Project Baseline Summary Report

Data Source: **EM CDB** Report Number: **GEN-01b**

Operations/Field Office: **Savannah River** Print Date: **3/9/2000**

Site Summary Level: **Savannah River Site** HQ ID: **0517**

Project **SR-FA20 / Reactors Monitoring Project**

General Project Information

Project Description Narratives

Purpose, Scope, and Technical Approach:

Definition of Scope: This project covers surveillance and maintenance during pre-deactivation, deactivation, and post-deactivation periods for the former defense production reactors in P, C, R, K, and L Areas. Although the reactors have been permanently shut down, the disassembly basins contain legacy contamination as well as irradiated excess equipment and scrap. P, C, and R Areas are in a pre-deactivation surveillance and maintenance phase until FY2007, when deactivation work commences. Post-deactivation surveillance and maintenance activities will commence by FY13. For K and L Areas, pre-deactivation and deactivation period surveillance and maintenance will not commence until FY13 and FY37, respectively. Post-deactivation will follow in FY20 and FY44, respectively. Pre-deactivation surveillance and maintenance activities include the base activities required to monitor and maintain the safety envelope of P, C, R, K, and L Areas for the protection of Site personnel, the public, and the environment. These activities include:

· Operation and management of the facilities with a standard of care consistent with the hazard classification of the facility, and implementation of the guidelines of DOE Order 5480.19;
· Surveillance of required safety-related equipment and systems, through routine facility rounds;
· Surveillance of facility infrastructure through routine facility rounds to guard against building deterioration;
· Operation and maintenance of systems required to monitor and control residual contamination and to alert personnel of hazards;
· Control of access to hazards (high energy, radiation, hazardous chemicals, etc.);
· Performance of environmental monitoring to ensure integrity of S&M plan;
· Personnel training and qualifications for all required processes, systems, and functions are maintained in support of the facility S&M plan;
· Low Level and other waste processing, characterization, packaging, and shipment to maintain current facility status;
· Maintenance and improvements necessary to maintain compliance with established standards of operation;
· Maintenance of a work control system as required by DOE Order 4330.B;
· Maintenance of vital safety systems as specified in Authorization Safety Basis documents;
· Providing a method of safe entry into the facilities;
· Maintenance of facilities to ensure structural integrity, including replacement of the 707-C administrative building roof system;
· Oversight and maintenance of essential facility support services systems;
· Work package and maintenance procedures development;
· Field procurement and spare parts management, on an as needed basis;
· Execution of limited scope stabilization and deactivation activities to characterize and then prevent the spread of contamination or the release of any residual materials, including removal of legacy sludge and activated scrap from the P, C, and R disassembly basins, and irradiated control rods from the C basin;
· Performance of drills, maintenance of emergency response plans for affected facilities, and maintenance of associated emergency response equipment.

During the deactivation period, some elements of pre-deactivation surveillance and maintenance may become unnecessary due to execution of limited scope mitigation activities that reduces associated risks. Although these may vary from facility to facility, pre-deactivation and deactivation period surveillance and maintenance scope and costs are assumed, for the purposes of this plan, to be the same. Post-deactivation scope and costs will be

Project Description Narratives

substantially reduced, although the specifics will again vary from facility to facility based upon as yet undefined facility specific deactivation end states.

Under this project, the site Decontamination Facility is maintained and operated. The Decontamination Facility is assumed to operate indefinitely. This facility provides the Site with:
· "Green is Clean" services to reduce waste being sent to LLW disposal;
· Lead and stainless steel recycling services, including storage, decontamination, and resizing for reuse directly or in conjunction with the Site Beneficial Reuse of Metals program;
· Launderable items (except clothing and PPE) such as washable bags, tarps, and mop heads intended to reduce the amount of disposed LLW;
· Decontamination techniques, expertise and equipment;
· Prefabricated containment provision services to eliminate maintenance delays while waiting for containment procurement; and,
· Contamination area rollbacks to reduce risk and waste generation by elimination of contamination areas in other site operating facilities.

This project also supports continued occupancy of administrative buildings located in C Area. The C Area administrative facilities include six large permanent office buildings, and a large number of temporary office trailers. Most of these, especially the permanent facilities, are relatively new. For the purposes of this project, it is assumed that these buildings and trailers will be maintained and occupied until final disposition of C Area (i.e., indefinitely). Three large administrative facilities are also located in K Area, two of which are relatively new. For the purposes of this project, none of these are assumed to be occupied beyond the completion of K Area deactivation.

Technical Approach: Surveillance and maintenance of P, C, R, K, and L Areas requires no new technologies or capabilities that are not already available at SRS.

Project Status in FY 2006:

Site funding limitations currently preclude funding for the full deactivation projects that would be needed to significantly reduce P, C, R, and K (following mission completion in FY2013) Area surveillance and maintenance costs. Current funding guidance indicates that the large scale deactivation scope outlined in separate PBSs will begin after FY06. Until such time, P, C, R and K Areas will be maintained at a higher level of surveillance and maintenance costs commensurate with the residual risk posed by the current "as left" condition of each facility. This S&M program will be based upon the facilities` Transition Report and S&M Plan. L Area will not be available for deactivation until FY2037.

This does not preclude, however, the planning and implementation of smaller scale disposition actions. These actions would be initiated under this ACP project to reduce a specific risk, thereby lowering surveillance and maintenance costs associated with that particular risk. In some cases, excess site assets may be used to fund disposition actions. These excess assets may be used in a barter arrangement with a subcontractor in exchange for the demolition and removal of excess facilities (known as an "assets for services" subcontract). Any proceeds from this type of activity may be used to fund additional disposition activities at SRS. Other funding for disposition projects would be incremental to the surveillance and maintenance budget. As funding for these small scale disposition actions is speculative, no consideration is given to them in this PBS.

Post-2006 Project Scope:

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The post-FY2006 work scope is a continuation of pre-deactivation surveillance and maintenance until such time as deactivation is completed. Current funding guidance indicates that these deactivation activities will begin after FY2006. Deactivation is expected to be complete by FY2012 for P, C, and R Areas, FY2019 in K Area, and FY43 in L Area. At such time, a routine of quarterly entries will be established. These entries will verify the structural integrity of facilities, and verify the operational integrity of any remote monitoring equipment, sump pumping equipment, and environmental monitoring equipment required by the surveillance and maintenance plans for each Area. This quarterly monitoring will continue until final disposition of the facilities.

Project End State

This project only provides for surveillance and maintenance during the pre- and post-deactivation phases of the P, C, R, K, and L Areas life cycle (i.e., this project end state). Additional projects will be required to meet the EM site end state. Contamination in each Area is expected to be consolidated within the confines of the 105 Reactor buildings. At this time, final end states for the reactor areas have not been defined. Reuse of certain facilities has been considered in the past. However, no plans have been made at this time to reuse any of the facilities after deactivation (post-FY2012).

No nuclear materials, spent fuel, or high level waste will be stored in P, C, R, K or L Areas following deactivation, nor will any be generated by this project. Wastes generated by this project will be primarily job control wastes from incidental decontamination, surveillance, and maintenance activities. Such wastes would be disposed of as low level waste.

Cost Baseline Comments:

Costs identified in this PBS are rough order of magnitude engineering estimates only. Some pre-deactivation surveillance and maintenance costs are based on historical data. Post-deactivation surveillance and maintenance costs are dependent on the deactivation end points, which in turn depend on the characterization of facility hazards. No facility characterization or end points determination has been made for any of the reactor facilities. Completion of these activities will likely alter the post-deactivation surveillance and maintenance cost and scope estimates contained in this ACP project.

Safety & Health Hazards:

P, C, and R Reactor facilities include five areas: the Disassembly Basin, Purification Area, Assembly Area, Moderator Storage areas, and the Process Room (reactor tanks). The Basin Area contains contaminated light water, residual irradiated scrap materials, and sludge. The major hazards associated with the reactors are the result of continued storage of contaminated moderator in C reactor, storage of depleted uranium oxide in the 105-R assembly area, storage of spent deionizers in all reactors, and storage of entrained radionuclides throughout the 105 buildings. Some chemicals are stored in these areas for continued surveillance and maintenance operations.

The criteria for determining the radiological hazard categories are provided in DOE-STD-1027-92, and the criteria for determining the chemical hazard categorization are provided in WSRC-MS-92-206. Determination of the above hazards are described in WSRC-TR-95-0105, Rev. 0, "Basis For Interim Operation (BIO) For The C, P, and R Reactor Facilities", Section 6, "Safety Analysis". Chemical inventories are controlled in accordance with procedure FDP 14.1 "Chemical Management Program".

Safety & Health Work Performance:

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Project Description Narratives

Activities and check points are described by the Integrated Management System Description. The conditions and requirements are clearly established and agreed upon prior to the starting of any project and those requirements are contractually binding upon WSRC. The key elements of the WSRC Integrated Safety Program are to define the scope of work, identify and analyze hazards associated with the work, develop and implement hazard controls, perform work within controls, and provide feedback on adequacy of controls and continue to improve safety management. The WSRC Integrated Procedures Management System is the primary mechanism for implementing the objective, principles and functions of the Safety Management System. This system establishes Company-Level, Division-level, and Program-specific procedures consistent with organizational roles, and ensures a consistent, discipline site-wide approach to safety while performing work. The resource description, costs and skill mix are defined in the following Sections: Costs D.2.2 and D.3, FTEs D. 2.5 and 2.7 of this document.

PBS Comments:

As of the end of FY96, all spent fuel and irradiated targets located in the P Area disassembly basin have been relocated to K Area. In addition, all irradiated cadmium control rods have been removed from P and C Reactors, packaged, and moved to an interim storage location in E Area.

Baseline Validation Narrative:

Not Applicable.

General PBS Information

Project Validated? **Date Validated:**

Has Headquarters reviewed and approved project? No

Date Project was Added: 12/1/1997

Baseline Submission Date: 7/3/1999

FEDPLAN Project? Yes

Drivers:

CERCLA	RCRA	DNFSB	AEA	UMTRCA	State	DOE Orders	Other
Y	Y	N	N	N	Y	Y	Y

Project Identification Information

DOE Project Manager: S. L. Johnson

DOE Project Manager Phone Number: 803-557-3828

DOE Project Manager Fax Number: 803-557-3669

DOE Project Manager e-mail address: sandra-l.johnson@srs.gov

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General PBS Information

Is this a High Visibility Project (Y/N):

Planning Section

Baseline Costs (in thousands of dollars)

	1997-2006 Total	2007-2070 Total	1997-2070 Total	1997	Actual 1997	1998	Actual 1998	1999	2000	2001	2002	2003	2004	2005	2006
PBS Baseline (current year dollars)	149,055	1,986,032	2,135,087	10,617	10,617	9,800	9,800	9,963	14,264	18,406	15,787	20,884	16,688	15,522	17,124
PBS Baseline (constant 1999 dollars)	135,386	601,124	736,510	10,617	10,617	9,800	9,800	9,963	13,768	17,149	14,322	18,448	14,354	13,000	13,965
PBS EM Baseline (current year dollars)	149,055	1,986,032	2,135,087	10,617	10,617	9,800	9,800	9,963	14,264	18,406	15,787	20,884	16,688	15,522	17,124
PBS EM Baseline (constant 1999 dollars)	135,386	601,124	736,510	10,617	10,617	9,800	9,800	9,963	13,768	17,149	14,322	18,448	14,354	13,000	13,965

	2007	2008	2009	2010	2011-2015	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045	2046-2050	2051-2055	2056-2060	2061-2065	2066-2070
PBS Baseline (current year dollars)	11,607	11,921	12,242	12,573	65,270	77,507	81,937	93,612	126,955	143,977	164,493	184,384	207,110	233,075	262,739	296,630
PBS Baseline (constant 1999 dollars)	9,217	9,217	9,217	9,217	44,203	45,944	42,514	42,513	50,465	50,092	50,093	49,148	48,320	47,595	46,962	46,407
PBS EM Baseline (current year dollars)	11,607	11,921	12,242	12,573	65,270	77,507	81,937	93,612	126,955	143,977	164,493	184,384	207,110	233,075	262,739	296,630
PBS EM Baseline (constant 1999 dollars)	9,217	9,217	9,217	9,217	44,203	45,944	42,514	42,513	50,465	50,092	50,093	49,148	48,320	47,595	46,962	46,407

Baseline Escalation Rates

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1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
0.00%	0.00%	0.00%	3.60%	3.60%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%

2010	2011-2015	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045	2046-2050	2051-2055	2056-2060	2061-2065	2066-2070
2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%

Project Reconciliation

Project Completion Date Changes:

Previously Projected End Date of Project: 9/1/2070

Current Projected End Date of Project: 9/1/2070

Explanation of Project Completion Date Difference (if applicable):

Project Cost Estimates (in thousands of dollars)

Previously Estimated Lifecycle Cost (1997 - 2070, 1998 Dollars):	713,041	**Actual 1997 Cost:**	10,617	**Actual 1998 Cost:**	9,800
Previously Estimated Lifecycle Cost of Project (1999 - 2070, 1998 Dollars):	692,624	**Inflation Adjustment (2.7% to convert 1998 to 1999 dollars):**			18,701
Previously Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars):	711,325				

Project Cost Changes

	Cost Adjustments	Reconciliation Narratives
Cost Change Due to Scope Deletions (-):		
Cost Reductions Due to Efficiencies (-):		
Cost Associated with New Scope (+):		
Cost Growth Associated with Scope Previously Reported (+):	4,767	Growth due to need to dispose of heavy water coolant system deionizers.
Cost Reductions Due to Science & Technology Efficiencies (-):		
Subtotal:	716,092	

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Project Reconciliation

Additional Amount to Reconcile (+): 1 K and L Reactors remain operational longer due to spent fuel storage program requirements.

Current Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars): **716,093**

Milestones

Milestone/Activity	Field Milestone Code	Original Date	Baseline Date	Legal Date	Forecast Date	Actual Date	EA	DNFSB	Mgmt. Commit.	Key Decision	Intersite
Project Mission Complete	SR-FA20-002		9/1/2070								
Project Start	SR-FA20-001		10/1/1996								

Milestones - Part II

Milestone/Activity	Field Milestone Code	Critical Decision	Critial Closure Path	Project Start	Project End	Mission Complete	Tech Risk	Work Scope Risk	Intersite Risk	Cancelled	Milestone Description
Project Mission Complete	SR-FA20-002				Y						
Project Start	SR-FA20-001			Y							

Performance Measure Metrics

Category/Subcategory	Units	1997-2006 Total	2007-2070 Total	1997-2070 Total	Actual Pre-1997	Planned 1997	Actual 1997	Planned 1998	Planned 1999	Planned 2000	Planned 2001	Planned 2002	Planned 2003	Planne 200
Tech.														
Deployed	Ntd	1.00	0.00	1.00					1.00					

Category/Subcategory	Units	Planned 2004	Planned 2005	Planned 2006	Planned 2007	Planned 2008	Planned 2009	Planned 2010	Planned 2011 - 2015	Planned 2016 - 2020	Planned 2021 - 2025	Planned 2026 - 2030	Planned 2031 - 2035
Tech.													
Deployed	Ntd												

Category/Subcategory	Units	Planned 2036 - 2040	Planned 2041 - 2045	Planned 2046 - 2050	Planned 2051 - 2055	Planned 2056 - 2060	Planned 2061 - 2035	Planned 2066 - 2070	Exceptions	Lifecycle Total
Tech.										
Deployed	Ntd									

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Category/Subcategory	Units	Planned 2036 - 2040	Planned 2041 - 2045	Planned 2046 - 2050	Planned 2051 - 2055	Planned 2056 - 2060	Planned 2061 - 2035	Planned 2066 - 2070	Exceptions	Lifecycle Total
Tech.										
Deployed	Ntd								1.00	1.00

Technology Needs

Site Need Code: SR99-4014

Site Need Name: Basin Cleanup Technology

Focus Area Work Package ID: DD-10

Focus Area Work Package: Production Reactor D&D

Focus Area: DDFA

Agree with Technology Link: Y

Benefits (Cost, Risk Reduction, Both): Cost

Technologies	Cost Savings (in thousands of dollars)	Range of Estimate
Membrane-Supported Particle-Bound Ligands for Cesium Removal		
Specialized Separation Utilizing 3M Membrane Technology		

Related CCP Milestones	Related Waste Streams	Agree?	Change?
	01915: -	Y	N
	00540: LAL - Special Case Waste	Y	N
	00528: LAE - Incinerable Low Activity Job Control Waste	Y	N

Technology Deployments

	Deployment Year		
Deployment Status	**Planned**	**Forecast**	**Actual Date**
Technology Name: LRAD Based			
Deployment Commitment	1999		