



Department of Energy

Washington, DC 20585

April 4, 2014

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DNF SAFETY BOARD

The Honorable Peter S. Winokur
Chairman
Defense Nuclear Facilities Safety Board
625 Indiana Avenue, NW, Suite 700
Washington, DC 20004

Dear Mr. Chairman:

This is in response to your March 12 letter advising the Department of Energy (DOE) to thoroughly evaluate the ventilation system at the Waste Isolation Pilot Plant (WIPP) and evaluate the safety controls and contingency plans necessary to maintain confinement to ensure adequate protection of the workers and the public.

The Department agrees with the Board on the importance of the filtered ventilation system. Because of this concern, the Department took several actions to implement compensatory measures and to evaluate the ventilation system. As a result of executing the Department's Unreviewed Safety Question process as described in the Department's rule 10 CFR Part 830, *Nuclear Safety Management*, operational restrictions were imposed on March 8 and March 11. The Department began implementing the following operational restrictions and compensatory measures to:

- Prohibit the Waste Handling mode in the Underground (U/G);
- Not operate any U/G liquid fueled vehicles;
- Continue to operate the Mine Ventilation System in Filtration Mode; and
- Not enter the U/G ventilation exhaust drift.

On March 12 the WIPP contractor, Nuclear Waste Partnership (NWP), issued Management Directive (MD) 1.5, Revision 0, titled *Operational Restrictions*, with the additional operational restriction to:

- Restrict combustible loading in the Exhaust Filter Building (Bldg 413) and around the associated ductwork.

On March 19 in accordance with 10 CFR 830, NWP transmitted to the Department the WIPP Habitability Evaluation of the Safety of the Situation to formalize the implementation of the operational restrictions and compensatory measures.



On March 21, the Department approved the enclosed Safety Evaluation Report (SER) approving the WIPP Habitability Evaluation of the Safety of the Situation (ESS). MD 1.5, Revision 1, *Interim Underground Operational Restrictions and Requirements*, was also issued and approved March 22, 2014. The following four conditions of approval were added by the Department through the SER approval:

- The ESS alone is not sufficient for approval of underground activities;
- Vehicle barriers will be appropriately emplaced to protect the aboveground portions of the Exhaust Filter Building Ventilation System;
- The contractor, NWP, LLC, is directed to identify all required support systems and report back in two weeks any deficiencies and compensatory measures and a timeframe for establishing corrective action plans or procedural controls; and
- NWP is directed to provide to the Carlsbad Field Office, within two weeks, a schedule for completion of a thorough evaluation of the filtered ventilation system vulnerabilities and identify potential compensatory actions.

We appreciate the advice and feedback provided by the Board and the presence of your staff observing our investigation of the fire and radiological event, and we look forward to continued positive interactions.

If you have any questions, please contact me or Mr. James Hutton, Acting Deputy Assistant Secretary for Safety, Security, and Quality Programs, at (202) 586-5151.

Sincerely,



David Huizenga
Acting Assistant Secretary
for Environmental Management

Enclosure



Department of Energy
Carlsbad Field Office
P. O. Box 3090
Carlsbad, New Mexico 88221

MAR 21 2014

Mr. Robert L. McQuinn, Project Manager
Nuclear Waste Partnership, LLC
P. O. Box 2078
Carlsbad, NM 88221-2078

Subject: Department of Energy Approval of ESS 20114-01, WIPP Habitability Evaluation of the Safety of the Situation, Revision 0

Reference: Transmittal letter AA:14:01037, Subject: Contract DE-EM0001971, WIPP Habitability Evaluation of the Safety of the Situation, ESS-2014-01, dated March 19

Dear Mr. McQuinn:

In accordance with the requirements of 10 CFR 830 Subpart B and DOE Memorandum Matthew Moury to J. Franco, Subject: Delegation of Safety Authorities, dated January 29, 2014, the Carlsbad Field Office (CBFO) Safety Approval Authority hereby approves the Nuclear Waste Partnership (NWP) submittal of the above referenced document. The enclosed document DOE/WIPP 14-3521 Safety Evaluation Report for Approval of ESS 2014-01, WIPP Habitability Evaluation of the Safety of the Situation, Revision 0 documents the basis for this approval.

The following conditions of approval are established to demonstrate additional expectations of CBFO for activities in the near future, but are not considered necessary for timely implementation of the controls contained in ESS 2014-01, Revision 0:

- This ESS alone is not sufficient for approval of underground activities which will require an additional ESS to be submitted by NWP for CBFO approval. NWP should also consider timely development and submission to CBFO of an ESS to establish appropriate controls to re-establish ground control in the underground per 30 CFR 57;
- NWP is directed to emplace appropriate vehicle barriers to protect vulnerable aboveground portions of the Exhaust Filter Building (EFB) Ventilation System;
- CBFO places a high level of importance on the EFB Ventilation system as a result of the underground fire and radioactive release events. CBFO also places emphasis on identifying EFB Ventilation System required support systems and conducting EFB Ventilation System and support system maintenance. CBFO therefore directs that NWP identify all required support systems (e.g., electrical backup, plant air, etc.) and report back to CBFO within two weeks any identified deficiencies and compensatory measures that mitigate the deficiencies and a time frame for establishment of any required corrective action plans or procedural controls. A critical spare parts list should also be identified along with a schedule for assuring on site availability of critical spare parts within two weeks.

- NWP is directed to provide CBFO within two weeks a schedule for completion of a thorough evaluation of the filtered ventilation system vulnerabilities and identify potential compensatory actions. This should include potential underground scenarios and future underground activities. Until this thorough evaluation is finished, NWP shall ensure a EFB Ventilation System vulnerability review is accomplished for each approved work package.

The effective implementation date of the WIPP ESS 2014-01 Revision 0 is no later than March 23, 2014, two days from the date of this approval to allow adequate time for staff training and for the completion of necessary revisions to procedures affected by the ESS 2014-01 requirements and safety actions.

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

Sincerely,


 Jose R. Franco, Manager
 Carlsbad Field Office

Enclosure

cc: w/enclosures

- | | |
|----------------------|-----|
| R. Nelson, EM-21 | *ED |
| D. Bryson, CBFO | ED |
| D.C. Gadbury, CBFO | ED |
| G. Basabilvazo, CBFO | ED |
| J.R. Stroble, CBFO | ED |
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| J.A. McCormick, NWP | ED |
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CBFO M&RC

*ED denotes electronic distribution

**Safety Evaluation Report
for Approval
of
ESS-2014-01
WIPP Habitability Evaluation of the Safety of the Situation
Revision 0**

**Managed and Operated by Nuclear Waste Partnership, LLC
Under U. S. Department of Energy Contract DE-EM0001971**



**U. S. Department of Energy
Carlsbad Field Office**

March 2014

AUTHORITY APPROVAL

**Safety Evaluation Report
for Approval
of**

ESS-2014-01

**WIPP Habitability Evaluation of the Safety of the Situation
Revision 0**

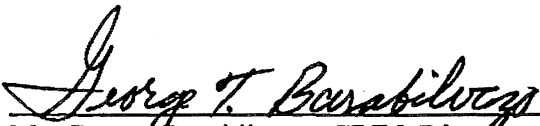
**U. S. Department of Energy
Carlsbad Field Office**

March 2014



Dr. Robert C. Nelson, CBFO
Authorization Basis Review Team Leader

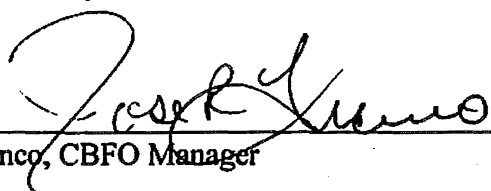
Date: 3-21-14



Mr. George Basabilvazo, CBFO Director,
Environment, Safety and Health

Date: 3-21-14

Approved:


Mr. Jose Franco, CBFO Manager

Date: 3/21/14

1.0 EXECUTIVE SUMMARY

This Safety Evaluation Report (SER) documents the U.S. Department of Energy's (DOE) review and approval of ESS 2014-01, *WIPP Habitability Evaluation of the Safety of the Situation*, Revision 0. ESS 2014-01 was formally initiated and transmitted to CBFO for approval by transmittal letter AA:14:01037, Subject: *Contract DE-EM0001971, WIPP Habitability Evaluation of the Safety of the Situation, ESS-2014-01*, dated March 19, 2014, from Mr. Robert L. McQuinn, Project Manager, Nuclear Waste Partnership LLC (NWP), to Mr. Jose R. Franco, Manager, Carlsbad Field Office.

The implementation of ESS 2014-01 does not affect the approved DOE/WIPP 07-3372, *Waste Isolation Pilot Plant Documented Safety Analysis*, Revision 4 or the DOE/WIPP 07-3373, *Waste Isolation Pilot Plant Technical Safety Requirements*, Revision 4 (TSR) documents. DSA and TSR Revision 4 documents were approved August 21, 2013 by SER DOE/WIPP 11-3467.

ESS 2014-01 imposes the compensatory actions taken by the NWP during recovery efforts described in the WIPP Haul Truck Fire and Radiological Release Events Integrated Recovery Plan for above ground habitability. ESS 2014-01 alone is not sufficient for future planned underground activities.

The purpose of ESS 2014-01 is to evaluate the safe habitability of the WIPP site, and the safety of the public and the environment as the result of the identification of inadequacies of the existing safety basis. These inadequacies were documented by the Potential Inadequacies in the Safety Analysis (PISA) Determinations: P14-0001- Occurrence Report EM-CBFO-NWP-2014-0001 - Underground Salt Haul Truck Fire and P14-0002- Occurrence Report EM-CBFO-NWP-2014-0002 - Underground Radiological Event and subsequent positive Unreviewed Safety Question Determinations (USQD) (PISA P14-0001, PISA P14-0002, USQD D14-009, and USQD D14-013) associated with the recent fire and radiological events.

The positive PISA and USQD evaluations define, in part, the significance of the WIPP U/G ventilation and HEPA filtration system inadequacies. As such initial interim controls have been established by NWP Management involving these two systems. During the interim period, and until NWP has put in place more fully developed physical upgrades and associated Technical Safety Requirements (TSRs) are established and approved by DOE, the interim controls defined by ESS-2014-01 will be compliantly implemented upon DOE approval of the ESS. Mitigation provided by the WIPP U/G ventilation and HEPA filtration systems is now essential to safe habitability of the WIPP site and the protection of the public and the environment. ESS-2014-01 describes new interim controls to ensure the early detection of abnormal conditions and allow response to maintain the intended functions of the subject systems. During the NWP evaluations and determinations of the positive PISAs and USQDs, CBFO and supporting staff attended all of the NWP Nuclear Review Board meetings and participated in the discussions and comment sessions.

This SER is prepared in accordance with the guidance provided in DOE-STD-1104-2009, *Review and Approval of Nonreactor Nuclear Facility Safety Analysis Reports and Safety Design Documents* and provides the DOE Approval Authority with the basis for approval of ESS 2014-01, Revision 0.

2.0 REVIEW PROCESS

The CBFO reviews were completed prior to submittal of this SER to the DOE Approval Authority. Reviews of the Nuclear Waste Partnership (NWP) proposed ESS 2014-01 document were completed by the CBFO staff, with assistance from the CBFO Technical Assistance Contractor. The CBFO reviews were performed and documented in accordance with CBFO Management Procedure 4.11, *Safety Basis Review Procedure*. The CBFO review comments were communicated to the M&O contractor, and completed on March 21, 2014. Acceptance of the review comments was also documented on March 21, 2014. The review involved verification of the technical accuracy, completeness, effectiveness and defensibility of the compensatory actions proposed with ESS 2014-01.

3.0 APPROVAL BASES and BASE INFORMATION

The acceptance of compensatory actions implemented with ESS 2014-01 are provided by the adequate integration of the actions into the approved DSA and TSR documents and WIPP operations. Integration is evaluated in the following areas:

Base Information – General descriptions in Chapters 1, *Site Characteristics*, and 2, *Facility Description*. No changes were made to Chapter 1 or Chapter 2

ESS 2014-01 defines and implements several interim safety measures and operational restrictions including:

- Do not enter WASTE HANDLING MODE in the UNDERGROUND.
- Do not operate any U/G liquid fueled vehicles.

The two operational restrictions (above), in conjunction with the existing operating and emergency response procedures, provide the necessary controls for hazards associated with fires in the U/G.

- Continue to operate the Mine Ventilation System in Filtration Mode. Do not operate the system in any other mode.
- Do not enter the U/G ventilation exhaust drift. This is defined as:
 - For Panel 7, room 7, S-2180 to E-300
 - For Panel 6, S-3080 to E-300
 - For drifts south of S-3080
 - E-300 to the exhaust shaft

The second two operational restrictions in conjunction with the existing operating and emergency response procedures provide the necessary controls for hazards associated with the radiological release in the U/G.

In addition, interim controls have been established by NWP Management. During this interim period and until physical upgrades are more fully developed and Technical Safety Requirements (TSRs) are established, these controls will remain in place. Those interim controls will be implemented by controlled procedures and/or processes including detailed, repeatable, assured instructions, which will be further defined in the NWP Implementation Plan for EES-2014-01. Any abnormalities associated with EES interim controls will be promptly reported and evaluated for significance. The ESS-2014-01 interim controls follow:

- Locks and tags have been placed on the three 700 fans' dampers and motors to restrict their operation. Locks and tags will be verified weekly.
- Caution tags have been placed on the three 860 fan controls, to assure only one 860 fan is operating, since Filtration Mode is restricted to the flow rate of one 860 fan. Tags will be verified weekly.
- Restrict and minimize combustible loading in and around (within approximately 25 feet) the Exhaust Filter Building (Bldg. 413) and around the associated ductwork.
 - o Each shift ensure no accumulation of unauthorized combustibles.
 - o Planned work will be evaluated, through the USQ process, to assure combustibles in and around Bldg. 413 are minimized and attended during execution and removed upon completion of work.
- Visually inspect each shift (through the filter bank windows) the filters and filter compartments for units 41-B-856 and 41-B-857, to assure no visual change in configuration or obvious system deterioration.
- Qualitatively assess the in-service 860 fan each shift to monitor for abnormal operations, e.g. vibration and noise.
- Record the amperes each shift for the in-service 860 fan to assure it is operating in a normal range.
- Monitor each shift the following system performance for the HEPA filter units, 41-B-856 and 41-B-857, and the U/G ventilation system. For abnormal conditions, such as an instrument that becomes unavailable, corrective or preventive maintenance activities will be managed in a timely and sustained fashion in accordance with approved procedures. If the Central Monitoring System (CMS) is not available, then local readings will be monitored for the filters and Station B flow rate.

- o Differential pressures (DPs) for all filter banks (CMS or Local)
- o DP for the Waste Hoist Tower (CMS)
- o DP for regulator 308 (CMS)
- o Station B flow rate (CMS or Local)
- Monitor every four hours the radiological activity at Station B by direct frisk of the filter paper. If the results indicate > 2 times background from the Station B portable air sampler (PAS) filter, then notifications and response actions will be taken.
- Monitor weekly the Ground Control Monitoring System (GCMS). For abnormal ground conditions make notifications to include the Facility Shift Manager.

3.2 HAZARD AND ACCIDENT ANALYSES

There are no changes made to the DSA Chapter 3 hazard or accident analysis.

The implementation of the compensatory actions in ESS 2014-01 is to ensure that the approved safety envelope is maintained in the interim. The compensatory actions are consistent with the material-at-risk limits established in the WIPP DSA. The compensatory measures do not make corrections to the frequency, consequence and risk analysis. These measures do not affect the hazards analysis bounding events or affect the operational safety functions of the WHB or UG safety systems or credited controls as presently approved by DOE.

3.3 SAFETY STRUCTURES, SYSTEMS, AND COMPONENTS AND SPECIFIC ADMINISTRATIVE CONTROLS

There are no proposed changes to the DSA Chapter 4 Safety Structures, Systems, and Components.

3.4 SPECIFIC ADMINISTRATIVE CONTROLS

There are proposed compensatory administrative actions described above in Section 3.0 that do not conflict with any SACs credited in the DSA Chapter 4 Specific Administrative Controls (SACs).

3.5 DERIVATION OF TECHNICAL SAFETY REQUIREMENTS

There are no proposed changes to the DSA Chapter 5 Derivation of Technical Safety Requirements.

3.6 SAFETY MANAGEMENT PROGRAM CHARACTERISTICS

There are no proposed changes to the DSA Safety Management Programs.

3.7 TECHNICAL SAFETY REQUIREMENTS

The ESS 2014-01 compensatory actions are implemented as equivalent to the currently approved Technical Safety Requirements.

4.0 RECORDS

Review of this change was conducted in accordance with the general requirements in DOE-STD-1104-2009. This SER is a part of the administrative record associated with this review and is available for inspection.

5.0 CONDITION OF APPROVAL

The following conditions of approval are established to demonstrate additional expectations of CBFO for activities in the near future, but are not considered necessary for timely implementation of the controls contained in ESS 2014-01, Revision 0:

- This ESS alone is not sufficient for approval of underground activities which will require an additional ESS to be submitted by NWP for CBFO approval. NWP should also consider timely development and submission to CBFO of an ESS to establish appropriate controls to re-establish ground control in the underground per 30 CFR 57;
- NWP is directed to emplace appropriate vehicle barriers to protect vulnerable aboveground portions of the Exhaust Filter Building (EFB) Ventilation System;
- CBFO places a high level of importance on the EFB Ventilation System as a result of the underground fire and radioactive release events. CBFO also places emphasis on identifying EFB Ventilation System required support systems and conducting EFB Ventilation System and support system maintenance. CBFO therefore directs that NWP identify all required support systems (e.g., electrical backup, plant air, etc.) and report back to CBFO within two weeks any identified deficiencies and compensatory measures that mitigate the deficiencies and a time frame for establishment of any required corrective action plans or procedural controls. A critical spare parts list should also be identified along with a schedule for assuring on site availability of critical spare parts within two weeks.
- NWP is directed to provide CBFO within two weeks a schedule for completion of a thorough evaluation of the filtered ventilation system vulnerabilities and identify potential compensatory actions. This should include potential underground scenarios and future underground activities. Until this thorough evaluation is finished, NWP shall ensure a system vulnerability review is accomplished for each approved work package.

The implementation of the compensatory actions proposed in ESS 2014-01 does not affect the TSR Revision 4 document and therefore do not affect any credited safety controls.

6.0 RESULTS

The review resulted in confirmation that the proposed ESS 2014-01, Revision 0 are accurate and complete, and are consistent with all hazards identification, hazards analyses, and subsequent accident analyses summarized from the post event evaluation. The proposed compensatory actions do not introduce any new unreviewed safety hazards that require additional safety controls to be implemented. The hazards associated with handling and disposal of any radioactive contamination remains bounded by the existing hazard analysis described in the DSA, Revision 4.

It is the judgment of the reviewers that the submitted NWP ESS 2014-01 meets the 10 CFR 830 Subpart B requirements and DOE Order 420.1C requirements and is consistent with associated DOE guidance. The implementation of the proposed compensatory actions are appropriate interim actions to allow the Contractor (NWP) to operate safely as described and controlled within the DOE-reviewed and approved safety basis documentation.