# June 1, 2011 EnergySolutions

# Depleted Uranium (DU) Performance Assessment (PA) Modeling Report

Summary by

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# ES DU PA Model Report

- Report Includes:
  - 60 pages
  - 1 digital DVD

- Required by License Conditions (LC)
  - LC 35.A and
  - LC 35.B

# ES License Requirements

- LC 35.A (effective June 1, 2010)
  - No disposal of concentrated DU without prior approval as per *UAC R313-25-8*.
  - UAC R313-25-8(4) - Specific Technical Information
    - General population will be protected (25/75/25 mR/yr)
    - Pathways to consider:
      - Air
      - Soil
      - Groundwater
      - Surface water
      - Plant uptake
      - burrowing animals

# ES License Requirements

– UAC R313-25-8(4) - continued

- Identify / Differentiate Protection via:
  - Site characteristics
  - Design features
- Protect Inadvertent Intruders via:
  - Waste classification
  - Waste segregation
  - Adequate barriers
- Analysis to evaluate control of exposures via:
  - Routine operations and likely accidents
  - Waste handling, storage, and disposal

# ES License Requirements

- UAC R313-25-8(4) - continued
  - Analysis of Long Term Stability -
    - Active natural processes
      - » Erosion
      - » Mass wasting
      - » Slope failure
      - » Settlement of waste / backfill
      - » Infiltration thru covers / adjacent soils
      - » Surface drainage of site
      - » Effects of changing lake levels
    - Reasonable Assurance: *no ongoing active maintenance*

# ES License Requirements

- UAC R313-25-8(5)
  - additional requirements after June 1, 2010
  - no DU land disposal without:
    - Submittal of a PA Report to demonstrate:
      - Performance standards will be met in both:
        - » 10 CFR 61
        - » Corresponding State rules
    - PA will be revised to *"… reflect on-going guidance and rulemaking from NRC*"
    - PA compliance period: 10,000 yrs
    - Additional PA simulations to evaluate:
      - Peak dose (qualitative analysis)

# ES License Requirements

- LC 35.B

  *"B. Performance assessment: A performance assessment, in general conformance with the approach used by the Nuclear Regulatory Commission (NRC) in **SECY-08-0147**, shall be submitted for Executive Secretary review and approval no later than June 1, 2011. The performance assessment shall be revised as needed to reflect ongoing guidance and rulemaking from NRC. For purposes of this performance assessment, the compliance period will be a minimum of 10,000 years. Additional simulations will be performed for a minimum 1,000,000 year time frame for qualitative analysis."* (emphasis added)

# ES License Requirements

- *NRC SECY-08-0147 (p.10)*
  - Option 2: Recommended by NRC Staff
    - NRC Rulemaking – changes to 10 CFR 61
      - Site Specific Analysis for Disposal of Large Quantities of DU
      - Risk informed approach
      - Minimal disruption to existing LLRW waste classification
    - NRC Staff – to prepare guidance for DU PAs:
      - For public comment
      - Outline appropriate parameters / assumptions

# ES Report Content

- TOC, Section 1.0

  1. Licensing Overview
  2. Regulatory Summary
  3. Historical DU Management
  4. Basis for PA

# ES Report Content

- TOC, Section 2.0
  1. Radiation Protection Program (UAC R313-15-101)
  2. Dose Limits, Occupational, Adults (UAC R313-15-201)
  3. Dose Limits, Individuals (UAC R313-15-301)
  4. Radiologic Criteria, Unrestricted Use (UAC R313-15-402)
  5. Access Control, High Radiation Areas (UAC R313-15-601)
  6. Security / Control, Licensed Sources (UAC R313-15-801)
  7. Posting Requirements (UAC R313-15-902)

# ES Report Content

- TOC, Section 2.0
  8. Procedures, Receiving / Opening Packages (UAC R313-15-906)
  9. Method for Approval, Disposal Procedures (UAC R313-15-1002)
  10. Waste Classification (UAC R313-15-1009)
  11. Instructions to Workers (UAC R313-18-12)
  12. General Information – Expected Schedules [UAC R313-25-6(3)]
  13. Specific Technical Information (UAC R313-25-7)
      - Principal design features
      - Descriptions - design criteria / justification and codes

# ES Report Content

- TOC, Section 2.0

14. Technical Analysis (UAC R313-25-8)
15. Financial Qualifications (UAC R313-25-10)
16. Requirements for Issuance (UAC R313-25-11)
17. Individual Exposure Assurance (UAC R313-25-18)
18. General Population Protection, Radiation Releases (UAC R313-25-19)
19. Inadvertent Intruder Protection (UAC R313-25-20)
20. Protection of Individuals, Operations (UAC R313-25-21)

# ES Report Content

- TOC, Section 2.0

21. Post-closure Site Stability (UAC R313-25-22)
22. Disposal Site Design (UAC R313-25-24)
23. Funding for Site Closure (UAC R313-25-31)
24. Financial Assurance, Institutional Control (UAC R313-25-32)
25. Groundwater Protection Limits (UAC R317-6)

# ES Report Content

- TOC, Section 3.0 - Conclusions
- TOC, Section 4.0 - References
- Appendix A – Clive DU PA Model, Ver. 1.0