

5.0 Program Interfaces

Execution of the EM Cleanup Project at SRS involves numerous interfaces with other organizations both on and offsite. Since EM is the major SRS program, it provides landlord services to other organizations, primarily the National Nuclear Security Administration (NNSA). The major interfaces are described below for both on and offsite interfaces. EM's role as landlord will end with the completion of the *PMP* work scope by the end of FY 2025. EM landlord and interface responsibilities will transition to the Office of Legacy Management or other DOE program office. Activities to ensure a smooth transition will be required.

5.1 Onsite Interfaces

This section describes key interfaces with other programs at the SRS.

Landlord

As landlord, EM provides a range of services to other organizations. The operating cost of these services is allocated to all programs on site. EM is responsible for managing and funding capital projects for all general site infrastructure. General site infrastructure includes utilities, common administrative housing, laboratories, computing, telecommunications, transportation, and emergency systems. The EM program also provides general services, including the following:

- environmental services, such as environmental monitoring and reporting and regulatory compliance support and oversight;
- safety and health protection services, including dosimetry, respiratory protection, medical services, and the SRS safety program;
- general site services, such as engineering services, maintenance programs, nondestructive testing, geotechnical support, criticality and

safety analysis programs, emergency services and fire department, fleet management, etc.;

- general site infrastructure that operates and maintains shared facilities across the site, such as roads, railroads, bridges, parking lots, grounds, dams and other facilities outside the general areas;
- procurement services and materials management;
- information technology;
- management services including contract administration, document control and records management;
- human resources;
- internal and contractual audits;
- legal counsel;
- finance; and
- public affairs.

The following programs receive this support:

- NNSA-Defense Programs (NNSA-DP)
- NNSA- Nuclear Nonproliferation (NNSA-NN)
- Savannah River Ecology Laboratory.

The major program interfaces are described briefly below.

National Nuclear Security Administration – Defense Programs – Tritium

The NNSA-DP mission includes maintaining technical expertise in tritium operations, production, and engineering to support the nation's nuclear weapons stockpile. The tritium program generates both liquid and solid low-level waste that is disposed at the SRS. This program does not have a forecast end date. Another NNSA-DP mission at SRS is the planning and support of the Modern Pit Fabrication facility, a potential new mission if SRS is chosen as the location. This *PMP* assumes that no NNSA-DP facilities will be transitioned to EM for deactivation and decommissioning.

National Nuclear Security Administration – Nuclear Nonproliferation (NNSA-NN) – Plutonium Disposition

SRS has been selected as the location for the construction and operation of facilities to dispose of approximately 33 metric tons of surplus weapons-usable plutonium in a manner that meets the "Spent Fuel Standard." The Spent Fuel Standard is achieved when weapons-usable plutonium is made as inaccessible and unattractive for weapons use as is the plutonium that exists in spent nuclear fuel from commercial reactors.

Three new facilities will be required to accomplish this plutonium disposition mission. One facility is the Pit Disassembly and Conversion Facility (PDCF). The nation's nuclear weapons are disassembled at the Pantex Plant in Texas. Plutonium pits from inside the nuclear weapons that are no longer needed for defense will be sent to the SRS PDCF which will disassemble the plutonium component of a nuclear weapon, and convert the resulting plutonium metal to a declassified oxide form suitable for the second facility, the Mixed Oxide (MOX) Fuel Fabrication Facility. The MOX Fuel Fabrication Facility will blend depleted uranium dioxide and plutonium dioxide, form the mixture into pellets, and load the pellets into fuel rods for use in commercial nuclear power plants. Approximately 33 metric tons of surplus plutonium will be used to fabricate this MOX fuel.

The MOX Fuel Fabrication Facility will be owned and financed by DOE but designed, built, licensed, and operated by a private consortium (Duke, Coegema, and Stone & Webster companies). The facility will be licensed by the Nuclear Regulatory Commission and operated so that the facility will be available for inspection by the International Atomic Energy Agency. The ultimate disposition for the MOX fuel, after its use in power plants, will be a geologic repository planned for Yucca Mountain. The third facility is the Waste Solidification Building that will treat the waste streams from both PDCF and MOX.

The construction of new facilities for disposition of surplus U.S. plutonium will not take place unless there is significant progress on plans for plutonium disposition in Russia. Current plans are to construct the new plutonium disposition facilities near the center of the site north of F Area. The program to disposition up to 33 metric tons of surplus plutonium is estimated to begin in FY 2009 and require approximately 10 years of operation. Additional materials could be declared surplus if the U.S. and Russia agree on further reductions in their respective nuclear weapons stockpiles, therefore, potentially extending this mission. Note that completion of the work scope in this *PMP* is not dependent on EM plutonium being processed in these facilities. Implementation of the new plutonium missions may result in additional waste generation that may require EM disposition. The new plutonium missions constitute a small percentage of increase in waste volumes over the existing waste management obligations. This *PMP* assumes that NNSA will deactivate and decommission their own facilities and that no new waste sites will be created.

National Nuclear Security Administration – Nuclear Nonproliferation Program (NNSA-NN) – Enriched Uranium Blend Down

The U.S. has declared a total of 174.3 metric tons of highly enriched uranium (HEU) surplus to future weapons needs. One path for making this material unsuitable for nuclear weapons is through a dilution process called “blend down,” which makes this material suitable for productive use in commercial reactors. Of the 174.3 metric tons of HEU, approximately 85% will be converted to commercial or research reactor fuel. The remaining HEU will be disposed of as waste. Of the HEU to be converted to commercial or research reactor fuel, over 33 metric tons is considered off-specification, meaning the fuel will not meet typical reactor fuel specifications; however, with adjustments in enrichment, it will perform similarly to fuel made from new material. Of the more than 33 metric tons of off-specification HEU, approximately 21 metric tons is located at SRS. Existing EM facilities in H Area along with a new low-enriched uranium loading facility are being used to blend-down approximately 16 of the 21 metric tons of HEU located at SRS and owned by the EM program. The remaining five metric tons of HEU will be shipped directly to a Tennessee Valley Authority vendor (Nuclear Fuel Services) for blend down.

National Nuclear Security Administration – Defense Programs (NNSA-DP) – Potential New Mission – Modern Pit Facility

The DOE has a National Environmental Policy Act (NEPA) process under way to determine the site for a Modern Pit Facility (MPF) to replace the functions shutdown at the Rocky Flats Environmental Technology Site in Colorado. Five sites, including SRS are being considered as host sites for the MPF. Rocky Flats was the source for the plutonium portion of nuclear weapons, called the “pit.” The Congressional Panel to Assess the Reliability, Safety, and Security of the U.S. Nuclear Stockpile noted in its 2002 report that the MPF is needed to fill the most important gap in our current nuclear weapons production infrastructure,

and that it is especially critical for the U.S. to accelerate work on a modern modular pit facility. The MPF project currently has a 17-year long schedule, with certified pits being produced in 2020. A national project organization and infrastructure consistent with a major system acquisition activity has been established. Conceptual design work is currently being performed at SRS, supported and directed by the NNSA and a multi-site team. Any potential landlord costs to support this potential new mission have not been included in this *PMP*.

Office of Science – Savannah River Ecology Laboratory

The Savannah River Ecology Laboratory (SREL) provides site ecological evaluations and research. The University of Georgia, which manages SREL, employs approximately 160 employees.

U.S. Forest Service – Savannah River Forest Station

The Savannah River Forest Station (SRFS) is an independent unit of the U.S. Forest Service, which manages the SRS forest resources, as well as provides a forest fire protection program, manages the site's secondary road system, conducts erosion control, performs soil restoration and conducts exterior boundary maintenance. Funding for services provided by USFS is reimbursed by the EM program. There are approximately 90 SRFS employees at SRS.

Office of Nuclear Energy – Potential New Mission – Hydrogen Technologies
SRS is currently participating in hydrogen technology programs with the potential for expansion.

5.2 Offsite Interfaces

The SRS has many interfaces with other programs and sites. In most cases, SRS depends on services of other sites, while in some cases other sites depend on SRS. Key interfaces with other sites are described below. Regulatory and stakeholder interfaces are described in Section 7.0.

Waste Isolation Pilot Plant

Transuranic (TRU) waste resulting from nuclear material stabilization activities has been stored at SRS for years. The TRU waste poses a significant risk due to waste characterization uncertainties and the potential for the build-up of hazardous gases that could lead to an environmental release of contamination. TRU waste is being characterized and processed to ship to the Waste Isolation Pilot Plant (WIPP). Shipments of TRU waste drums began in FY 2001. Through FY 2003, SRS had completed shipments of 6,790 drums of TRU waste to WIPP, with 5,824 drums shipped in FY 2003 alone. WIPP provides personnel at SRS who package material for shipment and provides certain equipment required for TRU processing. Deinventory of the TRU inventory at SRS depends on the continued operation and acceptance of TRU waste at the WIPP.

Federal Repository at Yucca Mountain (DOE-RW)

Critical to the completion of the EM cleanup at the SRS is operation of a Federal Repository currently planned to be located at Yucca Mountain, Nevada, and scheduled to begin receipts in FY 2010. Key assumptions in this plan are:

- all spent nuclear fuel will be shipped offsite for final disposal at Yucca Mountain, beginning in FY 2011

- all high-level waste will be shipped offsite for final disposal at Yucca Mountain, beginning in FY 2010
- shipments of both materials to Yucca Mountain will end in FY 2020.

Hazardous and Mixed Waste Disposal (Commercial)

Hazardous waste is defined by the EPA and requires management in accordance with specific regulatory mandates. Mixed low-level waste is a low-level waste which also contains hazardous constituents and is managed in accordance with DOE Order 435.1 and hazardous waste regulations. The Solid Waste program receives, stores, and arranges offsite treatment or disposal for SRS generated hazardous/mixed wastes. Examples of hazardous/mixed waste include materials such as lead, solvents, paints and pesticides. N Area contains some of the interim hazardous waste storage facilities for the site, which involves three primary operations: receipt of waste from onsite generators, interim storage, and shipment of the waste for offsite treatment and disposal. Continued operation and cleanup of the SRS depends on the ability to ship hazardous waste to offsite vendors. Although Nevada Test Site and Hanford may be available in the future, there are presently no federal disposal facilities for treated listed mixed waste.

Low-Level Waste Disposal

Low-level waste is radioactive waste that is not classified as high-level waste, TRU waste, spent nuclear fuel or byproduct material and does not contain any hazardous waste. Typically, low-level waste at SRS is radioactively contaminated materials such as job control waste, small and large equipment, plastic sheeting, gloves, soil and suspect contaminated. Some low-level wastes generated at SRS are disposed of at other DOE (Nevada Test Site or Hanford) or commercial sites. Cleanup of SRS depends on continued shipment of these materials to other sites for disposal.

Receive Waste (Naval Reactors)

Classified waste, such as reactor components, is routinely received from Naval Reactors. These components are disposed in E Area.

Tennessee Valley Authority (Nuclear Fuel Services)

As mentioned above, excess highly enriched uranium at SRS is being dispositioned by both down blending and shipment to the TVA vendor, Nuclear Fuel Services (NFS), and by direct shipment to NFS. NFS also provides natural uranium for the blending. SRS depends on TVA to provide and accept these materials to enable deinventory of H Area and K Area.

Oak Ridge National Laboratory

Deinventory of H Canyon is dependent on transferring excess Np^{237} to Oak Ridge for use in producing Pu^{238} .

Oak Ridge Toxic Substances Control Act Incinerator

SRS sends waste to the Oak Ridge Toxic Substances Control Act Incinerator for thermal treatment. Although primarily available for treatment of radioactive polychlorinated biphenyl waste, the incinerator is also permitted for mixed and low-level waste. Most recent shipments include F Canyon PUREX solvent.

Hanford, Los Alamos National Laboratory, and Lawrence Livermore National Laboratory Pu Receipts

The DOE still has significant excess inventories of Pu at three sites other than SRS: Hanford, Los Alamos National Laboratory, and Lawrence Livermore

National Laboratory. The 2002 PMP proposed consolidation of plutonium from across the DOE Complex at SRS to await disposition. The PMP cited several benefits for the consolidation including cost savings, reduced plutonium storage footprint, and an enhanced Homeland Security by reducing the number of target facilities. DOE has not made a decision to consolidate EM-owned plutonium at SRS but consideration of taking such action is currently under study.

SRTC Support to Hanford Waste Treatment Plant

SRTC has provided significant support to the Hanford Waste Treatment (WTP) Research and Technology Program. Primary areas of support have been in the areas of waste characterization, process and design confirmation, obtaining basic data to support design, and obtaining regulatory data to support environmental permitting and waste form qualification. SRTC began supporting WTP in FY 2001 and is anticipated to continue support into FY 2006. The SRTC budget to support this effort has been in excess of \$60 million.

Spent Nuclear Fuel

SRS receives, stores, and will ultimately ship spent nuclear fuel from both domestic and foreign research reactors. This program requires extensive interface with reactor owners, and other DOE programs and field offices.

Other Programs

SRS is supporting a variety of national programs in a number of areas, e.g., Homeland Security, Nuclear Forensics, Fusion Energy, etc. Many of these programs have potential for growth at SRS with reuse of existing facilities or installation of new facilities. SRS also depends on offsite organizations to accept materials for stabilization and/or disposition such as depleted uranium oxide and depleted uranyl nitrate solutions.