



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

December 9, 2002

OFFICE OF  
AIR AND RADIATION

Dr. Inés Triay, Manager  
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U.S. Department of Energy  
P.O. Box 3090  
Carlsbad, NM 88221-3090

COPY

Dear Dr. Triay:

This letter provides the results of the U.S. Environmental Protection Agency's (EPA) inspections for EPA-WIPP-6.02-21a (Subpart A), EPA-WIPP-6.02-21b (waste emplacement), and EPA-WIPP-6.02-21c (parameter monitoring) of the Waste Isolation Pilot Plant (WIPP). EPA performed these inspections on June 24-28, 2002, under authority of 40 CFR 194.21. We have determined that the activities that we inspected were being conducted consistent with the Agency's Certification Decision of May 18, 1998. We also determined that the Department of Energy (DOE) is in compliance with the requirements of 40 CFR Part 191, Subpart A. The inspection team did not identify any findings or concerns.

If you have any questions regarding the enclosed reports, please call Betsy Forinash at (202) 564-9233.

Sincerely,

Frank Marcinowski, Director  
Radiation Protection Division

Enclosure

cc: Ava Holland, CBFO  
Russ Patterson, CBFO  
Casey Gadbury, CBFO  
Alton Harris, DOE/HQ  
Matthew Silva, EEG  
Steve Zappe, NMED

| UNIQUE # | DOE UFC | DATE REC'VD | ADDRESSEES   |
|----------|---------|-------------|--|
| 0206999  | 5486.00 | DEC 16 2002 | I. Triay<br>A. Holland<br>R. Patterson<br>C. Gadbury |

**DOCKET NO: A-98-49**  
**Item: II-B3-37**

**EPA INSPECTION No. EPA-WIPP-6.02-21b**  
**OF THE**  
**WASTE ISOLATION PILOT PLANT**  
**June 24-27, 2002**

**Waste Emplacement Inspection Report**

**U. S. ENVIRONMENTAL PROTECTION AGENCY**  
**Office of Radiation and Indoor Air**  
**Center for Federal Regulations**  
**1200 Pennsylvania Avenue, NW**  
**Washington, DC 20460**

**November 2002**

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## **1.0 Executive Summary**

In accordance with 40 CFR 194.21, the U.S. Environmental Protection Agency (EPA or the Agency), conducted an inspection of the U.S. Department of Energy's (DOE) Waste Isolation Pilot Plant (WIPP) near Carlsbad, New Mexico, from June 24 to 27, 2002. The WIPP is a disposal system for defense-related transuranic (TRU) waste as defined by the WIPP Land Withdrawal Act.<sup>1</sup> EPA certified that the WIPP complies with the Agency's radioactive waste disposal regulations (Subparts B and C of 40 CFR Part 191) on May 18, 1998.

Five DOE transuranic waste sites have shipped waste to the WIPP for disposal. These sites are: Los Alamos National Laboratory (LANL) in New Mexico, Rocky Flats Environmental Technology Site (RFETS) in Colorado, Idaho National Engineering and Environmental Laboratory (INEEL), Hanford Site in Washington, and Savannah River Site (SRS) in Georgia. The first shipment was received by the facility in March 1999.

EPA inspected the WIPP to verify that waste is being emplaced in the underground facility in the manner specified in DOE's Compliance Certification Application (CCA) for the WIPP (EPA Air Docket A-93-02, Item II-G-01, and associated documents). The inspection also verified the proper emplacement of backfill material (magnesium oxide) with the waste packages. EPA found that waste is being emplaced in accordance with commitments made in the CCA.

## **2.0 Inspection Purpose and Scope**

The purpose of this inspection was to determine whether wastes sent to the WIPP have been emplaced in the underground facility in the manner specified in DOE's Compliance Certification Application for the WIPP. EPA performed the inspection under authority of 40 CFR 194.21, which authorizes the Agency to inspect the WIPP during its operational period to verify continued compliance with the EPA's WIPP Compliance Criteria and the certification decision of May 18, 1998. Emplacement of waste, and backfill in particular, is relevant to compliance because the emplacement method supports the models that DOE used in the WIPP performance assessment to understand the potential for transport of radionuclides out of the mined rooms. The WIPP site is operated by Westinghouse TRU Solutions (WTS) under contract to DOE. The majority of waste-related activities performed on the site are described by or controlled through WTS procedures. A list of all WTS procedures examined for this inspection is provided in Table A.

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<sup>1</sup>WIPP Land Withdrawal Act, Public Law 102-579, Section 2(18), as amended by the 1996 WIPP LWA Amendments, Public Law 104-201.

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**Table A**  
**Listing of WTS Procedures Examined During Inspection**

- *WTS Quality Assurance Program Description*, Waste Isolation Pilot Plant Procedure WP 13-1, Revision 22; Effective Date March 27, 2002
  - *Specification for Repackaged MgO Backfill*, Waste Isolation Pilot Plant Procedure D-0101, Revision 3, ECO Number 9753; Effective Date April 4, 2000
  - *CH Waste Processing*, Technical Procedure WP 05-WH1011, Revision 16; Effective Date May 7, 2002
  - *WIPP Waste Information System Program*, Waste Isolation Pilot Plant Procedure WP-08-NT.01, Revision 6; Effective Date December 3, 2001
  - *TRU Waste Receipt*, Management Control Procedure WP-08-NT3020, Revision 3; Effective Date January 24, 2002
  - *Waste Stream Profile Form Review and Approval Program*, Waste Isolation Pilot Plant Procedure WP-08-NT.03, Revision 1; Effective Date October 20, 2000
- 

The activities within the scope of this inspection included are:

- demonstration of the site's ability to receive, process, and emplace TRU wastes within the repository
- the use of magnesium oxide (MgO) backfill in appropriate amounts to fulfill CCA commitments
- maintenance of relevant waste packaging records, including the electronic WIPP Waste Information System (WWIS).

The Inspector observed wastes that had been emplaced in the repository and reviewed records documenting that waste emplacement was conducted in accordance with procedures. To date, the wastes received at the repository are contact-handled (CH) transuranic wastes from LANL, RFETS, INEEL, SRS, and Hanford. These wastes are in one of two configurations: Standard Waste Boxes (SWBs) and 55-gallon (208 liter) drums assembled in groups of seven, called a Seven Pack. Both the SWB and Seven Pack have the same "footprint"—that is, they occupy equivalent floor space—and can be stacked in vertical columns as described in this report. There are other waste configurations allowable at WIPP, but they have not been employed to date and are not addressed in this report. A list of wastes emplaced in the repository as of the date of this inspection is provided in Attachment A.

### 3.0 Performance of the Inspection

The EPA Inspector was Nick Stone, the WIPP Project Officer for Region 6. Casey Gadbury, the CBFO Waste Operations Program Manager, was the chief DOE contact for the inspection. A list of all inspection participants is provided in Table B.

**Table B**  
**Inspection Participants**

| INSPECTION TEAM MEMBER | POSITION                               | AFFILIATION  |
|------------------------|--|--------------|
| Nick Stone             | Inspector                              | EPA Region 6 |
| CBFO/WTS PERSONNEL     | POSITION                               | AFFILIATION  |
| Casey Gadbury          | Waste Operations Program Manager       | DOE/CBFO     |
| Jody Plum              | RCRA Compliance Manager                | DOE/CBFO     |
| Dave Speed             | WWIS Data Administrator<br>Team Leader | WTS          |
| Mike Strum             | WWIS Data Administrator                | WTS          |

The inspection took place on June 24-27, 2002, at the WIPP facility, which is located approximately 30 miles south east of Carlsbad, New Mexico. The opening meeting with CBFO and WTS personnel was held on June 24, 2002. The EPA Inspector viewed a required safety video at the WIPP site before the inspection activities began. The Inspector interviewed WTS personnel about current shipments and emplacement in the underground.

The EPA Inspector then accompanied CBFO and WTS personnel into the underground repository, in order to view waste packages that had been emplaced. The EPA Inspector selected five containers and noted their numbers; the records for these containers were examined later. The WTS personnel explained how waste packages are handled and emplaced and answered questions from the EPA Inspector. The inspection continued the next day with an examination of records and interviews of WTS personnel in charge of the WIPP Waste Information System (WWIS), which took place at the Carlsbad Field Office in Carlsbad. A closeout meeting was held at the end of each day.

#### *3.1 Waste Emplacement and WIPP Waste Information System*

The repository is subdivided into panels, each panel consisting of seven (7) rooms. Wastes have been emplaced in Room 7 and most of Room 3. Rooms 4, 5, and 6 were bypassed due to excessive salt creep. At the time of inspection, waste was emplaced in the access Drift S1950

and facility staff were preparing to begin emplacement in Room 2. Since opening in 1999, wastes have been emplaced in Drift S1600 adjacent to Room 7, throughout Rooms 7 and 3, and Drift S1950.<sup>2</sup>

Wastes are stacked in columns (also called waste stacks) three high in any combination of SWBs and Seven Packs, both having the same "footprint." The Inspector did not observe any 85 gallon drum assemblies or Ten Drum Over Packs (TDOPs), both of which have specific requirements regarding their placement in a column.<sup>3</sup> There is no particular order in which SWBs and Seven Packs are stacked; wastes are emplaced as received. A series of three columns (9 SWB or Seven Packs total) spans the distance of the disposal cell from left to right with ample space between columns. Space between the repository wall and the waste column is left open at alternating ends, as represented in Table C below. A second row of three columns is emplaced parallel to the first, but each column is staggered such that it is located between two columns from the previous row; these two left-to-right rows of three columns each (6 columns or 18 SWBs/Seven Packs) are designated a row and numbered, as shown in Table C below. This results in each waste Seven Pack or SWB having a unique identifier that indicates its location underground according to the row, the column and the position within the column (see Attachment B). MgO is placed above each column in 4,000 pound super sacks.

**Table C**  
**Schematic of Waste Emplacement in Columns**

|          |          |          |          |          |          |   |
|----------|----------|----------|----------|----------|----------|---|
| Column 1 |          | Column 3 |          | Column 5 |          | Combination of 2 left-right<br>columns is a Row |
|          | Column 2 |          | Column 4 |          | Column 6 |   |

The EPA inspector randomly selected five waste containers emplaced in the repository, and WTS personnel read their identification numbers directly off the drums. The EPA Inspector was unable to read them directly because the area adjacent to the emplaced waste was posted as a Radiation Area and access was restricted. The containers selected are identified in Table D below.

<sup>2</sup> Procedure WP 05-WH1011 identifies the order of waste emplacement in the repository.

<sup>3</sup> Due in part to their different footprint, TDOPs must be placed on the bottom of a column, and 85 gallon drum assemblies must be placed on the top level of each column.

**Table D**  
**Randomly Selected Waste Containers Examined During Inspection**

| <u>Site of Origin</u> | <u>Waste Container Identifier</u> | <u>Container Type</u>        |
|-----------------------|-----------------------------------|------------------------------|
| RFETS                 | RFS00855                          | Standard Waste Box           |
| RFETS                 | RFDB0279                          | 55 gallon drum pipe overpack |
| RFETS                 | RFDA7881                          | 55 gallon drum pipe overpack |
| RFETS                 | RFDA0323                          | 55 gallon drum pipe overpack |
| INEEL                 | IDRF741202926                     | 55 gallon drum               |

Some records were paper, while others were electronic, such as fields in the WIPP Waste Information System (WWIS) database. The WWIS is an on-line database system used to record, track, and document the range of activities required for shipping TRU wastes to WIPP. The WTS personnel stated that the reliance on electronic approvals instead of paper was deliberate and was designed to minimize the use of paper. The EPA Inspector examined the following modules:

- Characterization Module, linked to the Waste Container Data Report
- Certification Module, linked to the Acceptance Report or Rejection Report
- Shipping Module, linked to the Shipment Summary Report
- Inventory Module, linked to the Nuclide Report and Waste Emplacement Report.

Mike Strum produced either paper or electronic records of all modules requested. All records were found to contain the required information.

### *3.2 Magnesium Oxide Backfill*

Magnesium oxide (MgO) is used in the repository as backfill, as specified in DOE's Compliance Application (CCA). WTS Procedure D-0101, *Specification for Prepackaged MgO Backfill*, contains specifications for the amount and specific placement of prepackaged MgO for four waste configurations: 85 gallon Over Packs, Ten Drum Over Packs, Seven Packs, and Standard Waste Boxes. WTS Technical Procedure WP 05-WH1011; *CH Waste Processing*, details a procedure for MgO placement and how to document that the placement of MgO has been accomplished correctly (CH Waste Processing Data Sheet). The EPA Inspector observed that MgO had been placed properly in the three rows that were visible from outside the restricted access area. Completed rows have supersacks stacked on each column. Records examined for the 5 waste shipments discussed earlier in this report indicated that MgO had been placed in compliance with Technical Procedure WP 05-WH1011.



#### **4.0 Summary of Findings**

The activities examined during the inspection were found to comply with WTS procedures and with the description of waste and that for the backfill emplacement provided in the CCA. No noncompliance or activities that had the potential to compromise waste isolation were observed. The inspector identified no findings or concerns.

**Attachment A**

**Listing of TRU Wastes Emplaced at WIPP As of June 21, 2002**

|                           |  |
|---------------------------|--|
| TRU Waste Generator Site: | Los Alamos National Laboratory   |
| Waste Containers Shipped: | 55 gallon (208 liter) drums in Seven Pack Configuration<br>Standard Waste Boxes (SWBs)   |
| Number Shipped:           | 169 total - 28 drums & 141 SWBs  |
| TRU Waste Generator Site: | Idaho National Engineering and Environmental Laboratory  |
| Waste Containers Shipped: | 55 gallon (208 liter) drums in Seven Pack Configuration  |
| Number Shipped:           | 9326 total - 8893 drums & 433 dunnage drums  |
| TRU Waste Generator Site: | Rocky Flats Environmental Technology Site  |
| Waste Containers Shipped: | 55 gallon (208 liter) drums in Seven Pack Configuration<br>55 gallon drums with Pipe Overpack Containers (POCs)<br>Standard Waste Boxes (SWBs) |
| Number Shipped:           | 4740 total - 2730 drums, 13552 POCs, 35 dunnage drums,<br>& 42 SWBs  |
| TRU Waste Generator Site: | Hanford Site   |
| Waste Containers Shipped: | 55 gallon (208 liter) drums in Seven Pack Configuration  |
| Number Shipped:           | 383 drums total & 2 dunnage drums  |
| TRU Waste Generator Site: | Savannah River Site  |
| Waste Containers Shipped: | 55 gallon (208 liter) drums in Seven Pack Configuration  |
| Number Shipped:           | 336 drums total  |

**Attachment B**

**Waste Emplacement Report Data for Five (5) TRU Waste Containers**

|                |               |          |          |           |          |
|----------------|---------------|----------|----------|-----------|----------|
| TRU PACT No.   | 125           | 145      | 145      | 178       | 164      |
| Container No.  | IDRF741202926 | RFDA0323 | RFDA7881 | RFDB0279  | RFS00855 |
| Row Number     | 148           | 148      | 148      | 137       | 147      |
| Height         | Top           | Top      | Top      | Middle    | Middle   |
| Column         | 2             | 6        | 4        | 1         | 3        |
| Disposal Cell  | SD1950        | SD1950   | SD1950   | Main Room | SD1950   |
| Disposal Room  | 3             | 3        | 3        | 3         | 3        |
| Disposal Panel | 1             | 1        | 1        | 1         | 1        |
| Disposal Date  | 6-23-02       | 6-24-02  | 6-24-02  | 6-17-02   | 6-23-02  |

**Attachment C**

**Inspection Checklist**

## WIPP Emplacement Inspection Checklist

| #                        | Question  | Comments (Objective Evidence)   | Documentation                        | Results           |             |  |             |          |       |               |             |          |             |          |             |          |     |          |
|--------------------------|---|---|--------------------------------------|-------------------|-------------|--|-------------|----------|-------|---------------|-------------|----------|-------------|----------|-------------|----------|-----|----------|
| <b>Waste Emplacement</b> |   |   |                                      |                   |             |  |             |          |       |               |             |          |             |          |             |          |     |          |
| 1                        | Is waste being emplaced in the underground facility in the manner specified in DOE's Compliance Certification Application (CCA)?  | Observed the waste emplaced in Panel 1, within the access drift near the opening of Room 2. The waste emplacement appeared to be compliant with the requirements in the CCA.  | WP 05-WH1011                         | Adequate          |             |  |             |          |       |               |             |          |             |          |             |          |     |          |
| 2                        | Are waste stacked in columns three high?  | Inspector observed the waste stacks. All stacks were three drums high with an MgO super sack above each.  | WP 05-WH1011                         | Adequate          |             |  |             |          |       |               |             |          |             |          |             |          |     |          |
| 3                        | Are waste emplaced as received?   | Inspector observed waste removed from TRU-PACT II containers and staged for transport into the underground.   | WP 05-WH1011                         | Adequate          |             |  |             |          |       |               |             |          |             |          |             |          |     |          |
| 4                        | Are records adequate? Randomly select five waste containers to verify records for waste approval, shipment, and receipt:  | <table border="0"> <thead> <tr> <th><u>Site of Origin</u></th> <th><u>Identifier</u></th> </tr> <tr> <th><u>Type</u></th> <th></th> </tr> </thead> <tbody> <tr> <td>Rocky Flats</td> <td>RFDB0279</td> </tr> <tr> <td>Idaho</td> <td>IDRF741202926</td> </tr> <tr> <td>Rocky Flats</td> <td>RFS00855</td> </tr> <tr> <td>Rocky Flats</td> <td>RFDA7881</td> </tr> <tr> <td>Rocky Flats</td> <td>RFDA0323</td> </tr> </tbody> </table> | <u>Site of Origin</u>                | <u>Identifier</u> | <u>Type</u> |  | Rocky Flats | RFDB0279 | Idaho | IDRF741202926 | Rocky Flats | RFS00855 | Rocky Flats | RFDA7881 | Rocky Flats | RFDA0323 | N/A | Adequate |
| <u>Site of Origin</u>    | <u>Identifier</u>   |   |                                      |                   |             |  |             |          |       |               |             |          |             |          |             |          |     |          |
| <u>Type</u>              |   |   |                                      |                   |             |  |             |          |       |               |             |          |             |          |             |          |     |          |
| Rocky Flats              | RFDB0279  |   |                                      |                   |             |  |             |          |       |               |             |          |             |          |             |          |     |          |
| Idaho                    | IDRF741202926   |   |                                      |                   |             |  |             |          |       |               |             |          |             |          |             |          |     |          |
| Rocky Flats              | RFS00855  |   |                                      |                   |             |  |             |          |       |               |             |          |             |          |             |          |     |          |
| Rocky Flats              | RFDA7881  |   |                                      |                   |             |  |             |          |       |               |             |          |             |          |             |          |     |          |
| Rocky Flats              | RFDA0323  |   |                                      |                   |             |  |             |          |       |               |             |          |             |          |             |          |     |          |
| 5                        | Verify documentation for the containers listed in item 4 - waste generator site transmittal of waste to WIPP, WIPP approval, shipment certification for transport to WIPP, shipment initiation documentation, shipment received at WIPP records, waste emplace in the underground, and placement of backfill [MgO]. | Reviewed the Shipment Summary Report, the Waste Container Data Report, and the CH Waste Processing Data Sheet (Attachment 1 of WP 05-WH1011) for each of the selected drums.  | Attachments 1 and 4 of WP 05-WH1011. | Adequate          |             |  |             |          |       |               |             |          |             |          |             |          |     |          |

### WIPP Emplacement Inspection Checklist

| #   | Question  | Comments (Objective Evidence)   | Documentation           | Results  |
|---|---|---|-------------------------|----------|
| <b>Backfill [MgO] Emplacement</b>           |   |   |                         |          |
| 6   | Is DOE properly emplacing backfill material (magnesium oxide [MgO]) with the waste packages?  | Inspector observed the MgO super sacks placed on top of the waste stacks.   | WP 05-WH1011            | Adequate |
| 7   | Are Super Sacks placed on top of waste stacks as described in Volume 1, Section 3.3.3 of the CCA; approximately 4,000 pounds, multi-wall construction with a vapor and moisture barrier?                                    | Inspector observed the MgO super sacks to be constructed of polymer multi-walled material and sized properly to contain 4,000 lbs of MgO.   | WP 05-WH1011            | Adequate |
| #   | Question  | Comments (Objective Evidence)   | Documentation           | Results  |
| <b>WIPP Waste Information System (WWIS)</b> |   |   |                         |          |
| 8   | Is DOE maintaining records of waste shipments and emplacement properly?   | Reviewed the WWIS reports and WP 05-WH1011 attachments for the five selected drums.   | WP 05-WH1011            | Adequate |
| 9   | Do the characterization module, certification module, shipping module, and inventory module adequately record the required information?   | Interviewed Dave Speed and reviewed the characterization module, certification module, shipping module, and inventory module for each of the five drums selected.                 | WP 05-WH1011            | Adequate |
| 10  | Characterization Module - Review a WWIS Waste Container Data Report. Does this report adequately record the Waste Stream Profile Form information?  | Reviewed the Waste Container Data reports for each of the selected drums. Determined that each report reflected the Waste Stream Profile form information.                        | WP 05-WH1011 and RP0360 | Adequate |
| 11  | Characterization Module - Does the data administrator verify that DOE/CBFO has granted certification and transportation authority to the generator/shipper site prior to review of generator/shipper characterization data? | Reviewed the Container Approval/Rejection Report. This document confirms that CBFO certifies and grants authority to each generator prior to review of the characterization data. | WP 05-WH1011 and RP0510 | Adequate |

### WIPP Emplacement Inspection Checklist

| #  | Question  | Comments (Objective Evidence)   | Documentation  | Results  |
|----|---|---|--|----------|
|    | <b>WIPP Waste Information System (WWIS)</b>   |   |  |          |
| 12 | Certification Module - Examine an Acceptance Report and a Rejection Report. Do these adequately record waste information?   | Reviewed RP0510 "Container Approval/Rejection Report."  | WP 05-WH1011 and RP0510  | Adequate |
| 13 | Is the generator/shipper denied any further write access to certification information after the data passes the limit and edit check and a review by the WWIS data administrator? | In discussions with Dave Speed and Mike Strum I determined that the generator sites are denied write access to WWIS data that has been confirmed by CBFO prior to shipment. | WP 05-WH1011   | Adequate |
| 14 | Shipping Module - Review the Shipment Summary Report. Does the report correctly record the containers shipped?  | Reviewed the Shipment Summary Report for each of the drums selected. Determined that each drum was accurately described in the report.                                      | WP 05-WH1011 and RP0390  | Adequate |
| 15 | Inventory Module - Review the Container Emplacement Report. Does this report adequately record the date of receipt, disposal locations of containers, and the emplacement of MgO? | Reviewed the Container Emplacement Report for each of the drums selected. Determined that the report accurately showed the receipt date, location, and placement of MgO.    | WP 05-WH1011 and RP0440  | Adequate |
| 16 | Does the WWIS adequately document waste shipment and emplacements information for waste containers selected item 4 above?   | After review of the documents provided, I determined that the WWIS accurately reflects the waste shipment and emplacement information for the drums selected in Item 4.     | WP 05-WH1011 and RP0390, RP0440, RP0360, RP0510, and Attachments 1&4 of WP-05-WH1011 | Adequate |

**DOCKET NO: A-98-49**  
**Item: II-B3-37**

**INSPECTION No. EPA-WIPP-6.02-24a**  
**OF THE**  
**WASTE ISOLATION PILOT PLANT**  
**June 24-25, 2002**

**40 CFR 191, Subpart A Inspection Report**

**U. S. ENVIRONMENTAL PROTECTION AGENCY**  
**Office of Radiation and Indoor Air**  
**Center for Federal Regulation**  
**1200 Pennsylvania Avenue, NW**  
**Washington, DC 20460**

**November 2002**



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### Attachments

|              |                                    |
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| Attachment A | Inspection Plan and Checklist      |
| Attachment B | Opening and Closing Sign Up Sheets |
| Attachment C | Documents Reviewed Table           |

## **1.0 Executive Summary**

The U.S. Environmental Protection Agency (EPA) conducted an inspection of the Waste Isolation Pilot Plant (WIPP) on June 24-25, 2002, as part of our continuing oversight program. This inspection was conducted under the authority of 40 CFR 191, Subpart A. The purpose of this inspection was to verify that the Department of Energy (DOE), which operates the WIPP, was in compliance with the dose release standard found at 40 CFR 191.03.

Inspectors reviewed DOE's ability to monitor radiation releases to the public due to normal waste disposal operations and any unplanned or accidental releases that might occur during reporting periods established under 40 CFR 191. As of June 2002, there had been no such releases. Inspectors examined WIPP's emission control devices and methods used to estimate radiation doses to the public. In addition, the inspectors toured radiation sample locations and equipment, observed sample processing, and reviewed the computational methods used to estimate doses.

We found that DOE continued to improve its air monitoring program during the past year, has an effective radiation sampling program, and can calculate both yearly and accidental dose estimates adequately. Inspectors identified no findings or concerns.

## **2.0 Scope**

The scope of this inspection was to verify that WIPP continues to capture, measure, and calculate a radiation dose to members of the public during waste disposal operations effectively. Inspection activities included an examination of monitoring and sampling equipment both on- and off-site, and in the underground. This inspection was conducted under the authority of 40 CFR 191, Subpart A.

During this year's inspection, we focused our attention on two main areas: (1) DOE's ability to produce an annual report; and (2) DOE's ability to respond to unplanned or accidental releases. EPA's expectations in both areas are described in "Guidance for the Implementation of the EPA's Standards for Management and Storage of Transuranic Waste (40 CFR Part 191, Subpart A) at the WIPP" (EPA 402-R-97-001), Sections 2.3 and 4.2.

## **3.0 Inspection Team, Observers, and Participants**

The inspection team consisted of two EPA representatives. Thomas Klein of the Environmental Evaluation Group (EEG) and Alton Harris of DOE Headquarters were present as observers.

| Inspection Team Member | Position               | Affiliation |
|------------------------|------------------------|-------------|
| Chuck Byrum            | Inspection Team Leader | EPA         |
| Nick Stone             | Inspector              | EPA         |

Numerous DOE staff and contractors participated in the inspection.

| DOE/Contractor Participates | Position                         | Affiliation |
|-----------------------------|----------------------------------|-------------|
| Russ Patterson              | PA Manager                       | DOE/CBFO    |
| Casey Gadbury               | Waste Ops Pgm Manager            | DOE/CBFO    |
| Linda Frank-Supka           | ES&H                             | WTS         |
| Dave Kump                   | ES&H                             | WTS         |
| Tom Goff                    | Radiological Engineer            | WTS         |
| Sabrina Lacy                | Radiological Control Technician. | WTS         |

WTS = Westinghouse,      CBFO = Carlsbad Field Office,      ES&H = Environmental  
NTP = National TRU Program      OPS = Operations      Safety and Health

The inspection began on Monday, June 24, 2001, with a presentation by Dave Kump about the status of the WIPP radiation monitoring program. He discussed changes in the program (COB-A2002-AA) since EPA inspection no. EPA-WIPP-6.02-21a in June 2001, as summarized below

*Monitoring Station A -*

- Skid A-3 moved from the east skid location to the south skid location.
- Changing from flow recorder data cards to a PC-based recorder (not completed at time of inspection).
- Changing from one DP instrument on each skid (3) to one DP instrument on each leg (9).
- A temperature and humidity probe is being added to each skid.
- Differential pressure, temperature, and humidity data will be archived to the PA-based recorder.
- An efficient probe cleaning tool was designed, developed, and put into use.

- Ball valves were installed in each leg of each skid to prevent filter loss.
- The Station A-1 probe and transport line were replaced.
- Improvements to Station A have allowed a reduction in filter changes from twice per day to once per day.

#### *Monitoring Station C*

- Texas A&M has been contracted and is performing work to certify Station C at the Waste Handling Building using the 1999 ANSI 13.1 Standards.

#### *Monitoring Station D*

- Installation of Station D at the qualified location was completed in August 2001. Installation included an enclosure to protect personnel and samples during sample collection from the high air velocity in E-300.

#### *Other Changes*

- An offsite communicator was put into service to allow expeditious notification of stakeholder personnel of events at the WIPP that may affect the quality of air effluent samples.

The inspection team toured and reviewed various activities to verify effective implementation of procedures. The team reviewed the new skid location at Station A at the air exhaust, viewed filter changing operations, evaluated the radiological accidental response procedures and implementation, interviewed site staff about the steps involved in an accidental response scenario, examined the changes implemented at Station D, and the Waste Handling Building (WHB).

The inspectors asked DOE/WTS staff to walk through the steps necessary to develop and complete the annual emissions report, and to simulate an accidental release scenario and show the steps to respond.

#### **4.0 Performance of the Inspection**

Inspectors reviewed the aspects of the radiation compliance program described below.

##### *Annual Report Development*

Inspectors reviewed the steps taken to produce the annual emissions report using

procedure WP 12-HP3125. No findings or concerns were identified.

#### *Simulated Accidental Release*

Inspectors reviewed the steps that would be taken during an accidental release of radioactive material. On June 25 inspectors observed Sabrina Lacy changing filters at Station A following the chain of custody procedures for a hypothetical accidental release. Inspectors followed the samples to the onsite laboratory and were walked through the steps taken to determine first estimates, "quick count," and the laboratory procedures to determine final measurements of possible radioactivity on the filters collected from Station A.

Next, Tom Goff showed inspectors how weather data are collected in real time, how GXQ program input files are updated, and how an accidental release is estimated by running the GXQ computer code. During last year's inspection of the same program (EPA-WIPP-6.02-21a; See Air Docket A-98-49, Item II-B3-13), inspectors questioned the readiness of the WIPP program to perform dose calculations during an emergency. Mr. Goff explained the process of performing dose calculations using three different methods, described in Procedure WP12-ER4903, "Radiological Event Response, Rev. 8." The WIPP program met a full time staff member hired to run the GXQ program periodically and take real-time meteorological weather measurements.

DOE has moved the sample of record location from Skid A-3 to Skid A-1 to improve the representativeness of air effluent samples taken at Station A. This move significantly improved the overall quality of the samples. Inspectors observed that the sampling equipment was working properly. Inspectors reviewed the Station D location and the changes that had been taken to improve its operation. Further details about inspection activities can be found in Attachment A, Inspection Checklist.

#### **5.0 Summary of Findings**

Inspectors concluded that DOE adequately implemented a radiological monitoring and sampling program for WIPP disposal operations and appropriately performed calculations to estimate potential releases to the public. Inspectors identified no findings or concerns.

**Attachment A**  
**Inspection Checklist**

Part 191 Subpart A for year 2002 - Compliance Reporting Checklist

*Should column 5 test contain past tense?*

| #   | Question  | EPA Citation   | Comment (Objective Evidence)   | Result |
|---|---|--|--|--------|
| <b>40 CFR 191.03 Compliance Standard</b>                        |   |  |  |        |
|   | Does DOE "...provide reasonable assurance that the combined annual dose equivalent to any member of the public in the general environment resulting from: (1) Discharges of radioactive material and direct radiation from such management and storage and (2) all operations covered by Part 190; shall not exceed 25 millirems to the whole body, 75 millirems to the thyroid, and 25 millirems to any other critical organ." | 40 CFR 191.03 Subpart A - Environmental Standards for Management and Storage | DOE has demonstrated that they can capture, measure, and calculate releases to assure that they are and remain below these limits.   | Sat.   |
| <b>Scope of activities considered in determining compliance</b> |   |  |  |        |
| 1   | Does DOE demonstrate that all activities at the WIPP up until the point of disposal are considered in determining compliance?   | EPA 402-R-97-001 Section 2.3, Page 4   | The Site Environmental Report (COB-A2002-C) documents the results of DOE/WIPPs efforts to consider all activities that impact compliance.  | Sat.   |
| 2   | Does DOE demonstrate that radiation doses to the public due to<br>1) actual normal operation and<br>2) any unplanned or accidental releases are examined?   | EPA 402-R-97-001 Section 2.3, Page 5   | Section 3.2 of COB-A2002-A, documents the program planned to show how this requirement is examined. COB-A2002-F, documents the QA requirements for the sampling of emissions. COB-A2002-I demonstrates that normal operations are examined. COB-A2002-BA documents DOE's review of potential accidents at WIPP. Procedure WP 12-HP4000 (COB-A2002-AH) documents emergency responses. | Sat.   |
| <b>Media considered in determining compliance</b>               |   |  |  |        |
| 3   | Does DOE demonstrate that the air pathway is the credible release pathway?  | EPA 402-R-97-001 Section 2.4, Page 5   | COB-A2002-G, Chapter 5 page 5.2-12 of the SAR (DOE/WIPP-95-2065, Rev. 5) documents that the air pathway is the only credible release pathway.  | Sat.   |
| 4   | Does DOE demonstrate that other exposure mechanisms from an air release could include inhalation of contaminated air, immersion in a plume of radioactive particles, ingestion of soil on which contaminated particles have been deposited, swimming in ponds in which radionuclides have been deposited are considered?  | EPA 402-R-97-001 Section 2.4, Page 5   | Section 2.1 and 3.5 of COB-A2002-A documents the detailed plan for measurements these potential exposure mechanisms. COB-A2002-I demonstrates that these exposure mechanisms are included.   | Sat.   |

Part 191 Subpart A for year 2002 - Compliance Reporting Checklist

| #   | Question  | EPA Citation  | Comments (Objective Evidence)   | Results |
|---|---|---|---|---------|
| <b>Media considered in determining compliance</b> |   |   |   |         |
| 5   | Is DOE monitoring the expected air exhaust pathway and performing environmental monitoring of other release points and exposure pathways to confirm air exhaust as the only release pathway?  | EPA 402-R-97-001<br>Section 2.4, Page 5<br>and page 6.                              | Section 2.1 of COB-A2002-A explains DOE plan to fulfill this requirement. COB-A2002-C demonstrates that DOE implements a groundwater surveillance, biota sampling and off-site air monitoring programs.                           | Sat.    |
| <b>Boundary of compliance</b>                     |   |   |   |         |
| 6   | Does DOE demonstrate compliance at the "exclusive use area" boundary?<br>If not, does DOE justify changing this boundary?   | EPA 402-R-97-001<br>Section 2.5, Page 6.<br>EPA 402-R-97-001<br>Section 2.5, Page 7 | Section 3.1 of COB-A2002-A states that the "Exclusive Use Area" will be used as the boundary for 40 CFR 191 Subpart A compliance.   | Sat.    |
| <b>Location of maximally exposed individual</b>   |   |   |   |         |
| 7   | Does DOE examine radiation doses to individuals at any offsite point where there is a residence, school, business, or office? (Such as grazing, mining, or oil drilling in the vicinity.)   | EPA 402-R-97-001<br>Section 2.6.1, Page 8   | COB-A2002-I demonstrates that DOE does consider doses at appropriate offsite points, such as Smith Ranch located 7.5 km away in the WNW sector of WIPP.   | Sat.    |
| 8   | Does DOE analyze potential exposure pathways and examine demographic information and conduct field investigations to identify the location of actual individual who could be exposed via those pathways?                                      | EPA 402-R-97-001<br>Section 2.6.1, Page 8   | COB-A2002-I demonstrates that DOE does consider doses at appropriate offsite points, such as Smith Ranch located 7.5 km away in the WNW sector of WIPP.   | Sat.    |
| 9   | Does DOE conduct separate analyses of potential dose received from each exposure pathway?<br>Then does DOE assume that a member of the public resides at the single geographic point on the surface where the maximum dose would be received? | EPA 402-R-97-001<br>Section 2.6.1, Page 8   | COB-A2002-BA Section 5.2.1.1 describes the selection of the MEI location. COB-A2002-I demonstrates that DOE does consider doses at appropriate offsite points, such as Smith Ranch located 7.5 km away in the WNW sector of WIPP. | Sat.    |



Part 191 Subpart A for year 2002 - Compliance Reporting Checklist

| #  | Question  | EPA Citation                               | Comments (Objective Evidence)  | Results |
|--|---|--|--|---------|
| <b>Personal parameters</b>                         |   |  |  |         |
| 10   | Does DOE assume that the individual exhibits personal characteristics of the "reference man" when evaluating radiation dose to the maximally exposed individual?  | EPA 402-R-97-001<br>Section 2.6.2, Page 8  | Section 3.2 of COB-A2002-A describes the "reference man" parameters as described in the CAP88-PC computer code. COB-A2002-I demonstrates that "reference man" is used to evaluate radiation doses. | Sat.    |
| <b>Calculation of dose - Modeling - Parameters</b> |   |  |  |         |
| 11   | Does DOE provide both whole body radiation dose and critical organ radiation dose for the maximally exposed individual (or a hypothetical individual conservatively located at a point of higher exposure)? | EPA 402-R-97-001<br>Section 2.7.1, Page 8  | COB-A2002-I demonstrates that DOE appropriately fulfills the requirements of #11.  | Sat.    |
| 12   | Does DOE calculate radiation doses including all release points and reflecting evaluation of all exposure pathways?   | EPA 402-R-97-001<br>Section 2.7.1, Page 8  | Section 2.1 COB-A2002-A states that the air pathway is the most credible but other exposure pathways will be monitored. COB-A2002-I demonstrates that all release points are evaluated.            | Sat.    |
| 13   | Does DOE use computer modeling to calculate radiation doses for compliance with the Subpart A standard?   | EPA 402-R-97-001<br>Section 2.7.2, Page 9  | Section 3.2 of COB-A2002-A states that a computer model will be used to calculate radiation doses. COB-A2002-I demonstrates that DOE is using computer modeling.                                   | Sat     |
| 14   | Does DOE use CAP88-PC to perform dose calculations?   | EPA 402-R-97-001<br>Section 2.7.2, Page 9  | Section 3.2 of COB-A2002-A states that CAP88-PC is used for dose calculations. COB-A2002-I demonstrates that DOE is using CAP88-PC.  | Sat.    |
| 15   | Does DOE use an alternate model for calculating radiation doses? If so, does DOE justify such usage?  | EPA 402-R-97-001<br>Section 2.7.2, Page 10 | Section 3.2 of COB-A2002-A states that DOE uses the atmospheric dispersion code (CXQ) to determine concentrations for accidental releases.   | Sat.    |
| 16   | Does DOE adequately support exposure parameters used in dose calculations?  | EPA 402-R-97-001<br>Section 2.7.3, Page 10 | COB-A2002-I demonstrates that DOE is using appropriate parameters in dose calculations.  | Sat.    |

Part 191 Subpart A for year 2002 - Compliance Reporting Checklist

| #  | Question  | EPA Citation                               | Comments (Objective Evidence)  | Results |
|--|---|--|--|---------|
| <b>Calculation of dose - Modeling - Parameters</b> |   |  |  |         |
| 17   | Does DOE document that "conservative simplifying assumptions" are used in the radiation dose calculations?  | EPA 402-R-97-001<br>Section 2.7.3, Page 10 | COB-A2002-I demonstrates that DOE is using conservative simplifying assumptions in dose calculations.  | Sat.    |
| 18   | <p>Are DOE's exposure parameters as conservative as the following?</p> <p>For a maximally exposed individual located at a residence, assumed continuous exposure (24 hours per day).</p> <p>For a maximally exposed individual located at a business, office, or school, assume exposure of 8 hours per day.</p> <p>Assume individuals consume 3 liters per day of drinking water from an underground source of drinking water.</p> <p>Assume inhalation rate for air to be <math>9E+5</math> cm<sup>3</sup>/hr.</p> <p>Assume ingestion rate of meat to be 85 kg/yr.</p> <p>Assume ingestion rate of leafy vegetables to be 18 kg/yr.</p> <p>Assume ingestion of milk to be 112 liter/yr.</p> <p>Assume ingestion rate of produce to be 176 kg/yr.</p> | EPA 402-R-97-001<br>Section 2.7.3, Page 10 | Section 3.2 of COB-A2002-A states that DOE is using these values as exposure parameters. COB-A2002-I demonstrates that DOE is using these parameters in dose calculations. | Sat.    |

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| #   | Question   | EPA Citation  | Comments (Objective Evidence)  | Results |
|---|--|---|--|---------|
| <b>Emissions and Environmental Monitoring - Air</b> |  |   |  |         |
| 19  | Does DOE demonstrate that effluent flow rate measurements are made using Reference Method 2 of Appendix A to 40 CFR Part 60 to determine velocity and volumetric flow rate for stacks and large vents?   | EPA 402-R-97-001<br>Section 3.1, Page 11,<br>(1(i))   | COB-A2002-F Section 4.1 documents that this requirement is appropriately implemented at WIPP.                  | Sat.    |
| 20  | Does DOE demonstrate that effluent flow rate measurements are made using Reference Method 2a of Appendix A to 40 CFR 60 to measure flow rates through pipes and small vents?   | EPA 402-R-97-001<br>Section 3.1, Page 11,<br>(1(ii))  | Not applicable at WIPP. Duct diameter associated with WIPP exhaust point exceed the 40 CFR 60 requirements.    | NA      |
| 21  | Does DOE demonstrate that the frequency of flow rate measurements depend on the variability of the effluent flow rate?<br><br>Note: For variable flow rates, continuous or frequent flow rate measurements are expected to be made. For relatively constant flow rates, only periodic measurements are expected. | EPA 402-R-97-001<br>Section 3.1, Page 11,<br>(1(iii)) | COB-A2002-A, Section 3 describe the continuous air monitoring requirements at WIPP.                            | Sat.    |
| 22  | Does DOE demonstrate that radionuclides to be directly monitored or extracted, collected and measured using Reference Method 1 of Appendix A to 40 CFR Part 60 for selected monitoring or sampling sites?  | EPA 402-R-97-001<br>Section 3.1, Page 11,<br>(2(i))   | DOE uses 40 CFR 61 Appendix B Method 114. COB-A2002-F documents in Section 4.1 the location of sampling sites. | Sat.    |

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| #   | Question  | EPA Citation   | Comments (Objective Evidence)  | Results |
|---|---|--|--|---------|
| <b>Emissions and Environmental Monitoring - Air</b> |   |  |  |         |
| 23  | Does DOE demonstrate that radionuclides to be directly monitored or extracted, collected and measured continuously with an in-line detector capable of distinguish relevant radionuclides? As an acceptable alternative to direct radiation monitoring, the effluent air stream may be continuously sampled such that analysis of filters or other collectors will provide an accurate estimate of emissions from a known flow rate during a fixed sampling time. | EPA 402-R-97-001<br>Section 3.1, Page 11,<br>(2(ii))     | DOE uses periodic monitoring at WIPP to show compliance with 40 CFR 191 Subpart A.   | NA      |
| 24  | Does DOE demonstrate that radionuclides are collected and measured using procedures based on the principles of measurement described in Appendix B, Method 114 of 40 CFR 61?<br><br>If not, does DOE demonstrate that the Administrator has approve the method used?  | EPA 402-R-97-001<br>Section 3.1, Page 12,<br>(2(iii))    | COB-A2002-F page 10 documents that DOE used these principles.  | Sat     |
| 25  | If DOE is using the "Shrouded Probe", does DOE demonstrate that this alternative method is being used according to the guidance provide in "An Explanation of Particle Sampling in a Moving Gas Stream Within a Duct Using an Unshrouded and Shrouded Probe"?   | EPA 402-R-97-001<br>Section 3.1, Page 12,<br>(2(iii)(a)) | An Assessment of the WIPP Shrouded Probe Against EPA Approval Criteria for Use of Single Point Sampling with the Shrouded Probe HA:98:0100 (Included in August 2000 Inspection Report, A-98-49, II-B3-12, COB 191A-AO-2000) documents DOE's evaluation of the Shrouded Probe and its compliance with the EPA criteria. | Sat.    |
| 26  | Does DOE's quality assurance program meet the performance requirements described in Appendix, Method 114 of 40 CFR Part 61?   | EPA 402-R-97-001<br>Section 3.1, Page 12,<br>(2(iv))     | COB-A2002-F documents DOE quality assurance requirements. These meet the requirements of 40 CFR 61.  | Sat.    |

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| #   | Question   | EPA Citation   | Comments (Objective Evidence)  | Results |
|---|--|--|--|---------|
| <b>Emissions and Environmental Monitoring - Air</b> |  |  |  |         |
| 27  | <p>If it is impractical to measure the effluent flow rate in accordance with the method(s) in Section 3.1(1) or to monitor or sample extraction according to methods in Section 3.1(2) has DOE demonstrated that the use of alternative effluent flow rate measurement or site selection and sample extraction are appropriate and that the alternate method are used provided the following:</p> <p>(i) DOE shows that methods in Section 3.1(1) or (2) are impractical;<br/>                     (ii) DOE shows the alternative procedure will not significantly underestimate the emissions;<br/>                     (iii) DOE show the alternative procedure is fully documented; and<br/>                     (iv) DOE has received prior approval from EPA.</p> | EPA 402-R-97-001<br>Section 3.1, Page 12, (3(i) to 3(iv))    | See question #19, DOE uses Section 3.1 (1)(i) of EPA 402-R-97-001 page 11.     | NA.     |
| 28  | Does DOE demonstrate that radionuclide emission measurements are in conformance with the methods in Section 3.1(1) and (2) to be made at all release points which have a potential to discharge radionuclides into the air in quantities which could cause a combined annual dose equivalent in excess of 1% of the dose limit in Subpart A?   | EPA 402-R-97-001<br>Section 3.1, Page 12 and page 13, (4(i)) | Section 3.3.3 of COB-A2002-A documents DOE's compliance with this requirement. | Sat.    |
| 29  | Does DOE demonstrate that all radionuclides which could contribute greater than 10% of the combined annual dose equivalent for a release point are being measured?   | EPA 402-R-97-001<br>Section 3.1, Page 13, (4(i))             | Section 3.3 of COB-A2002-A documents DOE's compliance with this requirement.   | Sat.    |

Part 191 Subpart A for year 2002 - Compliance Reporting Checklist

| #  | Question  | EPA Citation   | Comments (Objective Evidence)   | Results |
|----|---|--|---|---------|
|    | <b>Emissions and Environmental Monitoring - Air</b>   |  |   |         |
| 30 | If DOE uses alternative procedures to determine emissions, does DOE demonstrate that they have prior EPA approval?  | EPA 402-R-97-001<br>Section 3.1, Page 13,<br>(4(i))  | DOE does not use alternative procedures at WIPP.  | NA      |
| 31 | Does DOE demonstrate that for other release points which have a potential to release radionuclides into the air it has performed periodic confirmatory measurements to verify the low emissions?                                  | EPA 402-R-97-001<br>Section 3.1, Page 13,<br>(4(i))  | DOE does not have other release points which have a potential to release radionuclides. COB-A2002-BA documents these conclusions. | NA      |
| 32 | Does DOE demonstrate that an evaluation has been done to evaluate the potential for radionuclide emissions for that release point?  | EPA 402-R-97-001<br>Section 3.1, Page 13,<br>(4(ii)) | Chapter 5 of COB-A2002-BA documents this evaluation.  | NA      |
| 33 | Does DOE demonstrate that estimated radionuclide release rates are based on discharge of effluent stream that would result if all pollution control equipment did not exist, but the facilities operations were otherwise normal? | EPA 402-R-97-001<br>Section 3.1, Page 13,<br>(4(ii)) | Section 5.2 of COB-A2002-BA documents this demonstration.   | Sat.    |

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| #   | Question   | EPA Citation  | Comments (Objective Evidence)  | Results |
|---|--|---|--|---------|
| <b>Environmental Measurements (Page 13)</b> |  |   |  |         |
| 34  | Does DOE demonstrate that environmental measurements of concentrations of radionuclides in air at the critical receptor locations are used as an alternative to air dispersion calculations in demonstrating compliance with the standard? | EPA 402-R-97-001<br>Section 3.1, Page 13,<br>(5)      | Section 3.5, COB-A2002-A documents that DOE does not use environmental monitoring as an alternative.   | NA      |
| 35  | Does DOE demonstrate that air at the point of measurement is continuously sampled for collection of radionuclides if environmental measurements are used?  | EPA 402-R-97-001<br>Section 3.1, Page 13,<br>(5(i))   | Section 3.3.3, COB-A2002-A documents that DOE uses periodic confirmatory monitoring because doses are below 1% of the standard.  | NA      |
| 36  | Does DOE demonstrate that the environmental measurement program is appropriately designed to collect and measure specifically those radionuclides which are major contributors to the annual radiation dose from the facility?             | EPA 402-R-97-001<br>Section 3.1, Page 13,<br>(5(ii))  | COB-A2002-I documents the results DOE's environmental monitoring program. This report demonstrates that the results are based on major radionuclides.                              | Sat.    |
| 37  | Does DOE demonstrate that radionuclide concentrations which would cause an annual dose equivalent of 10% of the standard are readily detectable and distinguishable from background?   | EPA 402-R-97-001<br>Section 3.1, Page 13,<br>(5(iii)) | COB-A2002-D and COB-A2002-H describe the methods used by DOE to measure radionuclide concentrations. These methods will detect doses that are in compliance with this requirement. | Sat.    |
| 38  | Does DOE demonstrate that a quality assurance program that meets the performance requirements described in 40 CFR Part 61, Appendix B, Method 114 is conducted for environmental measurements?   | EPA 402-R-97-001<br>Section 3.1, Page 13,<br>(5(iv))  | COB-A2002-F documents that DOE's QA program meets these requirements.  | Sat.    |

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| #   | Question  | EPA Citation  | Comments (Objective Evidence)  | Results |
|---|---|---|--|---------|
| <b>Environmental Measurements (Page 2)</b>                      |   |   |  |         |
| 39  | Does DOE demonstrate that EPA has granted prior approval for the use of environmental measurements to demonstrate compliance with the standard?               | EPA 402-R-97-001<br>Section 3.1, Page 13,<br>(5(v)) | DOE has not requested approval to use environmental measurements.  | NA      |
| <b>Emissions and Environmental Monitoring -<br/>Other Media</b> |   |   |  |         |
| 40  | Does DOE demonstrate that environmental monitoring of other release points or critical receptor locations to confirm air exhaust as the only release pathway? | EPA 402-R-97-001<br>Section 3.2, Page 14.           | COB-A2002-C demonstrates that DOE's environmental program monitors other release points and critical receptor locations. | Sat.    |



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| #   | Question  | EPA Citation  | Comments (Objective Evidence)   | Results |
|---|---|---|---|---------|
| <b>Compliance Reporting</b>                         |   |   |   |         |
| 41a   | Does DOE demonstrate compliance with the Subpart A standard by showing that the annual radiation dose to any member of the public in the general environment falls below the regulatory limits?   | EPA 402-R-97-001<br>Section 4.2, Page 15.             | Section 3.3.3 of COB-A2002-A documents that DOE's plans to report results yearly. COB-A2002-I demonstrates that DOE does report results yearly.   | Sat.    |
| 41b   | Does DOE report results of monitoring and the dose calculations for each reporting period?  | EPA 402-R-97-001<br>Section 4.2, Page 15              | Section 3.3.3 of COB-A2002-A documents that DOE's plans to report results yearly. COB-A2002-I demonstrates that DOE does report results yearly.   | Sat.    |
| 41c   | Does DOE demonstrate that monitoring is performed each calendar year of facility operation, and that radiation doses are calculated after the end of each year?   | EPA 402-R-97-001<br>Section 4.2, Page 15              | Section 3.3.3 of COB-A2002-A documents that DOE's plans to report results yearly. COB-A2002-I demonstrates that DOE does report results yearly.   | Sat.    |
| <b>Notification of construction or modification</b> |   |   |   |         |
| 42  | Does DOE demonstrate that they have provided the EPA written notification of any planned construction or modification to the WIPP facility, prior to commencing any such activity, if it results in an increase in the rate of emissions of radionuclides during operation? | EPA 402-R-97-001<br>Section 4.3, Page 16.             | Section 5.0 of COB-A2002-A documents that DOE's plans to report results yearly. COB-A2002-I, Section 8.0 demonstrates that DOE does report planned construction and modification during the year. | Sat.    |
| 43  | Does DOE demonstrate that advanced notification was not needed for construction and modification if the radiation dose caused by all the emissions from the new construction or modification is less than 1% of the Subpart A dose limits?                                  | EPA 402-R-97-001<br>Section 4.3, Page 16 and page 17. | Section 5.0 of COB-A2002-A documents that DOE's plans to report results yearly.   | Sat.    |

**Part 191 Subpart A for year 2002 - Compliance Reporting Checklist**

| <b>Subpart A - Normal Reporting</b> |   |   |                |
|-------------------------------------|---|---|----------------|
| <b>#</b>                            | <b>Questions</b>  | <b>Comment (Objective Evidence)</b>   | <b>Results</b> |
| 1                                   | <p>Document the steps normally taken to prepare and complete the annual Subpart A report as noted in the example in Implementation Plan for 40 CFR Part 191, Subpart A.</p> <p>List steps involved and provide objective evidence that verifies the quality of results at each step. List procedures that control the process in the order they are used.</p> <p>We are mainly looking for how the process works and how procedures are used.</p> | <p>Attachment D.2 shows the documents generated to produce the annual report. The documents follow the requirements of WP 12-HP3125 (COB-A2002-AC) as noted on each page. This step-by-step process documents that DOE/WTS is following appropriate steps to measure can calculate the annual effective dose.</p> | Sat.           |

**Part 191 Subpart A for year 2002 - Compliance Reporting Checklist**

| <b>Subpart A - Accident Reporting</b> |  |  |                |
|---------------------------------------|--|--|----------------|
| <b>#</b>                              | <b>Questions</b>   | <b>Comment (Objective Evidence)</b>  | <b>Results</b> |
| 1                                     | <p>Assume the CMR monitors an underground CAM alarm at 0900, June 25, 2002. Report the steps taken to deal with such an event, using reasonable detail - not everything that takes place. List major steps involved and provide objective evidence that verifies the quality of results at each step, noting procedures used.</p> <p>For example:</p> <ul style="list-style-type: none"> <li>-Release notification</li> <li>-Taking samples</li> <li>-Laboratory measurements</li> <li>-Derivation of the source term</li> <li>-Calculation of projected doses</li> </ul> <p>You have four hours to complete this task.</p> <p>We are looking for how samples are collected, analyzed, and how the dose is calculated.</p> | <p>Attachment D.4 shows documents produced in response to a CAM alarm. COB-A2002-XX records the steps, with related procedures, taken to response to a possible radioactive release. These documented steps show that DOE/WTS is prepared and drilled to respond to an accidental release.</p> | Sat.           |

**Attachment B**

**Opening and Closing Meeting Attendance Sheets**



**Westinghouse TRU Solutions  
Meeting Attendance Record**

ose EPA 40 CFR 194.42 Presentations

Date 6/25 Location Le. Conf Rm/Stc Time 1:30

| Name           | Title                     | Organization        | Phone        |
|----------------|---------------------------|---------------------|--------------|
| Lisa Will      | QA Analyst                | QA AP               | 8433         |
| Rae RICHARDSON | GROUNDMATER TEAM LEAD     | ESH/EM              | 8293         |
| Pick Salness   | CTAL                      | CTAL                | 7187         |
| Russ Patterson | PA member                 | DOE/EM/CBFO/ORS     | 231-7457     |
| Tom Pfeifle    | Monitoring Team lead      | SAIL/CPG            | 224-0124     |
| Chuck Byrum    | Lead Inspector            | EPA HQ              | 24665 7885   |
| REY CARRASCO   | Prim. Engr.               | OPS/CES Engr.       | 8698         |
| S. J. PATENT   | MANAGER GEOTECH & MINING  | OPS/MINE DEV/PON    | 8370         |
| L. PYATT       | SURVEYOR                  | OPS/SURVEY DEPT     | 8191         |
| C. Tierce      | ESH MGR                   | WTS                 | 8325         |
| S.B. Jones     | ESH, Env. Mon Mgr         | WTS                 | 8293         |
| SUBHASH SETHI  | MINE DEVELOPMENT PRG. MGR | WTS                 | 8182         |
| ALTON HARRIS   | WASTE MGMT ENGINEER       | DOE HQ - WMP OFFICE | 301-903-8466 |
| Tom Klein      | Env. Scientist            | EEG                 | 865-9675     |
| Larry Madl     | Principal Scientist       | WTS                 | 234-8400     |
| Nick Stone     | Inspector                 | EPA Region 6        | 24665 7226   |
| Lasey Gadbury  | Waste ops Program Mgr     | DOE-CBFO            | 8303         |
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COB-A2002-AB2

## Westinghouse TRU Solutions Meeting Attendance Record

Purpose EPA Monitoring Inspection Audit Morning Meeting

Date 6/25/02 Location Eng. Conf. Rm. Time 8:00 AM

| Name           | Title                        | Organization        | Phone        |
|----------------|------------------------------|---------------------|--------------|
| Lisa Will      | QA Analyst                   | QA AP               | 8433         |
| Dave Kump      | Rad. Saf. & Energy Mgr. Mgr. | WTS/ES+H            | 8486         |
| Ginny Waymire  | QA Officer - WTP Labs        | WTS/ES+H            | 8018         |
| Alton Harris   | WASTE MANAGEMENT ENGR.       | DOE HQ - WTP OFFICE | 301-903-8446 |
| Tom Klein      | Env. Scientist               | EFG                 | 865-9765     |
| Russ Patterson | PA Manager                   | DOE/CBFO/ORC        | 234-7457     |
| Casey Gadbury  | Waste Ops Program Mgr.       | CBFO-DOE            | 8303         |
| Cink Kenney    | Spec. Oversight Specialist   | CTAC                | 8128         |
| Tom Goff       | Rad. Eng.                    | WTS                 | X-8861       |
| Carolyn Lomax  | CA Rad. Con. Eng.            | WTS                 | 8935         |
| Bob Wade       | CA Rad. Con. Mgr.            | WTS/OP              | 8721         |
| Chuck Byrum    | Lead Inspector               | EPA HQ              | 24665755     |
| Nick Stone     | Inspector                    | EPA Region 6        | 246657326    |

COB-A2002-AB3

## Westinghouse TRU Solutions Meeting Attendance Record

rose EPA Monitoring Inspection Audit Management  
Meeting  
 Date June 24, 2002 Location Lg. Conf Rm./Site Time 3:30 pm

| Name              | Title                      | Organization    | Phone        |
|-------------------|----------------------------|-----------------|--------------|
| Lisa Will         | QA ANALYST                 | BAAAP           | 8433         |
| Jim Kenney        | S.O. Specialist            | CPMC            | 8128         |
| Ginny Waymire     | QA officer - WIPP Labs     | ES&H WTS        | 8018         |
| Russell Patterson | PA Manager                 | DOE/EM/CBFO/ORC | 234-7457     |
| Chuck Byron       | Head Inspector             | EPA HQ          | 246657555    |
| Dave Kump         | Rad Safety & EM Mgr.       | WTS/ES&H        | 515-234-9411 |
| Tom Klein         | Env. Scientist             | EEG             | 885-9765     |
| Don Harward       | ES&H Dep. Mgr.             | WTS             | 8285         |
| Linda Frank-Supka | Linda Frank-Supka          | WTS             | 234-8816     |
| Larry Madl        | Larry Madl                 | WTS             | 234-8400     |
| Casey Gadbury     | CBFO Waste Ops Pgm Manager | DOE/CBFO        | 8303         |
| Nick Stone        | Inspector                  | EPA Region 6    |              |
| Caroline Tierice  | ES&H MGR                   | WTS             | 585-834-8325 |
| ALTON Hannis      | WASTE MGMT ENGINEER        | DOE/HQ          | 301-783-8446 |
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COB-A2002-AB4



## Westinghouse TRU Solutions Meeting Attendance Record

Topic EPA Monitoring Inspection Audit opening Meeting  
 Date 6/24/02 Location Lg. Conf Rm./Site Time 8:30 AM

| Name-             | Title                           | Organization   | Phone        |
|-------------------|---------------------------------|----------------|--------------|
| Lisa Will         | QA ANALYST                      | QA ADP         | 8433         |
| John Hoff         | MANAGER ASBESTOS/ROG. QA        | QA             | 8403         |
| Steve Youngerman  | OPS Manager                     | OPS - WTS      | 8302         |
| H.W. Bellows      | OPS MANAGER                     | OPS            | 8257         |
| ALTON Harris      | DOE HQ <sup>WASTE MGMT</sup>    | DOE HQ         | 301-903-8446 |
| Casey Gadbury     | DOE/CBFO Waste Ops Team Manager | DOE-CBFO       | 8303         |
| Nick Stone        | EPA REGION 6 Inspector          | EPA Region 6   |              |
| Chuck Byrum       | EPA Inspector                   | EPA OIA        |              |
| Ginny Waymire     | QA Officer - WIPP Labs          | ES+H           | 8018         |
| Kuss Patterson    | PA-Manager                      | DOE-CBFO       | 505/231-7657 |
| RON RICHARDSON    | TEAM LEAD GROUNDWATER           | WTS            | 234-2395     |
| Stewart Jones     | Mgr. Env. Monitoring            | WTS            | 8293         |
| RAY CARASLO       | Prin. Engr.                     | Mini Ops       | 8698         |
| S.J. PATCHET      | Hon. Comm. Eng                  | Min. Dev. Dept | 8370         |
| Steve Pritchett   | SUBWAY                          | WTS MINI OPS   | 8191         |
| Michael Galbraith | DOE/CBFO Fac Rep                | DOE            | 8365         |
| TIM KLAUS         | System Eng Mgr                  | CBFO           | 8460         |
| John D. Gony      | Waste Handling Coord Mgr        | WTS/WHO        | 8906         |
| ROBERT WADE       | CH Radiol. Control MGR          | WTS/RELATION   | 8701         |
| Don Harward       | ES&H Rep. Mgr                   | WTS/ES&H       | 8285         |
| Rob Hayes         | RH Rad Engineer                 | WTS/ES&H       | 8629         |
| SABRINA LACH      | RAD CON TECH                    | WTS/OHP        | 8168         |
| Paul Salmer       | CTAC / Hydrologist              | CTAC           | 7187         |
| Mike Lipscomb     | QA Manager                      | WTS            | 8240         |
| CANDICE SIERRA    | ESH. MGR                        | WTS            | 8525         |
| Jim Kenney        | CTAC - Sp. Oversight            | CTAC           | 8128         |
| Thomas Klein      | EEG - Scientist                 | EEG            | 885-9625     |
| Tom Goff          | Radiological Engineer           | WTS            | 234-8861     |
| Linda Frank-Supka | Radiological Engineer           | WTS            | 234-8816     |
| Dave Kump         | hot safety                      | WTS            | 234-8486     |
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COB-A2002-AB5

**Attachment C**

**Table of Documents Reviewed**

| Documents Reviewed and Copies Received |  | 191.03 Subpart A Inspection - June 2002   | DOE Documents   |      |
|--|--|---|---|------|
| #                                      | Document Title   | Subject Matter  | Source and Location   | Copy |
| 1                                      | CCA, Appendix EMP; Waste Isolation Pilot Plant Environmental Monitoring Program. DOE/WIPP 96-2194. In particular pages 4-1, 5-1, 5-3, 5-4, 5-6.                | Discussed DOE environmental monitoring plans at the WIPP site.<br>COB-A2002-1   | DOE, CCA, Appendix EMP (*Not included in this inspection report.) | No*  |
| 2                                      | Implementation Plan for 40 CFR 191, Subpart A DOE/WIPP 00-3121, Revision 2, June 2001  | Outlines program at WIPP to show compliance with 40 CFR 191, Subpart A.<br>COB-A2002-A                                  | DOE/WTS   | No*  |
| 3                                      | Periodic Confirmatory Measurement Protocol for the Waste Isolation Pilot Plant DOE/WIPP 97-2238, Revision 6, June 2001   | Used to explain the protocol to used preform periodic confirmatory measurements.<br>COB-A2002-B                         | DOE/WTS   | No*  |
| 4                                      | Waste Isolation Pilot Plant CY 2000 Site Environmental Report, DOE/WIPP 01-2225, ESRF-045  | Example of the results of the environmental monitoring program, in particular radiological measurements.<br>COB-A2002-C | DOE/WTS   | No*  |
| 5                                      | Airborne Radioactivity - Technical Procedure WP 12-HP3500, Revision 9, 03/26/02  | Procedure provides instructions for analyzing, reporting, and trending results of air samples.<br>COB-A2002-D           | DOE/WTS   | No*  |
| 6                                      | WTS Quality Assurance Program Description WP 13-1, Revision 22, 03/27/02   | WTS minimum quality requirements for WIPP.<br>COB-A2002-E   | DOE/WTS   | No*  |
| 7                                      | Quality Assurance Program Plan for Sampling Emissions of Radionuclides to the Ambient Air at the Waste Isolation Pilot Plant WP 12-RC.01, Revision 6, 06/16/00 | QA program for sampling air emissions at WIPP.<br>COB-A2002-F   | DOE/WTS   | No*  |

| Documents Reviewed and Copies Received |  | 191.03 Subpart A Inspection - June 2002   | DOE Documents             |      |
|--|--|---|---------------------------|------|
| #                                      | Document Title   | Subject Matter  | Source and Location       | Copy |
| 8                                      | Pages 5.2-11, Chapter 5 of DOE/WIPP-95-2065 Rev. 5.  | This selection verifies that the air pathway is the only pathway of concern at the WIPP.<br>COB-A2002-G   | DOE/WTS.                  | No*  |
| 9                                      | Instructions for Periodic Confirmatory Sampling Compliance Reporting<br>WP 12-HP3125, Revision 7, 06/15/01 | This procedure provides instructions for Radiological Engineers of the Radiological Controls Department to fulfill the requirements of NESHAPs.<br>COB-A2002-H                            | DOE/WTS                   | No*  |
| 10                                     | Letter from Inez Triay (DOE) to Carl Edlund Weber (EPA). June 25, 2002                                     | References the attached Annual Periodic Confirmatory Measurement Compliance Report for the U.S. Department of Energy's Waste Isolation Pilot Plant for calendar year 2001.<br>COB-A2002-I | DOE/WTS<br>Attachment D.1 | Yes  |
| 11                                     | Presentation on changes to the monitoring system by Dave Kump in the opening meeting.                      | Discussed changes to Station A and procedures to improve effluent monitoring.<br>COB-A2002-AA   | DOE/WTS<br>Attachment D.1 | Yes  |
| 12                                     | Opening and Closeout Meeting Sign-up Sheets  | COB-A2002-AB1 to AB5  | DOE/WTS<br>Attachment B   | Yes  |
| 13                                     | Instructions for Periodic Confirmatory Sampling Compliance Reporting, WP 12-HP3125, Revision 7, 06/15/01   | COB-A2002-AC  | DOE/WTS<br>Attachment D.2 |      |

|    | Documents Reviewed and Copies Received   | 191.03 Subpart A Inspection - June 2002  | DOE Documents          |      |
|----|--|--|------------------------|------|
| #  | Document Title   | Subject Matter   | Source and Location    | Copy |
| 14 | Sample - From WP 12-HP1300 Attachment 1 - Radiological Monitoring Equipment Log Sheet                                | Form used to document a filter change out at Station A.<br>COB-AA2002-AD   | DOE/WTS Attachment D.2 | Yes  |
| 15 | Sample - Tables showing Station A and Station B NESHAP Filter information  | Documents daily filter change-outs, flow rates, and air volumes. Use to calculate total annual dose.<br>COB-AA2002-AE1 and AE2 | DOE/WTS Attachment D.2 | Yes  |
| 16 | Sample - From WP 12-HP1300 Attachment 3 - CAM and FAS Rates and Alarm Set Points                                     | Used to verify that alarms are set correctly/<br>COB-AA2002-AF   | DOE/WTS Attachment D.2 | Yes  |
| 17 | Radiological Event Response, Emergency Response Procedure, WP 12-ER4903, Revision 5, 01/18/01                        | Procedure documents actions taken if a potential or actual radioactive release takes place.<br>COB-AA2002-AG                   | DOE/WTS Attachment D.4 | Yes  |
| 18 | Emergency Radiological Control Responses, Emergency and Alarm Response Procedure, WP 12-HP4000, Revision 2, 06/19/00 | Section 3.0 documents actions to be taken in the event of and "ON-SITE AIRBORNE RADIOACTIVITY EVENT".<br>COB-AA2002-AH         | DOE/WTS Attachment D.4 | Yes  |
| 19 | Sample - Summary of Station A, Skid A-3 and A-1 Monthly Probe Cleaning Activities Calendar Year 2001                 | Documents results of probe monthly cleaning.<br>COB-AA2002-AI  | DOE/WTS Attachment D.2 | Yes  |
| 20 | Sample - Attachment 5 - Request For Analysis / Chain-of-Custody Record   | Used to request laboratory analysis and serves as a chain of custody form.<br>COB-AA2002-AJ                                    | DOE/WTS Attachment D.2 | Yes  |

| Documents Reviewed and Copies Received |  | 19F.03 Subpart A Inspection - June 2002  | DOE Documents             |      |
|--|--|--|---------------------------|------|
| #                                      | Document Title   | Subject Matter   | Source and Location       | Copy |
| 21                                     | Sample - Laboratory Sample Result Summary for Stations A, B, and C.  | Documents results of laboratory measurements.<br>COB-A2002-AK1 to AK3                            | DOE/WTS<br>Attachment D.2 | Yes  |
| 22                                     | Sample - Worksheet used to calculate total annual values.  | Documents summation of monthly values.<br>COB-A2002-AL.  | DOE/WTS<br>Attachment D.2 | Yes  |
| 23                                     | Sample - From WP 12-HP3125, Attachment 1 - Composite Samples Worksheet with accompanying Excel spreadsheet | Documents final composition of values and calculation yearly activity.<br>COB-A2002-AM1 and AM2. | DOE/WTS<br>Attachment D.2 | Yes  |
| 24                                     | WIPP Air Monitoring Status First Quarter 2002, June 2002   | Documents results of periodic probe inspection and cleaning.<br>COB-A2002-AN                     | DOE/WTS<br>Attachment D.3 | Yes  |
| 25                                     | Response to Underground Airborne Radioactive Release, with procedure references                            | Documents steps taken to respond to airborne release.<br>COB-A2002-AO                            | DOE/WTS<br>Attachment D.4 | Yes  |
| 26                                     | Example page from CMR Operation Log Book   | This log book notes daily activities and any accidents.<br>COB-A2002-AP                          | DOE/WTS<br>Attachment D.4 | Yes  |

|    | Documents Reviewed and Copies Received  | 191.03 Subpart A Inspection - June 2001  | DOE Documents             |      |
|----|---|--|---------------------------|------|
| #  | Document Title  | Subject Matter   | Source and Location       | Copy |
| 27 | From WP 12-HP3700, Attachment 1, 2, 3, and 4 - Initial Radiological Event/Sample Data                               | Documents the 'first' estimate of a possible release.<br>COB-A2002-AQ                          | DOE/WTS<br>Attachment D.4 | Yes  |
| 28 | From WP 12-HP1305, Attachment 1 - Fixed Air Monitoring Equipment Log Sheet  | Used to demonstrate filter change during a possible release.<br>COB-A2002-AR                   | DOE/WTS<br>Attachment D.4 | Yes  |
| 29 | From 12-HP3500, Attachment 4 - Request For Analysis/Chain-of Custody Record   | Used to request laboratory analysis of filters and as a chain-of custody form.<br>COB-A2002-AS | DOE/WTS<br>Attachment D.4 | Yes  |
| 30 | Sample - Laboratory sample log book   | Records when the laboratories receive samples to be processed.<br>COB-A2002-AT                 | DOE/WTS<br>Attachment D.4 | Yes  |
| 31 | Sample - SP2002-3 - Radiochemistry Sample Preparation Log Book  | Records the preparation of samples for radiochemistry analysis.<br>COB-A2002-AU                | DOE/WTS<br>Attachment D.4 | Yes  |
| 32 | Sample - Notebook 2002-1, Example of Lab Workbook   | Demonstrates record keeping in the laboratory.<br>COB-A2002-AV                                 | DOE/WTS<br>Attachment D.4 | Yes  |
| 33 | Sample - Fromm WP 12-ER4916, Attachment 1 - Assessment form, results of GXQ calculations for release demonstration. | Documents the input and results of GXQ calculations.<br>COB-A2002-AW1, AW2, and AW3            | DOE/WTS<br>Attachment D.4 | Yes  |

