



**Briefing on
proposed revisions
to 10 CFR Part 61
and Low-Level
Waste Disposal**

June 25, 2015

Opening Remarks

Mark Satorius
Executive Director for
Operations

Purpose

Provide an overview of ongoing Low-Level Waste (LLW) Disposal Activities with emphasis on the 10 CFR Part 61 rulemaking

At a Glance

- **Disposal of Large Quantities of Depleted Uranium**
- **Unanalyzed Waste Streams**
- **Concentration Averaging**
- **Waste Manifest Reporting**

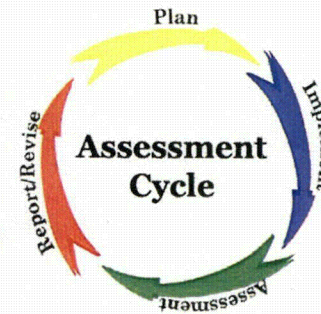
At a Glance

- **LLW Strategic Assessment**
- **Byproduct Material Financial Assurance**
- **Greater Than Class C LLW**

Office of Nuclear Material Safety and Safeguards

Scott Moore, Deputy Director

Recent Activities and Near Term Successes



- **Revised Branch Technical Position on Concentration Averaging and Encapsulation**
- **Phantom 4 Regulatory Issue Summary**
- **LLW Strategic Assessment**

Objective

To discuss the Low-Level Waste Program with a focus on the proposed revisions to the low-level radioactive waste disposal regulations.

Why is this rulemaking needed?

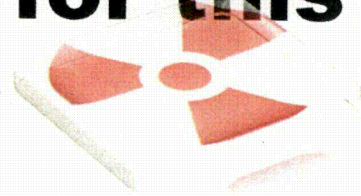
To ensure that LLW streams that significantly differ from those LLW streams considered in developing the current 10 CFR Part 61 regulatory basis can be disposed of safely.

Which LLW facilities would be covered by the proposed rule?

Commercial LLW Sites in the U.S.



What is the rationale for this rulemaking?



Need to address:

- **Depleted uranium**
- **LLW from DOE operations**
- **Blended LLW**
- **Waste forms/volumes**
- **Unexpected LLW waste streams from new technologies**

**Division of
Decommissioning, Uranium
Recovery, and Waste
Programs, NMSS**

Larry W. Camper, Director

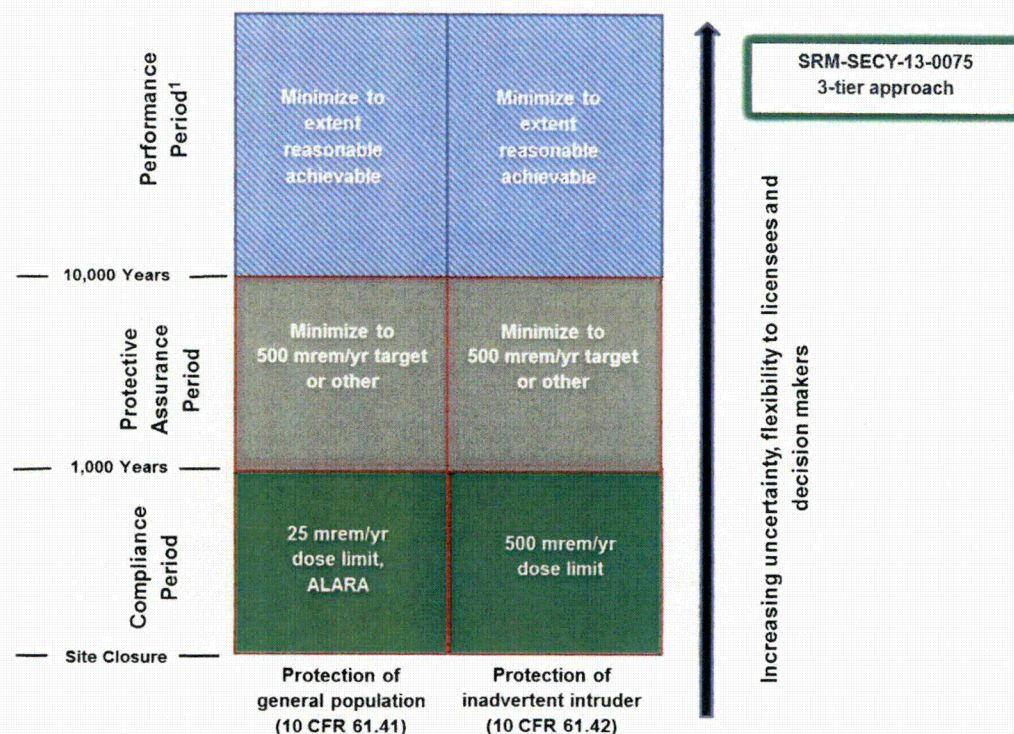
Major changes in the proposed rule

- **1,000 year compliance period**
- **Inadvertent Intruder analysis**
- **Protective Assurance analysis**
- **Analysis for performance period beyond 10,000 years**

Major changes in the proposed rule

- **Safety Case/Defense in depth**
- **Updated technical analyses at closure**
- **Site Specific Waste Acceptance Criteria**
- **Compatibility Changes**

What are the timeframes and dose limits for the analyses?



¹ Only applicable if concentrations on a facility-averaged basis are above 10 CFR 61.13(e) Table A

SRM-SECY-13-0075

Staff solicited stakeholder input on the:

- **Proposed three-tiered approach**
- **Analytical threshold (500mrem) for the protective assurance period**

SRM-SECY-13-0075

**Staff solicited stakeholder
input on the:**

- **Quantitative goal-- dose limits
for the performance period
analysis**
- **Compatibility category B**

Stakeholder Feedback:

- **Compatibility Category**
- **Three Tiered Approach Complexity**
- **Changes to Performance Objectives**

Stakeholder Feedback:

- **Supplemental Environmental Impact Statement**
- **Consultations with Native American Tribes**
- **Data supporting a Performance Assessment**

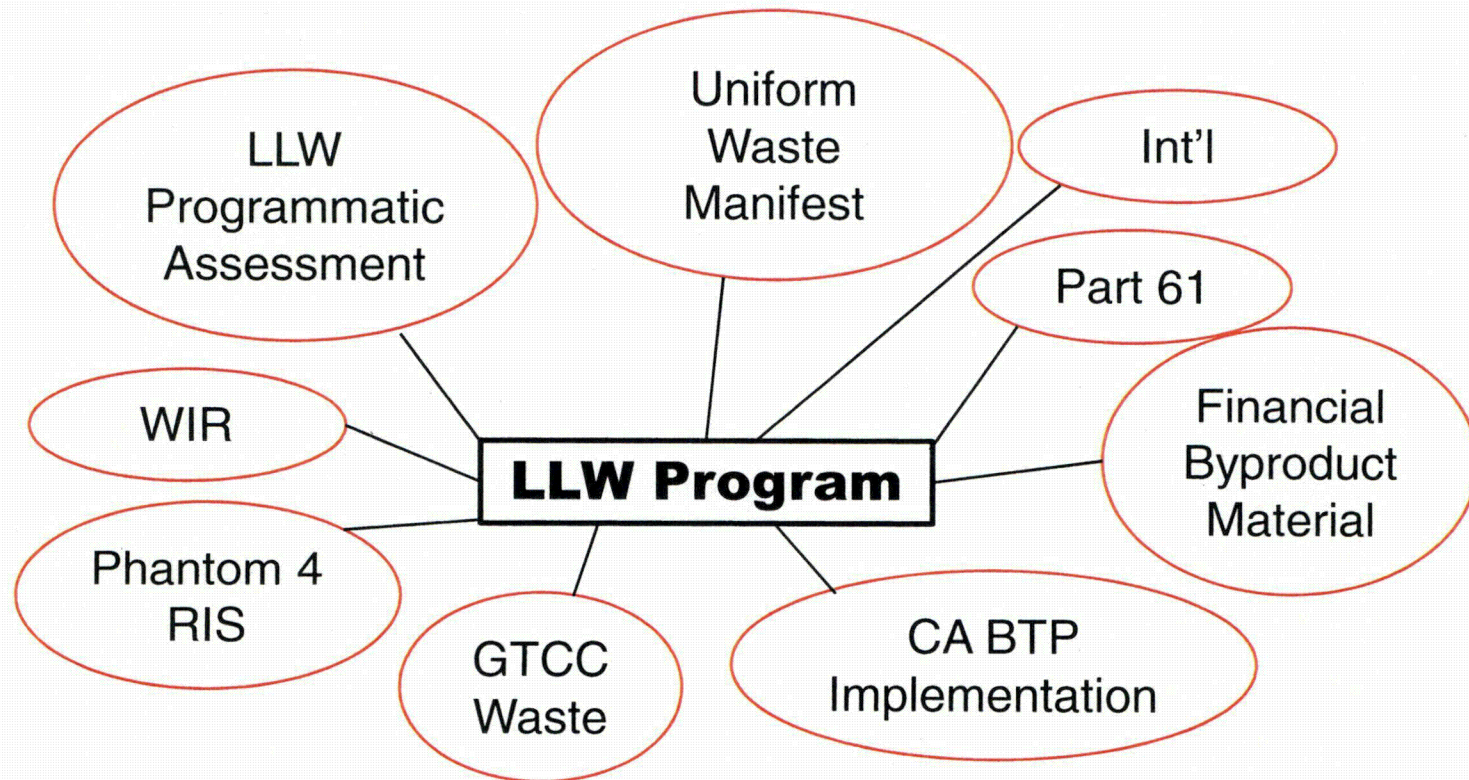
Stakeholder Feedback:

- **Operating Site Applicability**
- **Introducing Subjectivity**

Path Forward:

- **Analyze comments and develop responses**
- **Engage Agreement States**
- **Interactions with ACRS**
- **NUREG 2175**
- **Final Rule**

LLW Program Overview



ACRONYMS

- **ACRS: Advisory Committee on Reactor Safeguards**
- **CA BTP: Concentration Averaging and Encapsulation Branch Technical Position**
- **CFR: Code of Federal Regulations**
- **DOE: Department of Energy**
- **GTCC: Greater Than Class C**
- **Int'l: International**
- **LLW: Low Level Waste**
- **Mrem: Millirem**
- **NMSS: Office of Nuclear Material Safety and Safeguards**
- **RIS: Regulatory Information Summary**
- **SRM: Staff Requirements Memorandum**
- **WIR: Waste Incidental to Reprocessing**

Low-Level Radioactive Waste Disposal Proposed Revisions to 10 CFR Part 61

**Rusty Lundberg, Director
Division of Radiation Control
Utah Department of Environmental Quality**



Presentation Overview

- Part 61 process – stakeholder engagement
- Agency priorities
- Utah regulatory activities
 - Rules: Performance assessments
 - Waste classification
- Compatibility
- Subsequent rulemaking – waste classification

Stakeholder Engagement

- Appreciate Commission's focus throughout the entire rulemaking development process
- Continual recognition of the importance of stakeholder involvement
- Participation and response from stakeholders reflects importance of this rulemaking
- Recent public meetings in all four sited states particularly beneficial

Agency Priorities

- Build and enhance public and regulated community confidence and trust
- Foster and work within a regulatory framework that is transparent and predictable
- Assure that LLW management within Utah is protective of public health and safety and the environment
- Promote and advance and information sharing and availability

Utah Depleted Uranium (DU) Rule

(Adopted – April 2010)

- "Concentrated DU" means waste with DU concentrations greater than 5% by weight
- Land disposal of significant quantities of concentrated DU (> 1 metric ton in total accumulation) after June 1, 2010, shall submit a performance assessment (PA)
- PA revised, as needed, to reflect ongoing guidance and rulemaking from NRC

Utah Depleted Uranium (DU) Rule

- Performance assessment compliance period a minimum of 10,000 years. Additional simulations performed for the period where peak dose occurs and the results analyzed qualitatively
- No facility may dispose of significant quantities of concentrated DU prior to the approval by the Division Director of the performance assessment

Utah Depleted Uranium (DU) Rule

- Demonstrate the performance standards specified in 10 CFR Part 61 and corresponding provisions of Utah rules will be met for:
 - Total quantities of concentrated DU and other wastes, including wastes already disposed of and
 - Quantities of concentrated DU the facility now proposes to dispose

Utah

Performance Assessment Rule

(Adopted – February 2011)

- Conditions for requiring a performance assessment
 - Waste was not considered in the development of the limits on Class A waste and not included in the analyses of the Draft EIS for 10 CFR Part 61
 - Waste is likely to result in $> 10\%$ of the dose limits during the time period at which peak dose would occur

Utah

Performance Assessment Rule

- Conditions for requiring a performance assessment (cont.)
 - Waste will result in $> 10\%$ of the total site source term over the operational life of the facility
 - Waste would result in an unanalyzed condition not considered in the development of R313-25 (10 CFR 61.55)

Waste Classification - Utah

- Utah's Prohibition for Class B & C low-level radioactive waste
 - Current Law

19-3-103.7. Prohibition of certain radioactive wastes.

No entity may accept in the state or apply for a license to accept in the state for commercial storage, decay in storage, treatment, incineration, or disposal:

(1) class B or class C low-level radioactive waste; ...

Amended by Chapter 10, 2005 General Session
(Utah Code Ann., §19-3-103.7)

Waste Classification – Utah

“This proposed revision must not either explicitly or by interpretation be a means to by-pass the existing waste classification requirements of Subpart 61.55.”

“It is vital to Utah's Class B and Class C prohibition that the existing classification system of low-level radioactive waste remain in place, with the ability of a state, such as Utah, to enforce state prohibitions on wastes with higher radioactive levels.”

-- Gov. Gary R. Herbert

PR 10 CFR Part 61
(77FR72997)



January 4, 2013 (7:56 PM)

OFFICE OF SECRETARY
RULEMAKINGS AND
ADJUDICATIONS STAFF

GARY R. HERBERT
GOVERNOR

STATE OF UTAH
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SALT LAKE CITY, UTAH
84114-2220

GREG BELL
LIEUTENANT GOVERNOR

January 4, 2013

Secretary
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001
ATTN: Rulemakings and Adjudications Staff

RE: Utah Comments on the Proposed Rule Changes to 10 CFR Part 61, Licensing
Requirements for Land Disposal of Radioactive Waste
Docket ID: NRC-2011-0012

On behalf of the State of Utah, I appreciate this opportunity to comment on the above-referenced rulemaking proposal. I commend the Nuclear Regulatory Commission (NRC) staff, who I understand have worked closely with the Agreement States, the Low-Level Waste Forum, and other interested stakeholders throughout this rule development process. I have been informed that this level of stakeholder engagement has enhanced the dialogue associated with the proposed rule changes.

As you know, Utah has demonstrated a vital leadership role with respect to the key issues related to the management and disposal of low-level radioactive waste. This letter serves as an affirmation of my ongoing commitment to protect the health and safety of the residents of Utah and to offer comments to the NRC regarding some basic, yet vitally important principles that the Commission needs to follow when considering revisions to 10 CFR Part 61.

For a number of years, Utah has, by state statute, explicitly prohibited the management and disposal of Class B and Class C radioactive wastes inside the state. This statutory prohibition is important to the people of Utah, as well as top government officials because it serves to limit Utah's role in the overall national framework for low-level radioactive waste. Given the importance of our state law, it is vital that the NRC maintain the waste classification system in order to preserve the integrity of Utah's regulatory framework. In any proposed revision, NRC should preserve the regulatory flexibility necessary for an Agreement State, particularly a sited state such as Utah, to institute and address state-specific conditions and requirements, so that Utah may continue to prevent the disposal of radioactive wastes with radioactivity levels greater than Class A limits within its borders.

Waste Classification - Utah

- Independent verification
 - Public confidence
- Waste Acceptance Criteria
 - Host state resources impact
 - Coordination with disposal facility and waste generators

Compatibility

- Flexibility for Host States
 - State waste classification requirements
 - Performance assessments (DU)
 - In progress / Completed

PR 10 CFR Part 61
(77FR72997)



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Subsequent / Second Rulemaking Waste Classification – Depleted Uranium

- Commission request for comment
- Commercial disposal of large volumes of depleted uranium
 - Initial basis for Part 61 rulemaking
- Waste classification of depleted uranium
 - Significant ingrowth of progeny suggests depleted uranium is unique to other long-lived radionuclides
- Public confidence and acceptance

Subsequent / Second Rulemaking Waste Classification – Depleted Uranium



May 2015

Contact

Helge Gabert
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(801) 536-0215

Public Informational Meetings

Wednesday, May 6, 2015
5:00 PM to 8:00 PM
Tooele County Courthouse
47 South Main Street
Tooele, Utah

Thursday, May 7, 2015
5:00 PM to 8:00 PM
Utah Department of Environmental
Quality, Board Room #1015
195 North 1950 West
Salt Lake City, Utah

DEQ Website

[www.deq.utah.gov/businesses/E/
EnSolutions/depleteduranium/
performance/index.htm](http://www.deq.utah.gov/businesses/E/EnSolutions/depleteduranium/performance/index.htm)

DEQ Social Media

Blog

www.deq.utah.gov/blog

Facebook

www.facebook.com/utahdeq

Twitter

[www.twitter.com/UtahDEQ](https://twitter.com/UtahDEQ)

Utah Department of Environmental Quality Division of Radiation Control

Fact Sheet

Depleted Uranium Safety Evaluation Report (SER) Summary

The Safety Evaluation Report (SER) summarizes the analyses that DEQ and its contractor SC&A performed to determine whether the performance assessment (PA) for the disposal of significant quantities of depleted uranium (DU) at the EnergySolutions Clive facility meets federal and state regulatory performance criteria for depleted uranium (DU) disposals. The SER determines the extent to which the depleted uranium performance assessment (DU PA) submitted by EnergySolutions complies with these regulatory requirements.

All conclusions in the SER, including determinations that issues have been resolved, conditionally resolved, or not resolved are subject to reconsideration based on public comments and the record as a whole. DEQ has not made a formal recommendation or determination at this time regarding EnergySolutions' proposal. The director of the Division of Radiation Control will make the final decision as to whether to issue a license amendment allowing EnergySolutions to dispose of large volumes of concentrated depleted uranium based on the SER/DUPA and comments received during the public comment period.

Preliminary Conclusions in the SER

For the purposes of the SER, "resolved" means that a determination has been made that there is sufficient information to demonstrate that this requirement will be met. "Conditionally resolved" means that a determination has been made that there is sufficient information to demonstrate that this requirement will be met, provided that the applicable condition is also met. "Not resolved" means that a determination has been made that sufficient information has not yet been provided to DEQ to demonstrate that this requirement will be met. "Not observable" means that there is sufficient information to show that this condition cannot be met.

Resolved

The DEQ evaluation found that for the following topics, the EnergySolutions DU PA met the required regulatory criteria. The following issues have been resolved:

- Uranium's solubility
- Protection of the public from releases of radioactivity
- Protection of individuals from inadvertent intrusion
- Uranium oral toxicity

Utah Department of Environmental Quality: Division of Radiation Control

Conditionally Resolved

The DEQ evaluation found that for the following topics, the EnergySolutions DU PA satisfactorily met the required regulatory criteria, and the following topics can be resolved based upon the demonstration that the "Additional Conditions for Approval" have been met. The following issues have been conditionally resolved:

- Kind, amount, classification, and specifications of the material
- Ground water quality discharge permit and compliance with ground water protection levels
- Waste emplacement and backfill

Not Resolved

The DEQ evaluation found that for the following topics, the EnergySolutions DU PA has not satisfied all of the Department's concerns and the topics are not resolved at this time. The following issues have not been resolved:

- Evapotranspiration cover
- Infiltration
- Erosion of cover
- Frost damage
- Effects of biologicals on radionuclide transport
- Clay liner
- GoldSim quality assurance
- Deep time analysis

Not Resolvable

The DEQ evaluation found that at this time there are no topics in the EnergySolutions DU PA that cannot be resolved because of information that asserts that standards cannot be met.

Additional Conditions for Approval

EnergySolutions must agree to meet the following conditions before DEQ can give final approval.

1. **Agreement with Department of Energy (DOE)**
Prior to disposal of DU waste, EnergySolutions shall provide a written agreement letter between DOE and EnergySolutions indicating that DOE will accept title to the Federal Cell containing DU after closure.
2. **Disposal below grade**
DU waste must be disposed of below the original-grade level of the proposed Federal Cell.
3. **Depleted uranium as Class A waste**
EnergySolutions shall provide documentation that the Nuclear Regulatory Commission (NRC) does not plan to reclassify DU.
4. **Modeling of the remainder of waste**
EnergySolutions shall submit a revised performance assessment for DEQ approval that addresses the total quantities of concentrated DU and other wastes before any radioactive wastes other than the DU waste are emplaced in the Federal Cell.
5. **Waste acceptance criteria**
Prior to any land disposal of significant quantities of concentrated DU, EnergySolutions shall submit a written Waste Acceptance Criteria plan designed to ensure that all DU waste received by EnergySolutions conforms with all physical, chemical, and radiologic properties assumed in the DU PA modeling report.
6. **Prohibition of recycled uranium in DU waste**
EnergySolutions is prohibited from land disposal of any quantity of DU that was produced at DOE facilities from uranium-bearing materials containing recycled uranium.
7. **Hydrological and hydrogeological properties of lower confined aquifer**
EnergySolutions will develop and implement a program to provide more detailed site characterization and hydrogeological evaluation of aquifers in the area, particularly the deeper confined aquifer.

**Thank you for the opportunity and privilege to
present this information.**

Contact Information

Rusty Lundberg

Division of Radiation Control

Utah Department of Environmental Quality

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rlundberg@utah.gov

After July 1, 2015:

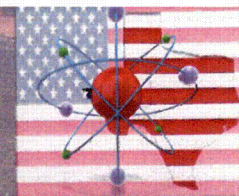
Rusty Lundberg

Deputy Director

Division of Waste Management & Radiation Control

Utah Department of Environmental Quality





10 CFR Part 61 Proposed Rule Panel Discussion

June 25, 2015

**Charles Maguire, Director, Radioactive
Materials Division**

**Texas Commission on Environmental
Quality**

The Proposed Rule will include a regulatory compliance period of 1,000 years

- Texas supports a minimum 1,000-year regulatory compliance period
- Texas regulations currently require a minimum period of 1,000 years after closure or the period at which the peak dose occurs, whichever is longer, as the period of analysis for conducting a performance assessment (PA)
- Texas has not used the term “*compliance period*” in its regulations – instead we have said “*period of analysis*”
- Texas would like to maintain these current requirements
- We acknowledge that a compliance period of 1,000 years is consistent with decommissioning standards

The Proposed Rule will require a site-specific analysis for protection of the general public within the 1,000-year compliance period with a specific dose limit of 25 mrem/yr.

- Texas supports the requirement for a site-specific analysis and specific dose limit of 25 mrem/yr within the 1,000-year compliance period
- Texas used a period of analysis of 50,000 years and a specific dose limit of 25 mrem/yr in evaluating the original Waste Control Specialists (WCS) application due to the proposed inventory of Carbon-14
- A site-specific analysis is critical given that waste acceptance may be determined by analysis of long-lived radionuclides like Depleted Uranium (DU) or Greater than Class C (GTCC)
- A site-specific analysis was required as part of the application review process for issuing the license to WCS and will continue through the annual PA updates required by the license

The Proposed Rule would require protective assurance analysis and intruder assessment analysis for the end of the compliance period through 10,000 years, built upon the same assumptions contained in compliance period. There is also the stated goal in the proposed rule of keeping doses below a 500 mrem/yr analytical threshold.

- Texas supports the requirement for a 10,000-year protective assurance analysis and intruder assessment analysis with the dose limit not to exceed a 500 mrem/yr
- Texas used a 500 mrem/yr dose limit in evaluating the intruder assessment analysis in the original WCS license application
- The WCS license requires annual PA updates which will include intruder assessment analyses

The Proposed Rule will require a qualitative analysis covering a performance period of 10,000 years or more after site closure to evaluate the ability of the disposal system to mitigate long-term risks associated with the disposal of long-lived low-level radioactive waste

- Texas supports the requirement for qualitative analysis for periods greater than 10,000 years
- The updated technical analyses performed by WCS were evaluated for different periods up to 1,000,000 years. This was to evaluate the proposed disposal of large volumes of DU
- The annual WCS PA updates have included a qualitative analysis

The Proposed Rule will include a clear statement that licensing decisions are based on defense in depth (DID) protections, such as siting, waste forms and radionuclide content, engineered features, natural geologic features of the disposal site, and using performance assessment goals and insights, as well as scientific judgment.

- Texas supports basing licensing decisions on DID considerations - this combination of DID and PA should be identified as the “safety case” for licensing
- DID warrants a site-specific analysis to account not only for natural features, but also how engineered features contributing to the safety case compliment the natural features
- DID at WCS included, but was not limited to:

Depth of burial; Placement of waste in reinforced concrete canisters; Disposal units lined with concrete; Drainage layer in the cover; Cover, floor, and sidewalls includes one foot of concrete among the 10 other layers; NRC Branch Technical Position on Concentration Averaging; Low precipitation rate; Subsurface is compacted clay; Site location; Waste Form; Waste Acceptance Criteria

The Proposed Rule would be a matter of compatibility between the NRC and the Agreement States, which would ensure consistency between the Agreement State requirements and the NRC requirements.

- Texas supports the changes to the compatibility categories with one request for your consideration:
 - Texas would like to maintain the flexibility to require a compliance period of 1,000 years after closure or the period at which peak dose occurs, whichever is longer
 - Texas would change “period of analysis to compliance period” in its rules
 - A compatibility requirement of “C” as opposed to the currently proposed “B” would therefore allow Texas to ensure a long-term human health and environmental protection level that has served us well in building and maintaining community support for the disposal site

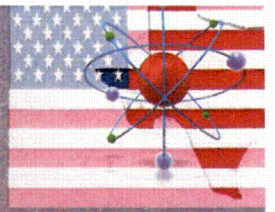
NRC, Proposed Part 61 Revisions

Performance Period	Minimize to extent reasonable achievable	Minimize to extent reasonable achievable	10,000 Years
	Minimize to 500 mrem/yr target or other	Minimize to 500 mrem/yr target or other	
	25 mrem/yr dose limit, ALARA	500 mrem/yr dose limit	Site Closure
Protective Assurance Period			1,000 Years
Compliance Period			
	Protection of general population (10 CFR 61.41)	Protection of inadvertent intruder (10 CFR 61.42)	

State of Texas Analysis

Period of Analysis			Peak Dose
	25 mrem/yr dose limit, ALARA	500 mrem/yr dose limit	
			1,000 Years
			Site Closure
	Protection of general population (30 TAC 336.709, 30 TAC 336.724)	Protection of inadvertent intruder*	

*While the intruder analysis and 500 mrem annual limit are not current regulatory requirements, the analysis was performed per NRC guidance.



**Thank you for the opportunity to
present this information**

I look forward to your questions.

