Tank 4 Update

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Presented to: Citizens Advisory Board

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Savannah River Remediation
• Routine annual inspections of the waste tanks are performed as part of our program to ensure safe storage of liquid waste,
  – A hairline crack was found in the upper weld of Tank 4, an old-style Type I tank during an inspection
  – The crack is over five feet above the current liquid level in the tank
• The tank remains structurally sound
• There is no impact on safety or operations
• There has been no release to the environment
• This type of condition is not unexpected and should have no significant impact on the remaining activities planned in Tank 4 prior to its operational closure per the Liquid Waste System Plan
Waste Tanks

- **(24) Old Style Tanks**
  - Type I/II: partial secondary containment
    - Routine visual inspections of annulus
    - Monitor and visually inspect during waste removal activities
  - Type IV: single shell tanks (SST)
    - Routine internal visual inspections
  - Up to 50 years old
  - Do not have full secondary containment
  - (2) have been closed
  - No active leaksites today

- **(27) New-Style Tanks**
  - Full secondary containment
  - No leakage history
  - Receive all new waste
  - Used for all processing activities
  - Comprehensive inspection program
    - Visual inspections
    - Volumetric inspection

**Type I (12)**
Old Style
750 kgal
1951-1953

**Type II (4)**
Old Style
1.0 Mgal
1955-1956

**Type III (27)**
New Style
1.3 Mgal
1966-1981

**Type IV (8)**
Old Style
1.3 Mgal
1956-1960
• Comprehensive integrated approach to maintaining structural integrity of tanks, a critical component of operations
• Evolving program to successfully address emerging issues and preclude consequential degradation
Comprehensive Inspection Program

- **Visual Surveillance**
  - Still photography ~5000 photos/year
  - Wide Angle
  - Direct
  - Video Camera Inspections 000 video/visual exams/year

- **Type I/II tanks**
  - No active leaksites: waste below all known leaksites
  - Use of conductivity probes in annulus
  - Routine visual inspections of annulus
  - Monitor and visually inspect during waste removal activities
Tank 4 Visual Inspection Results

- 2011 inspection photo provided evidence of an indication in the wall of Tank 4, an old-style Type I tank
- After comparison to past photos it was declared a crack
- The operating level for the last 20 years has been below the crack location (234 in).
- The location of the newly identified crack is consistent with our known degradation mechanisms (SCC) for a non heat treated Type I Tank.
The structural integrity of the tank remains sound with a high margin.

The leak integrity will be maintained by limiting liquid volume below the crack site.

A specific inspection plan will be developed to reduce the risk of leaks in tank 4 during waste removal operations.

Analysis at the highest stress levels near the bottom of a full tank shows no impact to structural integrity.
Degradation Mechanisms

• Primary mode of degradation is nitrate-induced stress corrosion (SCC) cracking near fabrication welds or repair welds
• Occurred early in service in non-stress relieved Type I/II Tanks
• Type III Tanks have no known leaksites
  – Better materials of construction
  – Post-weld heat treatment to relieve weld residual stresses
• Corrosion control program to preclude further degradation
• Corrosion control program has been successful in preventing any liquid leaks
Conclusion

• SRS continues to inspect all waste tanks as part of a comprehensive SI program
• A hairline crack was found in the upper weld of Tank 4, an old-style Type I tank during a routine annual inspection
  – The crack is over five feet above the current liquid level in the tank
  – The tank remains structurally sound
  – There is no impact on safety or operations
  – There has been no release to the environment