



## Recovery Progress Has WIPP Poised to Resume Operations in 2016

The Department of Energy's (DOE) Carlsbad Field Office (CBFO) and Nuclear Waste Partnership (NWP), the management and operations contractor for the Waste Isolation Pilot Plant (WIPP) have made significant progress in recovery efforts at WIPP following the 2014 salt haul truck fire and radiological release. This progress has the Nation's only underground transuranic waste repository poised to resume waste disposal operations in December 2016.

### Fire Corrective Actions Completed

The Accident Investigation Board identified 75 corrective actions following the February 5, 2014, fire and nearly all have been completed. Improvements include:

- Installation of automatic fire suppression systems has been completed on the majority of the underground liquid-fueled equipment. In addition, the installation of an automatic fire suppression system is near completion in areas of the underground where there is a high potential for fire (maintenance shop, operations office, lunchroom, oil storage).
- A robust combustible control program in which any item entering the underground will be analyzed for fire loading characteristics.



**New underground fire-fighting equipment has been purchased over the past two years.**

- Additional visual emergency egress strobes and reflectors have been added to ensure personnel can exit the underground safely in the event of an emergency.
- Dozens of underground emergency drills and exercises have been held over the past two years to ensure personnel are trained to safely evacuate the underground in a timely manner.
- A new underground personnel accountability system has been installed that allows two-way communication, text messaging, alarms and real-time tracking of employees.

### **Radiological Risk Reduced**

In May of 2015, initial panel closures, using chain link, brattice cloth, run of mine salt material and steel bulkheads, were installed on Panel 6 and Panel 7 in Room 7, the location of the 2014 radiological release. In addition, continuous air monitors were installed outside the bulkheads on the intake and exhaust sides. These closures physically isolated the waste stream that caused the radiological release, providing additional protection for the underground workers and fulfilling one of the requirements in a New Mexico Environment Department administrative compliance order.

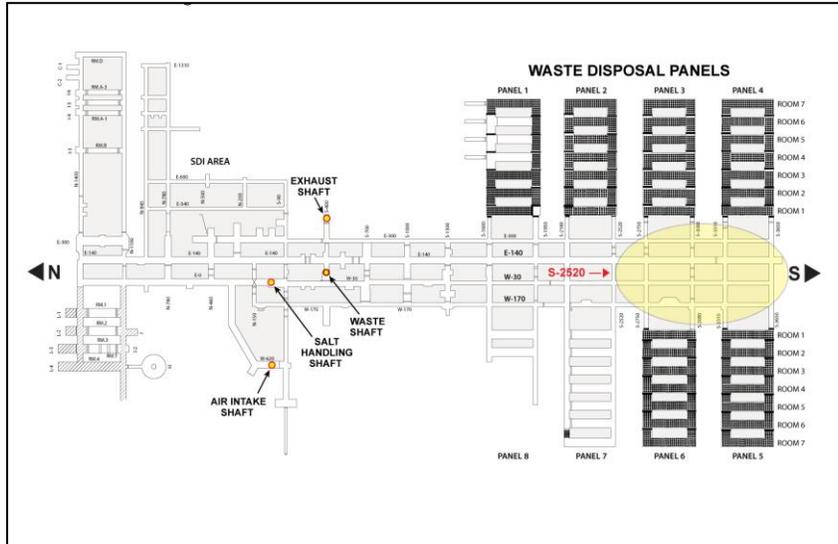


**Respiratory requirements have been reduced thanks to radiological contamination mitigation progress in the WIPP underground.**

DOE and NWP also completed radiological risk reduction activities in the WIPP underground. mitigation activities included the application of a fine water mist to the walls and floor. As the mist evaporates, the salt recrystallizes, encapsulating the contamination that was on the surface. In addition, brattice cloth and a layer of previously-mined salt were laid along contaminated portions of the floor to trap any contamination and to provide a durable surface for vehicle traffic. These radiological risk mitigation techniques help prevent the resuspension of surface contamination and allow for a reduction in the level of radiological controls necessary to protect workers. In September 2015, zone recovery activities were completed along the pathway from the waste hoist to the entrance of Panel 7 where waste emplacement operations will begin when operations resume.

## Respiratory Requirements Reduced

As a result of radiological risk mitigation efforts by WIPP Radiological Control teams, requirements for respiratory protection were lifted for a significant portion of the WIPP underground. The change in respiratory protection requirements, which applies to all areas



**Areas south of S2520 in the WIPP underground no longer require radiological respiratory protection equipment due to current radiological conditions.**

south of S-2520, represents a significant milestone in contamination mitigation efforts. While the use of protective clothing, booties and gloves remains necessary in these areas, eliminating the need for air purifying respirators reduces physical stress on employees working there and makes performance of work activities easier and safer.

## Underground Stability Improved

The elasticity of salt was one of the reasons it was originally chosen as a desirable medium for TRU waste disposal. The roof, floor and walls in the WIPP underground creep inward at a rate of 3 to 6 inches per year and will eventually encapsulate the waste emplaced there. Because of this salt creep, the WIPP underground requires constant maintenance, or ground control, to keep tunnels (drifts) open and allow continued operations. Mine stability is achieved through the installation of 10 – 20 foot steel bolts into the roof and walls of the underground to help hold layers of rock together and prevent roof falls.

Maintenance (rock bolting) is normally performed on a daily basis; so after a 9-month hiatus



**Ground control activities, like rock bolting, ensure the WIPP underground is safe.**

where no ground control could be performed, catch up bolting was one of the highest priorities of the recovery. To date, catch-up bolting in the underground is approximately 90 percent complete. To accelerate this work, WIPP recently added a hybrid bolting machine. The hybrid bolting machine runs on either diesel or electric power and will further enhance WIPP's ability to increase ground control activities. Under the current limited ventilation conditions, the amount of diesel equipment that can be operated in the WIPP underground at any given time is restricted. The hybrid bolter increases the capacity for bolting crews under the current limited ventilation conditions. A second hybrid bolting machine will soon be placed in service. The addition of the hybrid machines has allowed for increased bolting activities without impacting other operations that require the use of diesel equipment.

### **Additional Underground Ventilation**

To provide sufficient air flow necessary to allow WIPP to return to waste disposal operations, two new ventilation units were procured and are being installed in 2016. One of the units is a surface fan and filter unit known as the Interim Ventilation System (IVS). The other is an additional fan unit, the supplemental ventilation system (SVS), which has been placed in the underground.

Much like the existing underground ventilation system (UVS), the IVS unit consists of fans that will draw air out of the underground and pull it through High Efficiency Particulate Air (HEPA) filter units before it is released to the environment. The IVS will be connected to the existing UVS ductwork and the two units will work in tandem to increase airflow in the underground from the current 60,000 cubic feet per minute (CFM) up to 114,000 CFM. Since the 2014 events, all air exiting the WIPP underground passes through HEPA filters prior to being released to the outside. The increase in airflow is necessary to meet permit requirements for resumption of waste placement operations and will increase the amount of work that can be performed underground.



**Installation of ducting for the Interim Ventilation System is nearing completion.**

The SVS has been installed in the WIPP underground near the air intake shaft and will help draw air into the mine to support future mining operations. Under mine configurations that separate the clean ventilation circuits from contaminated circuits, use of the SVS will allow salt-laden air from mining operations to be exhausted through the unfiltered salt shaft, avoiding the HEPA filtered UVS/IVS circuits.

## **Emergency Response Capabilities Bolstered**

Improvements were also made to the WIPP's emergency response capabilities. In 2015, construction was completed on a 4,000 square foot, state of the art Emergency Operations Center (EOC). The Skeen-Whitlock Building is located on the south side of Carlsbad away from the WIPP site and houses the Carlsbad Field Office. It was remodeled to include the new EOC.



**The new, state of the art, offsite Emergency Operations Center became operational in late 2015.**

The physical changes include a primary EOC area, Emergency Management support area and several contingency rooms. Other key upgrades include the installation of new computers, wall-mounted monitors and interactive message boards. A number of software enhancements have also been added that are designed to improve incident response capabilities.

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## **Re-Start Preparations**

With only a handful of recovery activities remaining, DOE and NWP will begin to focus efforts on a series of re-start activities that are intended to develop proficiencies and test capabilities for site workers, equipment and procedures that will be necessary for resumption of waste emplacement operations.

## **Integrated Cold Operations**

Integrated cold operations will be one of the first steps in preparation for restart. Over an eight week period, workers will practice using new equipment, procedures and processes that will now be used for receipt, downloading and placement of waste. Workers will use empty waste containers and conduct drills and exercises on a variety of scenarios designed to test knowledge and develop proficiency at the various waste handling operations. Workers will also

be tested on their knowledge and ability to respond to off-normal situations following safety controls outlined in the new Documented Safety Analysis (DSA) for the site.

In addition to waste handling and emplacement operations, cold operations will also test the Safety Management Program improvements for fire protection, radiological controls and emergency management response. Use of the underground emergency notification system and localized fire suppression systems will also be included in the exercises.



**Waste Handling personnel will verify procedures and processes during Integrated Cold-Run activities.**

## **Readiness Activities**

Following cold operations WIPP will undergo several formal readiness activities designed to evaluate performance and level of preparedness prior to startup. The first of these activities will be the contractor Management Self-Assessment (MSA). The MSA focusses primarily on implementation of the Safety Management Programs and will identify best practices and opportunities for improvement. Any and all deficiencies will be addressed and corrective actions will be implemented prior to closure of the MSA.

Following the MSA, NWP will conduct the Contractor Operational Readiness Review (ORR). The ORR will include use of a team of independent subject matter experts who will focus on evaluating the following:

- Implementation of Safety Management Program corrective actions
- Implementation of corrective actions associated with the Accident Investigation Board reports
- Determination of the level of readiness of workers, the plant and processes necessary for resumption of waste emplacement.

After demonstrating a successful completion of the contractor ORR and the closure of any findings, NWP will formally declare readiness.

Once the contractor declares readiness, DOE will begin its own independent review of the contractor and facility. When the DOE ORR is completed and corrective actions from any findings have been implemented, DOE will declare readiness for the site.

In addition to internal reviews and evaluation, WIPP will undergo independent assessments from regulators including the New Mexico Environment Department (NMED). Concurrence from regulators on completion of any corrective actions and the declaration of readiness will be necessary before authorization to commence with waste emplacement is final.

Resumption of waste emplacement will mark the end of multi-year effort that will better position WIPP for the future. Future operations at WIPP and the National Transuranic Program will include a significantly enhanced safety environment that will enable many years of continued service to the Nation.