

U.S. Department of Energy

Corrective Action Plan for
Environmental Management Headquarters
*Phase 1: Radiological Release Event at the
Waste Isolation Pilot Plant on
February 14, 2014*



Washington, DC 20585

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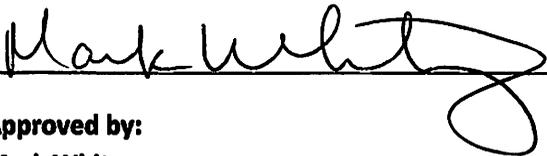


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ACRONYMS

AIB	Accident Investigation Board
CAM	Continuous Air Monitor
CAP	Corrective Action Plan
CBFO	Carlsbad Field Office
CFR	Code of Federal Regulations
CMR	Central Monitoring Room
DNFSB	Defense Nuclear Facilities Safety Board
DOE	U.S. Department of Energy
DSA	Documented Safety Analysis
EM	Office of Environmental Management
EMCBC	Environmental Management Consolidated Business Center
EOC	Emergency Operations Center
FSM	Facility Shift Manager
HEPA	High-Efficiency Particulate Air
HQ	Headquarters
ISM	Integrated Safety Management
JON	Judgment of Need
NWP	Nuclear Waste Partnership
ORPS	Occurrence Reporting and Processing System
PISA	Potentially Inadequate Safety Analysis
SCWE	Safety Conscious Work Environment
TRU	Transuranic
TSR	Technical Safety Requirements
USQ	Unreviewed Safety Question
WIPP	Waste Isolation Pilot Plant

1.0 PURPOSE

The purpose of this Corrective Action Plan (CAP) is to specify U.S. Department of Energy (DOE) actions for addressing Office of Environmental Management (EM) Headquarters (HQ) issues identified in the Accident Investigation Report for the Phase 1: Radiological Release Event at the Waste Isolation Pilot Plant (WIPP) on February 14, 2014. The report identified 31 Conclusions and 47 Judgments of Need (JON). Twelve of the Conclusions and ten of the JONs were determined to be associated with DOE HQ oversight of the operations. As such, EM HQ has taken the action to develop the CAP for those JONs specific to HQ (i.e., JONs 11, 13, 23, 25, 26, 32, 44-47). This report documents those corrective actions, along with the responsible office and due dates for completing the actions. The overall approval process for the CAPs associated with this event will involve both the Carlsbad Field Office (CBFO) and EM HQ offices. Specifically, CBFO will approve the NWP CAP (with EM HQ concurrence); EM HQ Office of Safety, Security, and Quality Programs (EM-40) will approve the CBFO CAP; and the Assistant Secretary for the Office of Environmental Management (EM-1) will approve the EM HQ CAP.

2.0 BACKGROUND

At approximately 2314 Mountain Standard Time on Friday, February 14, 2014, there was an incident in the underground repository at the DOE Waste Isolation Pilot Plant (WIPP) near Carlsbad, New Mexico, which resulted in the release of americium and plutonium from one or more transuranic (TRU) waste containers into the environment. The WIPP is a deep geologic repository, mined out of a thick bed of salt, for the disposal of defense TRU waste generated primarily from the cleanup of DOE sites. The release was detected by an underground continuous air monitor (CAM) and then directed through high-efficiency particulate air (HEPA) filter banks located in the surface exhaust building. However, a measurable portion bypassed the HEPA filters via design leakage through two ventilation system dampers and was discharged directly into the environment from an exhaust duct. No personnel were determined to have received external contamination; however, 21 individuals were identified through bioassay to have initially tested positive for low level amounts of internal contamination as of March 28, 2014. Trace amounts of americium and plutonium were detected off-site.

The Accident Investigation Board (AIB) began the investigation on March 3, 2014, and completed Phase 1 of the investigation on March 28, 2014. The report covers the AIB's conclusions for the release of TRU from the underground to the environment, which is considered to be Phase 1 of the investigation. Based upon the evidence gathered in the accident investigation, the AIB concluded that the unfiltered above-ground release identified in Phase 1 of the investigation was preventable. The AIB concluded that a thorough and conservatively considered hazard analysis, coupled with a robust, tested and well maintained HEPA filter capable exhaust ventilation system could have prevented the unfiltered above ground release that occurred on February 14, 2014. Evaluation of the need for additional corrective actions for HQ will be evaluated when the Phase 2 report is issued.

The specific Conclusions and JONs that were associated with DOE HQ and a summary of the Accident Investigation Report discussions are included in this section below.

Conclusions #8/9:

There is an observed lack of robustness in the CBFO technical review of Documented Safety Analysis (DSA)/Technical Safety Requirement (TSR) changes/annual updates, e.g., lack of documentation of the technical basis for approval to support development of a Safety Evaluation Report. While the Safety Evaluation Reports are consistent with the format per DOE Standard-1104, *Review and Approval of Nuclear Facility Safety Basis and Safety Design Basis Documents*, the conclusions do not include adequate rationale for acceptance of the proposed changes.

CBFO has insufficient nuclear safety management/staffing since the 2010 timeframe along with the retirement of Authorization Basis Senior Technical Advisor and existing Nuclear Safety Specialist staff responsible for multiple subject matter expertise.

- JON #11: CBFO and DOE HQ need to commission an independent assessment of the CBFO safety basis review and approval process and implement corrective actions that ensure effective implementation.
- JON #13: CBFO and DOE HQ need to arrange for temporary DOE senior nuclear safety resources to mentor existing CBFO nuclear safety and supporting resources, and assist as necessary.

The AIB report noted issues with the adequacy of the NWP Unreviewed Safety Question (USQ) procedure, the USQ procedure implementation, and the annual USQ determination submittals. Specifically, with respect to the NWP USQ procedure, NWP has a DOE-approved procedure governing the USQ process that includes requirements for evaluating whether proposed new activities are outside of the safety basis and steps following an operational event or discovery of information to determine whether to declare a Potentially Inadequate Safety Analysis (PISA). The AIB identified concerns that some changes to the facility can be evaluated with concurrence from the Nuclear Safety organization. Additionally, potentially confusing steps were identified in the USQ procedure associated with the PISA declaration process. With respect to the USQ procedure implementation, the AIB observed some hesitancy on the part of NWP to initiate a PISA determination in the absence of data related to the underground radiological release of February 14, 2014. Additionally, weaknesses were observed in USQ evaluations associated with recovery activities. Finally, with respect to the annual USQ determination submittals, the contractor has provided summaries of USQ determinations to CBFO annually. However, neither the contractor nor CBFO have recently performed formal assessments of the effectiveness of the USQ process.

Conclusions #10/11/12:

Compensatory measures were not put in place to mitigate issues identified immediately following the February 5, 2014, underground fire event with respect to emergency management.

The emergency management program was not adequately structured and implemented such that personnel did not recognize, categorize, or classify the emergency and implement protective actions in a timely manner.

The WIPP (NWP and CBFO) emergency management program is not fully compliant with DOE Order 151.1C, *Comprehensive Emergency Management System*, e.g., activation of the Emergency Operations Center (EOC), classification and categorization, emergency action levels, implementation of the Incident Command System, training, drills and exercises, etc. Weaknesses in classification, categorization, and emergency action levels were previously identified by both external review and in the response to the underground fire and the radiological release events.

- JON #23: DOE HQ needs to conduct an effectiveness review of the NWP and CBFO emergency management program implementation within six months of completion of the corrective actions for the Emergency Management JON.

During on-site emergency conditions, the Facility Shift Manager (FSM) is in control of the facilities, and is considered the Incident Commander, Emergency Director and the Resource Conservation and Recovery Act Emergency Coordinator. The FSM has full authority and responsibility for coordinating all emergency response measures. The FSM is also responsible for event categorization and classification, and activates the EOC. When the EOC is activated, a Crisis Manager assists the FSM with emergency actions. The contractor's plans do not allow the FSM to transfer the Emergency Director position to a more senior official such as the Crisis Manager in the EOC. Subsequently, this diminishes the ability of the FSM to focus on strategic and tactical response. The present response organization could possibly extend past the recommended Incident Command System span of control for the FSM/Incident Commander position during a large incident and could possibly constrain the FSM in making quick and sound decisions. In addition, the elements of the NWP Emergency Management Program and Radiological Controls training were reviewed by the AIB, and a number of issues were identified such as the lack of position-specific training for the various EOC roles and responsibilities. Further, multiple emergency response implementing procedures were evaluated and some discrepancies were identified in the implementing radiological emergency response procedures. Finally, WP 04-EM4200 includes a note that states: "Two identical CAMs sample the air in the disposal panel exhaust downstream of the active disposal rooms, providing adjacent monitors for verification of radiological conditions if both CAMS are in service." The second CAM (CAM-152) was out of service during this event and would have been very beneficial in the verification of the alarms received initially in the Central Monitoring Room (CMR). This could have possibly resulted in quicker implementation of protective actions with two CAM alarms. It was also identified by the

AIB that the CMR did not utilize the CMR emergency ventilation system during this event. During a release, the CMR air filtration system removes radioactive airborne contaminants and pressurizes the atmosphere inside the building to preclude infiltration of contaminated air into the CMR. Per interviews and a review of maintenance records and logs, a number of problems with the radiological response equipment were identified in the AIB report.

Conclusion #13/15:

NWP and CBFO have allowed the safety culture at the WIPP project to deteriorate as evidenced by the workers feedback that they do not feel comfortable identifying issues that may adversely affect management direction, delay mission related objectives, or otherwise affect cost or schedule. Questioning attitudes are not welcomed by management and many issues and hazards do not appear to be readily recognized by site personnel.

DOE has exacerbated the safety culture problem by referring to numbers of Occurrence Reporting and Processing System (ORPS) reports and other deficiency reporting documents, rather than the significance of the events, as a measure of performance by Source Evaluation Boards during contract bid evaluations, and poor scoring on award fee determinations. Directly tying performance to the number of occurrence reports drives the contractor to non-disclosure of events in order to avoid a poor score. This practice is contrary to the Department's goals of the development and implementation of a strong safety culture across our projects.

- JON #25: DOE HQ needs to engage external safety culture expertise in providing training and mentoring to NWP and CBFO management on the principles of a strong nuclear safety culture and implement any recommendations from these experts.
- JON #26: DOE HQ needs to clearly specify the use of performance reporting results, e.g., ORPS and non-conformance reports in Past Performance Evaluations, to encourage conservative reporting and communication of Lessons Learned.

The Safety Conscious Work Environment (SCWE) Self-Assessment completed in January 2013 by NWP and by CBFO identified weaknesses in clear expectations and accountability as well as weaknesses in teamwork and mutual respect and participation in work planning and control. The 2012 SCWE survey indicated a reluctance of employees to raise safety issues to management and indicates a "chilled" environment. Based on the SCWE survey results, 40 percent of NWP and almost 60 percent of CBFO employees indicated a reluctance to raise issues to management. Since completion and publication of the survey results, NWP has made little progress on corrective actions. The CBFO has not taken substantial action to address SCWE survey results indicative of weak safety leadership, allowing an environment to exist that does not value open communication without fear of retribution. In addition, CBFO conducted a *Waste Isolation Pilot Plant*

Integrated Safety Management and Quality Assurance Oversight and Implementation Review dated February 2013. The intent of this review was to address the DOE EM guidance for making the annual Integrated Safety Management (ISM) Declaration. This review was completed with minimal input from workers/employees. The only working level interview was conducted with a United Steel Workers Union Safety Representative. Also, management assessments conducted by the contractor have a primary focus on cost and schedule performance. There is not a focus on identifying organizational weaknesses and correcting issues to improve safety performance.

Conclusions #16/17:

The current culture at NWP is such that due consideration for prioritization of maintenance of equipment is not given unless there is an immediate impact on the waste emplacement processes.

Execution of the NWP engineering process has not been effective in maintaining configuration of key systems at WIPP.

- JON #32: DOE HQ EM and CBFO need to develop an infrastructure improvement plan within six months to identify and prioritize program-wide critical infrastructure upgrades for key systems to ensure continuation of EM's programmatic mission execution at WIPP. Additionally, DOE HQ EM needs to coordinate an extent of condition review at other EM sites and take action based on the outcome of that review.

The underground exhaust air creates a harsh environment for the ventilation system mechanical components. The salt and moisture entrained from the underground inhibits normal operation due to coating components with salt and contributes to accelerated component degradation due to the associated corrosion. Key maintenance issues impacting operation of the underground ventilation system were identified. In addition, numerous additional components of the underground ventilation system were out-of-service or had been otherwise impaired for an extended period of time.

Conclusions #29/30/31:

DOE HQ failed to ensure that CBFO was held accountable for correcting repeated identified issues involving radiological protection, nuclear safety, ISM, maintenance, emergency management, work planning and control and oversight.

DOE HQ management has failed to ensure that adequate resources, full-time employees, technical expertise, travel money, adequate budget, etc., are provided to support the WIPP project.

DOE HQ management and staff failed to adequately define and execute roles and responsibilities related to line management, oversight, safety and balanced priorities.

- JON #44: DOE HQ needs to develop and implement a process to ensure repeatedly identified issues related to the safety management programs are confirmed, closed and validated by the local DOE office in a timely manner.
- JON #45: DOE HQ needs to re-evaluate priorities and allocate the resources, i.e., funding, staffing, infrastructure, etc., applied to the WIPP project to ensure those resources effectively address safety, programmatic, and operational considerations.
- JON #46: DOE HQ needs to better define and execute their roles and responsibilities in order to improve line management ownership, oversight, safety, and resources to ensure site implementation of the radiological protection, nuclear safety, ISM, maintenance, emergency management, work planning and control and oversight policies and requirements are consistent and effective.
- JON #47: DOE HQ needs to perform an effectiveness review on all corrective actions completed in response to this investigation.

The CBFO Manager reports to EM HQ. The AIB surveyed several DOE HQ managers and support staff to gain a better understanding of roles and responsibilities as they relate to overseeing or supporting the WIPP project. Several of the interviewees indicated that they had a role in influencing actions such as how much funding or other resources are to be provided and how resources are allotted but few indicated that they were responsible for ensuring adequacy of their actions related to project performance. In addition, both EM HQ and EM Consolidated Business Center (EMCBC) responses indicated that resources, e.g., full-time equivalents, travel budgets, etc., have been declining for the last several years and that “assist” visits and support have been affected. In addition, DOE HQ provides support to WIPP in the form of policies, DOE orders, resources (budget and human capital), mission support, emergency management, quality assurance, nuclear safety, security, independent oversight, etc. The AIB reviewed the last four years of budget requests by CBFO and EM, and the actual budgets received. The AIB also reviewed communications between CBFO and EM HQ requesting additional staffing in 2012. The AIB noted that facility operations received less funding than requested in two of those four years. While the AIB recognizes that there is a negotiation process with all projects during budget formulation each year, given the issues with maintenance and configuration management related to this accident, the AIB concluded that DOE should review these processes and determine if improvements need to be addressed.

3.0 UNDERLYING CAUSES

As part of the AIB report, the team identified direct, root, and contributing causes for the radiological release event. The results from the investigation report are summarized here and discussed in more detail in the report.

Direct Cause – the immediate events or conditions that caused the accident.

The AIB identified the direct cause of this accident to be the breach of at least one TRU waste container in the underground which resulted in airborne radioactivity escaping to the environment downstream of the HEPA filters. Due to restrictions on access to the underground following the event, the exact mechanism of container failure, e.g., back or rib fall, puncture by a failed roof bolt, off-gassing, etc., is unknown at this time and must be determined once access to the underground is restored. This will be investigated in Phase 2.

Root Cause – causal factors that, if corrected, would prevent recurrence of the same or similar accidents.

The AIB identified the root cause of Phase 1 of the investigation of the release of radioactive material from underground to the environment to be NWP's and CBFO's management failure to fully understand, characterize, and control the radiological hazard. The cumulative effect of inadequacies in ventilation system design and operability compounded by degradation of key safety management programs and safety culture resulted in the release of radioactive material from the underground to the environment, and the delayed/ineffective recognition and response to the release.

With regard to ventilation system design and operability: the filtration portion of the ventilation system has two HEPA filter bypass isolation dampers that provide a pathway of unfiltered exhaust into the environment. These isolation dampers are not suitable as a containment boundary and reduce the overall efficiency of the HEPA filter system. This condition was never identified by the contractor, CBFO, or HQ in any of the revisions and updates to the WIPP safety basis documentation.

Contributing Causes – events or conditions that collectively with other causes increased the likelihood or severity of an accident but that individually did not cause the accident. For the purposes of this investigation, contributing causes include those related to the cause of the radiological release to the environment, as well as those related to the subsequent response.

The AIB identified eight contributing causes to the radiological release to the environment investigated in Phase 1, or resultant response.

- 1) Implementation of the NWP Conduct of Operations Program is not fully compliant with DOE Order 422.1, *Conduct of Operations*, and impacted the identification of abnormal conditions and timely response.
- 2) NWP does not have an effective Radiation Protection Program in accordance with 10 Code of Federal Regulations (CFR) 835, *Occupational Radiation Protection*, including but not limited to radiological control technician training, qualification and requalification, equipment and instrumentation, and audits.
- 3) NWP does not have an effective maintenance program. The condition of critical equipment and components, including CAMs, ventilation dampers, fans, sensors,

and the primary system status display were degraded to the point where the cumulative impact on overall operational readiness and safety was not recognized or understood.

- 4) NWP does not have an effective Nuclear Safety Program in accordance with 10 CFR 830 subpart B, *Safety Basis Requirements*. There has been a reduction in the conservatism in the DSA hazard/accident analysis and corresponding TSR controls over time, commencing with EM HQ delegation of safety basis approval authority in late 2009. For example, 15 of 22 design basis accidents were removed from the latest revision without any clear justification, including the elimination of a roof/rib fall event in an open waste panel. In addition, the DSA and TSRs contain errors, there is a lack of DSA linkage to supporting hazard analysis information, and there is confusion over the back fall accident description in a closed versus open panel.
- 5) NWP implementation of DOE Order 151.1C, *Comprehensive Emergency Management System*, was ineffective. Personnel did not adequately recognize, categorize, or classify the emergency and did not implement adequate protective actions in a timely manner.
- 6) The current site safety culture does not fully embrace and implement the principles of DOE Guide 450.4-1C, *Integrated Safety Management Guide*. There is a lack of a questioning attitude, reluctance to bring up and document issues, and an acceptance and normalization of degraded equipment and conditions. This is supported by the 2012 SCWE survey results which indicated a reluctance to report issues to management, indicating a chilled work environment. Execution of the NWP Contractor Assurance System in accordance with DOE Order 226.1B, *Implementation of Department of Energy Oversight Policy*, was ineffective. Execution of the Contractor Assurance System did not identify precursors to this event or the unacceptable conditions and behaviors documented in the AIB report.
- 7) Execution of CBFO oversight in accordance with DOE Order 226.1B was ineffective. CBFO failed to establish and implement adequate line management oversight programs and processes and hold personnel accountable.
- 8) DOE HQ line management oversight was ineffective. DOE HQ failed to ensure that CBFO was held accountable for correcting repeated identified issues involving radiological protection, nuclear safety, ISM, maintenance, emergency management, work planning, and control and oversight.

4.0 ISSUE RESOLUTION/CORRECTIVE ACTIONS

EM HQ will provide Federal staff to direct, track and validate the specific corrective actions in this plan. The “Lead” designated in the following actions is intended to indicate the individual responsible for coordinating that action. Other offices will be involved in the corrective action closure. The EM-40 office will collect a status of the actions identified in this plan and will provide a verbal or written status report to EM-1/2 as requested, at a minimum of once per quarter.

4.1 JON #11: CBFO and DOE HQ need to commission an independent assessment of the CBFO safety basis review and approval process and implement corrective actions that ensure effective implementation.

Issue Description

The NWP USQ determination procedure does not clearly communicate the actions supporting the PISA process, and NWP has demonstrated lack of recognition of the need for CBFO approval of proposed recovery activities that are outside the analyzed safety basis. In addition, the determination of PISAs and evaluation of proposed recovery actions associated with the radiological release involving application of the categorical exclusion criteria, USQ screening, and USQ determinations indicate lack of understanding (e.g., completeness and applicability of responses regarding impact on previously analyzed accidents or safety controls; clearly addressing the scope of the questions such as impact on frequency, consequences, equipment important to safety; completeness of identifying applicable accidents previously analyzed, or accident of a new type not previously analyzed). Further, the contractor has submitted reports of performed USQ determinations annually, in December of each year. Approximately 15 to 30 USQ determinations have been completed annually. This total is surprisingly low for a Hazard Category 2 nuclear facility compared to other nuclear facilities in the DOE complex. The low number of USQ determinations performed annually implies that USQ determinations are not being prepared when there may have been a need for further in-depth evaluation of proposed changes. There have been no formal assessments of the effectiveness of the USQ process in the past few years by either the contractor or CBFO.

Approach

DOE HQ will perform an assessment of the CBFO safety basis review and approval process. Assessment corrective actions will be administered in accordance with the EM-40 corrective action management process.

Deliverable/Milestone/Due Dates

Objective 1: *DOE HQ will conduct an assessment of the CBFO safety basis review and approval processes based on the requirements of 10 CFR 830.200 and guidance provided in DOE Standard 1104. The assessment will also evaluate the implementation of the processes reviewed.*

Action JON 11-1.1: Complete assessment of CBFO safety basis review and approval processes.

Deliverables: Issued independent assessment report.

Due Date: May 31, 2015

Lead: Todd Lapointe, EM-41

Action JON 11-1.2: Approve CAP submitted by CBFO which addresses issues identified during the independent assessment.

Deliverables: Approved CAP

Due Date: July 31, 2015

Lead: Todd Lapointe, EM-41

Action JON 11-1.3: Validate corrective action closure

Deliverables: Issued report demonstrating corrective action validation

Due Date: 30 days after closure of the actions in CAP from JON 11-1.2

Lead: Todd Lapointe, EM-41

Action JON 11-1.4: Corrective action effectiveness review

Deliverables: Issued report documenting corrective action effectiveness validation

Due Date: 90 days after validation of corrective action closure from JON 11-1.3

Lead: Todd Lapointe, EM-41

4.2 JON #13: CBFO and DOE HQ need to arrange for temporary DOE senior nuclear safety resources to mentor existing CBFO nuclear safety and supporting resources, and assist as necessary.

Issue Description

See issue description in Section 4.1.

Approach

The EM-40 HQ Office will work with CBFO to provide nuclear safety resources and mentoring until proper expertise can be obtained by the CBFO Office.

Deliverable/Milestone/Due Dates

Objective 1: *Provide additional nuclear safety expertise to the CBFO staff until needed nuclear safety positions can be filled by CBFO.*

Action JON 13-1.1: Establish Nuclear Safety Senior Technical Advisor position

Deliverables: Approved CBFO organization chart including Nuclear Safety Senior

Technical Advisor

Due Date: July 01, 2014 (Complete)

Lead: Tony Weadock, EM-42

Action JON 13-1.2: Staff the Nuclear Safety Senior Technical Advisor position with off-site personnel pending CBFO permanent hire

Deliverables: Documentation demonstrating Nuclear Safety Senior Technical Advisor appointments

Due Date: July 01, 2014 (Complete - will continue through completion of Action JON 13-1.3)

Lead: Tony Weadock, EM-42

Action JON 13-1.3: Fill STA position

Deliverables: Documentation demonstrating Nuclear Safety Senior Technical Advisor position has been filled

Due Date: February 28, 2015 (Complete)

Lead: Tony Weadock, EM-42

Action JON 13-1.4: Provide additional senior nuclear safety resources to support CBFO until additional CBFO expertise is obtained

Deliverables: Documentation demonstrating off-site senior nuclear safety resources on-site and remote support

Due Date: March 01, 2014 (Complete – will continue with EM-40 and EM/NNSA personnel through CBFO filling Safety Programs Director and Nuclear Safety Specialist positions)

Lead: Tony Weadock, EM-42

4.3 JON #23: DOE HQ needs to conduct an effectiveness review of the NWP and CBFO emergency management program implementation within six months of completion of the corrective actions for the Emergency Management JON.

Issue Description

The success of the DOE Comprehensive Emergency Management System is dependent upon the timely identification of an emergency that results in the prompt implementation

of protective actions. At NWP, the emergency plans and implementing procedures identify the FSM with the responsibility to categorize the incident and to implement protective actions in a timely manner for all emergencies. Therefore, this would require the FSM to have expert knowledge of the site's Emergency Action Levels and the use of general discretionary Emergency Action Levels. DOE Order 151.1C states "Emergencies involving hazardous materials require time-urgent response actions to minimize or prevent unacceptable consequences." The AIB determined that NWP implementation of DOE Order 151.1C was ineffective in responding to the radiological release.

Approach

This JON is similar to JON #28 in the AIB report for the fire event at WIPP. As such, the actions developed in the *Corrective Action Plan for Environmental Management Headquarters Accident Investigation Report Underground Salt Haul Truck Fire at the Waste Isolation Pilot Plant February 5, 2014*, dated August 2014 will be sufficient. Specifically, Section 4.2 Actions JON 28-1 and JON 28-2 from the referenced CAP will address this concern.

4.4 JON #25: DOE HQ needs to engage external safety culture expertise in providing training and mentoring to NWP and CBFO management on the principles of a strong nuclear safety culture and implement any recommendations from these experts.

Issue Description

Overall, the AIB determined that CBFO and NWP safety culture is lacking in the leadership focus area, employee/worker engagement, organizational learning, and associated attributes. The performance issues observed during response to the radiological event are the outcome of the inadequate safety culture. Additionally, communication of the contents of lessons learned systems such as ORPS is being misrepresented in "Past Performance" evaluations by Source Evaluation Boards during contract bid evaluations, poor scoring on award fee determinations, etc. Referring to ORPS as the source of the information drives the contractor to non-disclosure of events in order to avoid a poor score. A mechanism that rewards conservative reporting in ORPS could help alleviate this trend.

Approach

EM-40 will provide safety culture expertise, external to CBFO and NWP, to assist in mentoring CBFO and NWP management to identify and improve behaviors, as well as systems, structures, and processes, that as noted in Conclusion 14 of the AIB report, may be "driving the non-disclosure of events in order to avoid a poor score" on award fees. This JON is consistent with similar issues identified in the Department's recent DNFSB 2011-1 *Safety Culture and Safety Conscious work Environment Extent of Condition Report* and efforts should be taken to ensure these deliverables/milestones align with the Departmental actions as they evolve (e.g., actions by the Department's Safety Culture Improvement Panel).

Deliverable/Milestone/Due Dates

Objective 1: *Enhancement of the understanding and implementation of a strong nuclear safety culture at CBFO and NWP.*

Action JON 25-1.1: Identify external safety culture expertise external to CBFO and NWP, to assist in mentoring CBFO and NWP leaders (ISM Safety Focus Areas: Leadership, Organizational Learning).

Deliverables: Identify safety culture expert (memorandum or email)

Due Date: February 28, 2015 (Complete)

Lead: James Hutton, EM-40

Action JON 25-1.2: Safety culture expert to assist CBFO and NWP leadership in identifying behaviors, as well as systems, structures, and processes that may be “driving the non-disclosure of events in order to avoid a poor score.” (ISM Safety Focus Areas: Leadership, Employee Engagement, Organizational Learning)

Deliverables: Safety culture expert on-site visits trip reports (4 visits - January, February, March, April 2015)

Due Date: June 30, 2015

Lead: Julie Goeckner, EM-40

Action JON 25-1.3: Based on the information obtained from the site visits conducted to support JON 25-1.2, identify one or two proposed high-level “leading” performance indicators to measure safety culture – applicable not only to WIPP, but to all Departmental elements. (ISM Focus Areas: Leadership, Organizational Learning)

Deliverables: Memorandum or email proposing one or two high level “leading” performance indicators to the Department’s Safety Culture Improvement Panel for consideration

Due Date: September 30, 2015

Lead: Julie Goeckner, EM-40

Action JON 25-1.4: Safety culture expert to provide recommendations to CBFO and leadership to strengthen FY 15 award fee language associated with reporting of events. (ISM Safety Focus Areas: Leadership, Organizational Learning)

Deliverables: Award fee language improvement suggestions

Due Date: TBD (dependent upon contract schedule)

Lead: Julie Goeckner, EM-40

4.5 JON #26: DOE HQ needs to clearly specify the use of performance reporting results, e.g., ORPS and non-conformance reports in Past Performance Evaluations, to encourage conservative reporting and communication of Lessons Learned.

Issue Description

See issue description in Section 4.4.

Approach

EM-HQ will evaluate the current use of performance reporting results in past performance evaluations and how that approach may discourage reporting by the sites/contractors; then make recommendations to the Department's Safety Culture Improvement Panel for consideration to improve the Department's approach to contractual oversight of safety culture. This JON is consistent with similar issues identified in the Department's recent DNFSB 2011-1 *Safety Culture and Safety Conscious Work Environment Extent of Condition Report* and efforts should be taken to ensure these deliverables/milestones align with the Departmental actions as they evolve (e.g., actions by the Department's Safety Culture Improvement Panel).

Deliverable/Milestone/Due Dates

Objective 1: *Develop a consistent approach to the use of performance reporting results that encourages reporting of issues.*

See Actions JON 25-1.1 – JON 25-1.4.

4.6 JON #32: DOE HQ EM and CBFO need to develop an infrastructure improvement plan within six months to identify and prioritize program-wide critical infrastructure upgrades for key systems to ensure continuation of EM's programmatic mission execution at WIPP. Additionally, DOE HQ EM needs to coordinate an extent of condition review at other EM sites and take action based on the outcome of that review.

Issue Description

The AIB determined that the NWP maintenance and engineering programs have not been effective in keeping critical pieces of equipment in a high state of operational readiness. The cumulative impact of the combination of degraded equipment on overall facility operational readiness was not adequately considered. There is an acceptance to tolerate or otherwise justify (e.g., lack of funding) out-of-service equipment. Additionally, configuration management was not being maintained or adequately justified when changes were made. The AIB reviewed the equipment status and condition in the CMR and the underground. The condition of critical pieces of equipment indicated that management had not taken prompt action to resolve longstanding deficiencies. The accelerated corrosion of components in the underground ventilation system enhanced by water intrusion below the surface in the exhaust shaft has not been effectively evaluated and mitigated. Many items have been out-of-service or in a reduced status for more than six months. It was not clear that NWP had a clear approach to prioritizing maintenance activities in regard to critical equipment or that there is an effective formal process to identify compensatory measures other than a fire watch for impaired safety-related equipment. Additionally, the equipment and components that affect normal operation of the mine ventilation system did not appear to have been effectively evaluated and dispositioned regarding their impact on system operation.

Approach

The Office of Disposal Operations (EM-31) within the Office Waste Management (EM-30) will coordinate with the CBFO and affected Mission Units and Mission Support organizations to identify and prioritize program-wide critical infrastructure upgrades to ensure the continuation of EMs programmatic mission execution at WIPP.

Deliverable/Milestone/Due Dates

Objective 1: *Evaluate the CBFO WIPP Recovery plans for WIPP Recovery for a prioritized maintenance and infrastructure program at WIPP.*

Action JON 32-1.1: Provide written comments on the Performance Measurement Baseline for WIPP Recovery (e.g., to ensure it aligns with CBFO CAP).

Deliverable: Written comments provided on the Interim Performance Measurement Baseline for WIPP Recovery

Due Date: May 30, 2015

Lead: Doug Tonkay, EM-31

Action JON 32-1.2: Support Carlsbad requests during Fiscal Year 2016 budget development and 2017 budget formulation with an emphasis on a prioritized maintenance and infrastructure program at WIPP.

Deliverable: Provide comments on Fiscal Year 2016 markup and 2017 budget formulation supporting Carlsbad funding for a prioritized maintenance and infrastructure program at WIPP.

Due Date: September 30, 2015

Lead: Doug Tonkay, EM-31

Objective 2: Conduct extent of condition reviews at other TRU waste generator sites to evaluate infrastructure needed to support continuation of EM's programmatic mission execution at WIPP.

Action JON 32-2.1: Evaluate field responses to the infrastructure and maintenance data call by the Assistant Secretary for EM.

Deliverable: Prepare memorandum to the Deputy Assistant Secretary for Waste Management documenting TRU waste generator sites with pending infrastructure needs critical to EM's programmatic mission execution at WIPP.

Due Date: May 30, 2015

Lead: Doug Tonkay, EM-31

Objective 3: Conduct extent of condition reviews at other TRU waste sites to evaluate procedures used to treat and/or remediate TRU waste at active true waste generator sites.

Action JON 32-3.1: Assess the chemical stability of TRU waste for disposal at the WIPP at three active generator waste sites.

Deliverable: Prepare a report for the Deputy Assistant Secretary for Waste Management.

Due Date: March 31, 2015

Lead: Doug Tonkay, EM-31

4.7 JON #44: DOE HQ needs to develop and implement a process to ensure repeatedly identified issues related to the safety management programs are confirmed, closed and validated by the local DOE office in a timely manner.

Issue Description

Based on the review of the log sheets from the last year, the AIB determined that many of the CBFO technical/oversight staff made infrequent trips to the underground as part of

the oversight activities. In addition, from interviews with several CBFO staff members, there is a strong perception that contractor and CBFO directors do not welcome negative findings or observations and that CBFO staff have to individually follow up on corrective actions from NWP, rather than getting timely responses in accordance with site corrective action processes, in order to ensure effective actions have been taken. It was not apparent that follow-up is pursued in all cases by CBFO staff. Several CBFO staff members indicated that they can convey issues verbally to the contractor with mixed results for correction; however, there is not an effective mechanism to convey documented issues to the contractor. In addition, from review of the recent SCWE employee survey, 59 percent of the CBFO staff members that completed the survey answered “somewhat” to “yes” on the question of the existence of a chilled work environment.

In addition, several externally generated oversight documents [DOE HQ, Defense Nuclear Facilities Safety Board (DNFSB), Office of Health, Safety and Security, EMCBC, etc.] that contained findings, observations, and opportunities for improvement for the CBFO and WIPP site were reviewed by the AIB. In many cases, no CAPs were developed or implemented, corrective action responses were not developed in a timely manner (for example, a year lapsed between the assessment and development of a CAP), or implementation of corrective actions were either incomplete or ineffective.

The AIB interviewed several DOE HQ management and support staff to gain an understanding of roles and responsibilities related to line management and support of the WIPP project. Several of the interviewees indicated that they had a role in influencing actions such as how much funding or other resources are to be provided and how resources are allotted but few indicated that they were responsible for ensuring adequacy of their actions related to project performance. The AIB noted that roles and responsibilities (and the associated impact on balanced project priorities) were not clearly understood and executed. While the AIB recognizes that there is a negotiation process with all projects during budget formulation each year, given the issues with maintenance and configuration management related to this accident, the AIB concluded that DOE should review these processes and determine if improvements need to be addressed. The AIB also concluded that DOE HQ Line Management and Oversight was inadequate in lack of line management responsibility and follow through; failure to enforce and ensure that issues are corrected in the areas of emergency management, radiological protection, nuclear safety, maintenance, work control, ISM; availability of resources to perform oversight have been reduced over last several years; and roles and responsibilities are not clearly understood. DOE HQ and CBFO have not critically evaluated and prioritized investments for improving facility infrastructure to support expected performance of the WIPP facility.

Approach

This JON is the same as JON #27 in the AIB report for the fire event at WIPP. As such, the actions developed in the *Corrective Action Plan for Environmental Management Headquarters Accident Investigation Report Underground Salt Haul Truck Fire at the Waste Isolation Pilot Plant February 5, 2014*, dated August 2014 will be sufficient.

Specifically, Section 4.1 Actions JON 27-1.1 through JON 27.2-3 from the referenced CAP will address this concern.

4.8 JON #45: DOE HQ needs to re-evaluate priorities and allocate the resources, i.e., funding, staffing, infrastructure, etc., applied to the WIPP project to ensure those resources effectively address safety, programmatic, and operational considerations.

Issue Description

See issue description in Section 4.7.

Approach

This JON is similar to JON #29 and JON #31 in the AIB report for the fire event at WIPP. As such, the actions developed in the *Corrective Action Plan for Environmental Management Headquarters Accident Investigation Report Underground Salt Haul Truck Fire at the Waste Isolation Pilot Plant February 5, 2014*, dated August 2014 will be sufficient. Specifically, Section 4.3 Actions JON 29-1.1 and JON 29-1.2; in addition to Section 4.5 Actions JON 31-1.1, JON 31-2.1, JON 31-2.2 and JON 31-2.3 from the referenced CAP will address this concern.

4.9 JON #46: DOE HQ needs to better define and execute their roles and responsibilities in order to improve line management ownership, oversight, safety, and resources to ensure site implementation of the radiological protection, nuclear safety, ISM, maintenance, emergency management, work planning and control and oversight policies and requirements are consistent and effective.

Issue Description

See issue description in Section 4.7.

Approach

EM-40 will commission a team to review the roles and responsibilities of EM HQ to help understand and implement proper oversight and ownership.

Deliverable/Milestone/Due Dates

Objective 1: *The EMCBC will evaluate the current roles and responsibilities for EM HQ with respect to CBFO and identify areas to enhance and improve implementation.*

Action JON 46-1.1: Ensure peer review(s) are conducted of EM Roles, Responsibilities, Accountabilities, and Authorities, assessment procedure(s), assessment schedule, issues management process, performance plans, and staffing analysis in order to identify improvement opportunities.

Deliverables: Issued review report(s)

Due Date: April 30, 2015

Lead: John Sattler, EMCBC

Action JON 46-1.2: Ensure a CAP for the issues identified in the review is developed.

Deliverables: Approved CAP

Due Date: May 31, 2015

Lead: Robert Murray, EM-43

Action JON 46-1.3: Ensure actions addressing identified improvement opportunities from action JON 46-1.1 are completed.

Deliverables: Documentation and closure evidence demonstrating improvement opportunity actions were completed.

Due Date: Due date provided in the associated CAP

Lead: EM-30/40 Office Directors (specific responsible parties depend on issues identified)

Action JON 46-1.4: Ensure an assessment of corrective action effectiveness is completed.

Deliverables: Issued assessment report

Due Date: 180 days after completion of the actions in the CAP

Lead: John Sattler, EMCBC

Action JON 46-1.5: Ensure a CAP for the issues identified in the assessment of effectiveness is developed.

Deliverables: Approved CAP

Due Date: 30 days after issuance of the assessment effectiveness report

Lead: Robert Murray, EM-43

Action JON 46-1.6: Complete actions addressing assessment issues

Deliverables: Documentation and closure evidence demonstrating issue actions were completed.

Due Date: Due date provided in the associated CAP

Lead: EM-40 Office Directors (specific responsible parties depend on issues identified)

4.10 JON #47: DOE HQ needs to perform an effectiveness review on all corrective actions completed in response to this investigation.

Issue Description

See issue description in Section 4.7.

Approach

EM-40 will commission a team to review the effectiveness of the actions contained within this plan.

Deliverable/Milestone/Due Dates

Objective 1: *EMCBC will review and evaluate the effectiveness of the corrective actions and determine if any additional actions are needed.*

Action JON 47-1.1: Complete effectiveness review

Deliverables: Issued effectiveness review report

Due Date: 180 days after completion of all actions

Lead: John Sattler, EMCBC

Action JON 47-1.2: Ensure a CAP for the issues identified in the effectiveness review is developed.

Deliverables: Approved CAP

Due Date: 30 days after issuance of the effectiveness review report

Lead: Robert Murray, EM-43

Action JON 47-1.3: Complete actions addressing effectiveness review issues

Deliverables: Documentation demonstrating effectiveness review actions were completed

Due Date: 60 days after completion of the effectiveness review

Lead: EM-40 Office Directors (specific responsible parties depend on issues identified)

5.0 SUMMARY

The actions described in this CAP address the twelve Conclusions and ten JONs associated with HQ from the WIPP radiological release AIB Report. The CAP is consistent with the Department's commitment to ISM and draws on the feedback and improvement core function. The Department's Federal HQ employees will assert control of the plan and its actions from initiation to closure and validation of effectiveness. The Department believes these actions are responsive and appropriate for implementing the overall intent of the issues in the investigation report. The actions that resulted from this effort are summarized in Table 1 and the schedule is depicted in Figure 1.

6.0 ORGANIZATION AND MANAGEMENT

The DOE EM-40 Deputy Assistant Secretary is the Responsible Manager for the execution of this CAP. EM-40 will provide a periodic (i.e., quarterly) update of the status of the associated actions to EM-1 and/or EM-2-via a verbal briefing or email. EM-40 will coordinate the actions identified in this report and track their status and closure on an ongoing basis. To assure the various Department implementing elements and the DNFSB remain informed of the status of the corrective action implementation, the Department will provide progress briefings to the DNFSB and/or DNFSB staff as requested.

Table 1 – Action Summary

Action	Corrective Action	Lead	Deliverable	Due Date
Conclusions #8/9 - JON #11				
JON 11-1.1	Complete independent assessment of CBFO safety basis review and approval processes.	Todd Lapointe, EM-41	Issued independent assessment report.	05/31/15
JON 11-1.2	Approve CAP submitted by CBFO which addresses issues identified during the independent assessment.	Todd Lapointe, EM-41	Approved CAP.	07/31/15
JON 11-1.3	Validate corrective action closure.	Todd Lapointe, EM-41	Issued report demonstrating corrective action validation.	30 days after closure of the actions in CAP from JON 11-1.2
JON 11-1.4	Corrective action effectiveness review.	Todd Lapointe, EM-41	Issued report documenting corrective action effectiveness validation.	90 days after closure of the actions in CAP from JON 11-1.3
Conclusions #8/9- JON #13				
JON 13-1.1	Establish Nuclear Safety Senior Technical Advisor position.	Tony Weadock, EM-42	Approved CBFO organization chart including Nuclear Safety Senior Technical Advisor.	07/01/14 Complete
JON 13-1.2	Staff the Nuclear Safety Senior Technical Advisor position with off-site personnel pending CBFO permanent hire.	Tony Weadock, EM-42	Documentation demonstrating Nuclear Safety Senior Technical Advisor appointments.	07/01/14 Complete
JON 13-1.3	Fill STA position.	Tony Weadock, EM-42	Documentation demonstrating Nuclear Safety Senior Technical Advisor position has been filled.	02/28/15 Complete
JON 13-1.4	Provide additional senior nuclear safety resources to support CBFO until additional CBFO expertise is obtained.	Tony Weadock, EM-42	Documentation demonstrating off-site senior nuclear safety resources on-site and remote support.	03/01/14 Complete
Conclusions #10/11/12 - JON #23				
<p>JON #23 - This JON is the same as JON #28 in the AIB report for the fire event at WIPP. As such, the actions developed in the <i>Corrective Action Plan for Environmental Management Headquarters Accident Investigation Report Underground Salt Haul Truck Fire at the Waste Isolation Pilot Plant February 5, 2014</i>, dated August 2014 will be sufficient. Specifically, Section 4.2 Actions JON 28-1 and JON 28-2 from the referenced CAP will address this concern.</p>				

Table 1 – Action Summary

Action	Corrective Action	Lead	Deliverable	Due Date
Conclusions #13/15 - JON #25				
JON 25-1.1	Identify external safety culture expertise external to CBFO and NWP, to assist in mentoring CBFO and NWP leaders (ISM Safety Focus Areas: Leadership, Organizational Learning).	James Hutton, EM-40	Identify safety culture expert (memorandum or email).	02/28/15
JON 25-1.2	Safety culture expert to assist CBFO and NWP leadership in identifying behaviors, as well as systems, structures, and processes that may be “driving the non-disclosure of events in order to avoid a poor score.” (ISM Safety Focus Areas: Leadership, Employee Engagement, Organizational Learning).	Julie Goeckner, EM-40	Safety culture expert on-site visits trip reports (4 visits - January, February, March, April 2015).	06/30/15
JON 25-1.3	Based upon the information obtained from the site visits conducted to support JON 25-1.2, identify one or two proposed high level “leading” performance indicators to measure safety culture – applicable not only to WIPP, but to all Departmental elements. (ISM Focus Areas: Leadership, Organizational Learning).	Julie Goeckner, EM-40	Memorandum or email proposing one or two high-level “leading” performance indicators to the Department’s Safety Culture Improvement Panel for consideration.	09/30/15
JON 25-1.4	Safety culture expert to provide recommendations to CBFO and leadership to strengthen FY 15 award fee language associated with reporting of events. (ISM Safety Focus Areas: Leadership, Organizational Learning).	Julie Goeckner, EM-40	Award fee language improvement suggestions.	TBD (dependent upon contract schedule)
Conclusions #13/15 - JON #26				
<p>JON #26 – This JON is consistent with similar issues identified in the Department’s recent DNFSB 2011-1 Safety Culture and Safety Conscious Work Environment Extent of Condition Report and efforts should be taken to ensure these deliverables/milestones align with the Departmental actions as they evolve (e.g., actions by the Department’s Safety Culture Improvement Panel). See Actions JON 25-1.1 – JON 25-1.4.</p>				

Table 1 – Action Summary

Action	Corrective Action	Lead	Deliverable	Due Date
Conclusions #16/17 - JON #32				
JON 32-1.1	Provide written comments on the Interim Performance Measurement Baseline for WIPP Recovery.	Doug Tonkay, EM-31	Written comments provided on the Interim Performance Measurement Baseline for WIPP Recovery.	05/30/15
JON 32-1.2	Support Carlsbad requests during Fiscal Year 2016 budget development and 2017 budget formulation with an emphasis on prioritized maintenance and infrastructure program at WIPP.	Doug Tonkay, EM-31	Provide comments on Fiscal Year 2016 markup and 2017 budget formulation supporting Carlsbad funding for prioritized maintenance and infrastructure program at WIPP.	09/30/15
JON 32-2.1	Evaluate field responses to infrastructure and maintenance data call by the Assistant Secretary for EM.	Doug Tonkay, EM-31	Prepare memorandum to the Deputy Assistant Secretary for Waste Management documenting TRU waste sites with pending infrastructure needs critical to EMs programmatic mission execution at WIPP.	05/30/15
JON 32-3.1	Assess the chemical stability of TRU waste for disposal at the WIPP at three active generator waste sites.	Doug Tonkay, EM-31	Prepare a report for the Deputy Assistant Secretary for Waste Management.	03/31/15
Conclusions #29/30/31 - JON #44				
<p>JON #44 - This JON is the same as JON #27 in the AIB report for the fire event at WIPP. As such, the actions developed in the <i>Corrective Action Plan for Environmental Management Headquarters Accident Investigation Report Underground Salt Haul Truck Fire at the Waste Isolation Pilot Plant February 5, 2014</i>, dated August 2014 will be sufficient. Specifically, Section 4.1 Actions JON 27-1.1 through JON 27.2-3 from the referenced CAP will address this concern.</p>				
Conclusions #29/30/31 - JON #45				
<p>JON #45 - This JON is the similar to JON #29 and JON #31 in the AIB report for the fire event at WIPP. As such, the actions developed in the <i>Corrective Action Plan for Environmental Management Headquarters Accident Investigation Report Underground Salt Haul Truck Fire at the Waste Isolation Pilot Plant February 5, 2014</i>, dated August 2014 will be sufficient. Specifically, Section 4.3 Actions JON 29-1.1 and JON 29-1.2; in addition to Section 4.5 Actions JON 31-1.1, JON 31-2.1, JON 31-2.2, and JON 31-2.3 from the referenced CAP will address this concern.</p>				

Table 1 – Action Summary

Action	Corrective Action	Lead	Deliverable	Due Date
Conclusions #29/30/31 - JON #46				
JON 46-1.1	Ensure peer review(s) are conducted of EM-40 Roles, Responsibilities, Accountabilities, and Authorities, assessment procedure(s), assessment schedule, issues management process, performance plans, and staffing analysis in order to identify improvement opportunities.	John Sattler, EMCBC	Issued review report(s).	04/30/15
JON 46-1.2	Ensure a CAP for the issues identified in the review is developed.	Robert Murray, EM-43	Approved CAP	05/31/15
JON 46-1.3	Ensure actions addressing identified improvement opportunities from action JON 46-1.1 are completed.	EM-40 Office Directors (specific responsible parties depend on issues identified)	Documentation and closure evidence demonstrating improvement opportunity actions were completed.	Due date provided in the associated CAP
JON 46-1.4	Ensure an assessment of corrective action effectiveness is completed.	John Sattler, EMCBC	Issued assessment report.	180 days after completion of the actions in the CAP
JON 46-1.5	Ensure a CAP for the issues identified in the assessment of effectiveness is developed.	Robert Murray, EM-43	Approved CAP.	30 days after issuance of the assessment effectiveness report
JON 46-1.6	Complete actions addressing assessment issues.	EM-40 Office Directors (specific responsible parties depend on issues identified)	Documentation and closure evidence demonstrating issue actions were completed.	Due date provided in the associated CAP
Conclusions #29/30/31 - JON #47				
JON 47-1.1	Complete effectiveness review .	John Sattler, EMCBC	Issued effectiveness review report.	180 days after completion of all actions

Table 1 – Action Summary

Action	Corrective Action	Lead	Deliverable	Due Date
JON 47-1.2	Ensure a CAP for the issues identified in the effectiveness review is developed.	Robert Murray, EM-43	Approved CAP.	30 days after issuance of the effectiveness review report
JON 47-1.3	Complete actions addressing effectiveness review issues.	EM-40 Office Directors (specific responsible parties depend on issues identified)	Documentation demonstrating effectiveness review actions were completed.	60 days after completion of the effectiveness review

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