NRC Role in Monitoring U.S. Department of Energy Disposal Activities at F-Tank Farm Savannah River Site

A Presentation to the Savannah River Site
Citizens Advisory Board
by
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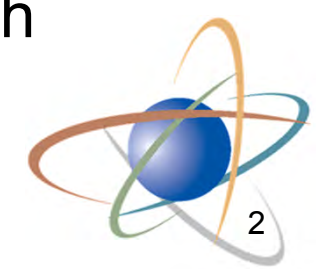
Background

- NRC Responsibility per NDAA
- *Consultation* before DOE Secretary Waste Determination
  - Three Criteria
- *Monitoring* after Waste Determination
  - Criterion re: Disposal Activities complying with 10 CFR Part 61 Performance Objectives



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What Are We Monitoring?

- Monitoring DOE Disposal Activities for Compliance with Part 61 Performance Objectives
  - Protection of the Public
  - Protection of Inadvertent Intruders
  - Protection during Operations
  - Site Stability

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Nexus of Consultation and Monitoring

- NRC Technical Evaluation Report
  - October 2011
  - No NRC conclusion re: Ability to Meet PO's
  - Staff Recommendations to DOE
  - Staff believes that implementation of recommendations will enhance likelihood of compliance with PO's
- NRC has been in Monitoring Mode since Spring 2012

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NRC Monitoring Role

- Identified in Section 3116 of the NDAA FY2005
- Assess whether DOE disposal activities comply with Part 61 Performance Objectives
- Coordinate with host state (SCDHEC)
- Report non-compliance to DOE, SC, U.S. Congress

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NRC Monitoring Plan

- Will become the basis for site monitoring
- Incorporates TER consultative review comments and recommendations into monitoring factors important to PO compliance
- Preparation and implementation coordinated with SCDHEC
- Implemented through technical reviews and periodic on-site observations

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Monitoring Process

- Monitoring Plan
- Technical Reviews
  - Environmental data, Experiments, and Calculations
- PA Revision Reviews
- Onsite Observation Visits
  - Observation Guidance
  - Summary Report

Periodic Compliance Monitoring Reports

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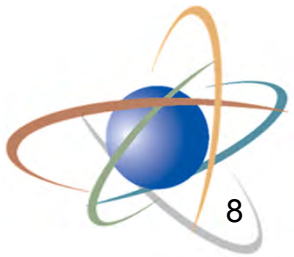
Technical Basis for Monitoring

- Performance Objectives are Paramount
- Monitoring Areas
  - General features or aspects important to DOEs ability to meet PO's
  - Remain constant throughout DOE closure process
- Monitoring Factors
  - Specific implementation features for Monitoring Areas
  - Likely to evolve and be activity specific
  - Tracked as Open or Closed



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Monitoring Areas

- Inventory
- Waste Release
- Cementitious Material Performance
- Natural System Performance
- Closure Cap Performance
- Performance Assessment Maintenance
- Protection of Workers during Operations
- Site Stability

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Inventory

- Impact on dose to public and inadvertent intruder
- Linearly related to dose if not solubility limited
- Must be updated as tanks are cleaned
- Comparison with estimates in PA
- Key factors
  - Final Inventory and Risk Estimates
  - Waste Sampling
  - Waste Volume
  - Ancillary Equipment Inventory

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Waste Release

- Impact on dose to public and inadvertent intruder
- Ability of residual waste to move into accessible environment
- Accessibility of residual waste to future inadvertent intruders
- Must assess physical and chemical barriers
- Key factors
  - Solubility
  - Chemical transition times

Cementitious Material

- Impact on dose to public and inadvertent intruder
- Includes pre-existing cementitious material and newly introduced grout
- Can both enhance and retard migration
- Key Factors
  - Concrete vault performance/ steel liner corrosion
  - Groundwater conditioning
  - Grout Performance
  - Shrinkage and Cracking
  - Basemat Performance

Natural System Performance

- Impact on dose to public and inadvertent intruder
- Hydrogeological environment adjacent to tanks and residual waste
- Migration to water table and through saturated zone
- Potential for access by member of the public or future intruder
- Key factors

  - Attenuation of Pu
  - Characterization of Calcareous Zones
  - Environmental Monitoring

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Closure Cap Performance

- Impact on dose to public, inadvertent intruder, and site stability
- Future barrier to water infiltration and intruders
- Implemented at end of closure process
- Key Factors

  - Long-term hydraulic Performance
  - Long-term erosion considerations
  - Closure cap considerations re: ALARA

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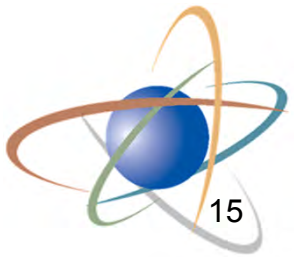
Performance Assessment Maintenance

- Impact on dose to public and inadvertent intruder
- Analytical tool to assess impacts of disposal activities on overall system performance
- Must be updated as new information or system understanding evolves
- Key factors
  - Scenario Analysis
  - Model and Parameter Support
  - FTF PA Revisions



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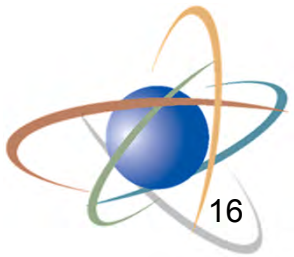
Protection of Workers During Operations

- Continuing radiation protection practices during site closure and disposal activities
- 10 CFR Part 20 and DOE RP regulations
- Key Factors
  - Worker Protection
  - Air Monitoring
  - ALARA



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Site Stability

- Features, events, and processes that can affect disposal facility components
- Deterioration of engineered features
- Compromise long-term system performance
- Key factors
  - Settlement
  - Others as closure operations continue

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NRC Update on Saltstone Activities

- April 30, 2012 – NRC issued both a Technical Evaluation Report and Letter of Concern to DOE
- July 12 and 26, 2012 - DOE sent two responses to Letter of Concern to NRC
- August 31, 2012 - NRC sent acknowledgement letter with a preliminary assessment of DOE's response
- NRC is evaluating the information in two DOE July 2012 response letters
- NRC will continue to interact with DOE and coordinate with SCDHEC

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Questions?
Comments