



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

FEB 17 2017

OFFICE OF
AIR AND RADIATION

Mr. Todd Shrader, Manager
Carlsbad Field Office
U.S. Department of Energy
P.O. Box 3090
Carlsbad, New Mexico 88221-3090

Dear Mr. Shrader:

The U.S. Environmental Protection Agency conducted inspections at the Waste Isolation Pilot Plant (WIPP) site during the week of November 7, 2016 as part of the Agency's continuing oversight. These inspections were performed under the authority of 40 CFR 194.21 and 40 CFR part 191, subpart A. The 2016 inspection was timed so that the Agency could observe the status of WIPP programs and procedures following facility recovery activities and prior to the resumption of active waste emplacement. The EPA team inspected both the WIPP surface and underground facilities, using established inspection checklists. This letter transmits the EPA's inspection reports.

Based on the activities documented in the enclosed reports, the EPA inspection team found that the DOE and its contract staff at the WIPP continue to meet commitments and regulatory requirements to track waste, monitor the disposal system, measure any radioactive releases, calculate potential dose to the public and document the results of these activities. None of these programs have degraded and several have improved during facility recovery. WIPP site personnel were attentive and accommodating, and the EPA inspection team was given excellent access to facilities, staff and information. Some minor areas for improvement were noted.

Copies of the enclosed reports will be placed on the EPA public docket at <http://www.regulations.gov>. If you have any questions regarding the enclosed reports, please contact Jonathan Walsh at (202) 343-9238 or walsh.jonathan@epa.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Alan D. Perrin".

Alan D. Perrin
Acting Director
Radiation Protection Division

Enclosures (3)

cc: Sean Dunagan, DOE/CBFO
Jeff Carswell, DOE/CBFO

E-DOCKET: EPA-HQ-OAR-2001-0012-0469

2016 - Monitoring Inspection Report

**INSPECTION No. EPA-WIPP-11.07-09b
OF THE
WASTE ISOLATION PILOT PLANT
November 7-9, 2016**

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

January 2017

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1 Executive Summary

The U.S. Environmental Protection Agency (EPA) conducted an inspection of the Department of Energy's (DOE) Waste Isolation Pilot Plant (WIPP) from November 7 to November 9, 2016, as part of the EPA's continuing WIPP oversight program. The purpose of this inspection was to verify that the DOE continues to adequately monitor ten parameters listed in the Compliance Certification Application (CCA), Volume 1, Section 7.0, in particular Table 7-7. Attachments A and B contain the inspection plan and the checklist used by the EPA inspectors, and Attachment C lists documents reviewed by the EPA. The monitoring inspection examines the monitoring of geomechanical, hydrological, waste activity, drilling-related and subsidence parameters.

During this inspection, as in 2015, the facility was undergoing active recovery and not emplacing waste. In February of 2014, two separate incidents – a salt haul truck fire and a radiological release – took place, which halted facility operations and continue to restrict access to areas of the underground. In April 2014, the EPA conducted an inspection under Subpart A in response to the radiological release, but did not address the monitoring of parameters. The EPA conducted its most recent prior monitoring inspection in April 2015 (E-Docket EPA-HQ-OAR-2001-0012-0458). The EPA conducted the November 2016 inspection described in this report after the site had completed major recovery activities in order to evaluate the state of the facility as it prepares to resume waste emplacement. The EPA inspectors toured locations where measurements are taken, examined data, and reviewed documents and procedures directing these monitoring activities. The inspection checklist in Attachment A provides details of these inspection activities.

The EPA found that the site has continued to effectively implement the monitoring programs at the WIPP throughout facility recovery for all areas reviewed. The inspectors also confirmed that the results of the DOE monitoring programs are reported annually. The inspection team did not identify any findings or concerns.

2 Scope

The EPA WIPP Compliance Criteria (40 CFR part 194.42(a)) requires the DOE to “conduct an analysis of the effects of disposal system parameters on the containment of waste in the disposal system.” The results of these analyses were included in the 1996 Compliance Certification Application (CCA), confirmed in the most recent Compliance Recertification Application (CRA), and used to develop pre-closure and post-closure monitoring requirements.

Volume 1, Section 7.0, of the CCA documents the DOE's analysis of monitoring parameters. Table 7-7 of the CCA lists the ten parameters that the DOE determined may affect the disposal system. These parameters are grouped into major categories and listed in Table 1. The EPA accepted these ten monitoring parameters in the 1998 Certification Decision and confirmed them in the 2010 Recertification Decision.

Table 1: Monitored Parameters

Parameter Category	Parameters
Geomechanical	Creep closure Extent of deformation Initiation of brittle deformation Displacement of deformation features
Hydrological	Culebra groundwater composition Change in Culebra groundwater flow direction
Subsidence	Subsidence measurements
Drilling-Related	Drilling rate Probability of encountering a Castile brine reservoir
Waste Activity	Waste Activity

This inspection was performed under authority of 40 CFR 194.21, which authorizes the EPA to verify the continued effectiveness of the parameter monitoring program at the WIPP. Inspection activities included an examination of monitoring and sampling equipment both on and off site, and in the underground. The EPA also reviewed sampling procedures and measurement techniques and verified implementation of an effective quality assurance program (see the document list in Attachment C of this report).

3 Inspection Team, Observers and Participants

The inspection team consisted of four EPA staff. Numerous DOE staff and contractors participated in the inspection; below is a partial list.

Table 2: Inspection Team

Inspection Team Member	Position and Inspection Focus	Affiliation
Jonathan Walsh	Inspection Leader	EPA – ORIA
Nick Stone	Inspector	EPA – Region 6
Jay Santillan	Inspector	EPA – ORIA
Michael Murphy	Inspector	EPA – Region 5

Table 3: Inspection Participants

Participant	Affiliation
Larry Madl	RES, Inspection Coordinator
Amanda Davis	RES
Russ Patterson	CBFO
Anderson Ward	CBFO
Steve Kouba	RES
Ed Lewis	NWP
Rey Carrasco	NWP
Paul Shoemaker	SNL
Stewart Jones	RES
Rick Salness	RES
Chris Luoma	NWP
Johnathan Callicoat	RES
Rob Watson	RES
Ty Zimmerly	NWP

Affiliations:

CBFO: DOE Carlsbad Field Office

CTAC: Carlsbad Technical Assistance Contractor

NWP: Nuclear Waste Partnership

RES: Regulatory and Environmental Services

SNL: Sandia National Labs

The inspection began on Monday morning, November 7, with an opening meeting at the WIPP site. Later that morning, EPA Inspectors observed the waste stored in the Waste Handling Building and discussed plans with the WIPP staff on resumption of waste emplacement. In the afternoon, inspectors discussed changes in the Groundwater Program since the last inspection. On the morning of November 8, inspectors discussed changes in the Delaware Basin Monitoring Program in the Cascades building in Carlsbad, followed by discussions in the changes in the Subsidence Monitoring Program at the WIPP site. In the afternoon, inspectors met with staff responsible for monitoring geotechnical parameters in the WIPP underground and then toured the uncontaminated areas of the underground repository. On the morning of November 9, inspectors observed air monitoring procedures at the WIPP site. In the afternoon, inspectors toured WIPP Laboratories in Carlsbad, discussed geotechnical monitoring data with Sandia

National Labs in Carlsbad, and discussed WDS waste emplacement tracking at the Skeen-Whitlock Building in Carlsbad. The inspection closeout meeting was held during the afternoon of November 9 at the Skeen-Whitlock Building.

EPA inspectors reviewed three fundamental areas to verify continued implementation of the DOE parameter monitoring program during the pre-closure phase: 1) written plans and procedures, 2) quality assurance procedures and records, and 3) results of the monitoring program in the form of raw data, intermediate reports, and final annual reports.

3.1 Monitoring of Geomechanical Parameters

The DOE committed to measure four geomechanical parameters in the CCA: creep closure, extent of deformation, initiation of brittle deformation, and displacement of deformation features. These parameters are monitored through convergence monitoring, deformation monitoring, fracture mapping and stratigraphic and fracture mapping, respectively.

Geomechanical monitoring parameters have had the greatest potential to be affected by the incident and facility recovery. The radiological release prevented personnel access to the underground between February and April of 2014, and continues to greatly restrict access to many areas of the repository. This interrupted routine manual geotechnical measurements and roof bolting and other ground control measures that are informed by these measurements. By the time of the April 2015 inspection, geomechanical monitoring had been restored, and a significant component of facility recovery involved catch-up roof bolting. Despite this, not all areas of the underground could be fully maintained. In 2016, the DOE reported rock falls in the access drifts to Panels 3 and 4, and a large rock fall in Panel 7, Room 4 – all areas that had been identified as unstable by the geotechnical monitoring program. Prior to the inspection, DOE had proposed closing the southern end of the repository (Panel 9) to reduce the amount of required ground control.

The inspection team met with Ed Lewis and Rey Carrasco on the afternoon of November 8. The geotechnical monitoring group demonstrated methods for analyzing extensometer and convergence point data and provided the inspection team with copies of example extensometer and convergence point data for Panel 7, Room 4 (Figures 1 to 4). Convergence of the mine drifts is measured and plotted (Figure 1) and the rate of displacement over time is calculated using the same measurements (Figure 2). With the addition of bolts, displacement rates also rapidly decrease (Figures 3 and 4). The rapid increase in displacement rate observed in Panel 7, Room 4 (Figure 2) was the basis for restricting personnel access to that room prior to the rock fall.

Closing areas of the repository, as proposed, would mean discontinuing the collection of manual geotechnical data for those areas. The inspection team went to Sandia National Labs, Carlsbad (SNL) to discuss the implications of this decision on the collection of data that might enhance understanding of repository behavior. NWP reports geomechanical data to SNL for analysis. SNL staff indicated that they use data from NWP reports (Figures 1-3), but do not dictate to the site where and how to collect the data. The geomechanical monitoring primarily measures the acute brittle deformation of the salt due to the stress created by mining, and not ductile creep closure.

Figure 1: Convergence point data from Panel 7, Room 4

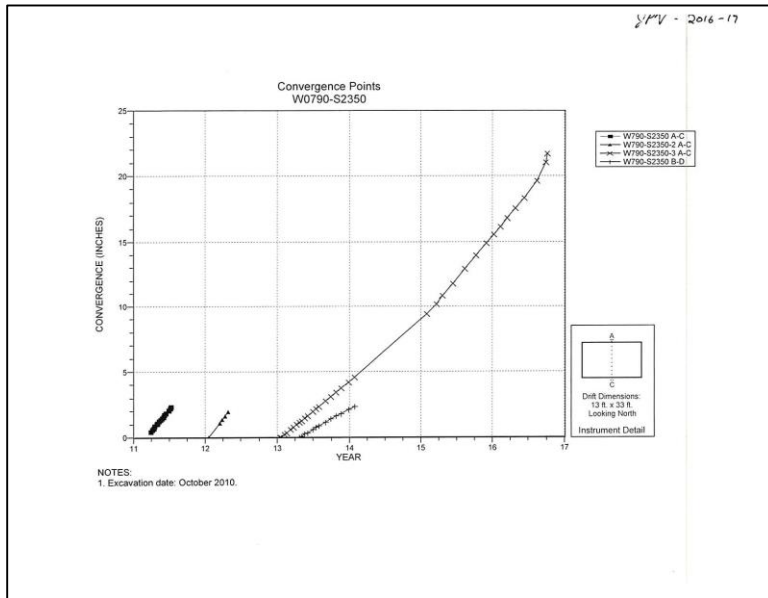


Figure 2: Displacement rate data from Panel 7, Room 4

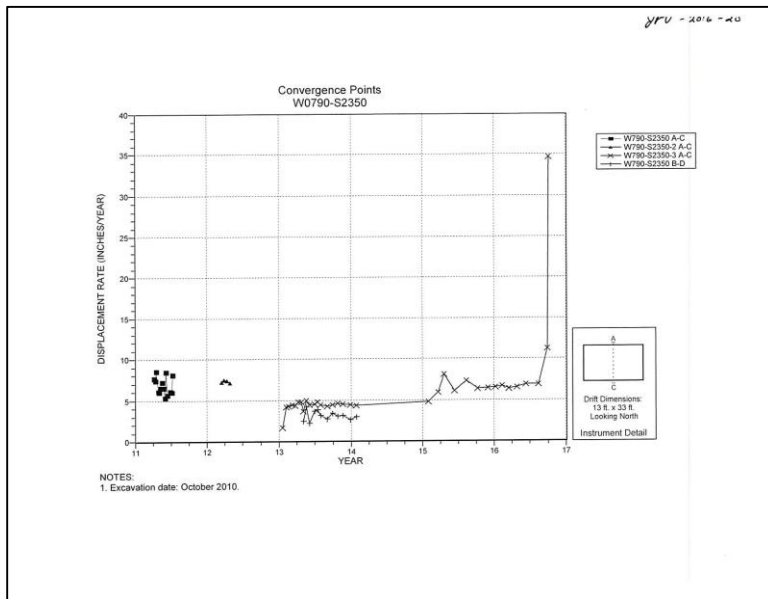


Figure 3: Displacement rate data from Panel 7, Room 5 after the addition of bolts

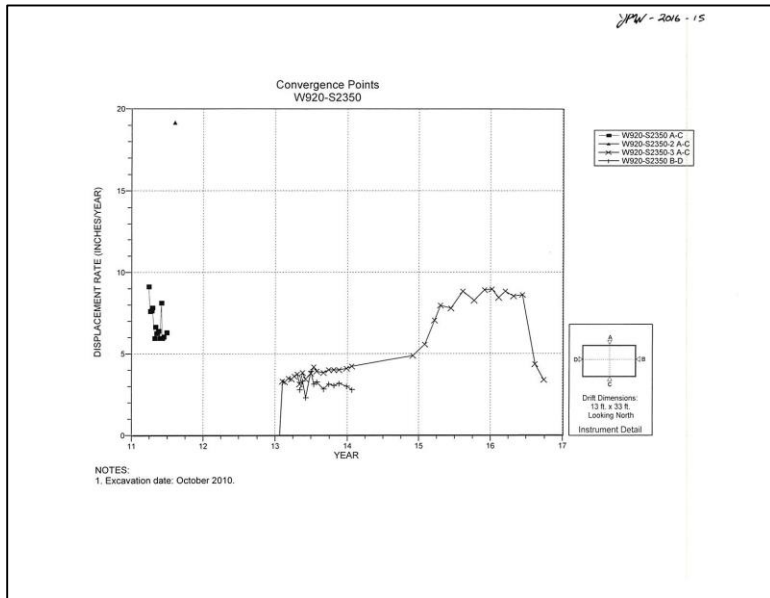


Figure 4: Bolts within the repository to slow salt displacement rate



3.2 Monitoring of Hydrological Parameters

The DOE committed to measure two hydrological parameters in the CCA: 1) Culebra groundwater composition, and 2) changes in the Culebra groundwater flow direction. Culebra flow direction is determined by using annual measurements of Culebra fresh water heads as inputs to a calibrated potentiometric map. Programmatic functions and responsibilities are outlined in the WIPP Groundwater Monitoring Program Plan, WP 02-1, Revision 13, effective 2/23/15. Results of this program are published in the WIPP Annual Site Environmental Report (ASER).

On the afternoon of November 7, Rick Salness met with inspectors on the WIPP hydrology program. Updates continue to the Culebra potentiometric monitoring well network. The hydrology program has purchased a new mobile lab for conducting water quality sampling, and also made major revisions were made to the procedure Field Parameter Measurements and Final Sample Collection (WP 02-EM1010 Rev 2) in 2014. Upon reading the procedure, the EPA inspectors found the new revision to be unclear, because the procedure defers to instrument manuals and software user's guides for instrument calibration and does not address the possibility of the instrument failing calibration. The 2017 monitoring inspection should be timed so that EPA personnel are able to observe site personnel performing the sampling procedures, which will allow a more complete review of this procedure. Based on the presentation and a review of the Waste Isolation Pilot Plant Annual Site Environmental Report for 2015 (DOE/WIPP-14-3572, September 2016), EPA inspectors did not identify any concerns or findings related to the monitoring of hydrological parameters.

3.3 Monitoring of Waste Activity Parameters

In the CCA, the DOE committed to monitor the total radioactivity of waste emplaced in the WIPP. Waste activity is collected for each container, shipped to the WIPP, and stored in the WIPP Waste Data System (WDS). The WDS is a database which tracks total radioactivity as well as other waste components emplaced in the WIPP (e.g., ferrous and non-ferrous metals, organic materials and MgO as well as radionuclide activity). Requirements for the WDS are discussed in the *WIPP Waste Data System Program and Data Management Plan*, WP 08-NT.01 Revision 31.

On the afternoon of November 9, inspectors met with Chris Luoma, a WDS administrator, who answered questions and generated reports, including the current total activities of the ten EPA-tracked radionuclides emplaced in the repository. The results are included in Table 4. There have been no changes since the last inspection as no waste had been emplaced since February, 2014.

The EPA inspectors did not identify any concerns or findings related to the monitoring of waste activity.

Table 4: Summary Totals WDS Nuclide Report

Panel: ALL Room: ALL			
Radionuclide	Repository CH Activity (Ci)	Repository RH Activity (Ci)	Total Repository Activity (Ci)
AM-241 Americium 241	2.581E5	6.208E2	2.587E5
CS-137 Cesium 137	1.421E1	1.444E4	1.444E4
PU-238 Plutonium 238	4.828E5	7.289E2	4.835E5
PU-239 Plutonium 239	3.333E5	3.839E2	3.337E5
PU-240 Plutonium 240	8.239E4	2.802E2	8.267E4
PU-242 Plutonium 242	2.72E1	3.821E-1	2.759E1
SR-90 Strontium 90	1.595E1	7.599E3	7.615E3
U-233 Uranium 233	6.536E0	3.848E-1	6.921E0
U-234 Uranium 234	8.669E1	1.14E0	8.783E1
U-238 Uranium 238	1.758E1	3.915E-2	1.762E1
Totals:	1.157E6	2.405E4	1.181E6

3.4 Monitoring of Drilling Related Parameters

The DOE committed to measuring two drilling related parameters in the CCA: the drilling rate and the probability of encountering a Castile brine reservoir. Data are collected through a program that is described in the *Delaware Basin Drilling Surveillance Plan*, WP 02-PC.02 Rev 6 (12/3/14). The results of the surveillance program are documented quarterly and reported annually. The most recent Delaware Basin Monitoring Annual Report (DOE/WIPP-16-2308, September 2016) was provided in the inspection documentation.

On the morning of November 7, inspection staff met with the staff of the Delaware Basin Surveillance Program. They reported no major changes to the program. In addition, the team provided the inspectors with an overview of their surveillance methods, including their routine monitoring of drilling reports. The team has incorporated personal communications with drilling companies onsite into their procedures as a means to update the database of Castille brine encounters.

3.5 Monitoring of Subsidence Parameters

In the CCA, the DOE committed to measure subsidence of the ground surface at the WIPP site. This parameter is measured using procedures documented as part of the *WIPP Underground and Surface Surveying Program* WP 09-ES.01, Rev. 7. The DOE performs subsidence surveys at the site annually during pre-closure operations. The most recent survey results are provided in the *WIPP Subsidence Monument Leveling Survey 2014*, DOE/WIPP 14-3541. The report shows that survey loop vertical closures and accuracies meet the standards set by the National Geodetic Survey for Second Order Class II surveys, and fulfills the requirement that the subsidence parameter is measured and reported on a yearly basis.

On the morning of November 9, the inspection team met with Ty Zimmerly to discuss changes to the surface subsidence monitoring program. There was no interruption to the surveying schedule due to the operational incidents at the WIPP, and the most recent change to the program was updating operating procedures for the new Leica NA3003 purchased in 2013. The team has received a new computer and has updated their data processing programs to run on Windows 7. During this inspection, the subsidence team demonstrated the operation of the new hardware and operating system by performing a download of recent field data (JPW-2016-13, JPW 2016-14). Procedure WP 09-ES4001 has been updated to reflect these hardware and software changes.

4 Summary of findings, observations, concerns, and recommendations

Based on program documents, interviews, and field demonstrations during the inspection, the EPA concludes that the monitoring program covers the ten monitoring parameters required by the EPA's 1998 Certification Decision. This inspection determined that monitoring sample collection, and sample/data analysis procedures were complete and appropriate; that staff were adequately trained and implemented the procedures adequately; and that appropriate quality assurance measures are applied. The EPA continues to find that the DOE has maintained adequate parameter monitoring during the past year and has the procedures and requirements in place to sustain their program into the next year. The EPA has no findings or concerns.

Attachment A: Inspection Plan

WIPP Monitoring Inspection Plan 40 CFR 194.42 for the year 2016

Purpose:

The purpose of this inspection is to verify that the Waste Isolation Pilot Plant (WIPP) is collecting monitoring data in accordance with commitments made in the documentation to support the EPA's certification decision, in particular CCA, Volume 1, Section 7.2, Table 7.7 and Appendix MON. This inspection is part of the EPA's continued oversight to ensure that DOE appropriately and accurately monitors the performance of significant parameters of the disposal system, and is conducted under the authority of 40 CFR 194, Sections 21, Inspections, and 42, Monitoring.

Scope:

Inspection activities will include an examination of monitoring and sampling equipment both on and off site, and in the underground. A review of sampling procedures and measurement techniques may be conducted. Quality assurance procedures and documentation for each of these activities will also be reviewed.

The EPA will meet with staff from the WIPP Geotechnical Engineering Program, the WIPP Groundwater Monitoring Program, the WIPP Underground and Surface Surveying Program, the Delaware Basin Drilling Surveillance Program, and WDS database administrators. The EPA will review procedures used and data and reports produced by each of these groups, as they relate to monitored parameters at WIPP.

Focal Areas of This Year's Inspection:

As with the 2015 inspection, the EPA is interested in changes made the monitoring program as a result of the 2014 incidents and restricted access to the underground. Specifically, this will include a discussion of which areas of the mine are no longer monitored, either due to radioactive contamination or the discontinuation of ground control. The EPA is particularly interested in whether recent data can refine our understanding of salt behavior and creep closure. The inspection team will meet with Sandia National Labs staff to discuss the analysis of monitoring data.

Location: This inspection will be held at the WIPP facility location twenty-six miles south east of Carlsbad, New Mexico and the surrounding vicinity as needed.

Duration: The EPA expects to complete its inspection in three days. Each day will begin with an opening meeting at 8:00 a.m. and end before 5:00 p.m. with a closeout session.

Expected Dates: November 7-9, 2016

Documents for Review: Electronically provide the latest versions of procedures and reports related to parameter monitoring. Please identify any procedures that have changed as a result of facility recovery.

Attachment B: 2015 Monitoring Inspection Checklist

Checklist for Geotechnical Monitoring Commitments– November 2016			
	Monitoring Commitments	Geotechnical Parameters	
#	Question	Comment (Objective Evidence)	Result
1	<p>Does the DOE demonstrate that they have implemented plans/programs/procedures to measure -</p> <ul style="list-style-type: none"> a) Creep Closure; b) Extent of Deformation; c) Initiation of Brittle Deformation and d) Displacement of Deformation Features <p>during the pre-closure phase of operations as specified in the CCA part of the geomechanical monitoring system? (CCA, Volume 1, Table 7-7; App MON, Table MON-1) 40 CFR 194.42 (c) and (e)</p>	<p><i>WIPP Geotechnical Engineering Program Plan, WP 07-01 Rev 7,</i> documents plans to measure, report, and the QA requirements related to these activities. Section 3.0 of WP 07-01 documents the geomechanical monitoring program and records the activities associated with this program. Section 4.0 of WP 07-01 documents the quality assurance requirements for these activities.</p> <p>The program has recovered from disruptions due to the 2014 radiological contamination of the underground. Geotechnical staff demonstrated the adequacy of the program. Inspectors reviewed their methods and data and verified that the geomechanical parameters continued to be appropriately monitored by the DOE.</p> <p>Results of this program are documented annually in the Geotechnical Analysis Report for each reporting period (DOE/WIPP-16-3572).</p>	SAT
2	<p>Does the DOE demonstrate that they have implemented an effective quality assurance program for item 1 above? 40 CFR 194.22</p>	<p>Yes. Details of the program are found in the Nuclear Waste Partnership, LLC Quality Assurance Program Description, WP 13-1, Rev. 36, effective 12/22/2015.</p>	SAT
3	<p>Does the DOE demonstrate that the results of the geotechnical investigations are reported annually? (CCA, App. MON, Page MON-10)</p>	<p>WP 07-01 Rev 7, Section 3.2 requires that analysis be performed annually and results are published in the annual geotechnical analysis report. The report for calendar year 2015 was</p>	SAT

		provided and reviewed by inspectors (DOE/WIPP-16-3572).	
Checklist for Hydrologic Monitoring Commitments – November 2016			
	Monitoring Commitments	Hydrological Parameters	
#	Question	Comment (Objective Evidence)	Result
1	Does the DOE demonstrate that they have implemented plans/programs/procedures to measure – a) Culebra Groundwater Composition; (CCA, Volume 1, Table 7-7; App MON, Table MON-1) 40 CFR 194.42 (c) and (e)	Yes. See WIPP Groundwater Monitoring Program Plan, WP 02-1, Rev. 14, effective 03/30/2016.	SAT
	b) Change in Culebra Groundwater Flow Direction during the pre-closure phase of operations as specified in the CCA part of WIPP’s groundwater monitoring plan? (CCA, Volume 1, Table 7-7; App MON, Table MON-1) 40 CFR 194.42 (c) and (e)	Yes. See: See WIPP Groundwater Monitoring Program Plan, WP 02-1, Rev. 14, effective 03/30/2016; Waste Isolation Pilot Plant Annual Site Environmental Report for 2015, DOE/WIPP-16-3572 and the Annual Culebra Groundwater Report.	
2	Does the DOE demonstrate that they have implemented an effective quality assurance program for item 1 above? (CCA, App MON, Page MON-22) 40 CFR 194.22	Yes. See WIPP Groundwater Monitoring Program Plan, WP 02-1, Rev. 14, Sections 5 and 9.	SAT
3	Does the DOE demonstrate that the results of the groundwater monitoring program are reported annually? (CCA, App. MON, Page MON-22)	Yes. See Waste Isolation Pilot Plant Annual Site Environmental Report for 2015, DOE/WIPP-16-3572.	SAT
Checklist for Waste Activity Monitoring Commitments – November 2016			
	Monitoring Commitments	Waste Activity Parameters	
#	Question	Comment (Objective Evidence)	Result
1	Does the DOE demonstrate that they have implemented plans/programs/procedures to measure - a) Waste Activity?	<i>WIPP Waste Data System Program and Data Management Plan</i> , WP 08-NT.01 Revision 31 describes the programmatic plan used to monitor	SAT

	(CCA, Volume 1, Table 7-7; App MON, Table MON-1) 40 CFR 194.42 (c) and (e)	and store waste activity information.	
2	Does the DOE demonstrate that they have implemented an effective quality assurance program for item 1? (CCA, App WAP, page C-30) 40 CFR 194.22	Yes. See Nuclear Waste Partnership, LLC Quality Assurance Program Description, WP 13-1, Rev. 36, and Waste Data System Software Quality Assurance Plan, WP 08-NT.04, Rev. 23.	SAT
3	Does the DOE demonstrate that the results of the waste activity parameters are reported annually? (CCA Volume, Section 7.2.4 Reporting)	Results are have not changed since the last inspection. The most recent version of this is found in the Annual Transuranic Waste Inventory Report and Annual Change Report.	SAT

Checklist for Drilling Rate Monitoring Commitments – November 2016

	Monitoring Commitments	Drilling Related Parameters	
#	Question	Comment (Objective Evidence)	Result
1	Does the DOE demonstrate that they have implemented plans/programs/procedures to measure - a) Drilling Rate; and b) Probability of Encountering a Castile Brine Reservoir? (CCA, Volume 1, Table 7-7; App MON, Table MON-1) 40 CFR 194.42 (c) and (e)	The <i>Delaware Basin Drilling Surveillance Plan</i> , WP 02-PC.02 Rev 6, documents the program to measure, record, report, and the QA requirements for these activities. The <i>Delaware Basin Drilling Database Upgrade Process</i> WP 02-EC3002 Rev 8 documents the process used to update databases with information from various commercial and state sources.	SAT
2	Does the DOE demonstrate that they have implemented an effective quality assurance program for item 1 above? (CCA, App DMP, page DMP-9) 40 CFR 194.22	Quality assurance requirements are documented in Section 7.0 of WP 02-PC.02 Rev 6.	SAT
3	Does the DOE demonstrate that the results of the drilling related parameters are reported annually? (CCA Volume, Section 7.2.4 Reporting; App DMP, page DMP-9)	Yes. Parameter updates are reported in the Delaware Basin Monitoring Annual Report, DOE/WIPP-16-2308, September 2016.	SAT

Checklist for Subsidence Monitoring Commitments – November 2016			
	Monitoring Commitments	Subsidence Measurements	
#	Question	Comment (Objective Evidence)	Result
	Does the DOE demonstrate that they have implemented plans/programs/procedures to measure - a) Subsidence Measurement? (CCA, Volume 1, Table 7-7; App MON, Table MON-1) 40 CFR 194.42 (c) and (e)	Yes, See <i>WIPP Underground and Surface Surveying Program</i> WP 09-ES.01, Rev. 7, effective 12/17/14.	SAT
	Does the DOE demonstrate that they have implemented an effective quality assurance program for item 1 above? (CCA, App DMP, page DMP-9) 40 CFR 194.22	Yes, See <i>WIPP Underground and Surface Surveying Program</i> WP 09-ES.01, Rev. 7, Section 4.	SAT
	Does the DOE demonstrate that the results of the subsidence measurements are reported annually? (CCA Volume, Section 7.2.4 Reporting;)	The results of this program are reported annually. The most recent version of this presented is <i>WIPP Subsidence Monument Leveling Survey – 2014</i> , DOE/WIPP 14-3541.	SAT

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Attachment C: Documents Reviewed

Monitoring of Geomechanical Parameters	ID	Source
Geotechnical Analysis Report for July 2012 – June 2013, Vol 1-3	N/A	DOE/WIPP
Geologic and Fracture Mapping of Facility Horizon Drifts	WP 07-EU1001 Rev 6	DOE/WIPP
Rev 1 Geologic Core Logging	WP 07-EU1002 Rev 1	DOE/WIPP
Manually Acquired Geomechanical Instrument Data	WP 07-EU1301 Rev 11	DOE/WIPP
Geomechanical Instrument Data Processing	WP 07-EU1303 Rev 10	DOE/WIPP
Installing Convergence Reference Points	WP 07-EU1304 Rev 6	DOE/WIPP
Installing Multiposition Borehole Rod Extensometers	WP 07-EU1305 Rev 3	DOE/WIPP
Installing Rock Bolt Load Cells	WP 07-EU1306 Rev 5	DOE/WIPP
Installing Wire Convergence Meters	WP 07-EU1307 Rev 5	DOE/WIPP
Installing Wire Extensometers	WP 07-EU1308 Rev 3	DOE/WIPP
WIPP Core Storage Handling and Distribution	WP 07-EU3504 Rev 5	DOE/WIPP
Software Screening and Control	WP 16-2 Rev 15	DOE/WIPP

Monitoring of Hydrological Parameters	ID	Source
WIPP Groundwater Monitoring Program Plan	WP 02-1, Rev. 14	DOE/WIPP
Waste Isolation Pilot Plant Environmental Monitoring Plan	DOE/WIPP-99-2194 Rev.9	DOE/WIPP

Field Parameter Measurements and Final Sample Collection	WP 02-EM1010 Rev 2	DOE/WIPP
Administrative Processes for Environmental Monitoring and Hydrology Programs	WP 02-EM3001 Rev 24	DOE/WIPP
Fluid Density Survey	WP 02-EM1021 Rev 10	DOE/WIPP
Groundwater Level Measurement	WP 02-EM1014 Rev 8	DOE/WIPP
Data Review for the Annual Culebra Groundwater Report	WP 02-EM1025 Rev 6	DOE/WIPP
Water Level Data Handling and Reporting	WP 02-EM1026 Rev 6	DOE/WIPP
Integrated Sample Control Plan	WP 02-EM.02 Rev 5	DOE/WIPP
Electric Submersible Pump Operation	WP 02-EM1002 Rev 6	DOE/WIPP

Monitoring of Delaware Basin Parameters	ID	Source
Delaware Basin Surveillance Plan	WP 02-PC.02 Rev 6	DOE/WIPP
Delaware Basin Drilling Database Upgrade Process	WP 02-EC3002 Rev 8	DOE/WIPP
Delaware Basin Monitoring Annual Report	DOE WIPP 16-2308	DOE/WIPP
Monitoring of Subsidence Parameters	ID	Source
WIPP Underground and Surface Surveying Program	WP 09-ES.01, Rev. 7	DOE/WIPP
Subsidence Survey Data Acquisition Report	WP 09-ES4001, Rev 4	DOE/WIPP
WIPP Panel Closure Survey Plan	WP 09-ES.02, Rev 4	DOE/WIPP
WIPP Subsidence Monument Leveling Survey 2014	N/A	DOE/WIPP

Monitoring of Waste Activities	ID	Source
WIPP Waste Data System Program and Data Management Plan	WP 08-NT.01 Rev 31	DOE/WIPP
Waste Stream Profile Form Review and Approval Program	WP 08-NT.03 Rev 18	DOE/WIPP
Waste Data System User's Manual	DOE/WIPP-09-3427 Rev 13	DOE/WIPP
TRU Waste Receipt	WP 08-NT3020 Rev 27	DOE/WIPP
Waste Data System Software Quality Assurance Plan	WP 08-NT.04 Rev 23	DOE/WIPP

2016 – Emplacement Inspection Report

**EPA INSPECTION No. EPA-WIPP-11.07-09c
OF THE
WASTE ISOLATION PILOT PLANT
November 7-9, 2016**

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

January 2017

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1 Executive Summary

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 November 7 through November 9, 2016, in accordance with 40 CFR 194.21. The WIPP is a disposal facility for defense-related transuranic (TRU) waste as defined by the WIPP Land Withdrawal Act. The EPA first 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.

The WIPP experienced two events in February 2014 that suspended waste emplacement and required implementation of recovery operations in the underground. The salt haul vehicle fire of February 5 and the radiation release of February 14, 2014 closed the underground to personnel access until April of that year. The EPA inspected air sampling and surface facilities at the site in April 2014, in response to the radiological release. The EPA conducted an annual inspection in April 2015 (see E-Docket EPA-HQ-OAR-2001-0012-0458), including entering the underground, while the facility was undergoing active recovery and not emplacing waste.

During the November 2016 inspection described in this report, EPA inspectors documented recovery progress, confirmed information the DOE has submitted to the Agency regarding recovery and observed the state of the repository and its operations shortly before the resumption of waste emplacement. The EPA confirmed Waste Data System (WDS) records for waste currently stored in the Waste Handling Building, toured the underground and observed the results of recovery activities taken to return the facility to operation. EPA inspectors reviewed documentation of training and exercise activities undertaken by WIPP management and staff to adapt to operational changes at the facility and prepare for restart. The EPA did not identify any findings or concerns during the Emplacement portion of the inspection.

2 Inspection Purpose and Scope

The EPA performed this inspection under the 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.

Due to the recovery process, the purpose and scope were unique for this inspection. The Agency confirmed adequate record keeping for the waste stored on site, exercise activities for training purposes and adequate training records for personnel associated with the recovery. The EPA observed equipment used to maintain the underground (bolting unit) during its tour of accessible areas of the underground. Due to potential radiological contamination, the active waste face was not accessible to inspectors unless they took extensive training that was not feasible at the time of this inspection.

3 Inspection Team, Observers and Participants

The inspection team consisted of four EPA staff, listed in Table 1.

Table 1: Inspection Participants

Inspection Team Member	Position	Affiliation
Jonathan Walsh	Inspection Leader	EPA – ORIA
Nick Stone	Inspector	EPA – Region 6
Jay Santillan	Inspector	EPA – ORIA
Mike Murphy	Inspector	EPA – Region 5

Numerous DOE staff and contractors participated in the inspection; below is a partial list.

Name	Affiliation
Larry Madl	RES, Inspection Coordinator
Amanda Davis	RES
Russ Patterson	CBFO
Anderson Ward	CBFO
Craig Suggs	NWP
Rey Carrasco	NWP
Jill Farnsworth	NWP
Chris Luoma	NWP

Affiliations:
CBFO: DOE Carlsbad Field Office
NWP: Nuclear Waste Partnership
RES: Regulatory and Environmental Services

4 Performance of the Inspection

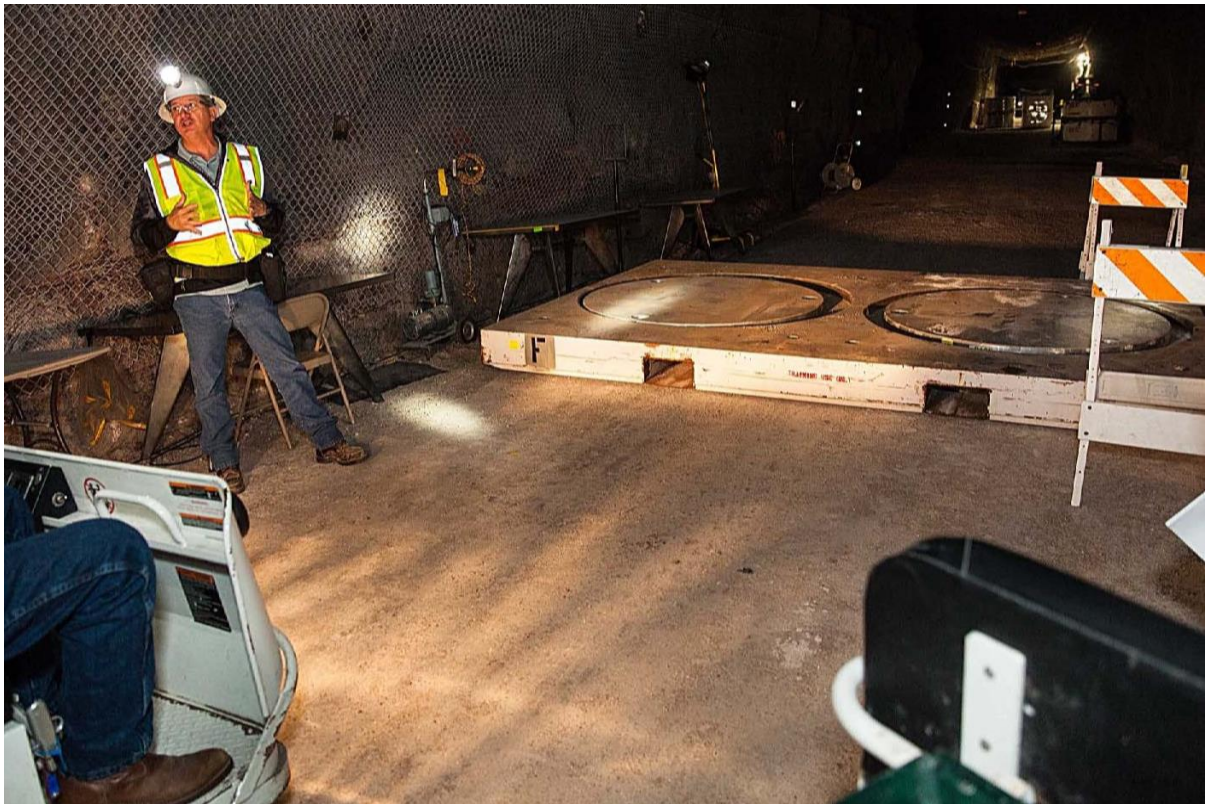
The inspection took place from November 7 to November 9, 2016 at the DOE's Carlsbad Field Office (CBFO) and at the WIPP facility, which is located approximately 26 miles southeast of Carlsbad, New Mexico. The opening meeting with CBFO and NWP personnel was held on the morning of November 7, 2016 at the WIPP site. Facility staff presented information addressing safety, recovery status, updates and changes to equipment or procedures. EPA inspectors accompanied CBFO and NWP personnel into the underground repository on the afternoon of November 8.

Figure 1: Inspection Team in the Underground



Following repository restart, waste will be emplaced into Panel 7, which was contaminated during the February 14, 2014 accident. While in the underground, the team was able to observe the area that waste handling personnel were using to practice the transferring waste into a contaminated area (see Figure 2). Only contact-handled (CH) waste will be emplaced at the time of facility restart. In the new (post-accident) process for waste disposal, waste is downloaded to the underground and brought to a Radiological Transition Area using the standard CH TRU Underground Transporter. There, an uncontaminated forklift is used to place the waste assembly on a facility pallet, which is positioned directly on the boundary of the Radiological Buffer Area. A forklift that remains within the radiological areas is then used to retrieve that waste and emplace it. Radiation Control personnel survey the pallet after each use. The updated procedure is detailed in WP 05-WH1025, Rev. 18, CH Waste Downloading and Emplacement.

Figure 2: Transition Zone (in Clean Area) for Exercise and Demonstration



The EPA inspection team did not enter any areas where access was restricted due either to potential radiological contamination or lack of ground control, which limited the extent of the inspection. Prior to 2014, the EPA inspection team always inspected the active waste face where emplacement had most recently taken place, to verify that waste was being emplaced and tracked in accordance with commitments to the EPA and WIPP procedures. Panel 7, where waste emplacement will resume, was contaminated as a result of the 2014 incident. No waste has been emplaced since 2014, and the status of Panel 7 was heavily documented during the response to the incident, making further review unnecessary during this inspection. During the 2017 inspection cycle, the DOE and site contractor will need to work with the EPA to present objective evidence that waste and MgO are being correctly emplaced and tracked.

5 Training and Exercises

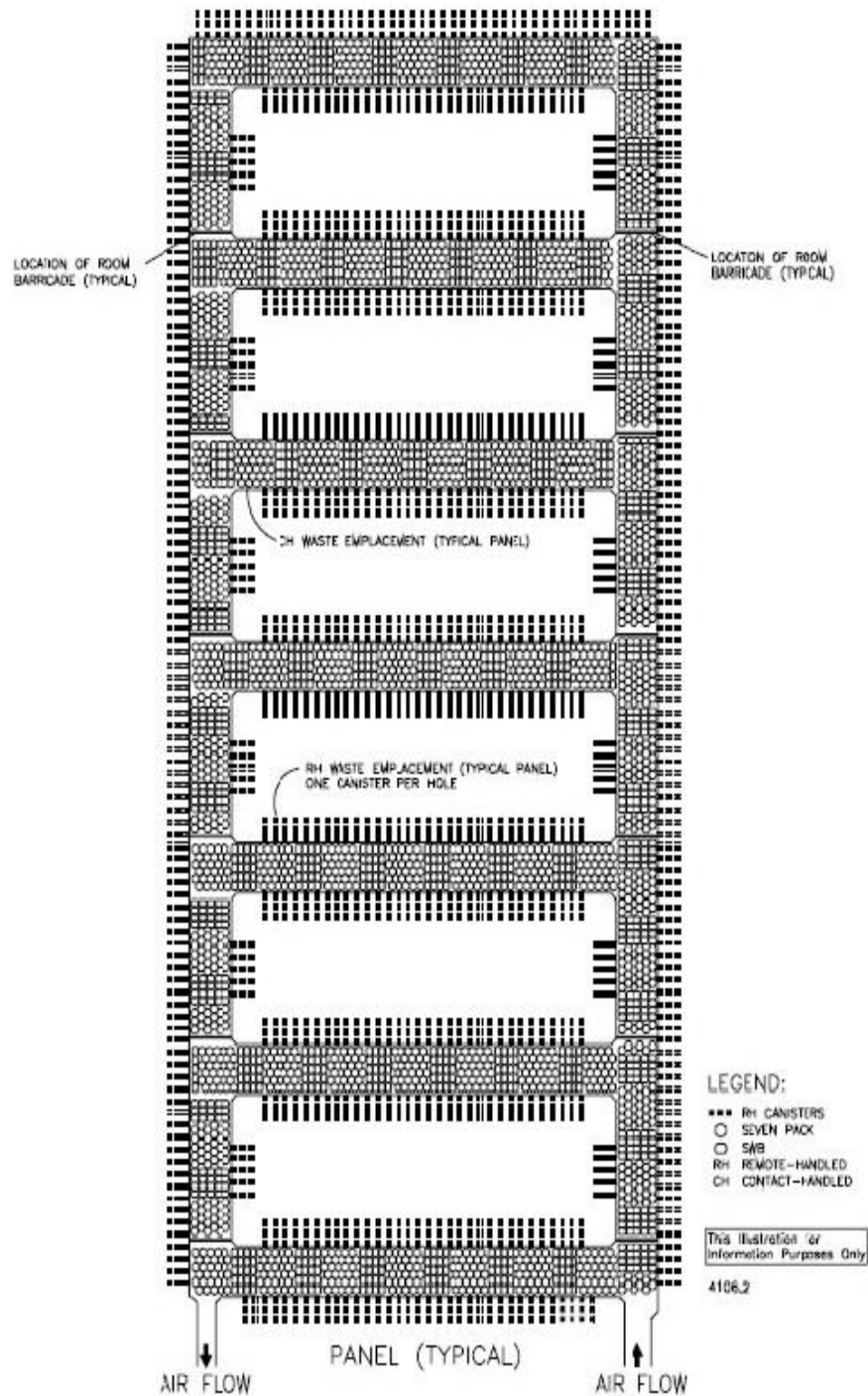
The recovery process has required the WIPP to re-evaluate standard operating procedures, document training and conduct operation exercises to assure compliance with all applicable requirements for the facility. The Inspection Team reviewed training records for three randomly selected new workers to confirm that the WIPP fulfills and documents its own training requirements. The team also reviewed documentation of the Bison Emergency Response exercise conducted in June. Personnel in the Central Monitoring Room were conducting a waste handling exercise while the Team was on site.

6 Waste Emplacement/Waste Data System

Wastes received at the repository include CH transuranic wastes from Argonne National Laboratory-East (ANL-E), Bettis Atomic Power Laboratory, GE Vallecitos Nuclear Center, Lawrence Livermore National Laboratory, Sandia National Laboratory, Los Alamos National Laboratory (LANL), Idaho National Laboratory (INL), the Hanford Site, Rocky Flats Environmental Technology Site (RFETS), Savannah River Site (SRS), the Nevada National Security Site (NNSS, formerly the Nevada Test Site), and Oak Ridge National Laboratory (ORNL). These wastes are received and emplaced in several configurations: Standard Waste Boxes (SWBs), 55-gallon drums assembled in groups of seven called a Seven Pack, 100-gallon drums for super compacted waste, Ten Drum Overpacks (TDOP), Standard Large Box 2 (SLB2) containers and Shielded Containers. Remote-handled wastes from INL, ORNL, ANL-E, and SRS have been emplaced in the WIPP. CH waste containers are stacked in columns (waste stacks) combining SWBs, drum packs, and TDOPs (see Figures 3 and 4). TDOPs are always placed on the floor of the room, occupying the bottom and middle position of a waste column. SWBs and drums may be emplaced in any order, with most wastes emplaced as received. The waste columns are in a series of staggered rows, with a row consisting of three columns that span the distance of a disposal room from left to right (Figure 3). RH waste is placed in boreholes in the walls of the disposal rooms.

The repository is subdivided into panels, each panel consisting of seven rooms. Waste was most recently emplaced in Room 7 of Panel 7, prior to the fire on February 5, 2014. At the time of the inspection, all waste emplacement continued to be suspended.

Figure 3: Typical Repository Panel Configuration



The EPA team inspected the Waste Handling Building on the morning of November 7. Waste has been stored in this facility since the 2014 incidents. As part of the Emplacement inspection, the EPA team typically identifies containers that have been emplaced in the underground, and verifies that those containers have been correctly tracked and recorded using

the Waste Data System. Because the waste face in Panel 7 remains inaccessible, the inspectors identified three containers stored in the Waste Handling Building for review, noting the identification numbers directly off the containers. The containers selected are identified in Table 2 below.

Table 2: Waste Containers Reviewed During Inspection

CH Waste Containers Reviewed During Inspection (Waste Handling Building)	Container Number	Container Type
	HBL 120185	Pipe Overpack Drum
	BN 10507558	55 Gal Drum
	SR 46030Z	SLB2

On the afternoon of November 9 at CBFO, inspectors met with Chris Luoma, an administrator of the Waste Data System (WDS). Container reports were produced for all three containers. All electronic records were found to contain required information including waste stream, container contents, and status.

7 Magnesium Oxide Backfill

Magnesium oxide (MgO) is the engineered barrier used in the repository as backfill, specified in DOE’s Compliance Certification Application (CCA). The EPA requires the DOE to maintain an MgO excess factor (safety factor) to ensure that adequate MgO is chemically available to control the chemistry of each room after closure. The Agency approved lowering the required excess factor to 1.2 (that is, emplacement of sufficient MgO to react with 1.2 times the amount of carbon present in the repository) in February 2008. Conditions of the EPA’s approval stipulate that the DOE must ensure a minimum reactivity of 96% for the MgO emplaced, and maintain the excess factor on a room-by-room basis. The DOE maintains an excess factor of 1.2 on a room-by-room basis. WDS staff generated a report showing that this factor was met in Panel 7, Room 7. Further MgO records were not reviewed because emplacement of waste, and therefore MgO, has been suspended since February 5, 2014.

MgO has been stored outdoors at the WIPP site since the events of 2014 in the polypropylene supersacks used for emplacement. The inspection team observed that this material has been labeled as “non-conforming”. Site staff stated that samples of MgO from each sack will be collected and sent for testing to confirm that it remains at least 96% reactive. All MgO tested so far has met the standard. Following testing, MgO that meets the reactivity standard will then be repackaged on site and emplaced with waste.

Figure 4: Non-conforming MgO Awaiting Testing and Repackaging



8 Comparison with Inventory Limits

The EPA establishes limits for certain waste components at the WIPP by approving performance assessment inventory estimates. The limit for ferrous metals is a minimum of 20 million kilograms. This limit was achieved in 2010. The amount of ferrous metal currently emplaced as of February 2014, is 27,561,627 kg, which is 138% of the minimum. The other established performance limit is for cellulosic, plastic and rubber (CPR) materials. In the original CCA, the DOE calculated 2.2×10^7 kg of CPR, establishing EPA's limit. In the subsequent performance assessment baseline calculations, the DOE added packaging materials to the calculations, and now the CPR limit for WIPP is 2.4×10^7 kg (see Table 3). The CPR values are tracked per container and the total CPR has remained constant since operations were suspended on February 5, 2014. The CPR total remains at 37% of the maximum limit.

The Summary of Waste Emplacement Inventory Report provided data for emplaced waste, including total activities of the ten EPA-tracked radionuclides, total weights of ferrous and non-ferrous metals, and the CPR/MgO balance by room, as of February 2014.

Table 3: Emplaced CPR, Ferrous, & Materials as of February, 2014

Material Type	Weight (kg)	Limiting Value	2015	2014	2013	2012	2011	2010	2009
Cellulosic, Plastic, Rubber (CPR)	8,914,542	24,000,000 max kg	37.1%	37.1%	36.3%	34.3%	32.3%	29.9%	26.3%
Ferrous Metal	27,561,627	20,000,000 min kg	138%	138%	132%	123%	113%	101%	87.5%
Non-Ferrous Metal	438,100	N/A							
Other Material ¹	13,357,139	N/A							

¹ Other Material reflects inorganic material and metal alloys.

The WIPP Land Withdrawal Act of 1992 limits the total waste to no more than 176,000 cubic meters (6.1 million cubic feet) and the total activity of the RH waste to 5.1 million curies. The emplaced waste as of November 2016 has not changed since suspension of emplacement in February 2014. The emplaced waste prior to suspension was 90,983 cubic meters or 3,213,034 cubic feet. The emplaced waste is 52.7% of the maximum allowed. The RH activity is shown in Attachment B as 24,050 curies, which is 0.47% of the maximum allowed.

9 Summary

The inspectors reviewed recovery operations, NWP procedures, training records, exercise records and records associated with selected stored containers. The procedures for processing CH waste upon facility restart were reviewed and found to be adequate, according to specified plans documented in the CCA; however, no waste has been emplacement since 2014. The EPA concludes that the DOE's emplacement activities and records are adequate, and that CPR and MgO are appropriately tracked. The Agency identified no findings or concerns with the emplacement portion of the inspection.

Attachment A: Inspection Plan

WIPP FY 2016 Inspection Plan for Emplaced Waste, Specified in DOE's Compliance Certification Application and per 40 CFR 194.2

Purpose:

The purpose of this inspection is to verify that upon resumption of disposal activities, waste will be emplaced in the WIPP underground facility in the manner specified in DOE's Compliance Certification Application (EPA Air Docket A-93-02, Item II-G-01) and other approvals.

The EPA is performing this inspection under the authority of 40 CFR 194.21, which authorizes the Agency to inspect the WIPP during its operational period to verify continued compliance with EPA's WIPP Compliance Criteria and the certification decision of May 18, 1998.

Scope:

The scope of this inspection traditionally has included a demonstration of the site's ability to receive, process, and emplace contact-handled and remote-handled TRU wastes within the repository; the use of magnesium oxide (MgO) backfill in appropriate amounts to fulfill DOE commitments and requirements; maintenance of relevant waste packaging records, including the electronic WIPP Waste Data System (WDS) and the verification of appropriately implemented quality assurance practices. The availability of documentation related to these processes and activities will be a major source of review.

Focal Areas for this Year's Inspection:

This inspection is being conducted in anticipation of the resumption of waste handling operations. The EPA expects the DOE to explain plans for resuming waste emplacement, and any changes made to the emplacement process as a result of facility recovery. The EPA will inspect waste that is being stored aboveground in the Waste Handling Building, and waste tracking in the WDS. The Agency will additionally use the underground portion of the inspection to observe facility recovery activities and the current state of the repository.

Location:

The inspection will be held at DOE's WIPP facility located twenty-six miles southeast of Carlsbad, New Mexico and the Carlsbad Field Office (CBFO) in Carlsbad. Inspection activities will include examination of the underground facilities, records related to waste emplacement, and other information as needed.

Duration:

The EPA expects to complete its inspection in three days. Each full day will begin with an opening meeting at 8:00 a.m. and end no later than 5:00 p.m. with a closeout session.

Expected Dates:

November 7-9, 2016.

Documents for Review:

Electronically provide the latest version of pertinent procedures and documentation related to CH and RH waste emplacement, MgO handling, management of the WDS, and recent training or exercises related to waste handling and emplacement.

Attachment B: Summary Totals WDS Nuclide Report through February, 2014

Panel: ALL Room: ALL

Radionuclide	Repository CH Activity (Ci)	Repository RH Activity (Ci)	Total Repository Activity (Ci)
Americium 241	2.581E5	6.208E2	2.587E5
Cesium 137	1.421E1	1.444E4	1.444E4
Plutonium 238	4.828E5	7.289E2	4.835E5
Plutonium 239	3.333E5	3.839E2	3.337E5
Plutonium 240	8.239E4	2.802E2	8.267E4
Plutonium 242	2.72E1	3.821E-1	2.759E1
Strontium 90	1.595E1	7.599E3	7.615E3
Uranium 233	6.536E0	3.848E-1	6.921E0
Uranium 234	8.669E1	1.14E0	8.783E1
Uranium 238	1.758E1	3.915E-2	1.762E1
Totals:	1.157E6	2.405E4	1.181E6

Attachment C: EPA Emplacement Inspection Checklist, November 7-9, 2016

	Questions: Waste Emplacement	Comments and Objective Evidence	Results
1	Is waste being emplaced in the underground facility in the manner specified in the DOE's Compliance Certification/ Re-Certification or other relevant documentation?	N/A. No waste emplaced since February 5, 2014.	N/A
2	Are CH waste containers stacked in columns appropriately given the type of container?	N/A. No waste emplaced since February 5, 2014.	N/A
3	<p>Are records adequate?</p> <p>Randomly select 3-4 CH and 2-3 RH waste containers to verify records for waste approval, shipment, and receipt.</p> <p>NOTE: Because waste handling has been suspended, three stored CH waste containers were selected in the Waste Handling Building to confirm the records.</p>	<p>Yes. TRU Waste Receipt WP 08-NT3020, describes the process. Records produced are Uniform Hazardous Waste Manifest, TRU Waste Receipt Checklist, Shipment Summary Report, and Radiological Survey Report. The EPA reviewed records and found records to be adequate.</p> <p>Selected Containers:</p> <p>CH Waste (Waste Handling Building)</p> <ul style="list-style-type: none"> - Pipe Overpack Drum - HBL 120185 - 55 Gallon Drum - BN 10507558 - Standard Large Box (SLB2) – SR 46030Z 	Satisfactory
4	<p>Is the DOE properly emplacing backfill material (magnesium oxide [MgO]) with the waste packages?</p> <p>Are super sacks placed on top of waste stacks according to procedure?</p>	N/A. No waste emplaced since February 5, 2014.	N/A

5	Verify documentation for the containers listed in item 3 - waste generator site transmittal of waste to the WIPP, WIPP approval, shipment certification for transport to the WIPP, shipment initiation documentation, shipment received at the WIPP records, waste emplaced in the underground, and placement of engineered barrier [MgO].	Inspectors examined electronic records kept aboveground for the selected containers. Documentation was determined to be adequate.	Satisfactory
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	Questions: RH Waste Emplacement	Comments and Objective Evidence	Results
6	Are RH containers approved for receipt, received, processed, and emplaced properly?	N/A. No waste emplaced since February 5, 2014.	N/A
7	Are RH containers appropriately tracked? Where is the information? --In the WDS, what report --During the receipt/transfer process where is it recorded? --In the underground?	N/A. No waste emplaced since February 5, 2014.	N/A
8	Content of RH canisters No RH in storage, access to emplaced RH restricted.	N/A. No waste emplaced since February 5, 2014.	N/A
9	Volume and mass and/or concentration of important waste components and radionuclides (RH and CH)? Are they within statutory and regulatory limits?	Detailed description of nuclide information is included in the Waste Emplacement Report. Yes.	Satisfactory
10	Are RH boreholes closed properly? (Note: also see #9 for tracking of RH in the U/G)	N/A. No waste emplaced since February 5, 2014.	N/A
11	Is a photographic record made of the RH canister number during emplacement and retained in the permanent record?	N/A. No waste emplaced since February 5, 2014.	N/A

	Questions: Procedures	Comments and Objective Evidence	Results
12	Do DOE procedures reflect an MgO safety factor to 1.2?	Yes. WP 05-WH1025, CH Waste Downloading and Emplacement, Rev. 12, Section 3.0, Backfill, establishes procedures to maintain a safety factor of 1.2 or greater per room on a daily basis. Procedures in the WDS User's Manual, WP-05-WH.02, Sections 6.2.5, 9.5.3, and Attachment 1 reflect the 1.2 safety factor and the use of 3,000-lb. super sacks as necessary. Review of the Summary of Waste Emplacement Inventory Report documents an MgO Safety Factor in excess of 1.2 for all rooms in each panel.	Satisfactory
13	Are both CPR and MgO calculated and tracked on a room- by-room basis?	N/A. No waste emplaced since February 5, 2014.	N/A
14	Are sampling and analytical procedures in place to ascertain that emplaced MgO maintains a minimum of 96% reactivity?	Yes. Specification D-0101, Prepackaged MgO Backfill, and WP 05-WH1105, MgO Sample Records Management, set forth analytical and document management procedures to verifying that each shipment of MgO maintains a 96 +/- 2% reactivity.	Satisfactory
15	Is the acceptance of the MgO backfill material from the supplier documented?	Yes. WP 05-WH1105, MgO Sample Records Management, Sec. 2.0 requires each shipment to be numbered, and the MgO supplier to provide an Analysis of Shipment and a sample under Chain of Custody for each shipment.	Satisfactory
16	For the MgO needed for high CPR, are there procedures or documentation for the WHE or WHM (or other appropriate personnel) identifying when and where additional MgO is needed?	Yes. General procedures are found in the WIPP WH Operation WDS User's Manual, WP 05-WH.02, Attachment 1, Special Requirements for Additional MgO. Section 3 of WP 05-WH1025 calls for notification of the WHM if daily reports show the MgO safety factor of a room to be less than 1.2.	Satisfactory

17	Is there documentation that identifies how MgO should be placed with high CPR waste?	Yes. WP 05-WH1025, CH Waste Downloading and Emplacement, Attachment 3, Super sack/BRT Emplacement Data Sheet; and WP 05-WH1058, CH Waste Handling Abnormal Operations, Sec. 4.0, BRT Emplacement	Satisfactory
18	Verify documentation of procedures for abnormal operating conditions, and documentation of training for contingencies.	<p>The Inspection team viewed records of individual training and coordinated exercises for emergency response. Abnormal operating and emergency procedures were reviewed, including but not limited to those listed below.</p> <p>WP 02-EC3506 Rev 10, Environmental Incident Reporting, is the Management Control Procedure for reporting releases, and includes statutory requirement charts for notifications and decision flowcharts.</p> <p>WP 12-9 Rev 42, WIPP Emergency Management Plan, is the top-level document outlining emergency response procedures and responsibilities, includes training requirements for response roles.</p> <p>WP 12-ER3906 Rev 18, Categorization and Classification of Operational Emergencies includes tables of procedures for emergency notifications and classification of events.</p>	Satisfactory

	Questions: Records/WDS	Comments and Objective Evidence	Results
19	Does the Waste Data System (WDS) adequately record required information?	Reports available through the EPA Dashboard contain the container number, shipment number, emplacement data and underground location. EPA staff queried the WDS to verify that this information is recorded correctly.	Satisfactory
20	Does the WDS adequately document waste shipment and emplacements information for waste containers selected? (Item 3 above)	Yes. The Container Query was generated, which correctly reflected container number and shipment number.	Satisfactory
21	Do records verify that contact handled waste container surface doses fall within statutory requirements? Where are CH surface dose records maintained?	Yes. CH surface dose measurements are recorded in the Container Query.	Satisfactory
22	Review a Container Query. Does this report adequately record the Waste Stream Profile information?	Yes. For all containers inspected, inspectors found the information in the Container Query and Certification Data Values.	Satisfactory
23	Review the Container Query. Does the report correctly record the containers shipped? CH, RH	Yes, under the Transportation Data Report. By querying the Shipment number, the Shipment Data report may be generated. Inspectors verified that the report reflects the containers shipped.	Satisfactory
24	Review the Waste Emplacement Report. Does this report adequately record the date of receipt, and disposal locations of containers? CH, RH	Yes. See Item 21.	Satisfactory
25	Is DOE assuring that the 1.2 safety factor is maintained on a room basis? Does the WDS accurately calculate the excess factor and recommend the proper amount of MgO to emplace?	Yes. See questions 12-17. EPA inspectors reviewed ISL Matrix Requirements WWIS2-REQ-2126 and -2127 to verify that the WDS software calculates MgO excess appropriately.	Satisfactory