SRS Tank 48

Independent Technical Review

Key ITR Observation

- *Two <u>distinct</u> problems:*
  - Removing tetraphenylborate (TPB) waste and then cleaning the tank sufficiently to support return to service
  - Processing contents to eliminate TPB hazard

Overarching ITR Conclusions

1. *TPB Processing is on the right track*
   - DOE/WSRC have selected the most promising candidates
   - Fluidized Bed Steam Reforming (FBSR) is the most technically attractive and mature of the candidate processes

Overarching Conclusions (continued)

2. *Heel removal and tank cleanout will be a very challenging task. Compounding issues:*
   - Physical difficulties in cleanout (access, congestion, etc.)
   - Unrealistic acceptance criterion

Overarching Conclusions (continued)

3. Dominant risk is programmatic, not technical

- Current strategy (sequential path) will not support January 2010 T48 return-to-service
- Completion 1½ years late is likely, with further delays quite possible
- Reason: two high risk / high uncertainty activities, in series, on the critical path

TPB Processing

- *Candidates reviewed*
  - Fluidized Bed Steam Reforming (FBSR)
  - Wet Air Oxidation (WAO)
  - Fenton's Reagent
  - Bulk Aggregation

ITR Comparison of Processing Candidates

- FBSR
  - most mature candidate
- WAO
  - strong candidate, but less developed for this application
- Fenton's
  - workable, but inferior for this application

Bulk Aggregation

- backup option, since not treatment option

ITR Recommendations re: TPB Processing

- Adopt FBSR as the lead technology
  - Resolve remaining issues on a high priority basis
- Carry WAO as the backup
  - Work as needed to confirm basic viability
- Do not pursue Fenton's or other alternatives further
- Concentrate bulk tank contents by ~3x, upstream of processing

Heel Removal and Tank Cleaning

- *The issue*
  - Processing flush liquids via FBSR would be costly, time consuming, and burdensome on DWPF
- *Proposed approach*
  - Initial flush processed thru FBSR
  - Progressive series of flushes, with water, then salt solutions and process via Saltstone
  - Further chemical cleaning, if essential

TPB Acceptance Criterion

- *The issue*
  - Expect heel will initially contain ~2000 Kg TPB
  - Current 35 Kg release spec (or 12 Kg, if adopted) is extraordinarily conservative
- *Proposed approach*
  - Revise acceptance criterion to be based on observed effluent concentrations
  - Limit set to provide high margin to downstream users' TPB tolerance

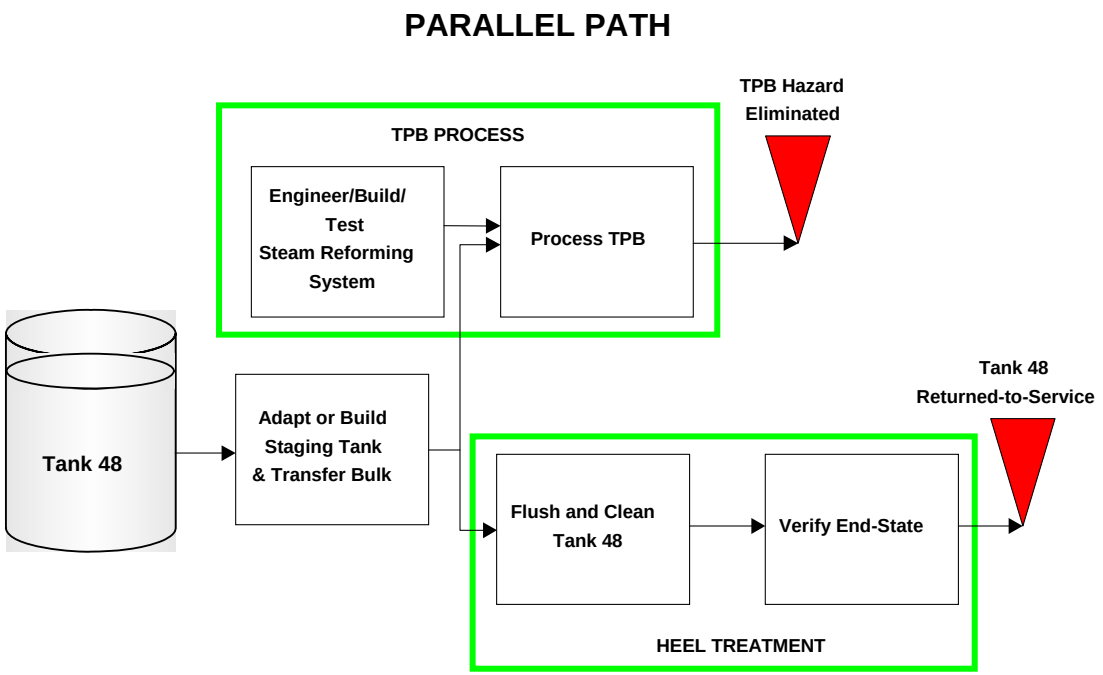
ITR Recommendations re: Heel Management

- *Adopt ITR-proposed flushing regimen*
- *Establish fundamentally different acceptance criterion for residual TPB*
- *Process heel flush material via Saltstone*

Parallel Path, in concept

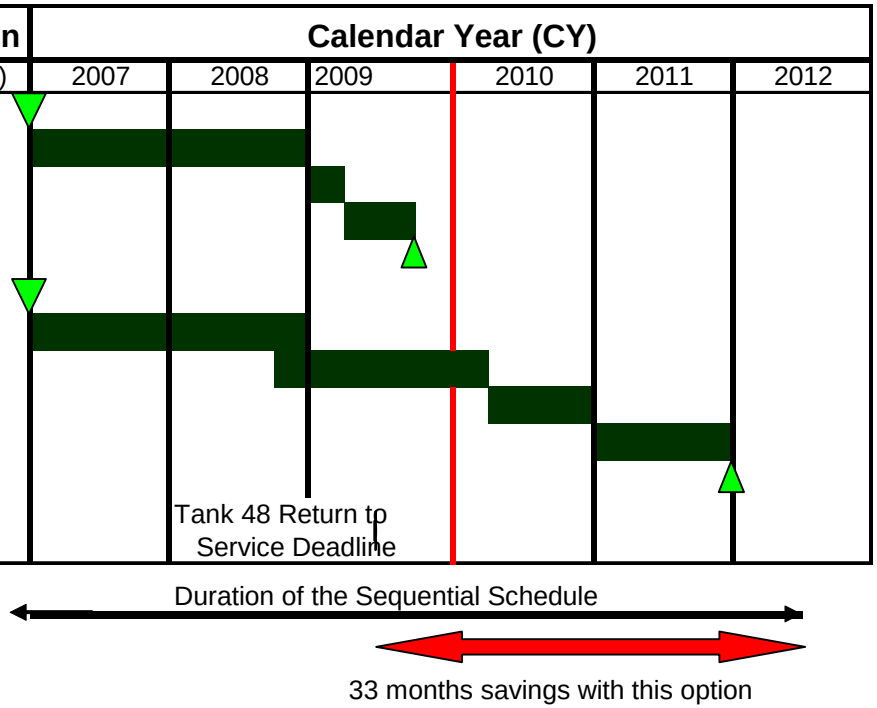
- *Approach is to move TPB processing off the schedule critical path, and to allow heel management work to begin sooner*
- *Objective is schedule compression **and** schedule risk reduction*

Parallel Path, Schematically



Parallel Path, Schedule Projections

Activity	Duration (months)
Authorization to commence the project	
Modify Existing Tank	24
Pump Down Tank 48	3
Heel Clean-up	6
Tank 48 returned to service	
New Steam Reformer System Design	24
Construction	18
Start-up and Test	8
Process Bulk Contents of Tank 48 TPB and Carbon Destroyed	12



Parallel Path Issues

- *Interim TPB Staging*
  - New vs. existing tank(s)
  - Stakeholder resistance (to either new tankage or to reuse of old-style tanks)
- *Precluding orphan waste*

ITR Recommendations re: Integrated Strategy

- *To maximize potential to achieve January 2010 T48 return-to-service:*
  - Adopt parallel path strategy
  - As first priority, select interim staging location
- *If schedule delay and schedule risk are tolerable:*
  - Proceed aggressively on current course

Integrated Strategy Recommendation (continued)

- *In either case:*
  - Accelerate TPB processing by early selection of FBSR
  - Projectize heel removal, on high priority effort
  - Develop and secure acceptance of revised TPB acceptance criterion

Reflections on the ITR Process

- *Team composition was excellent*
  - Diversity, breadth of experience and perspective
  - Size was about right
- *Aggressive schedule - ten weeks, start to finish*
  - Very efficient
  - Required sustained availability of team members
  - Did not sacrifice product