## Agenda
Friday, November 3, 2000  
141 Palace Avenue ♦ Santa Fe, New Mexico

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<tr>
<th>Time</th>
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<tr>
<td>2:00 p.m.</td>
<td>Introduction / Purpose</td>
<td>Jody Plum</td>
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<td>2:15 p.m.</td>
<td>RH Characterization - Defining the Path Forward</td>
<td>Miriam Whatley</td>
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<td>2:40 p.m.</td>
<td>RH Emplacement Process Overview</td>
<td>Tod Burrington</td>
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<td>3:00 p.m.</td>
<td>Remarks</td>
<td>Steve Zappe</td>
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<td>Comments / Feedback</td>
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Disposal of Remote-Handled TRU Waste
Continuing the WIPP Mission

Consultation and Cooperation Agreement and the Land Withdrawal Act:
- WIPP may receive up to 7,080 cubic meters of RH TRU, defense waste with a limit of 5.1 million curies from RH TRU

(~4% of the total WIPP waste volume: 175,600 cubic meters)

Remote Handled TRU Waste

Homogeneous solids, debris, soil/gravel

200 millirems - 1,000 rems per hour dose rate at package surface

Non-mixed and mixed with hazardous constituents

Alpha, beta, gamma and neutron-emitting

WIPP RH Authorization Basis

- Land Withdrawal Act
- NEPA Records of Decision
- Facility Safety Analysis Report/Technical Safety Requirements
- EPA Certification Final Rule
- Hazardous Waste Facility Permit

Modification Needed
Hazardous Waste Facility Permit

October 1999

Miscellaneous Unit Permit

Authorizes Contact-Handled TRU waste storage and disposal.


Provides Waste Analysis Plan for Contact-Handled TRU waste to comply with 40 CFR 264.12 requirements.

Contact-Handled Waste Analysis Plan Requirements

Characterization

Acceptable Knowledge

Headspace Gas Sampling and Analysis

Confirmation of Acceptable Knowledge

Radiography

Visual Examination

Solids Sampling

Headspace Gas Sampling and Analysis

Data Management

Audit Program

The Remote-Handled Prohibition

RH Waste is Prohibited Because: The DOE did not provide documentation that RH-TRU waste could be characterized in accordance with the hazardous waste regulations.

Solution: Performance-Based, RH-specific Waste Analysis Plan

What Does "Performance-Based" Mean?

PBMS (performance-based measurement system) conveys "what" needs to be accomplished, but not prescriptively "how" to do it.

EPA OSWER Performance-Based Measurement System (PBMS) Implementation Plan

What = "...all the information which must be known to treat, store, or dispose of the waste..."

20.4.1.500 NMAC (40 CFR 264.13)

What Does "Performance" mean In Terms of the WIPP Facility?

Air only pathway for hazardous release during operational phase

Repository performance would not be compromised even if repository-sensitive parameters were maximized

Remote-Handled Waste Analysis Plan

What Is Proposed

No

Physical waste form

VOC concentrations (bounded)

Hazardous waste codes

Know

Prohibited

Items

How = Reliance on Acceptable Knowledge where possible
What is Acceptable Knowledge

Joint NRC/EPAg Guidance on Testing Requirements for Mixed Radioactive and Hazardous Waste

Process knowledge
- Records of analyses performed by generator or TSDF prior to the effective date of RCRA regulations; or
  - A combination of the above information, supplemented with chemical analysis.

Why this Approach? ALARA

Safety
- Waste knowledge alone may be the most appropriate method to characterize mixed waste streams where increased radiation exposures are a concern.

Repository Performance
- Qualitative data may be all that are needed.
- Only collect data relative to "the site decision".

Remote-Handled Waste Analysis Plan

Why Not Proposed

Why No Headspace Gas Sampling?
RH constitutes small fraction of allowable emissions. RH emissions can be bounded by reducing permit emission limits.

Why No Solids Sampling?
Because of high radiation, small size samples are analyzed and large sample dilution is required. Analyses provide data that are not useful for regulatory determinations.

Remote-Handled TRU waste disposal is part of the WIPP's original mission.
Authorization basis for remote-handled waste must be completed.
WIPP preparing permit modification requests to allow remote-handled disposal.
Permit modifications include an RH-specific Waste Analysis Plan.
Proposed Waste Analysis Plan is "performance-based".
Desired outcome is to focus on use of acceptable knowledge, when possible and integrate ALARA considerations with RCRA compliance.

...What Does this Mean to You?

- Performance-based Waste Analysis Plan is a different approach for WIPP.
- We need your perspectives.

Remote-Handled Waste Analysis Plan

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Summary

- Remote-handled TRU waste disposal is part of the WIPP's original mission.
- Authorization basis for remote-handled waste must be completed.
- WIPP preparing permit modification requests to allow remote-handled disposal.
- Permit modifications include an RH-specific Waste Analysis Plan.
- Proposed Waste Analysis Plan is "performance-based".
- Desired outcome is to focus on use of acceptable knowledge, when possible and integrate ALARA considerations with RCRA compliance.

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...What Does this Mean to You?

- Performance-based Waste Analysis Plan is a different approach for WIPP.
- We need your perspectives.

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Remote-Handled Waste Analysis Plan

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...What Does this Mean to You?
The Waste Isolation Pilot Plant Overview

Robert Kehrman, Manager
Requirements Management Project
Westinghouse

Regulator Workshop
October 17, 2000
Carlsbad, NM
Topics

- Who we are
- Where WIPP is located and what does it look like
- Brief WIPP Chronology
- How we know it is the right place for Transuranic Waste Disposal
- What we have to know about the RH-TRU waste to keep WIPP safe
- Where the waste will come from and how much we have disposed so far
United States Department of Energy
Assistant Secretary for
Environmental Management

Carlsbad Field Office

Primary Participants

Waste Isolation Pilot Plant

Westinghouse
Los Alamos National Laboratory
Sandia National Laboratories
CTAC

National TRU Program
WIPP's Oversight / Stakeholders
Where WIPP is Located
Where WIPP is Located

- Northern Chihuahuan Desert
- 33 miles east of Carlsbad, NM
- Eddy-Lea County Line
- 16 Sections of Federal Land (10,240 Acres)
What Does It Look Like

WIPP LAYOUT

Air Intake Shaft
Salt Storage Piles
Salt Handling Shaft
Waste Handling Support Building
Exhaust Shaft

Panels 3-8 not yet excavated

Gatuna 1
Santa Rose 0-76m
Dewey Lake 30-168m
Rustler 84-130m
Selbo 533-610m
Repository

Cañile 381m
Boll Canyon 304m

Repository

Existing panel 1-2

Panels 3-8 not yet excavated

650m
1300m

620m
600m

700m

7500m
Brief WIPP Chronology

- 1955 - National Academy of Sciences recommends salt as host rock
  - Identified areas to investigate
  - Identified favorable siting criteria

- 1974 - Atomic Energy Commission selects site near Carlsbad for exploratory work

- 1979 - Congress authorizes WIPP for research and development for safe disposal of defense-generated radioactive waste that are exempt from Nuclear Regulatory Commission (NRC) (PL 96-164)

- 1980 - DOE issues Final Environmental Impact Statement (FEIS)
Brief WIPP Chronology (cont.)

- 1981 - DOE issues Record of Decision
- 1981 - DOE begins construction of WIPP Exploratory Shaft
- 1985 - EPA issues radioactive waste disposal standards applicable to WIPP
- 1986 - EPA states facilities must comply with Resource Conservation and Recovery Act (RCRA) for disposal of mixed (hazardous and radioactive) waste
- 1990 - New Mexico is authorized by EPA to regulate mixed waste
Brief WIPP Chronology (cont.)

- 1990 - DOE issues first Supplemental Environmental Impact Statement (SEIS)
- 1991 - DOE submits Parts A and B of the RCRA Permit Application to New Mexico
- 1992 - WIPP Land Withdrawal Act
  - Permanently segregates land for WIPP
  - Gives EPA regulatory authority to certify WIPP compliance to 40 CFR 191
- 1995 - DOE submits revised RCRA Permit Application to New Mexico Environment Department (NMED)
Brief WIPP Chronology (cont.)

- 1996 - EPA issues 40 CFR 194, compliance criteria in February
  - DOE submits 84,000 page Compliance Certification Application to EPA

- 1998 - DOE issues SEIS II in January
  - EPA certifies WIPP ready for disposal
  - New Mexico Environment Department issues draft hazardous waste facility permit (HWFP) for disposal of transuranic mixed waste
Brief WIPP Chronology (cont.)

- 1999 - First shipment non-mixed waste in March
  - New Mexico Environment Department issues Hazardous Waste Facility Permit in October

- 2000 - First shipment of mixed waste in September
How We Know it is the Right Place for TRU Waste Disposal

- DOE selected the best site available
- Performed risk assessments to evaluate the site
  - RCRA - 300 years
  - 40 CFR 191 - 10,000 years
- Regulatory Agencies have accepted our risk assessments
The Best Site Available

- Isolated location
- Geologically stable
- Thick salt formation
- Reasonable depth
- Little groundwater
- Resource considerations
The Best Site Available

"The best means of long-term disposal... is deep geological emplacement..."

National Academy of Sciences
Performed Risk Assessments to Evaluate the Site

- Geology, Hydrology, Climate, Seismology, etc.
  - Hundreds of parameters

- Waste
  - Chemical, physical, radiological properties
  - Packaging
  - Inventory

- Events and Processes
  - Natural
  - Manmade
Performed Risk Assessments to Evaluate the Site

- Probabilistic assessments
- Predicted performance for 10,000 years
- Complies with EPA standards by a factor of 10
Performed Risk Assessments to Evaluate the Site

- Used a 300-year subset for RCRA
- Result is no releases from the closed facility
- Only the air pathway is important during operations
Performed Risk Assessments to Evaluate the Site

- Important Parameters determined by the RCRA risk assessment
  - Moisture Content
  - Prohibited Items
    - Reactive
    - Corrosive
    - Ignitable
  - Chemical/Physical Properties
    - Volatile Organic Compound concentrations in the container headspace
    - Corrodible metals
    - Plastics, cellulosics, rubber
Performed Risk Assessments to Evaluate the Site

- These parameters are related to Permit Conditions
  - VOC Room limits
  - Moisture <1%
  - Prohibited Items None Allowed
  - Metals Track (Minimum)
  - Organics Track (Maximum)

- We re-evaluated these parameters for RH-TRU waste
What We Have to Know About the RH-TRU Waste to Keep WIPP Safe

- In the Risk Assessment for RH-TRU waste we show that:
  - Moisture does not matter
  - Organics (rubber, plastic, cellulosics) do not matter
  - Metals are bounded by the CH-TRU waste
  - VOCs can be accounted for by lowering the room limits
What We Have to Know About the RH-TRU Waste to Keep WIPP Safe

- This is because:
  - RH-TRU is a small percentage of the total waste in the repository
  - Repository performance is not compromised if these parameters are taken to extremes
What We Have to Know About the RH-TRU Waste to Keep WIPP Safe

- For RH-TRU waste, the following parameters are needed to assure the waste can be managed safely and in accordance with RCRA:
  - No prohibited items
  - Hazardous waste codes
  - Physical form of the waste

- These can be determined using knowledge of the waste.
Summary

- Facility was selected using well established criteria
- WIPP was characterized to determine important performance parameters
- Risk assessments show that WIPP will comply with applicable regulations
- Information needed for RH-TRU waste management can be obtained using knowledge of the waste.
WIPP Has Received Waste From Four Sites (as of 10-17-00)

Hanford

Idaho National Engineering and Environmental Laboratory

Los Alamos National Laboratory

Rocky Flats Environmental Technology Site (RFETS)

Waste Isolation Pilot Plant (WIPP)

Total 99