

**THE NATIONAL TRU PROGRAM:
PROVIDING SOLUTIONS FOR THE MANAGEMENT OF ALL TRANSURANIC WASTE**

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ABSTRACT

The Department of Energy's Carlsbad Field Office (CBFO) develops and directs implementation of the National TRU Program, assesses site compliance with program requirements, and helps ensure the commonality of activities and assumptions among the TRU waste sites.

The mission of the National TRU Program is to implement a DOE TRU waste system that will safely and cost-effectively achieve the desired end state at each site. The vision for the program is that each site with current or future inventory of TRU waste reaches its desired end state. At sites scheduled for cleanup and closure, the desired end state is the removal of all TRU waste from temporary storage for permanent disposal at an approved facility. At sites with ongoing missions, the desired end state is not only removal of TRU waste from temporary storage but also planned removal of newly generated waste.

The major actions that have occurred in the past year that further the accomplishment of the Department's goals to dispose of TRU/TRU-mixed waste and clean up sites for their return to the private sector include:

- gaining significant efficiencies within the requirements for characterizing waste that will come to WIPP, to both speed up waste receipt at the WIPP and reduce the waste characterization costs to the sites
- issuing the updated National TRU Waste Management Plan
- completing important changes to the program infrastructure that correspond with the change in WIPP's focus from permitting and certification to operations and the expanding mission of the Carlsbad Field Office, and
- developing the scenario for a central characterization/certification capability

This paper addresses these and other major actions being taken to help ensure the timely and efficient characterization and removal of TRU waste from the weapons sites.

INTRODUCTION

U.S. Department of Energy (DOE) TRU waste is currently stored at 5 major DOE sites and a potentially large number of small-quantity sites; additional TRU waste will be generated at these sites during future operations and from clean-up activities. Most of the waste is the result of nuclear weapons production, testing, and research and is divided into two major categories: contact-handled (CH) and remote-handled (RH), depending on the external dose rate of the waste containers. TRU waste is also identified as being mixed or non-mixed. Mixed TRU waste contains hazardous constituents regulated under the Resource Conservation and Recovery Act (RCRA). Examples of these hazardous constituents are cleaning solvents and heavy metals. TRU waste that originated from defense sources and that meets the *Waste Acceptance Criteria for the Waste Isolation Pilot Plant* (WIPP WAC) (1) is eligible for disposal at the WIPP, a deep geological repository located in southeastern New Mexico constructed specifically for the disposal of TRU and TRU-mixed waste.

The DOE CBFO manages both the National TRU Program (NTP) and the Waste Isolation Pilot Plant (WIPP) facility. Four organizations provide primary support to these programs: Westinghouse TRU

Solutions (WTS), Sandia National Laboratories, Los Alamos National Laboratory, and the CBFO Technical Assistance Contractor (CTAC), Portage Environmental, Inc.

INFRASTRUCTURE CHANGES AT THE CARLSBAD FIELD OFFICE

During FY 2000, the DOE Office in Carlsbad was elevated to Field Office status. In addition, both the Management and Operations Contract (M&O) and the CBFO Technical Assistance Contract (CTAC) were competed and awarded this past year.

The Carlsbad Area Office was granted Field Office status

On September 22, 2000, the Secretary of Energy announced that the Carlsbad Area Office was being elevated to Field Office status. Carlsbad joins Rocky Flats, Golden, and Ohio as the Energy Department's fourth Field Office.

Under the Department's plan, the Carlsbad Field Office (CBFO) will:

- lead a new initiative to monitor the environment and help direct clean-up issues along the U.S. border with Mexico. In addition, it will promote university collaborations in science and technology and the use of clean, sustainable energy sources.
- support the development of new monitoring technologies for waste storage, using the Waste Isolation Pilot Plant (WIPP) state-of-the-art facilities as a model, and demonstrate those technologies to the international community.
- host members of the scientific community as they conduct advanced research into the science of repositories and "particle" physics – to understand the smallest and most fundamental components of matter; and
- deploy new trucks and trailers that will serve as mobile systems for monitoring and characterizing waste at sites around the country in preparation for disposal at the WIPP.

The WIPP website is found at: <http://www.wipp.carlsbad.nm.us/>

The WIPP M&O contract was awarded

On December 15, 2000, the Secretary of Energy announced the award of the \$500M five year contract for the management and operation of the Department's Waste Isolation Pilot Plant to Westinghouse TRU Solutions, LLC (WTS). WTS was formed by Westinghouse Governmental Services Company LLC and Roy F. Weston, Inc. WTS assumed responsibility for operation of the facility on February 1, 2001. The TRU Solutions web site is found at: <http://www.trusolutionsnm.com/>

The CBFO Technical Assistance Contract was awarded

On November 28th, 2000, the Department of Energy awarded the \$28.8M five-year technical assistance contract to Portage Environmental, Inc., a small business headquartered in Idaho Falls, ID. The CTAC contractor is responsible for safety oversight, auditing assessment certification and independent oversight, and environmental compliance and regulatory oversight to assist CBFO personnel. The Portage Environmental web site is found at: <http://www.portageenv.com/>

TRU WASTE STEERING COMMITTEE

The mission of the TRU Waste Steering Committee (TWSC) is to further the goal of the National TRU Program by providing a forum for ensuring that the needs and experience of both the TRU waste sites and TRU waste treatment, storage, transportation, and disposal facilities are brought to the coordination of the national program.

Members of the committee consist of representatives from affected DOE Operations Offices, DOE/EM managers whose programs affect, or are affected by the NTP and other DOE/HQ Program Secretarial Office representatives.

The Objectives of the TRU Waste Steering Committee are to:

- Ensure that the TRU waste program is recognized and maintained as a high priority at the TRU waste sites;
- Establish a national program organization that includes the full representation and accountability of the TRU waste sites;
- Provide a forum for the identification and timely resolution of NTP management issues; and,
- Provide for direct and timely communication between the TRU waste sites and the NTP.

The TWSC meets three times a year: the next meeting will be in April in Las Vegas, NV. The minutes of the TWSC meetings are available on the web at: <http://www.wipp.carlsbad.nm.us/suyw/index.htm>

NAS/NRC BOARD ON RADIOACTIVE WASTE MANAGEMENT

The National Research Council report "Improving Operations and Long-Term Safety of the Waste Isolation Pilot Plant: Interim Report" was released on Friday, April 28, 2000. This report provides recommendations to the U.S. Department of Energy on issues related to the operation and long-term performance of the Waste Isolation Pilot Plant that merit immediate consideration and action. The WIPP TRU Subcommittee is engaged in a three-year study to review, evaluate, and make recommendations on (i) future geotechnical research activities to improve understanding of the capability of WIPP to isolate radioactivity from the environment and (ii) technical options to safely streamline the system of characterizing, treating, and transporting TRU waste from DOE storage sites to the WIPP repository. Their final report is expected in the spring of 2001.

Copies of the Interim Report can be obtained by contacting the National Academy Press or visiting their website: <http://www.nap.edu>.

NATIONAL TRU WASTE MANAGEMENT PLAN

The National Transuranic Waste Management Plan (2) was updated and issued in February 2001. It describes a TRU waste management configuration that integrates site-specific waste management planning with the waste handling and disposal capabilities of WIPP. The plan provides an integrated TRU waste management system that complements and supports the DOE-EM's planning efforts. The performance goals of the plan are to:

- Provide for TRU-waste site compliance with site-specific commitments, agreements, and orders
- Accelerate reduction of risk and mortgage by coordinating programs among sites
- Maximize disposal of TRU waste by the end of fiscal year 2006

- Maximize WIPP waste-handling and disposal efficiency

Disposal of CH-TRU waste began in FY99; disposal of RH-TRU waste will begin in FY02. Table I presents the latest estimated volumes of TRU waste by category at the major TRU waste sites and small-quantity sites.

The *National TRU Waste Management Plan* can be accessed at the following site:

<http://www.wipp.carlsbad.nm.us/library/ntpmp/MPFront.pdf>

TABLE I. TRU Waste Storage Locations and Pretreatment Volumes*

Site	Location	Total Waste Volumes (m ³)	
		Contact-Handled TRU Waste	Remote-Handled TRU Waste
Major Sites:			
Hanford Reservation (HR)	Richland, WA	32,000	900
Idaho National Engineering and Environmental Laboratory (INEEL)	Idaho Falls, ID	77,468.3	85
Los Alamos National Laboratory (LANL)	Los Alamos, NM	22,856.5	123.5
Oak Ridge National Laboratory (ORNL)	Oak Ridge, TN	1,482.6	2,253.5
Rocky Flats Environmental Technology Site (RFETS)	Golden, CO	15,864	0
Savannah River Site (SRS)	Aiken, SC	14,235	0
Small-Quantity Sites:			
Argonne National Laboratory-East (ANL-E)	Argonne, IL	246	77
Argonne National Laboratory-West (ANL-W)	Idaho Falls, ID	0	54.5
ARCO Medical Products Company (ARCO)	West Chester, PA	<1	0
Babcock & Wilcox – NES (B&W)	Lynchburg, VA	18.1	0
Battelle Columbus Laboratories (BCL)	Columbus, OH	4.2	20.8
Bettis Atomic Power Laboratory (BAPL)	West Mifflin, PA	17.6	3
Energy Technology Engineering Center (ETEC)	Santa Susana, CA	2.3	8.7
General Electric-Vallecitos Nuclear Center (GE-VNC)	Pleasanton, CA	9	11.8
Knolls Atomic Power Laboratory (KAPL)	Niskayuna, NY	0	10.5
Knolls Atomic Power Laboratory – Nuclear Fuel Services (KAPL-NFS)	Erwin, TN	213	0
Lawrence Berkeley Laboratory (LBL)	Berkeley, CA	1.1	0
Lawrence Livermore National Laboratory (LLNL)	Livermore, CA	1,515	0
Lovelace Respiratory Research Institute (LRRI) (1)	Albuquerque, NM	19.9	0
Mound Plant (MD)	Miamisburg, OH	247	0
Missouri University Research Reactor (MURR)	Columbia, MO	1.4	0
Nevada Test Site (NTS)	Nevada	665	0
Paducah Gaseous Diffusion Plant (PGDP) (2)	Paducah, KY	11.7	0
Sandia National Laboratories (SNL) (1)	Albuquerque, NM	108.4	25.5
Separations Process Research Unit (SPRU)	Schenectady, NY	470	0
U.S. Army Material Command (USAMC)	Rock Island, IL	2.5	0
West Valley Demonstration Project (WVDP)	West Valley, NY	93	479
Total Waste Volumes		167,411.7	4,027.3

*All volumes are prior to treatment and repackaging. These volumes are from the National TRU Waste Management Plan, Revision 2.

- (1) LRRI and SNL volumes to be sent to LANL for treatment and/or repackaging, and then to WIPP. Volume numbers are included in LANL values and therefore not included in totals.
- (2) Approximately 11.7 m³ to be shipped from PGDP to ORNL for processing. Volume numbers included in ORNL and therefore not included in totals.

MODIFICATIONS TO THE WIPP HAZARDOUS WASTE FACILITY PERMIT

In the past year several modifications have been made to gain efficiencies within the requirements of the WIPP HWFP. Modifications to the Permit are made in a formal manner in accordance with 40CFR270.42. There are generally three Classes of modifications:

- Class 1 modifications to the permit were identified and issued: such modifications are considered minor and can be implemented quickly.
- Class 2 modifications to the permit were identified and issued: such modifications are substantive and require about four months to put in place.
- Class 3 modifications to the permit are being considered for development and issuance: such modifications are substantive and generally require a year or longer to put in place.

A version of the Permit that both highlights and incorporates all of the modifications that have been made to date appears at the following website:

<http://www.wipp.carlsbad.nm.us/library/rcrapermits/permit%20sections.pdf>

OPTIMIZATION PROJECT

The National TRU Waste Management Plan states three goals for the National TRU Program:

- Maintain compliance with environmental, safety, and other regulatory requirements, agreements, and orders;
- Operate an integrated system to dispose of the DOE's TRU waste; and
- Optimize TRU waste system operations

The National TRU Waste System Optimization Project was created to provide the focus for making the TRU waste system as efficient as possible. It is being planned and managed in an interactive, coordinated, participatory relationship with DOE cleanup and closure sites, regulators, and stakeholders. The two near-term products of this effort will be the Strategic Plan for the Optimization Project, and the Optimization Project Implementation Plan.

TRU WASTE WITHOUT A CLEAR PATH FOR DISPOSAL

Waste without a current plan for disposal is TRU waste that is either prohibited from disposal at WIPP or will be generated after the end of WIPP's planned operational life. Although a small amount, the waste of primary concern is that prohibited from disposal at WIPP by current legislation, such as waste that is RCRA reactive or corrosive, and TRU waste generated from non-defense activities. The remainder of the waste is projected to be generated after the end of WIPP's planned operational life of 35 years. The overarching concern will be to ensure the waste has a disposal path: the DOE is responsible for disposition of all TRU waste under its control.

DOE ORDER 435.1

DOE Order 435.1, "Radioactive Waste Management", was issued on July 9, 1999. The Order applies to all new and existing radioactive waste management facilities, operations, and activities. Requirements are to be implemented as soon as possible with compliance to have been achieved within one year of issuance. If compliance with this Order was not achieved by July 2000, the Field Element Manager was to have requested approval to extend the compliance date to no later than October 1, 2001, from the cognizant Program Secretarial Officer (EM-1). The issuance of Revision 2 of the National TRU Waste Management Plan fulfills the obligation of the Deputy Assistant Secretary for Integration and Disposition

to develop a systemwide program plan for TRU waste. DOE Order 435.1 can be accessed at:
http://peak.lanl.gov:1776/cgi-bin/w3vdkhgw?qryGYAs2qny_;doe-480

CENTRALIZED CHARACTERIZATION APPROACH

An alternative strategy being considered for smaller TRU waste generator sites is to characterize waste for transportation only and then send it to the WIPP for disposal characterization in a centralized characterization facility (CCF). Once characterized and certified, the waste would be disposed of at the WIPP. DOE is currently considering requesting regulatory approval for this approach from the New Mexico Environment Department. The centralized characterization approach will be beneficial to sites with small quantities of TRU waste as it avoids the large initial costs of setting up the characterization infrastructure and achieving site certification. It is also potentially useful to aid larger sites in meeting their state's agreements for disposal of waste if their infrastructure is insufficient to certify waste at a high enough rate.

REFERENCE

1. U. S. DEPARTMENT OF ENERGY, "Waste Acceptance Criteria for the Waste Isolation Pilot Plant," DOE/WIPP-069, Revision 7, (November 1999). The current version of the WIPP WAC is available on-line at: <http://www.wipp.carlsbad.nm.us/library/wac/chwac.pdf>
2. U.S. DEPARTMENT OF ENERGY, "The National TRU Waste Management Plan," DOE/NTP-96-1204, Revision 2, (December 2000). The Plan can be accessed at the following site: <http://www.wipp.carlsbad.nm.us/library/ntpmp/MPFront.pdf>