

## SCHEDULING NOTE

**Title:** BRIEFING ON PROPOSED REVISIONS TO 10 CFR Part 61 and LOW-LEVEL RADIOACTIVE WASTE DISPOSAL (Public)

**Purpose:** To brief the Commission on the 10 CFR Part 61 rulemaking and Low-Level Radioactive Waste Disposal

**Scheduled:** June 25, 2015  
9:00 AM

**Duration:** Approx. 3 hours

**Location:** Commissioners' Conference Room, 1<sup>st</sup> fl OWFN

**Participants:**

<b><u>Panel 1 - External Stakeholders</u></b>	<b>60 mins.*</b>
<b>Mike Garner</b> , Executive Director Northwest Interstate Compact	10 mins.*
<b>Ralph Andersen</b> , Senior Director, Radiation Safety and Environmental Protection, Nuclear Energy Institute	10 mins.*
<b>Dan Shrum</b> , Senior Vice President of Regulatory Affairs, EnergySolutions	10 mins.*
<b>Scott Kirk</b> , Executive Vice President, Licensing and Regulatory Affairs, Waste Control Specialists	10 mins.*
<b>Perry Robinson</b> , General Counsel, Louisiana Energy Services (URENCO USA)	10 mins.*
<b>Matt Pacenza</b> , HEAL Utah	10 mins.*
<u>Topic:</u> <ul style="list-style-type: none"><li>• Site-Specific Analysis Rulemaking</li></ul>	
<b>Commission Q &amp; A</b>	<b>40 mins.</b>
<b>Break</b>	<b>5 mins.</b>

**Panel 2 - Regulators (NRC and Agreement States)**

**40 mins.\***

**Mark Satorius**, Executive Director for Operations

**Scott Moore**, Deputy Director  
Office of Nuclear Material Safety and Safeguards (NMSS)

**Larry W. Camper**, Director, Division of Decommissioning,  
Uranium Recovery and Waste Programs, NMSS

**Rusty Lundberg**, Director, Utah Division of Radiation Control and  
Organization of Agreement States

**Charles Maguire**, Director, Radioactive Materials Division,  
Texas Commission on Environmental Quality

Topics:

Site-Specific Analysis Rulemaking

- Historical Perspective
- Proposed technical revisions
- Challenges
- Guidance

Overview of Low-Level Waste Program

- Highlight programmatic successes
- Ongoing Activities\*\*

**Commission Q & A**

**40 mins.**

**Discussion – Wrap-up**

**5 mins.**

\*For presentation only and does not include time for Commission Q & A's

\*\*Only a high level overview of these topics will be provided as they will be discussed in more detail during future Commission meetings.



NRC Commissioner's Briefing  
Proposed 10 CFR Part 61 Rulemaking

June 25, 2015

Mike Garner  
Chair/Executive Director  
Northwest Interstate Compact



# Background

- Low-Level Radioactive Waste Policy Amendments Act of 1985 defines responsibility for waste management and disposal
  - States and interstate compacts
  - Federal government
- The U.S. Enrichment Corporation Privatization Act defines responsibility for depleted uranium disposal
  - U. S. Department of Energy is responsible; not states and interstate compacts



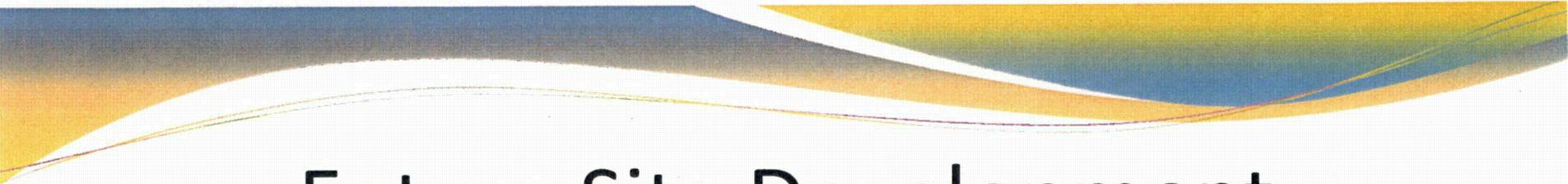
# Background

- New low-level waste disposal facilities needed by 2050
  - Richland, WA facility will begin closure activities in 2056
  - EnergySolutions has 30 years of licensed capacity remaining
  - Additional nuclear utilities scheduled to be decommissioned in next 20-40 years



# Purpose of Proposed Rulemaking

- NRC needs to develop regulations addressing the disposal of unanticipated waste streams such as large volumes of depleted uranium at commercial sites
- 2 commercial sites are interested in accepting large volumes of depleted uranium for disposal
  - Waste Control Specialists – Andrews County, TX
  - EnergySolutions – Clive, UT



# Future Site Development

- Site development depends on:
  - Technical analysis demonstrating low-level waste is disposed in a manner that is protective of public health and safety
  - Just as importantly it requires the public's support before initiating site development
  - Stability in regulations governing low-level waste facility operation



# Unintended Impacts of Rule

- Changes the dynamics as found in the Low-Level Radioactive Waste Policy Amendments Act regarding site development
  - Depleted uranium is not a state or compact responsibility
- Commercial sites not accepting large volumes of depleted uranium will be subject to the economic burden of implementing the rules with no economic benefit
  - Will result in increased disposal fees for low-level waste generators using the Richland, WA site



# Unintended Impacts of Rule

- Application of the rule to all commercial sites undermines the stability of regulations governing low-level waste disposal
  - States may be hesitant to support site development as the rules can change at any time to allow extremely different waste streams than those contemplated during the original public process
  - May make the public hesitant to support site development



# Unintended Impacts of Rule

- It is unlikely that a new site meeting the requirements of the proposed rule would be able to receive the public support necessary for site development
  - Such a site has never been developed and is likely un-siteable



# Reduce Unintended Impacts

- The new rule should apply only to those commercial sites seeking large volumes of depleted uranium for disposal
  - This could be accomplished through the inclusion of these requirements within a separate section or subpart of 10 CFR Part 61 that applies only to those sites seeking large volumes of depleted uranium or other long-lived radionuclides for disposal
  - All four sited states support this approach



# Benefits of Alternate Implementation

- Aligns more closely with the tenets of the Low-Level Radioactive Waste Policy Amendments Act
- Limits the economic burden to those sites that will benefit economically from the acceptance of large volumes of depleted uranium for disposal
- Maintains a higher level of stability for rules governing traditional low-level waste disposal
- Makes future site development more difficult, but much less difficult than if the rule is applied to all commercial sites



# Perspective on Part 61 Rulemaking and Low-Level Radioactive Waste Disposal

Ralph Andersen, CHP  
Senior Technical Advisor  
USNRC Commission Meeting  
June 25, 2015 • Rockville, MD

## Summary

- The current regulations “ensure public health and safety are protected in the operation of any commercial LLRW disposal facility”
- Proposed rule goes well beyond addressing safe disposal of “LLRW streams that are significantly different from [those] considered in the current 10 CFR Part 61 regulatory basis...”
- Will introduce unnecessary burden and unintended consequences

## Current Adequate Protection

- Integrated systems approach (current rule) implicitly similar to more explicit defense-in-depth approach (proposed rule)
- Emphasis on passive systems reduces reliance on long-term institutional controls
- LLRW disposal performance objectives are consistent with radiation protection standards employed throughout NRC regulations

## Significantly Different LLRW Streams (adapted from NRC staff presentations)

- Depleted Uranium
- LLRW from DOE operations
- Waste Forms/Volumes
- Blended LLRW
- LLRW streams generated from new technologies

## Intent of Proposed Rule

- Prepare a safety case and perform new site-specific analyses ~~to address safe disposal of significantly different LLRW streams~~
- Identify additional prudent site-specific measures for continued LLRW disposal
- Develop site-specific LLRW acceptance criteria

# Potential Unnecessary Burden and Unintended Consequences

- Required for all existing and new facilities – whether or not for disposal of significantly different LLRW streams
- Subordinates the existing waste classification criteria
- Implementation of a new approach introduces new uncertainties for present and future business decisions

# Preliminary Comments (Work in Progress)

- Provide for excluding existing facilities not pursuing disposal of significantly different LLRW streams
- Allow for use of site-specific waste acceptance criteria (e.g., for disposal of significantly different LLRW streams) and/or continued use of existing LLRW classification requirements
- Compatibility level implications should be more fully explored in regard to state- and site-specific issues
- Consider other changes in progress (e.g., LLRW branch technical position and regulatory issue summary on LLRW manifest reporting)
- Implications for possible future updating of the Waste Classification tables should be addressed prior to issuance of a final rule

Comments on Proposed Rule  
Regarding Low Level Radioactive  
Waste Disposal

June 25, 2015

Daniel B. Shrum  
Senior Vice President,  
*Energy Solutions*

## Summary of Issues

- Addition of performance assessment derived waste acceptance criteria
- Defense in depth
- Proposed rule is overly complicated
- Complications and inconsistencies
- Stability at 10,000 years
- Grandfathering provision
- Unintended consequences motivating unlicensed disposal

## Performance assessment derived waste acceptance criteria

- Using waste acceptance criteria in lieu of tables in 10 CFR 61.55 is technological advancement
- Superior to the limits in the tables
  - Based on site-specific conditions
  - Incorporate most recent ICRP guidance
  - Account for volumes and activity of waste disposed
- No revision to generic tables could improve on a site-specific approach

## Defense in Depth

- Appreciate the inclusion of a safety basis and the emphasis on defense in depth
- Proposed rule misapplies the concept of defense in depth
- Requirements for an “analysis” should be removed, e.g., 61.13(f)
- Analysis suggests quantitatively demonstrating the value of redundant systems
- Defense in depth comes from layers of protection
  - Suitable site geology + stability + proper package + activity limits = defense in depth

## Proposed rule is overly complicated

- Revision of Part 61 initiated as a “limited scope rulemaking” (SRM-SECY-08-0147)
- As proposed, it is not limited nor readily understandable
- Amount of detail in §61.7 and §61.13 is excessive
- Significant volume of detail in §61.7 not related to intent of limited scope
- Most additions to §61.13 belong in guidance
- These additions don’t strengthen rule or contribute to health and safety

## Complications and Inconsistencies

- From NUREG-1275
- Other Disruptive Processes (§5.1.1.3) – No reference to this term in the rule
- “Licensees should examine plausible scenarios for site evolution and characteristics in the site stability analysis” – directly conflicts with the SRM-SECY-13-0075 “only if scientific information compelling such changes from the compliance period is available”
- “Defense-in-depth analysis” – conflicts with SRM-SECY-13-0075 “clear statement that licensing decisions are based on DID protections”

## Stability at 10,000 years

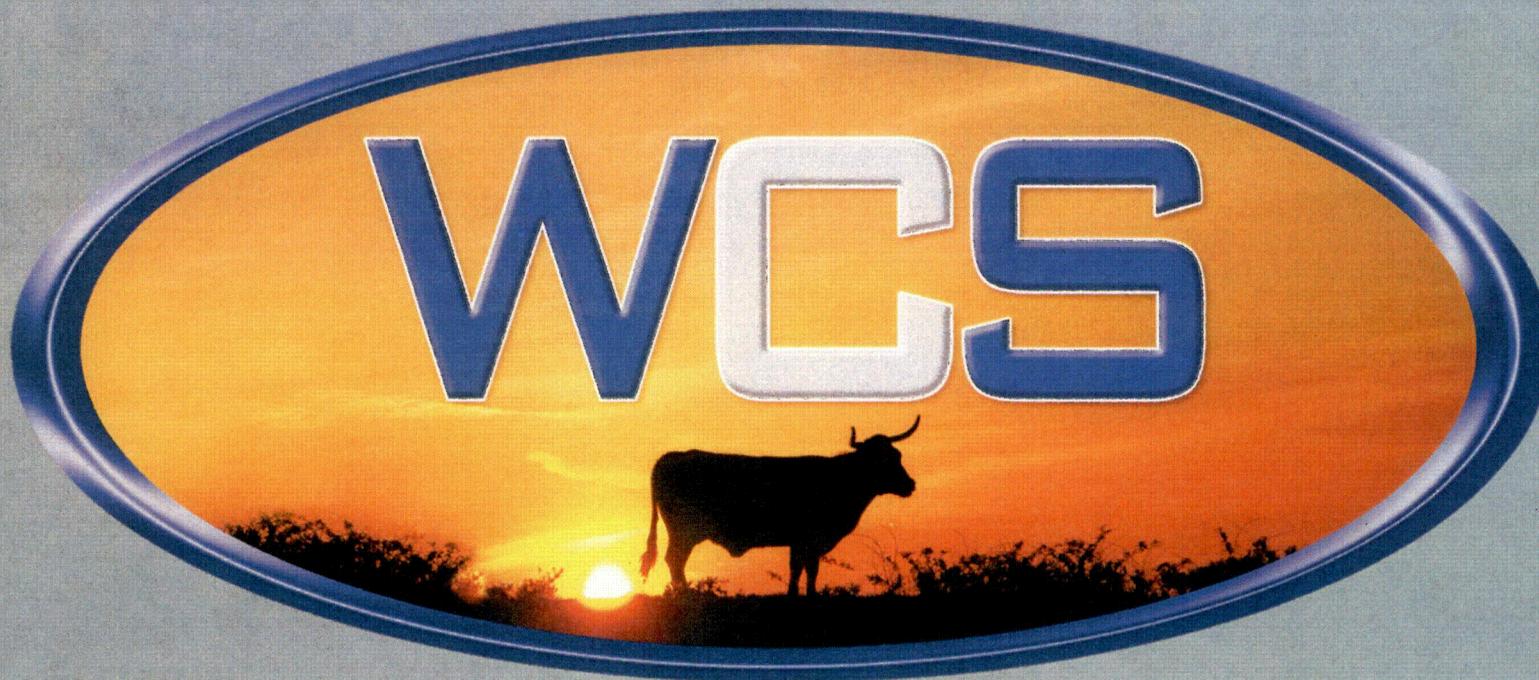
- The rule requires demonstrating site stability at 10,000 years
- §61.44 – “disposal facility must ... achieve long-term stability of the disposal site for the compliance and protective assurance periods...”
- Inconsistent with Commission direction, which explicitly refers to a “reasonable analysis”
- Technically infeasible – stability cannot be demonstrated to be stable for 10,000 years

## Grandfathering provision

- It is not reasonable to apply new rule to all existing and future LLW disposal sites – criteria should be fit for purpose
- The “limited scope” rulemaking was intended to address waste streams not previously analyzed for disposal
- Sites not disposing of such waste streams should be grandfathered
- Propose a standard similar to that used in Utah
  - Based on volume of depleted waste disposed
  - >1 tonne total depleted uranium

## Unintended consequences

- Complexity and cost of proposed rule will lead to unlicensed disposal of radioactive waste
- The Commission should include provisions for the disposal of low activity waste streams
- Absent that, more waste streams can be expected to go to disposal under 20.2002
- Waste streams allowed under 20.2002 are not adequately regulated
  - No regulatory control
  - No formal guidance



A N D R E W S , T E X A S

WCS' Perspectives Regarding the Site Specific Analysis  
Rulemaking under Part 61

J. Scott Kirk, CHP,  
Vice President of Licensing & Regulatory Affairs  
NRC Commissioners' Briefing  
25 June 2015, Rockville, Maryland



# Proposed Rulemaking

- WCS commends the staff's efforts to develop a proposed rulemaking for Unique Waste Streams.
- WCS supports the three tiered approach, as provided in the proposed rule.
- WCS also supports the radiation dose limits to protect the public and an inadvertent intruder.
- WCS recently received authorization to dispose of large quantities of DU with requirements more stringent than those in the proposed rule.



# Community Support

- WCS opened the first new disposal facilities in over 40 years.
- State, regional, and local communities are supportive of the nuclear industry.
  - WCS, URENCO, WIPP, and International Isotopes.
- Strong community support was a critical factor in licensing WCS' disposal facilities.





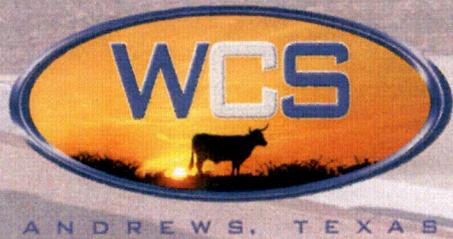
## Vision

- In 2003, Texas legislature envisioned a modern disposal facility that could take both commercial and DOE Class A, B and C LLW.
  - Mandated stringent siting requirements.
  - Required a design similar to monitored, retrievable storage .
  - Required Texas takes title of the waste at time of disposal for the commercial facility.
  - DOE takes title of the waste at the time of license termination for the federal facility.



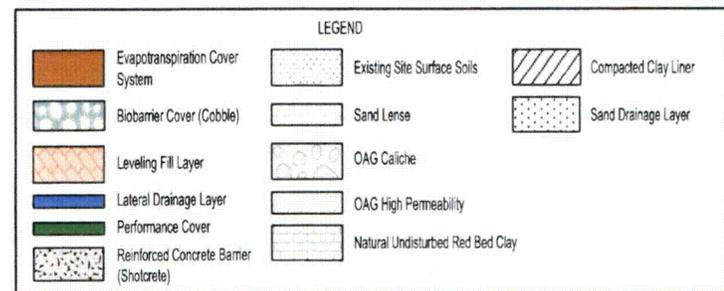
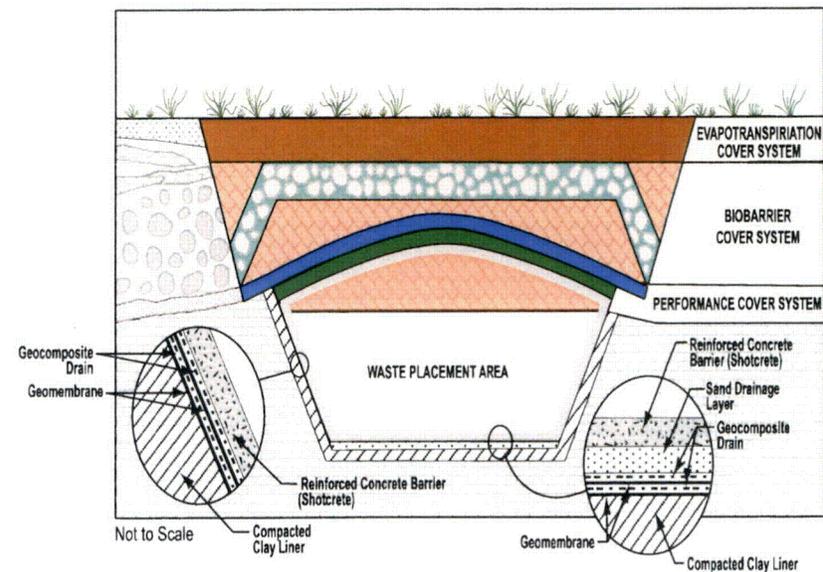
# Modern Disposal Facility

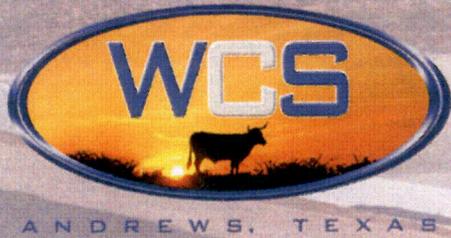
- A modern, well-sited and engineered facility can ensure the isolation of long-life radionuclides beyond 10,000 years.
  - Sited in an arid, remote part of the U.S.
  - Impermeable geology.
  - Far removed from potable water sources.
  - Engineering designs with multiple layers of defense-in-depth.
- Previous disposal sites were located because of their proximity to federal reservations, not based on their environmental performance.



# Site Characteristics and Engineering Design

- A 10 meter engineered cover that is not mounded at the surface.
- A 7 foot liner system that includes a 1 foot reinforced concrete barrier around the entire disposal unit.
- Disposal at depths greater than 30 meters is possible.
- Intruder resistant disposal canisters.





## Site Characteristics and Engineering Design

- All waste is disposed in the Dockum Formation.
  - 500 to 800 feet of impermeable redbed clay.
  - Water tables 600 – 1000 feet below grade.
- Arid climate: rainfall less than 15 inches per year and potential for evapotranspiration of over 60 inches of water per year.
- Hydrus infiltration model incorporated 24-hour rainfall events since 1954.
- The most extensively characterized site for LLW disposal in the U.S.
- Ideal for isolating long-lived radionuclides.



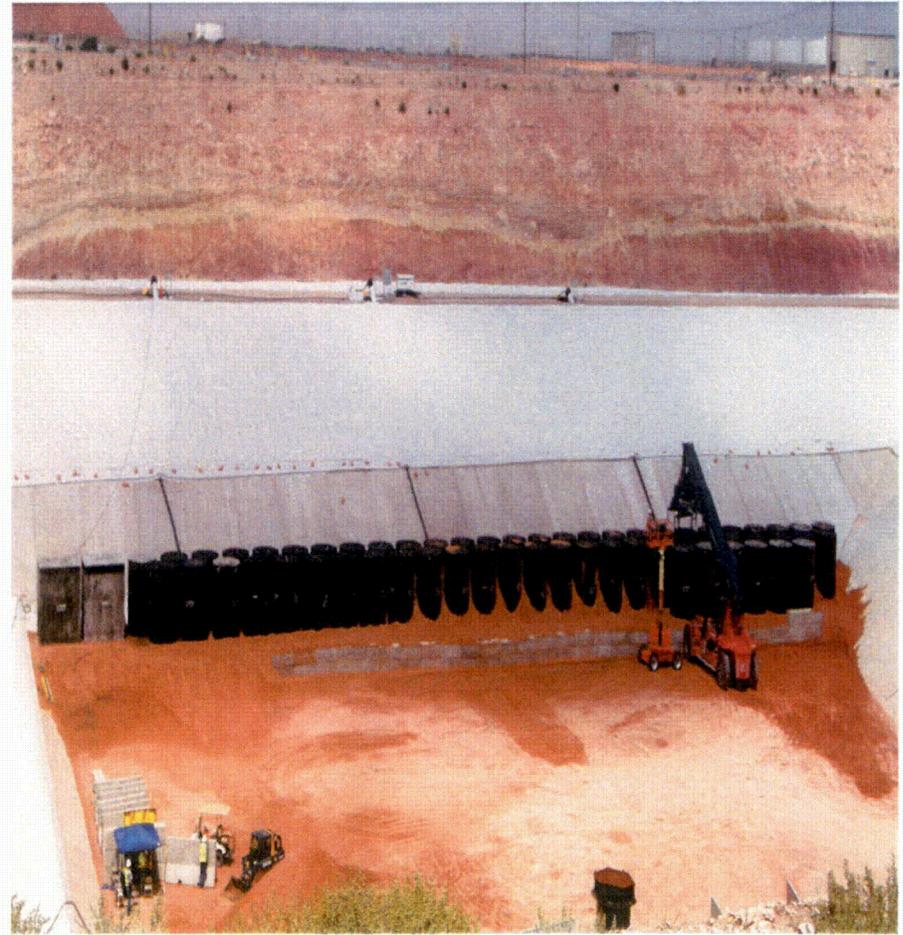
ANDREWS, TEXAS

# 40 Years of Change

**Previous Standard for Class B/C LLW**



**A New Disposal Facility**





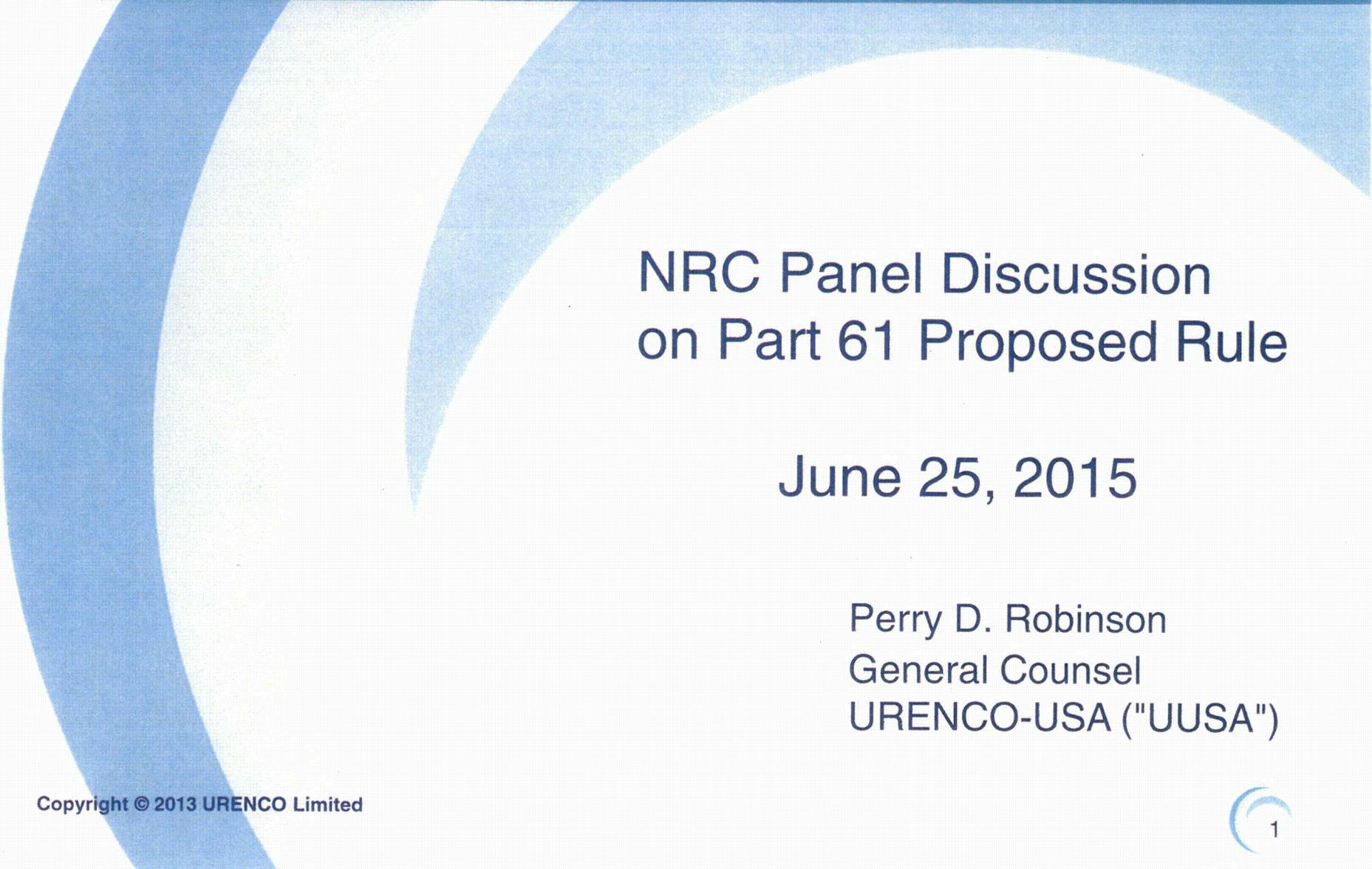
## Disposal of DU Authorized in Texas

- TCEQ regulations requires compliance for 1,000 years or peak dose, whichever is longer.
  - Most stringent Part 61-like regulations in the U.S.
- WCS analyzed disposal of 500,000 m<sup>3</sup> of DU as part of a major amendment.
- Analyzed time frames out to a million years, including the impacts from future climate changes.
- Demonstrated compliance with the dose limits for protecting the public and the intruder.



# Conclusions

- The industry has matured considerably over the past 40 years.
- WCS authorized to dispose of large quantities of DU complying with regulations more stringent than the three-tiered approach.
- A modern facility that is well sited, with defense-in-depth engineered barriers is suitable for isolating long-lived radionuclides well into the future.
- Agreement States and local communities willing to host a disposal facility may prefer maintaining existing regulations that may be more stringent than those under consideration by the NRC.

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# NRC Panel Discussion on Part 61 Proposed Rule

June 25, 2015

Perry D. Robinson  
General Counsel  
URENCO-USA ("UUSA")

# UUSA's Stake in the Rulemaking



- As the only commercial enrichment facility in US, UUSA has a substantial interest and stake in Part 61 rulemaking
  - Key driver of rulemaking - disposal of large quantities of depleted uranium ("DU") – first arose in UUSA initial licensing hearing
  - Increased requirements resulting from rulemaking will have a direct adverse impact on low level radioactive waste ("LLRW") generators, such as UUSA (e.g., disposal costs and operational changes)
  - Financial impacts can have a concomitant negative effect on long-term US domestic energy security
- NRC should perform an adequate regulatory analysis of the *enhanced* rulemaking impacts on the fuel cycle industry

# Dose "Minimization Analysis" Discussion



- Sections 61.41 & 61.42 introduce a new continuing dose "minimization analysis" for the public and inadvertent intruder by requiring doses to be below 500 mRem or "at a level that is supported as reasonably achievable based on technological and economic considerations"
- The new requirements raise concern for several reasons:
  - Lack of regulatory and technical support for the new standard
  - Legal precedent on similar standards indicates they can create considerable uncertainty for the regulated community
  - Although the standard is based, in part, on the as low as reasonably achievable ("ALARA") standard, the new standard does not include the type of objectivity the ALARA standard provides

- NRC's delay in considering the waste classification issue along with the other Part 61 requirements constitutes "piece-meal" regulation
  - Courts have discouraged agencies from a "one step at a time" regulatory process
  - NRC has not articulated a clear basis for its bifurcated approach
  - Both rulemakings have the same key driver – *i.e.*, evaluating the disposal of large quantities of DU
- NRC should reconsider its approach and instead move forward with an integrated rulemaking

- NRC has taken the position that "backfit" does not apply to Part 61 and, thus, did not perform a backfit analysis for the rulemaking
- For several reasons, not performing a backfit analysis should be reconsidered:
  - NRC's position narrowly construes the backfit rule under Part 70 - it does not consider that the new requirements can have significant impacts on LLRW generators who rely on Part 61 disposal facilities
  - Inconsistent with prior NRC rulemakings
  - NRC's published regulatory analysis is "qualitative"
  - Failure to consider impacts on affected segments of the industry is not consistent with agency policy to reduce cumulative effects of regulation ("CER")

# Conclusions



- 
- As discussed, there are still substantive matters that need consideration and/or reconsideration prior to finalization of the Part 61 rulemaking
  - Notwithstanding, the Commission and the NRC Staff are to be commended for allowing industry engagement

# HEAL Utah Comments On Part 61 Revisions

Matt Pacenza, Executive Director

[matt@healutah.org](mailto:matt@healutah.org)

801-355-5055



# HEAL Utah

- Nonprofit advocacy organization w/approx. 12,000 supporters
- More than a decade as stakeholder in nuclear waste issues in Utah
- Big nuclear waste campaigns over the years:
  - Advocated for ban on B&C wastes
  - Fought to keep foreign waste out of Utah
  - Sought to limit size of Clive site
  - Worked to keep Depleted Uranium, high level waste out of Utah
- Also work on clean air and clean energy issues

# Part 61 comments

- First, thanks for “hybrid” approach, allowing Utah to maintain ban on B&C wastes in classification tables
- A high priority of Gov. Gary Herbert, staff at Division of Radiation Control
- Do have some concern/confusion about language of “Hybrid waste acceptance approach.”
  - “to allow licensees...to develop site-specific WAC from the results of the technical analyses or from the requirements of the existing LLRW classification system.” (p. 16100 of 3/26/15 FR)
  - So licensee decides which approach? Can licensee sidestep ban choosing technical analyses approach?
  - NRC Staff at public hearings said that in fact state regulator chooses; perhaps rules need clarifying.

# Part 61 Concerns:

## Why was staff over-ruled?

### Compliance period

- **NRC staff originally proposed** a “20,000 year compliance period...” (*May 2011 Preliminary Proposed Rule Language.*)
- **NRC Commissioners overruled staff.** “The proposed rule should be revised to include a regulatory compliance period of 1,000 years.” (*February 2014 guidance to staff.*)

### Intruder Assessment

- **NRC staff originally proposed** “...must assume that an inadvertent intruder occupies the disposal site after closure...” (*May 2011 Preliminary Proposed Rule Language.*)
- **NRC Commissioners overruled staff.** “should be based on intrusion scenarios ...consistent with expected activities in and around the disposal site at the time of site closure.” (*February 2014 guidance to staff.*)

# Overruling Staff Reduces Public Faith in Rulemaking

- Commissioners orders same as industry requests
- **Energy Solutions comments:** “EnergySolutions is of the view that while a compliance period of 10,000 years may be workable, a compliance period of 1,000 years is preferable.” *(June 2011 comments to NRC)*
- **EnergySolutions comments** proposed a standard of “reasonably foreseeable scenarios” for the intruder assessment, not including the assumption that an intruder would occupy a site. *(June 2011 comments to NRC)*

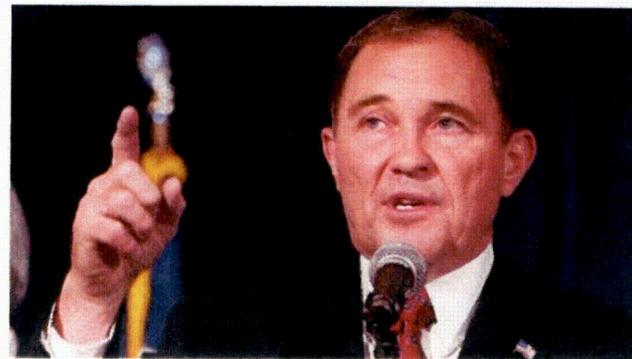
# Concerns with “Site Suitability Analysis” approach

- Utah is undergoing a PA review in its consideration of Depleted Uranium
- We’re the “test case” for how it works
- A PA is a massive, dense technical document – largely beyond ability of public to read, let alone comment on
- Development of PA puts enormous discretion and power in hands of consultants – hired by industry
- Advantage of bright lines of classification tables is it allows elected officials, public to participate in a robust debate
- Move to PA approach will limit public debate and participation. See Texas example.

# Should the NRC classify DU?

## Yes

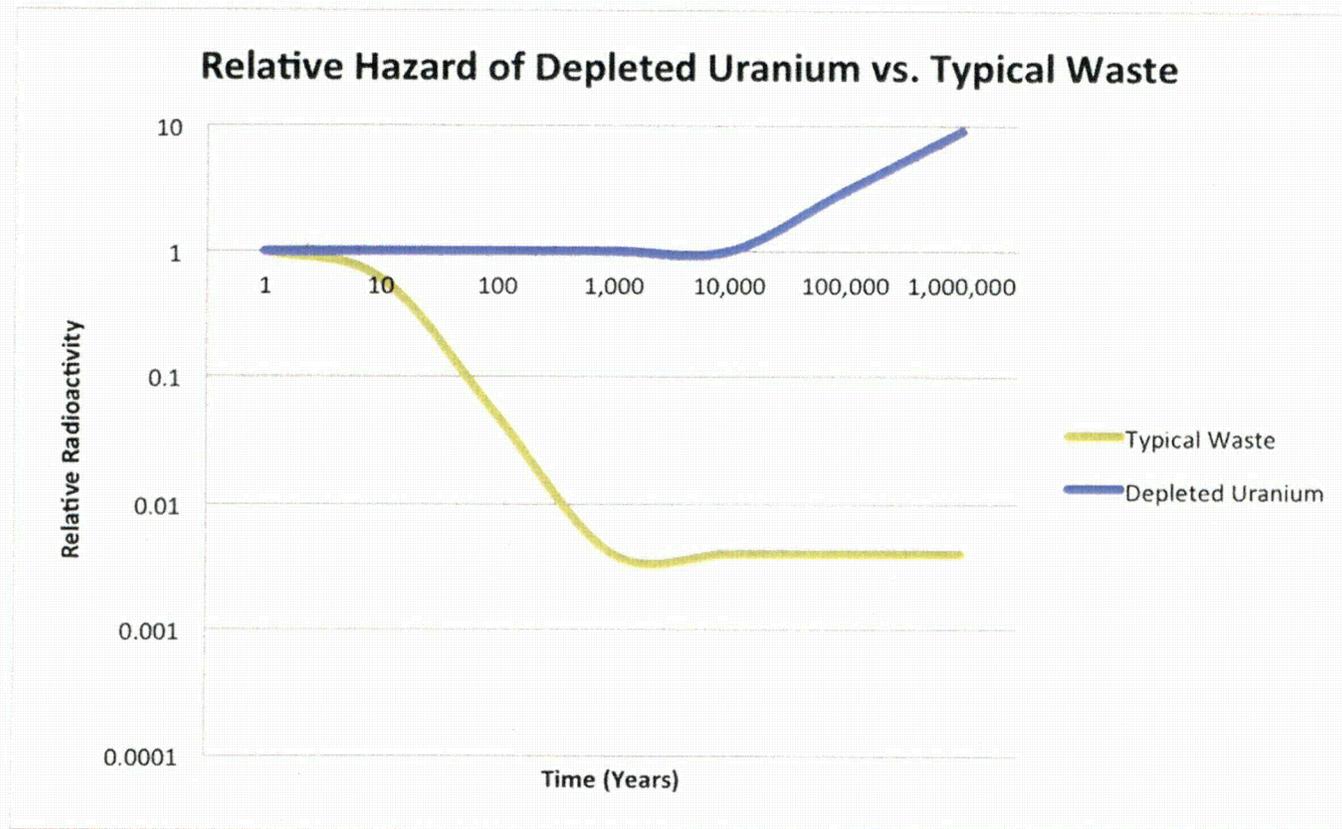
- Single most important “unique waste” decision Part 61 revisions are addressing is whether Utah and Texas should take DU
- Yet revisions won’t go into effect until after at least one, and most likely both, of those decisions are made
- NRC still has an opportunity to play a role in one of those decisions
- Utah officials – Gov. Gary Herbert, most prominently – are pleading with agency to classify Depleted Uranium before decision is final.
- "I expect the Nuclear Regulatory Commission to follow up on that and make their decision," he added. "Until that happens, I'm not comfortable having depleted uranium in Utah." (4/16/15 *Salt Lake Tribune*.)



# How Should the NRC Classify DU? Greater than Class A

- While classification is defined by current radiological hazard, duration has always been part of conversation
- Utah's debate on B&C ban was much about comfort with length of hazard
- The very Part 61 revisions document does this too
  - "Class C LLRW may require either greater burial depth or an engineered barrier that will prevent inadvertent intrusion for 500 years." (p. 16085.)
  - "wasteforms or containers should be designed to maintain gross physical properties and identity over 300 years, approximately the time required for Class B waste to decay to innocuous levels." (p. 16085.)
- But, right now, a regulatory loophole could allow waste that *doesn't reach a peak hazard for 2.1 million years* to be treated just like waste which loses 90 percent of its hazard in less than 200.

# Why Re-Classify DU



Source: NRC