DFLAW and the Road to Near-Term Tank Waste Treatment
Tank Waste Treatment: Hanford Site

7 Miles from 200 West to 200 East
**WTP Project** – $16.8B+ capital project (largest in DOE)

- Pretreatment (PT) Facility
- High Level Waste (HLW) Facility
- Low Activity Waste (LAW) Facility
- Analytical Laboratory
- Balance of Facilities (BOF)

**LAW**

- LAW / Lab nearing completion
- BOF in startup / commissioning
- Direct Feed plan for startup

**HLW**

- Technical issues caused delays
- BOF also supports HLW/PT

**PT**

- Three remaining technical issues
- Resolution anticipated by 2nd Qtr, CY2018

*September 2017*
**DFLAW approach:**

- Strategy supports phased mission progression towards the treatment of tank waste
- Phased feed approach looking at tank-side separation to provide initial feed for LAW Facility operations
- Revising the design of Low-Activity Waste Pretreatment System (LAWPS) facility to improve cost and schedule
- Focus on DFLAW startup to enable effective transition from construction to operations

**Outcome:** Increased confidence in the start of Low Activity Waste Treatment as soon as December 2021 and no later than December 2023
Additional benefits include:

- Enables the start of waste treatment in the near-term
- Drives cultural shift to operations at Waste Treatment and Immobilization Plant (WTP)
- Places approximately 75% of the WTP in operation
- Addresses liquids, the most mobile form of tank waste
- Creates double-shell tank space
- Supports the development of skills and experience in transitioning from design/construction to startup, commissioning, and operations
- Provides valuable lessons-learned to aid startup and commissioning and of the remaining portions of WTP
In order to make progress toward DFLAW, DOE is proceeding with an approach that will provide feed to the LAW Facility as soon as December 2021 but no later than December 2023.

The **Tank Side Cesium Removal (TSCR)** system is expected to provide the initial feed for LAW.

*Safe, cost-effective scale-up of treatment capabilities, precisely matching waste feed with available LAW treatment capability*
**Tank Side Cesium Removal (TSCR)** – would provide the initial feed for LAW

- Leverages functional characteristics of Tank Closure Cesium Removal (TCCR) system designed for Savannah River Site
- Portable and tank-side
- Ion-exchange to remove Cesium (proven technology – Fukushima)
- Pre/post-ion exchange filtration to remove undissolved solids and media fines
- Hydrogen retention mitigation, enclosure ventilation skid, hose-in-hose transfer lines to w/DSTs
- Equipment Request for Proposal issued in January
Low-Activity Waste Pretreatment System (LAWPS)

- LAWPS design reconsidered in fall of 2017 due to significant cost/schedule growth
- Transition to non-elutable resin created opportunities for design simplification
  - Reduced number of safety systems
  - Reduced footprint
  - Siting location options created
- Contractor proposal due in March, programmatic decisions will follow
WTP electrical distribution system energized and supporting BOF startup testing with permanent plant power.
WTP startup testing nearing completion for BOF systems and LAW systems commence startup testing.
### DFLAW Progress: 2019

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**Legend** *

- **C** = Construction
- **SU** = Startup
- **Com** = Commissioning
- **Maintenance/Operations**

*Reflects DFLAW systems status*

BOF = Balance of Facilities
LAB = Analytical Laboratory
LAW = Low-Activity Waste
EMF = Effluent Management Facility

- TSCR design complete
- Glass Former Facility
- Steam Plant
- Chiller/Compressor Plant
- Nonradioactive Nondangerous Effluent Facility
- BOF Switchgear Bldg. 91
- WTP Switchgear Bldg. 87
- Admin. Bldg.
- DOE Substation
- Combination/Maintenance Shop
- Cooling Tower
- Water Treatment Facility
- DOE Substation

**LAW startup testing in progress**
EMF system startup in progress and WTP systems preparing to support LAW Cold Commissioning

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TSCR fabrication / delivery complete

Nonradioactive Nondangerous Effluent Facility

Glass Former Facility

Steam Plant

Chiller/Compressor Plant

BOF Switchgear Bldg. 91

Cooling Tower

Water Treatment Facility

Admin. Bldg.

DOE Substation

Combination/Maintenance Shop

WTP Switchgear Bldg. 87
DFLAW Progress: 2021

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WTP ready to support DFLAW operations

TSCR commissioning / testing complete

Nonradioactive Nondangerous Effluent Facility

LAW Feed

Glass Former Facility

Steamp Plant

Chiller/Compressor Plant

BOF Switchgear Bldg. 91

Cooling Tower

Fuel Oil Facility

Water Treatment Facility

WTP Switchgear Bldg. 87

Admin. Bldg.

DOE Substation

Combination/Maintenance Shop

Warehouse
**Transition from construction to operations** – develop skills and experiences that will translate to future effort

**Hanford Site Integrated Priority List** – alignment on priorities with the Tri-Party Agreement signatories

**Initiation of waste treatment** – will create the opportunity to broaden the discussion on treatment options

**Site contracts transitions** – opportunity for the identification of new ideas and efficiencies
**DOE recognizes** the urgency of the cleanup mission and the need to continue to achieve safe and efficient progress.

**Continuing** to make progress towards DFLAW operations.

**DOE and its contractors are aligned** on the approach and are working to increase confidence in achieving DFLAW operations as soon as December 2021 and no later than December 2023.

**DOE is committed** to continuing to work with regulators and other stakeholders.