Operations Research Modeling In Support Of The Hanford Direct Feed Low Activity Waste Program

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Phase 1 Objectives

- **Current activities**
  - Completion, commissioning and startup of BFF and LAB
  - Completion of ongoing D Farm retrenches
- **DFLAW activities**
  - Completion of D Farm infrastructure and interim pretreatment capability (for removal of Cs and rnis; solids) needed to directly feed LAW
  - Completion, commissioning and startup of LAW
  - Final permitting of the onsite Disposal Facility for low activity waste
- **CH-TRU activities**
  - Retrieval and shipment of CH-TRU waste from SsTs to WIPP pending legal classification of wastes as TRU and obtaining necessary permits
- **DFLAW Activities**
  - Initiation of tank waste characterization and staging capability in the tank farms to support HLW
- **Technical issue resolution**
  - Completion of full-scale vessel testing and resolution of technical issues in the FT and HLW facilities

Operations Research Modeling is being used as a supplemental planning tool to quantify impact of equipment failures and other constraints on operational performance and identify any potential bottlenecks and improvement areas. OR modeling provides critical insight into operational performance of current and planned facilities to identify operational risks.

OR Model is being developed in support of DFLAW program and will be a valuable tool in the development of overall operational and management strategies as well as providing input to facility designs. The OR model will assess whether throughput and performance can be achieved, identify key process bottlenecks and any improvements that may be required to achieve target throughput and performance. OR model will test alternative design options to improve performance and provide feedback to the design agent for incorporation into the design.

**DFLAW OR model simulates**

- Tank farm operations including LAW feed staging in AP Farm, 242-A Evaporator Complex, D Farm, Secondary Liquid Waste Treatment from LAW
- LAW waste, solids and contamination products from HWIPs, LAW and Fuel Storage and transport to LAW facilities
- LAW Vitrification including Feed Receipt, Melter, Effluent Management Facility and secondary liquid waste return to the tank farm
- Equipment failure modes and restoration times and any other processing constraints

**Benefits**

- Underpin Operational Performance
- Determine Tank Storage needs between Tank Farms and WIPP LAW Vitrification
- Underpin Systems Investment for Tank Farm and LAWIP
- Test Current Maintenance Practices versus Predictive Maintenance Practices