U.S. DEPARTMENT OF ENERGY | OFFICE OF ENVIRONMENTAL MANAGEMENT

Salt Waste Processing Facility Project Status and Path Forward

Pam Marks, Federal Project Director
Salt Waste Processing Facility

July 25, 2017

SWPF Project Overview

Salt Waste Processing Facility (SWPF)

This critical facility will:

- reduce radioactive waste volume requiring vitrification,
- utilize the same actinide and cesium removal unit processes as Interim Salt Processing Facilities (Actinide Removal Project/Modular Caustic Side Solvent Extraction Unit)
- process over 90% of Tank Farm liquid radioactive waste (~100 Mgal after dissolution), and
- have a nominal capacity of 6 – 8 Mgal/year (or better!).

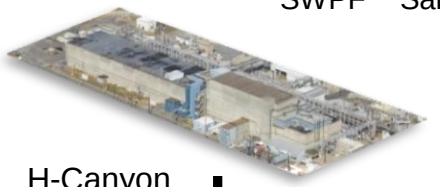
Liquid Waste System

Legend:

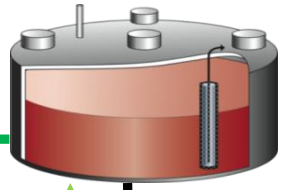
ARP	Actinide Removal Process
DWPF	Defense Waste Processing Facility
MCU	Modular Caustic Side Solvent Extraction Unit
SWPF	Salt Waste Processing Facility

SWPF

- ✓ Designed to Process more than 6 millions gallons per year
- ✓ Cs Decontamination factor > 40,000
- ✓ Technology is very mature
- ✓ No open Defense Nuclear Facilities Safety Board issues



H-Canyon Receipts



SWPF (construction complete)

Salt Waste

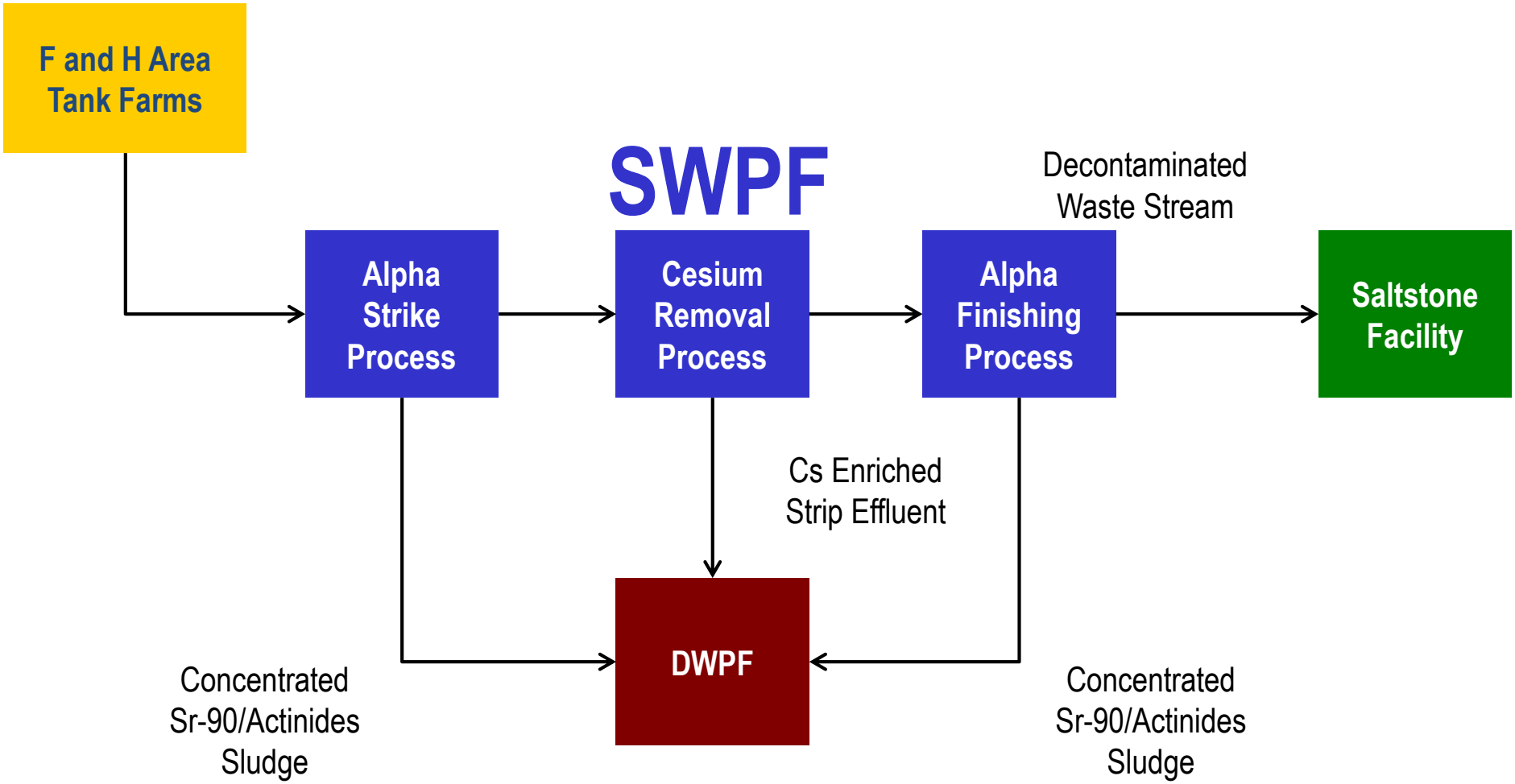
Recycle

Sludge Waste

Radionuclides

Decontaminated Waste Stream

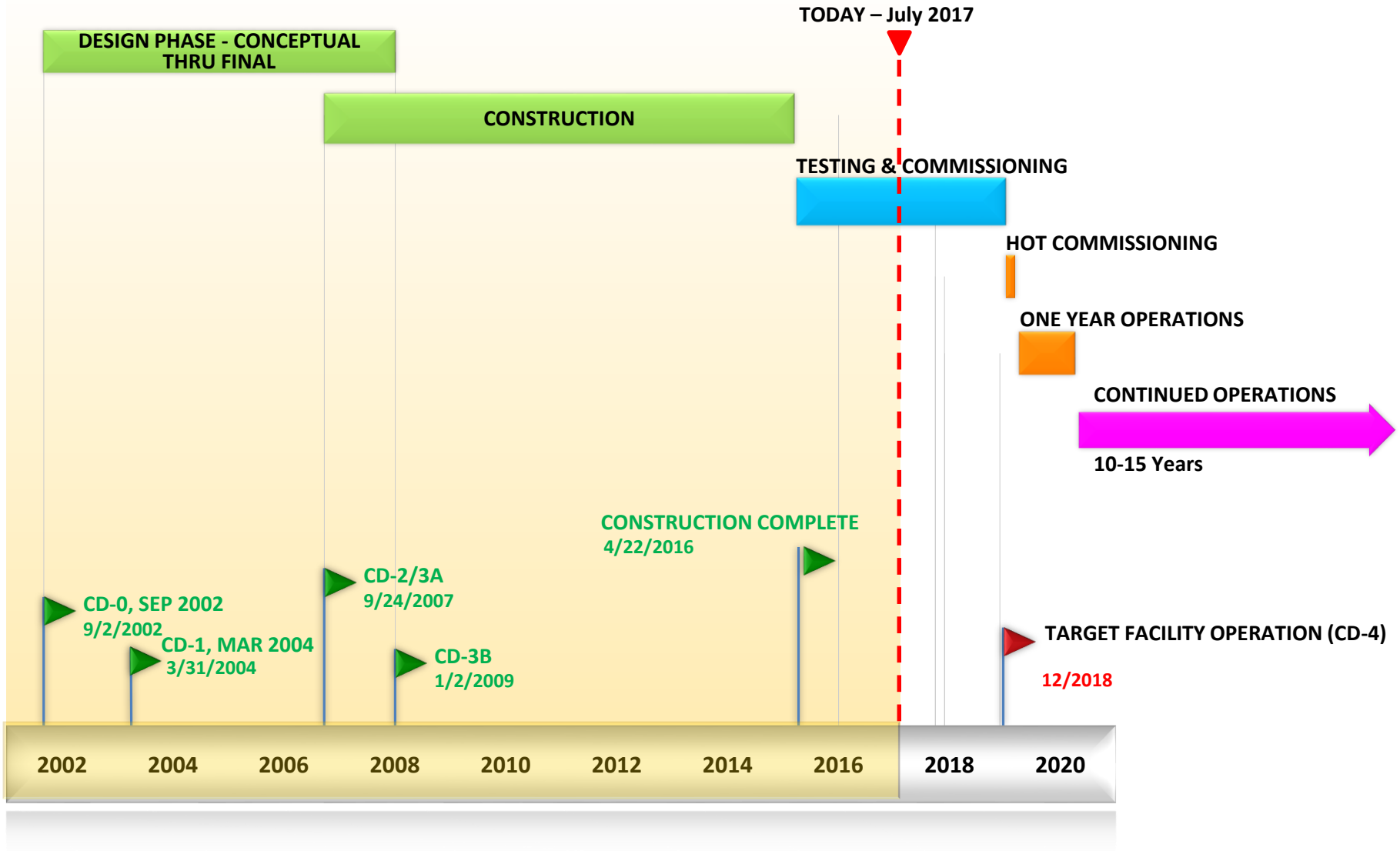
SWPF Process Overview



SWPF Facility Statistics

SWPF Stats			
Area	~140,000 sq.ft	Rebar	~4,600 tons
Basemat	8 ft. thick	Actuated Valves	~1,000
Concrete	~40,000 cubic yards	Manual Valves	~3,000
Pipe	~23 miles	Instruments	~1,500
Welds	~74,560	Tanks	85
Wire and Cable	~816,690 LF	Pumps	116

SWPF Project Milestones



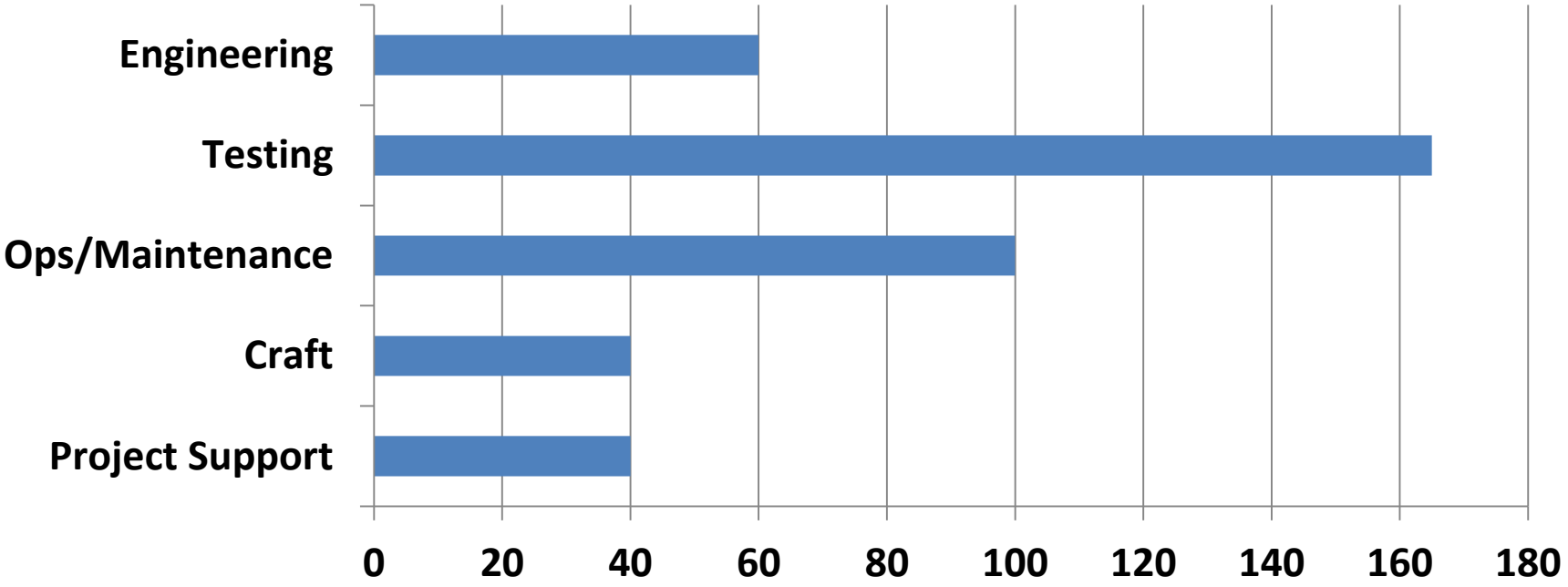
SWPF – Construction Complete

- Construction was completed on April 22, 2016
  - 8 months ahead of the Target Schedule of December 31, 2016
  - $60M+ under the Target Cost of $530M
  - No contract change orders or Requests for Equitable Adjustments

Salt Waste Processing Facility

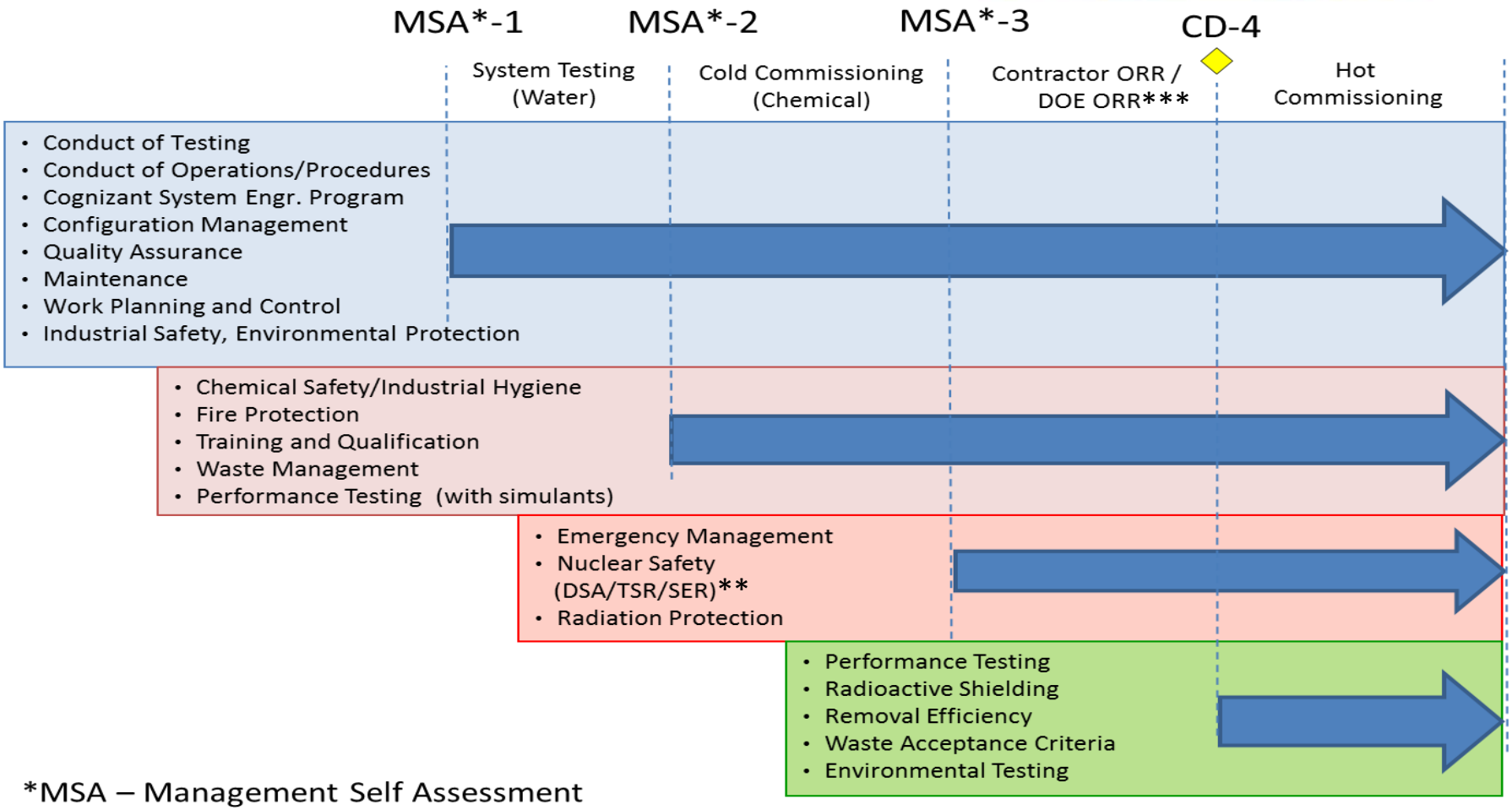
- Parsons is the contractor for the SWPF project *[design, construction, testing & commissioning, and operations for one year].*

- Current workforce of ~405



SWPF Testing & Commissioning Status

Testing & Commissioning Program: Safety Management Programs



*MSA – Management Self Assessment
**Documented Safety Analysis/Technical Safety Requirements/Safety Evaluation Report
***MSA-3 and ORR include integration with LW contractor

SWPF Testing Activities

- **System Turnover**

CG&A — **Calibration, Grooming and Alignment**
- Component level verification, setup, and tuning to support SOTs.

SOTs — **System Operational Testing**
- Confirmation of testable system attributes.

ISOTs — **Integrated System Operational Tests**
- Confirmation of Integrated System Performance requirements.

IWRs — **Integrated Water Runs**
- Confirmation of plant performance requirements using water. Operations proficiency.

CC — **Cold Commissioning with Chemical Simulant**
- Chemical processing confirmation using chemical simulants for waste removal efficiency including *design capacity performance testing.*

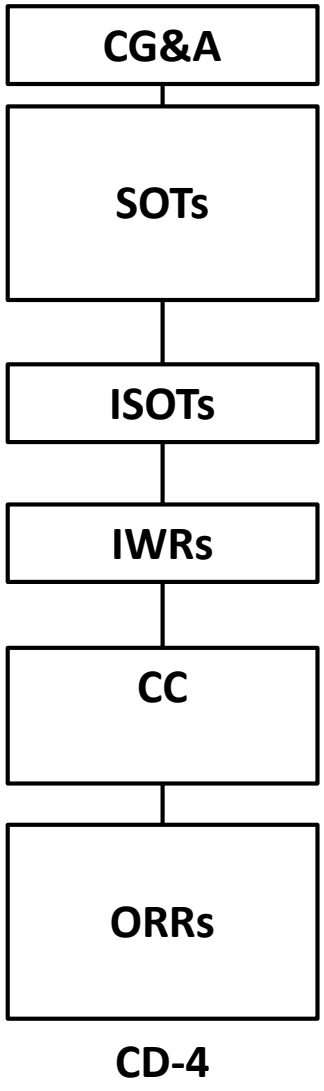
ORRs — **Contractor and DOE ORRs**

HC — **Hot Commissioning**
Confirmation of processing using radioactive waste.

- **CD-4**

SWPF Testing Activities

System Turnover



- 99% of CGA scope complete

- Plant utilities are operational (electrical, plant air, domestic water, and ventilation)
- 50%+ of SOT scope is complete (37 of 60 SOTs)
- 58% of Maintenance Trials complete (10 of 17 MTs)
- SWPF full plant control system and simulator operational to support testing & commissioning

- Plan to start first ISOT in July 2017

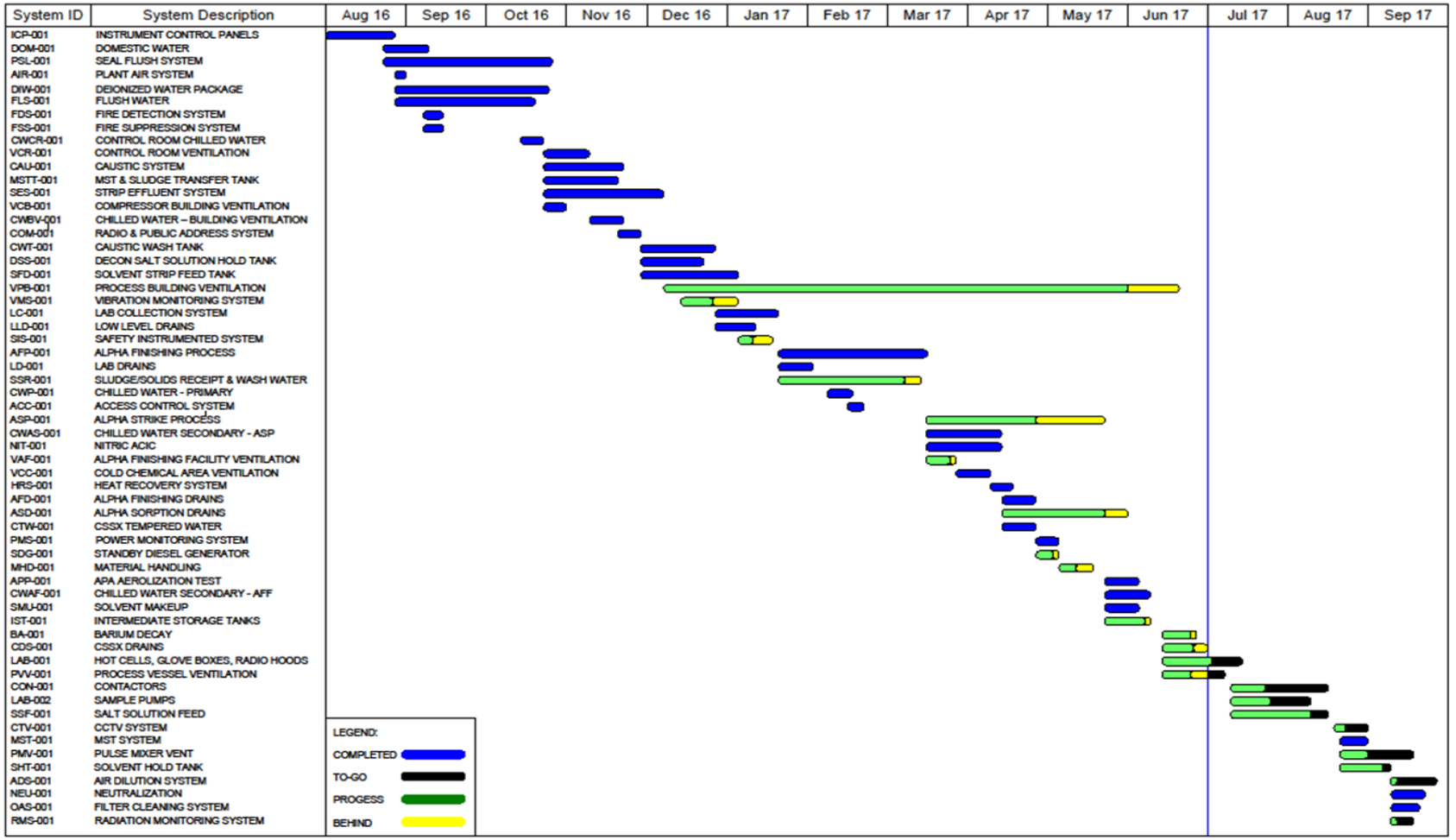
- Scheduled to begin November 2017

- Temporary simulant tank farm (125,000 gal capacity) design complete and construction underway; chemical loading on schedule for September 2017

- Documented Safety Analysis/Technical Safety Requirement submitted to DOE on May 2017; DOE SER approval anticipated by November 2017
  - Good integration support from SRR LWO contractor
- Significant early progress on readiness scope (e.g. Plan of Action, evidence database development

System Operability Testing Progress
July 1, 2017

System Operability Testing Status



SWPF Continuous Improvement Opportunity- Next Generation Solvent

- Parsons has successfully conducted full scale Caustic Side Solvent Extraction system testing with Next Generation Solvent (NGS).
- MCU hot pilot plant is currently successfully implementing NGS.
- NGS testing indicates that significant SWPF plant throughput improvement is possible (150%).
- NGS throughput enhancements could significantly accelerate critical path salt waste processing thereby facilitating large life cycle cost savings.
- Conceptual Design Reports and Proposals have been completed and submitted for NGS deployment at SWPF and are under review by DOE.
- DOE will be making a decision on final design and construction of the NGS annex during the summer of 2017.

Solvent Extraction

Looking to the Future/Path Forward

The SWPF Project is poised for continued success

- Continued commitment to protection of the public, the worker, and the environment
- No significant technical or regulatory issues
- Consistent and strong management team – both DOE, Parsons, and SRR
- DOE, Parsons, SRR, SRNS, and SRNL working very well together for the integrated solution
- Focused on achieving startup on or before December 2018
- Savannah River Site uniquely positioned for a complete LW clean-up solution – once SWPF is operational all pieces will be in place

Acronyms List

ARP Actinide Removal Process
CC Cold Commissioning
CD Conceptual design
CG&A Calibration, Grooming, and Alignment
DOE Department of energy
DSA Documented Safety Analysis
DWPF Defense Waste Processing Facility
HC Hot Commissioning
ISOTs Integrated System Operational Tests
IWRs Integrated Water Runs
MCU Modular Caustic Side Solvent Extraction Unit
MSA Management Self-Assessment
MTs Maintenance Trials
NGS Next Generation Solvent
ORRs Operational Readiness Reviews
SER Safety Evaluation Report
SOT System Operational Testing
SRNL Savannah River National Lab
SRNS Savannah River Nuclear Solutions
SWPF Salt Waste Processing Facility
TSR Technical Safety Requirements