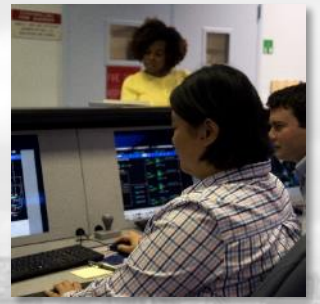
Savannah River Remediation
AECOM | BECHTEL | CH2M | BWXT

November 14, 2017



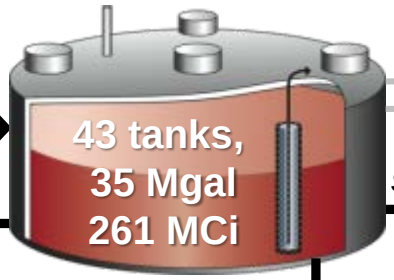
CONTINUOUSLY IMPROVING THE LIQUID WASTE MISSION

Rodney Blackmon

Project System & Execution Strategy Director

SRR Liquid Waste Program

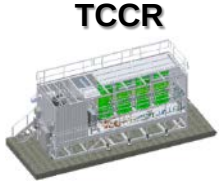
Nuclear Material Disposition/ Legacy Liquid Waste



Salt waste

Sludge waste

(in Testing & Commissioning)



Installation

Spent Columns (Offsite-Future-WIR)

Tanks Closed

Six closed under the SRR contract

<1% radionuclides remain in tanks

Radionuclides

Inert chemicals

HLW Vitrified

Most radionuclides to glass

Interim Storage for Canisters

LLW Stabilized

<1% radionuclides to Saltstone

Disposal Capacity

Lean Business System

STRATEGIC PLAN AND TRUE NORTH METRICS:
- Establish Vision and mission for organization
- Basis for hardwiring visual management

FACILITATED LEAN EVENTS:
- Value Stream Analysis (VSA)
- Rapid Improvement Event (RIE)
- Projects, JDIs, etc.

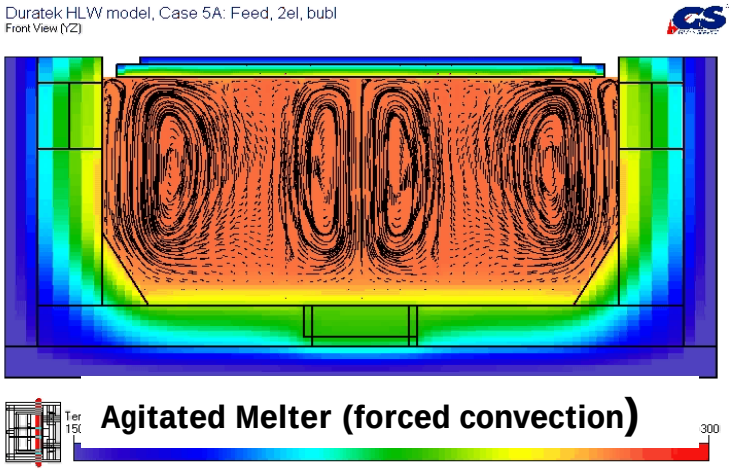
WORKPLACE LEAN ACTIVITIES:
- Visual Management
- Standard Work
- Problem Solving Tools

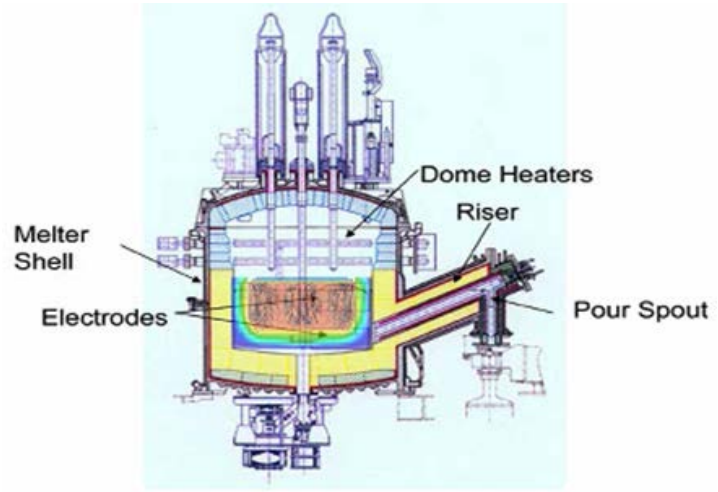
Continuous improvement is a core value

HLW Vitrification and Interim Storage

DWPF Bubblers

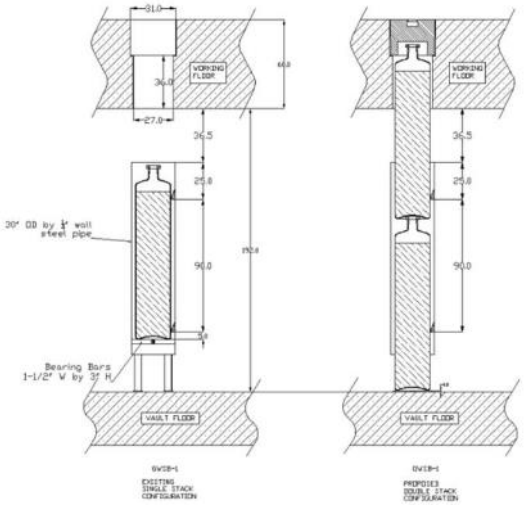
Bubblers more than double canister production capability





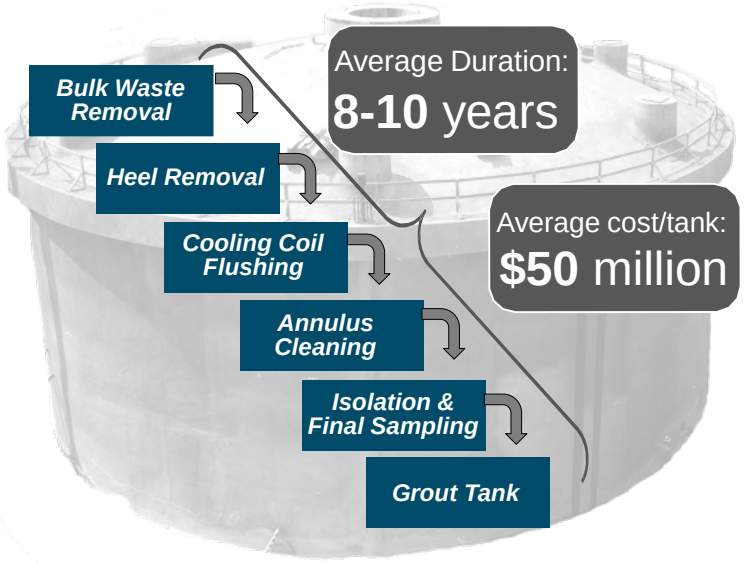
Canister Double Stack

- Doubles existing storage capacity (from 2,262 to 4,524)
- Successfully stacked 202 radioactive canisters in GWSB1
- Creates safe interim storage through Fiscal Year 2029
- Postpones expense of another storage facility, saving $74 million



Tank Closure

Current State of Tank Closure Before Lean



Event Benefits

Engineering Documents Rapid Improvement Event

- 58 day (50%) reduction in average cycle time from design input to output
- 50% reduction in the average number of drawings requiring change

Contaminated Pump Removal Rapid Improvement Event

- Establish storage control for necessary equipment—reduces ~900 person-hours from critical path
- Grout pumps in-place—saves ~$1M per tank

Target State of Tank Closure After Lean

Average Duration: ~~8-10 years~~

Average cost/tank: ~~$50 million~~

4-6 <$40

Waste Removal → Isolation → Grout Tank

- Heel Removal
- Cooling Coil Flushing
- Annulus Cleaning
- Final Sampling

Attributes

- Stay the course – eliminate starts and stops across the project
- Standard work and designs
- Simplified regulatory deliverables
- Increased parallel work rather than sequential
- Design with the end in mind – applied to Roteks (part of low-volume mixing jets) to reduce transition from Bulk Waste Removal to Heel removal
- Expedite characterization to eliminate need to wait for tank grouting

It's All in Our Own Hands–Insights to Lean Events

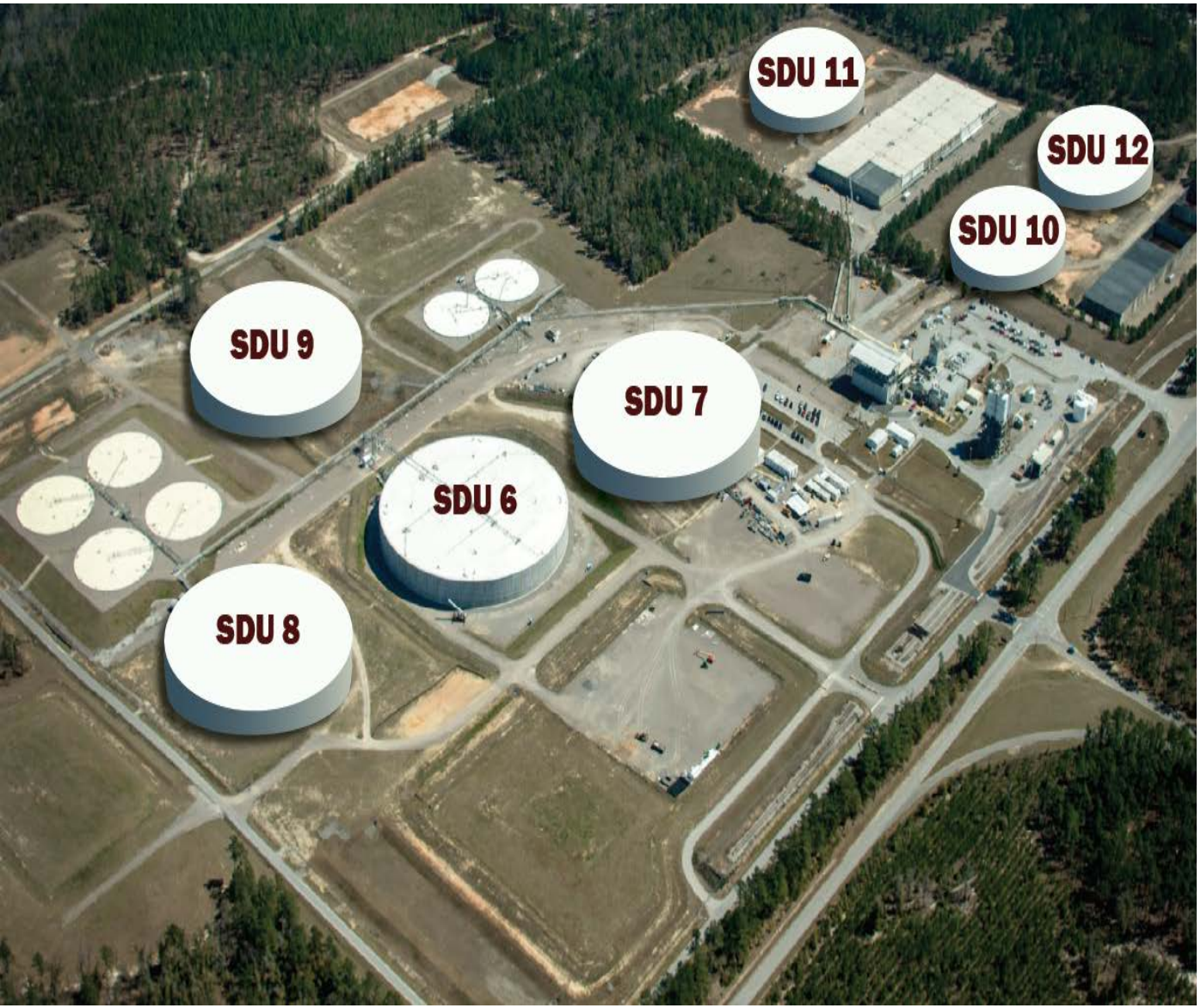
"Value is something you're willing to pay for. At SRR, we're eliminating unnecessary processes that the client doesn't want to pay for."

- Tom Foster, SRR President and Project Manager

"There is a common misconception that since this is the way 'we have always done it,' our stakeholders will not consider accepting anything different. The strength of the Lean process is that key stakeholders are invited to participate in the events. The assembly of affected parties is extremely powerful for team building and educating each other about what drives each organization's decision making."

- Lean participant

Saltstone Disposal Units



Results

~$1.9 Billion Cumulative Life-Cycle Cost Efficiencies Identified

Salt batch qualification cycle time

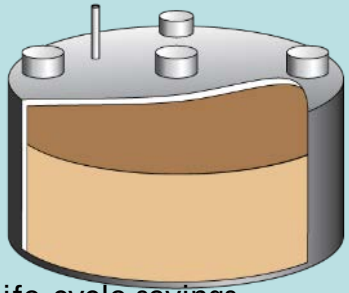
66% reduction

...which equates to...

24 months

...which equates to...

$1.0 billion in life-cycle savings



Error Proofing Complex Processes

32% reduction in pages

45% reduction in steps

48% reduction in sign-offs

132 Events

16 Value Streams

38% workforce participation

68 instances of regulator, stakeholder, and customer involvement in events

SDU 6 Complete

- Delivered **16** months ahead of schedule
- **~$25** million under budget

25% reduction in planning cycle-time at SRR

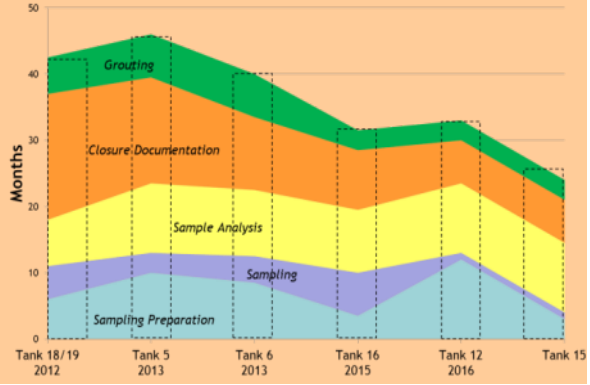
50% reduction in design drawings and cycle time for engineering documents for tank closure

30% reduction in resources needed to operate the Effluent Treatment Facility

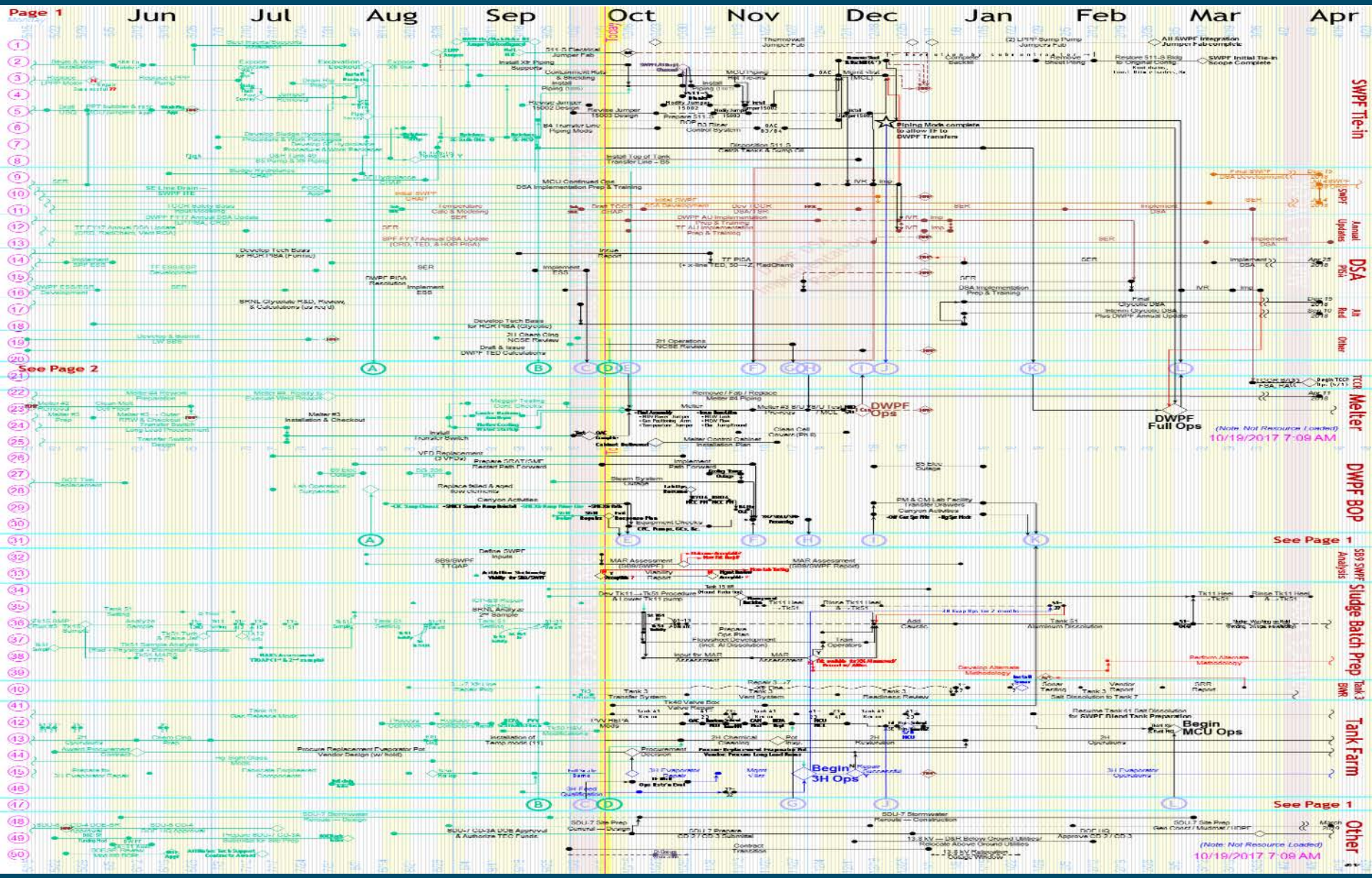
...which equates to...

$1/2 million per year

48% schedule improvement and **25%** improvement in cost efficiencies for tank closure



Outage Planning

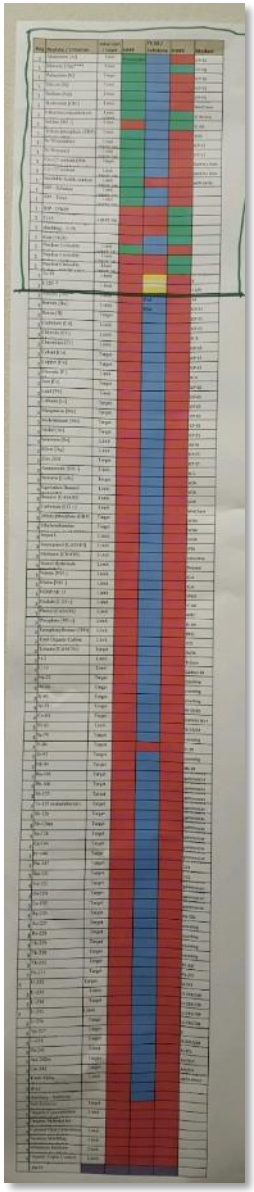


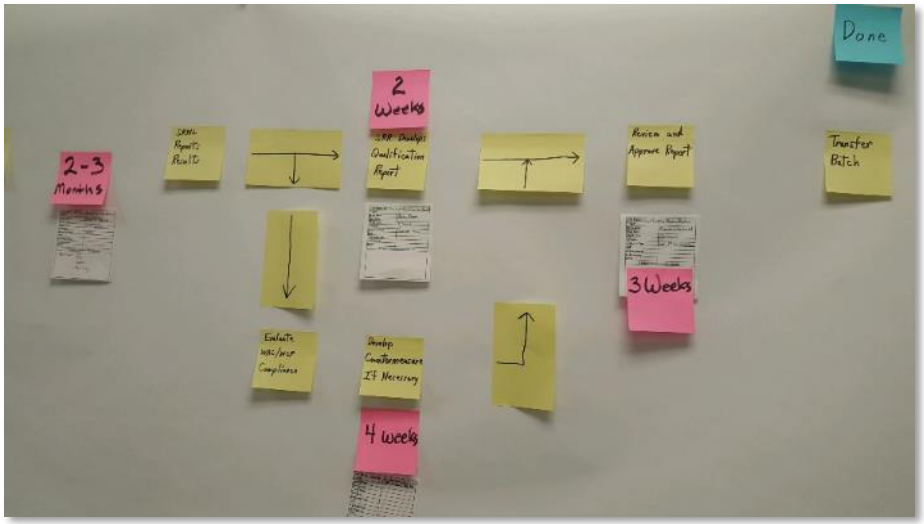
Reduce Salt Batch Validation Time

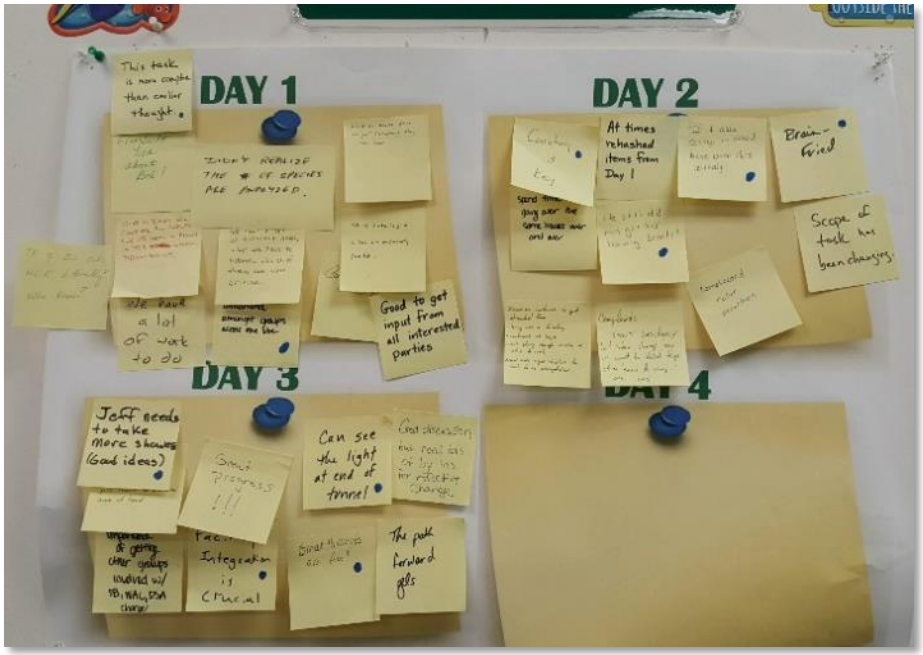
Problem Statement

Current Process for Collecting, Analyzing, and Reporting Samples for Salt Batch Processing Verification takes too long to Support SWPF Operations

Current	Proposed
~100 analytes	~25 analytes
4-5 months qualification time	~1 month acceptance time ✓
2-3 months analysis time	2 weeks analysis time
1-2 months report	~1 week report
	Increased reliance on process history







Liquid Waste Program