Savannah River Remediation

We do the right thing.

Liquid Waste
Top Ten Program Risks




Date: June 22, 2010

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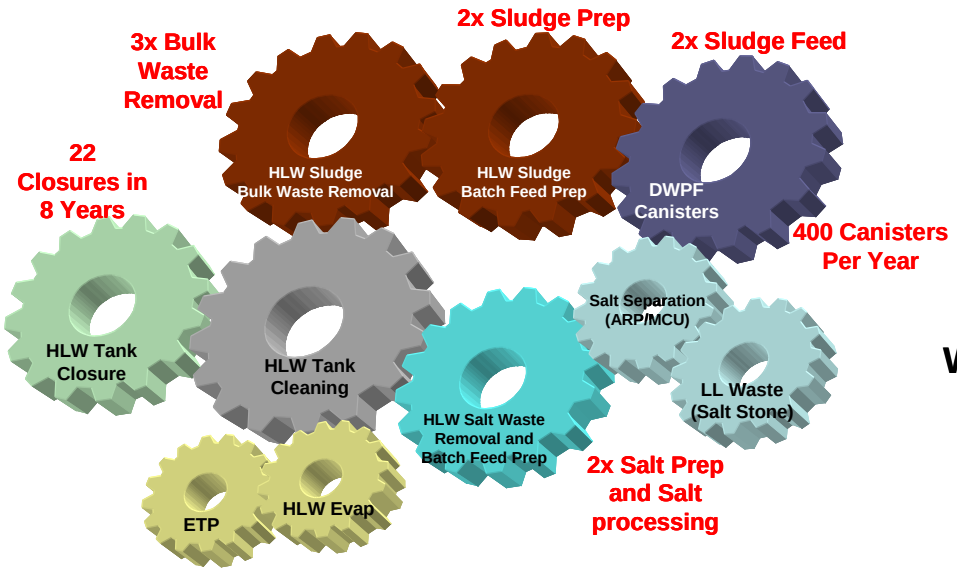
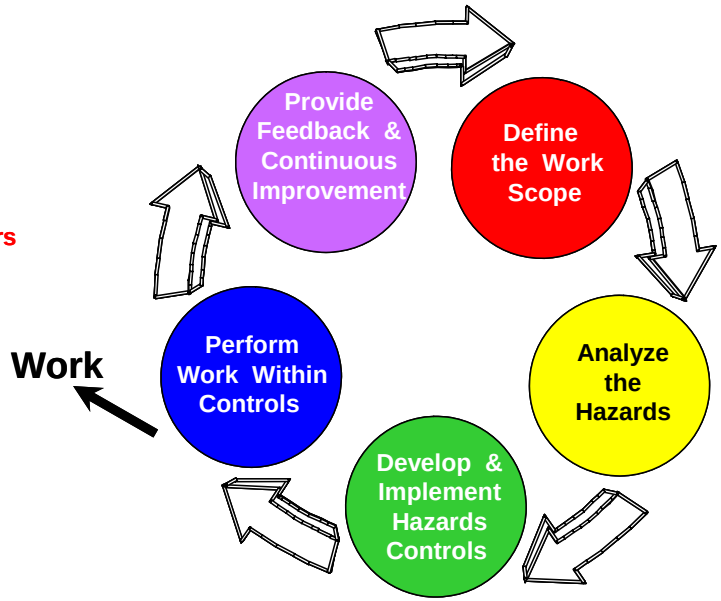
Event:
Citizen's Advisory Board

Waste Management Committee Meeting

SRR-LWP-2010-00050

Program Risks not Hazard Management





Program Risks relate to increase in overall cost or schedule of Liquid Waste Project

Integrated Safety Management System

Manages Hazards

Liquid Waste Project
Risk Management Approach

- Consistent with typical Project Management Process
- Covers entire Liquid Waste lifecycle
- Multiple categories: Business, Technical, Programmatic, etc.
- Risks change over life of project
- Real-time evaluation of risks and monthly review
- Annual formal Top-to-Bottom update of risks
  - Original Technical and Programmatic Risk Assessment Report issued in 2006
  - Revision 5 supports System Plan Revision 15

Grading of Programmatic Risks

Example Likelihood Criteria

Very Likely	≤ 10 years
Likely	10-25 years
Unlikely	25-50 years
Very Unlikely	> 50 years

Example Consequence Criteria

Negligible	< 3 month delay
Marginal	3-12 months delay
Significant	1-2 years delay
Severe	>2 years delay

Figure 3 – Risk Level Matrix

Likelihood (L)	Negligible	Marginal	Significant	Severe (Critical)	Very Severe (Crisis)
Very Likely	Low	Moderate	High	High	High
Likely	Low	Moderate	Moderate	High	High
Unlikely	Low	Low	Moderate	Moderate	High
Very Unlikely	Low	Low	Low	Moderate	High
* Non-credible	Low				

Consequence (C)

* Normally limited to assessing residual risks with Very Severe (Crisis) consequences

Example Risk Assessment Form

PBS SR-0014 **Risk Assessment Form**

ID Number: 012 **Revision:** 03 **Last Date Evaluated:** 8/12/2009 **Status:** Active

Statement of Residual Risk: Premature failure of installed spare equipment leads to canister production downtime while a new replacement is procured.

Residual Likelihood:	Likely	**Basis:** Based upon the 20+ years of remaining operation of the DWPF, the potential for a premature failure of an installed spare is likely.
Residual Consequence:	Significant	**Basis:** Premature failure of an installed spare is estimated to cause a canister production outage period judged to be up to 1 year in duration. Out-year residual impact of 1 year schedule delay, near-term residual impact of $10M to procure a new major equipment spare.
Residual Risk Level:	**Moderate**	

NEAR TERM Residual Impact			
	Best Case	Most Likely	Worst Case
Residual Cost Impact ($K):	10,000	10,000	10,000
Residual Schedule Impact :	0	0	0

Basis of NEAR TERM Cost and Schedule Impacts:
Basis - Near-term residual risk for all cases is the cost to procure a new major equipment spare. ($10M)

OUT YEAR Residual Impact			
	Best Case	Most Likely	Worst Case
Residual Cost Impact :	0	225,000	450,000
Residual Schedule Impact (Mos):	0	6 Mths	12 Mths

Basis of OUT YEAR Cost and Schedule Impacts:
Basis - Worst Case: Immediate premature failure of installed spare. Assume 1 year to procure and install replacement.
Most Likely Case: Spare equipment operates for 6 months before failure. Procurement of a replacement begins upon installation of spare. Assume 6 additional months to complete procurement and install replacement.
Best Case: Spare equipment operates for 12 months and does not fail until a suitable replacement is available. No significant canister production downtime is experienced.

LIFE CYCLE Residual Impacts (total of Near Term and Out Year)			
	Best Case	Most Likely	Worst Case
Residual Cost Impact :	10,000	235,000	460,000
Residual Schedule Impact (Mos):	0	6 Mths	12 Mths

Basis of LIFE CYCLE Cost and Schedule Impacts:
Residual impact based on total life cycle

Risk Assumptions : 13. DWPF will produce canisters at maximum throughput for the duration of the program (based on achievable melt rate, planned outages, and waste loading for sludge being processed). DWPF near-term canister production is based on revised sludge mass values. Production of salt-only cans is acceptable to DOE.

Event Comments: The risk of a premature DWPF melter failure is addressed under Risk 021. The failure to provide a spare DWPF melter is addressed under Risk 022.

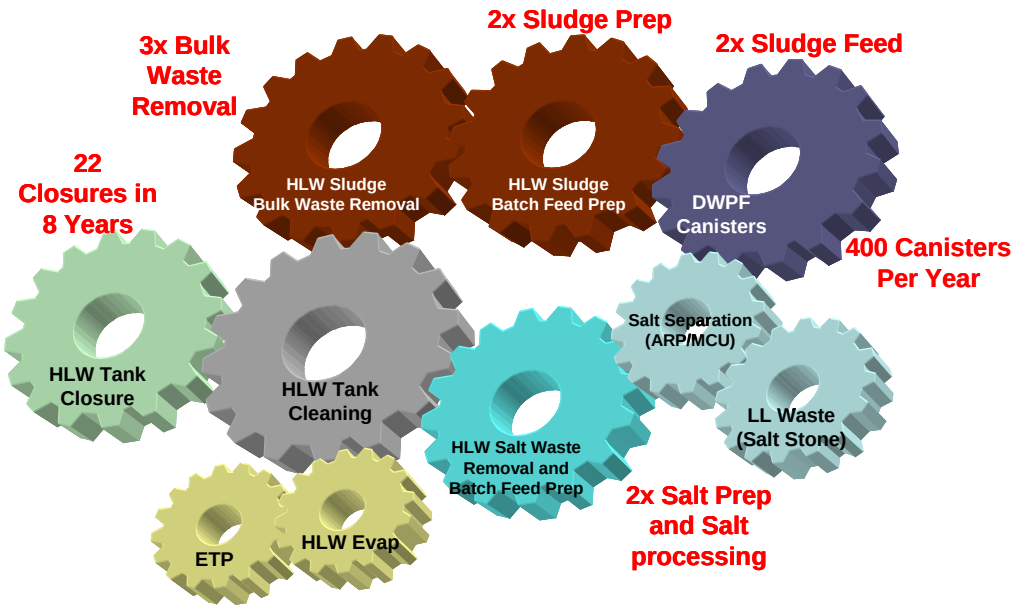
Example Risk Status Report

ID	Title	Risk Level	Review Date	Status: Transferred	Status: Closed	Status: Acceptable Risk	Status: Minor Concern	Status: Major Concern	Remarks
034	DWPF Impacted by Chemistry/Rheology of Sludge Waste Feed	Low	4/21/2010				●		Melter performance improvements being investigated. Research has been performed and implementation of melter bubbler mixing is underway to be installed by September 2010.
036	Sampling and Analysis of Salt Feed to ISDP Shows SPF WAC Cannot be Met After Processing	Low	5/5/2010			●			Batches are being sampled and to date they meet the WAC.
037	DWPF Impacted by Chemistry of Salt Waste Feed	High	4/21/2010				●		The need for additional characterization is being evaluated. Characterization data and operating lessons learned during ARP/MCU operations will be used in optimizing sludge batch compatibility with the SWPF waste stream for processing at DWPF.
040	Salt Dissolution Results in the Precipitation of Gibbsite	Moderate	5/5/2010			●			Investigating methods to avoid gibbsite formation.
041	Formation of Sodium Aluminosilicate in a Salt Tank	Moderate	5/5/2010				●		Developing flowsheets and mathmatical models for salt removal that avoid criticality.
042	Salt Waste Heel or Tank Annuli Waste Cannot be Processed Through SWPF	High	5/5/2010				●		Developing a flowsheet with additional feed treatment or processing modifications.
045	Higher Curie Sludge Impacts DWPF Canister Production	Low	5/6/2010			●			Sludge batch sampling, blending strategy development and qualification are being performed.
048	Sludge Physical Properties Cause Delays in Meeting Sludge Feed Objectives	Low	4/19/2010				●		Physical characteristics of waste are being determined and used in development of removal technologies that can tolerate variability in waste characteristics.
069	Higher Than Expected Cs Levels in Salt Solution Impact Processing	Low	5/5/2010			●			Batches are being sampled and no concerns have been identified to date.
070	Rogue Constituents in SWPF Feed	Moderate	5/5/2010				●		Evaluating the need for additional sampling and testing and developing tank sequencing / blending strategies.
071	Unknown Physical Properties in Heel Material During Mechanical Heel Removal	Low	4/20/2010				●		ECC is being deployed to handle this risk.
074	MCU Feed Requirements not met by ARP Processing Strategy (Filter Breakthrough)	Low	5/5/2010			●			Robust filter design provides protection and a basis to accept this risk.

Content changed from last update

● Risk has been transferred ● Risk has been closed ● Not a problem, no issues at this time ● Minor concern ● Major concern

Current Top Ten



Area of Concern	Strategy to Address
1. Equipment Reliability	System Health Monitoring, Maintenance Program and Spare Parts
2. Major System Failure (for example, Melter or Evaporator)	System Health Monitoring, Spares, Development of Repair Techniques
3. Tank Space Availability when Needed	Integrated System Planning
4. Tank Leak Sites Reduce Useable Space	Structural Integrity Program
5. Characterization of Waste	Early sampling and analysis, Development of robust processes to accommodate varying composition
6. Technology Readiness	Testing, mock-up, lessons learned from DOE complex
7. Salt Waste Processing Facility Start-Up Delayed or Processing Rate Limited	Interim Salt Disposition Project, Supplemental Salt Treatment Processes
8. Meeting Tank Cleanliness Requirements for Closure	Use of new technologies included Enhanced Chemical Cleaning
9. Availability of Closure Documentation	Integrated Planning and Development with Stakeholders
10. Integration/Coupling of Execution Activities	Integrated System Planning, Integrated Operations and Projects Planning and Scheduling

Risk Profile Change Since July 2009

- System Health Reporting Program fully implemented, Activities to improve degraded system all tracked within facility schedules
- Placed Tank 25 in drop tank service for the 2F evaporator
- 200+ High Level Waste Canisters processed at Defense Waste Processing Facility
- ~510 kgal of Salt Solution processed through Interim Salt Disposition Project
- Number of tanks that are actively in Waste Removal/Chemical Cleaning/Closure process has increased to 15 of the 22 tanks that are being closed
- Enhanced Chemical Cleaning real waste testing and design in progress
- Ready to deploy melter bubblers in DWPF this fall
- Tanks 18 and 19 residual characterization in progress
- Preliminary planning for Supplemental Salt Treatment

Summary

- Consistent with typical Project Management Process
- Covers entire Liquid Waste lifecycle
- Multiple categories: Business, Technical, Programmatic, etc.
- Risk changes over life of program
  - Real-time evaluation of risks and monthly review
  - Annual formal Top-to-Bottom update of risks
  - Risk profile is improving
- No risks prevent program completion