



**Department of Energy**  
 Carlsbad Field Office  
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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

**NMED**  
**Hazardous Waste Bureau**

Subject: Transmittal of Notification of Adverse Conditions

Dear Mr. Kieling:

The purpose of this letter is to provide the New Mexico Environment Department with the notification of adverse conditions pursuant to Permit Part 4, Section 4.6.1.3., *Notification of Adverse Conditions*; and Permit Attachment A2, Section A2-5b(2)(a), *Description of the Geomechanical Monitoring System*. This notification pertains to the January 15, 2015 discovery of a slab fall at the South 2750 Panel 3 entrance. The discovery took place during routine ground control and monitoring inspections. This area of the underground has been restricted since November 2014 due to the inability to perform roof-bolting activities as a result of the fire and radiological events on February 5 and 14, 2014, respectively. There were no injuries as a result of this incident, and there were no adverse impacts to human health or the environment.

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

  
 Robert L. McQuinn, Project Manager  
 Nuclear Waste Partnership LLC

Enclosure

cc: w/enclosure  
 R. Flynn, NMED \*ED  
 J. Kieling, NMED ED  
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\*ED denotes electronic distribution



**Evaluation of Ground Conditions  
in the  
S-2750 Entry to Panel 3  
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## Evaluation of Ground Conditions in the S-2750 Entry to Panel 3

The purpose of this document is to provide notification of a trend towards unstable conditions in the S-2750 panel access. A roof fall was discovered during a routine ground control and bulkhead inspection on January 15, 2015, in the S-2750 access to Hazardous Waste Disposal Unit (HWDU) Panel 3, approximately 20 feet east of the E-300 Drift intersection (Figure 1). The section that fell was estimated to be approximately 6' long by 6' wide and 18" thick, or about 7300 lbs. Access to this area has been restricted since November 2014 due to ground control concerns, and no WIPP personnel were present at the time of the fall. The area where the fall occurred is also known to contain low levels of radioactive contamination as a result of the February 14, 2014, event.

The Hazardous Waste Facility Permit (Permit) Part 4, Section 4.6.1.3 and Attachment A2, Section A2-5b(2)(a) describes the requirements if a trend toward adverse ground conditions are observed in HWDUs.

### *4.6.1.3. Notification of Adverse Conditions*

*When evaluation of the geomechanical monitoring system data identifies a trend towards unstable conditions which requires a decision whether to terminate waste disposal activities in any Underground HWDU, the Permittees shall provide the Secretary with the same report provided to the WIPP Operations Manager within seven calendar days of its issuance, as specified in Permit Attachment A2, Section A2-5b(2)(a),*

And,

### *A2-5b(2)(a), Description of the Geomechanical Monitoring System*

*The stability of an open panel excavation is generally determined by the rock deformation rate. The excavation may be unstable when there is a continuous increase in the deformation rate that cannot be controlled by the installed support system. The Permittees will evaluate the performance of the excavation. These evaluations assess the effectiveness of the roof support system and estimate the stand-up time of the excavation. If an open panel shows the trend is toward adverse (unstable) conditions, the results will be reported to determine if it is necessary to terminate waste disposal activities in the open panel. This report of the trend toward adverse conditions in an open HWDU will also be provided to the Secretary of the NMED within seven (7) calendar days of issuance of the report.*

Panel 3 has been filled (no longer receiving waste for emplacement) and bulkheads installed to block the ventilation to Panel 3 and for sampling purposes pursuant to the Permit. However, because the final closure system has not been installed, this area of the Panel is subject to the reporting described above.

### Geomechanical Monitoring

Geomechanical monitoring in this area consists of a convergence monitoring station located at approximately S-2750/E-410. Convergence measurements, at this location, were last performed on January 27, 2014. These measurements indicated a closure rate of approximately 4 inches per year which was less than the observed rate during the previous two years. These rates do not exhibit an accelerated trend towards roof failure. The installation of a ground support system was underway and originally scheduled to be re-bolted during the annual outage in February 2014. The outage was suspended as a result of the fire and radiological incidents, and the bolting was not performed.

The installation of the ground support system consisted of several stages, of which only the first stage was partially completed prior to installation suspension. The first stage of the multilayer ground support system consisted of a chain-link mesh, 4-ft mechanical roof bolts and 12-ft resin anchored roof bolts. For temporary emplacement, the chain-link mesh was initially attached to the back using powder actuated spad nails. The intent was to install roof bolts soon after to provide adequate support to hold the roof beam in place. Roof bolt installation was initiated near the panel closure bulkhead and was progressing westward towards the E-300 Drift. This work was suspended in February 2014 before any roof bolts were installed to secure the chain-link mesh and provide the necessary support to the roof beam. As a result of continuing salt creep deformation, lateral compression forces on the roof beam resulted in the roof beam bowing downward creating separations along shallow anydrite stringers located approximately 18 to 24 inches into the roof. As the separations grew, the section of the roof beam, located below the stringers, could no longer support itself and fell. The chain-link mesh, which was only superficially attached to the back, separated at the overlap and provided little resistance to the fall (Figure 2).



Figure 1. A close up of the roof fall material.



Figure 2. The separation in the chain-link mesh, along the overlap, caused by the roof fall.

The area in which the roof bolts were installed east of the ground fall are in good condition and are performing as expected.

WIPP geotechnical inspections conducted in November 2014 identified seven areas in the underground facility where access was restricted due to roof bolt loss. The deteriorating condition of the S-2750 access to Panel 3 was identified by Geotechnical Engineering using a series of visual and mechanical observations which included:

- Identification of roof bolt failures.
- The development of tension cracks in the roof beam.
- Convergence rate monitoring.
- Identification of separations along anhydrite stingers within the adjacent roof beam in E-300 drift.

Due to the area's history, its current condition, lack of ground support, and inaccessibility, it was recommended to continue restricted access to be controlled by Mine Operations management. Barriers and signs have been installed to this restricted area, and workers are reminded of these restrictions as part of daily pre-job briefings before entering the underground facility.

Ground control engineers have indicated that the area where the roof fall occurred can be re-bolted and recovered. The systematic completion of the ground support system and ground monitoring can be used to regain and maintain safe access to this area.