Enhanced Chemical Cleaning

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Tank Waste Corporate Board
Provide an overview of the ECC process and plan
• Oxalic Acid can get tanks clean
  – Tank 16 set a standard in 1982
  – Tanks 5-6 Bulk OA cleaning results under evaluation

• However, the downstream flowsheet and financial impacts of handling the spent acid were unacceptable
Oxalic Acid Flowsheet Impacts

- Oxalates from chemical cleaning impact salt processing
- A process change was needed
Vision

• Eliminate the impacts to the Tank Farm from spent acid management
• Enable a virtually unlimited use of acid with minimal impacts
• Use a dilute acid process to keep material-at-risk above the tank-top ALARA
• Leverage commercial power industry processes that handle spent oxalic acid solutions
• Use portable, modular, temporary equipment like Waste on Wheels (WOW)
Technology Evaluation

- Identified six nuclear power decontamination technologies with potential applicability
- AREVA’s CORD-UV process best fits the vision
  - Oxalates are decomposed by ozone and UV light

- Confirmed >90% dissolution of the simulant
- Confirmed >90% of the oxalates were destroyed

200 Grams of Sludge Simulant

After 6 Hours of Dissolution
Enhanced Chemical Cleaning Process

**Dissolution**
- Oxalic Acid Makeup Module
- Makeup Water Module
- Tank 8
- Dry acid
- Mixer(s)
- 40 gpm
- Dissolved sludge

**OA Decomposition**
- ECC Module
- 3000 gpm
- UV
- Ozone Module

**Solid-Liquid Separation**
- Evaporator Module
- Evap
- Ventilation Module
- Cooling Water Module
- Tank 34

Chemical Cleaning is complete in 6 months

OA Decomposition

Enhanced Chemical Cleaning Process

Chemical Cleaning is complete in 6 months
Phased Implementation gets process to the field faster.

First Phase

- Oxalic Acid
- "De-ionized" Water Makeup Preparation Module
- Dissolved sludge
- ECC Process Module
- Dilute slurry
- Caustic
- Tank 8
- Primary Ventilation Module
- Secondary Ventilation Module
- Tank 7

Final Phase

- Oxalic Acid Makeup Module
- Dry acid
- Water
- Evaporator Dryer Module
- Evaporator Dryer (s)
- Dissolved sludge
- ECC Process Module
- Dilute slurry
- Caustic
- Tank 8
- Primary Ventilation Modules
- Secondary Ventilation Modules
- Tank 34
Multi-Site Project Approach

One site designated as lead to develop technology

Multiple Site Effort

• Takes technology to a state ready for site-specific deployment

Site Specific Effort

• Balance of plant design and construction

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Currently evaluating testing for multi-site benefit
Summary and Plan

• Enhanced Chemical Cleaning
  – solves the life cycle issues of oxalate handling
  – improves the ability to remove sludge heels
    • 2 of 4 tests are complete
    • Results show that the process will be effective
  – Plan for 2010
    • Initiate 2 remaining tests
    • Initiate next phase of design
    • Baseline the project
      – Scope
      – Cost
      – Schedule