NRC Consultative Technical Evaluation Report for H Area Tank Farm Savannah River Site pursuant to Ronald W. Reagan National Defense Authorization Act of 2005

Presentation to
Savannah River Site Citizens Advisory Board
July 21, 2014
by
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Background

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- NRC's Role per NDAA
  - Consultation as part of DOE waste determination (WD)
    - Originally proposed on an individual tank basis
    - Consultation would have been on-going through 2020
    - Now on an aggregate tank farm basis
    - Current H Tank Farm (HTF) consultation will likely be the last
  - NRC Monitoring will commence following WD
    - In accordance with a combined F Tank Farm (FTF) and HTF Monitoring Plan
    - Coordination with SCDHEC

Consultation Chronology

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- February 2013 – DOE transmits draft basis and related performance assessment for HTF closure to NRC for review
- July 2013 – NRC transmits requests for additional information (RAIs) to DOE (many RAIs similar to those for FTF)
- November 2013, January 2014 – DOE responses to RAIs and follow up questions
- January 2014 through June 2014 – NRC finalizes TER
- June 17, 2014 – TER sent to DOE
- June 24, 2014 – TER publicly available
- ADAMS Accession Number ML14094A496

Overview of TER

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- Addresses three criteria specified in NDAA
  - whether or not repository disposal is required
  - removal of highly radioactive radionuclides to the maximum extent practical
  - ability to meet performance objectives specified in 10 CFR Part 61
- Findings and recommendations very similar to those in FTF TER
- Major differences
  - some HTF tanks have been completely submerged
  - some HTF tanks have a significant volume of waste in annuli
- Findings and recommendations will become basis for NRC monitoring

Criterion 1

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- Whether disposal in a geologic repository is required
- DOE posits in draft basis document that geologic disposal is not required
- NRC agrees there are no unique safety and security aspects of HTF that would require repository disposal if other criteria are met

Criterion 2

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- Removal of highly radioactive radionuclides (HRRs) to the maximum extent practical (MEP)
- Key Review Results
  - DOE's approach to developing projected tank inventories appears to be generally conservative
  - DOE's approach to developing final inventories after tank cleaning is reasonable
  - NRC believes some improvement in quantifying uncertainty is warranted
  - DOE should continue to evaluate efficiency of various tank cleaning technologies
  - DOE's process for identifying HRRs is reasonable
  - DOE has a process to demonstrate removal of HRRs to MEP; process could benefit from more detail as cleaning experience is accrued

Criterion 2
Key Recommendations

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- DOE should explore methods to improve estimates of residual waste volumes and related uncertainty
- If oxalic acid is not used for cleaning, DOE should reconsider cooling coil and wall inventory
- DOE should continue to examine reasons for unexpected inventory sampling results
- DOE should continue to evaluate HRR list with as new information is available
- DOE should emphasize HRR removal in selection of cleaning technology
- DOE should continue to participate in technology exchanges
- DOE should consider how it might better assess and optimize the effectiveness of selected technologies
- DOE should continue to refine methods to be used to demonstrate removal to MEP to ensure consistent application of technologies
- DOE should evaluate the practicality of additional radionuclide removal from Tank 16 annulus

Criterion 3

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- Waste classification and ability to meet performance objectives
- Waste Classification
  - Class C or GTCC
- Performance Objectives
  - Protection of the general population from releases of radioactivity
  - Inadvertent intruder protection
  - Protection of workers and the public during operations
  - Long-term stability

Criterion 3 - continued

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- Key Review Results
  - DOE's waste classification methodology is generally consistent with NRC guidance
    - DOE has reasonable exposure scenarios re: protection of the public
    - NRC notes uncertainty regarding projected releases and limited technical support for key barriers
    - DOE has reasonable exposure scenarios re: intruder protection; compliance tied to resolution of technical issues related to long-term protection of the public
    - DOE can demonstrate continued protection during operations
    - DOE should conduct additional analysis to demonstrate long-term stability

Criterion 3
Key Recommendations

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- Primary Recommendation
  - DOE should conduct waste release experiments
- Other Key Recommendations
  - DOE should conduct a more comprehensive analysis of contaminant release from Type I and II tank annuli
  - NRC supports DOE's commitment to sampling following waste retrieval; follow-up will be part of NDAA monitoring activity
  - DOE should continue to evaluate appropriateness of transport parameters
  - DOE should improve calibration of "far field" model
  - DOE should perform closure cap settlement and stability analysis

Closing Thoughts

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- Review results and recommendations are based on extensive NRC staff review of material provided by DOE as well as clarifying discussions in person and by phone and informed by previous reviews (e.g. F Tank Farm)
- As with FTF, the NRC TER for HTF draws no specific conclusions regarding DOE's ability to meet the performance objectives

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QUESTIONS

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