

# *Project Baseline Summary Report*

Data Source: **EM CDB**

Operations/Field Office: **Savannah River**

Site Summary Level: **Savannah River Site**

Project **SR-SF04-LT / Heavy Water - D Area (Post-2006)**

Report Number: **GEN-01b**

Print Date: **3/9/2000**

HQ ID: **2015**

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## **General Project Information**

### **Project Description Narratives**

#### **Purpose, Scope, and Technical Approach:**

The Heavy Water Processing System (Detritiation) will provide for the removal of tritium from the HW and reduction of the quantity of heavy water currently stored on site. The Detritiation activities in L-Area will include all programmatic and physical support efforts related to safe processing of Heavy Water to remove the tritium and upgrade the water to contract specifications. This process will be physically located in 105 L Assembly Area.

A tentative agreement has been reached between Westinghouse Savannah River Company (WSRC) and an outside partner to sell heavy water currently stored at SRS. Part of the agreement is that the water will be upgraded (light water removed) and the tritium content reduced prior to shipment. The partner will be responsible for the design and procurement of the upgrading and tritium removal processing equipment. WSRC will be responsible for installation of this equipment in the 105-L Assembly Area and providing the necessary services to place the Heavy Water Processing System (HWPS) into operation. WSRC will operate the system and eventually dismantle it. The present HWPS schedule places the HWPS into operation in FY02, pending availability of funds. (An upfront investment of about \$10M is required by WSRC/DOE in FY00/01 in order to realize future revenues in the tens of millions over the next eight years. The potential business partner is required to invest \$40M; the funding for this investment is uncertain at this time. No money from the EM budget has been identified to date.)

Once a contract is executed, the near term plan will be to establish a joint project team (WSRC and partner) to successfully execute the project. A jointly developed project execution plan will be generated. The partner has initiated design activities and are plans to complete most of their design in FY99, as well as initiate procurement of long-lead process equipment items. WSRC will work with the partner to complete a conceptual design to supply needed services to the HWPS. Construction is scheduled in the FY00 and FY01 time frame with operational readiness expected by the start of FY02. Activities currently continuing include the partner's Process Design and the Integrated Team Execution Plan. Anticipated activities will be the WSRC Conceptual Design and 105 L Assembly Area D&R.

Funding is not needed in this project for the partner's design, fabrication, testing and shipping of equipment.

#### **Project Status in FY 2006:**

Pending funding availability, the HWPS will be operational in FY2006, having begun in FY02.

#### **Post-2006 Project Scope:**

Pending funding availability, the HWPS operations are expected to be completed in FY07, after which it will be decommissioned and dismantled.

#### **Project End State**

Dismantled and removed from 105-L. The HWPS will be returned to the outside partner.

#### **Cost Baseline Comments:**

Funding for the HWPS is in the target/planning for FY00, but moved down to the 'requirements' case in FY01. This means that funds are currently

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available to begin the project in FY00, but not available to complete it in FY01. All schedules are dependent upon restoration of these funds. Further, actual work is subject to execution of the contract with the outside partner, which, in turn, depends on the partner's funding availability.

The financial figures for the Path to Closure (PtC) were derived using the SRS FY99 Annual Operating Plan (AOP) as the beginning basis. Outyear budget (OYB) requirements were estimated by factoring Detailed Information Input Forms (DIIF's) and outyear program planning assumptions/schedules against this AOP baseline. The OYB process utilizes the program requirements contained in the DOE Strategic Execution Guidance (SEG) as the formulation basis of detailed program/operating assumptions and Program Planning Packages used to communicate scope of work requirements to other SRS divisions, e.g. Construction, Waste Management, Environment, Safety & Health, etc. Financial estimates are generated by the line and support organizations using the DIIF system. Estimates were escalated for anticipated inflation using a 3.6% factor for FY00 and 01, and 2.7% for FY02 and beyond - per the guidance from the site.

The full cost of PBS work scope may change based on the authorized funding and priorities in any given year due to changes in site overhead assumptions. For planning and budgeting purposes, work scope costs were estimated using site overhead rates sized for clearance at a funding target of \$1,222.5 million. For FY2001 (the budget year), the site overhead is applied and cleared at the funding target, while the work scope below the funding target (planning level) is incremental direct cost. For FY2002, the site overhead is applied and cleared over the total planning level of scope.

### Safety & Health Hazards:

Storage of tritiated HW long-term is the hazard (and cost) which drives the need for detritiation/sale. Detritiation and sale of the HW will dramatically reduce the risk of the facilities where the material is now stored. Formal hazard analysis documents will be issued during the normal design process. The concern over operation of Heavy Water processing is an accidental release of tritium to the environment. Accidental releases of tritium can result in offsite exposures through either direct airborne release or aqueous release. Therefore, tritium is the only hazardous or radiological material that has the potential to represent any threat of significance to facility personnel or the general public.

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. Chemical inventory is controlled in accordance with RDP 14.1 "Chemical Management Program," and "Chemicals and Non-radioactive Hazardous Materials Control (U), DPSOL 105-1845-K."

Hazards present in the Heavy Water Processing Facility will vary during the construction and operation of the facility.

### Safety & Health Work Performance:

As described in DOE's, "Safety Management System Policy," P450.4, there are six primary components that must be implemented; Objective, Principles, Functions, Implementation, Responsibilities, and Mechanisms. In adopting these components into the WSRC program, WSRC developed the Safety Management System Policy MP 1.22, "Integrated Standards Based Safety Management Program," and submitted to the DOE (WSRC letter ESH-97-0004, F. B. Davis to L. C. Sjoström, "Schedules for Implementation of a Safety Management System (SMS) (U)," dated March 17, 1997) WSRC-IM-97-10, Rev. 0, "Safety Management System Description (U)." These documents describe the Safety Management System used to ensure safety is integrated into work performed under WSRC's Contract No. DE-AC09-96SR1850.

Through the performance of a Readiness Assessment and continuing operational assessments, there is reasonable assurance the facility can be operated

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## Project Description Narratives

without endangering the health and safety of the public, the workers, or the environment.

Activities and checkpoints 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.

### PBS Comments:

Operation of RW is specifically for the volume reduction of stored degraded heavy water. The cost of operation will be offset by the sale of Heavy Water. The degraded moderator inventory will be processed through RW in order to consolidate inventory. Without RW processing, an additional 1650 drums would be required for storage.

Degraded moderator is being processed to reduce consequences to personnel, public, and environment in the event a leak or spill were to occur. The moderator in C, P, L, and K storage tanks does not require processing by either HAM or MPF, nor will it be isotopically upgraded by RW. The specification grade moderator will be immediately ready for re-use or sale. Additionally, the DANA water and Dupont water processed prior to FY98 will be transferred to Oak Ridge during FY98.

### Baseline Validation Narrative:

none

## General PBS Information

|   |                 |
|---|-----------------|
| Project Validated?                              | Date Validated: |
| Has Headquarters reviewed and approved project? | No              |
| Date Project was Added:                         |                 |
| Baseline Submission Date:                       | 7/3/1999        |
| FEDPLAN Project?                                | Yes             |

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Project **SR-SF04-LT / Heavy Water - D Area (Post-2006)**

## General PBS Information

|                 |               |             |              |            |               |              |                   |              |
|-----------------|---------------|-------------|--------------|------------|---------------|--------------|-------------------|--------------|
| <b>Drivers:</b> | <b>CERCLA</b> | <b>RCRA</b> | <b>DNFSB</b> | <b>AEA</b> | <b>UMTRCA</b> | <b>State</b> | <b>DOE Orders</b> | <b>Other</b> |
|                 | N             | Y           | N            | N          | N             | N            | Y                 | Y            |

## Project Identification Information

**DOE Project Manager:** Sandra L. Johnson

**DOE Project Manager Phone Number:** 803-557-3828

**DOE Project Manager Fax Number:** 803-557-3996

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

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

## Planning Section

### Baseline Costs (in thousands of dollars)

|   | <b>1997-2006<br/>Total</b> | <b>2007-2070<br/>Total</b> | <b>1997-2070<br/>Total</b> | <b>1997</b> | <b>Actual<br/>1997</b> | <b>1998</b>           | <b>Actual<br/>1998</b> | <b>1999</b>           | <b>2000</b>           | <b>2001</b>           | <b>2002</b>           | <b>2003</b>           | <b>2004</b>           | <b>2005</b>           | <b>2006</b>           |                       |
|---|----------------------------|----------------------------|----------------------------|-------------|------------------------|-----------------------|------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| PBS Baseline (current year dollars)     | 59,095                     | 3,433                      | 62,528                     | 16,691      | 16,691                 | 15,968                | 15,968                 | 10,974                | 4,984                 | 0                     | 1,985                 | 2,039                 | 2,094                 | 2,151                 | 2,209                 |                       |
| PBS Baseline (constant 1999 dollars)    | 57,450                     | 2,702                      | 60,152                     | 16,691      | 16,691                 | 15,968                | 15,968                 | 10,974                | 4,811                 | 0                     | 1,801                 | 1,801                 | 1,801                 | 1,802                 | 1,801                 |                       |
| PBS EM Baseline (current year dollars)  | 58,963                     | 3,433                      | 62,396                     | 16,686      | 16,686                 | 15,906                | 15,906                 | 10,927                | 4,966                 | 0                     | 1,985                 | 2,039                 | 2,094                 | 2,151                 | 2,209                 |                       |
| PBS EM Baseline (constant 1999 dollars) | 57,318                     | 2,702                      | 60,020                     | 16,686      | 16,686                 | 15,906                | 15,906                 | 10,927                | 4,793                 | 0                     | 1,801                 | 1,801                 | 1,801                 | 1,802                 | 1,801                 |                       |
|   | <b>2007</b>                | <b>2008</b>                | <b>2009</b>                | <b>2010</b> | <b>2011-<br/>2015</b>  | <b>2016-<br/>2020</b> | <b>2021-<br/>2025</b>  | <b>2026-<br/>2030</b> | <b>2031-<br/>2035</b> | <b>2036-<br/>2040</b> | <b>2041-<br/>2045</b> | <b>2046-<br/>2050</b> | <b>2051-<br/>2055</b> | <b>2056-<br/>2060</b> | <b>2061-<br/>2065</b> | <b>2066-<br/>2070</b> |
| PBS Baseline (current year dollars)     | 2,268                      | 1,165                      | 0                          | 0           | 0                      | 0                     | 0                      | 0                     | 0                     | 0                     | 0                     | 0                     | 0                     | 0                     | 0                     | 0                     |

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|  | 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<br>(constant 1999 dollars)    | 1,801 | 901   | 0    | 0    | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0         |
| PBS EM Baseline<br>(current year dollars)  | 2,268 | 1,165 | 0    | 0    | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0         |
| PBS EM Baseline<br>(constant 1999 dollars) | 1,801 | 901   | 0    | 0    | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0         |

## Non-EM Costs included in the Cost Baseline

|                        | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Non-EM Category: Other |      |      |      |      |      |      |      |      |      |      |      |      |      |
| Unknown                | 0    | 0    | 0    | 0    | 0    |      |      |      |      |      |      |      |      |

|                        | 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 |
|------------------------|------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Non-EM Category: Other |      |           |           |           |           |           |           |           |           |           |           |           |           |
| Unknown                |      |           |           |           |           |           |           |           |           |           |           |           |           |

## Baseline Escalation Rates

|  | 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:**

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## Project Reconciliation

**Previously Projected End Date of Project:**

**Current Projected End Date of Project:** 10/1/1999

**Explanation of Project Completion Date Difference (if applicable):**

Decision to shut down D Area and pursue a sales contract for the excess Heavy Water inventory. Current plans are to complete the processing of water in a new facility. The cost of the new facility will be offset by sales revenues.

## Project Cost Estimates (in thousands of dollars)

|  |         |   |                                 |
|--|---------|---|---------------------------------|
| <b>Previously Estimated Lifecycle Cost (1997 - 2070, 1998 Dollars):</b>            |         | <b>Actual 1997 Cost:</b> 16,686                                     | <b>Actual 1998 Cost:</b> 15,906 |
| <b>Previously Estimated Lifecycle Cost of Project (1999 - 2070, 1998 Dollars):</b> | -32,592 | <b>Inflation Adjustment (2.7% to convert 1998 to 1999 dollars):</b> | -880                            |
| <b>Previously Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars):</b>            | -33,472 |   |                                 |

## Project Cost Changes

|  | Cost Adjustments | Reconciliation Narratives   |
|--|------------------|---|
| <b>Cost Change Due to Scope Deletions (-):</b>                           | 28,176           | Decision to shut down D Area, pursue sales contract, Complete sales processing in new facility. |
| <b>Cost Reductions Due to Efficiencies (-):</b>                          |                  |   |
| <b>Cost Associated with New Scope (+):</b>                               |                  | Decision to shut down D Area, pursue sales contract, Complete sales processing in new facility. |
| <b>Cost Growth Associated with Scope Previously Reported (+):</b>        |                  |   |
| <b>Cost Reductions Due to Science &amp; Technology Efficiencies (-):</b> |                  |   |
| <b>Subtotal:</b>   | -61,648          |   |
| <b>Additional Amount to Reconcile (+):</b>                               | 89,076           |   |
| <b>Current Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars):</b>     | <b>27,428</b>    |   |

## Milestones

| Milestone/Activity | Field Milestone Code | Original Date | Baseline Date | Legal Date | Forecast Date | Actual Date | EA | DNFSB | Mgmt. Commit. | Key Decision | Intersite |
|--------------------|----------------------|---------------|---------------|------------|---------------|-------------|----|-------|---------------|--------------|-----------|
| Project Start      | SR-SF04-001          |               | 10/1/1996     |            |               |             |    |       |               |              |           |

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## Milestones

| Milestone/Activity | Field Milestone Code | Original Date | Baseline Date | Legal Date | Forecast Date | Actual Date | EA | DNFSB | Mgmt. Commit. | Key Decision | Intersite |
|--------------------|----------------------|---------------|---------------|------------|---------------|-------------|----|-------|---------------|--------------|-----------|
| Project Complete   | SR-SF04-002          |               | 10/1/1999     |            |               |             |    |       |               |              |           |

## Milestones - Part II

| Milestone/Activity | Field Milestone Code | Critical Decision | Critical Closure Path | Project Start | Project End | Mission Complete | Tech Risk | Work Scope Risk | Intersite Risk | Cancelled | Milestone Description |
|--------------------|----------------------|-------------------|-----------------------|---------------|-------------|------------------|-----------|-----------------|----------------|-----------|-----------------------|
| Project Start      | SR-SF04-001          |                   |                       | Y             |             |                  |           |                 |                |           |                       |
| Project Complete   | SR-SF04-002          |                   |                       |               | Y           |                  |           |                 |                |           |                       |