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Carlsbad Field Office
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JUN 1 1 2013

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Mr. John E. Kieling, Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303

Subject: Submittal of the Panel 7 Certification of Construction

Dear Mr. Kieling:

The purpose of this letter is to submit the Panel 7 Hazardous Waste Disposal Unit (HWDU) Professional Engineer Certification of Construction as required by Part 1, Section 1.7.11.2 of the Waste Isolation Pilot Plant Hazardous Waste Facility Permit (HWFP), Number NM4890139088-TSDF. This section requires the submission of a letter signed by the Permittees and a New Mexico registered professional engineer stating that the facility has been constructed or modified in compliance with the HWFP. Richard Ray, a New Mexico Registered Professional Engineer, New Mexico Certificate Number 21634, performed the certification. Please contact Mr. George T. Basabilvazo to schedule your inspection of Panel 7 at the number listed below.

We certify under penalty of law that this document and all attachments were prepared under our direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on our inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of our knowledge and belief, true, accurate, and complete. We are aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

If you have any questions, please contact Mr. George T. Basabilvazo at (575) 234-7488.

Sincerely,

Jose R. Franco, Manager
Carlsbad Field Office

M. F. Sharif, Project Manager
Nuclear Waste Partnership LLC

Enclosure

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May 24, 2013

Mr. Ben Zimmerly, Subcontract Technical Representative
Nuclear Waste Partnership LLC
P.O. Box 2078
4021 National Parks Highway
Carlsbad, NM 88221

Subject: Engineering Services – Panel 7 Hazardous Waste Disposal Unit

Reference: Waste Isolation Pilot Plant (WIPP) Hazardous Waste Facility Permit

Dear Mr. Zimmerly:

This letter is the New Mexico professional engineer's determination required by Permit Condition 4, Section 4.5.2.1, that WIPP Panel 7 Hazardous Waste Disposal Unit (HWDU) was constructed in compliance with the Hazardous Waste Facility Permit (Permit). This letter is submitted in accordance with Condition 1, Section 1.7.11.2.

Pursuant to Task Order Release No. 1 under Master Task Order 501373, issued by Nuclear Waste Partnership LLC to Parsons Brinckerhoff, Inc. (PB), I visited the Waste Isolation Pilot Plant (WIPP) with Conrad Fischer, a Supervising Geologist with PB, between April 29, 2013 and May 1, 2013. Task Order Release No. 1 required PB to review construction documents, such as work packages, reports, and test results, and to observe the systems and components installed in the Panel 7 Hazardous Waste Disposal Unit (HWDU), in order to certify that Panel 7 HWDU was constructed and commissioned in a manner such that it can be operated in compliance with the conditions of the Permit.

I reviewed a representative sample of construction documents, held discussions with knowledgeable NWP staff cognizant of the documents and items observed, and observed the following items pertaining to WIPP Panel 7:

HWDU Construction

During my site visit I traveled from the base of the Salt Handling Shaft in the shaft pillar/service area to Panels 6 and 7 via main drifts W-30 and E-140 to observe conditions, systems and work activities in these panels and adjoining main entries. I confirmed that the Panel 7 HWDU consists of seven rooms connected by two east to west oriented drifts, S-2150 and S-2520, running from W-170 to Room 7, the westernmost room in Panel 7 as shown on Permit Figure A2-1, "Repository Horizon,"

and Drawing Number 51-W-214-W, "Underground Facilities Typical Disposal Panel" contained in the Permit.

I reviewed Drawing Number 51-W-214-W7, "Underground Facilities Disposal Panel 7", prepared and maintained by NWP staff from survey data and field measurements for Panel 7, with the NWP staff. This drawing displays the location and dimensions of Panel 7 with respect to permanently surveyed benchmarks. It provides survey station coordinates at the intersection of Drift S-2180 and the north end of Rooms 1, 4 and 7 and at the intersection of Drift S-2520 and the south end of Rooms 1, 4, and 7. According to this drawing, overall dimensions of the panel are approximately 831 feet from east to west and 366 ft from north to south. It also provides typical cross sections in Drift S-2180 just outby (east) of Room 1, in Drift S-2520 both outby (east) and inby (west) Room 1, and in Room 7. Drift or room width and height at the drift or room centerline and along each rib are indicated for each cross section. Average height and width dimensions for Drifts S-2180 and S-2520 are also noted at the midpoint between main Drift W-170 and Panel 7, Room 1, and at the midpoint between consecutive rooms. Average room widths are noted on Drawing Number 51-W-214-W7 at the approximate north / south center of each of the seven rooms in Panel 7.

While visiting Room 7 in Panel 7, the NWP geologist explained the methodology used at the WIPP facility to monitor geological conditions and to confirm that the drifts and rooms are excavated in the correct horizon in Panel 7 as required by the Permit, and from panel to panel. A string line is run along the inby (western) rib in each room approximately 3 feet above the floor. Elevation data relative to the string is noted at 10-foot intervals along the length of the room for the orange marker bed and each of the other five halite units being excavated. These data are tabulated and the elevation of each unit is then plotted versus the distance south of the Salt Shaft. I reviewed the data and plots for Room 7 of Panel 7 compiled by NWP staff. NWP staff explained that two 4-in.-diameter core holes are also drilled in each panel, one 50 feet up into the back (roof), and one 50 feet down through the floor, to delineate the geology between Marker Bed 138 located above the mining horizon and Marker Bed 139 located below the mining horizon.

Ground Control

While I was observing conditions and activities on Panel 7, the NWP ground control staff explained that the WIPP facility ground control procedures follow back (roof) and rib support practices consisting of scaling, rock-bolting and material removal that are approved by the Mine Safety and Health Administration. Four (4)-ft-long mechanical anchor bolts with wire mesh are installed at the roof-rib junction to prevent nuisance sloughage. The 4-ft mechanical anchors, supplemented with 12-ft-long DYWIDAG bolts with 3-ft-long resin columns installed in the center of the drifts and rooms, are used to support the back. NWP ground control staff monitors extensometer data (see Geotechnical Monitoring) for changes in conditions or closure rates, and recommend additional roof bolt supports when required. According to NWP ground control staff, the

ground control system in the panels is designed to maintain stable conditions while placing waste in the panel rooms.

Ventilation

The ventilation map shown on Drawing Number 54-Z-001-W, "Proposed Changes to Underground Mine Ventilation System," was reviewed with NWP staff and I observed the location of bulkheads and airlock doors used as ventilation controls along the W-30 and E-140 main drifts and connecting crosscuts to confirm that ventilation circuits for waste handling / disposal and for mining / construction are isolated from one another. In addition to requiring separation of the construction and disposal ventilation circuits, the Permit also requires that the ventilation air current in the disposal circuit be maintained at a lower pressure than the construction ventilation circuit so that air leakage between the two splits is always from the construction circuit to the disposal circuit. NWP staff explained that this is accomplished by regulating the main intake supply to the disposal circuit from the Air Intake Shaft and Salt Handling Shaft in the crosscut at S-1000 between W-30 and E-140. A bulkhead with an adjustable opening is used to regulate the amount of airflow directed to E-140 from the W-30 main intake. The pressure drop through this regulator causes the E-140 main intake air course supplying the disposal circuit at the south to be at a lower pressure than the W-30 main intake air course supplying the construction circuit to the south.

The Permit requires intake air to be coursed into a panel through the east / west oriented drift situated on one side of the panel and directed to the individual rooms using bulkheads and regulators constructed from telescoping steel tube framing and galvanized steel panels, with flashing made from brattice cloth or conveyor belt material placed around the perimeter of the bulkhead. The telescoping framing and flashing allows the bulkheads and regulators to adjust to the salt creep around the perimeter of the opening without a breach developing in the bulkhead. I observed all of the bulkheads and the regulator constructed on Panel 7.

Intake air is directed into Panel 7 from the E-140 main intake through the east / west drift located at S-2520 that intersects the south end of the Panel 7 rooms. Bulkheads equipped with vehicle doors with mandoors and regulators are located at the north end of each room to separate the panel intake air from the panel return air in the Drift S-2180 that intersects the north end of the Panel 7 rooms. These bulkheads enable the intake air to be directed to the westernmost Room 7 without short circuiting to the return. The section regulator is built across the panel return in S-2180 between Room 6 and Room 7. Overcasts constructed across the W-30 and E-140 main intake drifts allow the Panel 7 return air split to be directed to the main return air split in main Drift E-300. The overcast across E-140 at S-2180 from the intake side in E-140 and the overcast across W-30 from the return side in S-2180 were viewed.

The Permit requires a minimum ventilation airflow quantity of 35,000 cubic feet/minute (cfm) at standard air density to be provided in each active room when waste disposal is

taking place and workers are present in the room. This flow rate is equivalent to 42,000 actual cfm (acfm) at WIPP mine air density, as detailed in Attachment O of the Permit. I observed an NWP staff member measure the airflow across Room 7 of Panel 7 at approximately 46,740 cfm. Two continuous one-minute anemometer traverses were taken using telescoping extension rods for the anemometer with an average velocity of 95 feet/minute through a cross section of 15 feet high by 32.8 feet wide, or 492 square feet.

Geotechnical Monitoring

I viewed convergence stations located in Drifts S-2150 and S-2520 in Panel 7 at approximately mid pillar between the rooms and at the intersections with the rooms, and within each room. The stations were constructed from eye bolts recessed in the floor and back (roof) for measurement of convergence with a tape extensometer. According to NWP geotechnical staff, measurements are taken at the convergence stations every two weeks and plots of convergence are maintained for each location. I observed convergence stations and multipoint borehole extensometer stations in the back located near the longitudinal center of each room and in the drifts (two per drift). The electronic extensometers located in the roof at the center of each of the rooms are the minimum geotechnical monitoring equipment required by the Permit. According to NWP geotechnical staff, data from the electronic borehole extensometers are polled on a weekly basis. The Permit requires remote polling to be performed at least once per month. I reviewed displacement plots from each of the room and drift borehole extensometers for Panel 7 covering the period from initial installation in the fourth quarter of 2011 through the present. These plots are used to help monitor dilation of the immediate salt roof and bed separations along clay seams. NWP ground control staff stated that they walk each panel weekly to visually monitor floor, rib and back conditions.

Inspection boreholes are located in each room, at the intersection of the rooms and drifts and mid-way between each room in the drifts. The inspection boreholes allow qualitative assessments of bed separation and lateral movement to be performed. According to the NWP geotechnical staff, borehole data for Panel 7 confirmed that the anhydrite stringers present in the immediate roof in Panel 6 were not encountered in Panel 7.

Traffic Flow

The Permit requires separation of traffic flow for waste handling / disposal and mining / construction activities from S-1600 and locations southward and a map to be posted where persons entering the mine can view these routes. If the route is changed, a revised map is required to be posted. Both the typical underground transport route for waste handling activities that correspond to Figure A4-4 in the Permit, and the alternate

waste handling route which corresponds to Figure A4-4a in the Permit, were reviewed with NWP staff.

The typical waste transport route utilizes Drift E-140 as the main roadway. The alternate route utilizes Drift W-30 as the main waste handling roadway. To use the alternate waste handling route, the normally open airlock doors located across W-30 between S-700 and S-1000 are closed, and the normally closed vehicle doors located in the crosscut between W-30 and E-140 at S-700 are opened. This enables the main intake air regulator located in the S-1000 crosscut between W-30 and E-140 to be used to reduce the pressure in the intake air in W-30 relative to E-140 so that any air leakage is into the alternate waste handling main drift (W-30) as required by the Permit (see Ventilation). I reviewed WP 04-AU1029, Revision 0 "Configuration for W-30 Alternate Waste Handling Route – Technical Procedure" document, dated April 25, 2013. This document provides step-by-step procedures for adjusting ventilation system controls, vehicle doors and airlocks to properly implement utilization of Drift W-30 as the alternate waste transport route.

VOC Monitoring

The Permit requires the implementation of the Volatile Organic Compound (VOC) Monitoring Program for the repository and the underground HWDUs. As prescribed in the Permit, repository monitoring Station VOC-A is permanently located in the main return airway E-300 downstream of Panel 1 near S-1300. Mine ventilation air which could be impacted by VOCs from Panels 1 through 7 will flow past VOC-A. A second repository monitoring station, VOC-B, is required to be located upstream from the panel being filled with waste to measure VOC's attributable to upstream background sources and not from open or closed panels.

NWP VOC staff explained the procedures for VOC sampling in the rooms. VOC sampling stations in the waste disposal rooms are located on the inlet (intake air) side and outlet side (behind exhaust drift bulkhead) of each room, with the exception of Room 1, which is only provided with a return air side sampling location. When waste emplacement activities begin for a room, the return air side sampling location for that room is activated first. After contact-handled waste emplacement has been completed in the room, the intake side sampling location is activated for the room.

I observed VOC canister sampling units equipped with sampling pumps, pressure gauges, flow controllers, two sampling ports, inlet filters and electronic timers for Panel 7. Three sampling units were located adjacent to Panel 7 in W-170 between S-2180 and S-2520. One unit pumped samples for VOC-B, the second for the Panel 7 intake sampling locations and the third for the Panel 7 return sampling locations. The 6-liter stainless steel SUMMA sampling canisters were observed at the Panel 6 sampling unit location and are readily available for use in Panel 7. NWP staff explained that after connecting the canisters to the sampling units, a 15-minute line purge cycle is initiated at a rate of 1 liter per minute, followed by a 6-hour sampling period. According to NWP

staff, VOC-A and VOC-B repository monitoring locations are sampled twice weekly and the HWDU room-based monitoring locations are sampled every other week. Samples are sent to a New Mexico State University lab in Carlsbad for analysis.

Stainless steel sampling tubing is run from the sampling stations in the panels to the sampling units located at the mouth of each panel. I observed the configurations at the end of the sampling lines for the VOC-B monitoring station located in S-2520 between W-170 and Room 1 in Panel 7, as well as each of the six (6) intake sampling locations and seven (7) return sampling locations pre-installed on Panel 7. The end of each sampling line was terminated on the outside rib of the intake and return air access drifts on each side of the rooms with the single sampling line split into three sampling inlets—one near the back, one at mid height and one near the floor, similar to the arrangement shown in Figure N-4 in the Permit.

Radiation Monitoring

I observed the Continuous Air Monitors CAM-151 and CAM-152 installed in a walk-in enclosure located in the Panel 7 return at S-2180 between Room 1 and W-170. If the CAMS detect radioactive contaminants in the exhaust airflow, the mine ventilation system switches from two main surface exhaust fans in operation to the operation of one surface filtration fan with airflow passing through two identical HEPA filter assemblies situated on the inlet side of the filtration fan. A test of the automatic operation of the filtration mode initiated by the introduction of a radiation source at CAM-152 was witnessed. The alarm was received at the Central Monitoring Room and an announcement made over the PA system that the ventilation system was switching to filtration mode as part of a test. From the mine monitoring screens located in the Underground Services Room, I observed the subsequent shutdown of main mine exhaust fans 700B and 700C and the closing of the inlet dampers serving those fans, and the opening of the inlet damper for filtration fan 860C and the start-up of filtration fan 860C. In addition, closure of underground regulators at S-400 just west of the exhaust shaft and at S-1000 between the W-30 and E-140, helping to regulate flow for the filtration mode, was confirmed on the mine monitoring screens.

Underground Evacuation Alarm, Mine Phones and Public Address System

The Permit requires that the WIPP facility have an internal communications or alarm system capable of providing immediate emergency instruction to personnel consisting of two-way communication by the public address (PA) system and its intercom phones and paging channels, an internal telephone system, mine phones, pagers and portable two-way radios. Notification of underground evacuation is required to be made using underground evacuation alarm and strobe light signals.

NWP Cognizant Engineers demonstrated the operation of the communications / alarm system for Panel 7 and provided a copy of the "Operational Walkdown Checklist" that

they filled out during their inspection of the system for Panel 7. Portable skids containing a mine phone pager, PA phone with pager, flashing amber waste transport light, and white evacuation alarm lights are located in the intake air drift at S-2520 across from each of the seven rooms in Panel 7. During the demonstration of the internal communications/alarm system, the Cognizant Engineer paged both the Underground Services Room and the Central Monitoring Room (CMR) from the mine phone and PA phone located across from each Panel 7 room and talked to personnel in both the UG Services Room and the CMR. The CMR was then called to make an announcement for testing the waste transport warning system. The announcement of this test could be heard over the PA phone speakers and each of the amber waste transport lights for the Panel 7 rooms flashed during this test. The CMR was called again to initiate a test of the emergency evacuation alarm. An announcement of emergency evacuation testing could be heard over the PA phone speakers, the flashing white evacuation lights were confirmed to be operational at the skid for each room, and an audible yelping alarm could be heard from the PA phones.

Underground Escape and Evacuation Plan

The Resource Conservation and Recovery Act (RCRA) Emergency Coordinator can call for underground personnel to report to assembly areas during an underground or surface event using the PA address system. NWP staff explained that in the event of an evacuation alarm, personnel will evacuate to the nearest egress hoist station. Both the current Underground Escape and Evacuation Plan and Underground Escape Map reflect the current configuration of Panel 7. I reviewed the WIPP "Underground Escape Map" dated April 11, 2013, which is posted both on the surface and at locations underground. Both primary and secondary escapeway routes are noted on the map from all underground locations. NWP staff explained that primary evacuation routes are marked by green reflective tape on the ribs and secondary evacuation routes are marked by red reflective tape on the ribs.

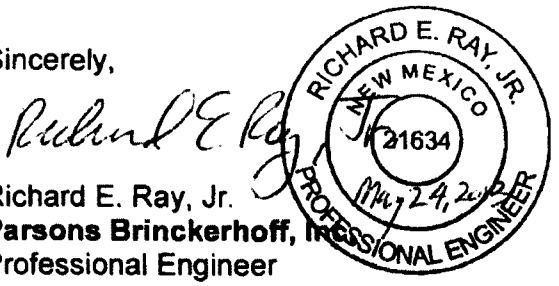
Inspections (Underground Openings Check List WP 04-AU1007)

The Permit requires the inspection of various systems and equipment, which are detailed in Table E-1 in Permit Attachment E. For each system and piece of equipment, the responsible WIPP facility organization/department for the inspection, frequency of inspection required and inspection procedure number and criteria are listed. I reviewed the WP 04-AU1007, Rev 12, "Underground Openings Inspections - Technical Procedure" document with NWP staff. This document contains inspection procedures for Employee Work Area Daily General Inspections, Mine Operations Underground Travelway Weekly Visual Inspections, and Mine Operations Underground Facility Annual Physical Inspections. The procedures include nine "Underground Openings Inspection Checklist" forms (Attachment 1) that cover each drift, crosscut and panel room underground, with blank columns for "Comment & Observation," "Action Taken & Date," and "Initials." Date and type of inspection (weekly or annual) are also noted on

the forms with blanks for date, time, the inspectors name and signature, and the manager's signature.

Based on such review, discussions, and observations only, in my professional opinion, Panel 7 HWDU was constructed and commissioned in a manner such that it can be operated in compliance with the conditions of the Permit.

Sincerely,



Richard E. Ray, Jr.
Parsons Brinckerhoff, Inc.
Professional Engineer