Please note that we will hold a conference call next Thursday, May 9, at our standard time of 12:00 noon EDT (the call-in number is still 703-736-7324; ask for the "NGA federal facilities" call). The purpose of the call will be to review early results from analyses concerning the National TRU Management Plan. States with DOE facilities storing TRU waste should receive a packet of information from DOE Carlsbad in preparation for the call. States without sites not planning to ship TRU waste may elect not to join the call (no other business is scheduled at this time).

We are still planning to hold future calls on the Waste Management PEIS and Draft PEIS for "Storage and Disposition of Weapons-Usable Fissile Materials" within the next few weeks.

Please call me if you have any questions.

Thanks.
National TRU Waste Management Plan

Development Status

Prepared by U.S. Department of Energy
Carlsbad Area Office, National TRU Program
May 1996
National TRU Waste Management Plan

Development Status

National TRU Program
Carlsbad Area Office

National Governors Association Briefing
May 9, 1996
National TRU Waste Management Plan

• National TRU Waste Management Plan
  » Process
  » Current Status
  » Path Forward

• National TRU Waste System Model
  » Modeling Scenarios
  » Modeling Results
  » Path Forward
Carlsbad Area Office

National TRU Waste Management Plan
National TRU Waste Management Plan

- Ensures TRU waste management programs are integrated, coordinated, and prioritized
- Systematically prioritize enabling projects
- Focus activities for maximum use of WIPP disposal
- Facilitate FFCAct STP implementation
- Provide generator sites annual guidance for effective operations planning
National TRU Waste Management Plan
Development Process

- Resource Data
- Waste Inventory Data
- Facility Configuration Data

Scenario

- National TRU Waste System Model
- System Cost Model

Modeling

Post-modeling Evaluations

Decision

National TRU Waste Management Plan
National TRU Waste Management Plan

- Management Plan will describe:
  - Existing Facilities Baseline
  - FFCAAct Compliance/WIPP Disposal Plan
  - Alternative Scenarios

- Resulting in a Recommended Configuration
  - Near-term (< 5 years) activities and site specific projects
  - Long-term programs
  - Relative Cost/Disposal Throughput Benefit
National TRU Waste Management Plan

- Schedule:
  » A Work in Progress with DOE Involvement
  » Annotated Outline - Complete
  » Prototype Draft - May
  » DOE Review Draft - June
  » External Review Draft - July
  » Final Draft - August
  » Final Plan Distributed - September
Stakeholder Interactions

● Goal:
  » Build Stakeholder Acceptance into Plan by Involvement in the Process
  » Briefings on the Process
  » Informal Discussions
  » Modeling Results
  » Post-Modeling Evaluations
  » Review of Management Plan
Stakeholder Interactions

- Current Stakeholder Involvement:
  - Generator Sites via Steering Committee and Executive Committee
  - DOE Headquarters
  - National Governors Association
  - Western Governors Association
  - Southern States Energy Board
  - Government Accounting Office

Amber Clay 5/3/96
Carlsbad Area Office

National TRU Waste System Model
National TRU Waste System Model

- A computer simulation model used to evaluate waste management system configurations
- Integrates cost, schedule, and throughput for a given waste management system configuration
- Provides a defensible decision process to enhance stakeholder acceptance
- Supports Management Plan development
National TRU Waste System Model

- **Current Status**
  - Two Modeling Scenarios Completed
    - Existing Facilities Baseline
    - FFCAct Compliance/WIPP Disposal Plan

- **Inputs & Process Flow Validated by Generator Sites**
  - All data points have documented references
Existing Facilities Baseline

- Process Flow limited to existing facilities and process capability within the DOE Complex

- Does not represent a "No Action" or "Safe Storage" Alternative

- Assumptions:
  
  » WIPP 35-year Operational Life beginning in 4/98
Los Alamos National Laboratory
Existing Facilities Baseline
Scenario 00.00.00

Storage (Pit 29)
158 CMPs
Capacity Full

Storage (Pit 3)
876 85-gal drums
200 85-gal drums
71 FRPs
Capacity Full

Storage (Pads 1,2,4)
3,887 85-gal Drums
181 FRPs
Capacity Full

Storage (Dome 46)
2,660 85-gal Drums
157 85-gal Drums
3 SWBs
Capacity Full

Newly Generated CH Waste
Start: 10/94
Stop: 9/33
1,000 Drums/yr
5 Boxes/yr
1 SWB/yr

Orum Venting and Headspace Gas Sampling (Mobile)
Start: 2/96
3,000 Drums/yr

RANT Stationary (RTR)
Start: 2/96
Stop: 9/33
2,000 Drums/yr

STQS (Mobile)
Start: 2/96
Stop: 9/33
1,000 Drums/yr

PAN Stationary
Start: 2/96
Stop: 9/33
5,000 Drums/yr

TA-54, Area G Shafts

Future RH Generation
10/96-9/33
3.5m³/yr

Previously Packaged RH Canisters
17 @ 0.89m³

Stored RH Waste Canister Equivalents @ 0.89m³

Place In Storage

---

= Storage  = Characterization  = Multi-Function Facility
= Generation  = Treatment  = Transportation
= Retrieval  = Repackage  = Decision
Note:

- This flow diagram is based on the TRU Waste Management Data Package and confirmation from a site representative.
- Inventory was provided by the BIR Rev. 2
- Date is based on a DOE approved QAR/P.

This flow diagram is based on the TRU Waste Management Data Package and confirmation from a site representative.

Inventory was provided by the BIR Rev. 2.

Date is based on a DOE approved QAR/P.
Existing Facilities Baseline

- Results:
  - Only INEL and RFETS have the facilities to characterize, certify, and ship waste to WIPP
  - Total Waste Volume Disposed
    - 4505 m³ CH
    - 0 m³ RH
    - 4505 m³ Total
  - DOE TRU Complex Model Life Cycle Cost
    - ≈ $18.847B
Existing Facilities Baseline
CH Waste Volume Remaining
FFCAct Compliance/WIPP Disposal Plan

• Process Flow based upon facilities listed in the FFCAct Site Treatment Plans, Consent Orders, and facility planning information from generator sites

• Designed to achieve compliance with FFCAct requirements and disposal at WIPP
FFCAAct Compliance/WIPP
Disposal Plan

- Assumptions:
  - Transportation Corridors - Routes and Schedules
  - Planned facility schedules consistent with Consent Orders and Site Treatment Plans
  - Infrastructure in place to begin RH Disposal in FY 2002
**Los Alamos National Laboratory**

**FFCAct Compliance/WIPP Disposal Plan**

**Scenario 01.00.00**

---

**A**

![Flowchart diagram](image)

**B**

- **Homogeneous?**
  - Yes: 70%
  - No: 30%

- **Select Sample?**
  - Yes: 8%
  - No: 92%

**C**

- **Waste Characterization**
  - **Glovebox Visual Exam, Innermost Bag Sample**
    - Start: 2/98
    - Stop: 9/33
    - 27 Drums/yr

- **Glovebox System Drum Coring, Visual Exam**
  - Start: 2/98
  - Stop: 9/33
  - 40 Drums/yr

---

**NOTE:**

- Flow Diagram based on the Consent Order/Site Treatment Plan and confirmation from a site representative.
- Inventory is from the Baseline Inventory Report Rev. 2
- a. Date is based on a DOE approved QAPJP.

---

**Legend:**

- = Storage
- = Characterization
- = Multi-Function Facility
- = Generation
- = Treatment
- = Transportation
- = Retrieval
- = Repackage
- = Decision

---

**Planned Facility or Operation:**

**Mobile RTR**
- Start: 2/98
- Stop: 9/33
- 50 SWBs/yr

**Alternate Box Assay**
- Start: 10/96
- Stop: 9/33
- 60 SWBs/yr

**Interim Storage Waiting for Shipping**

**Interim Storage**

**WPP Open?**
- Yes: 2 Shipments/wk
- No: 1 Ship to WIPP

**Headspace Gas Sampling for Transportation**
- Start: 4/98
- Stop: 9/33
- 4,800 Drums/yr
- 1,000 SWBs/yr

**RANT Available?**
- Yes: 2 Shipments/wk
- No: Mobile Loading Facility
  - Start: 4/98
  - Stop: 9/33
  - 2 Shipments/wk

**Ship to WIPP**

---

---
## FFCAct Compliance/WIPP Disposal Plan

<table>
<thead>
<tr>
<th>Site</th>
<th>QAPjP Approved</th>
<th>Site Certified</th>
<th>Corridor Open</th>
</tr>
</thead>
<tbody>
<tr>
<td>INEL</td>
<td>Jul 96</td>
<td>Nov 96</td>
<td>Apr 98</td>
</tr>
<tr>
<td>LANL</td>
<td>Feb 96</td>
<td>Aug 97</td>
<td>Apr 98</td>
</tr>
<tr>
<td>RFETS</td>
<td>Feb 96</td>
<td>Dec 97</td>
<td>Apr 98</td>
</tr>
<tr>
<td>SRS</td>
<td>Jan 97</td>
<td>Mar 98</td>
<td>Apr 98</td>
</tr>
<tr>
<td>ORNL</td>
<td>Feb 96</td>
<td>July 98</td>
<td>Oct 98</td>
</tr>
<tr>
<td>LLNL</td>
<td>Feb 96</td>
<td>Sept 98</td>
<td>Oct 99</td>
</tr>
<tr>
<td>NTS</td>
<td>Oct 96</td>
<td>Nov 98</td>
<td>Oct 99</td>
</tr>
<tr>
<td>Hanford</td>
<td>Sept 99</td>
<td>May 00</td>
<td>Sep 00</td>
</tr>
</tbody>
</table>
FFCAAct Compliance/WIPP Disposal Plan

- DOE Complex Modifications:
  - Characterization Facilities at:
    - Hanford, INEL, LLNL, NTS, ORNL, SRS
  - Repackaging Facilities at:
    - Hanford, INEL, LANL, LLNL, ORNL, NTS, SRS
  - Treatment Facilities at:
    - Hanford, INEL, ORNL, RFETS, SRS
  - Transportation Loading Facilities at:
    - Hanford, INEL, LANL, LLNL, NTS, ORNL, SRS
  - Mobile Waste Characterization & Transportation Loading Units at:
    - LANL
FFCAct Compliance/WIPP Disposal Plan

• Results:

» All Major Sites have the facilities to characterize, certify, and ship waste to WIPP

» Total Waste Volume Disposed

- 88055 m$^3$ CH
- 3297 m$^3$ RH
- 91352 m$^3$ Total

» DOE TRU Complex Model Life Cycle Cost

- $\approx$ $39.969B$
FFCAAct Compliance/WIPP Disposal Plan
CH Waste Volume Disposed

Cubic Meters

Fiscal Years

90000
80000
70000
60000
50000
40000
30000
20000
10000
0

FFCAct Compliance/WIPP Disposal Plan
CH Waste Volume Remaining

Fiscal Years

Cubic Meters


- SRS
- INEL
- Hanford
- ORNL
- RFETS
- LANL
- LANL
- LLNL
- NTS
FFCAmt Compliance/WIPP Disposal Plan
RH Waste Volume Disposed

Cubic Meters

INEL
Hanford
ORNL
LANL

Fiscal Years

FFCAAct Compliance/WIPP Disposal Plan
RH Waste Volume Remaining

Cubic Meters

INEL
Hanford
ORNL
LANL

Fiscal Years

FFCAct Compliance/WIPP Disposal Plan
(Generator Sites Only)
FFCAct Compliance/WIPP Disposal Plan
Annual Costs for the DOE Complex
Compliance Assessment

Specific Consent Order/Site Treatment Plan Milestones:

» INEL:

✓ 3100 m³ shipped by 2002

✗ 2000 m³ shipped per year after 2002

(milestone achieved if shipped volume is based on pre-treated ALLMW and TRU Waste volumes)

✓ Initiate AMWTF Operations by March 2003

✓ All waste removed by 2018
Compliance Assessment

» ORNL:

✓ Initiate treatment of RH sludges by June 2002
✓ Initiate shipment of RH sludges by September 2002
✓ Complete shipment of RH sludges by September 2023
✓ Initiate processing of RH solids by October 2014
✓ Initiate shipment of RH solids by March 2015
✓ Complete shipment of RH solids by September 2023
Compliance Assessment

» ORNL, cont.:

✔ Initiate processing of CH solids by October 2014
✔ Initiate shipment of CH solids by March 2015
✔ Complete shipment of CH solids by September 2023

» RFETS:

✔ Initiate shipment by September 1998
✘ Newly-generated waste stored less than 2 years
✔ Complete treatment by September 2022

» LANL:

✘ Complete treatment by December 2010
WIPP CH Waste Handling Capacity vs Scenario Throughput

WIPP Volume Capacity

WIPP Waste Handling Capacity

FFCArt Compliance/ WIPP Disposal Plan

Existing Facilities Baseline

Fiscal Years
FFCAct Compliance/WIPP Disposal Plan
CH Waste Volume Disposed by Site

![Graph showing CH Waste Volume Disposed by Site over Fiscal Years 1998 to 2003. The graph includes data for NTS, LLNL, LANL, RFETS, Hanford, and INEL.]
WIPP RH Waste Handling Capacity
vs Scenario Throughput

WIPP Volume Capacity

WIPP Waste Handling Capacity

FFCAct Compliance/
WIPP Disposal Plan

Cubic Meters

Fiscal Years


5/3/96 Page 38
Path Forward - Modeling

- New Scenarios to be Developed and Modeled in May and June
  - Maximize Waste Disposal
  - Small Quantity Site Waste Workoff
  - Address Projected Compliance Deficiencies
  - Alternative Scenarios
- Post Modeling Evaluations in June
Options for Alternative Scenarios

- Options Identified from the Alternative Scenario Brainstorming Meeting:
  - Regional/Centralized Treatment Facility
  - Regional/Centralized Detailed Characterization Facility
  - Full Treatment
  - Mobile Characterization
  - Rail Transportation
  - Regional/Centralized Analytical Laboratory
PERFORMANCE MEASURE CRITERIA FOR REVIEW OF MODELING SCENARIOS AND POST MODELING EVALUATIONS

Cost Criteria
- Total system life cycle cost
- Total life cycle cost, by site, by functional element
- Total system life cycle capital costs
- Total system life cycle operating costs
- Annual capital costs, total system and by site
- Annual operating costs, total system and by site
- Annual cost, by site, by functional element
- Annual cost per waste volume disposed
- Average cost per waste volume disposed

Operations Criteria
- Volume of stored waste retrieved annually, by site
- Volume of waste generated annually, by site
- Volume of waste characterized annually, by site
- Volume of waste treated annually, by site
- Annual volume of waste disposed at WIPP
- Total volume of waste disposed at WIPP
- Volume of waste remaining in inventory, by site
- Number of shipments per year, total and per site
- Annual number of TRUPACT-IIIs shipped, total and by site
- Utilization rates for transportation
- Utilization rates of site facilities
- Utilization rates for WIPP disposal operations

Schedule Criteria
- Number of sites that "worked off" waste per year
- Time required to "work off" waste at each site
- Average number of drums per TRUPACT per year
- Number of sites shipping waste per year
- Facilities under construction each year, by site
- Facilities coming on-line each year, by site

Programmatic Criteria
- Compliance with FFCA STP schedules
- Compliance with Consent Order schedules
- Status of technology development for each functional element

¹Elements:
Storage, Retrieval, Characterization, Certification, Treatment, Packaging, Shipment and Disposal