



U.S. Department of Energy  
Office of Inspector General  
Office of Audit Services

# Audit Report

Disposal of Remote-Handled  
Transuranic Waste at the Waste  
Isolation Pilot Plant




## Department of Energy

Washington, DC 20585

July 18, 2003

### MEMORANDUM FOR THE SECRETARY

FROM:

  
Gregory H. Friedman  
Inspector General

SUBJECT:

INFORMATION: Audit Report on "Disposal of Remote-Handled Transuranic Waste at the Waste Isolation Pilot Plant"

### BACKGROUND

The Waste Isolation Pilot Plant (WIPP), located near Carlsbad, New Mexico, is the Department of Energy's underground repository for defense-generated Transuranic (TRU) waste. TRU waste consists of items such as clothing, gloves, and tools contaminated with small amounts of radioactive elements. Most TRU wastes can be handled by workers using minimal specialized protective gear and is referred to as "contact-handled" TRU. However, TRU wastes with a surface radiation dose rate greater than 200 millirem per hour must be handled using remote devices and is referred to as "remote-handled."

The Department began disposing of contact-handled TRU waste at WIPP in 1999; however, it must modify the WIPP operating permit prior to disposing of remote-handled waste. The Department applied to the State of New Mexico and the Environmental Protection Agency for a permit modification in June 2002, and it anticipates approval in time for WIPP to begin receiving remote-handled TRU in 2005. The Department plans to dispose of at least 113,300 cubic meters of contact-handled TRU waste and 2,800 cubic meters of remote-handled TRU waste at WIPP over the life of the program. The objective of this audit was to determine whether the Department had established an efficient system for disposing of remote-handled TRU waste at WIPP.

### RESULTS OF AUDIT

We concluded that opportunities exist for the Department to improve the efficiency of its remote-handled TRU waste disposal program over the next two decades. Specifically, our audit disclosed that:

- If current waste emplacement practices continue, by 2020, the repository, as now configured, will not be able to accommodate 980 planned shipments of remote-handled TRU waste. The Department has recognized the potential space problem and identified some alternatives, but has not yet formally planned for the resolution of this issue.



- There should be improved integration in and consistency of local treatment plans at several sites and the Department's overall remote-handled TRU management plan. For example, according to the Department's accelerated cleanup schedule, WIPP will receive about 180 shipments of the Hanford Site's remote-handled TRU waste by 2012. However, Hanford only expects to send about 20 shipments by that date. This is an important difference which could, depending upon the path chosen for resolution, further impact the availability of space at WIPP for remote-handled TRU.
- There are actions that the Department can take to improve the efficiency of transporting TRU waste to WIPP. For example, we estimated the Department could reduce the number of planned shipments to WIPP by about 33 percent by optimizing the use of 10-drum, versus 3-drum shipping containers. Such action would have significant cost savings implications.

We also noted that existing strategic performance goals and measures for use in managing the program could be enhanced. By maintaining a careful focus on full integration and coordination of the treatment, transportation, and disposal of remote-handled TRU waste across the complex, the Department can increase the likelihood that its accelerated cleanup goals will be achieved. The Office of Environmental Management (Environmental Management), which has ultimate responsibility for this program, has a major effort underway to integrate and coordinate the remote-handled TRU waste program. Our report includes several recommendations intended to assist in this process.

### MANAGEMENT REACTION

Environmental Management disagreed with the finding and recommendations in the report, raising concerns that the report may draw faulty conclusions concerning the Department's management of TRU waste. Where appropriate, we have included management's specific concerns, along with our responses, in the text. Also, management's comments are included in their entirety as Appendix 3.

Environmental Management took the position, in response to the report, that recent improvements in established management systems are sufficient to address issues as they arise. In this regard, management indicated that it had established:

- Baseline configuration control for TRU waste shipments, including Assistant Secretary approval for baselines and subsequent changes;
- A formal process to approve all radioactive waste shipments, including TRU, on a bi-weekly basis;
- Performance-based incentives in contracts at shipping sites and at WIPP;
- Regular briefings for the Under Secretary on all aspects of WIPP, including shipments, operations, regulatory compliance activities, and permit modifications; and,
- New corporate performance metrics.

While the Office of Inspector General agrees that the improvements recently implemented by management are positive steps, our analysis indicated that additional action is needed to fully integrate and coordinate the treatment, storage, transportation, and disposal of remote-handled TRU waste.

Attachment

cc: Deputy Secretary  
Under Secretary for Energy, Science and Environment  
Assistant Secretary for Environmental Management  
Manager, Carlsbad Field Office

# DISPOSAL OF REMOTE-HANDLED TRANSURANIC WASTE AT THE WASTE ISOLATION PILOT PLANT

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# DISPOSAL OPERATIONS

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## Efficiencies

The Department of Energy (Department) faces a number of challenges that could impact the efficiency of its disposition of remote-handled transuranic (TRU) waste. The Waste Isolation Pilot Plant (WIPP) may lose access to disposal space needed for remote-handled TRU waste, and it could lose the ability to dispose of at least 980 shipments of remote-handled TRU waste unless the facility is reconfigured. Also, consistency between local treatment plans at several sites and the Department's overall program management plan could be improved. Further, opportunities may exist for the Department to develop a more cost-effective plan for optimizing the use of shipping containers for transporting remote-handled TRU waste to WIPP.

### Disposal Capacity

The WIPP facility contains disposal rooms excavated 2,150 feet underground in an ancient, stable, salt formation. The facility was designed to allow remote-handled TRU waste to be placed in holes bored into the walls of the disposal rooms before the rooms are filled with contact-handled transuranic waste. As a room is filled with contact-handled drums and boxes, access to the remote-handled TRU waste boreholes is blocked. Based on the current configuration, the Department could dispose of approximately 5,848 shipments of remote-handled TRU waste at WIPP, provided remote-handled TRU waste containers are disposed of before contact-handled waste containers are placed in the rooms.

However, the space available for disposal of remote-handled TRU waste is rapidly diminishing, in part because shipments of contact-handled waste began in 1999 and shipments of remote-handled TRU waste will not begin until at least 2005, after the permit modification is approved. In its 2002 National TRU Waste Management Plan, the Department stated that, based on current disposal plans, WIPP would lose approximately 2,400 disposal positions. We estimate that the loss of disposal positions will be significantly greater than anticipated in the management plan. Based on our analysis of the contact-handled TRU waste disposal and the difference in remote-handled TRU waste and contact-handled shipping rates in the future, WIPP will lose up to 3,574 remote-handled TRU waste disposal positions over the life-cycle of WIPP, resulting in a lack of disposal positions for approximately 980 shipments. In addition, the Department has about 1,700 cubic meters of orphan remote-handled TRU waste<sup>1</sup> that may eventually require disposal at WIPP.

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<sup>1</sup> Orphan waste is TRU waste for which a disposition path has not yet been defined.

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In responding to a draft of this report, the Office of Environmental Management stated that options are under consideration to dispose of all remote-handled TRU waste. Management stated that it closely monitors WIPP disposal operations and, through the existing planning and regulatory process, can accommodate changing waste forecasts and schedules as needed. Options available include use of underground disposal panels 9 and 10 or double canister emplacement in boreholes. Also, management stated that there is sufficient time to implement any option under current management practices.

We recognize that the Department could dispose of all remote-handled TRU waste using the alternatives listed by management. Our concern is that recent planning documents, including the permit modification submitted to New Mexico in June 2002, do not contemplate any of these alternatives. Given the time requirements typically associated with the regulatory process, and the fact that technical issues would need to be resolved, it would be prudent, in our judgment, for the Department to begin a formal planning process that accounts for the disposal of all remote-handled TRU waste shipments.

#### Site Treatment Plans

Although the Department has established an overall program management plan for remote-handled TRU waste, consistency between that plan and local treatment activities at several sites could be improved. For example:

- According to the Department's accelerated cleanup schedule, WIPP will begin to dispose of the Hanford Site's remote-handled TRU waste after its permit is modified, which is estimated to occur in FY 2005. The plan indicates that WIPP will receive about 180 shipments of remote-handled TRU waste from the Hanford Site by 2012. However, Hanford's primary planning document, its performance management plan, does not support shipment at this volume. Rather, Hanford's planning documents indicate that the site will not be prepared to ship large amounts of remote-handled TRU waste until after 2012.

The Office of Environmental Management stated that the Hanford Site will be able to ship waste generated from other sites, totaling about 20 shipments, soon after the permit is modified in 2005. In addition, management is considering options that would allow for an acceleration of shipments from the Hanford Site. When asked, however, management did not specify how the difference in shipments would be reconciled.

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- The Idaho National Engineering and Environmental Laboratory (INEEL) plans to begin shipping remote-handled TRU waste to WIPP in Fiscal Year (FY) 2005, but it currently has no facilities capable of treating remote-handled TRU waste and preparing it for shipment. As we noted in our report on INEEL's *Remote Treatment Facility* (DOE/IG-0573, November 2002), the Office of Nuclear Energy is planning to construct a \$68 million facility to process its remote-handled TRU waste beginning in 2009 at its Argonne National Laboratory-West, located on the INEEL site. However, start-up of this facility will occur four years too late to support the INEEL's acceleration plans, and the facility as currently conceived may not have the capacity to support the waste treatment needs of both Nuclear Energy and Environmental Management.
  - The Oak Ridge Reservation scheduled its remote-handled TRU waste treatment facility to be operational in January 2003; however, WIPP is not likely to be permitted to receive remote-handled TRU waste before January 2005. To its credit, the Oak Ridge Reservation began negotiating with its contractor to change the waste treatment operating plan to treat contact-handled TRU and other wastes first, in an attempt to avoid having an idle facility. However, if WIPP is not able to begin receiving remote-handled TRU waste by FY 2005, the plant may become idle.
  - The Savannah River Site, one of Environmental Management's smallest remote-handled TRU generator sites, is planning to send its remote-handled TRU waste to the Oak Ridge Reservation in 2025 to be treated for final disposal at WIPP. However, Oak Ridge officials stated that they were unaware of the Savannah River Site's plans. In fact, Oak Ridge planned to complete its waste treatment and decontaminate and decommission its treatment facility as early as FY 2010.

In responding to the draft report, the Office of Environmental Management stated that a robust integration process was used to develop the remote-handled Transuranic Waste Performance Management Plan, and specific implementation details continue to be developed at the sites. Also, management intends to develop a more detailed disposal schedule following approval by New Mexico of permits currently under review. Such a schedule would, presumably, resolve some or all of the issues noted above.



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## Shipping Containers

Opportunities exist for the Department to optimize, from a cost standpoint, use of two different shipping containers to transport remote-handled TRU waste to WIPP. The Department selected the 72B container (a 3-drum container) as its primary shipping container. The Department also obtained a second container, the 10-160B container (10-drum), though it planned to use the larger container in only very limited circumstances. We noted, however, that in many instances, the 10-160B could be more cost-effective. In fact, a 1996 Department study ranked the predecessor to the current 10-drum container as more desirable than the 3-drum container because it would improve shipping efficiencies and reduce the number of remote-handled TRU waste shipments.

It should be noted that the 10-drum container could not be used for shipping remote-handled TRU waste with plutonium levels above 20 curies, due to its single-shielded design. Also, the Oak Ridge Reservation should continue using the 3-drum container because its waste processing facility was designed to load that type of container directly. Nevertheless, the 10-drum container could be used to ship remote-handled TRU waste from seven generator sites to WIPP.

Based on site estimates of potential shipments using 10-drum containers, we calculated that the Department could reduce the number of shipments to WIPP from approximately 2,250 to 1,510, or 33 percent. Appendix 4 of this report provides a comparison of the difference in the number of shipments, using different casks. Although Carlsbad Field Office officials were concerned that the 10-drum container increases the burden on WIPP operations, our analysis showed that the larger container would not require more processing time than the 3-drum container.

Department officials stated that a reason for focusing primarily on one shipping container was to avoid the administrative burden of keeping technical and safety documentation on more than one container. We found, however, that the Carlsbad Field Office has in place all the technical and safety documentation for both container types. Thus, if the Department were to use the 10-drum container, any additional administrative burden may be minimal.

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In response to the draft, the Office of Environmental Management stated that the report misrepresents the Department's strategy for shipment of remote-handled TRU waste because it creates a misconception that the alternative 10-160B shipping container is not being appropriately utilized. Environmental Management noted that it owns a 10-160B shipping container, has used it, and has encountered difficulties in using the cask due to its size, weight, and the 20-curie limit on transuranic radionuclides -- factors not considered in the report's conclusion.

To the contrary, cost comparison does take into account the difficulties in using the 10-160B. Specifically, the cost comparison for the casks factored in overweight issues and radiological limits. To address weight issues, the cost of overweight fees was deducted from our savings calculation. To reflect the 20-curie limit, our cost comparison included only those sites that have a high potential to utilize the 10-160B cask given the Department's estimate of transuranic radionuclides. We recognize that the 10-160B container is not the most cost-effective alternative for all waste shipments; however, it is suitable for more shipments than planned.

## **Program Management**

Our audit disclosed additional opportunities for the Department to more fully integrate and coordinate the treatment, storage, transportation, and disposal of remote-handled TRU waste. Existing performance goals and measures for managing the program could also be enhanced.

### Integration and Coordination

The Office of Environmental Management is responsible for promoting integration and coordination of transuranic waste treatment, storage, transportation, and disposal activities across the complex to facilitate development of an effective and efficient system. To date, Environmental Management has relied primarily on the Carlsbad Field Office and the National Transuranic Waste Corporate Board (made up of representatives from Carlsbad, WIPP, Headquarters, and generator sites) to carry out these responsibilities. Board representation is limited to those sites currently shipping waste to WIPP. Since only contact-handled waste is being shipped, the sites that are major generators of RH-TRU waste are not integrally involved in the decision-making process.

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Management stated that the major remote-handled TRU waste generator sites are represented at TRU waste corporate meetings and contribute to the deliberations. However, we noted that major generators of remote-handled TRU waste, such as the Oak Ridge Reservation, are not members of the Board and, as a result, do not formally participate in the decision-making process.

#### Performance Goals and Measures

In our judgment, strategic performance goals and measures for the remote-handled TRU waste disposal program could also be enhanced. We noted that the Department developed a corporate-level performance measure covering the shipment of TRU waste and ensured that performance measurements were incorporated into the management and operating contract with Westinghouse at WIPP. However, there is currently no performance measure specific to the shipment or disposal of remote-handled TRU waste. In contrast, the Office of Environmental Management established a number of strategic performance goals for contact-handled TRU waste. Establishing similar strategic performance goals for the remote-handled TRU program would allow the Department to better focus its efforts and improve accountability.

In response to the draft report, management stated that the report did not reflect the integration process used by the Department to prepare performance management plans, nor did it reflect the Department's intense efforts to coordinate between sites. The Department has implemented new project controls to strengthen TRU waste management, including baseline waste shipment configuration control, formal biweekly approval of all waste shipments, performance-based contract incentives at waste shipping sites and WIPP, regular briefings for the Under Secretary on waste shipping interfaces, and new corporate performance metrics on waste disposal. Management concluded that these project management initiatives negate the need for additional actions.

We consider the improvements recently implemented by the Office of Environmental Management to be positive steps. However, the improvements did not identify or resolve inconsistencies between the Department's program management plan and the sites' plans. Thus, we concluded that Environmental Management should pursue additional integration efforts across the complex to fully coordinate the treatment, storage, transportation, and disposal of remote-handled TRU waste.

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**Cost and Cleanup  
Milestones**

Aggressive management of the challenges noted in this report could preclude the need to reconfigure the repository, increase the likelihood that accelerated cleanup goals will be reached, and avoid approximately \$7.9 million in unnecessary costs (see Appendix 5).

If the current waste emplacement trend continues, by 2020 the Department will be forced to reconfigure the WIPP facility to provide additional remote-handled TRU storage capacity. Without knowing the extent of additional space required, we could not determine how much the reconfiguration might cost. While the volume of waste permitted under the WIPP Land Withdrawal Act of 1992 would not be changed, the Department would be required to modify the original design and permit of the facility, as well as perform additional mining to accommodate the remaining inventory.

Further, the Department's accelerated cleanup goals may not be achieved if waste treatment, storage, transportation, and disposal activities are not integrated and coordinated across the complex. Without sufficient coordination for treatment and disposal of remote-handled TRU waste, the Department will not have the necessary assets in place, such as treatment facilities, to sustain an accelerated schedule.

In addition, we estimated that the Department could avoid about \$7.9 million in unnecessary shipping costs by using the 10-drum shipping containers rather than 3-drum shipping containers, where practical. We estimated potential savings using a cask loading efficiency of 75 percent (see Appendix 4, note 3) and a transportation rate of \$3.61 per mile (see Appendix 5, note 2). The Office of Environmental Management did not agree with our estimate of potential cost savings and questioned the assumptions used in the estimate. Management believed that a transportation rate of \$3.19 per mile and a cask loading efficiency of 50 percent was more accurate. Using management's assumptions, estimated savings would be, at most, about \$1.9 million. Explanations of the differences between our assumptions and management's are included in the notes to Appendices 4 and 5.

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## RECOMMENDATIONS

We recommend that the Associate Deputy Assistant Secretary for Integration and Disposition, Office of Environmental Management:

1. Maximize opportunities to fully integrate and coordinate the treatment, storage, transportation, and disposal of remote-handled TRU waste across the complex by:
  - a) Developing a contingency plan for dealing with the potential shortfall in the number of disposal positions for disposing of remote-handled TRU;
  - b) Ensuring that local program management plans are consistent with the overall Department's program management plan for remote-handled TRU waste; and,
  - c) Conducting an analysis to determine the optimal mix of shipping container types for cost-effective, safe, and environmentally acceptable shipment of remote-handled TRU waste to WIPP.
2. Ensure that the National Transuranic Waste Corporate Board has adequate representation for remote-handled TRU waste generator sites.
3. In coordination with regulators, establish and implement strategic performance goals and measures for accomplishing the remote-handled TRU waste disposal program.

## MANAGEMENT REACTION

The Assistant Secretary for Environmental Management did not concur with the finding and recommendations, stating that the draft report misrepresented the facts and drew faulty conclusions concerning the Department's management of remote-handled TRU waste. The Assistant Secretary agrees that opportunities exist for improvement; however, she believes that the established management systems are sufficient to address issues as they arise.

## AUDITOR COMMENTS

While we consider the improvements recently implemented by management to be positive steps, the audit demonstrates that additional actions are needed to fully integrate and coordinate the treatment, storage, transportation, and disposal of remote-handled TRU waste.

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Management's comments on the validity of the finding, along with our responses, have been incorporated into the text of this report and are included in their entirety as Appendix 3.

### PRIOR AUDIT REPORTS

- *Remote Treatment Facility* (DOE/IG-0573, November 2002), concluded that the Department had not integrated all Idaho National Engineering and Environmental Laboratory mission needs in the planning process for the Remote Treatment Facility. As a result, the facility would not be able to meet operation needs nor simultaneously process all remote handled solid waste in accordance with established deadlines.
- *Planned Waste Shipments to the Waste Isolation Pilot Plant* (WR-B-99-06, August 1999), concluded that the Carlsbad National Transuranic Waste Management Plan was not current or consistent with the data at the generator sites and could not be used to measure target dates for shipping waste to the Waste Isolation Pilot Plant.

## Appendix 2

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### OBJECTIVE

Determine whether the Department had established an efficient system for disposing of remote-handled transuranic (TRU) waste at the Waste Isolation Pilot Plant (WIPP).

### SCOPE

The audit was performed from April 8, 2002, to November 14, 2002, at WIPP in Carlsbad, New Mexico. Visits were also made to the Oak Ridge Operations Office in Oak Ridge, Tennessee, and Battelle Columbus in Columbus, Ohio. The audit scope was limited to the planning conducted by WIPP and the waste generators from 1995 through 2002 for treating, shipping, and disposing of remote-handled TRU waste at the WIPP.

### METHODOLOGY

To accomplish the audit objective, we:

- Obtained and reviewed planning documents for the activities under audit;
- Researched Federal and Departmental regulations;
- Reviewed findings from prior audit reports regarding the disposal of TRU waste at the WIPP;
- Reviewed the Office of Environmental Management's Top-to-Bottom Review Team Report, *A Review of the Environmental Management Program* (February 2002);
- Assessed internal controls and performance measures established under the Government Performance and Results Act of 1993;
- Surveyed remote-handled TRU waste generators at the various Departmental sites; and,
- Evaluated performance and cost data for applicable processes.

The audit was performed in accordance with generally accepted Government auditing standards for performance audits and included tests of internal controls and compliance with laws and regulations to the extent necessary to satisfy the audit objective. Specifically, we tested controls with respect to the Department's planning process for waste management activities. Because our review was limited, it would not necessarily have disclosed all internal control deficiencies that may



## **Appendix 2 (continued)**

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have existed at the time of our audit. We relied on automated data processing equipment to accomplish our audit objective. Specifically, we relied on the contractor's cost accounting system, and conducted tests to ensure reliability of the data. We held an exit conference with the Director, Waste Isolation Pilot Plant Office, Office of Integration and Disposition on February 27, 2003.

## Appendix 3

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United States Government

Department of Energy

# memorandum

DATE: April 29, 2003

REPLY TO  
ATTN OF: EM-23 (Doug Tonkay, 301-903-7212)

SUBJECT: Response to Proposed Final Audit Report on "Disposal of Remote-Handled Transuranic Waste at the Waste Isolation Pilot Plant"

TO: Gregory H. Friedman, Inspector General

I appreciate the opportunity to have met with you on the subject report and I also appreciate your staff's time in working with my office in this regard. However, I must respectfully disagree with the results and recommendations in the subject proposed final report dated April 7, 2003. As noted, ongoing discussions have occurred between the Office of Inspector General (IG) staff and my staff since the previous draft report was issued on February 26, 2003. Although some positive changes have resulted in the proposed final report, the report continues to misrepresent the facts and draw faulty conclusions concerning the Department's management of remote-handled transuranic (RH-TRU) waste activities.

Although the report states that the IG does not take issue with our assessment that Waste Isolation Pilot Plant (WIPP) can be configured to dispose of all RH-TRU up to the legal limit of 7,080 cubic meters at the WIPP, it still concludes that a new formal planning process is prudent. I disagree with the need for any new formal planning process. The Department closely monitors WIPP disposal operations and, through the existing planning and regulatory process, can accommodate changing waste forecasts and schedules, as needed. Options available include use of underground disposal panels 9 and 10 or double canister emplacement in boreholes. There is no near-term impact on WIPP operations, and there is sufficient time to implement any option if the forecast warrants under current management practices.

During the audit process, the IG staff found that consistency could be improved between the Transuranic Waste Performance Management Plan prepared by Carlsbad Field Office (CBFO) and Performance Management Plans prepared by waste generator sites, e.g. Hanford. The audit report does not reflect the integration process used by the Department to prepare the Performance Management Plans and the intense effort to coordinate among all the sites and CBFO and that this coordination is continuous and ongoing. The Environmental Management program has put in place new project controls to strengthen management of TRU waste and other accelerated cleanup activities, including: baseline configuration control of TRU waste shipments, formal bi-weekly approval of all waste shipments, performance-based contract incentives at waste shipping sites and WIPP, regular briefings for the Under Secretary on all aspects of WIPP and TRU waste shipping interfaces, and implementation of new corporate performance metrics, one of which is TRU waste disposed. These project management initiatives, which are acknowledged in the proposed final report, negate the need for additional actions. Our management focus is to identify issues, prioritize, establish options, and resolve

## Appendix 3 (continued)

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as needed. This management approach is being applied to the WIPP and must sustain throughout the life of this program.

The audit report misrepresents the Department's strategy for shipment of RH-TRU waste because it creates a misconception that the alternative CNS 10-160B shipping container is not being appropriately utilized. The Department owns a CNS 10-160B container and has used it for recent intersite RH-TRU waste shipments. Because of this experience, the Department understands the difficulties in using this cask due to its size, weight, and the 20 curie limit on transuranic radionuclides. The CNS 10-160B container, full or empty, requires special permits from states and is restricted from some highways. The Department has received negative feedback from truck drivers, state officials, and site workers about these difficulties. Documents and photographs were shared with the IG staff to support these claims, but these difficulties are not factored into the cost analysis and conclusions.

The cost analysis in the report is flawed. The analysis assumes unrealistic volumes of waste that can be shipped using the CNS 10-160B container. Initially, the IG analysis assumed that the CNS 10-160B container could be fully loaded with RH-TRU waste drums. When confronted with the Department's data that the number of drums in current shipments average about 50 percent efficiency due to radionuclide limits, the IG analysis cask loading assumption was changed to an arbitrary value of 75 percent efficiency. The IG staff are unwilling to accept the facts, i.e., 50 percent efficiency is our actual experience. The IG analysis also uses a cost of \$3.61 per shipment mile, which is not representative of shipping costs during operations at the level of current and planned operations at WIPP. The Department's analysis indicates that incremental costs will be \$1.85 per shipment mile, and the average costs for all contact-handled and RH-TRU shipments will be \$3.19 per mile based on the level of all planned TRU shipments. Although the report now includes the Department's efficiency and cost assumptions, I disagree with statements in the report that the Department's costs are unreasonable. Because the IG analysis continues to contain erroneous efficiency and cost assumptions, the cost savings claims are not credible.

The draft report alleges that the Department is not managing and integrating the RH-TRU waste program. This is simply false. There is a well documented record of interactions between generators and the Carlsbad Field Office to build the regulatory strategy and planning basis for RH-TRU waste at all levels. The major RH-TRU waste generator sites are represented at TRU waste corporate meetings and contribute to the deliberations. Evidence of this exists in the National TRU Waste Management Plan and Transuranic Waste Performance Management Plan, which fully describe the RH-TRU program and issues that are being worked. The Department is actively managing and fully integrating the RH-TRU program with other WIPP activities. The report also fails to acknowledge contributions of the new project management initiatives, described above, that are strengthening the management and coordination of all our accelerated cleanup efforts, including TRU waste disposal.

## Appendix 3 (continued)


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In addition, I disagree with the notion of establishing and implementing a new strategic performance measure related to RH-TRU waste. The EM program corporate performance measure placed on generator sites is the amount of TRU waste disposed at WIPP. This already applies to RH-TRU waste, when such shipments begin. Regulatory actions needed to begin disposal at WIPP are not well served by a performance measure.

I do concede that opportunities for management improvements exist, this is always the case. However as those are addressed, new opportunities will surface and we have established management systems that are robust enough to sustain them. Based on the above points, no additional actions are needed to address the recommendations in this IG audit report. Efforts are in place to appropriately manage changes in waste volume forecasts and schedules. Intensive planning efforts continue to implement Performance Management Plans to resolve any remaining inconsistencies and deal with changes. New project controls are in place already to ensure that TRU waste management activities are integrated. The RH-TRU waste generating sites already have adequate representation at corporate board meetings, and performance goals and measures are adequate to manage RH-TRU activities. Lastly, there is a policy in place for RH-TRU shipping that allows use of the alternative shipping container for instances where it makes good technical sense. No additional studies or actions are warranted at this time.

If you have any further questions, please call me on (202) 586-7709 or Patrice M. Bubar, Associate Deputy Assistant Secretary, Office of Integration and Disposition on (202) 586-5151.

  
Jessie Hill Roberson  
Assistant Secretary for  
Environmental Management

cc: Merley Lewis, ME-1.1  
Ines Triay, CBFO  
Frederick D. Doggett, IG-30

## Appendix 4

### DIFFERENCE IN NUMBER OF SHIPMENTS USING 72B AND 10-160B CASKS

Location	Volume in Cubic Meters (Note 1)	Shipments Using 72B Container (Note 2)	Shipments Using 10-160B Container (Note 3)	Difference in Number of Shipments
Richland, WA (Note 4)	1,077.5	1,212	692	520
Oak Ridge, TN	452.7	509	509	0
Idaho Falls, ID	304.0	342	195	147
Los Alamos/Sandia, NM	121.5	137	86	51
Pleasanton, CA	11.8	14	8	6
Argonne, IL	10.0	12	7	5
Niskayuna, NY	9.9	12	7	5
West Mifflin, PA	2.0	3	2	1
Argonne-West, ID	6.1	7	7	0

Notes:

1. Volumes for each site were obtained from the Remote Handled TRU Waste Inventory Report, dated June 2002. In calculating the difference in shipments, we excluded Oak Ridge, TN – a major remote-handled TRU site with 452.7 cubic meters of waste – since its waste treatment facility is designed for loading 72B casks. We also excluded remote-handled TRU from Argonne-West, ID, and some remote-handled TRU from Los Alamos, NM, since, for various reasons, some of this waste was not suitable to be shipped in the 10-160B.
2. For conservatism, we assumed that the 72B would be loaded at 100 percent efficiency. Specifically, rather than placing three 55-gallon drums in the 72B cask (.62 cubic meters) we assumed the 72B would be "direct loaded," which enables it to carry a volume of .89 cubic meters per shipment.
3. We assumed that the 10-160B would be loaded at 75 percent efficiency, with 1.56 cubic meters of waste. In response to a draft of this report, the Office of Environmental Management disagreed with our assumption and suggested that the 160B cask could achieve a loading efficiency of only 50 percent based on 3 casks previously loaded at the Columbus, OH, site. We recognize that the first three 10-160B casks were loaded at about 50 percent efficiency. However, our review of internal planning documents and related correspondence suggests that Environmental Management plans to achieve an efficiency rate of about 75 percent for 31.2 cubic meters of remote-handled TRU waste to be shipped from Columbus, OH, in about 20 future shipments. Further, we compared the relative TRU curie activity between various remote-handled TRU generator sites and found that Columbus, OH, has a smaller inventory and significantly higher curie activity with an average of 8.65 per cubic meter. Two large generators, Hanford and the INEEL, had average curie activities of 0.85 and 0.57 per cubic meter, respectively, which is one-tenth and one-fifteenth the curie activity for Columbus. Therefore, we believe that the estimate of 75 percent efficiency possible with the Columbus waste could be significantly exceeded with the majority of the rest of the waste to be shipped in 10-160B containers.
4. Includes waste shipped from Columbus, OH, and Santa Susana, CA, sent to Richland, WA, for interim storage.

## Appendix 5

### CALCULATION OF COST SAVINGS

Site	Total Mileage (Note 1)	Savings Using 10-Drum Container (Note 2)	Over-weight Fees (Round Trip) (Note 3)	Total Estimated Savings
Richland, WA (Note 4)	1,860,560	\$6,716,621	\$(521,345)	\$6,195,276
Idaho Falls, ID	418,362	1,510,287	(116,587)	1,393,700
Los Alamos/Sandia, NM	36,210	130,718	(2,580)	128,138
Pleasanton, CA	18,048	65,163	(2,248)	62,905
Argonne, IL	17,200	62,092	(3,475)	58,617
Niskayuna, NY	22,320	80,675	(10,071)	70,504
West Mifflin, PA	4,280	15,451	(2,626)	12,825
Total	<u>2,376,980</u>	<u>\$8,580,898</u>	<u>\$(658,932)</u>	<u>\$7,921,966</u>

#### Notes:

1. Round trip mileage was obtained from the Carlsbad Field Office.
2. We estimated potential savings using a transportation rate of \$3.61 per mile based on a weighted average for all years of the carrier contracts, including costs for "standby hours"—the time routinely spent by carriers waiting for trucks to be loaded. The Office of Environmental Management stated that \$3.61 is too high, and suggested that either \$3.19 or \$1.85 per mile would be more appropriate. However, the suggested price of \$3.19 per mile does not include the cost of standby hours nor average in multiple years' worth of varying transportation costs. Also, the suggested cost of \$1.85 per mile assumes the lowest possible rate achievable. Carrier rates decrease as minimal numbers of shipments are completed under the contract; thus, carrier rates are highest at the beginning of the year and lowest toward year-end. The \$1.85 rate represents the lowest possible rate achievable after established milestones are met. In addition, this rate does not include the cost of standby hours. Thus, we considered these rates to be unreasonable because they do not include life-cycle considerations.
3. Over-weight fees were obtained from the Institute for Regulatory Science, and were verified with various states' Departments of Transportation.
4. Includes waste shipped from Columbus, OH, and Santa Susana, CA, sent to Richland, WA, for interim storage.

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