Transuranic
(TRU)
Waste**

**Nuclear
Materials
Disposition**

**Waste Site
Remediation**

**Soluble
Waste
(Salt)**

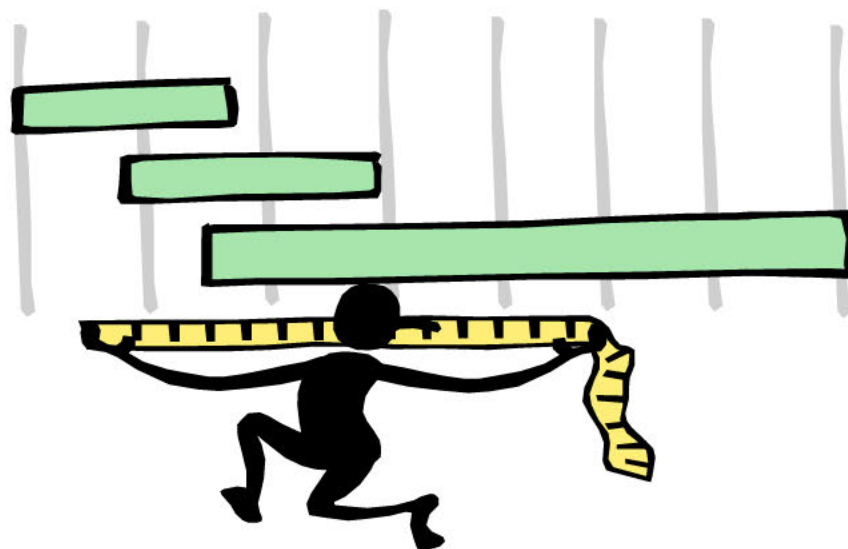
**Mixed & Low
Level Waste**

**Spent Nuclear Fuel
Receipt, Storage
& Disposition**

**Facilities
Deactivation &
Decommission**

**Tank
Closures**

“How did we do in Fiscal Year (FY) 2014 ?”



**Answer: Continued progress under
funding & weather constraints**

Fiscal Year 2014 Challenges

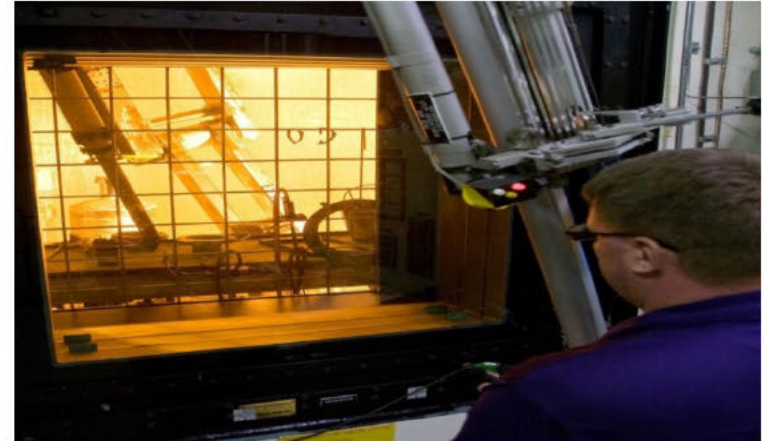
- **Government Shutdown October 2013 (beginning of Fiscal Year (FY) 2014)**
 - Temporary Funding Authorization Constraints
 - Temporary Savannah River Site Furloughs
- **Fiscal Year (FY) 2014 Continuing Resolution**
 - Beginning of year delays in authorization
- **Polar Vortex**
 - Freezing Temperatures
 - Steam Outage and Equipment Damages
- **Ice Storm**
 - Site Closing and Equipment Damages
- **Temporary closing of Waste Isolation Pilot Plant (WIPP)**
 - Delay of planned Transuranic (TRU) shipments

Highlights of Fiscal Year 2014 SRS Cleanup Program

- **Vitrified 126 Canisters of Radioactive Waste**
- **Completed operational closure of two Liquid Waste Tanks (Tanks 5 and 6)**
- **All Legacy Transuranic Waste (TRU) Remediated and Waste Isolation Pilot Plant (WIPP) characterization completed**
- **405 cubic meters of legacy Transuranic Waste (TRU) disposed at Waste Isolation Pilot Plant (WIPP)**
- **Spent Nuclear Fuel: Completed dissolution of the Sodium Reactor Experiment (SRE) Campaign and began dissolution of Foreign & Domestic Research Reactor fuel for uranium recovery**
- **Prepared Plutonium for mixed oxide (MOX) Plutonium Production; HB-Line began oxide production**
- **Continued receipt, safe storage and shipment of Nuclear Materials (including Spent Nuclear Fuel (SNF))**
- **Began field activities at the D Area Ash Project**

Liquid Waste: Vitrification Process

Canister Production



Performance Measure	Unit of Measure	Actual FY14	Target FY15	YTD Actuals FY15	YTD Cum FY15	End State*	% Compl.	Est. Year Compl*
Vitrify Insoluble Waste (Sludge)	Canisters Produced	126	156	35	3,912	8,582	46%	2038

*Based on System Plan Revision 19

Liquid Waste: Saltstone Processing

Saltstone Production Facility



Saltstone Disposal Unit (SDU2)



Performance Measure	Unit of Measure	Actuals FY14	Target FY15	Actuals FY15	YTD Cum FY15	End State *	% Compl.	Est. Year Compl*
Process Salt Solution	K Gallons Processed	1,167	1,200	0	9,800	124,657	8%	2040

* Based on System Plan Revision 19

10

Liquid Waste: Tank Closure

Grouting of Tanks 5 & 6 (Operationally closed in Fiscal Year 2014)



Performance Measure	Unit of Measure	Actual FY14	Target FY15	Actuals FY15	YTD Cum FY15	End State*	% Compl.	Est. Year Compl.*
Close Tanks: Old Style	Tanks Closed	2	1	0	6	24	25%	2032
Close Tanks: New Style	Tanks Closed	0	0	0	0	27	0%	TBD

* Based on System Plan Revision 19

Solid Waste Disposal: Transuranic Waste

Transuranic Waste (TRU) Shipment to Waste Isolation Pilot Plant (WIPP)



Performance Measure	Unit of Measure	Actual FY14	Target FY15	Actuals FY15	YTD Cum FY15	End State	% Compl.	Est. Year Complete
TRU- Legacy (in storage prior 2009)	Cubic Meters	405	0	0	11,063	11,600	95%	2017
TRU- Newly Generated	Cubic Meters	24	0	0	139	3,980 (Est)	Ongoing	TBD

Solid Waste Disposal: Mixed & Low Level Waste

Mixed Waste Shipment to Utah



Low Level Waste (LLW) New Trench - On Site



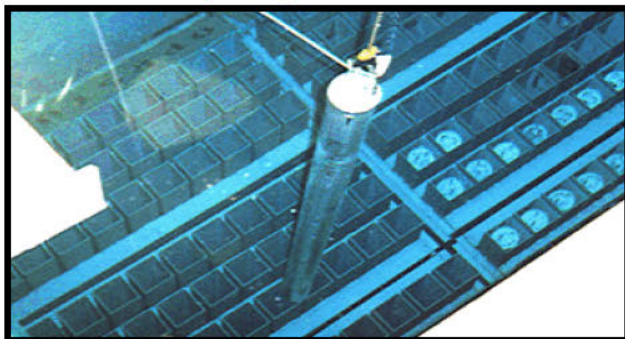
Performance Measure	Unit of Measure	Actual FY14	Target FY15	Actuals FY15	YTD Cum FY15	End State	% Compl.	Est. Year Complete
M&LL-Legacy (Prior to April 2008)	Cubic Meters					103,171	100%	2008
M&LL-Newly Generated	Cubic Meters	Met	< 400*	Met	< 400	< 400	Ongoing	TBD

* Accumulation of Mixed & Low Level Waste not to exceed 400 Cubic Meters at anytime

13

Spent Nuclear Fuel Receipt & Storage

Spent Nuclear Fuel (SNF) Bundle stored in L- Basin



SNF being sent to H Canyon via 70 Ton Cask

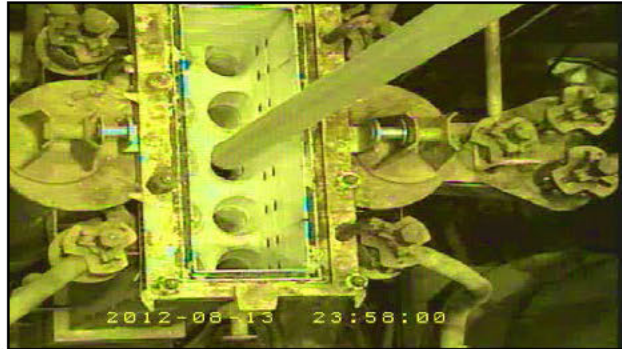


Performance Measure	Unit of Measure	EOY Actual FY14	Target FY15	Actuals FY15	EOY Target FY15	End State	Target Year
L-Basin Inventory	Bundles	3,065			2,985+	0	TBD
	Cores	120			Receipts 120	0	TBD
Added: New Receipts	Bundles	6	NA*				
Removed : Packaged for Transfer to H Canyon	Bundles	106	80	40			

* Forecasts not available due to security restrictions

Nuclear Materials Management

Spent Nuclear Fuel (SNF) Bundle placed into H-Canyon Dissolver



Plutonium 3013 Type Container



Performance Measure	Unit of Measure	Actual FY14	Target FY15	Actuals FY15	YTD Cum FY15	End State	% Compl.	Est. Year Complete
Highly Enriched Uranium Dissolved (SNF from L-Basin)	Bundles Cores	106 0	69 0	29 0	158 0	1,148* 200*	13% 0%	TBD
Plutonium Prepared for Disposition (All Paths)	Containers	10	40	0	167	5,600	3%	2031

* Current approved number of bundles / cores to be dissolved in H Canyon.

D Area Ash Basins

Remediation Planning

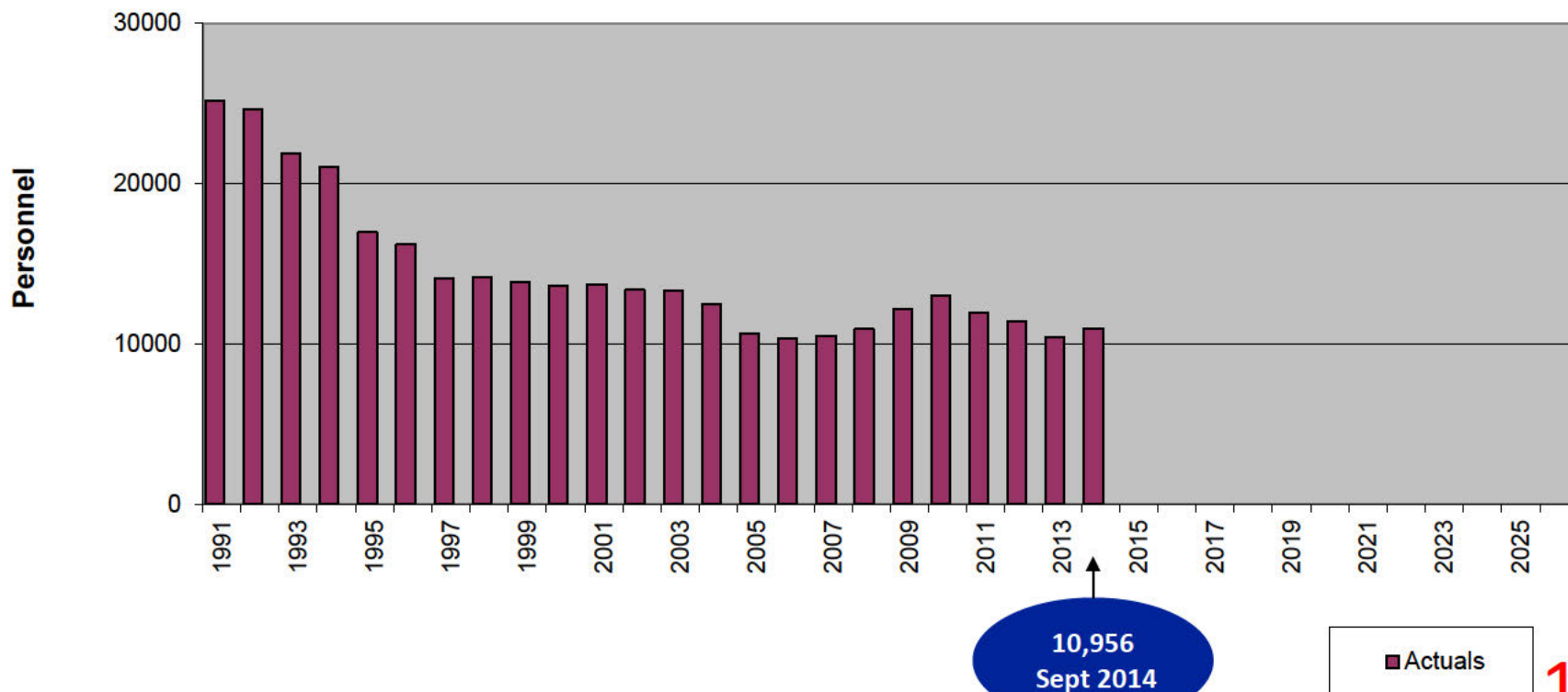


Performance Measure	Unit of Measure	Actual FY14	Target FY15	Actuals FY15	YTD Cum FY15	End State	% Compl.	Est. Year Complete
Remediation of Waste Sites	Waste Site	0	0	0	400	515	78%	2065
Facilities D&D'd	Facilities	4	1	0	289	1,126	26%	2065

D&D – Deactivation & Decommission

Savannah River Site Workforce - Historical

Savannah River Site Workforce



EM Site Cleanup- Major Categories	Unit of Measure	Fiscal Year 2015		Cum Actuals	End State Quantity	% Complete	Est. Year to Complete
		Actuals (FYTD)	Annual Target				
Liquid Waste							
Vitrify Highly Radioactive Components	Canisters	35	156	3,912	8,582	46%	2038
Process Low Level Components (Saltstone)	k Gallons	0	1,200	9,888	124,657	8%	2040
Close Tanks - Old Style	Tanks	0	1	6	24	25%	2032
Close Tanks - Newer Style	Tanks	0	0	0	27	0%	TBD
Solid Waste							
Transuranic Waste Disposed							
Legacy TRU (prior to 2009)	Cu Meters	0	0	11,063	11,600	95%	2017
Newly Generated TRU	Cu Meters	0	0	139	3,980	Ongoing	TBD
Mixed & Low-Level Waste Disposed							
Legacy (prior to 2008)	Cu Meters	Complete	Complete	Complete	103,171	Complete	2008
Nuclear Materials							
Highly Enriched Uranium: Blend Down & Ship	Trailers	Complete	Complete	Complete	336	Complete	2012
Plutonium Preparation - All Paths	Containers	0	40	167	5,600	3%	2031
Spent Nuclear Fuel: Dissolve							
Sodium Reactor Experiment	Bundles	Complete	Complete	147	147	100%	2014
Foreign & Domestic Reactor Fuel	Bundles	29	69	40	1,000	4%	TBD
High Flux Isotope Reactor Fuel	Cores	0	0	0	200	0%	TBD
Spent Nuclear Fuel Receipt & Storage							
Inventory in L-Basin	Bundles	(40)	NA	3,025	0	Ongoing	TBD
Soil, Groundwater & Facilities							
Remediation of Waste Sites	Waste Sites	0	0	400	515	78%	2065
Facilities Deactivated & Decommissioned	Facilities	0	1	289	1,125	26%	2065

- **Department of Energy – Savannah River will continue to track & monitor performance measures for the key operational areas of Environmental Management cleanup operations.**
- **Suggestions from the Citizens Advisory Board (CAB) for any additional improvements are welcomed.**