

**Independent Oversight Review of the
Waste Isolation Pilot Plant
Work Planning and Control Activities**



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**Office of Safety and Emergency Management Evaluations
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Acronyms

CAQ	Condition Adverse to Quality
CRAD	Criteria Review and Approach Document
CBFO	Carlsbad Field Office
DNFSB	Defense Nuclear Facilities Safety Board
DOE	U.S. Department of Energy
EM	Office of Environmental Management
HSS	Office of Health, Safety and Security
ISMS	Integrated Safety Management System
MOE	Monitored Operational Evolution
NWP	Nuclear Waste Partnership
OFI	Opportunity for Improvement
SCAQ	Significant Condition Adverse to Quality
SSW	Senior Supervisory Watch
TRU	Transuranic
WIPP	Waste Isolation Pilot Plant
WTS	Westinghouse TRU Solutions

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1.0 PURPOSE

The Office of Enforcement and Oversight (Independent Oversight), within the Office of Health, Safety and Security (HSS), conducted a shadowing oversight activity to review the U.S. Department of Energy (DOE) Carlsbad Field Office (CBFO) oversight of the Waste Isolation Pilot Plant (WIPP). This Independent Oversight activity was performed by HSS Office of Safety and Emergency Management Evaluations personnel shadowing the CBFO's review of the WIPP operating contractor's Work Control Improvement Plan implementation and effectiveness review, and CBFO's annual review of the contractor's Integrated Safety Management System (ISMS), specifically using the work planning and control Criteria Review and Approach Document (CRAD).

2.0 SCOPE

The Independent Oversight review focused on the requirements that support the key elements in DOE Order 226.1B, *Implementation of Department of Energy Oversight Policy*, with emphasis on the CBFO's oversight of the implementation of the contractor's effectiveness review performance and work planning and control process. The onsite portions of the review were performed during two visits: first on June 25-28, 2012, and a follow-up visit on January 22-24, 2013. The objectives of the Independent Oversight review were to evaluate selected portions of: (1) CBFO's oversight of the contractor's effectiveness review documentation; and (2) CBFO's performance of the annual ISMS declaration review of the contractor's work planning and control element.

3.0 BACKGROUND

The WIPP is a hazard category 2 nuclear facility whose mission is to provide a safe and permanent disposal location for DOE-owned transuranic (TRU) and TRU mixed wastes. Work planning and control constitutes a critical programmatic element of ensuring safe operation of the facility.

In October 2010, the Defense Nuclear Facilities Safety Board (DNFSB) documented that the ISMS processes used to plan and control activity-level work by the WIPP contractor, Washington TRU Solutions (WTS),¹ was not fully implemented. In January 2011, DOE submitted a corrective action plan summary to the DNFSB that provided the actions taken or planned by WIPP to address deficiencies. In June 2012, WTS issued an effectiveness review of the Work Control Implementation Plan, and the CBFO conducted a management assessment to evaluate the quality of the contractor's effectiveness review. The management assessment consisted of review of documentation; observations of work; and interviews with facility operations personnel, maintenance personnel (including work control planners), and quality assurance personnel. The CBFO team leader for the management assessment submitted the report for review in August 2012. CBFO approved and released the report in January 2013.

In September 2012, the DOE Office of Environmental Management (EM) asked the CBFO to submit the annual ISMS and quality assurance declaration report for fiscal year 2012 by February 28, 2013. On

¹ Washington TRU Solutions (WTS) was the operating contractor until October 1, 2012, at which time Nuclear Waste Partnership LLC (NWP), a URS-led entity with partner B&W Technical Services Group and major subcontractor AREVA Federal Services, was awarded the management and operating contract.

October 1, 2012, Nuclear Waste Partnership, LLC (NWP) was awarded the management and operating contract for WIPP. CBFO scheduled the ISMS review of the new contractor, NWP, for January 2013. Independent Oversight also scheduled a follow-up shadowing oversight visit to evaluate one of the seven ISMS review criteria, Criterion 6: Activity Level Work Planning and Control, Job Hazard Identification and Analysis, and Development of Hazard Controls.

4.0 METHODOLOGY

The Independent Oversight review began with an assessment of the CBFO's oversight process by shadowing the CBFO management assessment team in June 2012 and reviewing the contractor's documentation supporting the contractor's conclusion that corrective actions had been effective in resolving DNFSB work planning and control concerns from July 2010. The CBFO management assessment team in 2012 consisted of six individuals, shadowed by two observers from Independent Oversight. The observers provided an independent look at ongoing work activities and evidence files. Because of a lengthy delay in CBFO's approval and issuance of the management assessment report, the Independent Oversight team was unable to evaluate CBFO's conclusions until its follow-up visit in January 2013, when the report from the June 2012 management assessment was finally released. During the January 2013 follow-up visit, Independent Oversight also observed the activity of the CBFO team assigned to Criterion 6, including work observations, work package reviews, and interviews with management and workers in support of the annual ISMS declaration. The CBFO team consisted of the Facility Representative & Work Control Team Leader, two Facility Representatives, a nuclear safety engineer, an electrical safety systems specialist, and two technical support personnel.

5.0 RESULTS

5.1 CBFO Management Assessment

Oversight of the CBFO Management Assessment Team. During the June 2012 CBFO review, the CBFO management assessment team adequately executed the review plan through review of the contractor's evidence documentation; observations of work; and interviews with facility operations personnel, maintenance personnel (including work control planners), and quality assurance personnel. The CBFO team and Independent Oversight identified several significant concerns (discussed below) associated with the effectiveness of the contractor's Work Control Improvement Plan. By contrast, the contractor's surveillance identified no findings, no conditions corrected during the assessment, and no observations, and the contractor's effectiveness review report concluded that corrective actions taken to address the DNFSB issues had been effectively addressed and the issues were considered closed. Independent Oversight agrees with CBFO that conditions adverse to quality (CAQs) continued to exist including some that were similar to those identified by the DNFSB. These conditions discussed below, included procedure noncompliance, failure to document and submit issues, and ineffective use of issues management tracking systems. In addition, the CBFO team correctly concluded that the contractor's root cause analysis of the DNFSB issues was not sufficiently rigorous to determine the underlying causes and prevent recurrence, since WTS's causal analysis was limited to selecting high level apparent-cause codes for each issue without providing sufficient analysis beyond what was documented in the DNFSB report. (See OFI-1.)

CBFO Management Assessment Team Concerns. In 2010, the DNFSB staff observed personnel performing steps not in the procedure, not performing steps, and performing steps out of sequence. The WCIP stated that WTS would form a Conduct of Operations Continuous Use procedure evaluation team

to demonstrate the continued focus on procedure effectiveness. That action was deemed closed, and the WTS surveillance concluded that the effort had been effective.

However, the CBFO team's review of the monitored operational evolution (MOE) and senior supervisory watch (SSW) records identified continued work planning deficiencies. For example, information supplied by the contractor indicated that in 34 MOE's performed, there were 82 issues involving 24 categories of work including lockout/tagout, stop-work, and work package inadequacy. The CBFO team reviewed work packages and 31 MOEs performed between December, 2011 and March, 2012 and identified work planning and control deficiencies. Specifically, in December, 2011, 15 of 18 MOEs performed could not be completed due to work control issues. From January through March, 2012, 9 of 13 MOEs required changes or stop work orders. None of the 82 contractor identified issues were entered into the WIPP Form database.

The CBFO team noted that the WTS assessor conducting the effectiveness surveillance had reviewed the WIPP Form database, particularly WIPP Form records, for evidence of reported procedural noncompliance issues. The WTS assessor noted that fewer procedural noncompliance items were coded in the WIPP Form database in 2010 than in 2011 and thus concluded that the corrective actions to address this DNFSB issue had been effective. However, because the WTS assessor did not identify that these issues were omitted from the MOE and SSW records in the WIPP Form database, the assessor incorrectly concluded that this issue had been effectively resolved.

During Independent Oversight's shadowing of a CBFO team member, the Facility Representative correctly identified that a waste handling technician performed actions that were not written in a Continuous Use procedure being used for removing the outer containment vessel lid from a TRUPACT-II container – i.e., the technician rotated the counterweights on the adjustable center of gravity lift fixture to the balanced position while raising the outer containment vessel lid. The Facility Representative communicated this concern to a waste handling engineer, first line supervisor, and operations manager, who said that this operation had often been performed during the on-the-job training. The Facility Representative and Independent Oversight noted that the WTS personnel were reluctant to consider changing the procedure to include the specific action step. After WTS's evaluation that the operation was safe and a procedure change was warranted, WTS management authorized the worker to continue the removal of the outer containment vessel lid. WTS management informed CBFO that WTS will process the procedure revision concurrently with the work. The CBFO management review team properly identified these actions as a violation of the WTS work processes and procedures, as well as conduct of operations.

The CBFO team noted that the WTS effectiveness review assessor did not observe work package execution or performance of operations procedures. In reviewing the documentation of the WTS closure packages, the CBFO team identified that some of the corrective actions lacked sufficient documentation and justification to support closure. For example, CBFO identified that although one corrective action was to perform a comprehensive review of the skill-of-the-craft books; WTS made only minor word revisions and provided no evidence that the actions were effective.

In August 2012, the CBFO team leader drafted a formal management assessment report documenting the results per CBFO procedure MP 9.1, Management Assessments. This report format had been previously used for documenting CBFO oversight activities of the contractor. However, in this case, CBFO management did not promptly approve the report due to questions about substantiating the observations and a determination that MP 9.1 was not the correct format for contractor oversight reports. (See **OFI-2**.) CBFO later approved and issued the report on January 21, 2013, and provided a copy to Independent Oversight during the follow-up site visit. While awaiting issuance of this report, the CBFO Facility Representative Team Leader issued Operational Awareness entries into the CBFO database and, in

October 2012, met with the NWP Operations Manager and NWP Quality Assurance Manager to discuss the issues and request corrective actions. NWP reviewed the information but did not initiate any formal corrective actions because the management assessment report had not yet been formally issued.

Although the concerns had been entered into the CBFO Operational Awareness Database, no corrective action reports were generated, as required by MP 3-1, to formally and promptly identify and evaluate potential CAQs. Three potential CAQs were identified during the June 2012 management assessment but were not formally documented until the report was issued in January 2013. As a result, CAQ's continued exist with no corrective actions planned or taken for more than six months. (see Section 7, **F-1**):

1. The analysis process and associated corrective action process used by WTS for determining and resolving the causes of DNFSB findings did not prevent recurrence of previous findings.
2. WTS is not performing verbatim compliance when executing operations procedures and maintenance work packages.
3. WTS is not entering issues into the issues management tracking system that otherwise should be entered, resulting in recurrence of issues associated with work planning and control.

The management assessment report also provided two specific recommendations concerning weaknesses related to issues management and conduct of effectiveness reviews.

5.2 CBFO ISMS Assessment

Oversight of the CBFO ISMS Assessment Team. The CBFO team assigned to Criterion 6 reviewed a sample of the open work orders, conducted interviews, and observed work. Although CBFO had not yet completed the analysis of the evidence and concluded whether the objective for Criterion 6 had been met, Independent Oversight agrees with the identification of the issues raised during the review. Overall, the CBFO team was knowledgeable of the work control requirements and performed a thorough review.

CBFO ISMS Assessment Team Concerns. The CBFO nuclear safety engineer correctly identified that the work order package for the fire suppression system (a safety significant system) did not correctly describe the prerequisite condition that the Waste Handling Building is to be in standby mode and that the applicable technical safety requirements are to be consulted before the fire suppression system is disabled. The approved work order package was not written in accordance with the Work Control Process procedure.

One of the team members correctly identified that the maintenance crew did not conduct the daily pre-job brief in accordance with NWP procedure. The foreman did not review all the applicable steps described in the Task Preview section, as required by the procedure.

While the team was in the underground area, team members reviewed work package documentation, interviewed the workers and foreman, and observed work on ongoing jobs. They correctly noted that some hazards had not been properly documented, categorized, communicated, and mitigated, such as hearing protection, labeling of walking surfaces over holes, seat belt usage, at-risk behavior in lifting material, and expired job hazards analysis. One of the pre-job briefs prior to commencement of work was not documented in accordance with the NWP procedure. The team communicated these issues to the foreman when they were observed, and also stated some of them during the CBFO ISMS team exit briefing. These issues indicate that NWP management's expectations for the preparation, communication, and execution of work packages are not being met.

The CBFO team also reviewed performance metric data compiled over the past three months by the work planning department. After work packages are approved for use, management tracks and trends data

associated with delays, such as equipment unavailability, inadequate tools, or inadequate work instructions. CBFO questioned NWP's assertion that over the past three months, no inadequate work instructions for work packages have been approved on site. In the small sampling of work packages during the ISMS review, the CBFO team identified several inadequate work instructions.

6.0 CONCLUSIONS

The Independent Oversight team concurs with CBFO that the previous contractor, WTS, effectiveness review of the Work Control Improvement Plan implementation was inadequate and did not support its conclusions of effective performance. The WTS review's conclusion that corrective actions were effective was not substantiated by performance data (e.g., observation of actual conduct of work). The WTS review closed the surveillance primarily based only on evidence that the corrective actions were completed, but there was no evidence that the actions were effective in preventing recurrence of the conditions noted by the DNFSB.

Overall, the CBFO was knowledgeable of the work control requirements and performed a thorough review. The Independent Oversight team agrees with facts in the CBFO management assessment report concerning the previous contractor's inadequate causal analysis, problems associated with verbatim compliance with Continuous Use procedures, and inadequate utilization of the issues management system.

Although the CBFO ISMS assessment team has not yet issued its report, the Independent Oversight team agrees that the assessment correctly identified noncompliant conditions and continuing weaknesses in work planning and control. Management attention is warranted to ensure timely issuance of future reports and development of corrective actions.

7.0 FINDINGS

Findings indicate significant deficiencies or safety issues that warrant a high level of management attention. If left uncorrected, such findings could adversely affect the DOE mission, the environment, the safety or health of workers or the public or national security. Findings may identify aspects of a program that do not meet the intent of DOE policy.

F-1: CBFO did not follow the requirements of MP 3.1 and its quality assurance program requirements in the identification and disposition of conditions adverse to quality, and failed to document its findings in a manner that would ensure timely corrective action to these conditions that can be detrimental to safety.

8.0 OPPORTUNITIES FOR IMPROVEMENT

This Independent Oversight review identified the following opportunity for improvement (OFI). This potential enhancement is not intended to be prescriptive or mandatory. Rather, it is offered to the site to be reviewed and evaluated by the responsible line management organizations and accepted, rejected, or modified as appropriate, in accordance with site-specific program objectives and priorities.

OFI-1: Evaluate the collective safety significance of the identified conditions adverse to quality and work control concerns, and make a determination as to whether any immediate compensatory measures are warranted to ensure the continued safety of operations.

OFI-2: Revise MP 9.1 to clarify the purpose and scope to include use for contractor assessments and modify to add suggested timeframes for validating observations and issuing reports.

9.0 ITEMS FOR FOLLOW-UP

DOE Order 227.1, *Independent Oversight Program*, states that timely and appropriate action must be taken to address the findings and other deficiencies identified in Independent Oversight appraisal reports and that corrective action plans must be developed and implemented for Independent Oversight appraisal findings. Cognizant DOE managers must use site- and program-specific issues management processes and systems developed in accordance with DOE Order 226.1B, *Implementation of DOE Oversight Policy*, to manage and track these corrective action plans to completion.

DOE Order 227.1 further states that the HSS Office of Enforcement and Oversight must establish and implement a tailored approach for following up on findings based on significance and complexity. The approach must include selected appraisals to review the timeliness and adequacy of corrective actions, verify and validate the effectiveness of the corrective actions, and confirm closure of findings.

Therefore, as part of its oversight activities, Independent Oversight will follow the closure of the finding identified in Section 7.

Appendix A Supplemental Information

Dates of Review

Onsite Review: June 25-28, 2012
January 22-24, 2013

Office of Health, Safety and Security Management

Glenn S. Podonsky, Chief Health, Safety and Security Officer
William A. Eckroade, Principal Deputy Chief for Mission Support Operations
John S. Boulden III, Director, Office of Enforcement and Oversight
Thomas R. Staker, Deputy Director for Oversight
William E. Miller, Deputy Director, Office of Safety and Emergency Management Evaluations

Quality Review Board

William Eckroade
John Boulden
Thomas Staker
William Miller
Michael Kilpatrick
George Armstrong
Robert Nelson

Independent Oversight Site Lead

James Coaxum

Independent Oversight Reviewers

Joseph P. Drago - Lead
Mario Vigliani

Appendix B

Documents Reviewed, Interviews, and Observations

Documents Reviewed

- CBFO Quality Assurance Program Document, DOE/CBFO-94-1012, Revision 11, June 2010
- CBFO MP 3.1 – Corrective Action Reports, Rev 12, October 2011
- CBFO 9.1 – Management Assessments, Rev 7, September 2011
- Work Control Improvement Plan, 10-WC.03, Revision 5, June 2011
- DNFSB letter to DOE establishing a 90-day reporting requirement for a report on actions to correct work planning and control deficiencies at WIPP, October 22, 2010
- DOE letter to DNFSB letter transmitting the response to the Board's October 22, 2010 report regarding work planning and control at the WIPP, January 20, 2011
- CBFO Management Review Plan of the Work Control Implementation Plan Effectiveness Review at the WIPP, June 2012
- Transmittal of the WTS Quality Assurance Surveillance S12-18, Work Control Improvement Plan Corrective Actions [Commitment Tracking System 37947 (Defense Nuclear Facilities Safety Board Assessment Performed on July 13 through 15, 2010)], June 20, 2012
- CBFO Management Assessment 12-13 of the Work Control Implementation Plan Effectiveness Review at the WIPP, August 2012, Approved January 21, 2013
- CBFO letter to NWP transmitting Management Assessment 12-13, dated 1/21/2013
- Memorandum from Tracy P. Mustin, FY 2012 Annual Integrated Safety Management System and Quality Assurance Effectiveness Review Declaration, September 26, 2012
- WP 05-WH1011, CH Waste Processing, Continuous Use Procedure, Rev 43, February 13, 2012
- WP-04-AD3030, Pre-Job and Post-Job Reviews, Revision 3, January 3, 2012
- WO 1210854, Modify Sprinkler System Piping
- WO 1213498M, Level Waste Station Rails
- WO 1300286, Repair of E-140 Mine Floor Transport Route
- WIPP Form WF12-206, Damage to one of the tines on underground forklift, November 30, 2012
- PM041146, Rev 4, Conveyance Loading Car 41-H-018 Inspections and Maintenance, Maintenance Procedure, DRAFT
- PM041220, Rev 2, Aerial Work Platform 41-T-046, Maintenance Procedure, DRAFT
- PM04150, Rev 5, Inspection and Maintenance of Overhead Doors 41-N-100, 102, and 103, Maintenance Procedure, DRAFT
- CBFO ISMS Close-Out Meeting Notes, January 24, 2013
- WP 10-WC3011, Work Control Process, Rev 27, April 2012.

Interviews

- CBFO Site Manager
- CBFO Director of the Office of Site Operations
- CBFO Facility Representative & Work Control Manager
- CBFO Facility Representatives
- CBFO Nuclear Safety Engineer
- NWP Operations Manager
- NWP Work Planning & Control Manager
- NWP Safety Subject Matter Expert
- NWP Mining Manager

Observations

- WP 05-WH1011, CH Waste Processing, Continuous Use Procedure
- WO 1213498M, Level Waste Station Rails
- WO 1300286, Repair of E-140 Mine Floor Transport Route
- Maintenance Pre-Job Briefing