2014 System Plan, Revision 7—Selected Cases

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System Plan, Revision 7

- **Purpose:**
  
  *To describe the disposition of all tank waste managed by ORP and the completion of the treatment mission.*

- Governed by Milestone M-062-40

- 5 cases selected

- System Plan, rev. 7 modeling results due Oct. 31, 2014
Expectations

- Model activity and operations from present to out years
- Evaluate process to be Consent Decree compliant
- Identify areas of improvement
- Determine need for double shell tank space
## Cases Selected by Ecology

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<th>Consent Decree Compliant</th>
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<td>Direct Feed Low-Activity Waste and Direct Feed High-Level Waste Flow sheet</td>
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* An additional sensitivity case has been selected which includes a minor analysis of a variation to the primary case. Use of the enhanced glass model will be evaluated.
Case 1: Consent Decree Compliant

Questions to be answered:

- What does it take to meet requirements?
  - Complete C Tank Farm retrievals by 9/30/2014
  - Complete retrieval from 9 additional single shell tanks by 9/30/2022
  - Complete retrieval of all single shell tanks by 2040
  - Complete vitrification of HLW and LAW tank wastes by 2047

Features:

- Hanford Tank Waste Operations Simulator model improvements (carried through all cases)
- Expecting double-shell sludge waste level rise acceptable
- All WTP facilities available to meet Consent Decree dates
Case 2: Direct Feed LAW & HLW

Questions to be answered:
- What is impact on throughput when bypassing WTP pretreatment facility?
- What is efficiency and effectiveness of the Interim Pretreatment System?
- What is impact of enhanced glass model?

Features:
- Direct Feed LAW starts hot commissioning in 2022
- Interim Pretreatment System is on time to meet hot commissioning of WTP LAW
- Direct feed HLW starts hot commissioning in 2025
- New Tank Waste Characterization and Staging capability is in place to meet hot commissioning of WTP HLW
Case 3: Contingency Case for WTP Startup Uncertainty

Questions to be answered:
- What is number of new double shell tanks needed in 200 West Area to support single shell tank retrievals if WTP not fully operational until 2033?
- What will be total number of tanks and timing of construction to complete single shell tank waste retrieval by 2040?

Features:
- Direct Feed LAW radioactive operations start 2027
- Direct Feed HLW radioactive operations start 2030
- Complete single shell tank retrievals by 2040
Case 3: Simplified Diagram of Proposed New Double Shell Tank Farm

Legend
- Planned
- Planned, but Removed for Scenario
- Proposed for Scenario (Near-Term)
- Proposed for Scenario (Long-Term)

WRF = waste receiving facility
Case 4: Leaking Tanks

- **Question to be answered:**
  - What is impact of emergent leaking tanks which will require immediate, unplanned waste retrieval?

- **Features:**
  - 5 leaking single shell tanks are identified and retrieved, or surface barrier installed, before 2022
  - 1 double shell tank becomes unfit for use every 4 years starting in 2016
  - Starting in 2022, and every 5 years thereafter, 1 single shell tank confirmed as leaking and needs immediate waste retrieval
  - Not greater than 25% retrieval efficiency
Case 5: Consequences of Limited Funding

- **Question to be answered:**
  - What is impact of limited funding on mission metrics?

- **Features:**
  - Complete all single shell tank waste retrievals by 2040
  - Assume 12 years (2014-2025) funding:
    - 2014 = $1,085M ($460M for tank farms + $625M for WTP)
    - 2015-2025 = $1,135M ($510M for tank farms + $625M for WTP)
    - 2026-2030 -- funding ramp up not > 10%/year
    - 2031 and beyond – funding provided as needed to complete activities
Relationship of Cases

System Plan 6 Baseline Assumptions

Model Starting Assumptions for System Plan 7

Case 1
Consent Decree Compliant
1a Use Enhanced* Glass Model

Case 2
DF LAW & DF HLW Flowsheet
2a Use Enhanced* Glass Model

Case 3
Contingency Case for WTP Startup Uncertainty

Case 4
Leaking Tanks

Case 5
Consequences of Limited Funding

Acronyms and Notes
DF HLW  Direct Feed High-Level Waste
DF LAW  Direct Feed Low-Activity Waste
WTP    Waste Treatment and Immobilization Plant

* Enhanced Glass Model represents Glass Model 2013

Dotted border represents a SENSITIVITY CASE
## Schedule-Based Success Criteria

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<tr>
<th>Metric</th>
<th>Success Criteria</th>
<th>Milestone Number</th>
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<tr>
<td>Complete 241-C Tank Farm Retrievals</td>
<td>9/30/2014</td>
<td>B-1</td>
</tr>
<tr>
<td>Start Five Additional Single Shell Tank Retrievals</td>
<td>12/31/2017</td>
<td>B-3</td>
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<tr>
<td>Close Waste Management Area C</td>
<td>6/30/2019</td>
<td>M-045-83</td>
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<tr>
<td>Complete Nine Additional Single Shell Tank Retrievals</td>
<td>9/30/2022</td>
<td>B-4</td>
</tr>
<tr>
<td>Complete all Single Shell Tank Retrievals</td>
<td>12/31/2040</td>
<td>M-045-70</td>
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<tr>
<td>Close all Single Shell Tanks</td>
<td>1/31/2043</td>
<td>M-045-00</td>
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<tr>
<td>Treat all Tank Waste</td>
<td>12/31/2047</td>
<td>M-062-00</td>
</tr>
<tr>
<td>Close all Double Shell Tanks</td>
<td>9/30/2052</td>
<td>M-42-00A</td>
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